



George Washington Carver National Monument Cultural Landscape Report Environmental Assessment



George Washington Carver National Monument

Diamond, Missouri

Cultural Landscape Report/ Environmental Assessment

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About the front cover: View of Landscape of George Washington Carver National Monument

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FINDING OF NO SIGNIFICANT IMPACT

Cultural Landscape Report/Environmental Assessment George Washington Carver National Monument

The purpose of the Cultural Landscape Report (CLR) is to guide George Washington Carver National Monument (park) in identifying the best approach to managing the cultural and natural resources comprising the historic landscape in accordance with the park's legislative mandates. The proposed action is needed at this time to evaluate the feasibility of reconstruction of landscape features as well as establishment of directives and guidance for management of the relationship between existing prairie and woodland features and historic agricultural cover types, missing from the 1997 General Management plan (GMP). Direction is also needed to address what these areas should look like and how they should be used to tell the story of George Washington Carver's life. The proposed action is also needed to guide and enhance prairie management and its relationship to viewsheds; prairie restoration and management practices; woodlands and open space/savanna management; and vegetation management for the picnic area grove within the context of the park's cultural landscape. Guidance is also needed to clarify direction from the GMP in the development subzone and a parcel newly acquired by the National Park Service (NPS). The proposed action also addresses other specific site improvements needed at the park including: universal access, treatment of Williams pond and the contemplative trail; prevention of future bank erosion and maintenance of stream water quality; accommodation of overflow parking on the site; cemetery stone wall repair, maintenance, and management; and potential expansion of the Carver trail.

The park has prepared a Cultural Landscape Report/Environmental Assessment (CLR combined with an environmental assessment (EA) that evaluated four alternatives: a no action alternative (Alternative 1) and proposed improvements (Alternatives 2, 3, and 4), including the preferred alternative. The CLR/EA further analyzed the potential impacts these alternatives would have on the natural, cultural, and human environment. The CLR/EA was prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA), its implementing regulations by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508), and Director's Order 12 (DO-12), Conservation Planning, Environmental Impact Analysis and Decision-making and its accompanying Handbook.

NATIONAL PARK SERVICE SELECTED ALTERNATIVE

The NPS alternative selected for implementation is Alternative 4: "Honor, Commemorate, and Interpret the Life and Legacy of George Washington Carver by Employing a Combination of Agricultural Heritage and Exhibits of Plants Known to Him." The selected alternative will blend the approaches taken in Alternatives 2 and 3, with site-specific enhancements of the interpretive programming involving the nineteenth century landscape known to George Washington Carver, and

environmental education opportunities involving trail expansion and justification for ongoing prairie restoration activities to honor Carver's conservation work. This alternative will feature exhibits of plants known to Carver during his early years on the farm and used in traditional ways, as well as plants that were important to Carver's research and scientific efforts within the realm of economic botany.

It was determined that the selected alternative will best meet GMP goals and identified project goals and objectives, including: restoration of several lost features of the cultural landscape; enhanced interpretation through more trails and exhibit nodes related to George Washington Carver and plants from his early years on the farm as well as his work at Tuskegee; addition of a more agricultural appearance with the proposed haying in some of the prairie units; provision for overflow parking; and more. The selected alternative will provide a more optimum visitor experience if/when the park is able to implement. There is stakeholder and park support for this alternative because it achieves a reasonable balance between restoration of important cultural landscape features and ongoing management and interpretation of important natural resources. The selected alternative will improve the connection of the landscape and interpretive themes at the park.

Under Alternative 4, the majority of the existing developed core of the park will remain the same. The entrance drive, parking area, picnic area, visitor center, and maintenance area will continue to function and have a similar appearance to that present today. There will be interpretation of former farm features, the birthplace cabin, and the Moses Carver homestead and farm outbuildings; establishment of vistas along the Carver trail to interpret the agrarian setting; management and maintenance of field spatial organization with hayfields to reflect the agrarian setting of Carver's youth; establishment of a heritage fruit and nut orchard to interpret the Carver farm; expansion of the trail system into additional areas of the property to provide access to interpretive nodes associated with plants familiar to Carver; establishment of views by thinning woodlands west of Williams pond and the contemplative trail; and establishment of plants along trails and roads and interpretation of a wide variety of native species known to have been a focus of Carver's work including edible fruits, nuts, dyes, and fibers. Circulation throughout the park will provide where feasible, universal accessibility associated with the trail system and access to exhibits ensuring compliance with ABAAS (Architectural Barriers Act Accessibilities Standards of 1968) and the 2004 ADA-ABA Accessibility Guidelines. The existing housing area will be converted to overflow parking and retain the existing entrance/exit from Carver Road. Former housing structures will be removed to accommodate the overflow parking area. Accommodation of the site's storage needs will occur through the construction of a new 1,200 square foot (sf) facility integrated into the maintenance yard and perimeter wall.

MITIGATION

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience the following protective measures will be implemented as part of the selected alternative. The park will implement an appropriate level of monitoring throughout any construction process to help ensure that protective measures are being properly implemented and are achieving their intended results. Although the exact mitigation measures to be implemented will depend upon the final design and approval of plans by relevant agencies, the following best

management practices (BMPs) will be implemented, as necessary, to ensure protection of cultural and natural resources:

- Where necessary for resource or visitor protection, work areas will be identified with construction fence, silt fence, or some similar material prior to any activity.
- Until soil is stable and vegetation is established, erosion-control measures will be implemented to minimize erosion and prevent sediment from leaving the site.
- Temporary barriers will be provided to protect existing trees and shrubs that are not identified for removal.
- BMPs will be developed for site clearing, turf cover establishment and maintenance, and invasive plant control, installation of plants and trees, and riparian buffer preservation.
- All activities will comply with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register 44716, revised).
- Known archeological resources in the vicinity of project activities will be identified and delineated for avoidance prior to project work.
- The park will continue to coordinate with the State Historic Preservation Officer (SHPO) throughout the course of the project to protect and mitigate cultural resources.
- The park will comply with the Native American Graves Protection and Repatriation Act (NAGPRA) should any cultural items or graves be encountered on federal land.
- Equipment and material staging areas will avoid known archeological resources.
- Visitors will be informed in advance of construction activities via the park website and visitor center

OTHER ALTERNATIVES CONSIDERED

In addition to the selected alternative described above, the CLR/EA analyzed a no action alternative and two other action alternatives.

Alternative 1: No Action

Under Alternative 1, management of the entire park would continue in accordance with NPS policies and standards. It focuses on preservation of the existing character of the park and current interpretive programs. Under this alternative, there would be no changes to the facilities that currently accommodate visitor access and interpretation, or park administration and maintenance. Proposed changes that have already been approved, such as demolition of the park former housing structures, would be permitted to proceed. The existing visitor center would continue to serve as the primary means for visitor contact and orientation. The entrance drive and associated parking lot would remain the primary vehicular access route for visitors to experience the park's resources. Visitors would also continue to gain the majority of their knowledge of the life and accomplishments of Carver through the exhibits located within the visitor center and along the mile-long Carver trail. The picnic area would continue to support the visitor experience. No provision would be made to accommodate overflow parking beyond the use of current road margins and parking on designated grass areas.

Views identified as important interpretive vistas, such as from the visitor center environs across the prairie to the west, would continue to be managed for clear sight lines. Treatment would focus on stabilization and maintenance of the current landscape and preservation of the park's commemorative features as they exist today, including the Carver statue and bust, quote stones, and interpretive markers and monuments.

Alternative 1 was not selected because it would preclude the park from meeting some of the goals of the Purpose and Need statement and the list of management issues. No further exploration of ways to utilize the cultural landscape as a tool for interpreting Carver's life and accomplishments would be conducted. This alternative would also limit the park in its ability to explain the historical context within which George Washington Carver grew up and his efforts to get an education and prevent the rehabilitation of the landscape and its associated structures to enhance the memorial nature of the site.

Alternative 2: Rehabilitation of the Landscape, including Limited Restoration, to Interpret and Memorialize the Life and Achievements of George Washington Carver

Alternative 2 of the CLR/EA would focus on interpretation as a means of memorialization.

Interpretation of George Washington Carver's life on the Moses Carver farm, the experience of his transition from slavery to freedom, and the influence of these experiences on his later notable work and career as a scientist are already a focus of the park. As part of an overall strategy for managing the cultural landscape, this alternative would recommend developing additional connections between interpretive programming and what is known about the landscape that comprised the Moses Carver farm during the young Carver's time on the property.

The majority of the existing developed core of the park would remain the same. Current park concerns regarding screening of work areas, directing visitors to a single picnic area, and addressing overflow parking needs would be addressed. The ongoing efforts to manage natural resources for diversity and conservation, would serve as a foundation for interpreting Carver's work as a scientist. Other specific actions proposed in this alternative would include: expansion of the Carver trail to provide access to viewsheds of the rural agricultural setting and fields managed to convey historic agricultural character; interpretation of the accurate location of the birthplace cabin and the Moses Carver homestead based on further research and investigation with direct input from an NPS archeologist; and interpretation of other former Moses Carver farm features, such as outbuildings, pastures, fields, and cultivated areas, fencelines, hedgerows, the persimmon grove, and the nut and fruit orchard to depict the character of the Moses Carver farm and agricultural activities. There would also be clearing of woodlands not present during the Carver period and establishment of native warm-season grass fields and prairie communities following the recommended clearing of wooded areas.

Alternative 2 was not selected because it would constitute a large amount of land cover removal and re-establishment of vegetation. Also, in providing new interpretive experiences of the former farmstead, this alternative creates an increased and more intensive landscape management for park staff.

Alternative 3: Interpreting and Celebrating the Life and Work of George Washington Carver using an Economic-Botanical Approach

Alternative 3 would suggest connecting visitors with the range of plants available to Carver on the property during his youth and expanding interpretation to discuss how these plants and many others were used in his later scientific work during his years at Tuskegee Institute.

The focus of this rehabilitation alternative would be the interpretation of Carver's work and career through plants known to have been the focus of his experiments and scientific exploration. Plants would be featured along park trails to enhance interpretation of Carver's achievements. The design of the interpretive journey would include existing stands of native plants, and other species planted by the park for interpretive purposes. The existing trail would form the basis for the new interpretive layer, but extensions would provide access to areas of interest, such as Harkins woods. Existing plant communities would be managed for natural resource values and in accordance with scientific principles of conservation and species diversity, including the restored native grassland prairie.

Like Alternative 2, the majority of the existing developed core of the park would remain the same. Under this alternative, specific actions would include: establishment of a wide variety of native plant species producing useful and edible fruits, nuts, dyes, and fibers known to have been a focus of Carver's work; establishment of the persimmon grove, thinning of woodlands for expanded economic-botanical plantings; expansion of the trail system into additional areas of the property to provide access to economic-botanical plantings; continued natural resource management of restored grassland prairie and Harkins woods, and interpretation of the approach; and interpretation of Carver's conservation ethic and recommendations to Southern farmers and others featuring the restored grassland prairie.

Many of the components of Alternative 3 were blended into the selected alternative. Alternative 3 was not selected because stakeholders and the park felt there was a need for some expanded interpretation of the former farmstead and agrarian landscape that Carver knew as a boy. The memorialization of the entire life and work of George Washington Carver through the use of plant materials was carried through into the selected alternative.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

As required under CEQ regulations 40 CFR 1502.2(d), NEPA documents must include a section stating how each alternative analyzed in detail would or would not achieve the requirements of sections 101 and 102(1) of NEPA and other environmental laws and policies. The 2008 regulations from the Department of the Interior (43 CFR 46.30) define the environmentally preferable alternative as: "the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources." The implementation of Alternatives 1-4 is analyzed in the CLR/EA to minimize undesirable or unintended consequences.

The park has evaluated the impacts resulting from the different alternatives and has determined that Alternative 4, which honors, commemorates, and interprets the life and legacy of George Washington Carver through conveying and developing a combination of agricultural heritage and economic-botanical exhibits, is the environmentally preferable alternative. It will best address all the criteria presented in Section 101 (b) for the environmentally preferable alternative and will improve and enhance the connection of the landscape and interpretive themes at the national monument. While the no action alternative (Alternative 1) would maintain existing conditions, it would not be considered the environmentally preferable alternative because it would not meet the widest range of

beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences. The no action alternative would not improve or enhance the connection of the landscape and interpretive themes at the park. Alternatives 2 and 3, while exhibiting similarities to Alternative 4, would not combine the aspects of agricultural heritage and economic/botanical exhibits related to the landscape to convey the full story of the life and legacy of George Washington Carver.

WHY THE NPS SELECTED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

The intensity or severity of impacts resulting from implementing the selected alternative is evaluated using the 10 criteria listed in 40 CFR Section 1508.27. Key areas in which impacts were evaluated include cultural resources, natural resources, visual resources, visitor experience, and park operations. As defined in 40 CFR Section 1508.27, significance is determined by examining the following criteria.

Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts, which require analysis in an Environmental Impact Statement (EIS): As described in the CLR/EA, there will be short-term minor adverse and/or long-term beneficial impacts the park's historic resources including cultural landscapes, historic buildings and structures, vegetation, floodplains, water quality, visual resources, visitor experience and park operations from the selected alternative. Cultural resources will benefit from preservation, repair and rehabilitation of the special qualities of the historic setting. Natural resources will benefit from soil and water conservation management strategies, and management of restored grassland prairie and woodlands. The benefits to visual resources and visitor experience will result as new knowledge and understanding are incorporated into vegetation management, preservation and limited restoration of cultural landscape features, and integration of new and existing interpretation programming throughout the entire site. The benefits to park operations will result from providing more guidance on cultural landscape management activities and increasing interpretation and educational value.

Adverse impacts on vegetation, wildlife, visual resources, visitor experience, park operations, floodplains, wet prairie areas, and soils will be local and site-wide, short-and long-term, and minor, and will result from implementation and maintenance of the proposed circulation and vegetation modifications. No specific mitigation measures will be needed to reduce adverse impacts of the selected alternative beyond the best management practices (BMPs) listed in Table 5-1 in Chapter 5 of the CLR/EA. A summary of the effects to resources is found in Table 5-9 of Chapter 5 of the CLR/EA. No significant impacts were identified that will require analysis in an environmental impact statement.

Degree of effect on public health or safety: The selected alternative will have beneficial impacts on public health and safety. This alternative will enhance visitor safety at the park through circulation and accessibility improvements. The selected alternative enhances universal accessibility associated with the Carver trail and other aspects of the park, ensuring that the entire trail meets the ABAAS (Architectural Barriers Act Accessibilities Standards of 1968) and the 2004 ADA-ABA Accessibility Guidelines by addressing any deficiencies identified in *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report* (NPS 2014).

Unique characteristics of the geographic area such as proximity to historic and cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas: As described in the CLR/EA, the selected alternative will not affect prime farmlands, wild and scenic rivers, or ecologically critical areas because those resources do not exist in the park. The identified wet prairie areas that occur on the site are preserved. Existing buffers of restored prairie ensure the protection of these wet prairie areas and their associated unique vegetation. The park will continue to identify potential historic properties within areas surrounding the park proposed for ground disturbance and where previous surveys have not occurred.

Degree to which effects on the quality of the human environment are likely to be highly controversial: The selected alternative is not highly controversial. No issues arose during public scoping or the preparation of the CLR/EA from park staff. No issues were brought to the park's attention during the public review period that indicated a dispute with either the methods or results of the analysis of topics.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks: No highly uncertain, unique, or unknown risks were identified during the preparation of the CLR/EA or the public review period. In addition, the action will not represent a decision in principle about a future consideration.

Degree to which the selected alternative may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration: The selected alternative will not have a significant effect and does not establish a precedent for future actions with significant effects.

Whether the selected alternative is related to other actions with individually insignificant but cumulatively significant impacts: The CLR/EA concluded that past, present, and future activities, when coupled with the selected alternative, will have local and site-wide long-term beneficial cumulative impacts and local and site-wide long-term minor adverse cumulative impacts. No significant adverse cumulative impacts were identified. Likely future actions taken individually or collectively will result in no more than local, short-term and minor adverse cumulative impacts on the human or natural environment.

Degree to which the selected alternative may adversely affect districts, sites, highways, structures, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources: Impacts of the selected alternative on cultural landscapes, historic buildings and structures, and archeology will be long term beneficial. Benefits to the cultural landscape will be the reasonable balance achieved between the restoration of important cultural landscape features and ongoing management and interpretation of important natural features. Historic buildings and structures will be preserved, managed, and maintained, with enhanced interpretation, including the accurate location of the birthplace cabin and Moses Carver homestead. All improvements will be designed in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, reducing the potential for adverse impacts on the historic setting. No known archeological sites will be disturbed. To minimize potential adverse

effects, surveys will be conducted prior to ground-disturbing activities. Monitoring for subsurface artifacts will be conducted during ground-disturbing activities in the park.

The park initiated consultation with the Missouri SHPO with a scoping letter sent on January 27th, 2014. The SHPO was also sent an invitation to the May 14, 2014 scoping meeting and review of alternatives in a letter dated April 22, 2014. The SHPO also received a copy of the draft CLR/EA for review and comment, and the park will coordinate with the SHPO in the development of mitigation measures for historical and archeological resources, if necessary. The SHPO responded with a letter of concurrence with the park determination of *no adverse effect* on historic properties in a letter dated December 1, 2014. The park also initiated consultation with the THPOs for the United Osage Nation, the United Keetoowah Band of Cherokee Indians in Oklahoma, the Caddo Nation, and the Eastern Shawnee Tribe of Oklahoma for the purpose of developing a Programmatic Agreement between the tribes and the park. Letters were issued to the THPOs along with a draft of the agreement, inviting them to review the PA document and attend a follow-up consultation meeting. In the same letter, THPOs were invited to the larger stakeholder meetings for review of the CLR/EA alternatives at the park on May 14, 2014. A follow-up letter with notice of the stakeholder meeting date and time was sent to the THPOs on April 8, 2014, to solicit input and participation in the CLR/EA meeting. The park provided the THPOs a copy of the 95% draft CLR/EA for review and comment. The THPO for the Osage Nation Historic Preservation Office responded with a letter of concurrence with the park determination of *no adverse effect* dated January 23, 2015. Also, the acting THPO of the United Keetoowah Band of Cherokee Indians in Oklahoma responded with an email concurring with the park determination of *no adverse effect*, dated November 12, 2014.

No districts, sites, highways, structures, or objects listed on the National Register of Historic Places will be adversely impacted.

Degree to which the selected alternative may adversely affect an endangered or threatened species or its critical habitat: There are no federally endangered or threatened species known to occur within the park, although several state-listed species of special concern have been documented within the site. One rare fish species – the Arkansas Darter – has been a candidate for federal listing as a threatened or endangered species and is considered a species of conservation concern by the State of Missouri. In accordance with Section 7 of the Endangered Species Act, the park initiated consultation with the U.S. Fish and Wildlife Service (USFWS) on January 27, 2014. The USFWS also received a copy of the draft CLR/EA for review and comment. In a letter dated April 16, 2014, the USFWS concurred with the NPS finding of *no adverse effect* on threatened or endangered species.

Whether the selected alternative threatens a violation of federal, state, or local environmental protection law: The selected alternative will not violate federal, state, or local environmental protection laws.

PUBLIC INVOLVEMENT

Park staff at George Washington Carver National Monument and resource professionals of the National Park Service Midwest Regional Office conducted internal scoping for the CLR/EA project. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the preferred alternative to other planning efforts at the park. From previous planning efforts and development of resource documents, the park has a well-established list of stakeholders, interested in the alternatives being proposed for the park. For the CLR/EA, the superintendent initiated public scoping on March 1, 2014.

Comments and questions from members of the public were documented and taken into consideration during the development of the CLR/EA. The CLR/EA was made available for public review and comment from February 22, 2015 through March 23, 2015 on the NPS planning, Environment, and Public Comment (PEPC) website. Four comments were received during the comment period and taken into consideration as the CLR/EA was finalized. Agency letters were received from the SHPO, two THPOs and USFWS and are included in the appendix of the CLR/EA.

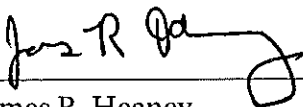
CONCLUSION

In light of the impacts described in the CLR/EA for the project and with guidance from NPS *Management Policies 2006*, natural and cultural resources information, professional judgment, and considering agency and public comments, the park has decided to implement the selected alternative, presented as Alternative 4 (Preferred Alternative). Implementing the selected alternative will enhance the connection of the landscape to interpretive themes, the historic setting of the site, the visitor experience, and park operations, while preserving, protecting, and managing the cultural and natural resources of the park.

The selected alternative will not constitute an action that normally requires preparation of an Environmental Impact Statement (EIS) and, as noted above, impacts resulting from implementing the action will not have a significant impact or effect on the natural, cultural, or human environment. There will not be significant impacts or effects on public health, public safety, threatened or endangered species, historic properties either listed on or eligible for listing on the National Register of Historic Places, or unique characteristics of the region.

No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative impacts or effects, or elements of precedence were identified during the impact assessment. Implementing the selected alternative will not violate any federal, state, or local environmental protections laws. The impacts that result from the selected alternative will not impair any park resources or values necessary to fulfill specific purposes identified in the park's enabling legislation (see attachment A).

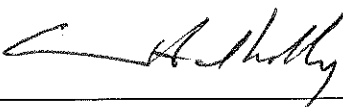
Recommended:



James R. Heaney
Superintendent
George Washington Carver National Monument

6-23-2015
Date

Approved:



Cam Sholly
Regional Director
Midwest Regional Office

7/13/15
Date

ATTACHMENT A: NON-IMPAIRMENT DETERMINATION

In addition to determining the environmental consequences of alternatives to proposed actions, National Park Service (NPS) *Management Policies 2006* and Director's Order-12 require an analysis of potential impacts and effects to determine if actions will impair park resources. Impairment is an impact that would, in the professional judgment of the responsible NPS manager, harm the integrity of park resources or values, including opportunities that will otherwise be present for the enjoyment of those resources or values. A determination of impairment is made for particular resource impact topics carried forward and analyzed in the environmental assessment for the selected alternative. The selected alternative (Alternative 4) for meeting the objectives established in the George Washington Carver National Monument (park) Cultural Landscape Report and Environmental Assessment (CLR/EA), is described in Chapter 5 of the CLR/EA. The CLR/EA also includes detailed information on existing conditions of resources (CLR/EA Chapter 3) and the impacts or effects the selected alternative will have on those resources (CLR/EA Chapter 6). Existing conditions and impacts or effects are briefly summarized in this impairment determination.

The description of park significance in Chapter 1 of the CLR/EA was used as a basis for determining if a resource is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- Key to the natural or cultural integrity of the park, or to opportunities for enjoyment of the park, or
- Identified in the park's general management plan or other relevant NPS planning documents as being of significance.

Per Section 1.4.6 of *Management Policies 2006*, park resources and values that may not be impaired include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

This impairment determination is based on current NPS guidance on determining impairment of park resources and values. The impairment determination for each resource and value includes:

- a brief description of the condition of the resource;
- whether the resource is necessary to fulfill the purposes for which the park was established;
- whether the resource is key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park;
- whether the resource is identified as a significant resource in the park's planning documents; and
- a statement as to why the action will or will not result in impairment of the resource, including a discussion of the context, severity, duration, and timing of any impacts, and any mitigation measures, if applicable.

Impairment may result from activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park, but this would not be a violation of the Organic Act, unless the park was in some way responsible for the action.

The George Washington Carver National Monument Cultural Landscape Report/Environmental Assessment analyzes impacts to the following resources: soils, vegetation, water quality, wildlife and rare, threatened and endangered species, wetlands, floodplains, cultural landscapes, historic structures, archeological resources, visual resources, visitor use and experience and park operations. NPS guidance provides that:

"impairment findings are not necessary for visitor experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, etc. because impairment findings relate back to park resources and values, and these impact areas are not generally considered to be park resources or values according to the Organic Act, and cannot be impaired the same way that an action can impair park resources and values."

Based on the aforementioned guidelines and basis for determining impairment of park resources and values, a determination of impairment is made for the following resource impact topics carried forward and analyzed in the CLR/EA for the selected alternative: soils, vegetation, water quality, wildlife (including rare, threatened and endangered species), wetlands, floodplains, cultural landscapes, historic structures, archeological resources, and visual resources.

NON-IMPAIRMENT DETERMINATION FOR THE SELECTED ALTERNATIVE

This non-impairment determination has been prepared for the selected alternative. A non-impairment determination is made for all relevant impact topics analyzed for the selected alternative. This impairment determination is based on current NPS guidance on determining impairment of park resources and values. The impairment determination for each resource and value includes:

- a brief description of the condition of the resource;
- whether the resources is necessary to fulfill the purposes for which the park was established; whether the resource is key to the natural or cultural integrity of the park or to the opportunity for enjoyment of the park; whether the resource is identified as a significant resource in the park's planning documents; and

- a statement as to why the action will or will not result in impairment of the resource, including a discussion of the context, severity, duration, and timing of any impacts, and any mitigation measures, if applicable.

SOILS

The soils at the park are vital to the natural integrity of the site as they sustain the various vegetation types and guide the management and maintenance of the designated land uses and vegetative covering. Soils are also key in understanding and interpreting the history of the site. Moses Carver deeded the first mining lease for a portion of his farm before his death, and in 1915 a zinc mine was developed in the southwest corner of the farm. Mining on this site continued on and off until the end of 1943. The company left a tailing pile on the 30 acre parcel where the mine was located and this parcel was not acquired with the rest of the park in the early 1950s. It was later integrated into the park following mitigation of the environmental hazards associated with the tailings from the defunct mine in 2006. The selected alternative treatment will integrate this parcel into the prairie restoration program as part of the ongoing fulfillment of the park purpose for resource conservation and interpretation at the national monument. The result will be a long-term beneficial impact on the soil associated with the 30 acres and soils throughout the site.

In the selected alternative, thinning of woodlands and establishment of new plantings associated with restored farmstead features as well as new construction will result in both a site-wide long-term beneficial impact and a short-term minor adverse impact on soils. The short-term adverse effects of the selected alternative on soils will be minor and will not substantially alter the quality and condition of the current soils within the park or region. The short-term adverse effects on soils will not diminish its role in fulfilling the park's purpose of preserving and interpreting the natural and cultural history, and the natural integrity of the national monument. Therefore, the selected alternative will not impair soil resources.

VEGETATION

The 240 acres of the park is primarily characterized by open restored prairie vegetation that allows for expansive views across the landscape. The open prairie vegetation is broken by a broad wooded zone that follows the riparian corridor of Carver and Williams branches. The Harkins branch corridor is also wooded in the northwest corner of the park. Harkins woods, is an area of special concern and management within the park because the makeup of the forest is markedly different from other park vegetation. Several plant species have only been recorded from this area. Set within this milieu is the more manicured landscape of the park's developed core, which occurs within the east-central section of the park. This core includes the grove of mature shade trees encompassing the picnic area, visitor parking, and the visitor center and maintenance yard.

Some of the larger natural stands of woodlands and woodland riparian corridors and contrasting open grassland prairie fields resemble historic vegetation patterns and fulfill the park's purpose of preserving and interpreting the history of the site and are key to its cultural and natural integrity. Along with Harkins woods and the associated unique plants species these natural vegetation features are considered significant resources on the site.

The grove in the picnic area, appears to have been planted by the Shartel family and incorporated into the park experience for visitors as a picnic area. The row of walnuts along the Carver trail was planted as an interpretive aid to recall this element of the Moses Carver farm. Both examples survive from early park development and are significant resources. They also fulfill the park's purpose of providing visitors the opportunity for historic interpretation of the landscape and enjoyment of the park.

Specific actions resulting from the implementation of the selected alternative include: mowing of some prairie units or areas to establish vistas along the Carver trail; managing riparian woodlands as gallery forests; thinning of dense woodlands for opening up views from the contemplative trail and removing invasive species and reducing density; planting of heritage fruit and nut orchards to interpret the Carver farm; expanding the trail system into additional areas of the property to provide access to interpretive nodes associated with economic/botanical plantings; and enhancing natural resource management of restored grassland prairie and Harkins woods for health, diversity, and soil and water conservation.

The proposed actions from the selected alternative will result in a park-wide long-term moderate beneficial impact and a short-term moderate adverse impact on vegetation. Short term adverse impacts are anticipated due to effects of thinning or selected partial clearing, trail expansion, and vegetative cover changes on soil erosion, soil moisture, community stability, and wildlife.

The overall impact from the selected alternative will be beneficial and will modify the vegetation to improve its role in fulfilling the park's purpose of preserving or interpreting the history of the area and preserving unique natural resources. Thus, the selected alternative will not impair vegetation resources because the park's vegetation will remain in the same or better condition and will contribute to the interpretation of the cultural landscape and the enjoyment of current and future generations of visitors.

WATER QUALITY

There are three streams that flow through the park and two spring branches that are completely contained within the site. Stream condition in the park is generally good. Protection of surface water and ground water is a management priority and currently water quality meets or exceeds all applicable water quality standards. The streams, springs, pond, and groundwater are considered significant resources both within and outside the monument boundaries. The water resources within the park contribute to its historic character and are necessary to fulfill the park's purpose of preserving and interpreting the natural history of the area, are key to the natural integrity of the park, and are considered significant resources. They also are key in fulfilling the park's purpose of providing visitors the opportunity for historic interpretation and enjoyment of the landscape.

In the selected alternative and in addition to existing water resource and conservation management, protection will be expanded to include the stabilization of the stream banks and preservation of landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors. Management strategies will address Williams pond as well and the springs on the site. Also extended monitoring for water quality will also continue.

The proposed actions from the selected alternative will result in a park-wide long-term minor beneficial impact and a short-term minor adverse impact on water quality.

Short term adverse impacts are anticipated due to effects of woodland thinning and very selective clearing, trail expansion, and vegetative cover changes in the riparian woodlands. The impacts will be minor and of short duration and water quality monitoring would remain constant during implementation activities.

The overall impact from the selected alternative will be beneficial and will preserve and enhance water quality and resources as well fulfilling the park's purpose of preserving or interpreting the history of the area and preserving unique natural resources. Thus, the selected alternative will not impair water quality because it will remain in its existing good condition and continue to get better and will contribute to the interpretation of the cultural landscape and the enjoyment of current and future generations of visitors.

WILDLIFE

The woodlands, streams and pond at the park provide year-round habitat for a variety of wildlife. Common mammals on the site include: opossum (*Didelphis virginiana*); raccoon (*Procyon lotor*); and hispid cotton rat (*Sigmodon hispidus*). Forty nine species of birds have been recorded as year-round residents or seasonal visitors within the park. Common species include: dickcissel (*Spiza Americana*); blue jay (*Cyanocitta cristata*); northern cardinal (*Cardinalis cardinalis*); and American robin (*Turdus migratorius*). Wet areas are home to several species of reptiles and amphibians and a rare fish species- the Arkansas darter (*Etheostoma cragini*). The wildlife within the park contribute to its historic character and are necessary to fulfill the park's purpose of preserving and interpreting the natural history of the area, are key to the natural integrity of the site, and are considered significant resources.

The selected alternative will modify and manage some of the park's vegetation to restore pre-settlement savanna-like composition and restore historic spatial organization on the site. Also a small amount of woodlands will be thinned to create viewsheds to the prairie grasslands and the mown fields. These actions will have both short-term adverse and long-term beneficial impacts to wildlife. Thinning vegetation will allow for an increase in understory development and diversity of species within the site. Thinning may slightly reduce food sources for some birds and mammals and reduce nesting and roosting cover for some species. Since this will occur slowly over time, the birds and mammals will likely find food sources and nesting cover from nearby trees on the site. These changes will have a minor adverse impact on wildlife.

Overall, the selected alternative will result in both a site-wide long-term beneficial impact and a long-term minor adverse impact on wildlife. The adverse effects of the selected alternative on wildlife will be minor and will not substantially alter the overall wildlife, wildlife habitat, or natural processes within the park or region. Therefore these adverse impacts on wildlife will not diminish its role in fulfilling the park's purpose of preserving and interpreting the natural and cultural history and the natural integrity of the site. Thus, the selected alternative will not impair wildlife resources because the modifications to vegetation and continued restored prairie management, will allow species and habitat to remain essentially unchanged.

WETLANDS

Several areas of the park experience wet conditions throughout much of the year. This is true for identified wet prairie areas located in the southwest and south-central areas of the site, and are particularly notable due to the diversity of plants that are only found in damp areas. In the selected alternative, these areas will be preserved along with the associated plant material and remain buffered within the context of restored prairie grasslands. The wetland areas are key to the natural integrity of the park and considered a unique park resource. Impacts of the selected alternative will be long-term and beneficial and will fulfill park goals of conservation and management of natural resources and will preserve the natural history of the park. Thus the selected alternative will not impair the wet prairie areas.

FLOODPLAINS

Three perennial streams, Carver, Harkins, and Williams branches as well as Carver and Williams springs, and their associated floodplains constitute one of the primary characteristics of the park landscape that link George Washington Carver's memories to his birthplace. Where gallery forests once edged stream corridors, floodplain communities are today characterized by young invader species and a dense understory of woody growth. The riparian forests today contain a greater percentage of fire intolerant species, and a denser character than that present during the mid-nineteenth century. Floodplains in association with the perennial streams and Williams pond are considered a significant park resource. This natural system fulfills the monument's purpose for establishment and is key to the natural and cultural integrity of the site and the opportunity for enjoyment of the national monument by visitors. Also, current laws and policies require that the following conditions be achieved in the park: minimize destruction, loss, or degradation of floodplains (and wetlands), and preserve their natural and beneficial values.

In the selected alternative, there will be a comprehensive management strategy that would address the stabilization of the stream banks and the removal of invasive species or other dead or unhealthy vegetation with the floodplains of the streams, springs, and Williams pond. Also, in the selected alternative there will be some thinning of the riparian woodland that covers the floodplains in order to control invasive species and slightly diminish the density of the woodlands to better reflect the condition during the time of George Washington Carver.

The selected alternative will have local, short-term, minor adverse impact on the floodplains due to clearing, stream bank restoration, and removal of invasive species. The selected alternative will also have a long-term and beneficial impact on floodplains due to the stream bank restoration, removal of invasive species and strategies for long-term maintenance and management. Thus the selected alternative will not impair the floodplains or stream banks associated with the waterways in the park.

CULTURAL LANDSCAPES AND HISTORIC BUILDINGS AND STRUCTURES

The cultural landscape and historic buildings and structures, are necessary to fulfill the park's purpose and are key to its cultural integrity and are considered significant site resources.

Cultural Landscapes: The natural elements of the park's cultural landscape include woodlands with unique vegetation species; riparian woodlands forming corridors along the three perennial streams; restored grassland prairie; and the streams, pond, and springs are preserved and enhanced through expanded interpretation and access to the entire site. The selected alternative will best meet the identified goals and objectives of the park, including restoration of several lost features of the cultural

landscape, enhanced interpretation through more trails and exhibit nodes related to George Washington Carver and plants from his early years on the farm and his work at Tuskegee. The selected alternative will provide a more optimum visitor experience if/when the park is able to implement. It also will provide a reasonable balance between restoration of important cultural landscape features and ongoing management and interpretation of important natural resources. This alternative will improve the connection of the landscape and interpretive themes at the park.

The selected alternative will have park-wide, long-term and major beneficial impacts on the cultural landscape. Beneficial impacts will include: woodland management; economic/botanical plantings and interpretation; trail expansion to include environmental interpretation in Harkins woods; and delineation and interpretation of the former farmstead of Carver's childhood. Cumulative effects will be park-wide, long-term, major and beneficial. Short-term, minor adverse impacts could occur during implementation of the selected alternative, but they will be minor and of short duration. Therefore, the selected alternative will not impair the cultural landscape of the park.

Historic Buildings and Structures: The only building at the park that survives from the nineteenth century is the circa 1881 Moses Carver house. The three buildings located within the former park housing complex survive from the early park establishment period however they are proposed for removal. Structures include the Carver family cemetery perimeter wall and the stone boundary markers in the northwest and southwest corners of the site. In the selected alternative, these resources will be preserved, managed, and maintained, with enhanced interpretation. The selected alternative will also include interpretation of the accurate location of the birthplace cabin and Moses Carver homestead based on further research and archeological investigation.

The selected alternative will therefore have local, long-term, moderate and beneficial impact on historic buildings and structures. Implementation of maintenance and management strategies and compliance with visitor access requirements may have short-term adverse impacts, but they will be minor and of short duration. Therefore, the selected alternative will not impair historic buildings and structures within the park.

VISUAL RESOURCES

The park exhibits several views designed primarily for visitor enjoyment and an understanding of the site. Predominant among them are the axial view along the park entrance road corridor that focuses on the visitor center; linear views that direct visitors along the trail to elements of the land known to Carver; and long expansive views from the visitor center and interpretive trail across the open restored prairie south of Carver branch and north and west of the Moses Carver house precinct. All of these views were established during the early park development period and are necessary to fulfill the park's purpose of preserving and interpreting the historic and commemorative landscape. All of the views survive and are a significant resource within park.

The selected alternative includes: thinning woodlands west of Williams pond to establish views from the contemplative trail to restored prairie and hayfields, created to reflect the agrarian setting of Carver's youth; expanding Carver trail with alignments that afford opportunities for views to restored orchards, historic farm interpretation outlines, and fields south and east of the visitor center and cemetery; and preserving the significant existing views within the site. The selected alternative

will have a site-wide, long-term and major beneficial impact to visual resources. Woodland thinning as well as establishment of the expanded trail in the selected alternative will result in short-term and minor adverse impact to visual resources. These impacts however will be short-term and minor.

Because visual resources will be preserved, maintained, expanded, and interpreted the selected alternative will fulfill the park's purpose for the education and enjoyment of current and future generations of visitors. Thus, the selected alternative will not impair visual resources.

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Chapter 1: Introduction

1.0 Overview

The George Washington Carver National Monument, located near Diamond, Missouri, was authorized by Congress on July 14, 1943. The park, a unit of the National Park System, was formally dedicated on July 14, 1953, to memorialize and preserve the 240-acre birthplace home of George Washington Carver. Carver was one of the leading agricultural scientists, educators, and humanitarians in America during the late nineteenth and early twentieth centuries.

Planning for the park began in 1951 when the National Park Service (NPS) asked regional historian Merrill Mattes to take the lead in preparing a basic planning document or master plan development outline for the new park unit. His initial description of the essential NPS goal of making the unit into a memorial site states:

Preservation of the George Washington Carver birthplace ensures the lasting memorialization of a humble man whose practical and momentous achievements in the field of scientific agriculture and chemistry led to his world-wide fame. Here was a signal triumph of the human spirit, for Carver rose to this eminence from a dubious beginning as a sickly, penniless, orphan slave boy, endowed only with a thirst for learning and an abiding sense of kinship with the Creator. The flowering of his many-faceted genius, as botanist, soil scientist, chemist, educator, and artist reflects

luster upon a race which has made remarkable strides toward dignity and self-sufficiency since Abraham Lincoln signed the Emancipation Proclamation. The Monument is a tribute, not only to a man, but to an eloquent expression of the American faith.¹

Though Mattes was a historian, he went on to identify the basic planning problem for the new park unit, which was how to convey the significance of the site, given that the principal historic features associated with Carver's early life—the birthplace cabin and the original Carver farm house—were both gone. Restoration would be difficult because no plans or photographs of these buildings were known to exist. What the park did have was the land itself, with its mix of native woods, open meadows, and planted walnut grove; the birthplace cabin site; the Carver family cemetery; and the later Moses Carver house.² This same issue challenges the park today and is one of the primary goals for this study.

Thus NPS began the process of assessing and establishing core management direction for the George Washington Carver National Monument. Management issues included: identifying the purpose of the unit; visitor use and experience goals; research and planning priorities; and the interplay of cultural and natural resource protection. Master plans were developed in the 1950s and 1960s; statements for management in 1971, 1984, and 1994; and a general management

1. Diane Krahe and Theodore Catton, *George Washington Carver National Monument Administrative History* (2014), 96, quoting Merrill Mattes, "Master Plan Development Outlines, George Washington Carver National Monument," April 1952, File D18, RDF, GWCA.

2. *Ibid.*, 96.

plan in 1997. The General Management Plan (GMP) for the park established a new core management direction by identifying the commemoration of Carver as the key objective of park management and provided a sound planning base for future management decisions for the site. This GMP also laid out the need to improve the interpretive program, which eventually led to the completion of a Long-Range Interpretive Plan (LRIP) in 2007. This plan defined the park story in a set of themes and sub-themes, to assess how completely and effectively the park's cultural and natural resources were being used to convey the park story.³

Management of both natural and cultural resources at the park has been a part of the planning process since the 1980s, including the initiation of a prairie restoration program, and subsequent management recommendations for the restoration and maintenance of prairie areas within the park boundaries. From 1994 to 2011, four scientific assessments of the progress of the prairie restoration found deficiencies with the program but offered no suggestions for modifications.⁴ Prairie management continues to be an issue for the park and part of the directive for the development of this Cultural Landscape Report (CLR) and Environmental Assessment (EA).

Since the GMP was completed, the park has endeavored to find a balance in the management of natural and cultural resources that both supports the memorial emphasis and addresses the issues of prairie management as well as the maintenance and preservation of cultural landscape features. In 1999, a study titled, *Springs of Genius: An Integrated Management Plan for George Washington Carver National Monument*, was completed that outlined a comprehensive approach for the integration of natural and cultural resource management. In 2010, the park prepared a Cultural Landscape Inventory (CLI) for the national monument that provided a comprehensive look at the historical development

and significance of the landscape, placing it in context of the site's overall significance. In the CLI, the conceptual framework for George Washington Carver National Monument was as a historic designed landscape:

... a composite of cultural and natural features dating back to Carver's boyhood, combined with post-1951 built features. Even the present-day vegetation and the Williams Pond were part of this cultural landscape inasmuch as the Park Service had manipulated the vegetation and modified the pond to serve the memorial's purpose.⁵

After this report was completed, the NPS submitted it to the State Historic Preservation Officer (SHPO) with the recommendation that the cultural landscape was eligible for listing on the National Register of Historic Places. The SHPO concurred.⁶

In 2013, the NPS engaged Bahr Vermeer Haecker Architects (BVH) of Lincoln, Nebraska, in association with John Milner Associates (JMA) of Charlottesville, Virginia; Wiss, Janney, Elstner Associates, Inc., (WJE) of Northbrook, Illinois; and Historic Resources Group, Inc. (HRG) of Lincoln, Nebraska, to prepare this combined CLR/EA to document and record the history and current conditions of George Washington Carver National Monument, and guide its future treatment and use. The goals and objectives of the report include:

- Follow GMP directives to determine the best approach to managing the park's cultural and natural resources in accordance with the park's legislative mandate
- Provide guidance for rehabilitating the landscape and its associated structures to enhance the memorial nature of the site

3. Ibid., 117, 120, 197.

4. Ibid., 239.

5. Ibid., 276.

6. Ibid., 276–277.

- Discuss overall management objectives for the park as documented in planning studies and other research documents
- Present a phased strategy for long-term management based on the landscape's significance, existing condition, and use
- Develop treatment recommendations that will address the entire 240-acre cultural landscape, balancing historic landscape protection with natural resource efforts, and supporting and enhancing interpretive programs
- Focus rehabilitation treatment on providing opportunities for the public to experience the peaceful environment and reflect on Carver's life

The CLR/EA was developed within a framework of previously-prepared resource inventories and planning studies, such as those noted above, in conjunction with natural resource studies prepared by Heartland Inventory and Monitoring Network (HTLN) and Missouri Resource Assessment Partnership (MoRAP). The CLR/EA draws upon these studies in the documentation of the park's landscape, assessment of its integrity, and development of landscape treatment recommendations.

1.1 Purpose and Need for the Project

The purpose of this project is to assist the NPS in identifying the best approach to managing the cultural and natural resources comprising the historic landscape at George Washington Carver National Monument in accordance with the park's legislative mandates. The proposed action alternatives and associated treatment recommendations address the entire 240-acre landscape and will assist the NPS with managing the historic property, balancing cultural and natural resource stewardship, and supporting and enhancing interpretive programs as well as the overall visitor experience.

The proposed action alternatives and treatment recommendations were developed within the context of a CLR, which provides the park with a guiding philosophy for management of both cultural and natural historic resources that can be directly tied to significant periods and themes in American history, namely the life of notable scientist, educator, and humanitarian George Washington Carver.

The CLR/EA presents an approach to long-term management of the park's cultural landscape that addresses the treatment needs of specific areas identified by NPS. They include:

- the approximately 20-acre developed core, an area of the park requiring intensive management, and including the visitor center/maintenance building complex, the area immediately adjacent to the memorial entrance, the picnic area, and the mile-long Carver Trail;
- the 30-acre parcel of property acquired by the park in 2006;
- the prairie units and the various vegetation species that cover the site based on recommendations from MoRAP, HTLN, and the Heartland Network Invasive Plant Management Plan/Environmental Assessment (IPMP/EA);
- prairie unit restoration and management practices, including type of prairie and the number of acres that should be maintained in prairie;
- prairie unit management, and its relationship to viewsheds;
- woodlands, savanna, and open space management to address differences between the contemporary landscape and historic Carver-era patterns of spatial organization and land cover;
- management of the grove of deciduous trees associated with the picnic area; and

- the overall justified approach to land cover management and its connection to interpretation and the visitor experience.

In addition to the treatment recommendations related to the topics listed above, other improvements identified as needed at the park and for consideration in the CLR/EA, include:

- universal access throughout the park including specifically identified trail sections that may need to be adjusted due to steep slopes or surfacing material;
- other accessibility issues, including those identified in the 2014 site assessment by the National Center on Accessibility;
- recommendations for treatment of Williams Pond and the contemplative trail that surrounds it;
- potential restoration of the stream banks currently covered with rip-rap in order to prevent future erosion and maintain water quality in the streams;
- accommodation of overflow parking on the site, including location, extent, access and surface treatment;
- cemetery wall repair, maintenance, and management;
- potential expansion of the Carver Trail;
- addition of a storage facility (in place of the buildings scheduled for demolition); and
- provision for overflow parking.

NPS has recognized the need to better integrate commemoration, interpretation/education, and the treatment and management of the landscape. NPS recommendations in a 1964 park master plan suggested restoration of the landscape that existed when Carver was a boy on the Moses Carver farm. This recommendation has never been implemented due to a lack of historical documentation of landscape features present on

the property during the period when George Washington Carver lived there, circa 1865–1876. The master plan did, however, state that the principal asset of the park was the land itself, as it was an expression of those qualities which characterize Carver’s greatness—simplicity, naturalness, and quiet beauty. With the development of the GMP in 1997, the park recognized how the site and its context had changed since 1964, requiring the formation of a new set of management objectives for the park, including managing resources to help interpret how the boyhood farm and surrounding area influenced Carver as an adult. This led to the further evaluation of the human, natural, and cultural resources and clarifying the utilization of these resources for interpretation, education, and commemoration.

Since 1997, a number of planning studies have been conducted to support appropriate treatment of the site’s cultural landscape and its natural features. None, however, have resulted in specific tangible documentation of the park’s character and composition during the targeted restoration period. There remains a need to further evaluate the feasibility of reconstruction of landscape features based on existing historical documentation and extant features, as well as the relationship between existing prairie and woodland features and historic agricultural cover types. There is also a need to address what these areas should look like and how they should be used to tell the story of George Washington Carver’s life. Questions also remain concerning the loss of agricultural and economic- botanical features associated with nineteenth century use of the property, such as the persimmon grove and apple orchard, and the feasibility of restoring these cultural landscape features. These topics are also explored in this CLR/EA.

1.2 Scope of the Report

The CLR/EA is the primary document used to guide management and stewardship of the cultural landscape and its individual resources, and to inform treatment, management, and maintenance of the grounds and buildings at George Washington Carver National Monument. The intent of the combined CLR/EA is to provide a holistic and integrated plan that addresses operational needs, while also recognizing that the mission of the NPS is to provide a rich and authentic visitor experience. It is also the intent of the combined document to ensure that long-term preservation and stewardship objectives are met to the maximum extent practicable.

The CLR portion of the document includes detailed documentation of the historical development of the park, evaluation of its existing conditions, analysis and evaluation of landscape characteristics, and preparation of treatment recommendations. The CLR builds upon the numerous studies and documents that currently exist for the park.

The EA portion of the document evaluates potential impacts on environmental, socioeconomic, and cultural resources through the proposed treatment/action alternative (preferred alternative), additional action alternatives, and a no action alternative. The EA provides the decision-making framework that analyzes a reasonable range of alternatives to meet objectives of the proposed action and evaluates potential issues and impacts to the park's resources and values. The EA also identifies mitigation measures to lessen the degree or extent of any identified impacts.

The combined CLR/EA includes the following chapters:

- Introduction
- Site History and Evaluation of Significance
- Existing Conditions, Comparative Landscape Analysis, and Facility Management Software System (FMSS) Maintained Landscapes data

- Affected Environment
- Alternatives and Treatment
- Impact Analysis and Environmental Consequences
- Consultation and Coordination
- Implementation, Phasing, and Work Orders
- Bibliography

1.3 Methodology

The CLR/EA was conducted in phases. The first phase involved a pre-proposal meeting held at the park in June 2013 to discuss the needs of the project. The second phase involved a meeting held at the park in November 2013 to discuss project organization, conduct background research and field investigation, and develop initial public scoping for the EA. The site visit also resulted in the identification of draft materials for entry into the Planning, Environment & Public Comment (PEPC) database and for Policy Act (NEPA) compliance tracking, preparation of press releases, and development of a list of stakeholders and a strategy for consultation.

The phase two site visit was followed by initial report production and preliminary consultation with agencies required as part of the EA compliance process to meet Section 7 of the Endangered Species Act (U.S. Fish and Wildlife Service, USFWS; state natural resource management agencies; and state natural heritage inventories), Sections 106 and 110 of the National Historic Preservation Act (NHPA) (SHPO and Advisory Council for Historic Preservation, ACHP), and other relevant regulations and reviews.

Following initial report preparation and park review of the document including draft alternatives/treatment recommendations, the team facilitated stakeholder meetings held at the park in May 2014. Stakeholders included the SHPO, Tribal Historic Preservation Officers (THPO), other federal and state agencies, and friends of the

park. The preferred alternative was developed based on the additional input from stakeholders and NPS review and comments.

The CLR/EA was then developed to 95 percent completion and reviewed by the park, Midwest Regional Office (MWRO) staff, and the Missouri SHPO, and THPOs. After review of the 95 percent draft, review comments were addressed and the 95 percent draft CLR/EA was made available for public and agency review by NPS on the PEPC site. After public review and response to comments, the 100 percent document was prepared for final review and circulated through the park and MWRO in order to get approval of the Finding of No Significant Impact (FONSI).

The specific methodologies utilized to prepare the CLR and EA components of the report are outlined below.

1.3.1 Cultural Landscape Report

The CLR for George Washington Carver National Monument was prepared in accordance and compliance with the guidance offered in the most recent versions of relevant federal mandates, executive orders, policies and guidelines, as well as applicable state, local, and national building and life safety codes, including:

- A Guide to Cultural Landscape Reports: Contents, Process, and Techniques
- Cultural Landscapes and NPS Facility Management, Landscape Lines No. 17
- The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes
- NPS Director's Order 10A: Design and Construction Drawings
- NPS Director's Order 28: Cultural Resources Management Guidelines
- NPS Director's Order 77: Natural Resource Protection; Reference Manual 77: Natural Resource Management

- Architectural Barriers Act of 1969; Rehabilitation Act of 1973; Americans with Disabilities Act of 1990
- NPS Management Policies, 2006
- NPS Guiding Principles of Sustainable Design
- National Register Bulletin: How to Apply the National Register Criteria for Evaluation
- National Register Bulletin: Guidelines for Documenting and Evaluating Rural Historic Landscapes
- National Register Bulletin: Telling the Stories: Planning Effective Interpretive Programs for Properties Listed in the National Register of Historic Places
- National Historic Preservation Act of 1966, as amended; Sections 106 and 110

In addition, the methodology used by project team members in preparing each component of the CLR portion of this document is described in detail below.

Background Research and Data Collection.

Prior to visiting the site, CLR team members began to collect documents and other materials pertaining to the project and site. In addition to assembling available research materials from the MWRO of the NPS, the team acquired the CLI for the park and the NPS List of Classified Structures (LCS) for park resources. The team also obtained secondary sources addressing the history of the site and region, and studies, maps, and plans available from the NPS Denver Service Center Technical Information Center. Also, all previously completed natural resource studies by HTLN and MoRAP were provided to the team by park staff. In preparation for field investigations, project personnel requested Geographic Information Systems (GIS) files from the park and the MWRO to use in developing base maps for field inventory.

Base Mapping. In anticipation of conducting fieldwork, the team prepared an AutoCAD base map of the park by compiling information

available from GIS mapping, aerial photography, and historic site plans. The draft base map was later refined and updated using the information collected during field investigations and from consulted sources. GIS data and the AutoCAD map were also used to generate diagrams and other report graphics.

Start-up Meeting. On November 5 and 6, 2013, project team members from Bahr Vermeer Haecker Architects, John Milner Associates, Inc., Wiss, Janney, Elstner Associates, Inc., and Historic Resources Group, Inc., met with park and regional NPS personnel at the George Washington Carver National Monument Visitor Center to initiate work on the CLR as part of the phase two site visit. The meeting began with introductions of park, regional office, and contractor project staff. During the meeting, NPS MWRO Historical Landscape Architect Marla McEnaney introduced the purpose, goals, and methodology of the CLR, and the park identified the issues of concern to be addressed in the report. Project administration procedures were established, materials needed by the CLR team were identified, and a process for transmission determined. The park also identified the resources available to the team and any special conditions unique to the project and site. NPS personnel subsequently provided the CLR team with a tour of the park. In addition to the start-up meeting, the project team met with park maintenance and interpretive personnel to solicit their input on park management issues, goals, and concerns.

Field Investigations. As part of the site visit conducted on November 5 and 6, 2013, CLR team members conducted preliminary field investigations to document landscape resources associated with the park. Team members photographed primary and representative landscape features, both cultural and natural, and annotated draft base maps with observations about materials, resource condition, and corrections to the available mapping files. Where the mapping was lacking in detail, team members prepared sketch maps that were later used to enhance the electronic files.

Historical Landscape Documentation and Site Physical History. CLR team members also conducted research at the park archives following the start-up meeting. The focus was on historic records addressing physical park development such as maps, plans, and photographs. The site physical history was drafted based upon review of the materials collected during these various research efforts. The information was first organized into a site history chronology of the physical events at George Washington Carver National Monument. The chronology was then used to identify a series of definable historic periods for the park's evolution. Each period was described through historical narrative, supplemented with historic maps, photographs, and plans.

Historic Period Plan Preparation. Historic period plans of the park cultural landscape were prepared to represent the farm during Carver's childhood (circa 1865–1876); the years of initial park planning through the official opening of the park (1943–1953); and the early park development period (1953–1960).

The CLR team developed the historic period plans through registration of historic mapping sources with existing conditions information; preparation of the existing conditions base map thus preceded work on the period plans. The project team used all available historic photographs and written descriptions of the landscape found in the research materials collected for the project to develop the period plans. Limited secondary sources were also used to corroborate information and to generate queries for primary sources. Secondary sources were typically evaluated for their credibility and utilized with caution.

Existing Conditions Documentation. The documentation of existing conditions was developed through preparation of cross-referenced narrative, graphic, and photographic materials, organized in accordance with the framework established in National Register Bulletins: Guidelines for Documenting and Evaluating Rural Historic Landscapes as well as the NPS's A Guide to Cultural Landscape Reports.

Existing conditions resource information was organized into a series of landscape characteristics.

The CLR documentation includes information derived from existing conditions base mapping, field investigations, review of photographs taken in the field, and examination of park planning documents, park files, and other relevant cultural and natural resource documents received from the NPS or acquired through research. The existing conditions documentation includes photographs of representative landscape features, which are referenced in the text.

Feature condition assessments were made using the categories suggested by the Guide to Cultural Landscape Reports: Good, Fair, Poor, and Unknown.⁷ Where relevant, specific condition-related observations made in the field are reflected in the report.

A table of resources was developed and is included at the end of Chapter 3: Existing Conditions and Comparative Analysis and Assessment. The table indicates the relationship between features identified on behalf of the CLR and those tracked by NPS as part of the FMSS, a numbering and naming convention used within the park for maintaining resources.

Evaluation of Significance. George Washington Carver National Monument was listed in the National Register of Historic Places in 1976. Concurrent with the preparation of the CLR/EA, an amended nomination was prepared that updated the earlier document with the findings of archeological investigations and research that has been conducted since the 1970s. This information was considered in conjunction with the guidance provided in the National Register Bulletin: *How to Apply the National Register Criteria for Evaluation* in the preparation of a significance evaluation for the CLR/EA used

to guide resource assessments. Data provided in the CLR was used in the Amended nomination.

Comparative Analysis of Historic and Existing Conditions. To better understand the relationship between the existing park landscape and the character of the landscape present during the period of significance identified in the significance evaluation, the CLR team prepared a comparative analysis of historic and existing conditions. The analysis focused on extant features, their dates of origin, and their evolution over time. The three primary goals of the comparative analysis were to:

- Understand which features survive from the period of significance;
- Establish the basis for an integrity assessment; and
- Provide an understanding of the similarities and differences between historic and existing conditions to serve as the basis for the development of a well-grounded treatment plan for the cultural landscape.

Identification of Contributing and Non-contributing Resources. Based on the findings of the comparative analysis of historic and existing landscape conditions, the CLR identifies those resources that contribute to its National Register significance, those that do not contribute, and those that are missing from the historic period of significance. Chapter 3: Existing Conditions and Comparative Analysis and Assessment describes each existing resource, as well as those that are missing. Missing resources were ascertained from existing documents, including archeological studies, and located on the period plans. Missing resources are also discussed as part of restoration

7. Robert R. Page, Cathy A. Gilbert, and Susan A. Dolan, *A Guide to Cultural Landscape Reports: Contents, Processes, and Techniques* (Washington, D.C.: Department of the Interior, 1998), 67.

and interpretation in the range of treatment alternatives.

Assessment of Integrity. The CLR summarizes the site’s overall integrity and then assesses its integrity in accordance with the seven aspects—location, design, setting, materials, workmanship, feeling, and association—identified in National Register Bulletin: How to Apply the National Register Criteria for Evaluation.

Treatment Plan. Work on the treatment plan proceeded from the overarching guidance of the GMP and was correlated with the LRIP to provide guidance on how the landscape can support and enhance interpretive themes. Guidance for treatment was also afforded during the project start-up meeting held in November 2013, and subsequent consideration of a full range of alternatives. Work on the treatment plan was developed in coordination with the development of action alternatives required for the EA process. Treatment alternatives were prepared early on in the project in order to engage the park and stakeholders in an evaluation process that considered all positive and negative outcomes associated with a range of options, allowing for a vetting process intended to encourage consensus and informed decision-making. The treatment plan addresses the goals, needs, and objectives for the project identified in meetings and consultation with stakeholders. The treatment plan is also based on the findings of the comparative analysis prepared as part of the CLR and the National Register-level significance evaluation.

1.3.2 Environmental Assessment

The EA methodology for this document follows the directives set forth in Director’s Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-Making, and the associated Handbook 12, from the NPS. The methodology of the EA is summarized below.

Purpose and Need. The “purpose” of the project is a statement of goals and/or objectives that the park intends to fulfill by taking action. The “need” describes the conditions prompting the NPS to consider action and explains why the park

is proposing the action at this time. Appropriate maps showing the project area and vicinity are included.

Background. This section includes a written narrative of the park purpose/significance, graphic descriptions of the study area, and documentation of the management and planning context. The process of developing the issues and impact topics for the EA portion of the document is articulated. Relevant impact topics were selected to help focus the affected environment and environmental consequences sections. Potential impact topics were evaluated and classified as either “Impact Topics Selected for Detailed Analysis” or “Impact Topics Dismissed from Detailed Analysis.”

Affected Environment. Chapter 4: Affected Environment describes the existing environment potentially affected by the project alternatives. Consistent with Council of Environmental Quality (CEQ) regulations (40 CFR 1502.15), this chapter presents a concise and focused description of the environment of the park. Information focuses on sensitive or controversial resources and/or those resources anticipated to incur project-related impacts.

Alternatives. In this CLR/EA, the development of treatment alternatives is combined within the treatment plan section in Chapter 5: Treatment Alternatives. A written description of the treatment alternatives, including a no action alternative and several action alternatives, is provided. The alternatives are also presented in graphic plans. The alternatives were developed with consideration of a reasonable range of actions. An NPS preferred alternative was identified before the document was made available for public comment. Discussion of the alternatives also includes identification of the “environmentally preferred alternative” per NPS Director’s Order 12, Handbook Section 2-7 (D) and (E), for comment during the CLR/EA public review. A description of alternatives considered but dismissed is also provided. In the narrative discussion, these alternatives are identified and described, including justification for eliminating them from further analysis.

Environmental Consequences. Chapter 6: Impact Analysis and Environmental Consequences provides an analytic evaluation of the potential effects or impacts of each of the alternatives on the resources described in the affected environment section. The objective analysis and disclosure of potential environmental impacts of the proposed action and alternatives facilitates informed decision-making. This analysis and disclosure of impacts is provided in this section, presenting the effects of each alternative on the various components of the affected environment.

Impact Comparison Matrix. The impact matrix is in a table format that allows for easy comparison of the various project alternatives (including no action). The matrix presents a concise summary of each alternative's potential effects by impact topic.

Consultation and Coordination. This section of the CLR/EA presents an overview of public involvement activities implemented as part of the environmental assessment process. Documentation of stakeholder participation is included as well as persons, organizations, and agencies contacted for information and assisting in identifying important issues, developing the alternatives, or analyzing impacts.

Record of Decision/Finding of No Significant Impact. Based on internal and public review, the approved decisions document was signed by the park superintendent and sent to the regional environmental coordinator, project manager/COTR and park contact for a seven-day review period. The decision document complies with the guidance found in Director's Order 12 Handbook.

Compliance with Federal or State Regulations. The EA portion of this document, including the alternatives, is technically and legally defensible and in full compliance with federal mandates, director's orders, policies and guidelines including:

- NEPA of 1969, as amended
- NPS Organic Act of 1916, 1 U.S.C. 1-4, et seq.

- CEQ (40 CFR 1508.9)
- NPS Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-Making
- Protection and Enhancement of Environmental Quality, Executive Order 11514, as amended by E.O. 11991
- Clean Water Act of 1977, as amended, Sec. 401, 402 and 404(b)(1)
- Endangered Species Act of 1973, as amended 16 U.S. C. 1531-1543
- Fish and Wildlife Coordination Act of 1934, as amended (16 U.S. C. 661-667)
- Invasive Species, Executive Order 13112
- The Architectural Barriers Act (as amended)

In addition, the EA was prepared in compliance with the requirements of Section 106 of NHPA, in accordance with ACHP regulations implementing Section 106 (36 CFR Part 800.8, Coordination with NEPA).

1.4 Historical Summary

George Washington Carver National Monument is significant as the birthplace and childhood home of George Washington Carver. The farm belonging to Moses and Susan Carver was young George's home until he was about eleven years old. It was on the farm that he had the opportunity to pursue his curiosity about the world around him.⁸ In addition to his farm-related tasks, George Washington Carver's interest in nature developed during his time on the farm as he explored the property, collecting various flowers, rocks, and insects. He also taught himself to read during his early years on the farm.

In 1876, young George was permitted to attend the Neosho Colored School in nearby Neosho, Missouri. His enrollment at the school marked the end of his time on the Moses Carver farm.⁹

After the death of Moses Carver in 1910, the property was sold to Samuel Warden. Warden owned the farm for two years and it was then purchased by C. M. Shartel in 1913. During the Shartel tenure on the property, various tenants and employees lived there. Mr. Shartel was actively engaged in the business of raising thoroughbred cattle, resulting in a series of changes to the landscape. There were many buildings and structures on the Shartel property associated with the agricultural and grazing land uses prevalent over the site, as well as residential structures for the family and farm employees.

The early 1940s saw the beginning of interest in establishing a national monument at the birthplace of George Washington Carver. In 1941, the St. Louis branch of the National Association for the Advancement of Colored People (NAACP) submitted a proposal to establish a memorial to

Carver at his birthplace. At the time they were informed that construction of a monument to a living man was a conflict with NPS policy. Dr. Richard Pilant, a social science professor at Washington University in St. Louis, also began to lobby actively for establishment of such a monument. The first federal legislation relating to the establishment of the George Washington Carver National Monument at the Moses Carver farm was introduced in 1942. No immediate action was taken until after George Washington Carver died on January 5, 1943. Following his death, new bills were introduced to Congress and on July 14, 1943, the monument was authorized. The legislation specifically authorized the Secretary of the Interior to build a museum, construct roads and monuments, and erect tablets within the boundaries of the park. Acquisition of the property was delayed by World War II and a dispute over the value of the farm. Ultimately, the federal government proceeded with condemnation of the property. During this interim period, from 1949 to 1954, Sidney J. Philips and the George Washington Carver National Monument Foundation leased the farm and opened it to visitors. In 1950, Congress amended the 1943 act and authorized additional funds for land acquisition. This enabled the Secretary of the Interior to acquire 210 acres of the original 240-acre farm. On September 25, 1952, the first superintendent and historian arrived on the site.

Dedication of the George Washington Carver National Monument took place on July 14, 1953. NPS efforts at the site through the 1950s included removal of deteriorated agricultural outbuildings, archeological research, presentation to the park of the cast concrete bust of George Washington Carver, the reconstruction of the wall around the

8. *George Washington Carver National Monument: General Management Plan* (National Park Service, June 24, 1997).

9. Jason H. Gart, *He Shall Direct Thy Paths: The Early Life of George W. Carver, Historic Resource Study* (Washington, D.C.: National Park Service, Department of the Interior, 2014),

citing Paul L. Beaubien and Merrill J. Mattes, "George Washington Carver National Monument: The Archeological Search for George Washington Carver's Birthplace," *Negro History Bulletin* 18, no. 2 (November 1954), 81–86.

Carver family cemetery, and the development of the Carver Trail.

In the summer of 1958, the park's Mission 66 prospectus was approved. Included in the document were plans to construct a visitor center and museum building. In addition, plans were made to modify the route of the Carver Trail that took visitors to the site of the birthplace cabin, the open fields once farmed by the Carver family, the 1881 farmhouse, and the Carver family cemetery.

In the spring of 1960, buildings comprising the former Shartel farm were removed; the main house was moved to another property nearby, where it remains today, and many other buildings were demolished. The new visitor center was dedicated in July 1960 and a cast bronze statue of George Washington Carver as a boy was also unveiled.

The final 30 acres of land that were part of the Moses Carver farm were donated by a private land owner to the Carver Birthplace Association in 2003. The Carver Birthplace Association subsequently transferred the deed for this land to the NPS on June 22, 2005. Mitigation of tailings and other potentially hazardous deposits associated with lead and zinc mining of the parcel was completed in 2006. In August 2007, the expanded and renovated visitor center was dedicated. The renovation included a 6,700 square foot addition to the 1960 building, with new interactive and extended museum space, classrooms, an expanded theater, terrarium, archives, and library, as well as a tornado shelter.

Today, the site contains a visitor center, museum, maintenance facilities, administrative offices, storage structures (former staff residences and seasonal housing), a system of restored prairie units, three streams, two springs, the Carver family cemetery, the Carver Trail, the 1881 Moses Carver house, and extensive interpretation of site features and the life of George Washington Carver.

1.5 Park Purpose/Significance

On July 14, 1943, the bill authorizing the establishment of the national monument passed and became Public Law 148 of the 78th Congress. Congress directed the NPS to maintain and preserve George Washington Carver's birthplace as a suitable and enduring public memorial in his honor. This was the first time in United States history that a birthplace site was designated as a national monument to someone other than a United States President and the first time a unit of the National Park System was established to honor the contributions of an African American.

The George Washington Carver National Monument derives its significance primarily from its association with George Washington Carver as his birthplace and boyhood home, where he spent his formative years that set him on the road to becoming one of this nation's most distinguished scientists, educators, and humanitarians. It preserves a place known to have been influential in shaping the personality of a man who played an important role in the social and agricultural history of twentieth century America.

The national monument was established to preserve the birthplace and commemorate the rise from slavery of George Washington Carver. His life demonstrates the opportunities afforded in the United States to men of ability and energy, regardless of their origins. His accomplishments are today an important part of America's heritage. The national monument memorializes the life, accomplishments and contributions of Carver, and preserves the landscape setting of the Moses Carver farm where George was born into enslavement and spent his early years. The landscape captures the ambiance in which Carver began his earliest scientific observations of the natural world around him. The focus of park management has traditionally been on interpreting the landscape setting that influenced the young and impressionable child who became a highly recognized research scientist, and how that setting

contributed to his life's achievements (Figure 1 and Figure 2).¹⁰

The park's LRIP summarizes the significance of the national monument as follows:

- The national monument preserves Carver's birthplace and childhood home, where the experiences of his formative years influenced his journey to becoming one of this nation's most distinguished scientists and humanitarians.
- The national monument is the nation's first memorial and unit of the National Park System to commemorate the achievements of an African American.
- The national monument is the first birthplace national monument of an individual other than a United States President.



FIGURE 1. Interpretation at George Washington Carver National Monument of the young Carver's early relationship to the natural world around him.



FIGURE 2. Landscape setting of the Moses Carver farm and current interpretation.

1.6 Description of the Study Area

George Washington Carver National Monument is located in Section 7 of Township 26 North, Range 31 West of the Fifth Principal Meridian, near the community of Diamond, Missouri (Figure 3 and Figure 4). Joplin, Missouri, is the closest city, located approximately 16 miles to the northwest. The region is situated along the western edge of the Ozarks within the Springfield Plain, a vibrant and ecologically diverse subsection of the Ozark Highlands ecoregion.¹¹ The park is accessed via Carver Road from County Highway V (Figure 5). Visitors generally travel to the site from Exit 11A off Interstate 44 (primary east-west route through southwest Missouri), or Exit 35 off Interstate 49 (primary north-south route through southwest Missouri). Interstate 44 and Interstate 49 each pass within 5 to 8 miles of the park.

10. *George Washington Carver National Monument Cultural Landscape Inventory* (NPS, 2010), 19.

11. Gart, *He Shall Direct Thy Paths*, 10.

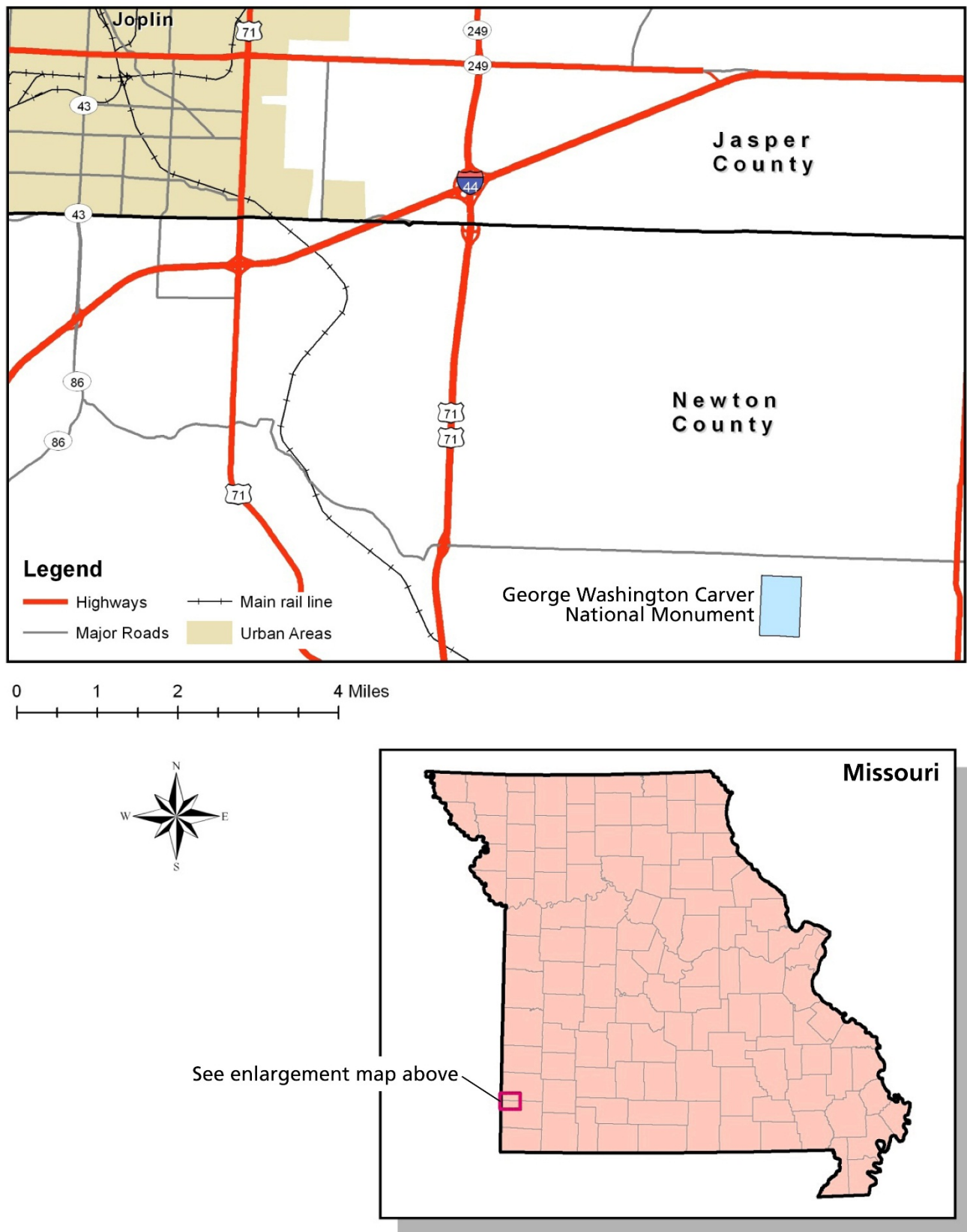


FIGURE 3. Location of George Washington Carver National Monument.

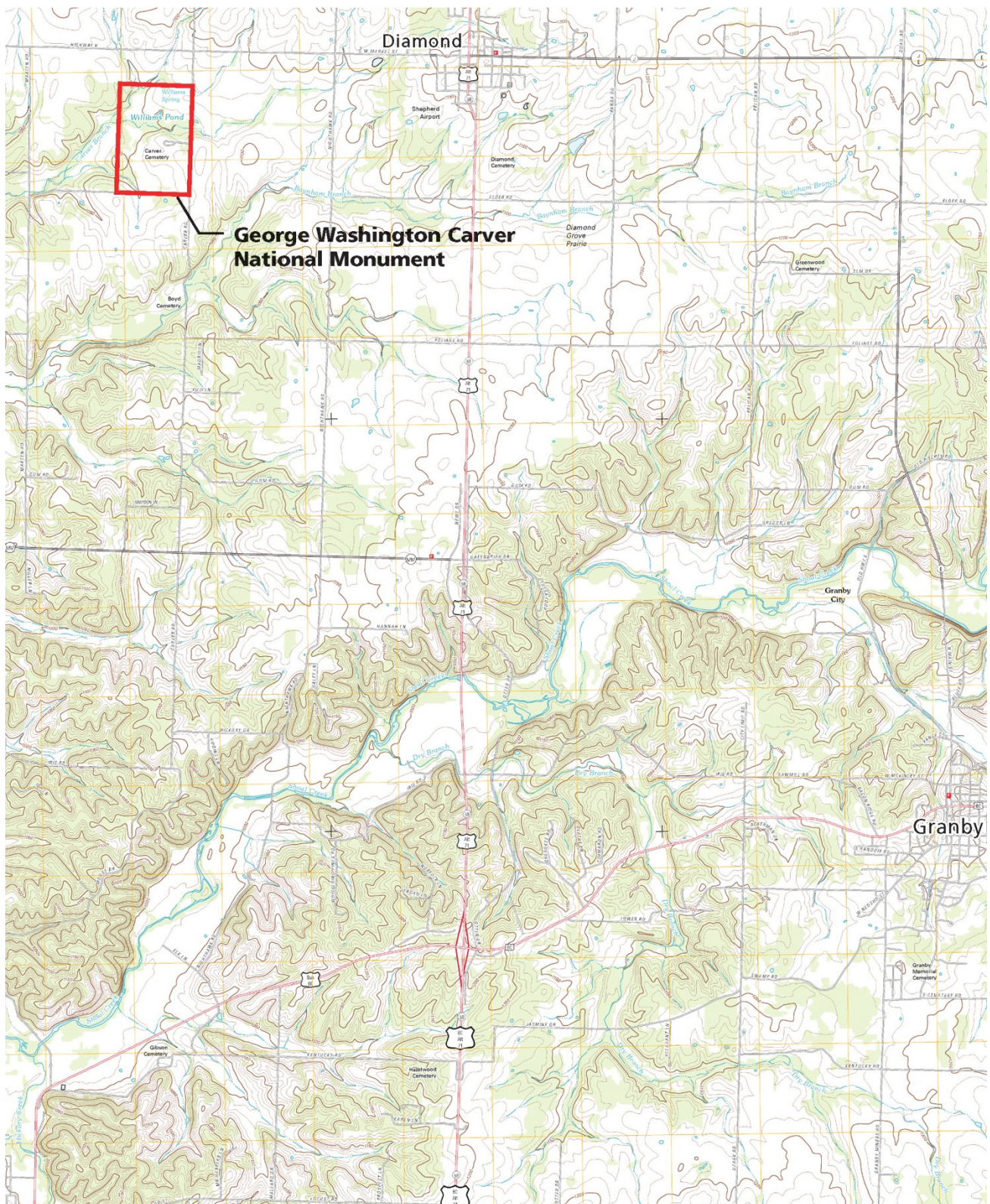


FIGURE 4. USGS map of the national monument, showing its location in relation to Granby and Diamond, Missouri.



FIGURE 5. View toward the entrance into George Washington Carver National Monument from Carver Road.

The park encompasses 240 acres of land between Carver Road to the east and Elder Road to the south. Privately held farmland edges the park to the north and east. The primary features of the park include a visitor center located at the end of a 1/4-mile entrance drive, a picnic grove, and a mile-long interpretive trail that provides access to several features of importance to Carver's boyhood (Figure 6 and Figure 7). Much of the park is maintained in restored prairie, affording long views across the landscape (Figure 8). Three small streams pass through the park: Carver, Harkins, and Williams branches (Figure 9). Carver Spring feeds Carver Branch, while Williams Spring, not currently visible, is the source for Williams Branch and the man-made Williams Pond. These small spring-fed streams flow across the central portion of the park from east to west, and through the northwestern corner of the park. The stream corridors that pass through the center of the property, as well as the uplands to the north, are generally wooded and divide the park into quadrants. Buildings constructed during the late 1950s and early 1960s for park housing and administrative needs are clustered along Carver Road, out of sight of most park activity areas.



FIGURE 6. The visitor center is set within an open lawn dotted with mature shade trees.



FIGURE 7. This grove of large deciduous trees is the setting for the picnic area and views to the visitor center.



FIGURE 8. Landscape of restored prairie and woodlands at George Washington Carver National Monument.



FIGURE 9. Carver Branch runs east/west through the landscape of the national monument.

1.7 Related Planning Documents

Many plans and studies contributed to developing the current treatment plan/alternatives for George Washington Carver National Monument. These include NPS research, management, policy, and other documents as discussed below. In addition to NPS management policies, several park-specific documents provided information on park resources and management strategies and priorities that were of use in developing this CLR/EA. These documents are listed and described below.

Management Policies, 2006. NPS

Management Policies, 2006, provides guidance for all management decisions, including those related to cultural resources. Cultural resources, including cultural landscapes and historic structures, are addressed in Section 5.0, which states that the NPS cultural resources management program involves “. . . stewardship to ensure that cultural resources are preserved and protected, receive appropriate treatments (including maintenance) to achieve desired conditions, and are made available for public understanding and enjoyment.”¹²

Master Plan for the Preservation and Use of George Washington Carver National Monument (NPS 1961–1964). This study called for the principal goal of recreating the historic scene of the 1860s and 1870s through continued research. As part of this study, the NPS recommended that the site’s landscape be restored to the setting present when Carver was a boy. This recommendation has never been carried out due to lack of detailed information for an accurate restoration of structures and landscape features and the associated management and maintenance of a farm restoration.

Historic Resource Study and Administrative History (NPS 1973).

This study by Anna Coxe Toogood discusses the physical features of the Moses Carver farm, land purchase and patents, farm production, and unimproved land filled with wild fruits, grasses and game. The report recommends that additional consideration might be given to the historic scene, stating, “While the visitor center obviously could not be moved from its dominating position on the farm grounds, it would be advisable to replant some of the crops, orchards, and native growth in the area during the historic period.”¹³

Historic Resources Management Plan (NPS 1978, revised 1980).

This study noted that the park’s vegetation is a historical resource and suggested it be managed as such in order to restore the historic scene to that of the Moses Carver farm of the 1860s and 1870s wherever practical and desirable. This plan advised the park to utilize twentieth-century conservation and agricultural techniques to grow crops, so that the site would closely resemble the Carver farm.

12. Management Policies, 2006 (Washington, D.C.: National Park Service, 2006), 60.

13. Anna Coxe Toogood, *George Washington Carver National Monument, Diamond, Missouri, Historic Resource Study and Administrative History*, July 1973, 43.

Historic and Vegetation Survey of the Five Prairie Management Units at George Washington Carver National Monument (NPS 1982). This study focused on land use patterns over the history of the Moses Carver farm. The Carvers managed a fairly diverse agricultural operation, raising horses, cattle, swine, sheep, goats, and poultry, as well as small-scale cropping and an apple orchard. Moses Carver raised Indian corn, wheat, oats, Irish potatoes, and hay crops. The plan indicated that very little data exists to offer clues as to the real extent and species composition of the historic scene.

Resources Management Plan (NPS 1984). This study included five management objectives. The plan identified the primary resource management objective as defined in the master plan and reaffirmed in the 1978 Statement for Management: “to restore the historic scene to that of the Moses Carver farm of the 1860s and 1870s wherever practical and desirable.”¹⁴ The plan has received several revisions, with the most current version approved in 1999.

Prairie Restoration Action Plan (NPS 1995). This plan provided detailed descriptions of current vegetation and planned management actions. The purpose of this action plan was to guide the continuing restoration of a representation of the prairie scene appropriate to the time period during which George Washington Carver lived on the property. This management approach retains the openness of the prairie areas and emphasizes the natural setting that was a strong part of Carver’s early life. The plan updates and incorporates methods in the 1984 Resources Management Plan, and includes an analysis of the current status of the prairie units, a set of qualitative and quantitative goals for restoration, and methods for monitoring to collect baseline data and measure restoration success.

General Management Plan (NPS 1997). The NPS prepared a GMP for George Washington Carver National Monument to serve as a guide for

the management and care of the monument for a period of ten to fifteen years. The plan provided a vision for the future of the national monument and a practical framework for decision-making. The plan helped identify the strategies, programs, actions, and support facilities necessary to manage visitation and best protect the monument’s resources.

Springs of Genius: An Integrated Management Plan for George Washington Carver National Monument (University of Wisconsin-Madison 1999). This integrated landscape restoration study was underway during the GMP process. The 1999 report was based on extensive research into the history and evolution of the park’s landscape and features, and provides recommendations for woodland restoration, wetlands management, exotic species control, and prairie restoration. Recommended planting lists were provided, as well as treatments such as planting, seed drills, broadcast methods, and recommended planting procedures. The report suggested the reorganization of management units into natural zones based on existing soils and topography, but these recommendations have not been adopted. Three master plan options were presented for future management of the landscape; none have been approved by the NPS.

Vascular Plant Inventory (NPS 2004). A vascular plant inventory was conducted at George Washington Carver National Monument in autumn 2002 in an effort to update the plant taxa originally collected in the late 1950s by Ernest J. Palmer. This study, combined with previous work conducted in the 1990s, resulted in reclassification of 79 percent of Palmer’s taxa, and the addition of 178 species not documented by Palmer. A total of 645 distinct taxa have been identified within the park. Of these, 114 are introduced and represent 35 families. Five taxa of special concern that were found are tracked by the Missouri Department of Conservation. The study involved field verification of Palmer’s taxa, field collection of plant specimens, quantitative analysis of habitats at the

14. *Resources Management Plan* (National Park Service, 1981, revised 1982, revised 1984), 26.

national monument, and spatial documentation of all plant species recorded.

Fire Management Plan and Environmental Assessment (NPS 2004). This study acknowledged that approximately 90 percent of the park's acreage is burnable and would benefit from periodic prescribed, controlled fire. Land that can sustain fire is comprised of restored prairie, agricultural fields, lawns, wetlands, and mixed oak forests. The plan recommends the use of prescribed fire as a tool for controlling or eradicating invasive exotic species. The plan notes, "The park is in the process of re-evaluating the existing cultural landscape, and through an upcoming GMP revision, may begin planning to change the management of some areas of the park to a more Carver period agrarian setting. In the event that a new cultural agrarian setting plan is adopted, the Fire Management Plan (FMP) will be revisited to address changes in vegetation types and fuel loads."¹⁵

Environmental Assessment for Visitor Center Renovation and Addition (NPS 2004). This EA was conducted in order to assess impacts from the proposed renovation of the existing visitor center, as well as the construction of a new addition to the visitor center that would expand and improve visitor and administrative facilities. The proposed visitor center renovation and addition was driven by a need to provide adequate museum collections storage, and to expand and better organize the educational functions, visitor facilities, and staff office space at the park.

Environmental Assessment Phase I and Pre-Acquisition Environmental Assessment (NPS 2004–2005). In 2005, the park acquired the final 30-acre parcel of land to complete ownership of Moses Carver's 240-acre farm. A Phase I EA was completed in 2004, followed by mine tailings

clean-up and remediation. A Pre-Acquisition EA was subsequently completed in 2005.

Special History Study, George Washington Carver: For His Time and Ours (NPS 2005). This study explores Carver's work with plant disease and mycology, wild plants as food and medicine, herbal medicines, chemurgy, and land use practices.

Long-Range Interpretive Plan (NPS 2007). This plan is based on the national monument's enabling legislation and mission. Using the national monument's mission, purpose and significance statements, primary interpretive themes, and visitor experience goals, this plan articulates the vision for the park's interpretive and educational future and recommends the interpretive media and programs best suited for meeting visitor needs, achieving management goals, and telling the story of George Washington Carver.

Cultural Landscape Inventory (NPS 2010). The CLI describes the character-defining features of the national monument landscape and identifies the resources that contribute to its historic significance. The CLI also discusses the significance of the park as a commemorative landscape that is listed in the National Register of Historic Places.

Natural Resource Condition Assessment (NPS 2011). The intention of this study, conducted by MoRAP, was to provide a synthesized assessment of current conditions in the park. The Natural Resources Condition Assessment builds on methods developed for a similar effort for Effigy Mounds National Monument in Harpers Ferry, Iowa. Elements of the methodology include 1) reliance on a framework of essential ecological attributes provided by the Environmental Protection Agency; 2) development of a list of resource types, indicators, and attributes for assessment; and

15. *Wildland Fire Management Plan: George Washington Carver National Monument* (National Park Service, May 2004), 4.

3) application of assessments by reporting unit, including park-wide, major terrestrial landscapes types, and major streams and tributaries.

Prairie Restoration Management Review and Integrated Cultural/Natural Resource Management Recommendations

(Department of Fisheries and Wildlife Sciences, University of Missouri, 2009–2011). This study provides an assessment of past prairie management practices and guidance for future management. The study evaluated several alternatives, including 1) restoration of historical vegetation (to approximate the boyhood scene of the 1860s–1890s); 2) utilizing the *Springs of Genius* data; 3) management emphasis on the current vegetation described in the Natural Resources Conditions Assessment; and 4) integrated cultural/natural vegetation management of the landscape. Recommendations included a realignment of management zones throughout the landscape. The report addressed key landscape issues, including native prairie restoration, riparian woodlands and savanna, row crops, old fields, prairie pasture, prairie, orchards, persimmon grove, walnut grove, wetlands, and intensive management of the visitor viewshed along the Carver Trail to restore communities with which George Washington Carver would have been familiar. The report identifies goals and recommended landscape treatments for each management zone. This document was instrumental in bringing much needed information together for the CLR/EA document.

Vegetation Management Alternatives for George Washington Carver National Monument (Heartland Inventory and Monitoring Network, 2010).

This study describes vegetation management alternatives for the woodlands and restored prairies, including no action, grass management, native plant management, wildlife habitat management, hay management, grazing management, and crop or orchard management.

Scope of Collection Statement (NPS 2011).

This statement includes the legislation that relates to NPS Museum Collections; park history,

significance, purpose, theme, and goals; laws, regulations, and conventions related to museum collections; and structures, landmarks, and other park resources listed on national or international registries.

Vegetation Classification and Mapping of George Washington Carver National Monument (MoRAP 2013).

This vegetation classification and mapping project was initiated in 2010 and completed in 2013. Protocols and products were produced following NPS Vegetation Mapping Program guidelines. Classification was based on sixteen quantitative field plots, which were placed across the park in a stratified random manner based on qualitative field observation points and viewing of air photos. Mapping was based on photo-interpretation of both leaf-on and leaf-off air photos. Accuracy assessment points obtained during 2012 verified that the map is nearly 100 percent accurate.

George Washington Carver National Monument: Accessibility Assessment Debriefing Report and Final Report (NPS 2014).

This study was conducted by the National Center on Accessibility in coordination with the NPS. The Center's assessment process was designed to identify barriers to participation for people with disabilities, make recommendations for barrier removal and improved access, and develop associated work orders and cost estimates to assist park personnel in long-term planning. At George Washington Carver National Monument, the assessment team from the National Center on Accessibility conducted an accessibility assessment of the physical and programmatic elements managed within the park and throughout the grounds. The team also interviewed park personnel, collecting information to provide a broad range of recommendations for improving access for visitors with disabilities.

Historic Resource Study (NPS 2014). This study emphasizes Carver's childhood years on the Moses Carver farm and his quest for schooling. It fills an important gap in the scholarship by placing George Washington Carver's life experiences within a broader regional and national context.

One key research finding concerns Carver's spirituality, which can be traced to a personal conversion on the Moses Carver farm.

George Washington Carver National Monument Administrative History (NPS, 2014). This study presents a chronological history of the park, emphasizing the influences and political processes that brought about the formation of the park unit and the history of the core management directives and their changes over time. It presents a comprehensive history of the site and park administration.

Heritage Tourism at George Washington Carver National Monument (NPS, 2014). This study presents the results of a qualitative study of heritage tourism behaviors and preferences of five cultural, racial, and ethnic groups in southwest Missouri. The objective was to learn about the preferred attributes of historical and cultural sites across demographic groups, the types of barriers faced in regard to visiting historical and cultural sites such as George Washington Carver National Monument, and how to increase the diversity of visitors to the park. Results of the study showed that through expanded outreach, more direct engagement with community representatives, advertisement designed for and targeted to reach specific populations, enhanced institutional image, and additional services, facilities, events and activities, the goals of increasing diversity in the park can be accomplished.

1.8 Environmental Assessment Impact Topics

1.8.0 Scoping

Environmental assessment scoping is an early and open process to determine the breadth of issues and alternatives to be addressed by a planning or construction document. The park staff and resource professionals of the NPS MWRO conducted internal scoping for the CLR project at George Washington Carver National Monument. This interdisciplinary process defined the purpose and need for the project, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the preferred alternative to other planning efforts at the park.

Typically, both internal and public scoping are held to address these elements. Previous planning efforts have yielded a list of stakeholders interested in the park and its future. For this CLR/EA, the superintendent initiated public scoping on March 1, 2014.

The NHPA (16 United States Code [U.S.C.] 470 et seq.); NEPA; NPS Organic Act; NPS Management Policies, 2006; Director's Order 12; and Director's Order 28 require the consideration of impacts on cultural resources, either listed in or eligible to be listed in the National Register of Historic Places. The park notified the Missouri SHPO of the project by e-mail correspondence on February 20, 2014, and a SHPO site visit was conducted April 2, 2014. The park provided the SHPO with a 75 percent draft copy of this CLR/EA. The SHPO was also sent a follow up invitational letter on April 8, 2014, for a stakeholder meeting to be held at the park on May 14, 2014. The NPS later provided the SHPO a copy of the 95 percent draft of the CLR/EA for review and comment.

The park sent the USFWS a scoping notice on April 8, 2014, to solicit input on threatened and endangered species concerns for the 240 acres of the park included in the CLR/EA treatment alternatives and to invite agency participation in the scoping meeting on May 14, 2014. The NPS

provided the USFWS a copy of the 95 percent draft CLR/EA for review and comment.

George Washington Carver National Monument conducted initial consultation with THPOs for the United Osage Nation, the United Keetoowah Band of Cherokee Indians in Oklahoma, the Caddo Nation, and the Eastern Shawnee Tribe of Oklahoma for the purpose of developing a Programmatic Agreement between the tribes and the park. Letters were issued by the NPS to the THPOs along with a draft of the agreement, inviting them to review the document and attend a follow-up consultation meeting on April 3, 2014. In the same letter, THPOs were invited to the stakeholder meetings at the park on May 14, 2014. A follow-up letter with notice of the stakeholder meeting date and time was sent to the THPOs on April 8, 2014, to solicit input and participation in the CLR/EA meeting. The NPS provided the THPOs a copy of the 95 percent draft CLR/EA for review and comment.

The detailed list of stakeholders and responses from the internal and external scoping process are identified and discussed in Chapter 7: Consultation and Coordination.

1.8.1 Planning/Management Issues and Concerns Management Overview

The management of George Washington Carver National Monument is generally guided by the GMP, with interpretation guidance provided by the LRIP and the CLI. The GMP was developed to supersede the then 30-year-old master plan and establish new management goals based on more recent resource planning documents. The philosophy of the plan centers around the management of natural and cultural resources and the visitor services program to support the commemoration of Carver in a dignified manner and adhere to the legislation that created the park. Natural and cultural resources are intended to

serve as symbols of significant events and influences on the character and life of George Washington Carver.¹⁶ The following “desired futures” management objectives were identified in the GMP:

- Preserve the agrarian setting;
- Manage cultural and natural resources to memorialize George Washington Carver’s life in a dignified and inspirational setting;
- Encourage the public to develop a deep understanding of George Washington Carver’s achievements and services to humanity;
- Explain the historical context in which George Washington Carver grew up and his efforts to get an education; and
- Evaluate the human/natural/cultural resources and utilize them to a greater extent.¹⁷

The LRIP was intended to complement and expand on the interpretive and educational functions outlined in the GMP. The interpretive and educational programs at the park are designed to provide opportunities for people to forge intellectual and emotional connections to the ideas and meanings inherent in the life and accomplishments of George Washington Carver. The plan outlines a goal of connecting all visitors with the legacy of Carver so that they can understand the significance of his contributions to mankind and realize their vital role in ensuring the future of the national monument.¹⁸

The CLI, developed three years after the LRIP, describes current NPS goals and challenges in the efforts for interpretation and management of the national monument:

With few historic structures and little documentation to work with, the NPS decided early on to focus on the vegetative surroundings that would have been present

16. *General Management Plan* (1997), 15.
17. *Ibid.*, 5.

18. *George Washington Carver National Monument Long-Range Interpretive Plan* (National Park Service, November 2007), 7–9.

during Carver's boyhood period given how influential the environment, both natural and agricultural, was to him. This setting also had to be co-sympathetic with any constructed amenities that would be added to the landscape for interpretive or commemorative purposes. This presented a challenge of how to appropriately represent and interpret a complex man of great achievement who preferred a quiet and simple lifestyle and little fanfare. Re-establishing plant communities is a lengthy process of careful study, inventorying, and monitoring over a period of time, allowing re-introduced communities to become self-sustaining. The park service also had the added complexity of ensuring that the setting did not overwhelm the accomplishments and influence of Carver and that the interpretation of and memorials to Carver did not overpower the natural setting.¹⁹

The CLI defined and confirmed the historic landscape boundary, identified significant viewsheds, and documented contributing features associated with George Washington Carver.

Over time, the park has evolved to include management of more than 130 acres of prairie; lightly-managed woodlands; and a developed core that has become increasingly ornamental in its character. Other aspects of the natural environment are interpreted as having influenced the young George Washington Carver, including the presence of wildflowers, fruit and nut trees, and the Carver spring. Natural resource management therefore emphasizes maintenance and restoration of native flora and fauna.²⁰

Management Issues. Several management issues were identified as part of the research, inventory, and evaluation of the park's cultural landscape and resources conducted on behalf of the CLR/EA. These issues address those elements and challenges associated with the existing site,

buildings, and structures, and operations or maintenance that make it difficult for the park to realize the vision and goals for the property. Detailed descriptions of these issues, and associated treatments, are presented in Chapter 5: Treatment Alternatives.

- Sustained adequate management of restored prairie.
- Identification of an area of the park to be maintained as an agrarian environment similar to that of the Moses Carver farm in the 1860s and 1870s. This is central to the interpretive goals for the site and an integral part of the proposed alternatives in Chapter 5: Treatment Alternatives.
- Management of existing natural systems including Carver Spring and the three streams, Carver, Harkins, and Williams branches, which are part of the cultural landscape. The Arkansas darter (*Etheostoma cragini*), a candidate for federal listing as a Threatened and Endangered species, has been found present in park streams.
- Sustained adequate management of Williams Pond. Though the pond is not considered a contributing feature to the historic landscape, it is a valuable resource to be managed and maintained. It is a common feature in all the treatment alternatives developed in the CLR/EA.
- Addition of more trails within the 240-acre landscape of the park. This would allow visitor access to more of the site and expanded interpretive opportunities. Expanded trails are part of the conceptual alternative plans in the treatment section of the CLR/EA.

19. *Cultural Landscape Inventory*, 22–23.

20. Gust M. Annis, Michael D. DeBacker, David D. Diamond, Lee F. Elliott, Aaron J. Garringer, Phillip A. Hanberry, Kevin M. James, Ronnie D. Lee, Sherry A. Leis, Michael E. Morey, Dyanna L. Pursell, and Craig C. Young, *George*

Washington Carver National Monument Natural Resource Condition Assessment, Natural Resource Report NPS/HTLN/NRR—2011/425. (Fort Collins, Colorado: National Park Service, Natural Resource Stewardship and Science, July 2011), 18–20.

- Identification of the presence, cover, and dispersion of invasive and problematic species and higher-than-desirable cover of invasive non-native vegetation at the park. Treatment recommendations include specific invasive species to be removed and recommendations for inhibiting the spread of invasive vegetation in the park.
- Integration of interpretation with the cultural landscape. The park wants to tie additional interpretive programming to the cultural landscape and is looking to the CLR/EA for direction.
- Establishment of universal accessibility according to the Architectural Barriers Act Accessibility Standards of 1968 (ABAAS) and the 2004 ADA-ABA Accessibility Guidelines (ADA-ABA). This is a major issue that will be addressed as the preferred alternative is selected and developed.
- Consideration of alternatives for the treatment, management, and maintenance of the wall surrounding the cemetery and the cemetery burial markers. Specific treatment recommendations are included in the treatment section of the CLR/EA.
- Establishment of a designated parking area for use during special events at the park. A design that indicates the location and design for overflow parking is included in the alternatives proposed in the treatment section of the CLR/EA.

1.8.2 Impact Topics Evaluated

An important part of the decision-making process associated with development of treatment recommendations is seeking to understand the consequences of making one decision over another. This CLR/EA identifies the anticipated impacts of possible actions on specific resources, park visitors, and neighbors, and park operations. The impacts are organized by topic, including natural resources, cultural resources, aesthetic resources and visitor use and experience, NPS operations and infrastructure, and long-term

management and sustainability of resources. Impact topics serve to focus and give boundaries to the environmental analysis and ensure the relevance of impact evaluation.

Specific impact topics were developed to allow comparison of the environmental consequences of each alternative presented in this CLR/EA. These impact topics were identified based on the issues raised during scoping; site conditions; federal laws, regulations, and Executive Orders; NPS Management Policies, 2006 and topics specified in NPS Director's Order 12 Handbook; park-specific resource information; and agency and public input during scoping. Each of the impact topics listed in the table at the end of this chapter would be affected by one or more of the alternatives evaluated in this CLR/EA. A brief rationale for the selection of each impact topic is provided and each impact topic is further discussed in detail in Chapter 4: Affected Environment.

A table of impact topics, their relevancy to this project, and relevant laws, regulations, and policies is provided at the end of this chapter.

1.8.3 Impact Topics Dismissed from Further Analysis

The following impact topics or issues were eliminated from consideration because the effects, if any, would be minor to negligible.

Geology. The NPS Organic Act and NPS Management Policies, 2006, direct the NPS to preserve and protect geologic resources and maintain natural geologic and coastal processes.

The entire area of George Washington Carver National Monument is on the western side of the Ozark physiographic province, an uplifted dome of sedimentary rock beds that have been dissected by hundreds of thousands of years of erosion. Included within the Ozark Dome lithographic series are sandstones, limestones, shales, and

dolomites.²¹ The action alternatives would have little to no impact on site geology because no subsurface excavation is proposed. No important or unusual geologic formations would be affected by the alternatives. As a result, each action alternative would have negligible local or long-term adverse impacts on geological resources. The no action alternative would have no effect on geologic resources. The goals and vision for the park preclude large-scale development from intruding on the site. They also limit physical changes at the national monument to those that can be carried out without altering geologic processes. The action alternatives proposed in this document are consistent with past NPS actions on the site and would not alter current geologic processes. Therefore, the impact topic of geology was dismissed.

Prime and Unique Farmland. The Farmland Protection Policy Act (FPPA) (7 Code of Federal Regulations [CFR] sec. 658) states that “the purpose of the Act is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses.” In addition, the FPPA states that federal programs shall be administered in a manner that, as practicable, would be compatible with state and local government and private programs and policies to protect farmland. The FPPA requires identification of proposed action that would affect any land classified as prime or unique farmland before federal agency approval of any activity that would convert farmland. The Natural Resources Conservation Service (NRCS), part of the U.S. Department of Agriculture (USDA), administers the FPPA as it relates to protection of farmland. Responsible federal agencies are required to consider alternative actions and ensure that their programs are compatible with state and local government programs. There is prime/unique farmland in Newton County and at the national monument, but nothing in the list of actions would permanently remove potentially productive land from being productive. Therefore, the impact

topic of prime and unique farmland was dismissed for consideration in the impact analysis.

Climate Change. Any emissions associated with the proposed action alternatives would be negligible. These emissions would have an indiscernible effect on climate change. Changes in visitor use following implementation of the action alternatives would not result in a substantial increase in traffic to the park. Because the proposed project would result in indiscernible contributions to climate change, this impact topic was dismissed from further analysis.

Paleontological Resources. NPS Management Policies, 2006, directs the NPS to protect, preserve, and manage paleontological resources. Because George Washington Carver National Monument is not known to contain scientifically important paleontological resources, it is unlikely there would be any effects on paleontological resources. Therefore, paleontological resources were dismissed as an impact topic.

Wilderness. The Wilderness Act and NPS Management Policies, 2006, require that all lands administered by the NPS be evaluated for their suitability for inclusion within the National Wilderness Preservation System. Areas suitable for wilderness designation are those that generally have the qualities of being untrammeled, natural, undeveloped, and offering solitude or a primitive and unconfined type of recreation. The project area is neither within nor even close to existing or proposed wilderness boundaries and therefore, is not subject to Wilderness Act requirements. Because there would be no direct effects on wilderness resources and values, this topic was dismissed from further evaluation.

Natural Soundscape. An important part of the NPS mission is preservation of natural soundscapes associated with national park units as indicated in NPS Management Policies, 2006, and Director’s Order 47: Sound Preservation and Noise Management. Natural soundscapes exist in the absence of human-caused sound. The natural

21. *Resource Management Plan* (1980), 2.

ambient soundscape is the aggregate of all natural sounds within the park, together with the physical capacity for transmitting natural sound through air, water, or solid material. Acceptable frequencies, magnitudes, and durations of human-caused sound varies among national park units, as well as potentially throughout each park unit, but are generally greater in developed areas and less in undeveloped areas. George Washington Carver National Monument is in a low use area with negligible vehicular traffic and background noise. None of the action alternatives would introduce additional noise and traffic from visitors and park staff. Because the alternatives would not increase noise levels, natural soundscapes was dismissed as an impact topic.

Air Quality. The 1963 Clean Air Act, as amended (42 USC 7401 et seq.) Section 118; and NPS Management Policies, 2006, require that air quality related values must be taken into consideration as an impact topic due to potential pollution sources related to action alternatives proposed for park sites. The scale of the action alternatives for George Washington Carver National Monument would not have any measureable impact on air quality. Therefore, air quality was dismissed as an impact topic. The closest air monitoring station is located in Carthage, Missouri, 9 miles north of the national monument.

Lightscape. In accordance with NPS Management Policies, 2006, the NPS strives to preserve natural ambient lightscapes, which are natural resources and values that exist in the absence of human-caused light. The action alternatives would not increase any use of nighttime lighting, specifically at the visitor center and the entrance to the site. Any necessary additions of nightlight for safety purposes would also have a negligible impact on the night sky. Therefore, lightscape was dismissed as an impact topic.

Museum Objects. NPS-28: Cultural Resource Management Guideline defines a museum object as “a material thing possessing functional, aesthetic, cultural, symbolic, and/or scientific value, usually movable by nature or design. Museum objects include prehistoric and historic objects, artifacts, works of art, archival materials, and natural history specimens that are part of a museum collection.”²² The proposed action does not include any design for storage and/or display of museum collections or collections accrued through site archeology, and does not otherwise affect museum objects. Therefore, this impact topic was dismissed from further analysis.

Environmental Justice. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental impacts of their programs and policies on minorities and low-income populations and communities. There are no environmental justice populations in the project area and none of the action alternatives would have an adverse effect on any population in general. Therefore, environmental justice was dismissed as an impact topic.

Indian Trust Resources. Secretarial Order 31.75 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaskan Native tribes. There are no Indian trust resources in George Washington Carver National Monument according to this definition. In addition, any

22. NPS-28: Cultural Resource Management Guideline (National Park Service, June 11, 1998), Appendix A: Glossary.

Indian titles to such lands now within the park have been extinguished through cession or sale. The lands comprising the park are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, Indian Trust resources are dismissed as an impact topic in this CLR/EA.

Natural or Depletable Energy Resource Requirements and Conservation Potential.

In accordance with NPS Management Policies, 2006, and Executive Orders 12873 and 12902, there are requirements in everything the NPS does that will have some small affect in improving our environmental footprint (green buying and sustainable building materials, etc.). However, individual changes at George Washington Carver National Monument are unlikely to have significant impacts to the wider universe of energy use and depletable resources. Therefore this impact topic was dismissed from further analysis.

Summary of Impact Topics

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Soils	NPS actively seeks to understand and preserve the soil resources of parks, and to prevent, to the extent possible, the erosion, physical removal, or contamination of the soil or its contamination of other resources. There is potential for soil disturbances from the implementation of the alternatives. Therefore, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies, 2006
Vegetation (including non-native and invasive plant species)	The park manages both grassland and forest. Grasslands cover approximately two-thirds of the park. Forested areas occur primarily along streams, but extend into the uplands. The picnic area and the visitor center/headquarters complexes are highly managed and manicured with a large proportion of non-native trees and shrubs. Also there is a higher than desirable cover of invasive non-native vegetation and problematic species at the park. Vegetation disturbance could occur and the introduction of more invasive non-native species is possible from activities implemented in the alternatives. Therefore, this topic was retained for further analysis.	NEPA (42 USC 4321 <i>et seq.</i>); NPS Organic Act; NPS Management Policies, 2006; Resource Management Guidelines (NPS-77); Federal Noxious Weed Control Act; Executive Order (EO) 13112, Invasive Species, 1999
Water Quality	There are three streams that flow through the monument and two spring branches that are completely contained within the park. These streams—Carver Branch, Harkins Branch, and Williams Branch—are tributaries of Shoal Creek. Aquatic habitats are an important part of the natural and cultural interpretive programs at the park. Disturbances from the implementation of these alternatives could affect water quality. Therefore, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies, 2006; Clean Water Act, Section 404
Wildlife and Wildlife Habitat	The landscape of George Washington Carver National Monument supports a variety of wildlife. Disturbances from the implementation of the alternatives could affect the wildlife and their habitat. Therefore, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies, 2006
Rare, Threatened and Endangered Species	Species of concern (flora and fauna) are present at George Washington Carver National Monument. Disturbances due to the implementation of the alternatives could affect species on the site and within the site's regional context. Therefore, this topic was retained for further analysis.	1973 Endangered Species Act, administrated by USFWS; USFWS's Endangered Species Program; NPS Management Policies, 2006

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Wetlands	Several areas of the park experience wet conditions throughout much of the year. The south-central, west-central, and east-central portions often have standing water in them during the winter and spring. Some of the water results from runoff, while much of it results from ground water seepage. Implementation of the alternatives could affect wetlands. Therefore, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies, 2006; Clean Water Act, Section 404; Executive Order 11988, Floodplain Management; Executive Order 11990, Protection of Wetlands; NPS Director's Order No. 77-1, 2002
Floodplains	Three small streams occur in the park—Carver, Harkins, and Williams branches. Carver and Williams branches originate as springs and have historic and natural significance. The streams have associated floodplains. Implementation of alternatives may affect floodplains. Therefore, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies, 2006; Clean Water Act, Section 404; Executive Order 11988, Floodplain Management; Executive Order 11990, Protection of Wetlands; NPS Director's Order No. 77-1, 2002
Cultural Landscapes	The future of the cultural landscape of George Washington Carver National Monument is a key issue and concern of the CLR/EA. Changes to the cultural landscape that could result from implementing one or more of the alternatives would be of concern to visitors, the public, the SHPO, interested tribes and THPOs, and NPS managers; therefore, this topic was retained for further analysis.	Sections 106 and 110 of the NHPA; ACHP implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); DO-28: Cultural Resources Management Guideline; NPS Management Policies, 2006; NEPA; Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes, 1996
Historic Structures	The future of historic structures on the landscape at George Washington Carver National Monument is a key issue and concern of the CLR/EA. Changes to historic structures that could result from implementing one or more of the alternatives would be of concern to visitors, the public, the SHPO, and NPS managers; therefore, this topic was retained for further analysis.	Sections 106 and 110 of the NHPA; ACHP implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); DO-28: Cultural Resources Management Guideline; NPS Management Policies 2006; NEPA; Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes, 1996
Archeological Resources	Ground-disturbing construction activities and vegetation removal associated with the CLR/EA alternatives have the potential to impact archeological resources. Therefore, this topic was retained for further analysis.	Sections 106 and 110 of the NHPA; ACHP implementing regulations regarding the "Protection of Historic Properties" (36 CFR 800); DO-28: Cultural Resources Management Guideline; NPS Management Policies, 2006; NEPA; Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes, 1996

Impact Topic	Reasons for Retaining Impact Topic	Relevant Laws, Regulations, and Policies
Visual Resources	The alternatives could affect views to and from George Washington Carver National Monument and views from one part of the park to another. Therefore, this topic was retained for further analysis.	NPS Management Policies, 2006
Visitor Use and Experience	The alternatives could affect overall visitor understanding of the entire landscape and the story of George Washington Carver, including interpretive and educational opportunities. Therefore, this topic was retained for further analysis.	NPS Organic Act; NPS Management Policies, 2006; GMP, 1997; and the LRIP, 2007
Park Operations	Park operations could be affected by the alternatives, including additional management/maintenance needs, and facility and interpretation needs. Therefore, this topic was retained for further analysis.	NPS Management Policies, 2006

Chapter 2: Site History

Introduction

This chapter consists of a history of George Washington Carver National Monument with accompanying chronology, an evaluation of the significance of the property, and a series of period plans illustrating the character and features present on the site at key points throughout its history. This chapter provides background to the comparative analysis of historic and existing landscape conditions and the assessment of the site's historic integrity provided in the next chapter. Together, these sections support an understanding of what resources are character-defining for the historic landscape, support its significance, and relate to the important themes and contexts that connect the national monument to local, state, and national trends in history and design.

Initial Settlement of the Moses Carver Farm

The first settlers of European descent arrived in Newton County, Missouri, in 1830. Sometime later in that decade, Moses Carver, his wife Susan, and his brothers George and Richard and their families arrived from Sangamon County, Illinois.²³ The Carvers settled approximately 2-1/2 miles

southwest of the present-day village of Diamond in Newton County.²⁴

The region in southwest Missouri in which the Carvers settled is located on the western edge of the Ozarks in the Springfield Plain. Prior to the arrival of Euro-American settlers, the area was home to the Osage tribe.²⁵

Upon arriving in Newton County, the Carver family is likely to have constructed a small log cabin. The homestead was included on an 1841 plat map prepared by the U.S. General Land Office. The map noted three cabins and two large fields, approximately 20 to 30 acres in size, on the property at that date.²⁶

The Carver family acquired title to the land under the right of preemption. This policy, which President James Madison extended to what was then the Missouri territory in 1814, allowed those living in the region the opportunity to purchase up to 160 acres of public land at a price of \$2 per acre.²⁷ This allowed settlers to occupy and farm the land prior to it being surveyed by the U.S. General Land Office. While Moses Carver settled the land in the 1830s, it was not until 1841 that the land was surveyed. As a result, it was not until 1843 that portions of the land on which Carver had settled were made available for purchase. On

23. Jason H. Gart, *He Shall Direct Thy Paths: The Early Life of George W. Carver, Historic Resource Study* (Washington, D.C.: National Park Service, Department of the Interior, 2014), 9–11.

24. John Harrington, Susan Haswell, and Evelyn Howell, with Arnold Alanen, *Springs of Genius: An Integrated Management Plan for George Washington Carver National Monument, Diamond, Missouri* (Madison,

Wisconsin: Department of Landscape Architecture, University of Wisconsin, 1999), 57.

25. Ibid., 10.

26. Harrington et al., 58.

27. Gart, *He Shall Direct Thy Paths*, 14–15, citing R. Douglas Hurt, *Agriculture and Slavery in Missouri's Little Dixie* (Columbia: University of Missouri Press, 1992), 43–44.

June, 1 1845, ownership of 160 acres of land was finally transferred from the federal government to Moses Carver.²⁸

Moses Carver further expanded his land holdings in 1844, when he obtained 40 acres from his brother Richard for \$50.²⁹ In 1853, Moses Carver received a patent for an additional 40 acres of land from the U.S. General Land Office. Following these acquisitions, Moses Carver owned 240 acres of land, comprising portions of two sections.³⁰

Moses Carver and his family began farming their holdings shortly after they first settled in southwest Missouri in the 1830s. The largest crop cultivated on the farm throughout the 1840s and 1850s was corn. In addition to farming, Carver owned cattle, horses, mules, sheep, pigs, and oxen. A walnut grove and apple orchard were also present on the Carver property.³¹ The walnut grove included more than 500 trees by the 1880s.³²

Beginning in the 1840s, as Moses Carver gained title to the land he settled, improvements were made to the farm. While the extent of the construction undertaken by the Carver family at this time is unknown, it is likely additional structures such as outhouses, stock sheds and pens, smokehouses, and a barn were constructed as the farming operations grew.³³

The Carver Family Cemetery. The Carvers established a small family cemetery on their property. Although the date of origin is not presently known, one of the graves marked in the

cemetery is that of Charity Dunn, who reportedly died in 1835. It is not clear, however, whether the Carver family had arrived in Newton County by this time, or if Dunn's death and burial at the cemetery predated their arrival.³⁴ The small graveyard is believed to have been originally surrounded by a dry stone wall constructed by Moses Carver.³⁵ In total, twenty-one known gravesites including those of Moses, Susan, Richard, and George Carver were established in the cemetery in the years 1835–1919.

Slavery at the Moses Carver Farm

Slavery was common in Missouri from the time of French and Spanish settlement until the U.S. Civil War. By 1860, slaves comprised 10 percent of the state's population overall, and up to 25 percent in counties along the Mississippi and Missouri rivers where larger plantations existed. In contrast, in southwestern Missouri, slaveholdings were typically quite small, with many only having possession of one slave. If a property only held one slave, that person was commonly a woman or girl who could work in both the house and the farm field. Although individual slaves in such a situation may have been somewhat socially isolated compared to slaves on large plantations, there were many opportunities for slaves from adjacent farms to interact at work events, church services, and social gatherings.³⁶ It was typical for slaves to work alongside their owners in farming the land, while also serving as household servants.³⁷ It was not uncommon for orphaned slave children to be raised in the farm household. Nor was it

28. Ibid., 16 citing Charles W. Porter III, "Report on an Investigation of George Washington Carver's Birthplace at the Old 'Diamond Grove' Plantation Near Diamond, Newton County, Missouri," February 24-March 5, 1943, 14, Boxes 187–188, George Washington Carver National Monument, RG 79, Records of the National Park Service-Region II Omaha, NARA-Central Plains (Kansas City).

29. Ibid.

30. Ibid.

31. Ibid., 16–18.

32. Ibid., 18, citing Porter, 9.

33. Ibid., 19.

34. Ibid., 8.

35. Robert P. Fuller, "Report on Project #4: Moses Carver and His Family" (U.S. Department of the Interior, National Park Service, George Washington Carver National Monument Park, October 18, 1955), 2.

36. Diane Krahe and Theodore Catton, *George Washington Carver National Monument Administrative History* (National Park Service, 2014), 21–23.

37. Gart, *He Shall Direct Thy Paths*, 27, citing Diane Mutti Burke, *On Slavery's Border: Missouri Small-Slaveholding Households, 1815–1865* (Athens: The University of Georgia Press, 2010), 131.

uncommon in the years immediately after the Civil War for emancipated slaves to remain at the same farm while they considered their new opportunities.³⁸

In October 1855, with operations expanding and the farm becoming more prosperous, Moses and Susan Carver purchased a 13-year-old enslaved African American girl named Mary for \$700. Under the ownership of the Carvers, Mary was likely responsible for cooking, cleaning, washing clothes, and sewing, as well as farm-related tasks such as feeding livestock and maintaining gardens.³⁹

In October 1859, Mary gave birth to a son, James.⁴⁰ The identity of James's father is unknown. Mary gave birth to a second son, George, circa 1865.⁴¹ While the identity of George Washington Carver's father is not known, some including George believe his father was a slave owned by James Grant, a farmer from nearby Buffalo Township.⁴² In addition to George and James, there is speculation that Mary also gave birth to two or three daughters while a slave of the Carvers.⁴³

Mary and her children resided in a slave cabin that was likely near the home of Moses and Susan Carver. In the 1940s, Moses Carver's nephew, Tom Williams, described the cabin as follows:

[F]aced east with a single window in the west and a chimney on the north. It was built of hewn oak logs perhaps six inches through, notched at the ends and fitted together, the cracks then being filled with clay or chinking. The door was a plank door with wooden hinges The roof was of clapboards. The chimney was built of rock up to the

mantelpiece and of sticks and clay from there. The sticks were about two and one half inches in diameter.⁴⁴

In 1865, prior to the conclusion of the Civil War, Mary and George were abducted from the Carver farm. Moses Carver sent John Bentley to recover Mary and George in return for 40 acres of land and a racehorse. While Bentley was able to locate George in Arkansas, he was unable to find Mary. George was suffering from whooping cough when he was discovered by Bentley. While various sources note that Mary was sold in Arkansas, others report that she died of pneumonia. Since Bentley only found George, he declined the land offered to him and only accepted the racehorse as payment.⁴⁵

Emancipation

Although the Emancipation Proclamation, which was issued by President Abraham Lincoln on January 1, 1863, freed enslaved persons in Confederate-held lands, it did not free those slaves in the states of Delaware, Kentucky, Maryland, Missouri, Tennessee, or the portions of Virginia that were to become West Virginia. Slaves in Missouri were not emancipated until the State constitutional convention on January 18, 1865. Mary and James thus remained slaves after the Emancipation Proclamation was issued, while George was born just as the legal practice of slavery was ending. After the constitutional convention some slaves were driven off their former owners' lands, while others were not told they were now free. Other slaves remained as paid laborers.⁴⁶

38. Krahe and Catton, 23, citing Burke, 148, 300.

39. Gart, *He Shall Direct Thy Paths*, 37, citing Burke, 135–138.

40. Ibid., 32. James's birthdate is taken from the information on his grave marker erected at the time of his death in 1873.

41. The birth of George Washington Carver was not recorded and as a result the exact year of his birth is not known. For this study, a birth year of 1865 has been assumed based on the findings of the Historic Resource Study. See Gart, *He Shall Direct Thy Paths*.

42. Gart, *He Shall Direct Thy Paths*, 35.

43. Ibid., 33.

44. Ibid., 38, citing Paul L. Beaubien and Merrill J. Mattes, "George Washington Carver National Monument: The Archeological Search for George Washington Carver's Birthplace," *Negro History Bulletin* 18, no. 2 (November 1954), 35.

45. Ibid., 46.

46. Ibid., 48, citing Burke, 301–303.

After emancipation, James and George, who were both young children and without parents, remained on the farm with Moses and Susan Carver.⁴⁷

The Moses Carver Farm after the Civil War

George Washington Carver lived on the Moses Carver farm from his birth until circa 1876. After emancipation, James and George initially remained in the former slave quarters, where they had resided with their mother. By 1870, census documents suggest that they shared this living space with Nickles Holt, Sr., an 88-year-old farmer from Tennessee, and his son or grandson, 14-year-old Nickles Holt, Jr.⁴⁸

The Carver farm continued to be prosperous following the Civil War and through the 1870s, with corn, potatoes, oats, and rye being cultivated. In addition, a number of livestock were present on the farm. James and George worked as farm laborers during their time living on the farm. George, whose health was poor, participated in less physically demanding tasks, such as carrying water or preparing logs.⁴⁹

In addition to his farm-related tasks, George Washington Carver's interest in nature was developed during his time on the farm as he explored the Carver property collecting various flowers and insects. During his early years on the farm, he also learned to read. Looking back at his childhood on the farm George Washington Carver noted, "Day after day I spent in the woods alone in order to collect my floral beauties and put them in my little garden I had hidden in brush not far from the house."⁵⁰

In the 1870s, George and James briefly attended the Locust Grove School, which met at the Locust Grove Church, approximately one mile from the Moses Carver farm (Figure 10). Their time at the school was short, as the brothers learned they could not continue their studies due to their race.⁵¹



FIGURE 10. George and James Carver, circa 1870s. Source: George Washington Carver National Monument Photo Collection.

George Washington Carver Leaves the Moses Carver Farm

In 1876, George Washington Carver, approximately 11 years old, was permitted by Moses and Susan Carver to attend the Neosho Colored School in nearby Neosho, Missouri (Figure 11). The Neosho Colored School was a school for African Americans located on the outskirts of Neosho near the small town of

47. Ibid., 48.

48. Ibid., 53, citing "Moses Carver," 1870 U.S. Census, Marion, Newton, Missouri, 24, dwelling 169, Record Group 29, Records of the Bureau of the Census, NARA-DC.

49. Ibid., 56–57.

50. Ibid., 61, citing "A Sketch of His Early Life Written by George W. Carver in 1897 or Thereabouts for Mrs. W. A. Liston and Miss

Etta M. Budd," Reel I, Frame 0007, Microfilm 17,416, The George Washington Carver Papers in the Tuskegee Institute Archives, Manuscript Division, Library of Congress.

51. Ibid., 78, citing Gary R. Kremer, *George Washington Carver: A Biography* (Santa Barbara: Greenwood, 2011), 8–9.

Neosho City.⁵² The school occupied a house at 639 Young Street, in a neighborhood with a concentration of African American residents. Founded in 1872, the Neosho Colored School ceased operating in 1891, when students moved to the newly constructed Lincoln School.⁵³



FIGURE 11. George Washington Carver, circa 1876. Source: George Washington Carver National Monument Photo Collection.

Shortly before George left the farm to enroll in the school, his brother James, 16 at the time, left for Fayetteville, Arkansas, before returning to Diamond and attending the school in Neosho with George. James continued to stay with the Carver family during this time, riding his horse to school

each day.⁵⁴ It is not known how long James remained at the school. Eventually, James worked as a plasterer or laborer for a railroad company in Seneca, Missouri. He died in 1883 from smallpox at the age of 23.⁵⁵

Not long after enrolling at the school in Neosho, George began residing in the home of Andrew and Mariah Watkins, a middle-aged African American couple who owned a home next door to the school. Carver initially stayed with them during the week, but eventually came to remain with them on weekends as well. George Washington Carver's enrollment in the Neosho Colored School marked the end of his time on the Moses Carver farm.⁵⁶ George reportedly returned on several occasions to visit the Carvers. While it is known that George Washington Carver visited the farm in the fall of 1884, there is evidence that he also returned during the summers of 1879, 1880, or 1881, prior to the death of Susan Carver in January 1882.⁵⁷

Refer to Figure 12, period plan of the Moses Carver farm, circa 1865–1876.

George Washington Carver in Later Years

In 1878, George Washington Carver left Neosho for Fort Scott, Kansas. Carver moved between Kansas and Missouri over the next few years before settling in Minneapolis, Kansas, where he graduated high school.⁵⁸

Carver attended Simpson College and Iowa Agricultural College and Model farm (now Iowa State University) between 1890 and 1896. During this time, Carver received a bachelor of agriculture degree, and a master of science degree in agriculture. Following completion of his master's

52. Ibid., 82. Neosho City was also referred to as Martling, New Neosho, North Neosho, and Newtown. The town was incorporated into Neosho in 1881.
53. Susan Richards Johnson & Associates, *Historic Structure Report: 1872 Neosho Colored School* (National Park Service, George Washington Carver National Monument, July 17, 2012), 15–17, 38.

54. Gart, *He Shall Direct Thy Paths*, 81–82.
55. Ibid., 101.
56. Ibid., 81–86.
57. Harrington et al., 6, citing Linda O. McMurtry, *George Washington Carver: Scientist and Symbol* (Oxford, U.K.: Oxford University Press, 1981), 9, 50.
58. Gart, *He Shall Direct Thy Paths*, 88–104.

degree, Carver joined the faculty of the Tuskegee Normal and Industrial Institute at the request of the school's president, Booker T. Washington. Carver became head of the newly formed agricultural department. Washington, like Carver, was born into slavery. Washington graduated from the Hampton Normal and Agricultural Institute in 1875. He was named the head of the Tuskegee Normal and Industrial Institute in 1880, shortly after its establishment by the Alabama State Legislature.⁵⁹

George Washington Carver remained at the Tuskegee Normal and Industrial Institute until his death in 1943. In addition to his role as teacher and head of the agriculture department, Carver was a vocal proponent of sustainable agricultural practices. He recognized that farmers' overdependence on cotton crops was causing soil erosion and depletion of fertility. As a result, Carver promoted the use of organic mulches and compost as ways to restore topsoil. He taught methods of crop rotation to practicing farmers, encouraging them to alternate cotton crops with soil-enriching crops such as sweet potatoes, pecans, peanuts, and soybeans. In addition, Carver educated farmers and the general public about soil and forest conservation, organic farming, and the use of nontoxic products.⁶⁰

Carver designed a mobile classroom to assist him in his teaching away from Tuskegee.⁶¹ He also performed research and experiments on new uses for peanuts, soybeans, sweet potatoes, and an assortment of other crops. Carver also developed uses for agricultural crops in industrial applications. During World War I, Carver produced 500 different shades of dye from soybeans as a way to replace textile dyes formerly imported from Europe. He received three different patents for these innovations.

George Washington Carver died on January 5, 1943. Prior to his death, he provided money to

Tuskegee Institute to establish the George Washington Carver Foundation. The goal of the foundation was to continue to fund agricultural research.

59. Ibid., 111.

60. G. Annis, M. DeBacker, D. Diamond, L. Elliott, A. Garringer, P. Hanberry, K. James, R. Lee, S. Leis, M. Morey, D. Pursell, and C. Young, *George Washington Carver National*

Monument Natural Resource Condition Assessment. Natural Resource Report NPS/HTLN/NRR (2011/425), 16–17.

61. Gart, *He Shall Direct Thy Paths*, 143.

for
George Washington Carver National Monument

Prepared by JMA, a CCRG company
Drawing No. GWCA 397 127384
PMIS No. _____

Legend

- 2014 GWCA Boundary
- 10-foot contour
- 1-foot contour
- Stream
- Spring
- Road
- Building or structure
- Rock wall
- Fence
- Woodland
- Fence row/orchard

Sources:
Historical base map (NOTE: many features on this map are conjectural; conjectural features are denoted on this illustration with an asterisk)
Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).

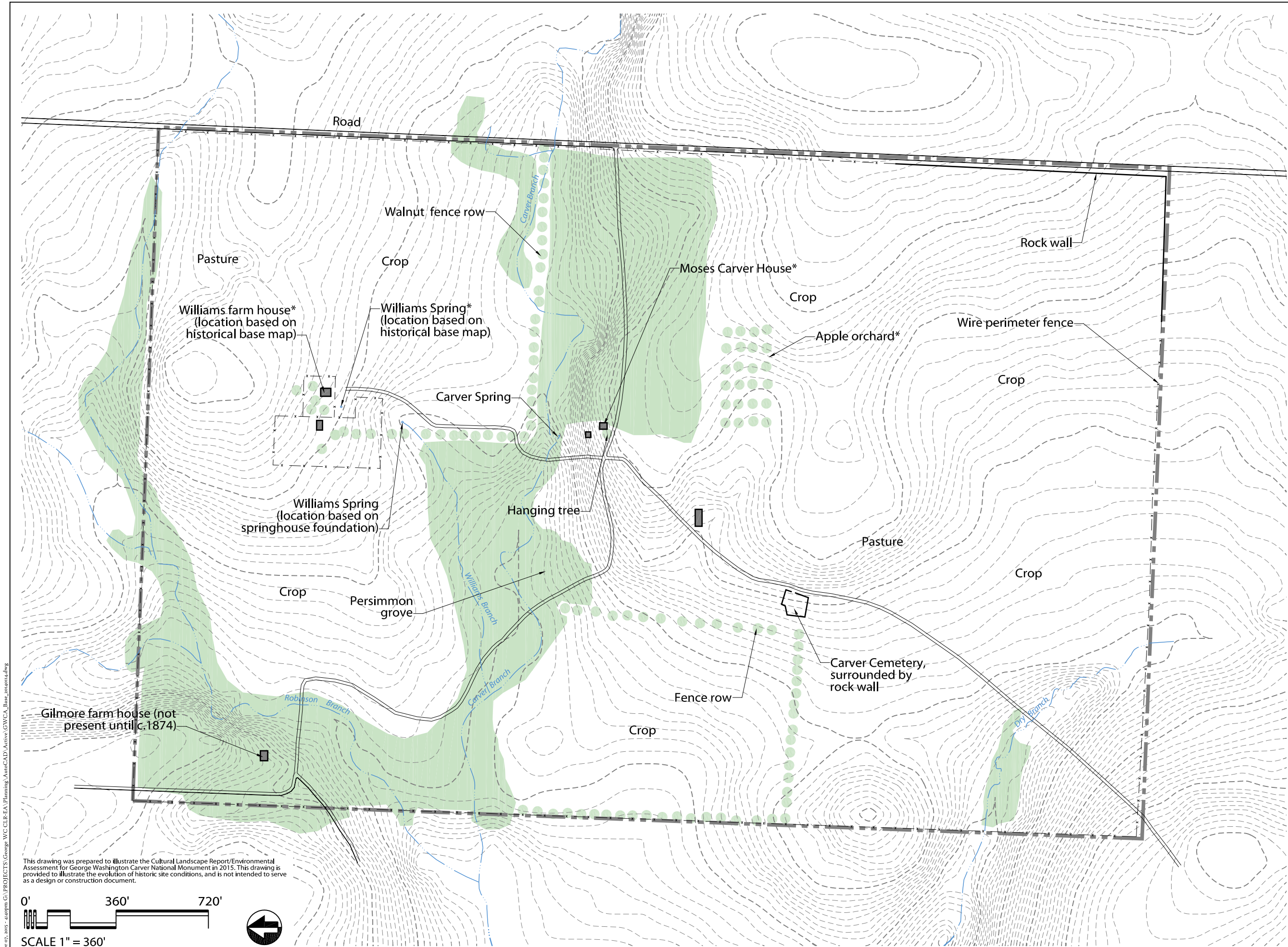


Figure 12.
Period Plan c.1865–1876

The Moses Carver Farm in the Late Nineteenth and Early Twentieth Centuries

On December 4, 1880, a tornado reportedly destroyed the Carvers' home, as well as the cabin where George Washington Carver was born.⁶² In 1881 a new house was constructed at the farm. The two-story wood-frame house had a front porch, while the interior was complete with a living room and kitchen.⁶³

Susan Carver died in January 1882. Shortly after Susan's death, Sarah Jane Williams and her husband William Moore Williams acquired a portion of the land owned by Moses Carver. (Sarah Jane Carver, the daughter of Moses Carver's brother George, had married William Moore Williams in 1853. They built a house near a large spring on the Moses Carver farm where they raised their family. The Williams children are thought to have been playmates of George Washington Carver.)⁶⁴

In 1900 with his health failing, Moses Carver left the farm he had established near Diamond, Missouri, and moved to Galena, Kansas, to live with his nephew John Thomas Carver, the son of Moses Carver's brother Richard.⁶⁵ In 1901, Moses deeded his farm to two of his nephews and one niece.⁶⁶

Moses Carver died in 1910 in Kansas. His body was returned to his farm in Missouri, where he was buried in the Carver family cemetery.⁶⁷

In 1911, Moses Carver's heirs sold the 240-acre property to Samuel Warden. Warden owned the

farm for only two years before C. M. Shartel purchased the property in 1913.⁶⁸

Several changes were made to the property by Shartel, who was a real estate broker. In 1916, the house constructed in 1881 was moved and remodeled. That same year, the wall around the cemetery, believed to have been constructed by Moses Carver, was removed. Throughout the period during which the land was owned by Shartel, various tenants and employees lived on the property. Shartel also ran a thoroughbred cattle business on the land, resulting in a series of changes to the landscape.⁶⁹

Between 1930 and 1939, an earthen dam was constructed on the property, creating Williams Pond.⁷⁰

Establishment of the George Washington Carver National Monument

In the summer of 1941, the St. Louis chapter of the National Association for the Advancement of Colored People (NAACP) developed the concept of establishing a new national park on the Carver farm site to honor George Washington Carver and his achievements. Although several members of Congress supported the idea, NPS Director Newton Drury noted that memorial sites honoring living individuals had not been established by the NPS.⁷¹ At the same time, the NAACP chapter did persuade the Missouri Highway Commission to place road signs directing visitors to the Carver

62. Cultural Landscape Inventory, 25.

63. Orville W. Carroll, *Historic Structures Report, Architectural Data Section, Part II, Moses Carver Late Period Dwelling, Building No. 5* (Diamond, Missouri: George Washington Carver National Monument, March 1966), 8, copy in George Washington Carver National Monument Library.

64. Harrington et al., 8.

65. Ibid.

66. Cultural Landscape Inventory, 26.

67. Fuller, 7–9.

68. Cultural Landscape Inventory, 26.

69. Harrington et al., 8.

70. Cultural Landscape Inventory, 26.

71. Krahe and Catton, 29, citing John J. Dempsey, Under Secretary, U.S. Department of the Interior, to John J. Cochran, U.S. House of Representatives, September 19, 1941; Newton B. Drury, Director, National Park Service, to Bennett Champ Clark, U.S. Senate, September 22, 1941; Drury to Walter C. Ploeser, U.S. House of Representatives, November 28, 1941, File L1417, RCF, GWCA.

farm, which were erected in early April 1942 near Diamond, Missouri, along U.S. Highway 71.⁷²

With the road signs in place, tourists began to arrive at the farm. The property owner, Stratton Shartel (C. M. Shartel's son), wrote to Sidney Redmond, president of the St. Louis chapter of the NAACP, to indicate that he was willing to consider selling 30 acres of land to establish a park at the site. Shartel wanted to retain the rest of the property to continue farming.⁷³

At the same time, Dr. Richard Pilant, a social science professor at Washington University in St. Louis, and a distant cousin of Moses and Susan Carver, began to lobby for establishment of a national monument at the birthplace of George Washington Carver. Pilant wrote several hundred letters to U.S. Representatives and Senators, as well as to Secretary of the Interior Harold Ickes. In addition, Pilant sought well-known individuals who could lend their name to the movement to establish the monument. This group, known as the "George Washington Carver Memorial Associates," was never incorporated but served as a cooperating agency working with the park for several years.⁷⁴ Pilant said that the idea for a federal memorial at the site had originated during a 1938 reunion held at the Moses Carver farm. With the onset of World War II, Pilant emphasized the value of the memorial in promoting national unity and interracial harmony, as well as countering Nazi propaganda.⁷⁵

Dr. Pilant contacted U.S. Representative Dewey Short in March 1942 to formally request legislation establishing a federal memorial.⁷⁶ At the same time, Shartel contacted Short to indicate that he was willing to sell a 25 to 30 acre parcel containing the site of the birth cabin and other structures for \$15,000.⁷⁷ The first congressional legislation

relating to the establishment of the George Washington Carver National Monument at the Moses Carver farm was introduced by Short to the U.S. House of Representatives on July 15, 1942. Parallel legislation was introduced to the U.S. Senate by Missouri Senator Harry S Truman on October 13, 1942. No immediate action was taken on either bill before the 77th Congress adjourned in December 1942.⁷⁸

George Washington Carver died on January 5, 1943. The next day in the 78th Congress, his death was announced by Representative Samuel Hobbs of Alabama, and Representative Short reintroduced his national monument bill, now known as H.R. 647. Senator Truman reintroduced the bill in the Senate as S. 37. The final bill was approved and signed into law by President Roosevelt on July 14, 1943.

Acquisition of Land and Early Park Planning

Based on the previous correspondence with Shartel that offered to sell a portion of the farm to the government for a price between \$15,000 to \$20,000, the final bill authorizing the establishment of the George Washington Carver National Monument allocated \$30,000 for the purchase of land and initial development of the park. This appropriation appeared adequate, as some local officials insisted that \$40 per acre was a typical price for undeveloped farmland in Newton County.⁷⁹ Also, county records indicated that (for tax purposes), the entire Shartel property, inclusive of buildings, was assessed at \$9,000.⁸⁰

A survey of the future park was performed by the National Park Service in March 1943. A report was prepared that described the condition of the site under the ownership of the Shartel family, and also

72. Ibid., 30.

73. Krahe and Catton, 30–31, citing Stratton Shartel to Mr. S. R. Redmond, President, National Association for the Advancement of Colored People, April 6, 1942, No. 2580, GWCA Collection of George Washington Carver Papers, GWCA Archives.

74. Toogood, 56–57.

75. Krahe and Catton, 32, 35.

76. Ibid., 37, citing Richard Pilant to Dewey Short, March 18, 1942, File 372, Dewey Short Papers, SHS-MO.

77. Ibid., citing Stratton Shartel to Dewey Short, Member of Congress, April 6, 1942, File 373, Dewey Short Papers, SHS-MO.

78. Ibid., 38–39.

79. Ibid., 48.

80. Ibid., 51.

discussed the proposed development of the park. Recommendations for development included purchasing 210 acres of the 240-acre farm, marking the site of the birthplace cabin if its location could accurately be determined, and constructing a museum building to properly orient visitors to the site. An area at the edge of the grove of trees surrounding the then-present farm buildings was suggested as a good location for the museum, as it was near the county highway and required little removal of existing trees. Preservation of the Carver family cemetery and construction of an interpretive trail were also recommended. The development cost, not including land acquisition, was estimated at \$77,800.⁸¹

After the final passage of federal legislation in July 1943, Conrad Wirth, then chief of land planning for the National Park Service, began negotiations with Stratton Shartel. The initial appraisal of the property by the federal government valued the land at \$15,000 for 210 acres. By the end of 1943, Shartel was asking for \$35,000 for the 210 acres, and negotiations with NPS stalled.⁸² A new appraisal was conducted after the war, in 1946, which stated a value of \$30,000 for the 210 acres in question. By that time, however, Shartel had increased his demand to \$73,000.⁸³ In May 1947, Shartel sold a 100-foot-wide easement for a 154-kilovolt electrical transmission line to the Empire District Electric Company. (Also at some time in the late 1940s, a 7,200-volt electrical transmission line was erected across the eastern edge of the property to the New-Mac Electric Cooperative, to serve several local farms.)⁸⁴

Early in 1948, the Department of Interior contacted the Department of Justice to begin condemnation proceedings on the property.

Meanwhile, on May 7, 1948, Shartel sold the farm to a local physician and his wife, Dawson W. and Nell Derfelt. Derfelt knew the significance of the site but later said that he was unaware the NPS still intended to purchase the property.⁸⁵

The petition to condemn the parcel was filed with the U.S. District Court in Kansas City on June 12, 1948. Following a jury trial in May 1949, on July 23, 1949, the court judged the various right-of-ways, mineral rights, and inholdings claimed by utility companies and former owners at a total of \$78,895.⁸⁶ As a result, Secretary of the Interior Oscar Chapman submitted a bill to Congress seeking to increase the appropriation to \$80,000 from \$30,000 first appropriated in 1943. In order to provide some funds for site development, the final version of the legislation signed by President Truman on September 9, 1950, raised the total to \$150,000.⁸⁷ On June 21, 1951, the District Court of the U.S. for the Western District of Missouri, Southwest District decreed the title for 210 acres of land to the United States Government for the establishment of the George Washington Carver National Monument.⁸⁸

While the condemnation and acquisition process was being considered in the federal court and Congress, Sidney J. Philips became involved in the protection of the site. Phillips, who was influential in the establishment of a memorial at the birthplace of Booker T. Washington located on the site of a former plantation in Franklin County, Virginia, provided support to the creation of a national monument at the birthplace of George Washington Carver.⁸⁹ In July 1949, Philips and the trustees of the Booker T. Washington Birthplace Memorial, Inc., formed a new organization called the George Washington Carver National Monument Foundation. In November 1949, the

81. Howard Baker, Regional Chief of Planning, Region Two. Planning Report Covering Boundary and Development Recommendations for (Proposed) George Washington Carver National Monument. National Park Service, Region Two. 1943.

82. Krahe and Catton, 62.

83. *Ibid.*, 63.

84. *Ibid.*, 66.

85. Toogood, 58; Krahe and Catton, 65.

86. Krahe and Catton, 69.

87. *Ibid.*

88. Cultural Landscape Inventory, 26.

89. Purchased by S. J. Phillips and originally under private control, the Booker T. Washington birthplace was designated a National Monument in 1956. The memorial consists of a reconstruction of the slave cabin present on the site at the time of Washington's birth.

foundation signed a one-year lease with the Derfelts for the farm, renewed in November 1950 for a second year. Even after federal acquisition of the site in June 1951, the foundation continued as caretaker of the farm. The National Park Service granted the foundation a special use permit from July 1, 1951, to June 30, 1952, to continue to care for the site and interpret it to visitors (Figure 13 and Figure 14). Even once Park Service personnel were on site from 1952, the foundation continued to farm the site until February 1954.⁹⁰



FIGURE 13. Sign marking the Carver birthplace site, 1952. Source: George Washington Carver National Monument Photo Collection, image 605.



FIGURE 14. Sign marking the Carver birthplace site, 1952. Source: George Washington Carver National Monument Photo Collection, image 605A.

During this time, B. B. Gaillard, a representative of the foundation and a former student of George Washington Carver, was named site custodian. In March 1950, Gaillard took up residency in the

large farm house constructed by the Shartels (Figure 15). The foundation's lease was extended another year through 1953. Gaillard resigned as caretaker in July 1952, at which time Robert Fuller, a history teacher from Joplin, was named temporary caretaker.⁹¹



FIGURE 15. The stone farmhouse constructed by the Shartel family. Source: George Washington Carver National Monument Photo Collection.

It was anticipated that funds to operate the monument would not be available until July 1952. As a result, the NPS began and completed advance planning for the farm. During this time it was determined that all but one building on the property had been constructed by the Shartels, and therefore most of the structures did not date to the period of the Carver family's ownership of the site.

In 1952, a cast concrete bust of George Washington Carver was sculpted by Audrey Corwin and presented to the park (Figure 16).⁹²

90. Krahe and Catton, 72–74.

91. Toogood, 59. Fuller was later named park historian and became the first African American professional employee of NPS.

92. Cultural Landscape Inventory, 27.



FIGURE 16. The cast concrete bust presented to the park in 1952 at the dedication of the site in 1953. Source: George Washington Carver National Monument Photo Collection.

On September 25, 1952, the first superintendent of the park, Arthur Jacobson, the park historian, Robert Fuller, and Jacobson's wife Valjher Jacobson, who served as clerk, began work at the site. The Jacobsons resided in the large farmhouse on site that had previously been occupied by the site custodians, and the Fullers occupied the former tenant house on the north side of Carver Branch.⁹³ Through 1952 and 1953, primary efforts consisted of demolishing many of the dozen agricultural outbuildings on the site.⁹⁴

In the spring of 1953, Paul Beaubien, an archeologist with the National Park Service, made a series of archeological digs at a site identified by local residents to determine the location of the birthplace residence of George Washington Carver. Evidence discovered by Beaubien confirmed the likely location of the cabin,

although questions regarding the actual location of the cabin remain.⁹⁵ (See further discussion of archeological studies, below.)

Dedication of the George Washington Carver National Monument took place on July 14, 1953. Approximately 1,000 to 2,000 people were in attendance, including Secretary of the Interior Douglas McKay (Figure 17 and Figure 18). Richard Pilant, an early proponent of the park, presented the NPS with the pen President Franklin D. Roosevelt used to sign the bill establishing the national monument in 1943.⁹⁶



FIGURE 17. Dedication of the George Washington Carver National Monument, 1953. Source: George Washington Carver National Monument Photo Collection.

93. Krahe and Catton, 85–86.

94. Ibid., 87. An October 1951 inventory identified three residences and twelve outbuildings, including barn, granary, cow shed, loafing shed, machine shed, another small shed, chicken coop, pig sty, feed storage and

brooder house, garage, another storage building, and a combination spring and milk house. A wood footbridge crossed the stream below the spring.

95. Toogood, 63.

96. Ibid., 61–62.



FIGURE 18. The dedication of the George Washington Carver National Monument, 1953. Note the Shartel farmhouse in the background. Source: George Washington Carver National Monument Photo Collection.

Beginning in 1954, and continuing into 1955, the wall around the Carver family cemetery was reconstructed and gravestones were repaired. The reconstruction was based on archeological research conducted by the NPS, and the stone material for the wall was obtained from the park property.⁹⁷

Other work accomplished by the NPS in the first few years following dedication of the national monument included rehabilitation of the stream bank to mitigate erosion, widening and surfacing of the entrance road, construction of an entrance sign, installation of four picnic tables, construction of pit toilets for public use, and replacement of the fence around the superintendent's house.⁹⁸ Also in the early 1950s, a trail was developed, likely following pre-existing footpaths on the farm for much of its length. This route later became part of the Carver Trail.⁹⁹ Stabilization work to preserve the Moses Carver house was finally completed in 1958.¹⁰⁰

Refer to Figure 19, period plan, 1943–1953.

97. Cultural Landscape Inventory, 27; Krahe and Catton, 218.

98. Krahe and Catton, 88.

99. Ibid., 143. See also NPS Drawing No. 397-3000, "Existing Conditions - Development Area" (May 10, 1956).

100. Ibid., 219.

for
George Washington Carver National Monument

Prepared by JMA, a CCRG company

Drawing No. GWCA 397 127384

PMIS No. _____

- Legend
- 2014 GWCA Boundary
 - 10-foot contour
 - 1-foot contour
 - Stream
 - Spring
 - Formal road
 - Unpaved road
 - Trail/footpath
 - Building or structure
 - Rock wall
 - Fence
 - Woodland
 - Utility line

Sources:

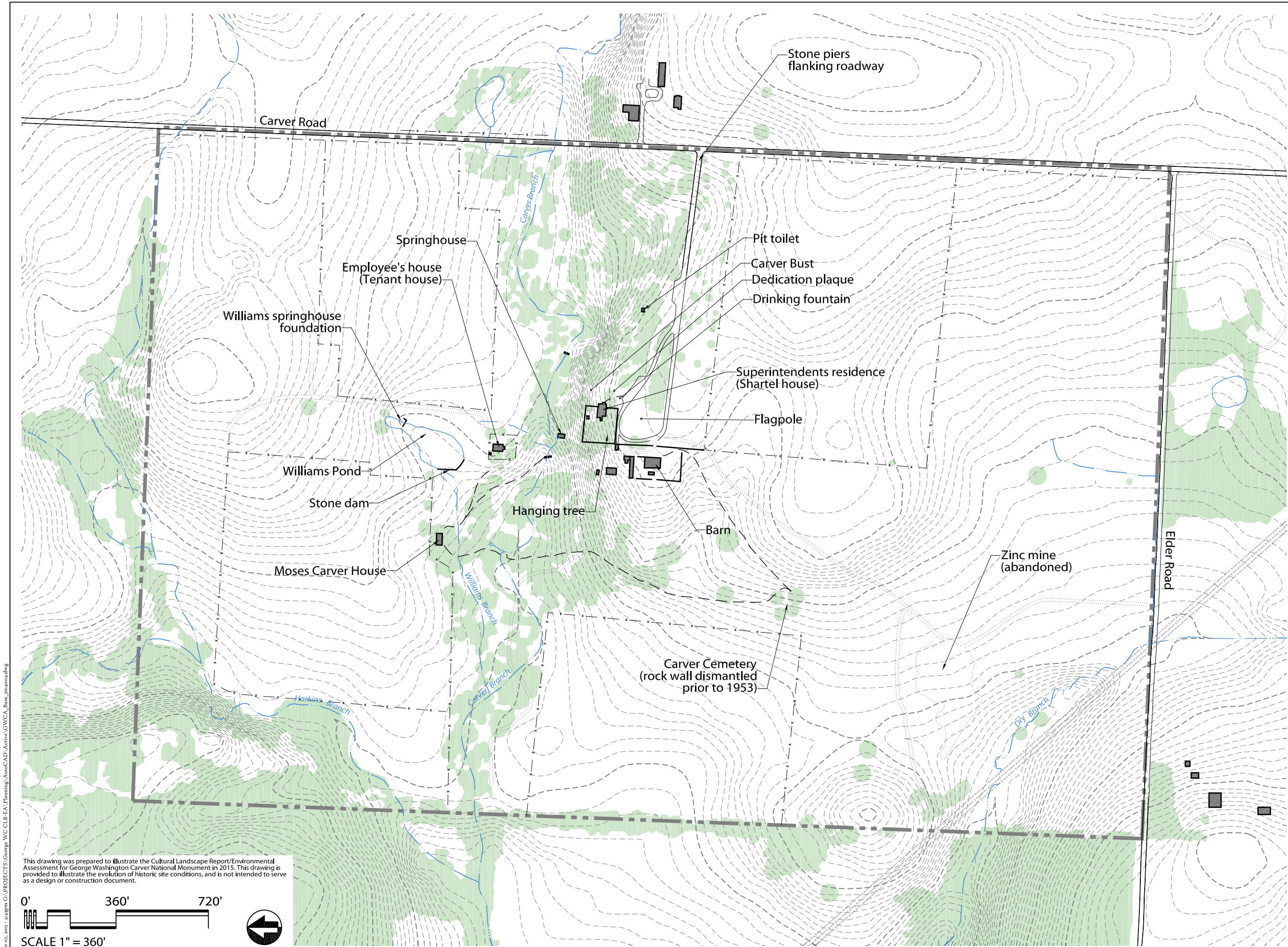
1953 Aerial photograph.

"Existing Conditions, Development Area," Drawing No. 397-3000, 5/1/1956.

"Sign Program – Type and Location Plan, General Area," Drawing No. 397-2007, 5/1/1953.

"Existing Conditions at Monument Area," Drawing No. 397-2001A, 12/3/1952.

Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).



This drawing was prepared to illustrate the Cultural Landscape Report/Environmental Assessment for George Washington Carver National Monument in 2015. This drawing is provided to illustrate the evolution of historic site conditions, and is not intended to serve as a design or construction document.

0' 360' 720'
SCALE 1" = 360'



Figure 19.
Period Plan 1943–1953

Mission 66 Development at George Washington Carver National Monument

The Mission 66 Program. By the 1950s, conditions at national parks were generally in a state of deterioration. Improvements had not been made to public facilities since the New Deal era programs of the 1930s. The desperate need for building maintenance and funding was further amplified by the rapid increase in visitors to national parks following World War II. Despite the increase in visitation, park facilities remained essentially as they had been before the war. Limited National Park Service budgets led to cuts in staff, which, combined with the increasing number of visitors, jeopardized the integrity and condition of the existing natural resources. The increase in automobile usage further endangered the parks, which were generally ill prepared to accommodate an influx of vehicles.

In February 1955, NPS Director Conrad Wirth conceived a comprehensive conservation program to revitalize the national parks. The ten year capital program aimed to modernize and expand the National Park System.¹⁰¹ Wirth chose to name the program “Mission 66,” as he thought the word “mission” successfully expressed the urgency of the park’s situation to Congress, while “66” was used to signify the end date of the program, which would be 1966, coinciding with the fiftieth anniversary of the establishment of the National Park Service. The Mission 66 plan not only sought to improve conditions at the parks through the construction of new roads, trails, and visitor facilities, but also through the establishment of increased operating budgets to maintain the parks in the future.

The goals of the Mission 66 program supported and accelerated a change in philosophy with regard to the design of buildings in the national parks. The postwar modernist architecture seen in

national parks featured low profiles and horizontal massing in addition to muted colors, which helped the buildings visually blend in with their natural surroundings. This was in direct contrast to the rustic style buildings primarily favored in park structures constructed prior to World War II, which, through their picturesque character, were highly noticeable in their context.¹⁰²

The Mission 66 Program at George Washington Carver National Monument.

When NPS began operation of the national monument, only a makeshift display area existed in the large farmhouse where the superintendent resided. The need for a new museum building was recognized by the NPS, and preparation of a museum plan began in 1954. This document would serve as a forerunner to the park’s Mission 66 prospectus.¹⁰³

In the summer of 1958, the park’s Mission 66 prospectus was approved. Included in the document were plans to construct a visitor center and museum building. Modifications were made to the route of the existing trail that took visitors to the site of the George Washington Carver birthplace cabin, the open fields once farmed by the Carver family, the 1881 Moses Carver house, and the Carver family cemetery (Figure 20).¹⁰⁴ In addition, a sculpture of George Washington Carver as a boy was proposed (Figure 21 and Figure 22).¹⁰⁵

101. Ethan Carr, *Mission 66: Modernism and the National Park Dilemma* (Amherst: University of Massachusetts, 2007), 10.

102. *Ibid.*, 134–135.

103. Toogood, 66.

104. Compare NPS Drawing No. 397-3000, “Existing Conditions - Development Area” (May 10, 1956) to NPS Drawing No. 397-3022, “Road & Trail System Plan” (November 1, 1960).

105. *Ibid.*, 68.



FIGURE 20. The Carver Childhood Trail, 1963. Source: George Washington Carver National Monument Photo Collection.



FIGURE 21. The 1881 Moses Carver house, 1955. Source: George Washington Carver National Monument Photo Collection.



FIGURE 22. The 1881 Moses Carver house, 1965. Source: George Washington Carver National Monument Photo Collection.

In 1958, prior to beginning construction of the visitor center, the park undertook further archeological study of the farm site. Although no building locations were confirmed, additional information was obtained about the cemetery.¹⁰⁶ (See further discussion of archeological studies, below.)

Residences for the superintendent and the historian were completed in May 1959. The two residences, constructed south of the park entrance, were identical, with each one-story structure having a gable roof, horizontal siding, a screened-in porch, and a carport. The residences were built according to standard plans prepared in 1957 by the NPS Eastern Office of Design and Construction. At the same time, a four-unit residence to house seasonal employees was also constructed. The one-story structure was similar in style to the single family residences, and had a gable roof, horizontal siding, and a series of enclosed porches (Figure 23).¹⁰⁷

106. Krahe and Catton, 216–217.

107. Toogood, 69–70.



FIGURE 23. The four-unit employee housing building, Superintendent's residence, and Historian's residence, circa 1959. Source: George Washington Carver National Monument Photo Collection.

In the spring of 1960, the former main farmhouse was moved to another property nearby, where it remains today. Seven outbuildings were also removed at this time.¹⁰⁸

Construction of the visitor center began in May 1959 to plans prepared by the Eastern Office of Design and Construction. The dedication of the new visitor center was held in July 1960 (Figure 24). The visitor center was a one and one-half story structure clad in brick and wood siding with low-sloped gable roofs, and an extended open covered porch at its perimeter. A breezeway at the south end of the building led to the utility area. Construction of an adjacent maintenance/utility building was included as part of the visitor center. The visitor center was located on the site of the former main barn of the Shartel farm. Construction of the visitor center in 1959 also included utilities for the site, such as a deep water wall, underground water lines, septic systems, natural gas lines, and overhead electrical lines.¹⁰⁹



FIGURE 24. The visitor center, circa 1960. Source: George Washington Carver National Monument Photo Collection.

A new entrance road and gate, signs, parking areas, and fencing around the boundary of the monument were completed in time for the dedication of the visitor center (Figure 25 through Figure 27). The new entrance road followed the path of the earlier road into the farm. The roadbed was raised and contoured, drainage culverts and curbs were installed, and the road was paved with asphalt. A new spur was built leading into the picnic area. The original extension of the road past the new visitor center to the site of the main farmhouse (superintendent's house) and across Carver Branch to the tenant house (historian's house) was removed. The road work included reconfiguration of the parking area in front of the visitor center, shifting the parking loop southward.¹¹⁰

A cast bronze statue of George Washington Carver as a boy by Robert Amendola was installed and unveiled in 1960 during the visitor center dedication (Figure 28). The new statue at the national monument was placed on a limestone boulder near the Carver Branch.¹¹¹

108. Krahe and Catton, 104.

109. *Ibid.*, 146.

110. *Ibid.*

111. Toogood, 69–70. The statue at the national monument was the second casting of this form by Amendola; the first was located in an urban park within the Carver Houses apartment complex at 101st Street in New York City.



FIGURE 25. Entrance to the park, shortly after the National Park Service assumed responsibility for the land. Source: George Washington Carver National Monument Photo Collection.



FIGURE 26. The entrance to the park, 1954. Source: George Washington Carver National Monument Photo Collection.



FIGURE 27. A view of the entrance to the park. Note the visitor center in the background. Source: George Washington Carver National Monument Photo Collection.



FIGURE 28. The Boy Carver statue, 1965. Source: George Washington Carver National Monument Photo Collection.

Ten mature elms were removed from the park after they were determined to be infected with Dutch elm disease in 1961. Trees in the main grove as well as other mature elms were sprayed to protect against the elm bark beetle. The spraying program continued for several years.¹¹²

Improved access to the site was also recommended as part of the Mission 66 Master Plan. Signs were erected at the intersection of State Highway 71 and County Road V in April 1962. A directional sign was added on Interstate 44 for eastbound traffic in 1963.¹¹³

Refer to Figure 29, period plan, 1953–1960.

112. Superintendent's Annual Report for 1961, George Washington Carver National Monument. 1962. The efforts continued through the 1960s and 1970s but were

ultimately unsuccessful; the last American elm in the park died and was removed in 1978.

113. Toogood, 71.

for
George Washington Carver National Monument

Prepared by JMA, a CCRG company

Drawing No. GWCA 397 127384

PMIS No. _____

- Legend
- 2014 GWCA Boundary
 - 10-foot contour
 - 1-foot contour
 - Stream
 - Spring
 - Formal road
 - Service road
 - Trail/footpath
 - Building or structure
 - Rock wall
 - Fence
 - Woodland
 - Fence row
 - Utility line

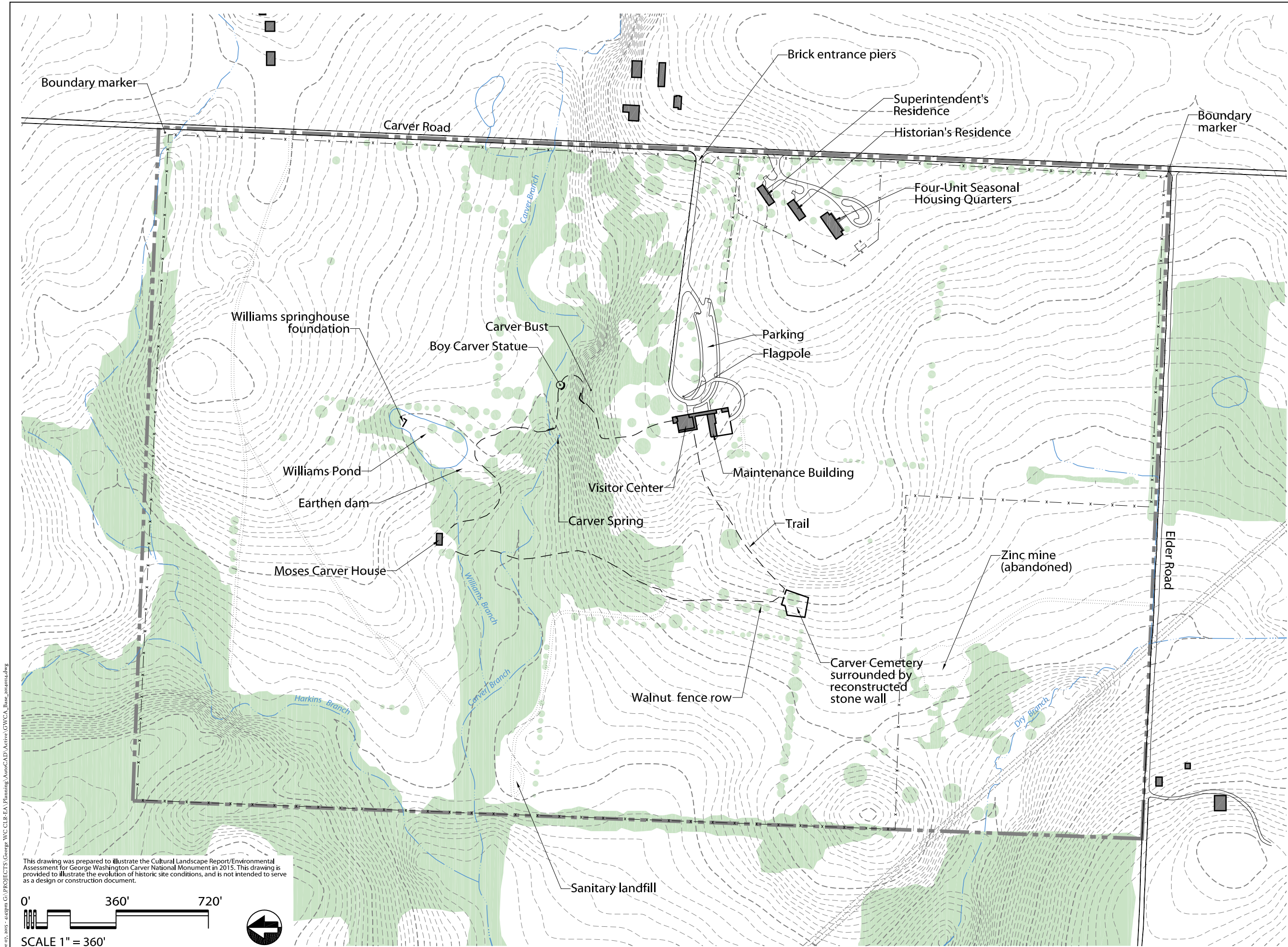
Sources:

1966 Aerial photograph.

"Planting Plan and Miscellaneous Construction," Drawing No. 397-3017B, 6/1/1960.

"Planting Plan and Miscellaneous Construction, Memorial Area," Drawing No. 397-3019C, 6/1/1960.

Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).



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0' 360' 720'
SCALE 1" = 360'



Figure 29.
Period Plan 1953–1960

Continued Development of the National Monument, 1963 to Present

In the years following the completion of Mission 66-related construction at George Washington Carver National Monument, limited large-scale construction projects were conducted.

In the summer of 1963, repairs to the Moses Carver house were completed, including partial replacement of siding, reroofing, repainting, window repair, and repair of the brick chimney.¹¹⁴

A tree replanting plan was undertaken throughout the 1960s and 1970s to address tree loss to disease and storms. As elm trees gradually succumbed to Dutch elm disease and other trees were damaged by severe weather, they were replaced by a variety of other species such as hard maple, oak, walnut, native dogwood, and redbud trees; the picnic area grove formerly contained many elms.¹¹⁵ New plantings were also placed to screen utilities and building foundations. For example, twelve junipers (*Juniperus scopulorum* ‘Southland’) were planted to screen the view from the Carver Trail of the visitor center mechanical units. Also, ornamental flower beds were added around the visitor center, including rose bushes near the entrance.¹¹⁶

Also at this time, a permanent sign system along the Carver Trail was completed. The green phenolic plastic signs with white lettering identified plants and historic points of interest along the trail (Figure 30 through Figure 32).¹¹⁷



FIGURE 30. Sign marking the birthplace cabin site, August 1963. Source: George Washington Carver National Monument Photo Collection, image 604A.



FIGURE 31. Signage along the Carver Trail, 1967. Source: George Washington Carver National Monument Photo Collection, image 3923.

114. Krahe and Catton, 219–220.

115. *Ibid.*, 140.

116. *Ibid.*, 141.

117. Superintendent's Annual Report for 1963, George Washington Carver National Monument. 1964.



FIGURE 32. Carver birthplace signage, date unknown. Source: George Washington Carver National Monument Photo Collection, image 602A.

The Carver bust, installed in 1952, was originally mounted on a temporary pedestal in the parking area. The bust was moved to a new location near the visitor center in 1963, and moved again to a different location near the visitor center in 1965. The cast concrete sculpture was installed on a new base at the time it was moved. The reason for the change of placement in 1965 was to move the bust to a location out of sight of the parking area, as park managers had noted that visitors frequently parked, went to view the bust, returned to their

cars, and left the park, without ever entering the visitor center.¹¹⁸

Also circa 1965, a new rustic bridge was constructed at the crossing of the Carver Branch.¹¹⁹

Approximately seventy diseased elms were removed in 1966. Walnut, oak, maple, sweet gum, and other native trees were planted in the winter to replace the removed elms.¹²⁰ A Historic Structure Report for the Moses Carver house was prepared in 1966.

In 1967, an agricultural land use contract was advertised. The contract called for 145 acres of land within the boundary of the monument to be maintained in their historic character as pasture or hay lands.¹²¹

A strong storm uprooted 100 trees and caused damage to the visitor center and residences in 1973. An Administrative History and Historic Resource Study were completed the same year.¹²²

In 1976, extensive exterior renovations were completed at the 1881 Moses Carver house. A partial interior restoration of the house was also completed at this time, including placing the structure on a new foundation.¹²³ In 1977, extensive repairs were made to the earthen dam by park personnel.¹²⁴

Williams Pond, constructed by the Shartel family in the 1930s, was expanded by the NPS in 1978.

The administrative functions of the park were relocated from the visitor center to Building

118. Krahe and Catton, 90, 109; Superintendent's Annual Report for 1963, George Washington Carver National Monument. 1965. The Superintendent's Report mentions the rustic bridge and references photographs (not attached to copy received), but does not describe its materials or construction.
119. Superintendent's Annual Report for 1964, George Washington Carver National Monument. 1965.
120. Superintendent's Annual Report for 1966, George Washington Carver National Monument. 1967.

121. Superintendent's Annual Report for 1967, George Washington Carver National Monument. 1968.
122. Superintendent's Annual Report for 1973, George Washington Carver National Monument. 1974.
123. Superintendent's Annual Report for 1975, George Washington Carver National Monument and Wilson's Creek National Battlefield. January 28, 1976.
124. Superintendent's Annual Report for 1978, George Washington Carver National Monument. 1979.

No. 23 (the former Superintendent's residence) in 1979. The garage was also enclosed and finished at this time. In conjunction with the move, a new six-space parking lot was constructed in front of the building.¹²⁵

In 1979, ten replica headstones and one footstone were replaced in the Carver family cemetery. The stones were replaced due to vandalism.¹²⁶

In 1981, the park prepared a Resource Management Plan which included a fire management plan and a prescribed burn plan. A controlled burn of the prairie was conducted in May 1982 in conjunction with the Resource Management Plan. The prairie was later disked and native grass was planted. The prairie restoration project was documented with photographs.¹²⁷ This program continued into the late 1980s and throughout the 1990s and early 2000s.

The last traditional agricultural lease in the park expired in 1983, replaced by a leasing arrangement that emphasized the planting of historically appropriate crops and hay for a smaller 66-acre tract, to run through 1989. At the end of this lease, the park ended the leasing program entirely, and the former agricultural area became prairie units 5, 6, and 7.¹²⁸

Construction of a new barbed wire fence at the boundary of the park began in 1982.¹²⁹

Construction was completed in phases, with the project concluding in 1985.¹³⁰ Portions of this

fence have been subsequently replaced at a later date.

In 1983, a storm washed out both bridges along the Carver Trail, resulting in the flooding of the trail and damage to nearby fences. About 100 tons of crushed limestone pea-sized gravel was used to raise and level the trail surface. New wayside signs were installed, and a portion of the trail was paved with asphalt.¹³¹

Also in 1983, the wall around the Carver family cemetery was rebuilt in areas where deterioration was observed. Deteriorated headstones were also replaced.¹³²

Following a severe storm in spring 1984, all four bridges along the Carver Nature Trail were replaced with new bridges later that year built by the Missouri Army National Guard. An accessibility ramp was also constructed at this time.¹³³ Also in 1984, the overhead electrical lines to the visitor center and maintenance complex were replaced with underground lines, and the septic system for the residential area was rehabilitated.¹³⁴

The Carver family cemetery was vandalized in June 1987 and again in 1989; in 1992, the missing and destroyed gravestones resulting from this vandalism were replaced with replicas.¹³⁵

In 1991, the George Washington Carver bust was moved and painted a metallic gold and coated with a waterproof sealer.

125. Superintendent's Annual Report for 1979, George Washington Carver National Monument. 1980.

126. Ibid.

127. Superintendent's Annual Report for 1981, George Washington Carver National Monument. 1982; Superintendent's Annual Report for 1982, George Washington Carver National Monument. 1983; Krahe and Catton, 225–229.

128. Krahe and Catton, 229–230.

129. Superintendent's Annual Report for 1982, George Washington Carver National Monument. 1983.

130. Superintendent's Annual Report for 1984, George Washington Carver National. February 18, 1985.

131. Krahe and Catton, 144.

132. Superintendent's Annual Report for 1983, George Washington Carver National Monument. February 14, 1984.

133. Superintendent's Annual Report for 1984, George Washington Carver National Monument. 1985.

134. Krahe and Catton, 146.

135. Ibid., 259.

A park-wide program to rehabilitate roads, parking lots, and sidewalks was completed in October 1991.¹³⁶

In 1993, a new universally accessible 450-square-foot freestanding comfort station was built. The comfort station was located on the northeast side of the visitor center, at the same site as the present (2014) comfort stations. The detached comfort station was connected to the visitor center by a covered walkway.¹³⁷ As part of this construction, a new trail segment was added connecting the comfort station to the Carver family cemetery.¹³⁸

The park began planning for further land acquisition in 1993, and a topographic survey of the 30-acre parcel at the southwest corner of the farm previously used to mine zinc and lead was completed in 1994. Mining operations had occurred in this area of the farm since the 1910s, and by 1943, a 40-foot-tall pile of mining waste had accumulated. As this parcel was not part of the original national monument, it became of specific concern to the park later, when consideration was given to adding it to the property.

Work began on a Long-Range Interpretive Plan in 1996.¹³⁹ A new General Management Plan was completed in 1997.¹⁴⁰

In 1996, the park acquired a surplus 12 foot by 60 foot trailer, which was placed on the site just north of the former historian's residence, by then in use as the visitor services and resource management building. The trailer was opened to the public in April 1997 as the Carver Discovery Center, with an

emphasis on children's educational interpretation.¹⁴¹

The split rail fence around the yard adjacent to the Moses Carver house was replaced with assistance from a local Boy Scout troop in 1998.

From 1990 through 1999, phased installation of upgraded museum exhibits was completed at the park.

In 1999, the National Park Service commissioned a research team from the University of Wisconsin–Madison to prepare an Integrated Management Plan for the park. The plan, which documented the cultural and natural history of the site, identified twelve historic and prehistoric sites within the boundaries of the park, including a complex site associated with Carver's birthplace cabin.¹⁴² The other sites included the Gilmore farm, Williams farm, north-south boundary site, several lithic flakes and scatters, and the extant Moses Carver house.

Several improvements and additions were made to the trails at the monument in 2001. The Carver Trail was enhanced as 400 linear feet of asphalt sidewalk were replaced with a new concrete sidewalk. A new accessible concrete trail overlaid with a lift of recycled rubber surfacing leading to the spring was also installed at this time. In addition, a 180-foot-long universally accessible boardwalk was constructed connecting the trail to the spring with the Boy Carver statue. Two new prefabricated steel arched bridges were constructed over the Carver Branch. A new mulch-surfaced trail, 1/4 mile long, was installed

136. Superintendent's Annual Report for 1991, George Washington Carver National Monument. March 5, 1992.

137. Information provided by NPS GWCA in correspondence with the authors, January 2015.

138. Krahe and Catton, 148–149. The Administrative History references the 1993 Superintendent's Report; the 1993 report, which was not available for review for the current study, may include further information about the new trail segment.

139. Superintendent's Annual Report for 1996, George Washington Carver National Monument. 1996.

140. National Park Service. George Washington Carver National Monument – General Management Plan 1997. 24 June 1997.

141. Krahe and Catton, 149.

142. Woolpert, LLP. *Environmental Assessment For Visitor Center Renovation and Addition, George Washington Carver National Monument* (Omaha, Nebraska: U.S. Department of the Interior, National Park Service, June 2004), 2–9.

around the Williams Pond. Granite benches were installed following the construction of the trail, along with granite stones engraved with George Washington Carver quotations.¹⁴³

In 2002, a new plank and post fence was installed from the park's main entrance at the north boundary to the headquarters area. This project was completed by park personnel.¹⁴⁴

For several years, the NPS had discussed acquiring the 30-acre parcel with Evelyn Taylor, who with her husband Bud had owned the 30-acre parcel since the mid-1950s. By 2004, the Superintendent's Annual report noted that:

The Association worked with the Monument and several other partners in 2003 and 2004 to ensure the last 30 acres of the original 240-acre Carver Birthplace Farm were donated and two hazardous mines were permanently closed and remediated. The value of the land donation is in excess of \$90,000 and the value of the remediation is in excess of \$40,000.

Remediation work was conducted through grants from the State of Missouri and collaborative work from the Diamond Road District. The State of Missouri oversaw all work and certified the site as hazard free at the conclusion of the project.¹⁴⁵

In 2003, Evelyn Taylor donated the parcel to the Carver Birthplace Association. The Carver Birthplace Association subsequently transferred the deed for this land to the NPS on June 22, 2005.

In 2003, due to concerns related to lead contamination in the water from numerous abandoned mine sites in the county, the 1959 well was abandoned, and the park water system was switched over to a shallower backup well drilled in 2000. The 1959 well was permanently sealed in December 2004, and by the summer of 2005, the

park had been connected to the City of Diamond water system.¹⁴⁶

The Moses Carver house underwent extensive restoration in 2005, including repairs to window trim and siding, repointing of the chimneys, replacement of the cedar shingle roof, replacement of the porches, removal of lead paint, and repainting of the entire interior and exterior in a historic color scheme.¹⁴⁷

The entrance road, former residential area access road, and parking lot within the park were also resurfaced in 2005. At the same time, the park worked with Newton County to share the cost of resurfacing Carver Road leading to the park.¹⁴⁸

The National Park Service Midwest Archeological Center (MWAC) conducted an intensive archeological investigation within the Area of Potential Effect (APE) for the expansion of the visitor center in April 2004. MWAC assisted in the completion of archeological preservation work at the park in 2006, including site condition assessment on all known archeological sites, shovel tests along the park entryway and in developed areas, and geophysical surveys of the cemetery and birthplace cabin site. (Refer to further discussion of archeological studies, below.)

Mitigation of tailings and other potentially hazardous deposits associated with lead and zinc mining of the parcel was completed in 2006.

On August 8, 2007, the extensively renovated visitor center was dedicated. The renovation included a 6,700 square foot addition to the 1960 building, with the addition of interactive and extended museum space, classrooms, an expanded theater, terrarium, archives, and library, as well as a tornado shelter. New exhibits were added to the museum as well as to the Moses Carver house. The renovation also included the addition of a

143. Superintendent's Annual Report for 2001, George Washington Carver National Monument. February 2, 2002.

144. Superintendent's Annual Report for 2002, George Washington Carver National Monument.

145. Ibid., 128, 208, 253; Superintendent's Annual Reports for 2003, 2004, and 2005, George Washington Carver National Monument, 2004, 2005, 2006.

146. Krahe and Catton, 147.

147. Ibid., 257.

148. Ibid., 145.

sustainable ground source heating, ventilating, and air conditioning system, and total replacement of the septic system. The expansion included a two-story addition to the west of the original building. The expanded visitor center is clad in utility brick and wood siding matching the colors of the original brick and siding. Both the new and original roofs were clad in asphalt shingles. During construction, the visitor center was housed in one of the former park housing structures near the entrance road.¹⁴⁹ With the completion of the visitor center complex, the Discovery Center trailer was sold and removed from the park in 2008. In 2010, the administrative offices in the visitor center were completed, and park staff moved to the visitor center. After 2010, the former housing buildings were used for storage.

In 2009, conservation work was completed on the park's statuary. The work included professional conservation of the bronze dedication plaque, Boy Carver Statue, and the Carver Bust.

A Vegetation Management Action Plan was completed in 2011. The same year, MWAC performed an archeological survey in the park, which included geophysical surveys of the developed area east of the visitor center and Williams Homestead, and mapping and a geophysical survey of the cemetery. A pedestrian inventory of the 30-acre parcel was also completed. (See further discussion of archeological studies, below.)

Also in 2011, new wayside interpretive exhibits were installed along the Carver Trail.¹⁵⁰ At the same time, the interpretive structure at the Carver birthplace cabin site was replaced with a new structure of the same design and materials.¹⁵¹

In 2013, Missouri Resource Assessment Program vegetation mapping for the park was completed.

Archeological Studies

Several archeological studies have been conducted at George Washington Carver National Monument, primarily by archeologists for the National Park Service Midwest Archeological Center (MWAC) and also by the University of Nebraska at Lincoln, as described below.¹⁵²

In April 1953, archeologist Paul Beaubien conducted archeological investigations in an effort to identify the location of the Carver birthplace cabin. Excavation sites selected based on oral history interviews uncovered two burned features and other "occupational debris in the southwest portion of the [then-] present flower garden."¹⁵³ However, no substantial archeological evidence was found to conclusively confirm the locations of the former cabin. Beaubien suggested that the park could place an interpretive marker at the location of the burned features to indicate the likely site of the cabin, and build a reconstructed cabin at another location for interpretive purposes.

In 1958, prior to beginning construction of the visitor center, the park undertook further archeological study of the farm site. Robert W. Neuman made four test trenches, two near the cemetery and two where oral history information indicated outbuildings were formerly located. Although no building locations were confirmed, the remains of fence posts for the cemetery were

149. Superintendent's Annual Report for 2007, George Washington Carver National Monument.

150. Krahe and Catton, 144.

151. Ibid., 261.

152. Information about prior archeological studies derived from summary prepared by Ann C. Bauermeister, RPA, National Park Service Midwest Region Archeological Center; see also Paul L. Beaubien, "Report of Archeological

Investigations – George Washington Carver N.M., Memorandum for the National Park Service, Region Two" (National Park Service, 1954); Bill Hunt, "Trip Report: Geophysical Inventory and Shovel Test Excavations at the Proposed Site of Visitor Center Expansion, George Washington Carver National Monument (GWCA)" (National Park Service, 2004).

153. Beaubien, 7.

seen, and two unmarked graves associated with the cemetery were discovered.¹⁵⁴

In 1975, a magnetic survey was performed on portions of the site by John W. Weymouth of the University of Nebraska at Lincoln. Two additional archeological surveys were performed by Ervan Garrison and Robert Bray of the University of Missouri, Columbia in 1976. These three studies all focused on possible home sites near the Moses Carver house. Garrison and David Denman, also of the University of Missouri, performed another series of archeological investigations in 1978.¹⁵⁵

In 1981, the NPS contracted with the Center for Archaeological Research at Southwest Missouri State University. These studies, led by principal investigator David W. Benn, focused on developing information about the site's prehistory. The survey resulted in the location of five additional prehistoric sites within the national monument and their listing with the Archaeological Survey of Missouri.¹⁵⁶

In July 1981, MWAC archeologist Janis Emery conducted a magnetometer survey inside the cemetery and in two small areas to the south and the west of the cemetery wall. Emery also conducted a resistance survey along two transects within the cemetery, and used mapping developed by Paul Beaubien during earlier excavations to mark the locations of the two burned features.

In April 2004, MWAC archeologists Bill Hunt and Ann Bauermeister conducted fieldwork including a magnetic survey and a shovel test inventory of the area proposed for the expansion of the visitor center and associated facilities. The shovel test inventory revealed no significant archeological resources in the proposed construction areas, while interpretation of the magnetic survey results

indicated a possible pole-in-ground structure, garden enclosure, or corral.¹⁵⁷

In September 2005, MWAC archeologists Ann Bauermeister and Michael Hammons investigated an area just south of the reconstructed birthplace cabin, using magnetic gradient and resistance survey methods. A square anomaly located southwest of the original cabin was interpreted to possibly represent a different building from the Moses Carver Farm, a structure associated with the twentieth-century Shartel Farm, or possibly the 1953 excavations by Beaubien. The 2005 study recommended analysis of spatial imagery to further understand the genesis of the anomaly.

In September 2011, MWAC archeologists Ann Bauermeister and Steve De Vore conducted large-scale geophysical surveys, mapping, and a pedestrian survey at the national monument. The work included additional and more intensive surveys of the park, with an emphasis on the developed area, the Williams Homestead, the Carver family cemetery, and a newly acquired 30-acre parcel. Magnetic and radar survey techniques and analysis revealed possible former historic building locations, including the location of Beaubien's 1953 excavation undertaken to search for evidence of the birthplace cabin. At the Williams Homestead, three previously documented mounds representing farmstead structures and/or associated debris were noted.

Evaluation of the 30-acre parcel comprising the southwest corner of the park, which included a former contaminated mine site that had been cleaned and filled by the Environmental Protection Agency circa 2006, did not reveal any archeological resources. The archeological study noted that the park planned to manage this area as a prairie. The Carver family cemetery was surveyed with non-invasive techniques to look for unmarked graves, and all above-ground cemetery

154. Krahe and Catton, 216–217.

155. *Ibid.*, 217.

156. David W. Benn, "An Intensive Archaeological Survey of George Washington Carver National Monument" (Springfield, Missouri: Center for Archaeological Research, Southwest Missouri State University, 1981).

157. Bauermeister, summary, citing Hunt 2004, 3.

components were documented with a detailed map, GPS readings, and digital photographs.

In September 2012, MWAC Archeologists Ann Bauermeister, Steve De Vore, and Ashley Barnett conducted additional investigations to follow up on the 2011 studies, expanding the previous study area to include the adjoining prairie that occurs across on the same landform. A GPR survey addressed the majority of the developed core except for the loop drive/parking area east of the visitor center, and resistivity surveys targeted the western section of the developed core including the reconstructed birthplace cabin, the 1953 studies by Beaubien, and the area between the picnic area and Carver Road where former historic buildings locations were potentially located. The entire prairie component was also surveyed. Targeted investigations at two locations that provided magnetic and resistivity data confirmed the possible location of a non-extant historic structure, including a feature composed of numerous stacked, tabular rocks that may be part of a structural foundation.

In August 2014, MWAC archeologists Ann Bauermeister, Steve De Vore, and Ashley Barnett conducted studies at the Moses Carver house and Williams Homestead sites, including the Carver house, a significant portion of the adjacent prairie to the north, and a section of the prairie north of the Williams Homestead that was not included in the 2011 survey. The study focused on the middle of the three mounded areas present to investigate whether this area represents the former house location. Analysis of the geophysical data collected during the 2014 study is underway. Preliminary results indicate that a non-extant barn that was not previously identified may have been located in an area in the prairie to the west of the Williams Homestead.

Refer to Chapter 3: Existing Conditions and Comparative Analysis and Assessment for further discussion of archeological studies as they pertain to specific resources and features.

George Washington Carver National Monument Chronology

1830s	Moses and Susan Carver settled on the site that is currently the George Washington Carver National Monument.
1835–1848	The birthplace cabin is believed to have been built. The Carver family cemetery was established by Moses Carver.
1844–1894	Moses Carver purchased and obtained patents for the entirety of the 240 acres during this period.
1865–circa 1876 or 1877	George Washington Carver lived on the Moses Carver farm from his birth until circa 1876 or 1877.
1860–1880	By this date, Moses Carver had improved acres of crops and planted about 520 orchard trees. He also planted walnut trees and vegetables.
1880	December 4: A tornado reportedly destroyed the Moses Carver dwelling and the birthplace cabin.
1881	Moses Carver constructed the Moses Carver house.
1901	Moses Carver deeded his property to two nephews and one niece.
1911	The Moses Carver farm was sold by his heirs to Samuel Warden.
1913	Samuel Warden sold the farm site to C. M. Shartel.
1916	The Moses Carver house constructed in 1881 was moved to its current location and remodeled. The cemetery wall was removed.
1930s	The earthen dam was built, creating Williams Pond.
1913–1930s	New houses and agricultural outbuildings were built on the farm.
1942	The St. Louis chapter of the NAACP persuaded the Missouri Highway Commission to install directional signage to the farm, and tourists began to visit the farm. The first Congressional legislation relating to the establishment of the farm site as a national monument was introduced.
1943	January 5: George Washington Carver died. July 14: The law designating the farm site as George Washington Carver National Monument was enacted.
1948	May 7: C. M. Shartel's son, Stratton Shartel, sold the farm site to Dawson W. Derfelt. June 12: Condemnation petition for farm property filed in federal court.
November 1949–February 1954	George Washington Carver National Monument Foundation had an agricultural lease for the site and opened the farm to visitation.
1951	Title to 210 acres of land transferred to the U.S. for purposes of establishing a national monument.
1952	September 25: First NPS superintendent and park historian arrived at site.
1952–1953	NPS demolished some non-historic agricultural outbuildings.

1952	The bust of George Washington Carver was sculpted by Audrey Corwin and presented to the park.
1953	Archeological investigations were conducted of the presumed birthplace cabin site.
1953	July 14: Dedication of George Washington Carver National Monument. The dedication plaque was installed.
1954–1955	The cemetery wall was reconstructed by the park based on archeological research.
1953–1958	Erosion mitigation of stream banks; widening and surfacing of entrance road; installation of four picnic tables; construction of pit toilets; Carver Trail first developed; Moses Carver house stabilized.
1958	Additional archeological investigations were conducted of the farm site.
1959–1960	Visitor center, utility building, Superintendent's residence, Historian's residence, and a four-unit seasonal quarters building constructed. Utility infrastructure, expanded entrance road, parking area, and fencing built. Carver Trail modified with a new route in some portions.
1960	Farmhouse and other structures constructed by the Shartel family removed.
1960	The Boy Carver statue was created by Robert Amendola and placed at its present site beside the Carver Branch in 1960.
1961	Dutch elm disease first identified in park.
1963	Repair of Moses Carver house completed.
1965	George Washington Carver bust moved to a new location and installed on a new base.
1975–1978	Archeological studies conducted to investigate possible home sites.
1976	Extensive repairs to Moses Carver house, including new foundation.
1977–1978	Repairs to earthen dam. Williams Pond expanded.
1979	Superintendent's residence (Building No. 23) converted for use as administrative offices.
1979	Replica headstones placed in cemetery.
1981	Archeological studies conducted to develop information about site prehistory and to further investigate the cemetery.
1982	Prairie restoration began.
1982–1985	Barbed wire boundary fence built around park property.
1983	Carver Trail filled and leveled; portions paved with asphalt. Cemetery wall partially rebuilt to address deterioration.

1984	Four new bridges built on Carver Trail. Overhead electrical lines buried.
1990–1999	Phase installation of upgraded exhibits completed at the park.
1991	The George Washington Carver bust moved, painted metallic gold, coated with a waterproof sealer.
1992	Missing and vandalized gravestones replaced with replicas in cemetery.
1993	Universally accessible comfort station built.
1996–2008	Trailer placed just north of former historian's residence, opened as Carver Discovery Center, 1997–2007.
2001	Improvements and additions to Carver Trail, including construction of an accessible trail leading to the spring, new contemplative loop trail around Williams Pond, and two new prefabricated steel arched bridges over the Carver Branch.
2002	New plank and post fence installed from park entrance to northern edge of headquarters area.
2003	On December 3, a local land owner donated the final 30 acres of the original Moses Carver farm in a fee-simple arrangement to the Carver Birthplace Association.
2004	Archeological studies conducted of area proposed for expansion of the visitor center.
2005	On June 22, the Carver Birthplace Association transferred the deed for the final 30 acres of the Moses Carver farm to the NPS.
2005	Major repairs were made to the Moses Carver house.
2005	Archeological studies conducted in area near reconstructed birthplace cabin.
2007	The visitor center was extensively expanded and renovated.
2009	Conservation work conducted on statuary.
2010	Administrative offices moved into expanded visitor center; housing group buildings used for storage.
2011	New wayside exhibits along Carver Trail. New interpretive structure at birthplace cabin site (as assumed based on previous archeological studies).
2011	Archeological studies conducted in developed area, Williams Homestead, Carver family cemetery, and newly acquired 30-acre parcel.
2012	Additional archeological studies conducted, expanding areas investigated in 2011 and including adjoining prairie.
2014	Archeological studies conducted at Moses Carver house and Williams Homestead sites.

Significance Evaluation

The significance evaluation identifies the important historical associations of the property, and comments on its architectural, archeological, and social value as they relate to the National Register of Historic Places. A property's significance is tied to a discrete period of time in which its important contributions were made and to relevant national, state, and local historic contexts. The section that follows describes the current National Register status of George Washington Carver National Monument and summarizes the information afforded in previous efforts conducted to evaluate the park's significance. This section also provides suggestions for modifications to previous evaluations based on current research and assessment.

National Register Status of George Washington Carver National Monument

George Washington Carver National Monument was administratively listed in the National Register of Historic Places on October 15, 1966, based on the National Historic Preservation Act. The significance of the property was documented through preparation of a National Register nomination that certified on September 28, 1976.¹⁵⁸ Revised National Register nomination documentation was in progress at the time this Cultural Landscape Report/Environmental Assessment was being prepared.¹⁵⁹

The current draft National Register nomination Additional Documentation identifies the national monument as significant under Criterion A, associated with events that have made a significant contribution to the broad patterns of our history, and Criterion B, associated with the lives of persons significant in our past. The current draft revised nomination documentation also cites Criteria Consideration C, a birthplace or grave,

and Criteria Consideration F, a commemorative property. The current draft nomination cites several areas of significance: science, education, community planning and development (park), and conservation.

As stated in the current draft nomination Additional Documentation section:

The George Washington Carver National Monument is significant for its association with the early life of [Dr.] George Washington Carver (circa 1865–January 5, 1943), the scientist, agriculturalist, educator, and humanitarian. It is significant under Criterion B, at the national level, as the birthplace and boyhood home [of] George Washington Carver. The national monument is also significant under Criterion A, at the national level, as an outstanding example of a district that commemorates the life and accomplishments of a leading African American scientist and educator. The associated area of significance under Criterion A is Community Planning and Development (Park) and Conservation.¹⁶⁰

The draft National Register nomination identifies two timeframes as the period of significance for the George Washington Carver National Monument. The first timeframe comprises the historic period of 1865–1876, encompassing the years in which Carver lived at the site from his birth until he left at age eleven to attend the Neosho Colored School. The second timeframe comprises the period 1943–1960, the commemorative era in which the landscape was dedicated and developed to memorialize the accomplishments of George Washington Carver, concluding with dedication of the Mission 66 visitor center.

In the nomination Additional Documentation section, the National Park Service Midwest Regional Office has clarified the determination of

158. Richard L. Ortega, George Washington Carver National Monument, National Register of Historic Places nomination form, April 6, 1976, (NRIS Number: 66000114).

159. The current draft nomination, titled "George Washington Carver National Monument

(Additional Documentation and Boundary Increase)," was prepared by Jason Gart, Senior Historian, History Associates, Inc., Rockville, Maryland, and is dated September 26, 2014.

160. Gart, National Register Nomination Additional Documentation (draft).

contributing and non-contributing resources as follows:¹⁶¹

Contributing Resources

Buildings:

- Moses Carver Late Period House – (1 contributing building; LCS 442; HS-05)

Sites:

- National Monument Landscape – (1 contributing site)¹⁶²
- Carver Family Cemetery – (1 contributing site; LCS 5039; HS-31)
- Carver Birthplace Cabin Site – (1 contributing site; archeological site 21NE119)
- Walnut Fence Row – (1 contributing site)

Structures:

- Carver Family Cemetery Wall – (1 contributing structure; LCS 70020; HS-31A)¹⁶³
- Carver Trail – (1 contributing site)

Objects:

- Bust of George Washington Carver – (1 contributing object; LCS 5036; HS-26)

- Boy Carver Statue – (1 contributing object; LCS 5038; HS-30)
- Dedication Plaque – (1 contributing object; LCS 5037; HS-27)
- Monument Site Boundary Markers – (2 contributing objects; LCS 70022; HS-35)¹⁶⁴

Non-contributing Resources

Buildings:

- Visitor Center and Utility Building – (1 non-contributing building)
- Superintendent's Residence – (1 non-contributing building)¹⁶⁵
- Historian's Residence – (1 non-contributing building)¹⁶⁶
- Four Unit Seasonal Quarters – (1 non-contributing building)¹⁶⁷

Sites:

- Gilmore Cabin/Farm site – (1 non-contributing site; archeological site 21NE120)
- Williams Cabin/Farm site – (1 non-contributing site; archeological site 21NE121)

Structures:

- Birthplace Cabin Site Outline – (1 non-contributing structure)¹⁶⁸

161. Correspondence by NPS MRWO with the authors.

162. The landscape includes, among other features, native vegetation, Carver Spring, Carver Branch, and Williams Branch.

163. NPS MWRO has noted that the cemetery wall represents the commemorative period and therefore should be counted as a contributing resource separately from the cemetery, which represents the historic period. Correspondence, NPS MWRO with the authors.

164. Although the draft National Register Additional Documentation classifies the boundary markers as objects, Cultural Landscape Report guidelines do not consider objects; therefore, for purposes of the CLR analysis the boundary markers are considered small-scale features. See chapter three for further discussion of the markers.

165. The findings of the CLR indicate that the buildings of the former housing/administrative area fall within the period of significance and thus contribute to the significance of the park landscape. However, the National Register nomination update currently in progress by NPS MWRO has determined these buildings to be non-contributing and they are the currently scheduled for demolition.

166. Ibid.

167. Ibid.

168. Per correspondence with NPS MWRO, the Birthplace Cabin Site is a contributing archeological resource, while the NPS-created commemorative log structure (Birthplace Cabin Site Outline) is a non-contributing structure.

- Williams Springhouse Foundation – (1 non-contributing structure; LCS 70023; HS-36)
- Williams Pond Earthen Dam – (1 non-contributing structure; LCS 70024; HS-37)
- Parking lot – (1 non-contributing structure)¹⁶⁹

These resources and other site features are further discussed in Chapter 3: Existing Conditions and Comparative Analysis and Assessment.

LRIP and CLI Significance Evaluation

In the Long-Range Interpretive Plan (2007) the park significance is summarized as:

- The national monument preserves George Washington Carver's birthplace and childhood home, where the experiences of his formative years influenced his journey to becoming one of this nation's most distinguished scientists and humanitarians.
- The national monument is the nation's first memorial and unit of the National Park System to commemorate the achievements of an African American.
- The national monument is the first birthplace national monument of an individual other than a United States President.

The Cultural Landscape Inventory (CLI) completed for the national monument in 2010 noted that although the National Register nomination lists several twentieth century features associated with the park and its mission to honor George Washington Carver, "the commemorative landscape aspect of the property, including criteria considerations, is not adequately documented."¹⁷⁰

In assessing the significance of the cultural landscape, the CLI notes both the significance of the setting in encouraging George Washington

Carver's interest in nature and agriculture, but also the importance of the commemorative character of the national monument, which honors Carver's life and work:

The landscape, which is presented as being intentionally minimally designed, is commemorative in nature reflecting the National Park Service's assessment of George Washington Carver's formative boyhood years where he was exposed to agriculture and other life ways that shaped his personality and contributed to his many achievements. The landscape reflects the location, setting, feeling, and association of Carver's formative years.

George Washington Carver National Monument is significant because it was the birthplace and home where Carver spent his formative years that set him on the road to becoming one of this nation's most distinguished scientists and humanitarians. The park as an established national monument, memorializes the life, accomplishments and contributions of George Washington Carver, and preserves the landscape setting of the Moses Carver Farm where George was born into enslavement. The landscape captures the ambiance in which Carver began his earliest scientific observations about the natural world around him.¹⁷¹

In response to the findings of the CLI, the Missouri State Historic Preservation Office noted:

... we concur with your determination that the Cultural Landscape does contribute to the National Register of Historic Places listed George Washington Carver National Monument district.¹⁷²

National Register Criteria for Evaluation.

In order for a property to be eligible for inclusion in the National Register of Historic Places, it must possess significance under one of four criteria. The Criteria for Evaluation document states:

169. Per correspondence with NPS MWRO regarding National Register nomination update in progress, 2015.

170. *Long-Range Interpretive Plan*; Cultural Landscape Inventory, 18.

171. *Ibid.*, 20. The term "lifeways" refers to a customary or traditional manner of living, including customs, practices, and arts.

172. Mark. A. Miles, Director and Deputy, State Historic Preservation Officer, to Roberta Young, Inventory Coordination, National Park Service, Midwest Region, re: George Washington Carver National Monument, July 12, 2010.

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. That are associated with the lives of persons significant in our past; or
- C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. That have yielded, or may be likely to yield, information important in prehistory or history.¹⁷³

National Register Significance of George Washington Carver National Monument.

The existing National Register documentation, together with additional research conducted on behalf of this study, served as the basis for evaluating the significance of the national monument conveyed herein.¹⁷⁴ The current draft nomination Additional Documentation in progress is cited herein. This documentation was reviewed in terms of relevant National Register criteria and the guidance provided in the National Register Bulletin: *How to Apply the National Register Criteria for Evaluation*.¹⁷⁵ In addition, the findings of the 2010 CLI relative to the significance of the cultural landscape were reviewed in developing this evaluation.

As noted in the draft National Register nomination Additional Documentation, George Washington Carver National Monument is nationally

significant under National Register Criterion A for its association with events that have made a significant contribution to the broad patterns of our history, and under Criterion B for its association with the life of George Washington Carver, a person significant in our past. It is also significant under Criteria Consideration C, a birthplace or grave, as the birthplace of George Washington Carver, and under Criteria Consideration F, as a commemorative property.¹⁷⁶

As noted in the draft National Register nomination Additional Documentation, the national monument is significant in the areas of science, education, community planning and development (park), and conservation.¹⁷⁷

George Washington Carver National Monument is significant as the first national monument, park, or site to recognize an African American, and to recognize a citizen other than a United States President. The creation of a national monument to honor an African American was at least partially rooted in political concerns of the time. Mr. Richard Pilant, Professor of Social Science at Washington University in St. Louis and a strong advocate for the establishment of the national monument, explained in a letter to Secretary of the Interior Harold Ickes:

... may I emphasize that this Memorial was pushed ahead in time of war, because its proponents considered it a war measure designed to furnish a worldwide symbol of racial goodwill for the United Nations now and a partial refutation of the most damaging accusations the Axis has been able to level against us in this war—charges relating to our treatment of the Negro ... as soon as the site is acquired and takes on national official character that representatives of the different United Nations be invited to take part at the dedication thereof as the first memorial in world history consecrated to race peace ...

173. *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (Washington, D.C.: Department of the Interior, 1995).

174. Gibbs; Gavin and Styles.

175. Patrick W. Andrus and Rebecca H. Shrimpton, eds., *How to Apply the National Register Criteria for Evaluation* (Washington, D.C.: National Park Service, 1990, revised 2002 for internet).

176. Gart, National Register Nomination Additional Documentation (draft).

177. Ibid.

that this be an annual affair serving as a world sounding board for the doctrine of race peace and progress.¹⁷⁸

The national monument is important as the birthplace of George Washington Carver, who is considered to be “one of the leading agricultural scientists and humanitarians to emerge in America during the late nineteenth and early twentieth centuries. In addition, he is considered to be one of the most significant African Americans of this same epoch. Since its inception, George Washington Carver National Monument has served as a symbol, for all Americans, of an individual who overcame tremendous odds to realize a number of nationally and internationally significant achievements.”¹⁷⁹ As noted in the CLI, as a reflection of his humble beginnings and formative childhood years. Echoing and building upon the National Register nomination, the CLI describes the influence of his early years as follows:

The natural environment, the self-sufficient lifestyle of the early farmer, and guidance from Moses and Susan Carver, as well as Andrew and Mariah Watkins during his stay in Neosho, were all strong factors during George’s formative years. In later life he spoke favorably of his early experiences on the Moses Carver Farm. From this humble beginning, George Washington Carver rose to become a renowned scientist, educator and humanitarian. His contributions to scientific agriculture and his efforts in an extension service for rural farmers brought him nationwide recognition.¹⁸⁰

As noted in *Springs of Genius*, although most of George Washington Carver’s accomplishments as an educator, botanist, agronomist, and humanitarian occurred at Tuskegee Institute in Alabama, the farm achieves its significance as the place where Carver spent his formative years, assisting in the farm work and exploring the back woods.¹⁸¹ The park interprets the landscape

setting that influenced Carver as a young child and encouraged his development as a scientist, educator, and humanitarian. Upon acquisition of the Moses Carver farm by the NPS, few historic structures were present and little documentation remained of the period of Carver’s early life at the site. Interpretation therefore focused on the natural and agricultural surroundings that would have been present during Carver’s boyhood, and their influence on his life and work. As noted in the 1973 Historic Resource Study and Administration History, the addition of features for interpretive or commemorative purposes “. . . presented a challenge of how to appropriately represent and interpret a complex man of great achievement who preferred a quiet and simple lifestyle and little fanfare.”¹⁸² In initial development of the site, the NPS sought a balance between restoration of the natural landscape (e.g., re-establishing plant communities) and the careful integration of interpretive features and memorials to George Washington Carver.

During the first decade after the NPS acquired the site, the majority of the structures associated with subsequent property owners were removed. A formal entrance to the site was created, with a park-like setting of open lawn and large trees. A picnic area, visitor center, and interpretive trail were established to accommodate visitors and connect them with Carver’s life through interpretive information, access to the landscape features known to Carver, and through provision of peaceful and contemplative spaces.

In particular, to interpret the way in which George Washington Carver experienced and learned about nature as a boy, the NPS developed the Carver Trail to enable visitors to experience the setting as Carver understood it. Along the trail are interpretive features designed to provide information without being visually intrusive. For example, a stone boulder with an inset bronze

178. Pliant to Ickes, January 24, 1944, “Proposed George Washington Carver National Monument, Federal Record Center, Kansas City, Missouri, Accession No. 65A719, FRC 150293, cited in Toogood, 56.

179. Harrington et al., 1; *Resources Management Plan* (1993), 3.

180. Cultural Landscape Inventory, 20.

181. Harrington et al., 1; *Resources Management Plan* (1993).

182. Toogood, 32.

plaque was placed near the birthplace cabin site in 1953; a plaque commemorates the establishment of the park, noting: “Within this area by an Act of Congress of July 14, 1943, is preserved the birthplace of George Washington Carver who rose from slavery to become a distinguished scientist and great force in creating racial understanding.”

The CLI notes that the trail

... is laid out to learn about Carver sequentially from birth into enslavement represented by the outline of the birth cabin, to the curious boy in a secret garden represented by the “Boy Carver Statue,” to a young adult who visited Moses and Susan Carver represented by the late period house, past the cemetery which is not only reflective but also a reminder of his survival and perseverance, to the amphitheater where his inspirational audio message at the Carver bust “start for the top and say ‘I Can,’” which allows for his message to still be delivered freely to all those willing to ask, and then on to the visitor center where education and the memorialization where Carver is presented not as a man of the past, but one of the present and future.¹⁸³

The trail leads from the visitor center past the plaque and site of the slave cabin, into the woodlands along the stream where George Washington Carver spent many childhood hours exploring nature. The Boy Carver statue, designed and cast by Robert Amendola and erected on a limestone boulder near Carver Branch in 1960, reminds the visitor of the young Carver’s curiosity and love of nature. The trail continues past the Williams Pond to the Moses and Susan Carver house, constructed in 1881 and moved to its current location in 1916, which George Washington Carver visited as an adult. The trail then takes visitors to the Carver family cemetery, set aside by Moses Carver as a one-acre plot for use as a family cemetery shortly after he settled in Newton County. The cemetery contains the graves of Moses and Susan Carver, family members, and local residents. The 4-foot-high dry-laid stone wall protecting the graves from livestock was removed

by subsequent landowners and reconstructed by the NPS in 1954.

The trail continues to an amphitheater and the Carver bust exhibit. The bronze-painted cast concrete bust, created by Audrey Corwin in 1952, features an audio recording of George Washington Carver speaking at a commencement address in 1942. The path then leads back to the visitor center, where further information about Carver’s life and achievements is presented.

The national monument contains features that illustrate the natural setting of George Washington Carver’s boyhood years as well as the memorialization of his life and work. The Carver family cemetery is the only remaining constructed feature that was present in the landscape during Carver’s boyhood. The extant Moses Carver house may not have been present when George Washington Carver lived at the Moses Carver farm. Although archeological investigations have identified probable locations of the cabin where Carver was born, no above-ground evidence remains. The landscape and setting convey the character and resources—fields, woods, stream, and abundant trees, wildflowers, and other plants—that supported his development and interests in agriculture, nature, and science. The features added by the National Park Service as part of the establishment and initial development of the national monument circa 1960 contribute to the commemorative theme as part of the interpretive resources created to help visitors understand George Washington Carver’s life and work. The landscape reflects NPS efforts to preserve the qualities of integrity related to setting, feeling, and association, while the trails illustrate the features implemented to support commemoration.

Many of the features that supported visitor needs and those of park operations were constructed between 1953 and 1960 through funding afforded by the NPS nationwide Mission 66 initiative. These features—the visitor center, entrance drive, parking lot, Carver Trail, park maintenance facilities, and the housing and administrative complex—survive today. The visitor center,

183. Ibid., 24.

however, has been significantly altered and no longer conveys its appearance as a Mission 66-era designed structure. The Carver Trail has also been substantially altered, but continues to contribute strongly to the theme of commemoration. The Mission 66 residences, as well as the utility area and maintenance building, were essential to operations and thus support the theme of commemoration through establishment and development of the park. These features, however, do not meet listing requirements as unusual examples of the type under Criterion C and are not indicated here as significant for their architecture.

Period of Significance. The suggested period of significance for George Washington Carver National Monument consists of two timeframes. The first period encompasses the years in which George Washington Carver lived at the site from his birth circa 1865 until he left at the age of eleven to attend the Neosho Colored School in 1876. This period includes the years in which Carver's early life on the farm formed his great appreciation for nature, and led to his lifelong work with plants for agriculture and medicinal uses. As noted in *Springs of Genius*, this period is of the greatest historical significance.¹⁸⁴ The draft National Register nomination documentation describes this period of significance as encompassing:

... the early life experiences of George Washington Carver, from his birth circa 1865, through his childhood and formative years on the Moses and Susan Carver farm, to his departure from the property in search of a formal education circa 1876.¹⁸⁵

The draft National Register nomination documentation also cites a second period of significance extending from 1943 through 1960, noting that this period

... represents the era in which local, state, and national officials, at the urging of Richard Pilant, and others, began actively promoting, and later developing, the landscape dedicated to memorializing the accomplishments of

George Washington Carver. The period concludes in 1960 with the dedication of the Boy Carver statue that today serves as the key component of the commemorative landscape.¹⁸⁶

The second period reflects land acquisition and establishment of park infrastructure by the NPS to support commemoration and interpretation of George Washington Carver's life and work. The draft nomination Additional Documentation provides a start date of 1943 for this second period of significance, based on the date of establishment of the park.¹⁸⁷ The second period concludes with the dedication of the Boy Carver statue as noted in the draft nomination, and also coincides with dedication of the visitor center in 1960.

The CLI suggests that the interpretive development of the cultural landscape through 2007 is significant under the theme of commemoration. Although the NPS site restoration efforts continued through 2007 (and are ongoing), an end date of 1960, as noted in the current draft National Register documentation and confirmed by NPS MWRO, is considered appropriate for the period of significance in that this date is tied to completion of the initial physical development by NPS of the national monument. Alterations and additions constructed between 1960 and 2007 are not linked to the establishment of the park that conveys its primary commemorative significance, and are therefore not considered inherently significant as part of the theme of commemoration.

The dates followed for each period of significance in analysis for this study are thus consistent with those identified for the National Register Additional Documentation, in progress at this writing.

184. Harrington et al., 1.

185. Gart, National Register Nomination Additional Documentation (draft).

186. Ibid.

187. Ibid.; correspondence, NPS MWRO with the authors.

Chapter 3: Existing Conditions and Comparative Analysis and Assessment

3.0 Introduction

This chapter documents, through narrative description, photographs, and labeled maps, the existing landscape features associated with George Washington Carver National Monument. The existing conditions documentation forms the basis for a comparative analysis, which evaluates to what degree the park landscape reflects its character and composition during the periods of significance identified in the previous chapter (circa 1865–1876 and 1943–1960). Comparison of the contemporary landscape with historic conditions helps to identify features that contribute to the National Register of Historic Places significance of the park, and to an understanding of its historic integrity. These qualities are important considerations that help to structure the treatment plan featured in Chapter 5: Treatment Alternatives.

This chapter is comprised of five sections. The first section—**Park Environmental and Cultural Context and Setting**—depicts the character and configuration of the landscape surrounding the park. The second section—**Overall Park Composition**—describes the park landscape as a whole. The third section—**Documentation and Assessment by Landscape Characteristic**—depicts the current condition and historic evolution of extant landscape features. The information is organized into a series of landscape characteristics, which are the tangible and intangible aspects of a property that collectively convey its historic character and aid in the understanding of its cultural importance.¹⁸⁸ They range from large-scale land use patterns and

relationships to site details and materials. The following twelve landscape characteristics are used to document George Washington Carver National Monument:

- **Natural systems and features** are the environmental resources and qualities that have influenced the development and physical form of a landscape. They include the underlying landform and topography, soils, and water resources, as well as attendant native plant communities.
- **Responses to natural resources** are examples of cultural responses to environmental conditions and associated natural features. They include such observances as the methods and materials used to construct and site buildings and structures, land uses relating directly to available resources, and storm water management practices.
- **Patterns of spatial organization** reflect the three-dimensional organization of physical forms and visual associations in a landscape, including the articulation of ground, vertical, and overhead planes that define and create space.
- **Views** are locations that afford expansive and panoramic prospects of the landscape, and can be either naturally occurring or designed. **Vistas** are deliberate directed views often meant to orient the gaze to a linear feature or particular focal point.

188. Page, Gilbert, and Dolan, 53.

- **Topographic modifications** are human-generated alterations of a land surface. Topographic modifications are often associated with such needs as accessing potable water, grading roads and paths, siting buildings, and draining storm water.
- **Land uses and activities** are the principal cultural activities in a landscape that form, shape, and organize it, and are often derived from site-specific environmental conditions.
- **Circulation** includes the spaces, features, and applied material finishes that constitute the systems of movement in a landscape.
- **Cultural vegetation** includes the deciduous and evergreen trees, shrubs, vines, ground covers, and herbaceous plants that have been introduced in a landscape by cultural activities.
- **Buildings** are elements constructed primarily for sheltering any form of human activity in a landscape. **Structures** are elements constructed for functional purposes other than sheltering human activities.
- **Utilities** are the systems and features that store and channel public service elements such as electricity, fuel, telephone, cable, water, and sewer.
- **Small-scale features** are landscape elements providing detail and diversity for both functional needs and aesthetic concerns in a landscape.
- **Archeological resources** are the traces or deposited artifacts in a landscape, evidenced by the presence of either surface or subsurface features.¹⁸⁹

Over the pages that follow, the park's unique features and systems are individually identified and described in accordance with the landscape characteristics noted above. The condition of each of the features is also assessed. All features are considered to be in good condition unless otherwise noted.

The comparative analysis portion of this chapter is composed of a discussion of the origin and evolution of each inventoried feature. Changes that have been made to the feature since its initial establishment and the impact on the character of the feature is also discussed, resulting in an assessment of historic integrity. Those features determined to survive with integrity from the period of significance—that is, continue to convey their historic associations—are identified as contributing resources, while features that postdate the period of significance, or have lost historic integrity, are indicated as non-contributing resources. Features present historically that are no longer extant are also identified, and characterized as missing resources.

The fourth section of this chapter—**Assessment of Integrity**—follows from the information developed as part of the comparative analysis. It is based on a comparison of the overall landscape to each of the periods of significance to determine whether historic associations are conveyed.

The fifth and final section of this chapter—**FMSS Data Table**—summarizes the relationship between the landscape characteristics addressed in the chapter and the park's Facility Management Software System (FMSS).

189. Ibid.; and Linda Flint McClelland, J. Timothy Keller, Genevieve Keller, and Robert Z. Melnick, National Register Bulletin: *Guidelines for Evaluating and Documenting Rural Historic Landscapes* (Washington: Department of the Interior, 1990).

3.1 Park Environmental and Cultural Context

See Figure 33, Context and Location Map.

George Washington Carver National Monument is located along Carver Road approximately 2-1/2 miles from the town of Diamond, Missouri, in the far southwestern corner of the state. The park falls within Marion Township, which is administered as part of Newton County. The Newton County seat is Neosho, located 14 miles to the southwest. The nearest city is Joplin, located 13 miles to the northwest. Although the majority of the city of Joplin falls within adjacent Jasper County, approximately one-quarter of Joplin residents reside in Newton County.

Interstate 44 is the primary east-west route through Southwest Missouri, and Interstate 49 the principal north-south route. Both of these interstate highways come within 8 miles of the park. Visitors reach Carver Road from County Road V, which is accessible from exits associated with the two nearby interstates.

3.1.1 Physiography

George Washington Carver National Monument sits atop the Springfield plateau or plain at the western edge of the Ozark Mountains (Figure 34). The region is known as the Ozark Highlands physiographic province, which is characterized by an area of uplift that extends across much of the southern half of Missouri and the northern third of Arkansas. It is expressed as a low mounded

dome dominated by a central ridge that extends east from the Mississippi River into Arkansas and Missouri. The dome, which exhibits greater relief and steeper slopes than the surrounding terrain, is irregularly broken by local faulting and incisions formed by watercourses as they traverse less resistant bedrock. Isolated hills, referred to as knobs or balds, frequently rise above the surrounding landscape.

The contour signature of the physiographic province includes broad, smooth valleys, and low hills with rounded summits. Slopes associated with stream valleys can sometimes be steep, and feature bedrock escarpments and outcroppings.

The Springfield plateau is an undulating plain that extends west into northeastern Oklahoma. The plateau is bounded on its north and east by the Missouri and Mississippi River valleys and on the south by the Arkansas River valley. The terrain of the Springfield plateau reflects the relative resistance of the underlying geology—composed of limestone and chert—to chemical and physical weathering.

Elevations across Newton County vary to a great degree, ranging from 1,360 feet above mean sea level (AMSL) at the Barry County line, to 830 feet AMSL along Shoal Creek as it crosses the Kansas border.¹⁹⁰ Elevational change within the park is narrower, ranging from a high point of 1,087 feet AMSL along portions of Carver Road and in the southwestern corner of the park to a low of 1,038 feet AMSL where Carver Branch exits the property along its western boundary.

190. Max W. Aldrich, *Soil Survey of Newton County, Missouri* (Washington, D.C.: U.S. Government Printing Office, September 1989), 2.

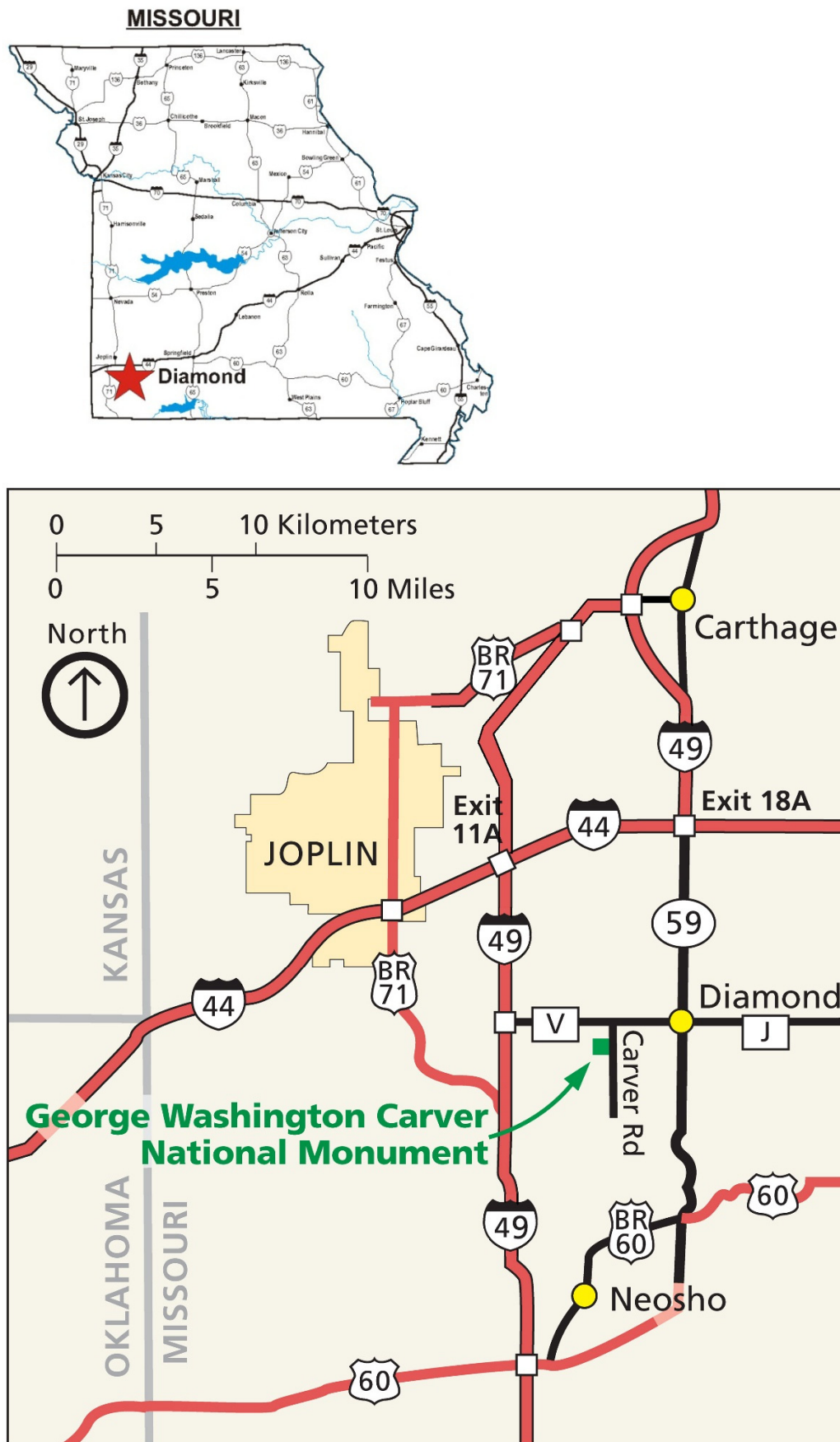


FIGURE 33. Context and Location Map.

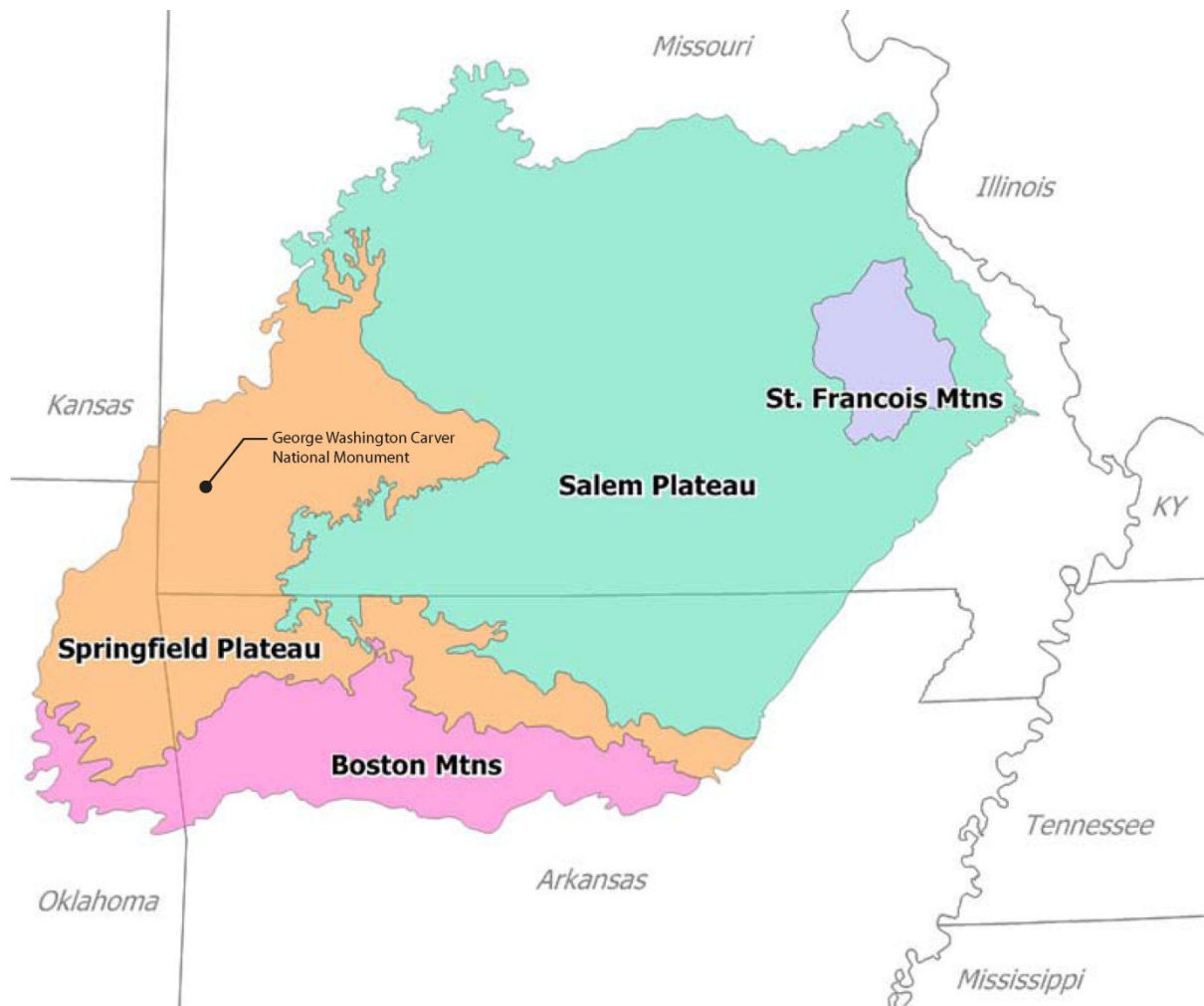


FIGURE 34. Subregions of the Ozark Highlands physiographic province. Source: Wikimedia Commons, 2006.

3.1.2 Geology and Soils

The bedrock associated with the Springfield plateau consists of sedimentary rocks ranging from Mississippian Reed Springs limestone to Pennsylvanian sandstone, but also includes dolomite and shale. The geology is composed primarily of stratified limestone interspersed with layers of boulders and chert, which is an impure form of flint. These rocks are of marine origin and belong to the Mississippian Series of the Lower Carboniferous age. The landforms associated with

the local geology—known as karst—are the result of weathering in the underlying, calcium-rich limestone, coupled with the resistance of the chert. Over millions of years, ground water that has percolated through fractures in the limestone has slowly dissolved and enlarged the fractures until the bedrock is a network of tunnels and caves. Karst features, such as springs, losing streams, sinkholes, and caves, are common features of the limestone geology of the Springfield plateau.¹⁹¹

191. A losing stream, also known as an influent stream, is one that loses water as it flows downstream due to infiltration into the ground. Infiltration occurs because the water table falls below the bottom of the stream channel. This is in contrast to the more

commonly seen “gaining” stream, which increases in water volume as it moves downstream and gains water from the local aquifer. Losing streams are common in regions of karst topography where stream water can be captured by an

The cherty limestone has had a significant impact on soil formation. Residuum, a combination of clay and chert resulting from bedrock disintegration, is often a component of local soils, particularly on the upland prairies.¹⁹² Soils in the region are also composed of wind borne deposits known as loess. The depth of the loess ranges from less than 1 inch to 6 inches, depending on the extent of erosion that has occurred. The soils are typically poor and thin, except in the river valleys. The soils of the Springfield plateau are generally richer than other parts of the Ozark Highlands.

Soils within the park fall within the Hoberg-Keeno association, characterized by gentle to moderately sloping, moderately well-drained, silty and cherty soils on uplands and terraces. This association is well suited to agriculture. Soils are generally shallow with moderate to high permeability. Within Newton County, approximately one-half of the association is used for pasture, hay, or tall fescue seed. The other half is cropped. The primary crops grown include small grains, soybeans, and grain sorghum. Chert fragments on and below the surface, a restricted rooting depth, wetness in spring, and a low available water capacity serve as limitations on agricultural activities. The association is also generally suited to building site development and some kinds of on-site waste disposal. As with agriculture, the limitations of this soil for building purposes include wetness, restricted permeability in the fragipan, and chert fragments.¹⁹³

Within the park, soil types include Hoberg, Keeno, and Wanda silt loams, and Secesh, Cedargap, and Carytown silt loams.¹⁹⁴ The Hoberg, Keeno, and Wanda soils occur on gently to moderately sloping lands on uplands and terraces. They are moderately well to well drained, and have moderate fertility and a low or acidic pH. They tend to occur adjacent to each other and comprise a large percentage of the park's soil composition. They can be classified as dry-mesic to mesic, and

most likely formed under the tallgrass prairie. They are well suited to prairie restoration.

Secesh, Cedargap, and Carytown soils occur along streams or in depressions. These soils are often exposed to flooding and sit above perched water tables. While most are wooded, they are also capable of supporting grassland vegetation. The geology of the region also includes elements that have been the focus of mineral extraction activities. Southwestern Missouri is part of a tri-state zinc and lead mining district with Kansas and Oklahoma. The northwest-trending fold structures and faults, impermeable shale layers above and below the Mississippian limestones, and karst topography are thought to have funneled zinc- and lead-rich fluids into Mississippian-age chert breccias or angular broken rock fragments.¹⁹⁵

Lead was first discovered near the location of present-day Granby, Missouri, in 1850. Lead deposits began to be mined in Granby by 1854. During the Civil War, the contested nature of the region led to the closing of the mines. The mines were reopened after the war; the arrival of rail lines allowed for shipping of extracted minerals to markets, and led to a period of regional prosperity. A mining boom began in Joplin, Missouri, around the turn of the twentieth century and continued until 1957. At one time, the tri-state district was the world's largest zinc producer. During World War I, extraction of lead, zinc, and tripoli contributed to the American military effort.

Circa 1915, a zinc mine was developed in the southwest corner of the Moses Carver farm that operated until about 1920. Paul Miller, a journalist and former resident of Diamond, wrote that the Granby & Neosho mine later included a 250-ton mill erected in August 1929. According to Miller, the mill was owned by the Tulsa-Diamond

underground cavern and subterranean river system formed from limestone bedrock dissolution.

192. Aldrich, 71.

193. Ibid., 8.

194. Harrington et al., 50–51.

195. John Graham, *Geologic Resources Inventory Scoping Summary*, George Washington Carver National Monument, Missouri (National Park Service, Geologic Resources Division, 2011).

Corporation.¹⁹⁶ Although Thomas B. Nolan, the U.S. Geological Survey's acting director, stated that two shafts were sunk in 1935 and 1939 to depths of over 60 feet and 120 feet respectively, the mine appears to have remained idle until the early 1940s, except for some exploratory drilling, when wartime needs spurred a revitalization of mining activities. The mineral rights to the land were then leased by the Liberty Mining Company of Tulsa, Oklahoma, which reportedly began mining operations early in 1942 but had ceased operations by late 1943. Zinc production during this period was relatively small.¹⁹⁷ However, the company left a tailings pile said to be 40 feet high. The 30-acre parcel of the original Moses Carver farm where the mine was located was not acquired with the rest of the park in the early 1950s. The property was later integrated into the park following mitigation of the environmental hazards associated with the tailings from the defunct mine in 2006.

3.1.3 Hydrology

Much of Newton County falls within the Spring River watershed. Shoal Creek is the largest stream within the county. Shoal Creek empties into the Spring River near Riverton in Cherokee County, Kansas. The creek enters the county from the east, and traverses it in a northwesterly direction, continuing through the city of Joplin, where Shoal Creek serves as the primary water supply. One of Shoal Creek's attractions is Grand Falls, a large waterfall located south of Joplin, Missouri, that runs through Wildcat Glades Conservation and Audubon Center.

All of the water resources associated with George Washington Carver National Monument drain into Shoal Creek.

3.1.4 Vegetation

The region falls within a prairie-forest transition zone that forms the western edge of the Eastern hardwood forest, but also includes areas of savanna and prairie typical of the landscape further west. Dominant tree species of the Eastern hardwood forest, including various oaks and hickories, characterize the open woodlands of the region. Otherwise, vegetation generally varies depending on slope, available moisture, solar orientation, soil type, and past land use. Mosaics of bluestem prairie are present where cultivation has not occurred (Figure 35).

Many of the species associated with prairie-forest transition areas, such as oaks and grasses, are highly adapted to fire. Trees often exhibit characteristics such as thick bark and the ability to sprout from the root crown. Fire also stimulates new growth in grasses, while killing other species that compete for light and moisture. The extent of prairie within southwest Missouri prior to European-American settlement, estimated at between 25 and 50 percent of the landcover, can be attributed, at least in part, to frequent grass fires that prevented the establishment of woody vegetation. Without the presence of fire or grazing animals, much of the grassland prairie quickly becomes filled with woody invaders.

196. Paul Miller, "Mining," 81–82; article in the Paul Miller Papers, Special Collections and University Archives, Oklahoma State University, copy obtained at George Washington Carver National Monument archives. Records also indicate that the farm owner permitted mine exploration by Kansas Exploration, Inc., in 1925, and by the Boston Commerce Drilling Company in 1928–1929. ("Lead and Zinc Mine, Potable Water Quality, Newton County National Priorities List of Hazardous Waste Sites," September 30, 2003, File L54, ACF, George Washington Carver National Monument archives.)

197. Thomas B. Nolan, Acting Director, U.S. Geological Survey, to Director, National Park Service, December 8, 1945, File 035, Box 187, CCF, RG 79, NA-CPR.

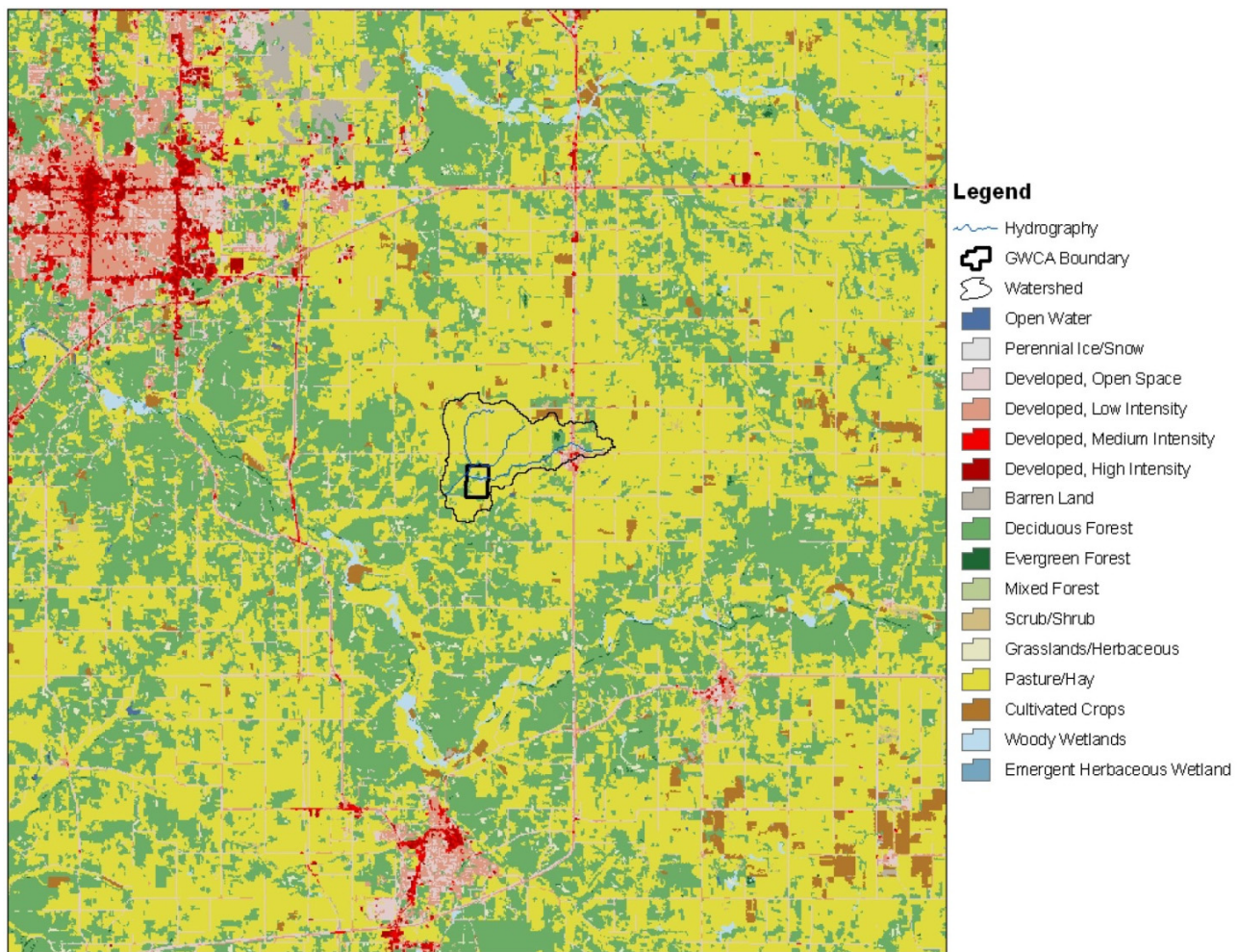


FIGURE 35. Land cover in the vicinity of the park, circa 2011. Source: Annis et al., *George Washington Carver National Monument Natural Resource Condition Assessment* (2011), 12.

Prior to European-American settlement, oak-hickory woodlands typically followed stream courses in the form of gallery forests (Figure 36), or occupied drier uplands in the form of savannas, composed of widely-spaced and open grown trees with grassland understories. The fire that contributed to these vegetation communities and compositions can be attributed to natural causes, such as lightning strikes, as well as anthropogenic activities. American Indians are thought to have regularly used fire as a tool to promote the development of prairie and savanna-like conditions, encouraging the growth of grasses and other herbaceous plants used for food and basket-making material, and to attract megafauna for hunting purposes. Maintenance of open expanses of landscape also facilitated travel and prospects important to protect against attack. The resulting

grasslands produced the deep, rich, soil profile—well suited to crop production—that later benefitted European-American settlers.



FIGURE 36. Image of a gallery forest at Tallgrass Prairie National Preserve, Chase County, Kansas. Source: Liz Sargent.

The two types of wooded conditions associated with southwestern Missouri are savanna and mixed woodlands. In both, oaks and hickories are the most prevalent species, comprising as much as 75 percent of the basal area of mature woodlands. Short-leaf pine and many deciduous species are also part of the overall composition of regional forests.

Today, regional plant communities differ from those present prior to European-American settlement in several ways. First, where gallery forests once edged stream corridors, floodplain communities are today characterized by young invader species and a dense understory of woody growth. Gallery forests once featured mature oaks, elms, and ashes subtended by an understory of grasses. Today, riparian forests contain a greater percentage of fire intolerant species, and a denser character than that present during the mid-nineteenth century. The extent of woodland cover also exceeds that present at the time of early settlement.

The composition of forest communities has changed due to a variety of factors that include cultivation, which depleted soil fertility and led to erosion; logging that disturbed natural woodland succession; fire suppression; the loss of important native species such as the American chestnut (*Castanea dentata*) and elm (*Ulmus americana*) to introduced pathogens; and the displacement of native species by invasive species.

Few stands of native prairie have survived cultivation. The impacts of agriculture are exhibited in the extent of cool-season exotic grasses and invasive species.

3.1.5 Wildlife

Fauna observed at George Washington Carver National Monument is representative of that found in old fields and disturbed woodlands

throughout the Ozark Highlands. Common mammals include the opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), prairie vole (*Microtus ochrogaster*), and hispid cotton rat (*Sigmodon hispidus*).¹⁹⁸ Forty-nine species of birds have been recorded as year-round residents or seasonal visitors within the park.¹⁹⁹ The most common and widely distributed species include the dickcissel (*Spiza americana*), blue jay (*Cyanocitta cristata*), northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), American crow (*Corvus brachyrhynchos*), downy woodpecker (*Picoides pubescens*), and tufted titmouse (*Baeolophus bicolor*).

The park's water resources and wetland habitats are home to several species of reptiles and amphibians. Common faunal species representative of the region include the American bull frog (*Lithobates catesbeianus*), southern leopard frog (*Lithobates sphenoccephalus*), ringneck snake (*Diadophis punctatus*), and three-toed box turtle (*Terrapene carolina triunguis*).²⁰⁰

3.1.6 Threatened and Endangered Species

There are no federally endangered or threatened species known to occur within the park, although several state-listed species of special concern have been documented, or are associated with habitats present within the park. Three grassland obligate birds—the dickcissel, eastern meadowlark (*Sturnella magna*), and grasshopper sparrow (*Ammodramus savannar*)—have been recorded at the park. No forest obligate species have been recorded. The three most frequently observed species of concern and their habitats include the dickcissel (tallgrass prairie or weedy fields), Indigo bunting (*Passerina cyanea*) (brush and low trees of overgrown fields), and Carolina

198. H. W. Robbins, *Inventory of distribution, composition, and relative abundance of mammals at George Washington Carver National Monument* (National Park Service Technical Report, 2005); as summarized in Annis et al., 18.

199. D. G. Peitz, "Bird monitoring at George Washington Carver National Monument, Missouri" (Fort Collins, Colorado: National Park Service, 2009); as summarized in Annis et al., 18.

200. Annis et al., 18.

wren (*Thryothorus ludovicianus*) (woodland understory).²⁰¹

Other bird species of concern observed within the park include the northern harrier (*Circus cyaneus*),²⁰² loggerhead shrike (*Lanius ludovicianus*),²⁰³ and painted bunting (*Passerina ciris*).²⁰⁴ Species identified by the park as important for monitoring purposes, but which are not associated with state or federal listings, include the northern bobwhite quail (*Colinus virginianus*) and Henslow's sparrow (*Ammodramus henslowii*).

One rare fish species—the Arkansas darter (*Etheostoma cragini*)—was observed within the park during a fish survey conducted in 2003.²⁰⁵

The wood frog (*Lithobates sylvaticus*) is the only amphibian identified as a species of concern associated with park habitats, although it has not yet been observed in the park.²⁰⁶

The state-endangered spotted skunk (*Spilogale putorius*) is another species that has not been observed within the park, although suitable habitat exists to support it.

One insect of concern, the regal fritillary (*Speyeria idalia*), has been identified within the park. It is associated with tallgrass prairies and wet grassy areas within the central United States.²⁰⁷

Plant species of concern noted within the park include the royal catchfly (*Silene regia*),²⁰⁸ observed in the park during a 2004 survey, and the American beakgrass (*Diarrhena americana*),²⁰⁹ observed in previous surveys but not during the 2004 survey. There are also five additional species of concern associated with park habitats that have not as yet been observed during survey efforts. They include tinytim (*Geocarpon minimum*),²¹⁰ prairie false foxglove (*Agalinis heterophylla*),²¹¹ earlyleaf brome (*Bromus latiglumis*),²¹² graceful sedge (*Carex gracillima*),²¹³ and velvety tick trefoil (*Desmodium viridiflorum*).²¹⁴

3.1.7 Planning and Zoning

The park is surrounded by privately owned land that is predominantly rural and agricultural in nature. This provides an appropriate setting for the park.

In 1995, however, the park began to grow concerned about development in the region and its potential impact on the landscape setting. The 1995 Superintendent's annual report notes:

The threat of inappropriate use of land around and adjacent to George Washington Carver National Monument is becoming more prevalent, due to the fact that land use is changing in Southwestern Missouri. Developers are buying up the land and building single family homes. More than 50 such homes

201. Ibid., 51–52.

202. Identified at the state level as S2E (imperiled); and at the federal level as G3G4 C (vulnerable, apparently secure, and a candidate for listing).

203. Identified at the state level as S2 (imperiled); and at the federal level as G4 (apparently secure).

204. Identified at the state level as S3 (vulnerable); and at the federal level as G5 (secure).

205. Identified at the state level as S3S4 (vulnerable to apparently secure); and at the federal level as G5 (secure).

206. Identified at the state level as S3 (vulnerable); and at the federal level as G3 (vulnerable).

207. Identified at the state level as S3 (vulnerable); and at the federal level as G3 (vulnerable).

208. Identified at the state level as S1 (critically imperiled); and at the federal level as G4G5 (apparently secure to secure).

209. Identified at the state level as S1 (critically imperiled); and at the federal level as G4G5 (apparently secure to secure).

210. Identified at the state level as E (endangered); and at the federal level as T (threatened).

211. Identified at the state level as S1 (critically imperiled); and at the federal level as G4G5 (apparently secure to secure).

212. Identified at the state level as S3 (vulnerable); and at the federal level as G5 (secure).

213. Identified at the state level as S1 (critically imperiled); and at the federal level as G5 (secure).

214. Identified at the state level as S1 (critically imperiled); and at the federal level as G5 (secure).

have been planned for an area three miles south of George Washington Carver National Monument. Since there is no zoning ordinance in place in Newton County and land owners are not required to get a permit to develop their land, I am very concerned about how the changing land use will impact the historic scene surrounding the park.²¹⁵

Although it has been twenty years since this concern was raised, few residential subdivisions have as yet been developed within view of the park. This remains a concern for the future.

3.1.8 Demographics

In 2010, the United States census recorded a population of 902 for the town of Diamond, Missouri, an increase of 11.6 percent over the 2000 census. Diamond falls within the Joplin, Missouri, Metropolitan Statistical Area. The population of Joplin at the 2010 census totaled 50,150, while the populations of Newton and Jasper counties totaled 58,114 and 117,404 respectively. The population of the city of Joplin has declined since a devastating tornado destroyed large developed areas of the city on May 22, 2011.

Based on review of employment statistics, most Newton County residents work in the health care and social assistance realm, followed by the manufacturing and retail sectors of the economy. Each of these areas of employment provides jobs for between 10 and 18 percent of the population. Local government, accommodation and food service, construction, and farm employment each employ between 6 and 8 percent of the population.

Historically, farming and mining were more important to the local economy. Today, beef cattle, wheat, and soybeans are the chief focus of the region's remaining farms.²¹⁶ Agricultural land uses remain prevalent within the area that surrounds the park. Longhorn and other beef cattle are raised on farms in close proximity to the park.

3.1.9 Climate

George Washington Carver National Monument is located in a temperate climatic zone with weather conditions ranging from extreme heat and humidity in the summer to cold, icy conditions in the winter. More than half of the region's annual 41 inches of precipitation—around 25 inches—falls between April and September, which encompasses the growing season for most crops cultivated within the county.²¹⁷

3.1.10 Regional Related Attractions

There are several local attractions that offer complementary programming to George Washington Carver National Monument. These include the Newton County Historical Museum, Newtonia Battlefield, Battle of Carthage Civil War Museum, Wildcat Glades Conservation and Audubon Center (Joplin), George A. Spiva Center for the Arts (Joplin), Joplin Museum Complex (Joplin), Cunningham Park (Joplin), Big Spring Park (Neosho), Stage Stop Campground (Neosho), Morse Park (Neosho), Fort Crowder Conservation Area (Neosho), Neosho Bicentennial Park (Neosho), Diamond Grove Prairie Conservation Area (Diamond), Walter Woods Conservation Area (Joplin), and Neosho National Fish Hatchery (Neosho). Two of these sites are particularly relevant to the programs and resources available at the park:

Wildcat Glades Conservation and Audubon Center.

The Wildcat Glades Conservation and Audubon Center, located in Wildcat Park within the city of Joplin, is associated with some of the last remaining chert glades, a globally unique habitat found only in this area. The center is also crossed by the biologically rich Shoal Creek stream valley. It protects habitat important to migratory birds and other wildlife. The center offers hands-on environmental education programs and activities, focusing especially on children. The center uses outdoor learning stations along its trail systems, as well as indoor classrooms for its programming.

215. Superintendent's Annual Report, 1995, 2.

216. Aldrich, 3.

217. Ibid., 2.

Diamond Grove Prairie Conservation Area.

Diamond Grove Prairie Conservation Area is one of the largest tracts of tallgrass prairie remaining in southwestern Missouri. Land surveyors in the 1840s described it as “rich rolling prairie;” Diamond Grove retains a similar character today. The area is dominated by native grasses such as prairie dropseed (*Sporobolus heterolepis*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and Indian grass (*Sorghastrum nutans*). An array of wildflowers such as Indian paintbrush (*Castilleja* sp.), blazing star (*Liatris* sp.), lead plant (*Amorpha caescens*), compass plant (*Silphium laciniatum*), and royal catchfly are visible in the flowering season.

Grassland bird species are also prevalent. Visitors can often view the uncommon Henslow’s sparrow, short-eared owls (*Asio flammeus*), and northern harriers. Deer (*Odocoileus virginianus*), quail (*Coturnix coturnix*), and rabbit are common in the brushy fencerows and prairie draws. The conservation area is maintained through prescribed burning to stimulate native prairie plants and control woody encroachment. Mechanical thinning is used to manage a 35-acre woodland within the conservation area that approximates a natural savanna community. Recreational opportunities for visitors include hunting, hiking, bird watching, and outdoor photography.

3.1.11 Park Stakeholders and Constituents

George Washington Carver National Monument has a variety of organizations, public agencies, colleges and universities, groups, corporations, individuals, and tribes involved with activities at the park. The Carver Birthplace Association (CBA), a key partner for the park, operates the visitor center gift shop and serves as the park’s friends group through a fund-raising agreement. The park has a very supportive Volunteer-in-Park program, with approximately 250 to 300 volunteers assisting the park and CBA each year.

3.2 Overall Park Composition

See Figure 37, Existing Conditions map.

The 240-acre park is edged to the east by Carver Road, to the south by Elder Road, and to the west and north by privately-held parcels. The surrounding landscape is generally agrarian and pastoral, composed of cultivated fields and pastures, with modest residential development occurring along road corridors. George Washington Carver National Monument encompasses the entire quarter section acquired by Moses Carver during the mid-nineteenth century for farming purposes.

The park property occupies a relatively level upland site, cut by the stream corridors of Carver, Williams, and Harkins branches. Although the landscape was once primarily in agricultural production, much of the land is managed today as restored native grassland prairie; successional woodland is present along the stream corridors and other low-lying lands.

Visitors arrive at the park via Carver Road. A park identity sign edged by brick piers, planting beds, and a gate mark the entrance. An asphalt drive leads through the park’s developed core—a pastoral landscape of turf, mature shade trees, the entrance road, parking area, visitor center, and picnic area. Parking edges the entrance road to either side; near the visitor center, the drive forms a tear-drop-shaped loop and a drop-off area. The park entrance road is also edged to the north by a grove of mature shade trees. A picnic area is set within the grove. A second picnic area edges the road to the south near the visitor center.

Connecting to the loop is a service drive that leads to the park’s maintenance or utility area, located adjacent to and south of the visitor center. Ornamental plantings edge the visitor center to help screen the work yard and parking lot of the adjacent maintenance area. Also screened from view of the primary visitor use area is a complex of three buildings that face Carver Road to the south of the park entrance. The complex, which features a separate entrance onto Carver Road, is currently used for storage, but was originally constructed to

support park housing needs. Buildings within the complex have also served as park administrative offices. The structures were formally eliminated from the NPS housing inventory in 2009, and approved for demolition and removal from park land. A small storage shed and yard are located at the southern end of the complex.

Visitors generally begin their tour of the park in the visitor center, which houses a rich array of exhibits about the life of George Washington Carver, as well as park administrative functions.

After leaving the visitor center, many visitors elect to follow the park's pedestrian interpretive tour route, composed of the mile-long Carver Trail that provides access to many of the features described by George Washington Carver in his recollections of his boyhood on the farm.

Polished granite stones etched with quotations from Carver edge a walk that links the visitor center and the Carver Trail trailhead. The quote stones are set within beds of ornamental roses. Near the trailhead, located to the north of the visitor center, visitors encounter several commemorative plaques and exhibits, such as the dedication plaque, memorial plaque, and birthplace cabin exhibit. A wayside exhibit interprets the purported location of the cabin where George Washington Carver was born, referencing the wooden structure built by the park to mark the outline of the birthplace cabin.

Beyond the cabin site, the trail enters the wooded Carver Branch stream corridor. The trail traverses the sloped terrain as it falls away toward the stream corridor in a looping switchback. The trail levels out near a spring that feeds Carver Branch. George Washington Carver is known to have explored the environs of the spring as a boy and drawn water here for farm residents. To mark the site, the Boy Carver statue, sculpted by notable artist Robert Amendola, was placed along the trail near the spring in 1960.

The trail continues on through the riparian woodland associated with Carver Branch, crossing the stream via a steel bridge before reaching Williams Pond, a constructed water feature

established in the 1930s by the Shartel family that owned the property between 1913 and 1948. The Contemplative Loop Trail, a spur of the Carver Trail, circumnavigates the pond. Quote stones like those found near the visitor center edge the Contemplative Loop Trail. The two trails rejoin across the dam of Williams Pond. The Carver Trail then continues in a westerly direction to a clearing in the woods at the edge of an open field. Set within the clearing is a dwelling precinct marked by a house built by Moses Carver circa 1881. A grove of walnut trees and a split-rail fence surround the house, which was relocated to this site by the Shartel family from its original location south of Carver Branch in 1916. The NPS interprets nineteenth century life on the farm at the cabin and a nearby demonstration kitchen garden. Views are afforded from the dwelling precinct into adjacent fields, now managed as grassland prairie.

Beyond the house, the trail continues south, crossing Williams Branch and Carver Branch in quick succession. A second steel bridge and elevated wooden boardwalk system conveys the trail across low-lying and inundated terrain. As the trail emerges from the stream valley, it enters open grasslands. Edging the trail for a short distance is a row of walnut trees planted by the NPS in the 1950s to recall the fencerows planted by Moses Carver during the nineteenth century. The row of walnut trees leads to a small family cemetery enclosed within a stacked stone wall. Moses and Susan Carver, as well as other family and community members, are buried in the cemetery. The stone wall was reconstructed by the NPS in 1954 based on oral accounts and archeological investigations.

The trail continues through the grassland prairie, traveling in a northeasterly direction to return to the visitor center. A bust of George Washington Carver, set within a small amphitheater-shaped seating area, edges the trail near the visitor center. An audio recording of George Washington Carver reading a poem can be activated by visitors near the bust. Beyond the bust, visitors return to the visitor center. From the visitor center environs, long views across the restored prairie are afforded to the southwest.

Much of the remainder of the park is managed as restored native grassland prairie. A wooded corridor edges the park's third stream—Harkins Branch—in the northwestern corner of the property, while the site of a former lead and zinc mine, currently characterized by highly disturbed woodlands and grassy fields, occupies the park's southwest corner.

In its character and configuration, the park expresses decades of work designed to appropriately memorialize George Washington Carver. The NPS determined that the most suitable way to memorialize George Washington Carver was to keep the memorial landscape simple, spare, and dignified. Proposals to reconstruct a slave cabin and to erect more elaborate statuary were rejected in favor of simple and meaningful gestures. Park planners have also insisted that the landscape features known to have been important to George Washington Carver during his youth be preserved in such a way as to help convey the park story. Interpretive waysides placed along the Carver Trail introduce visitors to several of the features of the property known to George Washington Carver: native plants, the spring, the woods, and the agricultural landscape. Rose bushes have been planted in front of the visitor center to remind visitors of George Washington Carver's love of flowers, but have been kept simple and minimal in size and expression. This "minimalist" approach is an intentional design feature of the park. The park's ongoing challenge for managing the monument is to ensure that the natural landscape does not overwhelm the memorial site, and that the memorial site does not overwhelm elements of the natural environment that had been formative for George Washington Carver as a child.²¹⁸ The interpretive message conveyed throughout the park draws on site features to reflect Carver's religious ideas, his love of art and music, and his love of plants and nature.²¹⁹

218. Krahe and Catton, 279–282.

219. Ibid.

for

George Washington Carver National Monument

Prepared by JMA, a CCRG company

Drawing No. GWCA 397 127384

PMIS No. _____

Legend

- GWCA Boundary
- 10-foot contour
- 1-foot contour
- Stream
- Spring
- Paved road
- Gravel road
- Mowed path
- Trail
- Building
- Post and board fence
- Post and wire fence
- Split-rail (worm) fence
- Woodland
- Utility line
- Gate

Sources:

National Park Service, Cultural Resource GIS office, CLI GIS conversion project, 2013.

Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).

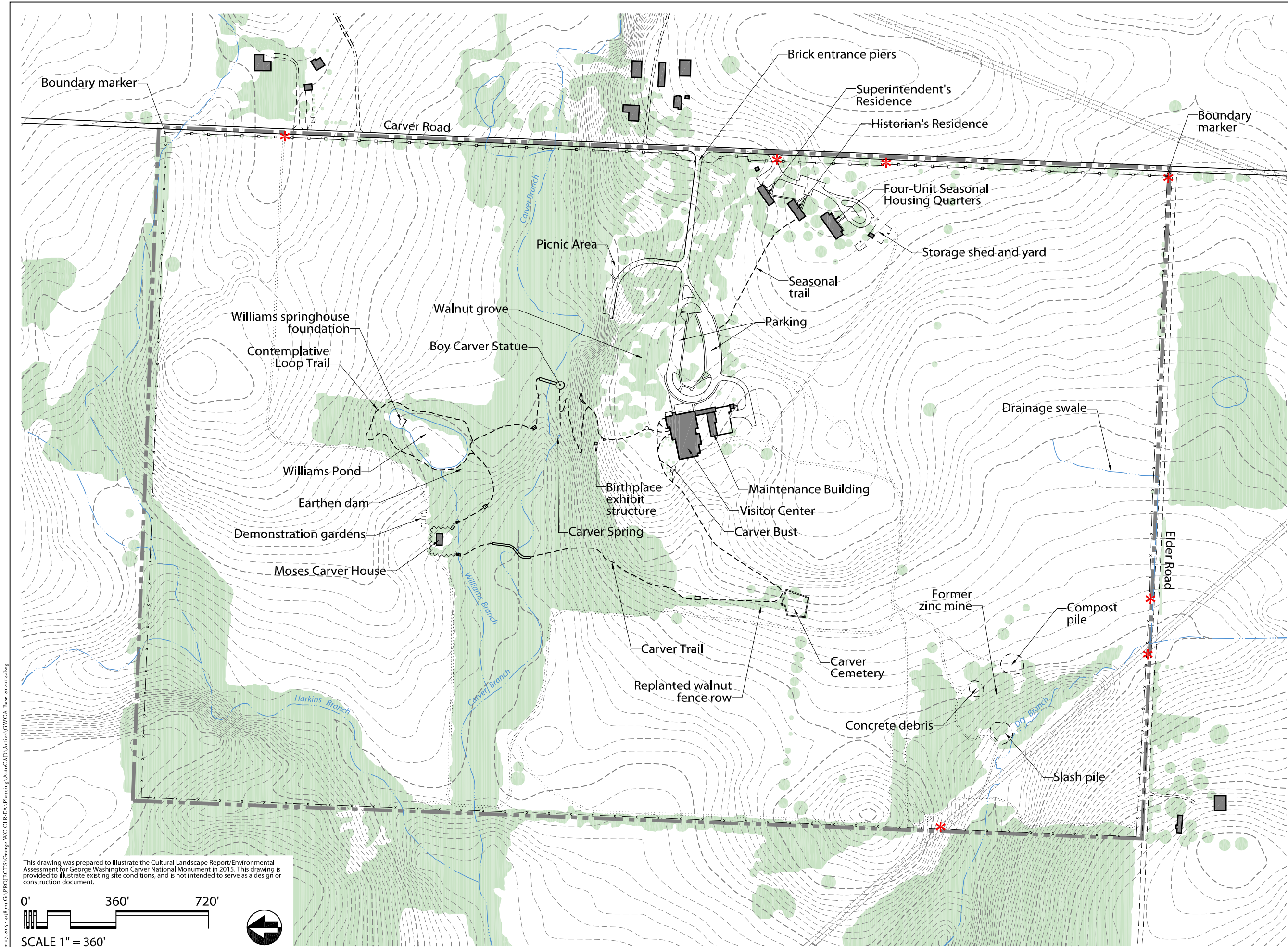


Figure 37.
Existing Conditions

3.3 Documentation and Assessment by Landscape Characteristic

The section that follows identifies each of the discrete physical resources associated with George Washington Carver National Monument. The features are arranged by landscape characteristic. For each landscape characteristic section, an introductory paragraph describes the range of features present within the park, and identifies which of these contribute to the significance of the park landscape. The introductory paragraph is followed by a physical description of each feature, and an indication of the feature's origin and subsequent evolution. For each landscape characteristic, any features known to have been present historically that are no longer extant are also discussed. An inventory of the contributing, non-contributing, and missing features occurs at the end of each landscape characteristic section.

3.3.1 Natural Systems and Features

George Washington Carver National Monument currently contains a variety of natural systems and features, ranging from water resources to native plant communities; many of these were known to George Washington Carver. In fact, natural features and systems are one of the primary characteristics of the park landscape that link George Washington Carver's memories to his birthplace. As Carver later noted:

My home was near Neosho, Newton County, Missouri, where I remained until I was about 9 years old. My body was very feeble and it was a constant warfare between life and death to see who would gain the mastery.

From a child I had an inordinate desire for knowledge, and especially music, painting, flowers, and the sciences, algebra being one of my favorite studies.

Day after day, I spent in the woods alone in order to collect my floral beauties, and put them in my little garden I had hidden in brush

not far from the house, as it was considered foolishness in that neighborhood to waste time on flowers.

And many are the tears I have shed because I would break the roots or flowers of some of my pets while removing them from the ground, and strange to say all sorts of vegetation seemed to thrive under my touch until I was styled the plant doctor, and plants from all over the country would be brought to me for treatment. At this time, I had never heard of botany and could scarcely read. Rocks had an equal fascination for me and many are the basketful that I have been compelled to remove from the outside chimney corner of that old log house, with the injunction to throw them downhill, I obeyed but picked up the choicest ones and hid them in another place, and somehow that same chimney corner would, in a few days or weeks, be running over again to suffer the same fate. I have some of the specimens in my collection now and consider them the choicest of the lot.²²⁰

Taken together, the natural systems and features present within the park include three perennial streams—Carver, Harkins, and Williams branches—as well as Carver and Williams springs, the intermittent Dry Branch stream corridor, riparian woodlands, and native grassland prairie. The three stream corridors, along with Carver Spring and Dry Branch, survive with integrity from the nineteenth century period of significance. Williams Spring has been inundated by a pond created during the early twentieth century, and is no longer in evidence within the landscape except when water levels in the pond are low. The native grassland prairie is a plant community that has been actively managed by the NPS since the 1980s to reflect pre-European-American settlement, and does not contribute to the historic park landscape. Aspects of the riparian woodland that edges Carver, Williams, and Harkins branches reflect nineteenth century conditions. With diminished integrity, these woodlands also contribute to the significance of the park landscape.

220 . George Washington Carver, as quoted in Toogood, 46–47.

Water Resources. As noted above, the water resources associated with the park include Carver, Williams, and Harkins branches, Carver and Williams springs, and Dry Branch. Carver Branch is one of the primary features of the park's interpretive landscape and the focus of the Carver Trail that affords interpretation of George Washington Carver's life on the farm. Carver Branch flows through the center of the park. Carver Spring empties into the branch north of the visitor center. As an adult, George Washington Carver recalled drawing water from the spring. The Boy Carver statue is sited in close proximity to this important feature. Williams Branch empties into Carver Branch within the park, and is also a feature of the Carver Trail. Harkins Branch is located in the northwestern corner of the park, and presently little interpreted, although it is edged by high quality woodlands. Dry Branch (Figure 38) is located in the southwestern corner of the park, and also not an important element of the visitor experience.

Carver Branch. Carver Branch traverses the park from east to west, forming a central wooded corridor. Both Williams and Harkins branches empty into Carver Branch, Williams Branch within the park, and Harkins Branch just outside the park boundary to the west. Carver Branch eventually empties into Shoal Creek northwest of the park.

The Carver Trail passes through this corridor for much of its length (Figure 39). The source of

Carver Branch is located a short distance to the east of the park. Carver Branch is classified as a losing stream by the state of Missouri. Data collected during several efforts conducted between 2003 and 2010 indicates that twenty-two fish species are present within park waters. The species present, which are typical of small headwater streams, include southern redbelly dace (*Chrosomus erythrogaster*), central stoneroller (*Camptostoma anomalum*), and green sunfish (*Lepomis cyanellus*).²²¹ As noted above, the Arkansas darter, a species of conservation concern, has been observed in Carver Branch.²²² The grass carp (*Ctenopharyngodon idella*), an introduced species potentially detrimental to native species, may be present within park waters.²²³

The park has monitored the water quality of Carver Branch and Spring since discovery of chemical and fecal pollutants and high mercury levels in 1983, and has worked to address runoff and other source problems upstream.²²⁴

Although the watershed of this stream exists in a primarily agricultural landscape, the water quality and physical habitat is generally good. It is possible that there is mild impairment from threats outside of the park boundaries.²²⁵ Land use changes on nearby areas have the potential to impact this resource.²²⁶

221. B. G. Justus and J. C. Peterson, *The fishes of George Washington Carver National Monument, Missouri* (Reston, Virginia: U.S. Geological Survey, 2005).

222. Missouri Natural Heritage Program 2010.

223. Annis et al., 18.

224. Superintendent's Annual Report, 1983.

225. D. E. Bowles, "Aquatic invertebrate monitoring at George Washington Carver National Monument: 2005-2007" (Fort Collins, Colorado: National Park Service, 2009), in Annis et al., 18.

226. Annis et al., 89-90.

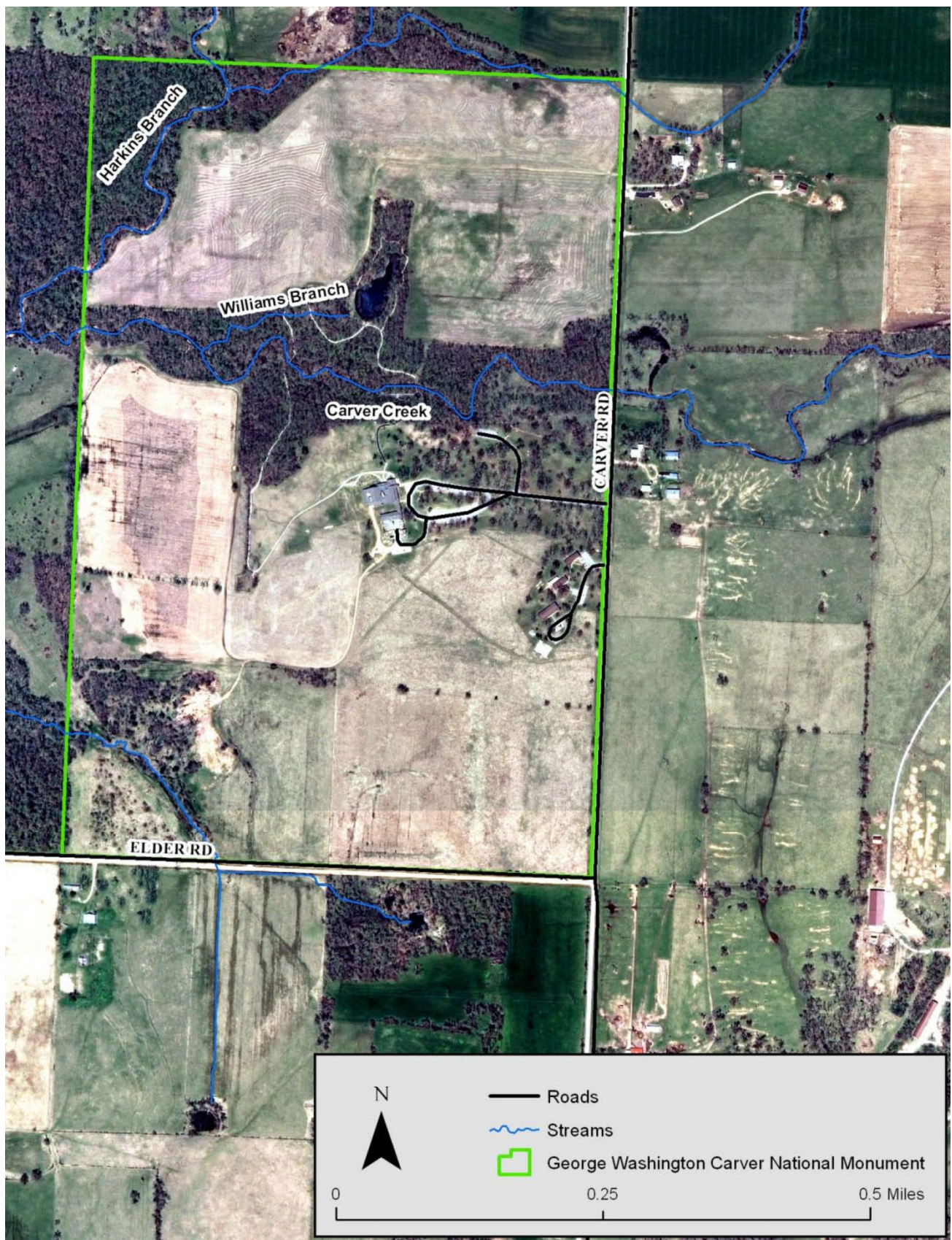


FIGURE 38. Streams within the park. Source: Annis et al. George Washington Carver National Monument Natural Resource Condition Assessment, 9.



FIGURE 39. Carver Branch and the riparian corridor.

Harkins Branch. Harkins Branch, located in the northwestern corner of the park, is larger than Carver Branch in terms of discharge but is a tributary. The water quality of the branch is considered to be good. The fish communities within Harkins Branch are generally diverse and healthy. As with Carver Branch, the cardinal shiner (*Luxilus cardinalis*) and the stippled darter (*Etheostoma punctulatum*) are present, and may be of special interest because they are endemic to the Ozark Plateau.²²⁷ The Arkansas darter is also known to be present in Harkins Branch.²²⁸ Harkins Branch shows greater stream bank instability than the other two streams, and only a small segment is contained within the park, so impacts from off-site pollutants may be a concern.

Williams Branch. This stream flows into Carver Branch in the central part of the park, with Williams Spring serving as its origin (Figure 40). Overall water quality is similar to Carver Branch, and similar fish species are known to inhabit the branch. Carver and Williams branches share a floodplain, and are similarly affected by surrounding agricultural activities.



FIGURE 40. Williams Branch feeds into Carver Branch.

Dry Branch. This is an intermittent stream channel located near Elder Road in the southwestern corner of the park (Figure 41). The channel is watered during the spring when groundwater levels rise in response to the rainy season, before summer heat and drought contribute to drying trends.



FIGURE 41. Dry Branch, an intermittent stream in the southwest corner of the park.

227. Justus and Peterson.

228. H. R. Dodd, D .E. Bowles, S. K. Mueller, and M. K. Clark, *Fish community monitoring at George Washington Carver: 2006-2007, 2010 status report* (Fort Collins, Colorado: National Park Service, 2011).

Drainage Swale. Overland flow of storm water has formed a drainage swale in the field south of the visitor center. This swale has likely been present since Carver ownership of the farm. It is not known to what degree farming has degraded the swale by contributing to erosion.

Springs are the outflow of subterranean streams. Two springs are known to exist on the property. These include Carver and Williams springs.

Carver Spring. This spring remains a free-flowing water source. It forms a very short spring branch that flows into Carver Branch.

Williams Spring. This spring is a naturally occurring water source that was known to the Carvers during their ownership of the farm. The spring is currently located under and inundated by Williams Pond. The pond, a constructed water feature that was added after Carver ownership, may have affected the hydrology of the spring.

The water resources present within the park are known to have been important, even critical, landscape elements of the Moses Carver farm. Carver appears to have settled this land based as much on the level terrain and fertile soils as on the abundant water supply. Carver is known to have sited his farmstead in close proximity to the two springs and Carver Branch. These streams and springs were an integral part of the farm, and well known to George Washington Carver as a boy. Moses Carver also likely chose sites for cultivation that were near, but not adjacent to, these water sources, where timber suggested the ground was well watered.

George Washington Carver is thought to have been responsible for bringing water to the Carver cabin from the Carver Spring during his childhood on the farm. The spring is one of the cultural landscape features that can be connected to George Washington Carver's direct knowledge of the farm.

Today, the stream corridors and the Carver Spring are generally more wooded than they were during the nineteenth century, and the site has also been marked with commemorative features such as the Boy Carver statue, Carver Trail and associated wayside exhibits, and landscaping. Several of these features were constructed during the park establishment period of significance.

Another important change to water resources since the nineteenth century has been the addition of Williams Pond, created through impoundment of the stream corridor with a dam. The pond was in place prior to park establishment, but was enlarged by the NPS in 1978–1979 when the dam required replacement. This led to the inundation of Williams Spring. In 1977, U.S. Fish and Wildlife stocked the pond with fifty rainbow trout.²²⁹ The pond is also known to have been stocked by the park, in cooperation with the Missouri State Fisheries, in 1984.²³⁰

Water quality concerns associated with the park's streams (chemical and fecal pollutants) and springs (high mercury levels) were identified by Missouri Southern State University students in 1983. In response, the NPS initiated a three-year water resource quality study.²³¹ In 1984, the park's water quality was found not to meet state standards. In investigating the source of the pollution, it was determined that the city of Diamond was not maintaining adequate sewage lagoons for its treatment facilities.²³²

The park's water resources, with the exception of Williams Pond, and the currently inundated condition of Williams Spring, survive from the nineteenth century period of significance, with diminished integrity of setting, and contribute to the significance of the park.

Plant Communities. Plant communities associated with the park fall into three broad categories: ornamental and other cultural vegetation associated with the park's developed core addressed below under the Cultural Vegetation section, riparian and upland

229. Superintendent's Annual Report, 1977.

230. Superintendent's Annual Report, 1984.

231. Superintendent's Annual Reports, 1983, 1984.

232. Superintendent's Annual Reports, 1984, 1985.

successional woodland communities, and restored native grassland prairie. The prairie and woodland communities are further delineated based on species compositions derived from a combination of soil types, available moisture, solar aspect, previous land use, and stand age. As noted in the park vegetation map (Figure 42) plant communities can be more specifically identified as:

bottomland oak-hardwood forest; bottomland successional deciduous sparse woodland and shrubland; upland prairie and savanna (wooded); upland successional deciduous sparse woodland and shrubland; and upland successional and disturbance grassland. There are also two wet prairie areas denoted as bottomland successional herbaceous vegetation.²³³

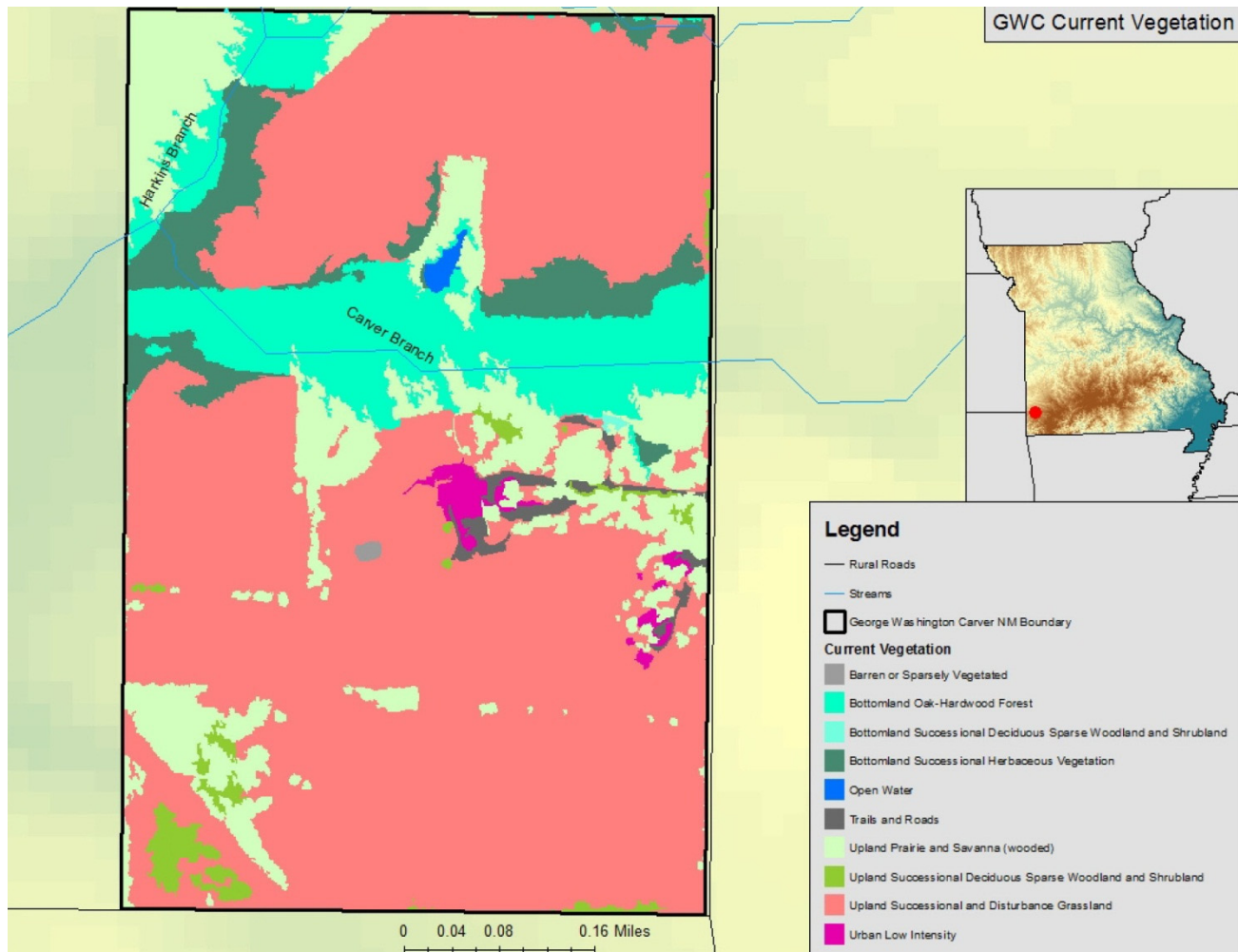


FIGURE 42. Vegetation communities within the park. Source: Annis et al. George Washington Carver National Monument Natural Resource Condition Assessment, 48.

233. Michael P. Burfield and Charles H. Nilon, *George Washington Carver National Monument: Integrated Vegetation Management Recommendations* (Columbia, Missouri: University of Missouri Department of Fisheries and Wildlife Sciences, June 2011), 9.

These communities have developed on the site of former croplands or where logging has removed woodland cover at some point in time. Although portions of the current woodlands may never have been plowed due to soil wetness or steep slopes not suited to crop production, the woods are likely to have been used to graze animals during the nineteenth century, and trees have been removed for many purposes. There are no woodlands or prairie communities that survive from Carver ownership of the farm, although in 1942 the Shartel's described the property as featuring enormous walnut and elm trees—most of which were there when George Washington Carver was born.”²³⁴ Most of the extant woodlands have arisen through secondary succession and are less than 100 years old.

The extant plant communities at George Washington Carver National Monument generally reflect the efforts conducted by the NPS since the 1980s to restore native grassland prairie and to enhance the health of native woodland communities. These two landcover types experienced extensive disturbance beginning in the second quarter of the nineteenth century, due to European-American settlement and associated agricultural use of the land. Native grassland prairie extends over the majority of the former field and pastureland associated with the Carver farm. Although prairie is known to have been present when Moses Carver settled the farm, some was cultivated, while much of the remainder served as pasturage for livestock. Despite a history of crop production, the remnants of mima mounds, common on native prairies such as Diamond Prairie nearby, are still evident in grasslands across much of the park.²³⁵

Similarly, the woodlands conveyed a more open-grown appearance during the nineteenth century due to such influences as fire and grazing. Thus the plant communities present today little resemble those present during the Carver period, and have

changed to a great degree since the early park development period of significance.

Woodlands. Based on previous natural resource studies, the park's woodlands are generally characterized as mesic riverfront forest undergoing succession following widespread disturbance prior to NPS acquisition (Figure 43).²³⁶ The majority of the park's woodlands generally follow the Harkins and Carver branch stream valleys, but woodland is also present along portions of the park boundary and within the former lead mine site parcel. Past cultural activities, primarily farming, grazing, and timbering, as well as the introduction of invasive exotic plant and animal species, have served to degrade the quality and integrity of the park's woodland vegetation. The woodlands associated with the remediated mine tailings site are the most highly disturbed, while the woodlands in the park's northwest corner that follow Harkins Branch are in the best condition. This woodland was historically white oak/burr oak-pecan, floodplain forest (small drainages).



FIGURE 43. Woodland in the Carver Branch stream valley.

The woodlands that relate directly to the stream corridors—Harkins Woods and Carver Woods—together cover approximately 61 acres of the park. Dominant species include hackberry (*Celtis occidentalis*), American elm, black walnut (*Juglans nigra*), and slippery elm (*Ulmus rubra*). Sycamore

234. Stratton Shartel to Dewey Short, Member of Congress, 6 April 1942, Folder 373, Dewey Short Papers, SHS-MO.

235. Mima mounds are low, flattened, circular to oval, domelike, natural mounds that are composed of loose, unstratified, often gravelly sediment that is an overthickened A horizon.

236. Harrington et al.

(*Platanus occidentalis*) and green ash (*Fraxinus pennsylvanica*) are also important species within these plant communities. Oaks and hickories are important components of the riparian and upland forests of the region. The highest density of oaks, particularly burr oak (*Quercus macrocarpa*), is found within the western portion of Carver Branch.²³⁷

These woodland communities convey a species composition that has been described as ruderal, or in the early stages of succession, by Diamond et al., as follows:

Early successional and invasive species are characteristic of this type. Black walnut, common hackberry, slippery elm, American elm, green ash, Osage orange (*Maclura pomifera*), and honeylocust (*Gleditsia triacanthos*) are found throughout. Coralberry (*Symphoricarpos orbiculatus*) and multiflora rose (*Rosa multiflora*) are common shrubs, while Virginia creeper (*Parthenocissus quinquefolia*) and poison ivy (*Toxicodendron radicans*) are common vines. Japanese honeysuckle (*Lonicera japonica*) formed a mat on the forest floor in some locations, and other non-native invasive species such as winter creeper (*Euonymus fortunei*), bromes (*Bromus tectorum*, *B. arvensis*), ground ivy (*Glechoma hederacea*), and tall fescue (*Schedonorus phoenix*) have established colonies characterized as the locally dominant ground flora. Communities along Carver Creek and Williams Branch in the central part of the park contain more large trees than other areas. Sycamore forms a gallery of large trees at water's edge in some places. Succession in this area may lead to more mature forests that fit within the National Vegetation Classification system as *Fraxinus pennsylvanica* – *Celtis* spp. – *Quercus* spp. – *Platanus occidentalis* Bottomland Forest (CEGL002410) over the next few

decades. Communities in the southwest portion of the park appear more disturbed with fewer large trees and a more open canopy versus other woodlands, and Eastern red cedar (*Juniperus virginiana*) is more common.²³⁸

Additional woody growth areas are identified as ruderal shrubland by Diamond et al., and described as follows:

This shrubland is dominated by weedy and early successional species such as Osage orange, honeylocust, hortulan plum (*Prunus hortulana*), and Pennsylvania blackberry (*Rubus pensilvanicus*). Non-native tall fescue (*Schedonorus phoenix*) together with annual and short-lived perennial grasses and forbs such as field brome and Canada germander (*Teucrium canadense*) are common.²³⁹

According to the 1841 General Land Office survey notes for Section 7, which includes the park, the property where Moses Carver established a farm circa 1838 was composed almost entirely of native prairie and savanna.²⁴⁰ Prairie was indicated as the dominant land cover, with only the extreme southwestern corner of the section in timber, including post oak (*Quercus stellata*), black oak (*Quercus velutina*), blackjack oak (*Quercus marilandica*), and hickory (*Carya* spp.).²⁴¹ It has also been estimated that a gallery forest approximately thirty feet wide edged Carver and Harkins branches to either side prior to settlement.²⁴² Wetter prairie likely edged upland drainageways, while the lower lying drainageways were probably wooded.²⁴³

Other published sources describe Newton County as potentially two-thirds wooded, with bands of oak/hickory and short-leaf pine edging stream corridors and topping hills. The extent of wooded area likely fluctuated in response to factors such as

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237. C. C. Young, S. A. Leis, and D. G. Peitz, *Vegetation Management Alternatives for George Washington Carver National Monument* (Republic, Missouri: Heartland Natural Resource Monitoring Program, 2010).
238. Diamond et al., 19–20.
239. Ibid., 26–27.
240. Walter A. Schroeder, *Presettlement Prairie of Missouri* (Jefferson City, Missouri: Department of Conservation, 1981).

241. Harrington et al., 55.
242. J. R. Jackson, *1985 Prairie Restoration Action Plan, George Washington Carver National Monument* (National Park Service, 1984).
243. T. A. Nigh and W. A. Schroeder, *Atlas of Missouri Ecoregions* (Jefferson City, Missouri: Missouri Department of Conservation, 2002).

precipitation levels and fire frequency. Regular burning, which occurred naturally from sources such as lightning, and through the deliberate actions of American Indians, also helped to maintain a relatively clear understory within wooded areas.²⁴⁴

The woodlands, primarily described as savanna, were likely oak-hickory forests composed of a mosaic of associations reflecting soil moisture conditions, elevation, and orientation. Species most frequently encountered in upland areas would have included black oak, black hickory (*Carya texana*), Eastern red cedar, American and slippery elm, post oak, blackjack oak, mockernut hickory (*Carya tomentosa*), and flowering dogwood (*Cornus florida*). Moist ground supported sugar maple (*Acer saccharum*), chinquapin oak (*Quercus muehlenbergii*), red oak (*Quercus rubra*), shumards oak (*Quercus shumardii*), and black oak. Bottomlands featured hackberry, American elm, Ohio buckeye (*Aesculus glabra*), bitternut (*Carya cordiformis*), black maple (*Acer nigrum*), basswood (*Tilia americana*), slippery elm, black walnut, red maple (*Acer rubrum*), green ash, sycamore, and chinquapin oak.²⁴⁵

The Carvers likely experienced a rapidly changing landscape that reflected the impact of fire suppression, clearing, grazing, and cultivation. As a result, the species composition and structure of both prairie and woodlands would have quickly changed, with woody species beginning to take hold within the prairies, and understory growth emerging in the gallery forests.²⁴⁶ The Moses Carver farm would also have affected the native woodlands, as the family harvested timber to build their cabins and fence rails, and girdled trees to make way for fields in the stream bottoms. Certain species would have been preferred, and thus harvested first. For examples, short leaf pine (*Pinus echinata*) would have been a preferred tree for cabin building, followed by white and burr oak.

Hackberry would have been preferred for fence rails.²⁴⁷

Foraging livestock likely influenced the unmanaged areas. Foraging swine tend to favor acorns, hickory, and walnuts, while cattle prefer grass species like big bluestem. This would have diminished the regenerative ability of oak and hickory species, and lowered the diversity of the plant communities, also favoring the emergence of species not popular with foraging livestock, such as aggressive and thorn-bearing species. Unimproved prairie land was likely used as a source of hay. Bottomland grasses and sedges would have been fed to the stock during winter.²⁴⁸

Today, the woodlands contain many fire intolerant species that would not have been present historically, and a much denser understory. Fire suppression and the removal of grazing animals from the landscape has affected species composition and led to a denser stand of trees and shrubs.

The successional woodland, while more extensive in land area than that present during both the Carver period and the early park establishment period, and with a composition of species that is altered due to several factors, nonetheless is a contributing resource that represents an example of gallery forest linked to the site's hydrology and landform and topography. These woodlands, however, have highly diminished integrity.

Native Grassland Prairie. Restored prairie covers more than 130 acres of the park. This vegetation community is classified by Diamond et al. as Restored Tallgrass Prairie, dominated by little bluestem and Indian grass. Present-day land cover management activities target a return to pre-settlement grassland conditions, rather than the agricultural stands that were present during the mid- to late-nineteenth century. The restoration areas, which contained few, if any, patches of remnant prairie at the time the program was initiated in 1982, are located on

244. Harrington et al., 47.

245. Jackson.

246. Ibid., 62.

247. Ibid.

248. Ibid.

the former pasture and cropfields that supported cultivation of non-native and annual plant species during the Carver and Shartel periods of ownership (Figure 44).²⁴⁹



FIGURE 44. Restored prairie in the western portion of the park.

The present prairie community is described in Diamond et al. as follows:

This grassland community is usually dominated by native tallgrass prairie species such as big bluestem, Indiangrass, and little bluestem. Restoration efforts have not been uniformly successful, and in some patches, usually <500 square meters, shrubs and annual grasses are among the dominants. Field brome was commonly important in these patches. Shrubs, including Pennsylvania blackberry and sumac (*Rhus copallinum* and *Rhus glabra*) are common components, and are among the visual dominants in some patches after one or more years of rest following mowing or prescribed fire. A wide variety of other herbaceous species were present, including rush (*Juncus* spp.) and sedge (*Carex* spp.) species, composite dropseed (*Sporobolus compositus*), and blackeyed Susan (*Rudbeckia hirta*). The herbaceous flora varied based on soil characteristics and, apparently, on past restoration history, which was not perfectly documented.²⁵⁰

Two areas of the prairie experience wet conditions throughout much of the year. Neither has been classified as wetlands. These two sedge-dominated communities are naturally emerging over pockets of Carytown soils in the west-central and southeast portions of the park.²⁵¹

For management purposes, the NPS has organized the prairie restoration into nine management units (Figure 45).

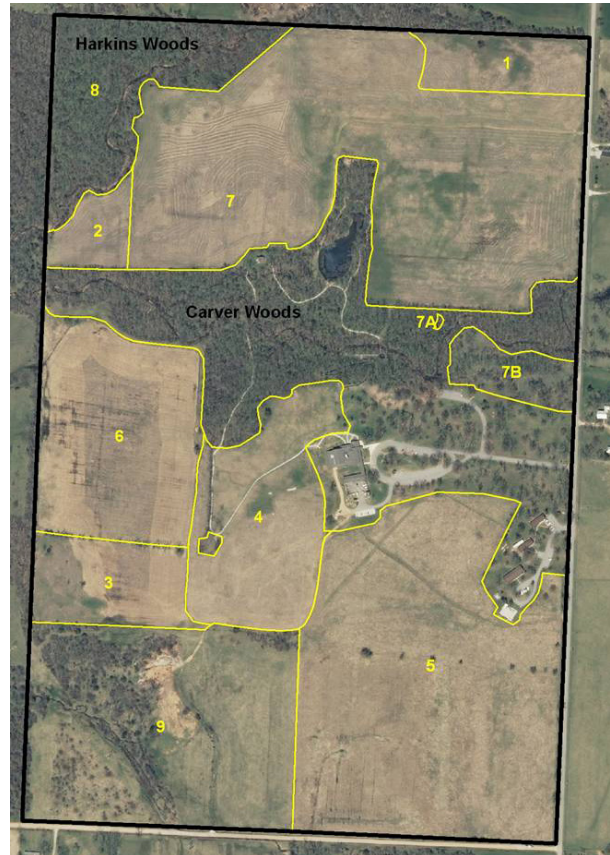


FIGURE 45. Prairie management units within the park. Source: Young, Leis, and Peitz, "Vegetation Management Alternatives for George Washington Carver National Monument," 2.

249. J. Jackson and B. Bensing, *A Historic and Vegetational Survey of the Five Prairie Management Units at George Washington Carver National Monument* (National Park Service, 1982).

250. Diamond et al., 29–32.

251. Harrington et al., 117.

The most recently added is prairie management unit 9, located of the former lead and zinc mine. The vegetation currently associated with the unit is classified as Non-native Ruderal Grassland by Diamond et al. as follows:

This mapped vegetation type was dominated by tall fescue, which was often the overwhelming dominant, and other successional grasses and forbs. Ruderal shrubs and small trees were often present, including Pennsylvania blackberry, hortulan plum, multiflora rose, honeylocust, and Osage orange.²⁵²

Tracing the evolution of plant communities between pre-settlement and the present day illustrates the nature of the changes that have occurred over time as well as the character and composition of the communities during different periods; this information may prove useful in anticipating the future condition of these communities.

Current park management is focused on restoring grassland prairies to pre-settlement conditions. The basis for understanding native vegetation and plant communities prior to European-American settlement of the area has stemmed from review of narrative accounts of travelers, General Land Office survey records (which in this area date to 1840–1841), and analysis of soil types and other environmental conditions that suggest the likelihood for certain plant associations.

There are no known first-hand accounts of the Moses Carver farm during early settlement that describe native vegetation. Scientists believe that prairies were an important land cover type in the pre-settlement landscape of Newton County, potentially covering one-third of the total land area.²⁵³ Tallgrass prairie was primarily associated with the level to rolling uplands, with woodland covering drier hill tops and edging stream valleys and corridors.

American Indians, including the Osage Nation present within the area at contact, are thought to have been instrumental in maintaining the land in prairie through the use of fire.²⁵⁴ Another factor in vegetation composition prior to European-American settlement was the presence of large herbivores such as bison that fed on grasses and forbs, influencing the composition and structure of the prairie, and creating non-vegetated gaps known as wallows.

The pre-settlement prairies existed as two principal types: dry-mesic chert prairie with swale inclusions—the same classification given to nearby Diamond Prairie—as well as dry-chert prairie.²⁵⁵

Dry-mesic chert prairie occurs on hills and plains on gentle to moderately steep slopes and ridges of all aspects. Several grasses, such as little bluestem, broom sedge, and Indian grass, are prevalent, although forbs are also present. This type of prairie typically was fire maintained. Today, this type of prairie is rare due to its association with prime farmland that has been converted to cropland or pasture.

Dry-chert prairie is associated with steep south and west facing side slopes of hills and plains along major prairie stream drainages. It is a mid-grass type characterized by little bluestem with mixed herbaceous flora. Due to the fact that this prairie type is fire maintained, it is now rare within the region.²⁵⁶

Based on analysis conducted in 2010 by representatives from MoRAP, comparison of historic soil compatibility and current vegetation maps can be used to predict native vegetation based on soil types (Figure 46). From this analysis, most of the park currently managed as restored grassland prairie was designated as, in descending order: little bluestem/prairie dropseed-big bluestem, bluestem prairie; post oak/chinquapin oak-bluestem, post oak-bluestem prairie or

252. Diamond et al., 27–29.

253. Harrington et al.; and Schroeder.

254. Harrington et al., 47.

255. Paul W. Nelson, “The Terrestrial Natural Communities of Missouri” (Jefferson City, Missouri: Missouri Department of Natural Resources, 2005).

256. Harrington et al., 55.

savanna; and big bluestem/prairie cordgrass-switchgrass, mesic tallgrass prairie.

There are also few descriptions of the Moses Carver farm that include detailed identification of plant communities during George Washington Carver's life there. According to *Springs of Genius*, by the 1860–1870s:

the conversion of prairie to agricultural purposes would have been nearly complete . . . by the late 1870s there was probably very little uncompromised prairie left on the Carver farm. At least 100 acres had been developed as fields. The remaining open land was probably intensely grazed. . . . What prairie remained on the Carver farm would most likely have been restricted to fence rows, hedges and patches of marginal land used for pasture and hay production. These remnants would be significantly different from pre-settlement prairie, but because the composition of the pre-settlement prairie is unknown, the full extent of the changes cannot be determined.²⁵⁷

As noted, Moses Carver is known to have improved approximately 100 acres of his farm by 1860 for agricultural purposes; the 140 acres of unimproved land on the Moses Carver farm likely remained native prairie used to graze livestock.²⁵⁸ In addition to the pressure of plowing and grazing, the prairie was affected by fire suppression, which allowed woody growth to take hold and overtake the herbaceous landcover. Thus, there was probably very little high quality prairie or woodland left on the farm during George Washington Carver's lifetime.²⁵⁹ Nonetheless, Burfield and Nilon suggest that as many as 111 acres of the original Moses Carver land remained unplowed prairie during George Washington Carver's early years on the farm.

Later in his life, George Washington Carver recalled walking through woods and fields filled with a variety of plants. Examination and enjoyment of plant communities and species are thought to have been a focus of George Washington Carver's boyhood at the Moses Carver farm. Carver specifically remembered wandering through the local woods, collecting and nurturing "floral beauties" as a boy. He employed his knowledge in the practice of a wide array of domestic stills and crafts, learning the medicinal and economic uses of the wild plant resources of the farm and surrounding region. Throughout his life, Carver was a passionate naturalist and a student of botany and geology. In his work, he displayed an unending interest in the potential economic and nutritional benefits of the South's native vegetation.²⁶⁰ Although the vegetation present today is not entirely consistent with that present during Carver's lifetime, many of the species known to him during his childhood remain present today.

The land continued to evolve after George Washington Carver left Diamond in 1876 or 1877. Burfield and Nilon note that the park in its entirety had been plowed by the early 1900s.²⁶¹ Increasingly mechanized commercial farming in the late nineteenth and early twentieth centuries likely led to significant changes in plant community composition. The prairie continued to be plowed and grazed until establishment of the national monument in 1943.²⁶²

The grasslands have been managed by the NPS since 1982 to reestablish native herbaceous and perennial forb species over former cropland. The goal is recreate a high quality pre-settlement prairie with high wildlife habitat value. Diamond Grove, a nearby 620-acre remnant of unplowed grassland, has been used as a model.²⁶³

257. Harrington et al., as quoted in Annis et al., 7.

258. Jackson and Bensing.

259. Annis et al., 7.

260. Ibid., 7.

261. Burfield and Nilon, and Annis et al., 17–18.

262. Harrington et al.

263. Ibid., 68.

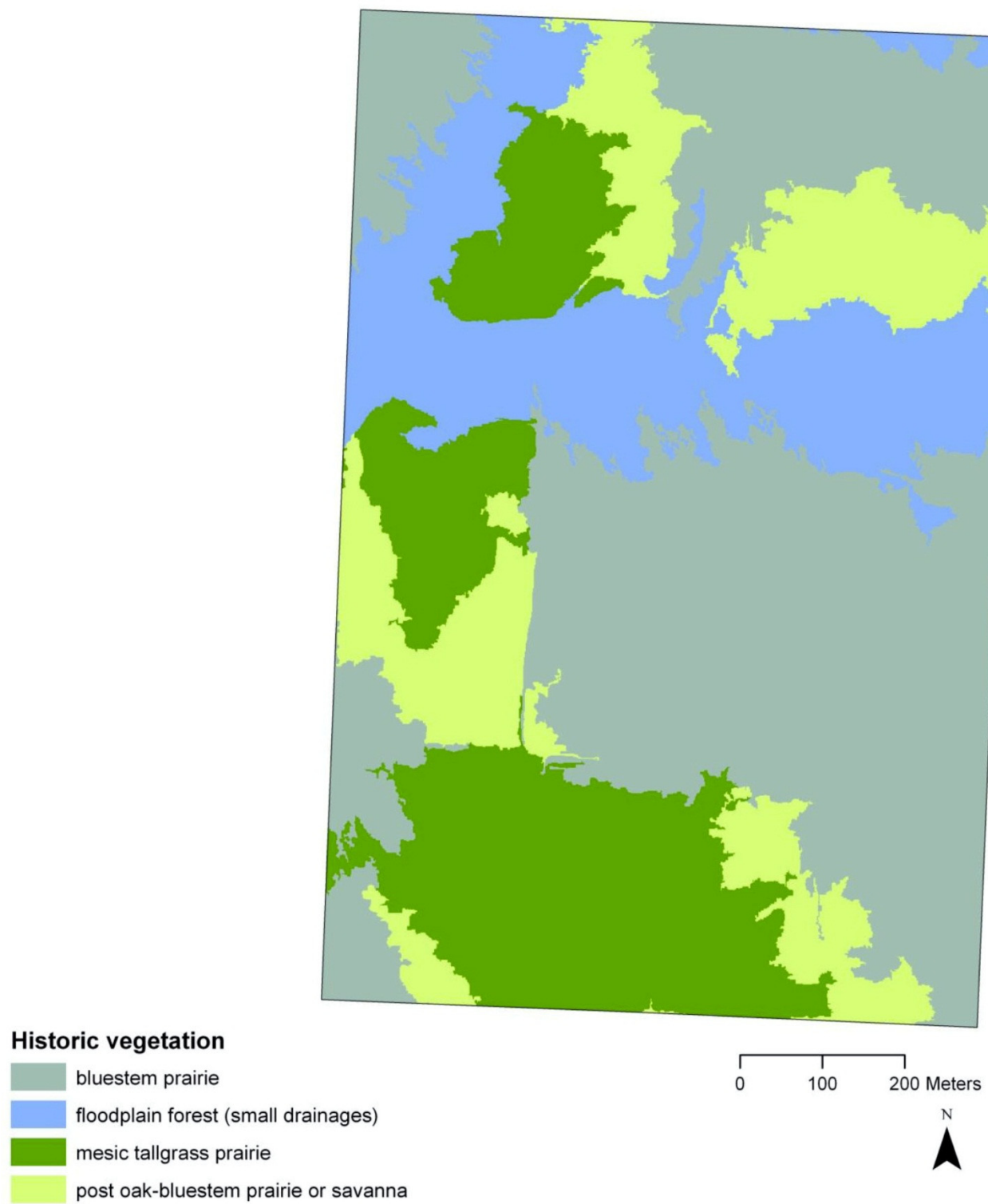


FIGURE 46. Historic soil compatibility vegetation map. Source: Annis et al. George Washington Carver National Monument Natural Resource Condition Assessment, 55.

The NPS prairie restoration program began within two areas, totaling six acres, of rocky land believed to include unplowed prairie remnants. As mowing and grazing contracts with local farmers ended over the course of the 1980s, the NPS did not renew them, and instead began to manage the former fields for restored native grassland prairie.²⁶⁴ Management Unit 2 is the only prairie unit that may be better suited to woodland than grassland, and should potentially be considered for conversion to white oak/burr oak-pecan, floodplain forest (small drainages).

The existing grassland restoration program postdates both periods of significance and thus is neither character-defining nor contributing to the significance of the park.

Invasive Species. There are several non-native plant species that have become problematic for managing park communities in an ecologically balanced manner. Twenty-five invasive exotic species were identified as part of a vegetation survey conducted within the park in 2006. In 2013, the NPS published a draft of the study *Invasive Plant Monitoring in George Washington Carver National Monument*, which serves to update earlier efforts to document the problems associated with invasive species within the park.

Invasive species are considered to cover at least 9 percent of the total area of the park.²⁶⁵ A total of 152 exotic, or non-native, plant species have been identified within the park. Of these, 41 are considered to be of particular concern for their ability to disrupt native communities and systems. Three native species—smooth sumac (*Rhus glabra*), winged sumac (*Rhus copallina*), and Eastern red cedar—may be considered as native pest plants in prairies at the park.²⁶⁶ Non-native species of concern located within the park include tall fescue, multiflora rose, Japanese honeysuckle,

bald and smooth brome (*Bromus racemosus*; *B. inermis*), Johnson grass (*Sorghum halepense*), Sericea lespedeza (*Lespedeza cuneata*), crown vetch (*Securigera varia*), and privet (*Ligustrum vulgare*).

The park's approach to managing invasive species currently focuses on reducing the numbers of species and individuals, and impeding further expansion of existing stands. The 2013 study suggests that "Cool season grasses, especially annual brome species such as bald brome, poverty brome, cheatgrass, and smooth brome accounted for the overwhelming majority of the invasive plants found on the park."²⁶⁷ Japanese honeysuckle and other invasive species pose a threat to the health of the woodland communities. The 2013 study notes "Within the forest, Japanese honeysuckle was the most abundant invasive plant."²⁶⁸

Currently, the HTLN Exotic Plant Management Team (EPMT) assists the park in managing invasive species, primarily using chemical treatments that are highly targeted and designed to reduce the abundance of specific plant species. The EPMT has committed to two clearly defined projects: 1) the control of invasive plants, specifically nodding plumeless thistle (*Carduus nutans*), Johnson grass, crownvetch, sericea, sweetclover (*Melilotus officinalis*), common mullein (*Verbascum thapsus*), and sumac within restored grassland prairie; and 2) the control of Japanese honeysuckle in Carver Woods.²⁶⁹

Other abundant species that need more consideration due to their abundance in prairies include smooth brome, curly dock (*Rumex crispus*), and hedgeparsley (*Torilis* spp.).²⁷⁰ Based on their relatively low abundances, the park may also need to consider control of privet (*Ligustrum* spp.), Eastern red cedar, and white mulberry

264. Annis et al., 7.

265. J. T. Cribbs, C. C. Young, J. L. Haack, and H. J. Etheridge, *Invasive exotic plant monitoring at George Washington Carver National Monument: Year 1 (2006)* (Fort Collins, Colorado: National Park Service, 2007), Table 5-5.

266. Ibid., 10.

267. Craig Young, Jordan Bell, and Jennifer Haack, *DRAFT Invasive Plant Monitoring in George Washington Carver National Monument* (Republic, Missouri: National Park Service, Heartland Network, 2013), vii.

268. Ibid.

269. Ibid.

270. Ibid., 14.

(*Morus alba*) in these forests at an apparently early stage of detection.²⁷¹

While the ecological impact is only potentially high for European privet, Amur honeysuckle (*Lonicera maackii*), and sulphur cinquefoil (*Potentilla recta*), these species should also be considered as potential targets for control due to their relatively low abundances.²⁷²

Missing Natural Features. Descriptions of a spring associated with Harkins Branch appear in historic documentation. The location of this spring is not currently known; it is possible that the spring is no longer active. As noted above, the Williams spring is currently inundated by Williams Pond and not visible today except at certain times of the year when the level of the water in the pond is low.

Contributing Natural Features and Systems.

- Carver Branch
- Harkins Branch
- Williams Branch
- Dry Branch
- Drainage Swale
- Carver Spring
- Woodlands (diminished integrity)

Non-Contributing Natural Features and Systems.

- Native grassland prairie
- Invasive species

Missing Natural Features and Systems.

- Williams Spring
- Harkins Spring

3.3.2 Responses to Natural Resources

Several features within the park exhibit cultural responses to natural resources that can be traced to either the Moses Carver farm period or the early park development period. These features include the siting of the Moses Carver farm in close proximity to fresh water resources; inclusion of the Williams Pond in the Carver Trail system; the use of bridges to cross streams; the siting of the picnic area within the deciduous grove of trees south of Carver Branch; the siting of the visitor center to overlook features of the Carver farm; and the use of swales and culverts to address storm water management along the park entrance road. These responses to natural features survive from the two periods of significance and contribute to the significance of the park landscape. There are also non-contributing responses to natural features that can be tied to Shartel ownership of the property, and NPS activities that postdate the period of significance.

Based on the fulfillment of a 1952 recommendation made by regional NPS historian Merrill J. Mattes to develop the new national monument around the natural features that inspired George Washington Carver's love of plants and the environment during his childhood on the farm, the park as a whole constitutes a cultural response to natural features.²⁷³ The NPS has generally treated the park as a historic designed landscape rather than a historic vernacular landscape, with a goal of honoring George Washington Carver's legacy through commemoration and interpretation, while preserving those traces of the historic scene known to Carver as possible without being concerned with a need to restore historic conditions. As such, the NPS has accommodated contemporary needs, while working to maintain a light-handed approach to underscore Carver's humble origins and connection with nature.²⁷⁴

271. Ibid.

272. Ibid., 15.

273. Master Plan Development Outline, 1952.

274. Cultural Landscape Inventory, 22–24.

Responses to natural resources reflecting Moses Carver's ownership of the property.

Primary among the responses to natural resources representative of the Moses Carver farm period is the connection between the **siting of the domestic precinct in close proximity to fresh water sources**. Archeological investigations have revealed the approximate location of the original Moses Carver homestead on the hillside overlooking Carver Branch. The homestead was sited to take advantage of access to the perennial flow of Carver Spring and Carver Branch nearby. Today a wooden outline of the birthplace cabin along the Carver Trail interprets this relationship.

As noted, Moses Carver selected a site on a plateau in close proximity to an abundant water supply when settling the farmstead in the mid-nineteenth century. The 1841 General Land Office survey notes three cabins in the area where Carver settled— Section 7, Township 26N, Range 31W. All are located near springs. Two large fields are shown, each between 20 and 30 acres in size. They are intersected by a creek. The survey notes describe the land as rolling, mostly good, high prairie soil with gravel on the surface in most places.²⁷⁵

George Washington Carver, writing later of his experiences on the farm, remembers drawing water from Carver Spring and carrying it to the farm dwellings. George Washington Carver would later reminisce fondly about the “blue flag, water cress, and calamus” that grew around the spring.²⁷⁶ Evidence of the siting of the Moses Carver homesteads in close proximity to fresh water sources survives today with diminished integrity. This response contributes to the significance of the park landscape.

In addition to the siting of the house in proximity to fresh water sources, the **Moses Carver farm** was organized so that agricultural uses were linked to soil and terrain conditions. The natural

resources of the farm likely fulfilled many of the needs of the family in the form of crops, forage, land cover that supported game, and provided wood for construction materials. In addition to the cultivation of farm products, wild foods, in the form of nuts, berries, and greens, contributed to household consumption. Many native woodland trees produced edible nuts collected for food by the Carvers. These included hickory, chinquapin, chestnut, and hazelnut. Fruiting vines, trees, and shrubs, such as strawberries, sarvis berries, dew berries, blackberries, huckleberries, fox grape, pawpaws, persimmons, and raspberries, grew wild in the woods and fields. Tea was made from the spice bush (*Lindera benzoin*) plant that grew along the streams and from the bark of the sassafras (*Sassafras albidum*) tree. It is also thought that George used plants found on the farm to create dyes and paints that he used in his artwork.

Many believe that the physical environment of the farm helped to shape “the man that young George would become in profound ways.”²⁷⁷ On the farm, George Washington Carver was able to explore his interest in and curiosity about the natural world with wonder and freedom. Later in his life, George Washington Carver wrote about the influence of the natural world on his life work. According to Carver, inspiration from nature formed the basis for his work with the peanut, as well as his less publicized experiments with herbal medicines, food substitutes, and paint colors from clay.²⁷⁸

In 1870, eighty acres of the farm remained forested. Carver noted while at the Tuskegee Institute that he did much of his studying in the woods: “I literally lived in the woods. I wanted to know every strange stone, flower, insect, bird, or beast.”²⁷⁹ This likely led to his scientific interest in botany. His participation in the farming operations also influenced his later research in agricultural science. Moses Carver subscribed to nineteenth-century scientific methods of farming and his farm

275. Ibid., 58.

276. Mark D. Hersey, *My Work Is That of Conservation: An Environmental Biography of George Washington Carver* (Athens: The University of Georgia Press, 2011), 13.

277. Krahe and Catton, 14.

278. Toogood, 33.

279. Gart, *He Shall Direct Thy Paths*, 61, citing George Washington Carver, “A Brief Sketch of My Life,” circa 1922, part of the George Washington Carver Papers, Tuskegee University Archives.

eventually became one of the most prosperous in the area.

On his farm, Moses Carver used timber from the gallery forests along the stream valley for construction material and fuel, cleared the level areas for crops, and pastured his livestock on the land that was less well suited to cultivation due to soil wetness, slopes, or droughty conditions. The connections between Carver's siting of cultivated fields and soil, orientation, slope, and available moisture conditions resulted in a particular layout of farm features is no longer in evidence today. It is possible to assume that fields were most likely sited to take advantage of gently-rolling terrain, and fertile, well-watered soils. Pasturage was more likely associated with marginal soils, steep slopes, and wet areas. Livestock was allowed to range freely so farmers fenced in their crops rather than their livestock. The bluestem grasses of the native prairie were found to afford good forage for cattle; this led to a long-standing tradition of raising livestock within the region. When overgrazed, however, the native bluestem died out and was replaced with introduced bluegrass.

Moses Carver's 240-acre farm supported a variety of agricultural activities. In 1850, as evidenced in the agricultural census, Moses Carver was raising 1,500 bushels of Indian corn, as well as 500 bushels of oats, 10 bushels of Irish potatoes, and 50 bushels of wheat. His herd of fifteen sheep provided him with 40 pounds of wool, and his six milk cows with 100 pounds of butter. He also owned twenty-one horses, two asses, eleven cattle, thirty swine, and four oxen.²⁸⁰

In 1860, Moses Carver had improved 100 acres of his 240-acre farm. He continued to sow large quantities of Indian corn, oats, and hay, but had also established a large orchard. The number of livestock listed in the census indicates that Carver had approximately half as many animals as in 1850, with a commensurate drop in the amount of wool produced. He appears to have experimented with

beeswax and honey production, and increased his butter output over that obtained in 1850.²⁸¹

Between 1860 and 1870, the period during which George Washington Carver was growing up on the farm, Moses Carver amassed a large sheep herd and continued to expand his orchards. By 1870, his wool production had more than tripled over 1860 totals, and his orchard had increased tenfold in value.²⁸²

Between 1870 and 1880, Moses Carver appears to have taken an interest in raising horses. From the eleven horses listed in the 1870 census, Carver had expanded his holdings to twenty-four by 1880. John Harris recalled that "Mr. Carver liked horses. Neighbors brought ponies in and ran a race down a one-half-mile track. This was a neighborhood sport." Elza Winter, the grandson of one of Carver's neighbors, remembered, "Moses Carver got his money from raising race horses." J. H. Melton recalled visiting Moses Carver every Sunday and selling horses for him.²⁸³

Also influencing the agricultural landscape during Moses Carver's tenure of the farm was the growth of the railroads. Towns such as Joplin, Springfield, and Neosho grew up in response to the railroads, which also suggested a shift from subsistence to market-oriented agriculture, and enabled timbering and mining industries to become established. Mining became an important part of the Newton County economy during the second half of the nineteenth century. In 1850, J.W. Moseley discovered lead on Shoal Creek near Neosho, and later opened a mine. By 1880, Joplin had become a supply center for regional mining.

Evidence of these activities is missing within the park landscape today. Although there is no direct evidence of agriculture on the property, NPS management maintains the former fields in open vegetative land cover through restoration of grassland prairie that aids interpretation of historic farm activities to a degree.

280. Ibid., 28.

281. Ibid., 27–28.

282. Ibid., 28–29.

283. Ibid., 29.

Responses to natural resources associated with Shartel ownership of the property.

There are also several responses to natural features that can be traced to Shartel family ownership of the property during the early- to mid-twentieth century. Principal among them is **Williams Pond, an impounded water feature constructed for flood control** by the Shartel family in the 1930s by damming Williams Branch. The pond, located north of Carver Branch (Figure 47), was intended to protect the relocated Moses Carver house from rainy season inundations.²⁸⁴ It is possible that the pond also supported the watering of the Shartel's thoroughbred cattle.

The three-quarter-acre pond was enlarged by the NPS in 1978. It is a focus of the park's Carver Trail and associated Contemplative Loop Trail.



FIGURE 47. Williams Pond was formed by impounding Williams Branch and spring.

Other responses to natural features present during Shartel ownership of the property include **stream crossings using small bridges and hardened fords**. These features have since been replaced with the present day boardwalks and bridges.

Also missing from the Shartel period is the **zinc and lead mine** once located in the southwestern corner of the property. The first evidence of this activity on the property is a lease to mine zinc and lead in the southwestern corner of the property dated 1915.²⁸⁵ The Granby & Neosho Mine is

known to have operated on the former Moses Carver farm circa 1916–1920. The Tulsa-Diamond Corporation later operated a 250-ton mill on the property in 1929. Two exploratory shafts of 60 and 120 feet were drilled in 1935 and 1939, and the mineral rights leased to the Liberty Mining Company of Tulsa, Oklahoma. The company began mining operations in 1942. This operation, characterized by a 250-foot shaft where the zinc and lead ore was brought up to the surface for extraction, continued for nearly two years. The mine was deactivated circa late 1943; the company left a 40-foot high tailings pile on the site. The tailings pile has since been removed.

Responses to natural resources associated with National Park Service development of the park.

Several responses to natural features are associated with NPS administration of the park. These include the use of the grove of mature trees to site a picnic area, locating the visitor center on a high point overlooking the Moses Carver farm and cemetery, siting the Carver Trail to connect the visitor with Carver-era landscape features, and the use of bridges and culverts to convey roads and trails across streams and swales. These responses date to the early park establishment period and contribute to the significance of the historic landscape.

Responses to natural resources that postdate the period of significance include the addition of culverts to convey storm water beneath the Carver Trail.

Siting of the Carver Trail. The Carver Trail was originally designed to take advantage of the property's natural resources and to interpret George Washington Carver's life on the farm. Features that were the focus of interpretation along the trail included Carver Branch, Carver Spring, Williams Branch, and the riparian woodlands. Since its original construction, the trail has been realigned in some locations and

284. Harrington et al., 66.

285. Miller, "Mining," 81–82. Records also indicate that the farm owner permitted mine exploration by Kansas Exploration, Inc., in 1925, and by the Boston Commerce Drilling

Company in 1928–1929. ("Lead and Zinc Mine, Potable Water Quality, Newton County National Priorities List of Hazardous Waste Sites," September 30, 2003, File L54, ACF, GWCA.)

resurfaced to address erosion problems, provide stream and wet area crossings, and accommodate universal accessibility. These changes postdate the early park development period of significance, and slightly diminish the integrity of the trail corridor as a response to natural resources.

Inclusion of Williams Pond in the Carver Trail.

Williams Pond is a featured part of the Carver Trail. After the NPS expanded Williams Pond in 1978, the Contemplative Loop Trail was added as a spur of the trail. The original trail connection to the pond contributes to the significance of the park landscape, while the Contemplative Loop Trail postdates the period of significance and does not contribute.

Use of bridges in association with park trail stream crossings. After the NPS acquired the Moses Carver farm property in 1953, one of the first improvements made within the park was the Carver Nature Trail (today referred to as the Carver Trail) that traced George Washington Carver's experience on the farm. To convey the trail across Carver and Williams branches, the National Park Service constructed wooden footbridges. In 2001, two of these bridges were replaced by steel bridges with wood decking. There are also two wooden footbridges that cross Williams Branch near the Moses Carver house. The trail also incorporates a boardwalk with recycled-content lumber for decking in the marshy area south of the Moses Carver house (Figure 48). While the extant bridge structures postdate the period of significance, they perpetuate the use of bridges to cross streams and wet areas associated with the early park development period.

Culverts are also used along the trail to convey storm water beneath the walking surface. These were added later to address erosion problems. They postdate the period of significance and do not contribute to the significance of the park landscape.



FIGURE 48. A footbridge conveys visitors over Williams Branch near the Moses Carver house.

Siting of the picnic area in the deciduous grove.

Two picnic areas edge the park entrance road. Both benefit from the dappled shade afforded by a grove of mature shade trees that parallels the road (Figure 49). The peaceful, cool, and refreshing quality of the grove offers a haven for visitors during the hot and humid summer months. The picnic area to the north of the entrance drive was designed for this use, and includes an access road, parking, both standard and universally-accessible picnic tables, trash and recycling receptacles, and a drinking fountain. The picnic area to the south of the entrance drive features several tables sited beneath the trees at the edge of the visitor parking area located near the visitor center; it is a later, informal addition to the park

The original siting of the picnic area to the east of the entrance road in 1953 took advantage of the tree grove present at the time of park establishment. The cool shade afforded by the trees complements the recreational needs of park visitors. This response to natural resources survives from the early park development period and contributes to the significance of the park landscape.



FIGURE 49. The grove of mature trees along the entrance road provides an ideal location for the park's picnic area.

Siting of the visitor center to overlook Moses Carver farm features. The park's visitor center was built in 1960 and later expanded in 2007. It occupies the edge of a ridgeline that affords expansive views of the land Moses Carver is known to have farmed during the mid to late nineteenth century. The location of the visitor center takes advantage of level topography, cool breezes, and good prospect; this siting is representative of Mission 66 design principles that linked interpretive centers with the primary resources of a park (Figure 50). The visitor center has an observation deck offering views across the park landscape to the west, southwest, and northwest.

Although the integrity of the visitor center has been diminished by changes made in 2007, the original siting of the building survives from the early park development period and contributes to the significance of the park landscape.



FIGURE 50. The visitor center overlooks the restored prairie.

Swales and culverts used along the park entrance road for drainage. The park entrance road was built in 1959 as an elevated corridor edged by drainage swales. Overland flow of storm water is conveyed through the swales to concrete culverts that pass beneath the pavement. These features were installed as part of Mission 66 development of the visitor center in 1959–1960.

The road generally follows the earlier alignment of the Shartel farm road, but was elevated to avoid wet areas and afford views to the park visitor center. The culverts and swales established to convey storm water away from and beneath the road corridor constitute responses to natural resources that survive from the early park development period and contribute to the significance of the park landscape.

Contributing Responses to Natural Resources.

- Siting of the Moses Carver farm domestic precinct in close proximity to fresh water sources
- Siting of the Carver Trail
- Inclusion of the Williams Pond in the Carver Trail
- Use of bridges in association with park trail stream crossings
- Siting of the picnic area in the deciduous grove
- Siting of the visitor center to overlook Moses Carver farm features (diminished integrity)
- Swales and culverts used along the entrance road for drainage

Non-Contributing Responses to Natural Resources.

- Culverts used along Carver Trail
- Williams Pond constructed for flood control

Missing Responses to Natural Resources.

- Moses Carver farm organization with agricultural uses linked to soil and terrain suitability

- Shartel-era stream crossings
- Lead and zinc mining

3.3.3 Patterns of Spatial Organization

George Washington Carver National Monument is primarily characterized by open restored prairie vegetation that allows for expansive views across the landscape. The open prairie vegetation is broken by a broad wooded zone that follows the riparian corridor of the Carver and Williams branches. The woodland forms a band that divides the property in an east-west direction near its center. The Harkins Branch corridor, located in the northwest corner of the park, is also wooded. Set within this milieu is the more manicured landscape of the park's developed core, which occurs within the east-central section of the park. The developed core encompasses the area between the park entrance and the visitor center. It includes the grove of mature shade trees, the picnic areas, visitor parking, and the visitor center and maintenance yard.

These patterns of spatial organization are nearly consistent with those present during the early park development period, although the extent of woodland has expanded, and formerly mown fields have been transformed into grassland prairie.

Entrance road corridor. The linear park entrance road corridor is straight, wide, and edged by groves of trees. The entrance road is oriented east/west, and leads to the visitor center. The visitor center, long and low in profile, lies perpendicular to the alignment of the entrance corridor and terminates views along the road (Figure 51). To either side of the road, views are afforded into groves of mature shade trees. Views of an adjacent former housing/administrative area to the south are generally blocked by shrubs and tree plantings. Views into the grove follow a spur road that leads to picnic area parking.

The park entrance road corridor was constructed circa 1959–1960 to provide access to the new visitor center. The entrance road corridor survives from the period of significance and contributes to

the significance of the park. Its integrity has been diminished by the expansion of the parking area along the northern side of the loop road circa 1986.



FIGURE 51. The linear park entrance road corridor, looking west toward the visitor center.

Visitor center environs. The visitor center environs, comprised of the landscape to the east, north, and west of the visitor center building, is generally characterized by paved paths and plazas, open lawn, foundation plantings, and ornamental planting beds. It is edged by woodlands to the north, and the groves of mature shade trees along the entrance road to the northeast, as well as the maintenance facilities to the south. The park maintenance facilities and yard, which are connected to the visitor center by a breezeway, are screened from view by the descending topography and carefully placed shrub and grass plantings. From the park entrance, visitors circulate around the building to the north where the trailhead for the Carver Trail is located (Figure 52).

The open knoll north of the visitor center is used by the park to orient visitors. Several circulation systems intersect here, including paths leading out of and around the visitor center, and the beginning and end points of the Carver Trail. The knoll contains monuments, markers, sculptural elements, and interpretive signage. It is contained by the grove along the entrance road corridor and the wooded Carver Branch stream corridor. Although the space has been used since the early park development period, aspects of its spatial character have changed since 1960 due to expansion of the visitor center, relocation of the Carver bust, and the loss of several elm trees that

once shaded this area. The visitor center environs survives from the period of significance, albeit with diminished integrity, and contributes to the significance of the park landscape.



FIGURE 52. The visitor center environs.

Picnic grove. A large grove of mature shade trees, widely spaced and open-grown, edges the park entrance road to the north. Trees also frame the road to the south. The grove edges a band of riparian forest that follows Carver Branch. The open-grown nature of the trees within the grove allows for an understory of mown turf. The park maintains a picnic area within the grove.

This grove of trees appears to have been established during Shartel ownership of the property. The grove was integrated into the design of the park entrance and visitor core experience as part of early park development (Figure 53). This grove survives from the period of significance and contributes to the significance of the park landscape.



FIGURE 53. The grove of shade trees along the entrance drive during the early park development period. Source: George Washington Carver National Monument photo collection.

Carver Trail corridor. The mile-long Carver Trail corridor, which begins at the visitor center, traverses a generally wooded area that follows the park's stream valleys. Within the riparian woodland, the Carver Trail passes Carver Spring and the Boy Carver statue, and crosses Carver Branch (Figure 54). The trail briefly emerges into a more open landscape of the Moses Carver house precinct before reentering the woods, crossing both Williams and Carver branches, before passing into the open prairie below the visitor center. Here, the trail follows a row of walnut trees planted by the NPS in the 1950s to recall a fencerow established by Moses Carver during the nineteenth century (Figure 55).

Although the corridor was somewhat wooded when the trail was established in the late 1950s, the extent of woodland has grown and the woods themselves have become more dense. Today, the trail corridor has a more tunnel-like quality than was present during the early park development period. Missing are the mix of open and savanna woodland conditions that characterized the trail when it was first established. The wooded corridor survives, with diminished integrity of feeling, from the early park development period, and contributes to the significance of the park landscape.



FIGURE 54. The Carver Trail cuts a narrow corridor through the woodland along Carver Branch.



FIGURE 55. A row of walnut trees that edges the trail below the visitor center recalls a fencerow established by Moses Carver.

Walnut fencerow. A row of walnut trees edges the Carver Trail between Carver Branch and the Carver family cemetery. The trees afford dappled shade along the trail. Additional prairie land is visible through the row of walnuts to the west.

The trees were planted in the 1950s by the NPS to replicate a feature thought to have been planted by Moses Carver on the property as a fencerow. The trees contribute to the overall feeling of agricultural field patterning on the property. This feature survives from the early park development period with integrity and contributes to the significance of the park landscape.

Moses Carver house and yard. The relocated Moses Carver house sits at the edge of the wooded stream corridor within a fenced yard edged by an open grown grove of walnut trees. From the fenced area, views of fields are afforded to the north and west (Figure 56). The house, yard, and fields are used to interpret nineteenth century farm life.

The walnut trees and fenced yard were installed in the 1950s. Demonstration garden beds were added later that do not contribute to the historic landscape. The Moses Carver house and yard otherwise survives from the early park development period with sufficient integrity to contribute to the significance of the park landscape.

Carver family cemetery. The Carver family cemetery is a one-tenth-acre space enclosed within a stacked stone wall constructed by the NPS in 1954 to replicate the wall present during Moses Carver's ownership of the farm. In 1959, the NPS acquired thirty-six headstones and installed them in the cemetery in support of park development and interpretation of this former feature of the Moses Carver Farm.



FIGURE 56. The Moses Carver house and yard.

Moses Caver established the Carver family cemetery for family as well as community members. The original cemetery was surrounded by a stone wall composed of limestone rubble collected from the fields. The original wall was later dismantled and the stone reused during the Shartel period of ownership (Figure 57).



FIGURE 57. The original wall surrounding the cemetery was dismantled during Shartel ownership. It was reconstructed by the NPS in 1954. The date of this photograph is not currently known. Source: George Washington Carver National Monument photo collection, image 439.

The wall present today was reconstructed by the NPS based on oral tradition and archeological investigations. Since 1954, the entrance through the cemetery wall has been relocated from the east side to the north side to coordinate with the Carver Trail, and many of the stones have fallen or become dislodged and subsequently restacked by park personnel. These changes diminish the integrity of design and workmanship of the reconstructed wall. The pattern of spatial organization exhibited by the cemetery otherwise survives from the early park development period and contributes to the significance of the park landscape.

Open fields. The open fields located within the park are comprised of nine prairie management units totaling 130 acres. Prairie restoration, which dates to the early 1980s, occurs on land used for agricultural fields during the Moses Carver farm period. The prairie units generally surround the developed core located between the park entrance and the visitor center, and the woodlands that edge the stream corridors.

At a broad scale, the open character of the fields is consistent with the historic agricultural patterns of spatial organization present during the Carver period, as well as the open field patterns present during the early park development period. The texture and height of the prairie land cover, however, differ from those of the former crop fields, hay fields, and pastures, diminishing the integrity of feeling and association of this pattern of spatial organization. The pattern of open land cover otherwise survives from both periods of significance and contributes to the significance of the park landscape.

Missing are examples of fields established within cleared bottomland terraces by the Carvers during their early occupation of the property. The bottomland terraces of Carver Branch were likely the first focus of cultivation by the Carvers due to the comparative ease of preparing the land for planting. However, with the unsuitability of the wet soils for agriculture and the potential for flooding, the bottomland terraces were later abandoned in favor of upland prairie land. Any evidence of these fields has long since disappeared due to successional woodland growth.

Woodlands. Woodland cover generally follows the three stream corridors, forming a thick band through the center of the park, and a second grove in the park's northwestern corner. These woodlands generally follow the outline of gallery forests present at the time of European-American settlement of the region in the 1830s, as well as the concentration of forest cover likely known to George Washington Carver. The Moses Carver farm is thought to have included 80 acres of woodland circa 1870, which is consistent with current conditions. The wooded stream corridors present today may offer some consistency with the community present during George Washington Carver's life on the farm, at least at a macro level. Present-day woodlands are far denser than the

former gallery forests, which featured a cleared understory due to periodic fire and grazing.²⁸⁶

At the time the park was established, the property was far less wooded. It is likely that portions of the woodlands were logged or cleared during the early twentieth century to support the cattle operations of the Shartel family (Figure 58). Inventories of the plant communities within the park indicate that all of the woodlands on the property are successional and less than 100 years of age. As patterns in the landscape, however, the woodlands have generally occupied the same or similar locations as those present during the Carver era. Thus the wooded stream corridors generally survive from the periods of significance, with diminished integrity of feeling, and contribute to the significance of the park landscape.



FIGURE 58. The wooded area along Carver Branch was less extensive during the early park development period as indicated by this 1959 photograph. Source: George Washington Carver National Monument photo collection, image 2647.

Missing Patterns of Spatial Organization.

Carver farmstead features. Missing from the nineteenth-century Carver property today are the texture of the farm and the division of the land into units associated with agricultural production. Elements of the property that are known to have existed, but are now missing, were associated with the original Carver domestic precinct located

south of Carver Branch near the present-day visitor center. They likely included a dwelling, outbuildings, a fenced kitchen garden, paths, and tree plantings. Beyond the precinct were crop fields edged by fencing, a large walnut and fruit tree orchard, and a persimmon grove. Moses Carver is said to have raced horses on his property on a track of some kind.

Contributing Patterns of Spatial Organization.

- Entrance road corridor
- Visitor center environs
- Picnic grove
- Carver Trail corridor
- Walnut fencerow
- Moses Carver house and yard
- Carver family cemetery
- Open fields
- Woodlands

Non-contributing Patterns of Spatial Organization.

- None identified

Missing Patterns of Spatial Organization.

- Carver farmstead features
 - Domestic precinct
 - Crop fields edged by fencing
 - Horse race track (speculative)
 - Walnut and fruit tree orchard
 - Persimmon grove

286. A gallery forest is a woodland that forms as a corridor along a river or wetland and sometimes projects into an adjacent landscape that is sparsely treed, such as savanna or prairie. Gallery forests form due to the

availability of soil moisture, fertility of the alluvial soils, and protection from some fire events associated with stream valleys.

3.3.4 Views and Vistas

George Washington Carver National Monument exhibits several views designed primarily for visitor enjoyment and understanding of the historic and commemorative landscape. Predominant among them are the axial view along the park entrance road corridor that focuses on the visitor center; linear views that direct visitors along the trail to elements of the land known to George Washington Carver; and long expansive views from the visitor center and interpretive trail across the open restored prairie south of Carver Branch and north and west of the Moses Carver house. Although these views were all established during the early park development period, the character of the restored prairie postdates the period of significance. While prairie likely remained present on the farm by the 1870s, these views were likely of agricultural fields and the Moses Carver farmstead and not of prairie. The prairie diminishes the integrity of feeling and association of these views. Otherwise, all of the views survive with sufficient integrity to contribute to the significance of the park landscape.

Little is known about views that were important to the Carvers in the design and layout of their farmstead during the nineteenth century. There are no specific views noted in historic documentation of the property, and it is not known to what degree views played a role in the delineation, orientation, and siting of the Moses Carver farm. It is possible that the Moses Carver farm was visible from the adjacent public road corridor, although it is believed that the Carvers were private people who chose to site their dwelling out of site of the road.²⁸⁷

It is also likely that the original house and cabin sites, located on the knoll overlooking Carver Branch, afforded views of the water course to the north and farm fields to the south during George Washington Carver's lifetime. Today, the view of these water resources is blocked by woody vegetation and is no longer discernible. It is also likely that expansive views were afforded across the rolling hills of the landscape due to the extent

of prairie cover and crop fields. Today, visitors continue to enjoy views of adjacent farms, as likely occurred historically from the property's higher elevations. Otherwise, the views present on the property today all date to NPS development of the property as a park in the 1950s, with modifications that reflect the effort to restore native grassland prairie communities.

Views into the park along the entrance

road. Visitors enter the park through a gate located along Carver Road. The entrance road that leads into the park follows a straight path before splitting to form a large loop in front of the visitor center (Figure 59). The entrance road is generally aligned with the visitor center environs and the entrance into the building, affording visitors an opportunity to understand the layout and organization of the park upon arrival. However, a triangular planting bed edges the eastern end of the loop, diminishing views of the visitor center. The road is framed by plantings of shade trees, which further direct the view toward the visitor center. This view was established with construction of the road and the original visitor center. Its integrity is diminished slightly due to changes made to the visitor center in 2007 and the addition of the triangular planting bed at the eastern end of the loop that interferes with direct views of the visitor center from the drive. Although it exhibits diminished integrity of design, this view contributes to the significance of the park landscape.



FIGURE 59. The linear view along the park entrance road.

287. Toogood, 30.

Linear views along the Carver Trail. A narrow linear view is associated with the generally wooded environs of the Carver Trail (Figure 60 and refer to Figure 54). The woodlands that edge the trail directs views along the linear corridor and limit views beyond.

The Carver Trail was one of the first features established by the park. It is likely that the environs and setting of the trail were less wooded when it was first installed. The subsequent growth of woodland has led to diminished integrity of feeling and association for views along the trail. Several Superintendent's annual reports indicate a goal of clearing trees and other vegetation along the trail in order to promote views, although the locations of these activities are not noted.²⁸⁸ Portions of the trail have been rerouted to better accommodate universal accessibility, altering the original design of the trail and associated views. The views along the Carver Trail generally survive from the period of significance, with diminished integrity resulting from the increase in woodland cover the rerouting of trail segments, and otherwise contribute to the significance of the park landscape.



FIGURE 60. Linear views are associated with the Carver Trail.

View across the prairie through the walnut fencerow. As noted earlier, a portion of the Carver Trail is edged by a row of walnut trees planted by the NPS to recall a feature of the Moses Carver farm. The space between the trees allows

for a series of filtered views to the open grasslands to the west (Figure 61).

These walnut trees were planted by the NPS in the 1950s during the early park development period. The resulting filtered views to adjacent fields thus survive from the early park development period, although their integrity is diminished by the change in land cover from agricultural fields to prairie. These views contribute to the significance of the park landscape.

Vista across the prairie below the visitor center. The visitor center, built in 1960, was sited at the edge of a plateau, affording views across the descending topography to the west that supported interpretation of the Moses Carver farm (refer to Figure 50). This siting is consistent with Mission 66 principles that suggested placing visitor centers as close as possible to, and within view of, a park's primary resources. A portion of the Carver Trail passes through the open fields and restored grassland to the west of the visitor center, affording additional views across the landscape.

When the visitor center was built in 1960, views from the building to the west encompassed fields maintained for agricultural purposes. The NPS initially maintained the fields through establishment of leases with local farmers, perpetuating this historic activity and associated views.

However, by 1973, the visitor center was described as obstructing "the visitor's panorama of the historic scene which once included the cemetery, farm buildings, log cabins, vegetable garden, orchard, the fields of Indian corn, hay, oats, and the pens and pastures with horses, cows, sheep, and hogs feeding."²⁸⁹

During the 1980s, the NPS began to convert most farm fields to grassland prairie. Today, the view from the visitor center is entirely of restored prairie. This view is discussed in park planning documents as the "visitor viewshed," designed for aesthetic appeal and to introduce visitors to the importance of land conservation and native plant

288. Superintendent's Annual Report, 1982.

289. Toogood, 43.

communities. As such, it meets objectives outlined in 2007 in the park's LRIP.²⁹⁰ It postdates the period of significance and does not contribute to the significance of the park landscape.



FIGURE 61. Filtered views are afforded across the prairie through the row of walnut trees northwest of the cemetery.

Vista across prairie from the Moses Carver house. The Moses Carver house is set at the edge of an open prairie within a fenced yard featuring a grove of walnut trees. From the dwelling precinct, visitors are afforded long views across the adjacent prairie (refer to Figure 56).

This vista has been altered by the transition from agricultural fields to prairie. As such, it has lost integrity and does not contribute to the significance of the park landscape.

Contributing Views and Vistas.

- Views into the park along the entrance road
- Linear views along the Carver Trail
- View across the prairie through the walnut fencerow

Non-contributing Views and Vistas.

- Vista across the prairie below the visitor center
- Vista across the prairie from the Moses Carver house

3.3.5 Topographic Modifications

George Washington Carver National Monument currently contains evidence of several topographic modifications associated with Shartel ownership, as well as the early park development period. There are no specific topographic modifications that have been identified to date within the park that can be tied to Moses Carver farm activities.

Topographic modifications that can be tied to the early park development period include grading to accommodate the park entrance road and parking areas, the visitor center, the Carver Trail, and the road and building sites associated with the former housing/administrative area. Topographic modifications that precede park establishment include the original Williams Pond dam, constructed during Shartel ownership. All other topographic modifications postdate the early park development period of significance. They include rehabilitation of the Williams Pond dam and expansion of the water body, rehabilitation of the landscape associated with the former lead and zinc mine, filling of a former park landfill, grading associated with expansion of the visitor center and parking area, and trail alignment changes and improvements.

Topographic modifications associated with Moses Carver ownership. Few topographic modifications have been identified in association with the Moses Carver farm. It is likely that farm activities took advantage of suitable soil conditions, and that the family did not manipulate the terrain to support agriculture.

Topographic modifications associated with Shartel ownership. During Shartel ownership, the primary topographic modification was construction of an **earthen dam to impound Williams Branch**. Williams Pond was established to control flooding and possibly to water livestock between 1930 and 1939 (Figure 62). This topographic modification did not occur during either period of significance. However, the feature was present during the early park development period and served as a design element of the

290. Woolpert, 4-3, 4-4; and Burfield and Nilon, 32.

Carver Trail, and thus contributes to the significance of the park landscape.



FIGURE 62. An earthen and stone dam was constructed during Shartel ownership to impound Williams Branch. Source: George Washington Carver National Monument photo collection.

Topographic modifications associated with National Park Service ownership.

Topographic modifications completed during the early park development period included grading to accommodate the entrance road and parking area, the Carver Trail, the original visitor center and maintenance complex, and the former housing/administrative area features. The park also graded the banks of the Carver and Williams branch stream corridors to address erosion, and placed rip rap to prevent further erosion. These modifications contribute to the significance of the park landscape.

Topographic modifications that postdate the period of significance include expansion of Williams Pond and rebuilt dam, grading to expand the visitor center and parking area, changes made to the Carver Trail, and mitigation of the former mine and landfill sites.

Grading to accommodate the entrance road and parking area. Several projects were completed at the park in 1959 and 1960 to accommodate park visitor and operational needs that required grading. The features established include the entrance road, visitor center, and former housing/administrative area. To construct the entrance road, the NPS established a raised corridor, edged by swales and other storm water management features (Figure 63 and Figure 64).

The entrance road was carefully graded to establish a level, smooth route between Carver Road and the visitor center, although the former Shartel access drive formed the basis for its layout. Initially, parking was afforded along the southern edge of the loop near the visitor center. Circa 1986, a second parking area was added to the northern section of the loop that required additional grading. The grading associated with the original road and parking area contributes to the significance of the park landscape, while the later parking area does not.



FIGURE 63. The park entrance road follows a raised corridor.



FIGURE 64. Swales and culverts convey storm water away from the entrance road.

Grading to accommodate the visitor center and addition. The visitor center was constructed in 1960. The site was graded to create a level and welcoming approach and entrance to the building from the east. Construction of the building also included its siting into a hillside. Surviving evidence of the grading conducted to accommodate construction of the original visitor center structure contributes to the significance of

the park landscape, with diminished integrity of design due to changes made to the building in 2007.

The 2007 visitor center expansion greatly enlarged the building. New construction, however, was designed to disturb as little ground as possible and required minimal grading. Work entailed establishing the foundation for the building and sculpting the landform between the expanded building and the maintenance building to create an evenly-sloped descending landform that would promote positive drainage (Figure 65). Grading between the buildings was not entirely successful; there is an isolated low spot at the southwestern corner of the visitor center where storm water collects and cannot drain. Current evidence of grading associated with the visitor center postdates the period of significance and does not contribute to the significance of the park landscape.



FIGURE 65. The expansion of the visitor center in 2007 required grading between the expanded building and the maintenance building.

Grading to accommodate the former housing/administrative area features. As part of the early park development effort guided by Mission 66, three buildings were constructed along Carver Road to accommodate park personnel housing. These buildings generally face the public road corridor. They are accessed via a short road, edged by parking, and a looped turnaround. These features were built from a site plan that indicated grading to establish level building foundations and yards, and a smoothly

sloped road corridor and parking area. The grading efforts conducted to establish this complex occurred within the early park development period of significance and contribute to the significance of the park landscape.

Williams Pond enlargement and rehabilitation of the earthen dam. In 1978, the NPS enlarged Williams Pond by excavating the impoundment area and reworking the earthen dam structure; the new dam enlarged the pond from approximately one-half to nearly three-quarters of an acre in size (Figure 66). In 1979, the NPS leveled the bank around the original dam. Excess sludge and dirt from a dredging project conducted the previous year was spread in two fields adjacent to the pond.²⁹¹ These grading efforts postdate the period of significance and do not contribute to the significance of the park landscape.



FIGURE 66. View of the earthen dam constructed across Williams Branch to create Williams Pond.

Grading to construct the Carver Trail, including accessibility improvements. The Carver Trail was constructed as part of the initial development of the park circa 1953. The trail was graded to establish a smooth, evenly sloped route. Portions of the trail followed the Carver Branch stream corridor. The park soon experienced problems with erosion, in part due to the steepness of some trail sections. In order to diminish the steepness of some slopes, and to meet universal accessibility standards, sections of the trail have been realigned to form switchbacks and follow gentler terrain, particularly along the slope north of the birthplace cabin site (Figure 67). The new trail configuration

291. Superintendent's Annual Report, 1979.

required construction of low rock retaining walls and associated grading (Figure 68). The section located near the row of replanted walnut trees has also been rerouted and re-graded to accommodate universal accessibility. These trail improvements postdate the period of significance. The original trail work conducted in the 1950s falls within the early park development period of significance and contributes to the significance of the park landscape.



FIGURE 67. Portions of the Carver Trail feature switchbacks to meet universal accessibility standards.



FIGURE 68. Low rock retaining walls and associated grading were used to support the switchbacks.

Grading to fill the former landfill. In 1982, a park landfill established in the 1960s was bulldozed and smoothed and the site rehabilitated.²⁹²

Grading to mitigate mine site and tailings. In 2004, the NPS acquired title to the 30-acre parcel that had been used for lead and zinc mining. Land disturbance associated with the mine and piled tailings were mitigated in 2006 in part through

grading. The tailings were described in several reports as 30- to 40-foot-tall piles. These features are no longer present.

Contributing Topographic Modifications.

- Williams Pond
- Grading to accommodate the entrance road and visitor parking area (northern)
- Grading to accommodate the original visitor center and maintenance building
- Grading to construct the original Carver Trail
- Grading to accommodate the park housing complex

Non-contributing Topographic Modifications.

- Grading to accommodate the visitor center expansion
- Grading to accommodate the expanded visitor parking area
- Grading to accommodate accessibility improvements associated with the Carver Trail
- Excavation to expand Williams Pond and spreading of the borrow material
- Grading to fill the former landfill
- Grading to mitigate mine site and tailings

Missing Topographic Modifications.

- Lead and zinc mine tailings and excavated shaft

3.3.6 Land Uses and Activities

George Washington Carver National Monument is associated with several land uses and activities. These include cemetery, commemoration, commerce, interpretation/museum/educational, maintenance, park administration, recreation, utility, and visitor services uses. These land uses are primarily associated with management and administration of the park, and have been present since 1960. Each is character-defining for the park landscape, and contributes to its significance. The

292. Superintendent's Annual Report, 1982.

cemetery is the only use surviving from the Carver period. Several other land uses associated with the property during Moses Carver's ownership are no longer present, including agriculture, mineral extraction, and residential. One other land use associated with the early park development period that is no longer active is park housing. Conservation efforts to restore native grassland prairie, introduced in the 1980s, constitute a non-contributing land use.

Cemetery. Located approximately 250 yards southwest of the site where Moses Carver built his log cabins stands the Carver family cemetery. Established during the mid-nineteenth century, the cemetery is comprised of a perimeter wall encompassing several grave sites (Figure 69). The cemetery includes marked and unmarked graves, including those of Moses and Susan Carver. Although the cemetery was altered by the Shartel family through removal of the original rock perimeter wall, the cemetery use survives from the Carver period. The cemetery is interpreted along the Carver Trail and helps to connect the property with the life of George Washington Carver, who would have known the cemetery. The cemetery land use contributes to the significance of the park landscape.

Commemoration. Commemorative land uses have been associated with the park since its establishment. The park as a whole

commemorates the life and achievements of George Washington Carver. In addition to the park, two sculptural works commemorate and honor Carver within the park. These works—the George Washington Carver bust and the Boy Carver statue—date to the early park development period. Commemorative land uses thus contribute to the significance of the park landscape.

Commerce. Commercial land uses are primarily associated with the gift shop in the visitor center. These commercial uses are administered by the Carver Birthplace Association, and have been present within the park since the establishment of the first visitor center during the early park development period. The commercial land use survives from the period of significance and contributes to the significance of the park landscape.

Interpretation/museum/educational. Interpretive land uses have been an essential component of the park since its earliest establishment. The Carver Trail was one of the first elements established for the enjoyment and edification of visitors. The role of interpretation has grown over the years, as have the wayside exhibits and other programs offered by the park within the visitor center and the landscape (Figure 70). Interpretive land uses survive from the period of significance and contribute to the significance of the park landscape.



FIGURE 69. The Carver family cemetery constitutes a cemetery land use that survives from the mid-nineteenth century.



FIGURE 70. Wayside exhibits interpret aspects of George Washington Carver's life along the Carver Trail.

Maintenance. Park maintenance activities are clustered in a building and grounds complex located south of the visitor center (Figure 71). The maintenance facility was established with the visitor center in 1960. Maintenance activities have been a component of the park since its early establishment, and this land use thus contributes to the significance of the park landscape.



FIGURE 71. The maintenance yard, south of the visitor center accommodates park maintenance needs.

Park administration. Park administrative offices are currently housed in the visitor center. Offices were constructed as part of the original visitor center, but moved to the housing area in 1979. The offices were relocated to the expanded visitor center in 2010. Park administration land uses have been a component of park operations since early park development, and contribute to the significance of the park landscape.

Recreation. Like interpretation, recreation has been a key land use of the park since its early

establishment. Both the picnic area and the Carver Trail afford recreational opportunities, and have done so since circa 1953. Recreational land use survives from the period of significance and contributes to the significance of the park landscape.

Utility. Since the early park establishment period, utilities have been an essential component of park operations, including water, sewer, gas, telephone, refuse collection, and electrical services (Figure 72). Although the specific features built to support park utility needs have changed over time, this land use survives from the early park development period of significance and contributes to the significance of the park landscape.



FIGURE 72. Overhead electrical lines in the southwest portion of the site represent a utility land use.

Visitor services. Visitor services, such as ranger contact, restroom facilities, and drinking fountains, are afforded in the visitor center, while picnic tables and a drinking fountain are available in the picnic area near the parking area. Visitor services have been part of the park since the early park establishment period and remain so today. As such, this land use contributes to the significance of the park landscape.

Conservation. The Moses Carver farm encompasses several natural resources of high quality and value, including native plant communities and water resources. Although none of the plant communities are pristine examples of pre-settlement vegetation, the successional woodland and restored prairie are being managed for natural resource values. The extensive prairie

restoration program initiated in the 1980s constitutes a conservation land use. This use postdates the period of significance and thus does not contribute to the significance of the park landscape.

Agriculture. The park was originally the site of the Moses Carver farm. The Carvers settled the land in 1838, the same year that Newton County was formed, beginning a process of clearing and cultivating crop fields, and establishing pastures and orchards. The Shartels continued agricultural use of the property, establishing thoroughbred cattle operations. After the national monument was established, fields were maintained by local farmers through lease agreements. Agricultural land uses were slowly discontinued after the park initiated a prairie restoration program in the early 1980s. Nothing remains of the former fields or the orchards on the property. Agricultural land uses are missing from the park landscape today.

Farming and stock raising remain important land uses within the landscape that surrounds the park. The Winter family, owners of the adjacent farm, were neighbors of Moses Carver. They continue to operate the farm across the road. Cattle grazing and other agricultural activities on lands within the vicinity of the park contribute to its historic setting.²⁹³

Park Housing. Housing facilities were constructed as part of Mission 66 improvements made within the park in the late 1950s and early 1960s. The three buildings, designed to accommodate park personnel, were used between circa 1960 and circa 1978. They are currently unoccupied and slated for demolition. The park housing land use, present during the period of significance, is missing from the park landscape today.

Mineral extraction. During the early- to mid-twentieth century, a 30-acre portion of the original Moses Carver farm was used to extract lead and zinc from the mineral rich local geology. Mining

on the property continued until circa 1943. This historic land use is missing within the park today.

Residential. The Moses Carver family is known to have resided on the Moses Carver farm during much of the nineteenth century. Two additional residences were present on the property during the late nineteenth and early twentieth centuries. These included the William and Gilmore farmhouses. The property subsequently served as the residence of the Shartel family. The last resident of the property was a caretaker engaged to oversee the property after its initial acquisition by the federal government. Once the park was established, residential land uses were replaced by park housing; both are now missing from the park landscape today.

Contributing Land Uses.

- Cemetery
- Commemoration
- Commerce
- Maintenance
- Interpretive/museum/educational
- Park administration
- Recreation
- Utility
- Visitor services

Non-contributing Land Uses.

- Conservation

Missing Land Uses.

- Agriculture
- Park Housing
- Mineral extraction
- Residential

293. Toogood, 43.

3.3.7 Cultural Vegetation

There are several examples of cultural vegetation presently associated with George Washington Carver National Monument that were established by the NPS to enhance the aesthetic and interpretive value of the park. Ornamental planting beds with trees, shrubs, and perennials at the park entrance and along the entrance road, foundation plantings around the visitor center, and planting beds edging the walks in the environs of the visitor center, are designed to enhance the appearance of the park and honor the memory of George Washington Carver (Figure 73 through Figure 76). The park has also planted native forbs along portions of the Carver Trail to contribute aesthetic and interpretive value.



FIGURE 73. Ornamental planting beds along the east facade of the visitor center.



FIGURE 74. Ornamental plants along the breezeway connecting the visitor center and maintenance building.



FIGURE 75. An ornamental planting bed in the visitor center parking lot planted by a local gardening club and maintained by park personnel and volunteers.



FIGURE 76. Ornamental planting beds edged by stone surrounding the brick entrance piers.

Some of the cultural vegetation located within the park, such as walnut fencerows and a demonstration garden exhibit near the Moses Carver house, is designed to recall features of the Moses Carver farm for interpretive purposes (Figure 77 and refer to Figure 55). In 1983, the park also attempted unsuccessfully to cultivate a persimmon grove to recall a favorite memory of George Washington Carver. Since the 1960s, the park has actively planted native trees to replace trees lost to disease and weather events.

The cultural vegetation that contributes to the significance of the park landscape is associated with the early park development period. This includes the replanted walnut fencerow, picnic grove, and ornamental plantings associated with the former housing/administrative area.



FIGURE 77. A demonstration garden exhibit in the vicinity of the Moses Carver house.

No examples of cultural vegetation survive from the period during which the Carvers owned the property. Missing cultural vegetation from this period includes cultivated crops, pasture grasses, rows of walnut trees used as fencerows, and a large nut and fruit tree orchard thought to have contained at least 520 trees by 1880. The dwelling precinct is also thought to have included a kitchen garden surrounded by a picket fence and a small orchard. Another vegetation feature described in historic accounts of the property that is now missing is a black walnut tree referred to as the “hanging tree” thought to have a direct connection to Moses Carver. This tree was interpreted along the Carver Trail when the park first opened, although the tree soon died.²⁹⁴

The Shartel family appears to have planted the grove of shade trees that edges the park entrance road (refer to Figure 49). This grove has been incorporated into the park experience for visitors as a picnic area. The park regularly plants trees to perpetuate the grove.

Cultural Vegetation associated with the Moses Carver farm. Early settlers, like the Carvers, are known to have established homesteads in this part of Missouri near fresh water sources and timber, often at the junction between timber and prairie land. The first crop fields were often located on level terraces of creek bottomlands where flooding had deposited fertile soils. To establish fields in these areas, settlers first

had to remove the trees associated with gallery forests, often by cutting or girdling. The rate that settlers were able to clear has been estimated at between two and three acres a year.

There were no fence laws in place at the time, and livestock were generally left to forage in the woodlands and on the prairies. The young offspring were often kept penned or tied near the house precinct to prevent the parents from wandering off. Rather than fence the pasture land, farmers fenced their fields to exclude livestock. Fences were typically constructed using split rails fashioned from the most rot-resistant timber, or using fieldstones removed from cleared crop fields. This kept livestock from trampling or grazing the crops.²⁹⁵ No specific evidence of the cultural vegetation associated with the Moses Carver farm survives today within the park.

Fields, Pastures, and Woodlands. Moses Carver is known to have improved 100 acres of his farm by 1860, which involved clearing and plowing for cultivation and other activities. The agricultural census for that year indicates that Moses Carver grew Indian corn, wheat, oats, Irish potatoes, hay, flax, and rye, much of which would be fed to his livestock during the winter, or sold or consumed by the Carver family and work hands.²⁹⁶

By this time, farmers had begun to abandon bottomlands and terrace fields in favor of upland prairie after exhausting the bottomland soil and struggling with farming in flood-prone zones. Abandonment of crop fields along stream corridors led to successional changes in the plant communities. Persimmons, sumac, and cherry, common early colonizers of old fields, likely became prevalent.

The 140 acres of unimproved land remained an important source of wild foods that were collected for consumption by the Carvers, as well as George and his brother, Jim. Walnut trees grew naturally in the area, but apparently were also planted by Moses Carver; the timber made good fences, flooring, inlay, and trim. Walnut trees were also

294. Ibid., 42, 73–74.

295. Harrington et al., 58.

296. Toogood, 41.

often planted around house precincts to help reduce yard maintenance, as walnuts emit a toxin from their roots that inhibits the growth of other plant species.

In Newton County, residents like the Carvers experienced significant changes in regional farm life during the latter part of the nineteenth century due to the emancipation of slaves, and the emergence of the mining and cattle industries. For farmers, zinc and lead mining operations provided a ready market for fruit, vegetables, and livestock. The Carvers likely began to use at least part of their farm for commercial rather than subsistence agriculture beginning in the 1870s.²⁹⁷

By 1875, the regional population had reached 12,000, and the mining and cattle industries were well established. Many farms adapted by increasing the number of acres in production, converting prairie into crop fields and improved pasture. By the late 1870s, there was likely little undisturbed prairie left on the Moses Carver farm. George Washington Carver's recollection of persimmon trees on the farm would be consistent with these changes. Short leaf pine, oaks, and hickories slowly disappeared, replaced by hackberry, elm, honey locust, and black walnut tree, along with Osage orange. The Osage orange was introduced into the region for fencerows, but quickly became an invasive nuisance. Successional woodlands that grew up on fallow land was much denser than the earlier gallery forests.²⁹⁸

Although some of the plants known to the Carvers remain present on the property today, the composition of the pastures and woodlands are not consistent with those present during the Carver period, and the field, pasture, and woodland features associated with the Moses Carver farm are all missing from the contemporary landscape.

Cultural Vegetation associated with the Shartel farm. The Shartels removed many of the features of the Moses Carver farm, including the

rows of walnuts, the stone walls, the orchards, and the remains of the Williams house and other dwelling precincts, including associated gardens.²⁹⁹ The Shartels are known to have raised thoroughbred cattle on the property. All of the fields were likely converted to cool-season grasses under Shartel ownership to support pasturage. The Shartels likely planted the grove of shade trees that edge the park entrance road to the north and provide the setting for the picnic area (see also below).

Cultural Vegetation associated with Park Activities.

Replanted walnut fencerows. Moses Carver is thought to have planted walnut fencerows in several locations around the farm as living fences.³⁰⁰ One of these is thought to have existed between Carver Branch and the cemetery. In the early park development period, the NPS planted a row of walnut trees along the Carver Trail as an interpretive aid to recall this element of the Moses Carver farm. This fencerow survives from the early park development period and contributes to the significance of the park landscape.

Ornamental plantings at the park housing complex. The three park housing buildings constructed in 1959–1960 are edged by foundation plantings and other groupings of ornamental plantings designed to screen views of the complex from visitor use areas. These plantings were primarily composed of native tree and shrub species (Figure 78). Many of the ornamental plantings indicated in as built drawings from 1960 remain present on the site today.

Plantings were later used to screen views of functional areas within the complex. In 1977, Amure River South privet (*Ligustrum amurense*) shrubs, a non-native species, were planted around the fire hydrant near the Superintendent's residence for aesthetic reasons.³⁰¹ Plantings that survive from circa 1960 contribute to the significance of the park; later additions do not.

297. Harrington et al., 63.

298. Ibid., 65.

299. Ibid., 66.

300. Ibid., 63.

301. Superintendent's Annual Report, 1977.

Picnic grove. The landscape to the north of the entrance road is characterized by the large grove of mature, deciduous, shade trees described previously. The trees are irregularly and widely spaced, allowing turf to grow beneath them. The grove was likely planted by the Shartels, who owned the property between 1913 and 1953. Tree species include walnut, oak, sycamore, and hackberry. Elms were formerly an important component of the grove. However, many American and slippery elms were lost in the 1960s to Dutch elm disease. The park actively replaces trees in the grove as they are lost with native species. This grove, which has been used as a picnic area for the park since the early 1950s, survives from the early park development period and contributes to the significance of the park landscape.

Native tree plantings. When the NPS acquired the property in 1952, it contained groves and woodlands of native trees along the Carver and Harkins branches. These form the basis for the riparian communities present today. The park recognized the importance and value of these native woodlands, and actively perpetuated the tree plantings.

In 1963, the park superintendent noted the value of the park's vegetation to visitors:

Academic groups are increasing in visitation to the area. The emphasis is on the educational information to be obtained from the birthplace. This seems feasible as the Carver story is connected with education, and the good plant identification and the great variety of native plants on the area would tend to make these visits of interest to classes in history, botany, and the natural sciences. We have shown a decided increase in the area lies not as a picnic site, but in the educational benefits of our area.³⁰²

In 1964, college botany classes are known to have visited the park due to the variety and diversity of species present.³⁰³

One of the management concerns during this period was the threat posed by the emerging Dutch elm disease to the park's large number of American and slippery elms. The 1961 Superintendent's annual report describes efforts conducted by the park to protect and treat the park's elm trees, which were part of the naturally occurring woodlands as well as the picnic grove. The report suggests that the park adopted a spray program to protect surviving trees from the elm bark beetle. Throughout the 1960s, the Superintendent's annual reports continue to mention this area of concern. In 1967 alone, the park reported that 27 out of a total of 150 surviving mature elms were infected with Dutch elm disease and had to be removed. By the early 1970s, the park began to realize that it was no longer able to care adequately for the failing trees, and in 1973 ceased treatment programs.³⁰⁴ The last American elm was removed from the park in 1978.³⁰⁵

Throughout the 1960s and 1970s, the Superintendent's annual reports also note the addition of native trees to replace the lost elms and other trees as they succumbed to age, storms, and other natural causes. Superintendent's annual reports repeatedly mention the loss of trees during storms. For example, in 1973, severe storms uprooted 100 trees. Another storm the following year uprooted another 100 trees.³⁰⁶

Replacement plantings appear to have been focused along the Carver Trail and in the picnic grove. Some trees were transplanted from the wild. Care was also taken to prune and treat surviving trees. Several native species were listed as being planted on a regular basis, including oak, dogwood, redbud, maple, yellowwood (*Cladrastis kentukea*), black gum (*Nyssa sylvatica*), and Kentucky coffeetree (*Gymnocladus dioica*).³⁰⁷

In 2002, a seasonal forestry technician and two Youth Conservation Corps crews worked on re-vegetation of the woodlands surrounding the areas

302. Superintendent's Annual Report, 1963.

303. Superintendent's Annual Report, 1964.

304. Superintendent's Annual Reports, 1972, 1973.

305. Superintendent's Annual Report, 1978.

306. Superintendent's Annual Reports, 1972, 1973.

307. Superintendent's Annual Report, 1967.

of the Carver Trail in the process of being rerouted.³⁰⁸

All of these tree plantings postdate the period of significance and constitute non-contributing resources. They are, however, important and reflect the park's ongoing efforts to establish an aesthetic designed to honor George Washington Carver.

Restored native grassland prairie. As noted earlier, the park currently manages 130 acres as restored grassland prairie. The prairie program was intended to more effectively recreate the historic scene while protecting resources within the park. The park is divided into nine prairie management units that reflect a combination of field location, soils, and past land use. The restored prairie units fall within the former agricultural fields of the Moses Carver and Shartel farmsteads. They reflect more than 35 years of work conducted by the NPS in conjunction with several partnering organizations.

Park plans to restore native grassland prairie can be traced to a study conducted in 1975 by Dr. Robert Landers, who identified a 10-acre area he thought contained remnants of native prairie grasslands.³⁰⁹ Based on his study, the park initiated plans to use prescribed fire to manage the parcel in native grassland as delineated in a 1977 Historic Resources Management Plan. The Superintendent's annual report of 1977 notes that the field lease program was anticipated to change based on this decision. A Missouri Conservation Department Field Service Agent visited the park to assist with the efforts and wildlife habitat enhancement.³¹⁰

In 1981, the park prepared a fire management plan and prescribed burn plan and signed a fire agreement with the Missouri State Conservation

Commission in anticipation of beginning a broader effort to restore native grassland prairie.³¹¹

In 1982, the park conducted its first application of prescribed fire to manage prairie restoration parcels, which were increasing in size each year.³¹² Prairie land was then disked and native grasses planted. The park installed a prairie restoration exhibit for the benefit of visitors to explain the change in land management. Later that year, the park prepared a Prairie Restoration Action Plan; as part of the plan, fixed point photographs were taken on a monthly basis to create a record of the program's progress.³¹³

In 1983 and 1984, the park continued using prescribed fire to manage four of the six prairie units, while reseeding was completed in another. Although agricultural special use permits were renewed, the park began to plan for a phased conversion of most or all cropland to native grasses using a hay management program.

In 1984, the State of Missouri provided seed for the endangered Meades milkweed (*Asclepias meadii*) as part of a cooperative program to establish the plant in protected areas around the state.³¹⁴

In 1985, the park finalized plans for seeding an additional 60 acres of prairie. Exotic species control efforts were conducted with assistance from the Missouri State Conservation agent.³¹⁵

In 1986, prairie restoration efforts involved monitoring and removing woody invaders. Some trees were allowed to remain to support establishment of a savanna-type ecosystem.³¹⁶

In 1988, 1989, 1990, and 1991 the park continued its use of prescribed fire to manage the prairie restoration program.

308. Superintendent's Annual Report, 2002.

309. Superintendent's Annual Reports, 1972, 1975.

310. Superintendent's Annual Report, 1977.

311. Superintendent's Annual Report, 1981.

312. For a summary of the annual burns between 1983 and 1994, see Appendix D.

313. Superintendent's Annual Report, 1982.

314. Superintendent's Annual Report, 1984.

315. Superintendent's Annual Report, 1985.

316. Superintendent's Annual Report, 1986.

In 1991, the Newton County 4-H Council provided prairie grass seed, which was used to seed portions of management units 5 and 6. Units 1 and 4 were hayed, and the prairie hay donated to support the activities of the Council. Prairie units 1, 2, 3, 4, the east half of 7, 7A, and 7B were also burned in conformance with the Prairie Management Program. Woody species, primarily sumac, were cut and treated with the herbicide garlon. Units 5 and 6 were mowed to control less desirable annuals and exotics. Most of unit 6 was plowed, disked, and seeded in an attempt to improve the composition of the grassland community.³¹⁷

In 1992, prairie management efforts included prescribed burning of units 1, 2, 3, and 4, and haying of units 1, 2, 3, and 4 west of the walnut fencerow. Units 3, 5, 6, and 7 were also mowed to control woody growth. To further support visitor understanding of and appreciation for the prairie restoration program, the park began offering prairie walks during an annual event known as Prairie Day.³¹⁸

In 1994, the park continued vegetation monitoring, as well as mowing, and treating with herbicides. Work continued in this way through the remainder of the 1990s.³¹⁹ Prescribed burns were conducted in 1995, 1997, 1998, 1999, and 2000.

Between 1998 and 2000, assistance was afforded by the Ozark Council, the natural resource office at Wilson's Creek National Battlefield, and the state. The 4-H Council also continued to work with the park, haying 350 bales of prairie grass and removing a large stand of Japanese honeysuckle.³²⁰

In 2002, a seasonal forestry technician and two YCC employees were hired to control exotic species in the prairie units. Japanese honeysuckle, Johnson grass, Lespedeza, smooth sumac, and crown vetch were targeted. In 2003, additional

work to control exotics was conducted, and multiflora rose added to the list of targeted species. A fire management plan was initiated but not completed. Due to the lack of a fire management plan, the prescribed fire program was suspended. Without prescribed burns, the number of exotic plants observed as part of monitoring programs increased, along with the fuel loads.

Once a fire management plan was put into place in 2005, the park was again able to use prescribed fire to manage the prairie restoration areas. In 2005, 73.4 acres were burned.³²¹ Additional acres were burned in 2006.

In 2007, the prairie units were managed through haying and the use of prescribed fire in cooperation with Newton County 4-H Council and the Missouri Extension Office.³²² In 2008, prairie units 5 and 6 were burned. Also in 2008, the park began developing a BMP manual for the prairie restoration program.³²³ Prescribed fire was again used in 2010.

In 2011, prairie and woodland management areas encompassed 200 acres of the 240-acre park. Management practices included mowing, hand pulling, herbicide application, and prescribed fire.³²⁴ In support of these efforts, the park prepared a Vegetation Management Action Plan with the assistance of the HTLN EPMT. The plan also relied on the information afforded by a study prepared by Burfield and Nilon through the University of Missouri at Columbia in 2011 titled *Integrated Vegetation Management Recommendations*.³²⁵ Prescribed fire was again used to manage prairie restoration areas in 2012 and 2014.

The restored native grassland prairie areas within the park postdate the early park development period, and do not accurately reflect vegetation communities associated with the 1865–1877

317. Superintendent's Annual Report, 1991.

318. Heartland geodatabase; Superintendent's Annual Report, 1992.

319. Superintendent's Annual Report, 1997.

320. Superintendent's Annual Reports, 1998, 1999, 2000.

321. Heartland geodatabase.

322. Superintendent's Annual Report, 2007.

323. Superintendent's Annual Report, 2008.

324. Superintendent's Annual Report, 2011.

325. Nilon and Burfield.

period of significance. As such, they constitute a non-contributing resource.

Ornamental plantings along the park entrance road. Ornamental plantings are associated with the park entry gate at Carver Road, and along the road in a bed located at the beginning of the loop. These plantings were installed by a local gardening group, and are maintained by park personnel and volunteers. The plantings include trees, shrubs, and ornamental grasses.

These features postdate the early park development period and do not contribute to the significance of the park landscape.

Ornamental plantings around the visitor center.

Ornamental plantings were installed along the foundation of the visitor center and around the building environs circa 1959–1960 as part of the early development of the park. Many of the original plants died, however, soon after planting. In 1963, the Superintendent’s annual report notes that replacements were planted around the foundation of the building, including sugar maples, oaks, walnut, dogwood, and redbud (*Cercis canadensis*), as well as periwinkle vines.³²⁶ In 1967, the roses in the beds at the entrance to the building were replaced.³²⁷ Flower gardens were later established in 1972 in honor of Carver’s great love for flowers.³²⁸ In 1973, the flower gardens sustained damage due to a tornado, and were replaced.³²⁹

Ornamental plantings were later added to help screen views of functional areas within the complex. In 1977, junipers were installed to screen heat pump units from view along the Carver Trail.³³⁰ Evergreen privet shrubs were used to screen some park fire hydrants.³³¹

Ornamental plantings continued to be added around the visitor center in the 1980s, some to shade the building as an energy conservation measure.³³² The Superintendent’s annual report

for 1991 indicates that park maintenance personnel installed materials in new planting beds around the visitor center and additional trees to enhance the appearance of the visitor center complex.³³³ In 1994, additional planting beds were installed in front of the visitor center and around the new comfort station, as well as elsewhere around the park’s developed core.³³⁴



FIGURE 78. Plantings associated with the former housing/administrative area were established at the same time as the buildings. Source: George Washington Carver National Monument photo collection.

While some of the existing material may be similar to that planted in 1959–1960, it appears that the majority of the shrubs and herbaceous plantings have been replaced or are new features that respond to the visitor center expansion. The existing plantings thus postdate the early park development period and do not contribute to the significance of the park landscape.

Fescue fields. Fescue was introduced to the area in the late nineteenth century, and quickly became popular for pasture use. Fescue continues to be associated with the lead and zinc mine site, and many of the farms located near George

326. Superintendent’s Annual Report, 1963.

327. Superintendent’s Annual Report, 1967.

328. Superintendent’s Annual Report, 1972.

329. Superintendent’s Annual Report, 1973.

330. Superintendent’s Annual Report, 1977.

331. Superintendent’s Annual Report, 1976.

332. Superintendent’s Annual Report, 1980.

333. Superintendent’s Annual Report, 1991.

334. Superintendent’s Annual Report, 1994.

Washington Carver National Monument. It was not likely a component of the farm until the latter part of Moses Carver's tenure of the farm.

Fescue fields were an important component of the property during Shartel ownership, when the property was used to raise cattle. After the NPS acquired the property in 1952–1953, it elected to maintain most of the fields in hay production to perpetuate the historic agricultural setting. The park entered into lease agreements with local farmers to maintain the fields in hay production. During the 1960s, the Superintendent's annual reports noted that agricultural land use contracts were issued to maintain 145 acres of the park in "their historical character as pasture or hay lands."³³⁵ This continued until 1982, when the park began converting former cropland to restored native grassland prairie. The majority of the fields present in 1952 have since been converted to grassland prairie, and this cultural vegetation type is missing from most of the park. The 30-acre parcel where lead and zinc were formerly mined remains a fescue field. This fescue field was not part of the property during the early park development period, and its character postdates the Moses Carver farm period. Fescue fields do not contribute to the significance of the park landscape.

Kitchen garden exhibit. Associated with the Moses Carver house precinct is a kitchen garden exhibit where vegetables known to have been grown by the Carvers are featured in fenced beds. The 1975 Superintendent's annual report is the first to mention the use of demonstration gardens to interpret the plants studied by George Washington Carver.³³⁶ The kitchen garden exhibit continues to convey interpretive messages that have been shared with visitors for several decades. It is maintained by volunteers.³³⁷ This feature postdates the period of significance and does not contribute to the significance of the park landscape.

Missing Cultural Landscape Features.

Carver House domestic plantings. Moses Carver is known to have planted or maintained oak, hickory, elm, and black jack oak trees around his house.

Walnut fencerows. Carver also planted several rows of black walnut trees around the property, including a line west of the house, as fencerows or living fences.³³⁸ Original examples of these features are missing from the contemporary landscape.

Orchard. Moses Carver is known to have planted an extensive fruit and nut orchard on the property during the 1870s. By the 1880 census, the orchard was recorded as containing at least 520 trees.³³⁹ The orchard was removed by the Shartel family after 1913. No evidence of the orchard remains on the property today.

Kitchen garden. In southwest Missouri, most settlers raised a variety of food crops for family consumption in kitchen gardens, usually small fenced plots, located near the dwelling. Vegetables, herbs, and fruits often grown in these kitchen gardens included white or Irish and sweet potatoes, sage, red pepper, string beans, roasting ears, onions, peas, pumpkins, squashes, cabbages, turnips, and beets. Many gardens also included fruits, such as watermelon and musk melon.

The agricultural census records the Moses Carver farm as specifically growing Irish potatoes. Carver's nephew James Robinson recalled Moses "planted [them] in the same spot every year." Neighbor Elza Winter noted that Carver grew gourds shaped like pumpkins for water and sugar containers. He indicated that the vines grew along Carver's picket fence, which likely enclosed the garden to protect it from the grazing stock.³⁴⁰

Persimmon grove. Moses Carver had a grove of persimmon trees on his property, and George Washington Carver described finding persimmon fruits on the farm. Park interpreters share the story

335. Superintendent's Annual Report, 1967.

336. Superintendent's Annual Reports, 1975, 1976, 1977.

337. Superintendent's Annual Report, 2003.

338. Toogood, 27–28.

339. Ibid., 43.

340. Ibid., 41.

of George recalling how he would sneak out of the cabin to eat persimmons, and get caught. Unfortunately, nearly all of the persimmon trees have died through the years, and very few remain within the park landscape today.

Hanging tree. The hanging tree was a large black walnut located on the knoll overlooking Carver Branch. The tree was the focus of a legend suggesting that thieves came onto the Moses Carver property, captured Moses Carver, and hung him by his thumbs from the branches of this tree to encourage him to divulge the location of a rumored buried cache of money, which he refused to do. Although the story remained unsubstantiated, the tree was an interpreted element along the original Carver Trail during the early park development period. The Carver Trail passed the tree and a sign that interpreted its history. Soon after the park opened, however, the walnut referred to as the hanging tree died.³⁴¹ The NPS attempted to prolong the interpretive value of the tree by treating it with preservative chemicals, but eventually were forced to remove it after it declined further. No evidence of the hanging tree remains within the park today, although a section of the tree is retained in the park's museum collections (Figure 79).³⁴²

Carver family cemetery. There is no cultural vegetation associated with the Carver family cemetery. Traditional practices associated with cemeteries often included removal of all vegetation through sweeping. The historic character of the cemetery vegetation is not presently known. Today, the cemetery is maintained in mown turf. Other vegetation is often removed from the cemetery. For example, a YCC crew stationed at Wilson's Creek National Battlefield traveled to the park in 1977 to remove vines and other unwanted vegetation from the rock walls of the Carver family cemetery.³⁴³



FIGURE 79. The “hanging tree” died soon after the park opened. Source: George Washington Carver National Monument photo collection.

Contributing Cultural Vegetation.

- Replanted walnut fencerow
- Ornamental plantings at the former housing/administrative area
- Picnic grove

Non-contributing Cultural Vegetation.

- Native tree plantings
- Restored native grassland prairie
- Ornamental plantings along the park entrance road
- Ornamental plantings around the visitor center
- Fescue fields
- Kitchen garden exhibit

Missing Cultural Vegetation.

- Fields, pastures, and woodlands
- Carver House domestic plantings
- Walnut fencerows
- Orchard
- Kitchen garden
- Persimmon grove

341. Ibid., 42.

342. Personal communication, Lana Henry, 75% draft CLR review comments, April 2014.

343. Superintendent's Annual Report, 1977.

- Hanging tree
- Carver family cemetery vegetation

3.3.8 Circulation

Circulation associated with George Washington Carver National Monument ranges from improved and unimproved vehicular roads and parking, to pedestrian walks, paths, and trails. The vehicular systems include the park entrance road and associated parking areas; the spur road to the picnic area; maintenance area access and parking; the former housing/administrative area entrance, access road, and parking; and an internal system of two-track farm lanes that provide access to the field areas and the park boundary for maintenance and law enforcement purposes. Pedestrian circulation features include concrete walks associated with the entrance road and parking; the entrance into the visitor center; the Carver Trail; the Contemplative Loop Trail; and the seasonal trail, an informal route linking the former housing/administrative area with the developed core.

Park entrance road and visitor parking area. The park entrance road extends into the park from Carver Road. The entrance itself is marked by ornamental shrub plantings and brick piers that support metal gates (refer to Figure 59). The asphalt road passes through mown turf lawn set with large shade trees. Near the visitor center,

the road splits to form a tear-drop shaped turn-around and drop off area, edged by two long bays of parking (Figure 80 through Figure 82).



FIGURE 80. The park entrance road as it passes the picnic grove.



FIGURE 81. Parking edges the road in the vicinity of the visitor center.



FIGURE 82. The entrance road features a drop-off area and looped return edged by parking.

The park entrance road and the southern bay of the visitor parking area were developed as part of the Mission 66 improvements made to accommodate visitors in 1959–1960. Weidman Industries, Inc. constructed the asphalt-paved entrance road and parking area, while Jones Construction Company built the entrance gate, signs, and fencing. All of the above facilities were completed in time for the July 1960 dedication of the visitor center (Figure 83).³⁴⁴ Prior to 1960, the park was accessed using the farm road established by the Shartels, which followed a similar alignment (Figure 84 and Figure 85). The Shartel entrance road was flanked by stone piers and wood fencing, and surfaced with gravel and hard-packed earth.



FIGURE 83. The Shartel entrance road was flanked by stone piers. Source: George Washington Carver National Monument photo collection.



FIGURE 84. The park entrance road prior to Mission 66 improvements. Source: George Washington Carver National Monument photo collection.



FIGURE 85. A new park road and entrance gate were completed in 1960. Source: George Washington Carver National Monument photo collection.

Although the entrance road has remained in the same location since its construction, it has been rehabilitated several times, and most features associated with the road, such as the entrance sign, planting beds, and parking areas have been added or replaced since 1960. In 1974, the park road system was considered in poor condition. It was resurfaced in 1975.³⁴⁵ Circa 1986, an additional parking area was added along the northern side of the loop.³⁴⁶ The road was again repaved in 1989. In 1991, the park's roads, parking lots, and sidewalks were described as rehabilitated.³⁴⁷

The entrance road and southern parking area survive with integrity from the early park development period and contribute to the significance of the park landscape. The integrity of the road is diminished slightly by changes to its setting, such as a new park identity sign, planting beds, and the addition of the northern parking loop.

Maintenance area access road and parking.

An asphalt-paved maintenance area access road arises from the south end of the entrance road. The maintenance area access road leads to the walled maintenance yard (Figure 86). A gravel-surfaced employee parking area edges the road to the south (Figure 87). An additional gravel-surfaced road extends north from the asphalt

344. Toogood, 70.

345. Superintendent's Annual Reports, 1974, 1975.

346. Superintendent's Annual Report, 1986.

347. Superintendent's Annual Report, 1991.

maintenance road, providing access to the rear door of the visitor center (Figure 88).

The maintenance area access road appears to have been constructed as part of the original visitor center and maintenance area development in 1960. Parking along the edge of the road was never formalized and occurs in an informal manner by park employees.

The maintenance area access road survives with integrity from the early park development period and contributes to the significance of the park landscape. The informal parking area postdates the period of significance, diminishes the integrity of the circulation feature, and does not contribute.



FIGURE 86. The maintenance area road arises from the south end of the park entrance road.



FIGURE 87. A gravel-surfaced employee parking area edges the maintenance area access road to the south.



FIGURE 88. A gravel-surfaced road leads to the rear of the visitor center.

Picnic area spur road and parking. The picnic area spur road leads north into the picnic area from the park entrance road (Figure 89). The asphalt-paved road curves through the grove, providing access to turf lawn set with picnic tables. The spur road ends in a small parking area located near the edge of the Carver Branch riparian corridor (Figure 90). The picnic area is described as present in 1953, and was apparently accessed from the present-day spur road. It appears that the road was upgraded in 1984. The road survives from the early park development period with sufficient integrity to contribute to the significance of the park landscape.



FIGURE 89. The paved picnic area spur road leads north from the park entrance road.



FIGURE 90. The picnic spur ends in a small parking area.

Former housing/administrative area access road and parking. Vehicular access to the former housing/administrative area arises from Carver Road approximately 300 feet south of the primary park entrance (Figure 91). Access to the area by the public is restricted by a metal gate (Figure 92). The asphalt road leads to the entrances of the three former residences, as well as the storage yard and fuel tank enclosure located to their south. Several small parking bays edge the roadway, which ends in a loop in front of the four-unit seasonal housing building (refer to Figure 94). Concrete wheelstops are located along the edge of each parking bay.



FIGURE 91. The housing complex road arises from Carver Road.



FIGURE 92. Access to the housing complex road is restricted by a metal gate.

The former housing/administrative area access road and parking area was completed in May 1959 along with the buildings (Figure 93).³⁴⁸ The original parking facilities were enlarged in 1979 near the four-unit seasonal housing building to accommodate administrative office use.³⁴⁹ An additional parking area was installed across from the Historian's residence in 1989. The turn-around loop was widened at the same time. The changes that have been made to the original configuration diminish the integrity of the access road.

The former housing/administrative area access road survives with diminished integrity from the early park development period and contributes to the significance of the park landscape.



FIGURE 93. The sidewalk and parking area at the Superintendent's residence in 1959. Source: George Washington Carver National Monument photo collection.

348. Toogood, 70.

349. Superintendent's Annual Report 1979.



FIGURE 94. The road ends in a loop in front of the four-unit seasonal housing building.



FIGURE 95. Several unpaved farm lanes or two-track roads arise from the south edge of the maintenance area access road.



FIGURE 96. The Carver Trail arises from a gravel landing north of the visitor center.

Internal access roads. Several two-track grass and gravel surfaced access roads extend throughout the property. These are used by the park to maintain fields, boundary features, and woodlands. The access road system is reached from the western end of the maintenance area access road, and from the park perimeter. The access roads are not open to the public (Figure 97 and refer to Figure 95). Gates in the park boundary fence are associated with several two-track access roads (Figure 98). Access roads are present in the southwest corner of the park, on the site of the former zinc mine, an area that is also used to house a slash pile (Figure 99). Access roads generally follow the park boundary and treelines, although some cross restored grassland fields.

Some of these access roads may follow historic farm roads. For example, the North-South Road that follows the park's west boundary may be the same route noted in the 1841 General Land Office survey notes.³⁵⁰ Further investigation is needed to determine the history of the access roads.

The existing access roads appear to reflect historic patterns and farm uses present by the time of park establishment and contribute to the significance of the park landscape.



FIGURE 97. The grass or grass and gravel surfaced two-track roads afford access to the fields, woodlands, and park boundaries.



FIGURE 98. Gates in the park boundary fence provide access to several of the two-track roads.



FIGURE 99. Several access roads are located in the southwest corner of the park in the vicinity of the former zinc mine.

Carver Trail. The mile-long Carver Trail winds through the park's developed core. The trail arises from a trailhead north of the visitor center. Along the trail, visitors pass a succession of features, including a bronze dedication plaque, an exhibit interpreting Carver's birthplace site, Carver Spring, the Boy Carver statue, Williams Pond, the circa 1881 Moses Carver house, the Carver family cemetery, and the Carver bust. The trail was one of the first amenities established by the NPS at the park. It is meant to link cultural and natural features on the site with George Washington Carver's early life on the farm.

Materials used to surface the trail vary. Near the visitor center, the surface is gravel (Figure 96). A queuing area composed of concrete block marks the trailhead (Figure 100). The trail continues as a rubberized surface set over concrete (Figure 101).

350. Cultural Landscape Inventory, 37.

As the trail traverses the steep slope of the Carver Branch ravine, it is paved with asphalt, and configured as a switchback that is edged by low stacked stone walls. Boardwalks and small wooden footbridges elevate the trail over wet areas associated with the Carver Spring and Carver and Williams branches (Figure 102 and Figure 103). Two prefabricated steel and wood plank bridges convey the trail over Carver Branch in separate locations (Figure 104). The first is located near the Boy Carver statue, while the second is located south of the Moses Carver house (Figure 105 and Figure 106). Other parts of the trail are surfaced with gravel (Figure 107 through Figure 109). A concrete amphitheater-like plaza encircles the Carver bust, and includes concrete steps (Figure 110).

The graveled area outside the north entrance to the visitor center features a series of paths that link the beginning and end of the Carver Trail, and the concrete walk that edges the visitor center.



FIGURE 100. A concrete-block queuing area marks the Carver Trail trailhead.



FIGURE 101. A portion of the trail features a rubberized surface set over concrete.



FIGURE 102. A boardwalk elevates the trail over the wet area associated with Carver Spring.



FIGURE 103. The trail is surfaced with gravel as it passes through the woodland, and is set with wooden footbridges where it passes over wet areas and ephemeral streams.



FIGURE 104. A prefabricated bridge conveys the trail over Carver Branch.



FIGURE 105. Boardwalk is used where the trail crosses the confluence of Carver and Williams branches.



FIGURE 106. A second prefabricated bridge crosses the confluence of Carver and Williams branches.



FIGURE 107. Gravel surfacing is used where the trail passes out of the woodland and follows the walnut fencerow.



FIGURE 108. The trail passes close to the cemetery.



FIGURE 109. The trail narrows as it passes through the prairie and turns east toward the visitor center.



FIGURE 110. A concrete plaza and stairs edge the Carver bust and mark the culmination of the Carver Trail.

Contemplative Loop Trail. The Contemplative Loop Trail is a one-quarter-mile spur trail of the Carver Trail that encircles Williams Pond. It is designed to provide a quiet experience meant to evoke the spiritual and philosophical aspects of Carver's life. Stone benches and polished granite blocks inscribed with quotes from George Washington Carver's speeches and writings are set

along the trail to foster quiet reflection (Figure 111). The trail is variously surfaced with wood chip mulch and leaf litter as it passes through the trees surrounding the pond, and a mown grass surface where it passes over the earthen dam on the west end of the pond. A wood-edged recycled plastic plank boardwalk carries pedestrians over a wet area south of the pond (Figure 112).



FIGURE 111. The Contemplative Loop Trail arises from the Carver Trail and leads around Williams Pond.



FIGURE 112. A wood-edged boardwalk conveys the trail over a wet area on the south side of the pond.

The Carver Trail was one of the earliest features developed at the park to connect visitors with George Washington Carver's historic associations with the property. Initially known as the Carver Childhood Trail and the Carver Nature Trail (Figure 113), it was intended "... to help visitors understand Carver and experience nature the way he experienced it from childhood.³⁵¹ Interpreted along the route was the original slave cabin, the

hanging tree, open fields associated with the Moses Carver Farm, Carver Spring and Branch, the Moses Carver house, a walnut fencerow, and the cemetery. Native trees and wildflowers were labeled for the benefit of visitors. Later, the Boy Carver statue was added near the spring.³⁵²



FIGURE 113. The Carver Trail pictured in August 1963. Source: George Washington Carver National Monument photo collection.

The trail as originally installed extended from an overlook terrace atop the knoll east of Carver Branch, to a large looping circle similar to that present today. The Boy Carver statue was added in 1960 along the then gravel trail. The Carver Branch crossing occurred via a wooden bridge.

By 1963, the NPS had begun to identify problems with the trail and to develop plans to improve it. In 1964–1965, the park was able to secure sufficient funding to resurface the trail, relocate a problematic section, and add a new rustic bridge for the Carver Branch crossing (Figure 114). However, a storm later that year washed out rock work added to support the bridge. The park subsequently paved the trail from the visitor center to the Carver Branch to protect visitors from wash outs and slippery surfaces approaching the stream (Figure 115).³⁵³

351. Cultural Landscape Inventory, 23.

352. Toogood, 68.

353. Ibid., 73.



FIGURE 114. The wooden bridge crossing Carver Branch in 1964. Source: George Washington Carver National Monument photo collection.



FIGURE 115. The trail was paved from the visitor center to Carver Branch in 1964. Source: George Washington Carver National Monument photo collection.

The trail continued to exhibit problems, however. In 1981, an assessment suggested that handrails were needed along steeper slopes, the bridges were in need of repair, and more benches were desired.³⁵⁴ Although the trail was repaired in 1982, a storm in 1983 washed out both bridges, and damaged the pavement.³⁵⁵ In 1984, the Missouri Army National Guard built four new bridges and an accessibility ramp, while the trail was again repaired and resurfaced.³⁵⁶ In 1988, a prefabricated steel bridge was installed to accommodate the crossings of Carver Branch.

Sections of the trail were again reconfigured and resurfaced in 1991.

In 1994, an accessible comfort station was installed near the visitor center. To provide access to the building, the park built new sidewalks and extended the Carver Trail.³⁵⁷

In 2001, 400 linear feet of asphalt walk were replaced with a 4-inch-thick concrete sidewalk overlaid with recycled rubber surfacing, and accessibility improvements were made between the cabin site and the spring, and near the confluence of the two streams, using boardwalk. Two new prefabricated steel arched bridges were installed across Carver Branch to allow for the safe passage of the visiting public. The trail was also expanded in 2001 to include the one-quarter-mile Contemplative Loop Trail around Williams Pond. The trail followed a mown grass route that had been established as early as 1979. New base rock and pea gravel were added to the trail surface.³⁵⁸

In 2002, additional work was done on the trail to correct safety hazards, including the addition of 50 tons of native rock, fill dirt, and topsoil to reshape the terrain to reduce the steepness of the slope. Sections of recycled plastic boardwalk were installed as part of an Eagle Scout project.³⁵⁹

In 2008, the park again undertook accessibility improvements for a 0.3-mile-long segment of the Carver Trail, incorporating switchbacks below the birthplace cabin site to reduce the existing grade of 12 percent to 4.5 percent. A 150-foot-long dry stacked stone retaining wall was added on the uphill side of the trail.³⁶⁰

The Carver Trail has been substantially altered since its original installation. Nonetheless, although it possesses diminished integrity of design, workmanship, and materials, the trail possesses sufficient integrity of location, setting, feeling, and association to contribute to the significance of the park landscape.

354. Superintendent's Annual Reports, 1981, 1982.

355. Superintendent's Annual Report, 1983.

356. Superintendent's Annual Report, 1984.

357. Superintendent's Annual Report, 1994.

358. Superintendent's Annual Report, 2001.

359. Superintendent's Annual Report, 2002.

360. Superintendent's Annual Report, 2008.

Walks. Several concrete walks are present within the park. These are located in the vicinity of the visitor center and the former housing/administrative area. Concrete walks edge the large island created by the looped entrance road, as well as the drop-off loop and the bus parking bays in the south parking area (Figure 116 and Figure 117 and refer to Figure 82). A wide concrete walk, lined with ornamental plantings, decorative benches, and quote stones, leads from the drop-off loop to the front entrance of the visitor center and around the north side of the building to the Carver Trail trailhead (Figure 118 and Figure 119). Another concrete walk links the drop-off loop to the covered breezeway between the visitor center and the maintenance building (Figure 120).



FIGURE 116. A concrete walk edges the visitor center parking area.



FIGURE 117. Concrete walks also edge the large island created by the looped entrance road.



FIGURE 118. A wide concrete walk leads from the parking area to the front of the visitor center.



FIGURE 119. The wide concrete walk leads around the visitor center to the north, providing access to the Carver Trail trailhead.



FIGURE 120. A walk connects the drop-off area and the breezeway between the visitor center and the maintenance building.

Concrete walks connected the parking area with the visitor center as part of early park development (Figure 121). These have been altered and amended since 1960 to accommodate universal accessibility needs as well as the expansion of the visitor center. In 1981, the park assessed barriers to access for visitors. In order to meet access goals, the park identified a need to improve the restrooms and the north entranceway into the visitor center, which had been determined to be difficult to maneuver. In 1982, ramps were added to the visitor center entrance for enhanced accessibility. These were later removed. As part of the visitor center expansion, the walk system was reworked, including around the building entrance and to its north. The present-day walks appear to follow similar alignments and configurations of the walks installed during the early park development period, but have since been replaced. They possess diminished integrity of design, workmanship, and materials, but otherwise possess sufficient integrity to contribute to the significance of the park landscape.

An informal path links the former housing/administrative area with the developed core. This path, known as the seasonal trail, is an informal feature that does not contribute to the significance of the park landscape.



FIGURE 121. Walks have been present along the road and parking areas since the early park development period. Source: George Washington Carver National Monument photo collection.

Concrete and asphalt walks link small parking bays with the concrete porches associated with the entrances into each of the three buildings in the housing complex. Wood ramps have been added

to two of the three buildings (Figure 122). An additional concrete walk connects the two residences (Figure 123). Walks were installed at the Superintendent's residence and the Historian's residence at the time the buildings were constructed.

Concrete walks within the former housing/administrative area survive from the period of significance and contribute to the significance of the park landscape. Other features postdate the period of significance and do not.



FIGURE 122. Walks and ramps allow access to two of the former residences, now used for storage.



FIGURE 123. A concrete walk links two of the residences in the former housing/administrative area.

Concrete walk in picnic area. A short concrete walk is located along the edge of the picnic area spur road, providing access to a universally-accessible drinking fountain and water pump

(Figure 124). The walk was added in 1993 and postdates the period of significance. As such it does not contribute to the significance of the park landscape.



FIGURE 124. A concrete sidewalk in the picnic area allows access to a drinking fountain.

Associated Circulation Features.

Carver Road. The park is accessed via Carver Road, which parallels the eastern edge of the park (Figure 125). Carver Road extends between Interstate 44 to the north and Iris Road to the south. It is a rural county road. Carver Road has afforded access to the park since its establishment.



FIGURE 125. Carver Road forms the eastern boundary of the park.

In 1956, the road approaches to the national monument were improved following Carver Day celebrations that indicated concerns regarding their condition.³⁶¹ However, the road remained gravel- or dirt-surfaced until circa 1966, when Carver Road was surfaced with asphalt. The new

surfacing extended to the southeast corner of the park. The work was completed as a cooperative effort between the Newton County Court and the Diamond Special Road District, based on the request of the park.³⁶² The road was again resurfaced in 1973 after being described as nearly impassable following a severe winter.³⁶³ In 2005, the park received money to improve its road system and parking lots. The park used some of the funds to work with the Newton County Commission and park neighbors to improve four miles of road leading to the park from two state highways. The park also successfully petitioned to have the speed limit in front of the park entrance reduced from 45 to 35 miles per hour.³⁶⁴

Elder Road. The park's south boundary edges an unimproved earth and gravel corridor known as Elder Road. Gates in the boundary fence afford access into the park from Elder Road in two locations.

Highways. Many visitors travel to the park from Exit 18A off **Interstate 44**, or Exit 35 off Interstate 49. From Exit 18A on I-44, visitors travel Highway 59 south to Diamond before heading west on **State Highway V** for 3 miles to Carver Road. Exit 35 on I-49 is located 5 miles west of the park, and connects to **U.S. Highway 71 south**, which in turn leads to State Highway V. Visitors follow State Highway V south for four miles before reaching Carver Road.

These roads are important routes that support visitation to the park. The significance of the George Washington Carver birthplace along local highways began to be recognized in 1942 when the state installed a highway marker along U.S. Highway 71 near Diamond that noted the area to be the "Birthplace of George Washington Carver."

George Washington Carver Historic Trail. The George Washington Carver Historic Trail was created as a joint effort between the Boy Scouts of America, the Ozark Council, and the park. The 10.2-mile route links Carver's birthplace with the school in Neosho that Carver attended in 1876. In

361. Toogood, 76.

362. Superintendent's Annual Report, 1966.

363. Superintendent's Annual Report, 1972.

364. Superintendent's Annual Report, 2005.

1975, park staff worked with the Boy Scouts of America to initiate work on the trail, which opened later that year.³⁶⁵ In 1979, the Carver Birthplace Association placed a memorial marker in the yard denoting the property as the first public school George Washington Carver attended. The Association also placed a memorial marker in the yard of the home belonging to Andrew and Mariah Watkins where Carver lived while attending school in Neosho.³⁶⁶ In 1995, trail improvements involving additional planning, development, routing, and signing were completed.

Missing Circulation Features.

Carver farm lanes. The Moses Carver farm likely included a primary entrance lane that connected the farm precinct with a nearby public road corridor, and internal farm roads that led to crop fields. No evidence of these circulation features exists today, with the possible exception of the north boundary road. It is thought that the present-day Moses Carver house, although it currently “faces east, on its original site it faced south—an orientation that exploited winter sunlight and provided a view of the country lane that once ran past the Carvers’ front porch towards the family cemetery.”³⁶⁷

Carver horse racing track. John Harris, a former Diamond area resident interviewed to record his memories of the property, recalled that Moses Carver’s neighbors brought their horses to the Moses Carver farm to race them on a one-half-mile track. Elza Winter remembered that “. . . Moses Carver got his money from raising race horses. Had a horse called Dog Legs because he was so ugly. Sold him. After that Dog Legs won races.” No additional documentation of this feature has been located to confirm the presence of a race track on Carver’s land.³⁶⁸

Contributing Circulation Features.

- Park entrance road and visitor parking area (north bay)

- Maintenance area access road and maintenance yard area parking
- Picnic area spur road and parking
- Former housing/administrative area access road and parking
- Access road leading southwest from the maintenance area through and around fields
- Internal access roads, including North-South Road (west boundary)
- Carver Trail
- Concrete walks associated with the residences in the former housing/administrative area and the visitor center

Non-contributing Circulation Features.

- Staff parking area adjacent to the maintenance area
- Concrete walk at picnic area
- Contemplative Loop Trail
- Steps and amphitheater associated with the Carver bust
- Wood ramps associated with the residences in the former housing/administrative area
- Seasonal trail

Adjacent and Nearby Circulation Features.

- Carver Road
- Elder Road
- Highways
- George Washington Carver Historic Trail

Missing Circulation Features.

- Carver farm lanes
- Carver horse racing track

365. Superintendent’s Annual Report, 1975.

366. Superintendent’s Annual Report, 1979.

367. Harrington et al., 26.

368. Toogood, 40.

3.3.9 Buildings and Structures

There are six buildings and fifteen structures located within the park. The only building that survives from the nineteenth century is the circa 1881 Moses Carver house. The other five buildings were constructed by the NPS in 1959–1960 to accommodate visitor uses and park operations. One of these—the park visitor center—was substantially altered and expanded in 2007 to better accommodate interpretive exhibits and protect museum collections. The other four—the maintenance building, Superintendent’s residence, Historian’s residence, and four-unit seasonal housing building—survive from the early park establishment period with sufficient integrity to convey their historic associations and contribute to the significance of the park landscape. The three buildings located within the park housing complex, however, are slated for removal.

Of the thirteen structures present within the park, two date to the early park development period and constitute contributing features. They are the rebuilt stone wall that encloses the historic Carver family cemetery and a springhouse foundation. The remaining structures are contemporary additions that postdate the period of significance and do not contribute to the significance of the park landscape. They include a storage shed, dam, piers, gates, fencing, footbridges, and a stone wall. The date of origin of two additional maintenance-related structures has not been determined.

Buildings.

Moses Carver house (also Moses Carver Late Period Dwelling; LCS ID 000442; HS-05). The Moses Carver house is believed to have been built circa 1881 by Moses Carver, possibly in response to the loss of an earlier dwelling to a tornadic event. The house was originally located to the south of Carver Branch, but moved to its present location north of the stream corridor in 1916 by subsequent owners of the property. The 1-1/2 story L-shaped wood-framed structure has open covered porches at the front (east) and rear (southwest).

The three-room house has intersecting gable roofs covered in sawn cedar wood shingles. The exterior

finishes and materials include painted wood clapboard siding with painted wood four-over-four double-hung windows, wood trim, fascia, corner beads, and rubble stone faced foundation walls. Other details include varnished wood porch floors, unfinished open riser wood steps to the front and rear porches, and two brick masonry chimneys (Figure 126 through Figure 131).



FIGURE 126. The Moses Carver house, view looking southwest toward the side and principal facades.



FIGURE 127. The Moses Carver house, view looking northwest toward the principal facade.



FIGURE 128. The Moses Carver house, view looking northeast towards the rear porch.



FIGURE 129. View of the rear porch stair and floor. The porch stairs were rehabilitated in 2014.



FIGURE 130. The front porch of the Moses Carver house.



FIGURE 131. Detail of the junction of the front porch and the main house showing the separation of siding and porch elements caused by settlement and other movement.

The house is generally in good condition and is well maintained. The paint coating at exterior wood siding, trim, and window sashes is performing well, although the transparent porch floor finish is worn and in fair to poor condition due to wear and weathering. Some minor settlement has occurred since the building was rehabilitated in 2005. Evidence of this settlement occurs at the southwest and southeast corners of the house; the settlement is causing some separation of wood trim elements at the porch floors and wood siding (refer to Figure 131). The rubble stone masonry foundation is in good condition. It appears that the stone was repointed in 2005, but it is unknown if the entire foundation was rebuilt. The exterior wood doors are in good condition; they are somewhat protected from the elements by the cover offered by the porches. The open riser wood stairs are in fair condition and exhibit some wear and deterioration.

The house does not have an accessible route to the porches or the interior. The existing steps and widths and sill heights of the historic doorways currently prevent universal access.

As noted by Harrington et al., in *Springs of Genius*, there is some reason to believe that the house predates the 1881 construction date generally

attributed to it. This date assumes that the house was built following destruction of an earlier dwelling by a tornado that swept through the area in 1880.³⁶⁹ It is possible that this assumption is mistaken, and that the house could have been built during George Washington Carver's time on the farm. Harrington et al. suggest that the building's architectural style, construction materials, and building techniques all point to an earlier construction date. For example, the style of the house better reflects antebellum construction techniques, which had generally been replaced by the 1870s, as a mode of folk construction in Missouri, by balloon framing.³⁷⁰ Harrington et al. also consider it possible that Carver built the house earlier based on the wealth he had accumulated in the 1870s.³⁷¹

According to the LCS, the Moses Carver house was first rehabilitated by the NPS between 1952 and 1962. Based on review of Superintendent's annual reports, the building was in need of repairs and maintenance by the early 1960s. In response to the need for repairs, the NPS engaged Orville W. Carroll to prepare a Historic Structure Report (HSR) for the dwelling in 1964. Following completion of the HSR, the building was re-shingled, painted, and structural weaknesses repaired.³⁷²

In 1972, the Superintendent described a request for the services of a professional architect to assist the park in further restoration of the house.³⁷³ In 1973, the house was described in poor condition and badly in need of repair and restoration. The park received funding for repair of the house in 1974, and work continued through 1976. The Jones Brothers Construction Company of Joplin was engaged to perform much of the work, which included setting the building on a new foundation.³⁷⁴ In 1979, a copper roof was introduced on the rear porch of the house, and the

floor of the porch was replaced. Interior floors were treated with preservative.³⁷⁵

In 2005, the NPS conducted a second extensive rehabilitation effort that included installation of a new roof and porch, replacement of windows and siding, repainting the structure inside and out, removal of all lead-based paint, replacement of crumbling mortar in the chimneys, and replacement of the front and rear porches. Overseen by the NPS Regional Historical Architect Al O'Bright, the project involved careful research and analysis, such as testing, to determine the original paint scheme. Unfortunately, the newly painted siding served to attract squirrels. Detering squirrels from destructively gnawing the wood proved to be a multi-year challenge.

It is believed that George Washington Carver visited Moses and Susan Carver in this house on at least one occasion—circa 1884—prior to his leaving for Tuskegee in 1896.³⁷⁶ It is the only building in the park directly associated with his life.

In the early 1950s, the NPS included the Moses Carver house as an exhibit along the Carver Trail, creating a fenced yard precinct around it for interpretive purposes.

The Moses Carver house survives with integrity from the early park development period in its current location and contributes to the significance of the park landscape.

Visitor Center (Building No. 21). The George Washington Carver National Monument Visitor Center is located at the west end of the park entrance road and parking loop. The building was constructed in 1959–1960 as part of the Mission 66 program. The original building was a low, one-story, brick and wood-sided building with cedar shake roofing. It contained 3,300 square feet of space, approximately 1,268 square feet of which were occupied by museum exhibits. A long

369. Ibid., 23.

370. Ibid., 25.

371. Ibid., 26.

372. Superintendent's Annual Report, 1964.

373. Superintendent's Annual Report, 1967.

374. Superintendent's Annual Reports, 1974, 1975, 1976.

375. Superintendent's Annual Report, 1979.

376. Toogood, 42.

overhang ran along the entire eastern side of the building, connecting the visitor center with a restroom building to the north and a maintenance building to the south. The restroom building was connected to the visitor center by a covered breezeway.

In 2007, the building was expanded and remodeled to accommodate additional educational/interpretive programming. The expansion involved adding space to accommodate a multipurpose room, humanitarian room, kitchen and storage area, science and history discovery areas, science and history focus areas, a theater, enlarged museum space, new offices, curatorial facilities, and other support-function areas such as a library-conference room and a computer room. As part of the expansion of the building, the heating, ventilation, and air conditioning systems were replaced, and a new power generator installed. The project entailed construction of a large two-story addition to the west side of the original visitor center and included the development of a new entrance into a main lobby located between the existing restroom building and the original visitor center (Figure 132 through Figure 138). In 2010, the administrative offices were completed in the expanded visitor center complex; park staff subsequently relocated from offices in the former housing/administrative area buildings to the new space.



FIGURE 132. View of the visitor center looking southwest.



FIGURE 133. View of the renovated visitor center entrance and entrance plaza.



FIGURE 134. View south of the breezeway connecting the visitor center and the maintenance building.



FIGURE 135. View looking northeast of the expanded visitor center.



FIGURE 136. View looking northwest of the original visitor center, foreground. Note the decorative limestone panels between the steel sash windows.



FIGURE 137. Detail showing the deteriorated siding and paint at the junction of the breezeway roof and the visitor center.



FIGURE 138. Detail of the warped and deteriorated wood siding and paint, as well as the damaged ridge vent, under the roof.

The surviving section of the original one story visitor center is clad with modular brick and painted shiplap cedar siding and is topped with a low slope roof. Windows in the original building are steel sash and arranged in horizontal bands, with limestone panels between each window group. The 2007 visitor center addition utilized jumbo brick veneer with a similar blend of brick colors as the original building, along with wood siding that matched the profiles of the original siding. Windows in the newly constructed areas are clad-wood units, either fixed or casement in operation. The new roofs have shallow slopes, matching the slopes of original roof elements. It appears that all roof surfaces received new asphalt shingles as part of the 2007 construction effort. The majority of the visitor center's doors and entrance systems are painted hollow metal with insulating glass at transoms and sidelights.

An open air breezeway or covered canopy connects the visitor center to the maintenance building. The breezeway canopy is constructed of exposed painted wood beams and columns, roof rafters, and decking.

The visitor center is generally in good condition but contains some areas where materials are experiencing advanced deterioration. The brick masonry is in good condition, with no evidence of settling or deteriorated mortar. Limestone window sills and decorative panels, while containing some organic growth or dirt, are generally in good condition. The steel windows are in good to fair condition with some peeling paint and deteriorated sealant. New clad wood window units appear to be performing well and are in good condition. Three-tab asphalt shingles covering the roof are in good to fair condition. Most roof edges do not have gutters or downspouts and contain painted metal drip edging and wood fascia. Roof areas fitted with gutters and downspouts are located at the north and east entrance areas and at the high roof areas that drain to the courtyard between visitor center and maintenance building. The perimeter of these roof areas have half-round profile gutters and round downspouts painted to match the wood fascia. The majority of the wood fascia and metal drip edges, gutters, and downspouts are in good

condition, but paint failure is widespread. Wood siding is in various states of repair, from fair to deteriorated. Many areas of rotted wood siding are present, especially at exposed high roof/wall junctions. The majority of the paint coatings at areas of wood siding is either faded or deteriorated. Other painted wood surfaces at the underside of the eaves and the covered breezeway are in good condition.

Over the years, the building has required several repairs. In 1966, for example, the superintendent reported having to make major repairs to the roof of the visitor center, which was leaking due to a built-in gutter.³⁷⁷

In 1979, park administrative offices were moved from the visitor center to the former Superintendent's residence. The larger office in the visitor center was converted into an audio-visual room, while the smaller office was converted for use by the interpreter. A vestibule was added to the front door of the visitor center at the time.

In 1994, an accessible restroom was installed along the northern end of the visitor center, and changes were made in the Carver Trail to provide access to the new facilities.³⁷⁸ In 1995, the visitor center heating, ventilation, and air conditioning system was upgraded.

The building expansion conducted in 2007 was preceded by review of the park's Mission 66 features for their historic significance and integrity. The Missouri SHPO determined that the collection of mid-twentieth-century features had been altered substantially since their original construction and did not possess sufficient integrity to render them eligible for listing in the National Register of Historic Places, and that they did not contribute to the significance of the national monument. The determination suggested

that the proposed new construction would not have an adverse effect on the park.³⁷⁹ The visitor center has been extensively altered since its original construction. It has lost integrity of design, association, materials, and workmanship. As such, it does not contribute to the significance of the park landscape.

Maintenance Building (Building No. 22). The maintenance building (Figure 139 through Figure 142) was constructed along with the visitor center in 1959–1960. As noted previously, it was built as part of the Mission 66 program.



FIGURE 139. The maintenance building, view looking southeast.



FIGURE 140. The maintenance building, view looking northwest from the maintenance yard.

377. Superintendent's Annual Report, 1966.

378. Superintendent's Annual Report, 1994.

379. "Project Agreement, George Washington Carver National Monument, Remodel and Expand Visitor Center to Provide Multi-Purpose Facility and Storm Shelter," April 2004, File D22, ACF, GWCA, and Mark A. Miles, Deputy State Historic Preservation Officer, to Superintendent, 25 May 2004.



FIGURE 141. The maintenance building, view looking northeast from the maintenance yard.



FIGURE 142. Detail of the deteriorated masonry wall surrounding the maintenance yard.

The maintenance building is a simple rectangular form capped with a gable roof. The one-story building is set into the hillside and contains offices and administrative areas along the northern side, and a high bay shop area accessible at south side. The south side of the building fronts a maintenance yard, which is encircled with a low brick masonry wall constructed of the same modular brick as the maintenance building and original visitor center. It is also edged by a small brick utility building (see below). Windows are steel sash units arranged in horizontal bands, with limestone panels between each window group. The shallow slope roof is covered in three-tab asphalt shingles and does not have gutters or downspouts. The roofs have painted metal drip edges and wood fascia. The overhanging roof eave

has exposed rafters and dimension wood sheathing, very similar to the covered breezeway joining the maintenance building and visitor center. The majority of the maintenance building's doors and entrance systems are painted hollow metal with some glass as sidelights. The five overhead bay doors at the south maintenance yard are fiberglass.

The maintenance building is generally in fair condition but contains some areas which are experiencing advanced deterioration. Brick masonry is in good condition, with no evidence of settling or deteriorated mortar. Limestone window sills and decorative panels, while containing some organic growth or dirt, are also in good condition. Steel windows are in good to fair condition, with some peeling paint and deteriorated sealant. Three-tab asphalt shingles and the majority of the wood fascia and metal drip edges are in good condition, but paint failure is evident. The overhead doors appear to be operable and in fair condition. The low brick masonry walls surrounding the maintenance yard are in poor condition. Large areas of spalling masonry and eroded mortar are evident at the east and west sections of the enclosure wall.

In 2003–2004, the maintenance building, along with the visitor center and three residences, was assessed by the Missouri SHPO for its significance and integrity relating to the Mission 66 program. The building was determined not eligible for listing in the National Register of Historic Places.³⁸⁰ Nonetheless, this building survives from the early park development period with a good degree of integrity and contributes to the significance of the park landscape.

Utility building. The utility building is a small, one-story rectangular structure located at the southeast corner of the maintenance yard (Figure 143). Constructed of brick masonry to match the visitor center and maintenance building, the utility building has a low slope gable roof covered in three-tab asphalt shingles. A set of concrete stairs is located at the south wall, and the west wall contains a pair of hollow metal access

380. Superintendent's Annual Report, 2003, Ibid.

doors. The building houses the main fire pump and emergency generator for the visitor center complex and contains the generator exhaust stack and multiple fire department connections at the south exterior wall. The building masonry, doors, roof, and fascia are in good condition. The building houses a fire pump and emergency generator. This equipment is no longer needed by the park.



FIGURE 143. The utility building, view looking northeast.

Superintendent's residence (Building No. 23). (Figure 144 through Figure 147) Located at the southeast corner of the park near Carver Road is a group of three Mission 66-era structures designed and constructed in 1959–1960. One of these, a single-family dwelling, is known as the Superintendent's residence. This one-story ranch-style rectangular structure was converted to the park headquarters in 1979. To accommodate office uses in the former Superintendent's residence, the garage was enclosed and finished, a six-space parking lot was constructed in front of the building, and a new concrete pad and step were added to the front of the building. Several changes were also made to the interior.³⁸¹

The structure is currently being used as storage for surplus equipment and supplies, and is slated for demolition. All administrative functions formerly located in the building were moved to the renovated and expanded visitor center in 2010.



FIGURE 144. The Superintendent's residence, view looking northwest towards main front door.



FIGURE 145. The Superintendent's residence, view looking east towards the rear deck.



FIGURE 146. Detail of a deteriorated wood ramp and deck behind the Superintendent's residence.

381. Superintendent's Annual Report, 1979.



FIGURE 147. Detail of the west gable showing the deteriorated fascia and roofing.

The Superintendent's residence is rectangular in plan with a low slope asphalt shingled gable roof. The roof has deep overhanging eaves, typical of ranch style homes, and metal gutters and downspouts. The exterior walls are clad with embossed beige-painted steel lap siding with painted metal fascia and soffits. At the front of the residence, a large pressure treated wood ramp has been added to provide an accessible route to the main entrance. Two sets of concrete steps and stoops mark the main front door and a secondary entrance. At the rear of the residence, a large hexagonal wood deck has been added, along with a ramp to provide universal access at the rear of the structure. Windows are double hung design, either single or paired, with wood sashes. All window openings have been fitted with aluminum storm sashes painted in a dark brown color. All entrance doors have been retrofitted with newer steel clad doors with vision panel and lever type hardware.

The residence is generally in fair to poor condition. The siding, while mostly intact, shows signs of fading paint and deterioration. Some metal fascia panels are missing, and many are loose, allowing water into the cladding systems and causing deterioration of wood wall elements. Shingle roofing systems are also in fair to poor condition. Several loose and detached asphalt shingles are evident. Paint and sealant at the wood windows are also in poor and deteriorated condition. Both wood ramps and the rear deck

contain organic growth and many warped and rotted members. Two large ground mounted HVAC units located at the rear of the house are ducted into the main house. These units are apparently still in use to provide heating and cooling to the residence. Their age and condition is unknown.

In 2003–2004, this and the other Mission 66 era buildings were assessed by region and determined not eligible for listing in the National Register of Historic Places.³⁸² Nonetheless, this building survives from the early park development period and contributes to the significance of the park landscape.

Historian's residence (Building No. 24). (Figure 148 through Figure 151) Located directly west of the Superintendent's residence is the Historian's residence. This one-story ranch style rectangular structure is smaller in size but similar in configuration to the Superintendent's residence. Currently the structure is being used as storage for surplus equipment and supplies for the park. It is slated for demolition.



FIGURE 148. The Historian's residence, view looking northwest towards the front door.

382. Ibid.



FIGURE 149. The Historian's residence, view looking east towards the rear of the structure.



FIGURE 150. Detail of the rear wood deck.



FIGURE 151. Detail of the rear wood deck.

The Historian's residence is rectangular in plan with a shallow slope asphalt shingled gable roof. The roof has deep overhanging eaves and metal gutters and downspouts. The exterior walls are

clad with embossed beige-painted composition wood fiber siding with painted wood fascia and soffits. At the front of the residence, a pressure treated wood ramp has been added to provide an accessible route to the main entrance. There is evidence of an in-filled garage door at the south wall where a rectangular section of siding does not match the adjacent siding. At the rear of the residence, two small rectangular wood decks have been added.

Windows are double hung design, either single or paired, with wood sashes. All window openings have been fitted with aluminum storm sashes painted in a dark brown color. All entrance doors have been retrofitted with newer steel clad doors with vision panel and lever type hardware.

The residence is generally in poor condition. The siding is deteriorated, with fading paint and areas of rot or deterioration. Wood fascias are warped and have severely deteriorated paint coating. Paint and sealant at the wood windows are also in poor and deteriorated condition. The wood ramp and two rear decks contain many warped, rotted, and missing members.

In 2003–2004, the Historian's residence was assessed by the Missouri SHPO and determined not eligible for listing in the National Register of Historic Places.³⁸³ Nonetheless, this building survives from the early park development period and contributes to the significance of the park landscape.

Four-unit seasonal housing building

(Building No. 25). (Figure 152 through Figure 156) The four-unit seasonal housing building is a one-story building located in the southwest section of the grouping of Mission 66 residential structures. It is currently used for storage and slated for demolition.

The rectangular ranch style building is characterized by concrete masonry walls that subdivide the structure into four apartment units. Wall areas between parting walls are clad in painted cedar lap siding. The roof is a shallow

383. Ibid.

slope gable covered in three tab asphalt shingles. The roof edges have painted wood fascia and metal gutters and downspouts. The front of the building has screened-in porches that also act as the main front door entrances for each unit. The rear of the building has one door for each unit leading to small concrete patio slab. Windows are double hung design, either single or paired, with wood sashes. All window openings have been fitted with aluminum storm sashes painted in a dark brown color. All entrance doors have been retrofitted with newer steel clad doors with vision panel.



FIGURE 152. The four-unit seasonal housing building, view looking northwest towards the front facade.



FIGURE 153. The four-unit seasonal housing, view looking towards the west facade.



FIGURE 154. The four-unit seasonal housing building, view looking northeast.



FIGURE 155. The four-unit seasonal housing building, view looking towards the east and rear facades.



FIGURE 156. Detail of the rear of the building, showing stoops, condensing units, and electrical service features.

The four-unit seasonal housing building is generally in fair to poor condition and does not meet universal accessibility standards. The cedar siding, while mostly intact, contains large areas of paint failure and wood deterioration. Wood fascia boards have extensive paint failure and are warped. The asphalt shingle roofing is in fair to poor condition. Several loose and detached asphalt shingles are in evidence. Many downspouts are missing, allowing water to pool around building foundations. Paint and sealant at the wood windows is also in poor and deteriorated condition.

In 2003–2004, this and the other Mission 66 era buildings were assessed by the Missouri SHPO and determined not eligible for listing in the National Register of Historic Places.³⁸⁴ Nonetheless, this building survives from the early park development period and contributes to the significance of the park landscape.

Structures.

Storage area shed. The Superintendent's Report states that the storage shed was constructed in the maintenance shop area in 1997. The shed and associated storage area were moved to the southwest corner of the housing complex around 2004 to allow the construction of the expanded visitor center. The storage building located in association with the fenced enclosure at the southwest corner of the housing complex postdates the period of significance and does not contribute to the significance of the park landscape (Figure 157).

Board fence enclosure at storage area. A wooden post and board fence forms a rectangular enclosure for the maintenance yard associated with the storage shed. The yard is used to store construction materials associated with maintaining the park. Although its date of origin is not currently known, the fenced enclosure appears to postdate the period of significance and does not contribute to the significance of the park landscape.



FIGURE 157. A small storage shed is located in the fenced storage yard southwest of the housing complex.

Footbridges along Carver Trail. George Washington Carver National Monument contains two pedestrian bridge crossings of Carver Branch. Bridge 1 is located along the Carver Trail directly adjacent to the Boy Carver statue (Figure 158). Bridge 2 is also located along the trail immediately south of the Moses Carver house (Figure 159).



FIGURE 158. Bridge 1, view looking north and showing the approach ramp and bridge truss configuration.

384. Ibid.



FIGURE 159. Bridge 2, view looking south from the approach ramp.

The bridges are identical in design, structure, and material. The bridges utilize two Corten tubular steel trusses with a 2x6 wood pedestrian walk situated between the trusses. The bridge truss assembly rests on thick concrete stem wall foundations at either side of the stream (Figure 160). Dimensional treated-wood approach ramps edge the end of each bridge to match the grade of the bridge walk surface with the trail system. The steel truss bridge sides also contain two 2x6 wood railings to fill the gaps between the diagonal truss members. The center of the bridge wood walking surface is painted with a gray sanded paint to improve traction and prevent slippage (Figure 161).



FIGURE 160. Detail of the concrete foundation stem wall on Bridge 1.



FIGURE 161. View of wood decking and the wood railings.

Identification tags on each bridge indicate that they were constructed by Bridge America, Inc., of Alexandria, Minnesota. Each bridge was engineered to carry 100 pounds per square foot (live load) and 6,000 pounds of vehicular load. The bridges were installed in 1991.

Both bridges are in good to fair condition. The 2x6 wood railings are warped and contain organic growth. Several elements of the wood approach structures also have rotted wood components including vertical posts and railings. Corten steel elements appear to be in good condition and are performing well. Paint at the wooden bridge floor is worn in some areas and also contains organic growth.

Wooden footbridges have been used to convey the Carver Trail across park streams since at least 1963 (Figure 162). Bridges were also used during the Shartel period to cross property streams (Figure 163). The initial bridges were replaced in 1993, and again in 2001. They postdate the period of significance and do not contribute to the significance of the park landscape.

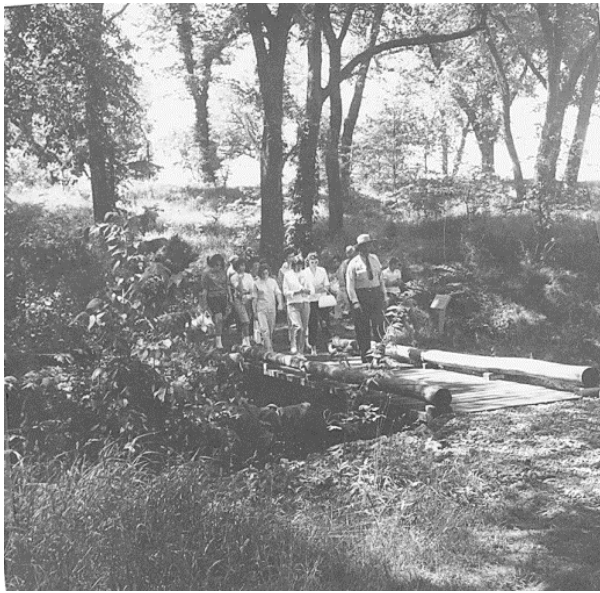


FIGURE 162. A footbridge crossing Carver Branch in 1963. Source: George Washington Carver National Monument photo collection.



FIGURE 163. Footbridges were used to cross streams during Shartel ownership, such as this bridge pictured in 1938. Source: George Washington Carver National Monument photo collection.

Williams Pond dam (LCS ID 070024; HS-37).

Williams Pond is impounded with an earth fill gravity dam, fitted with a discharge pipe, that was built in 1978 (Figure 164 and refer to Figure 66).³⁸⁵ An earlier dam, which was built of earth reinforced with rock and mortar, was built in the 1930s by the Shartels approximately 100 feet downstream from the Williams Spring (Figure 165).³⁸⁶ The dam formed a shallow one-half acre pond. The pond

was named after Sarah Jane Williams, Moses Carver's niece. William Moore Williams married Sarah Jane Carver (Moses Carver's niece) in 1853. They built a house on the Moses Carver farm where they raised their family. The Williams children are thought to have been playmates of George Washington Carver.



FIGURE 164. The Williams Pond dam includes a discharge pipe.



FIGURE 165. The original dam was constructed in the 1930s. As shown, the earthen structure was reinforced with a mortared rock wall. Source: George Washington Carver National Monument photo collection.

The NPS excavated the land adjacent to the original pond to enlarge it when they repaired the dam to address safety and aesthetic concerns in 1978. Today, the pond measures three-quarters of an acre. Repair work was conducted according to a plan prepared by the NPS in consultation with a U.S. Soil Conservation Service Engineer.³⁸⁷ A

385. Cultural Landscape Inventory, 40.

386. The LCS also notes a possible original period of construction circa 1920 to 1929.

387. Superintendent's Annual Report, 1978.

survey of park cultural resources in 1976 determined that the dam did not contribute to the historical significance of the national monument, so the use of more contemporary materials in the dam's reconstruction was not considered to be an issue. The project ultimately entailed the removal of 600 cubic yards of dredge materials from the pond. Much of the material was spread in the woods to the east and north of the pond, at a depth of up to 3 feet. To prevent damage to the woodland trees, the dredge material was later removed and spread in nearby fields.

In 2004, the dam embankment was regraded to enhance mowing safety by placing rock at the base and backfilling with soil to diminish the steepness of the slope.³⁸⁸ Today, the earthen structure is maintained under mown turf.

The dam postdates the period of significance and does not contribute to the significance of the park landscape.

Stone wall, Carver family cemetery (LCS ID 070020; HS-31A). The Carver family cemetery is enclosed within a 4-foot high, 4-foot thick, irregularly-shaped, stacked stone perimeter wall with an opening along the north side (refer to Figure 69). The wall measures approximately 70 feet on each side. It was reconstructed in 1954 by the NPS based on oral history information collected from older residents who remembered a wall enclosure prior to Shartel ownership of the property. The original stone wall was removed in the 1930s by the Shartels, who reused the stone elsewhere (Figure 166). The northern opening is not consistent with archeological evidence that suggests the original opening was located on the eastern wall (Figure 167).



FIGURE 166. The stone wall surrounding the cemetery was removed in the 1930s. Source: George Washington Carver National Monument photo collection.



FIGURE 167. The current opening on the north side of the cemetery wall is not consistent with archeological evidence, which suggests the opening was formerly located on the eastern wall.

James Robinson, a nephew of Moses Carver, recalled that:

There was a fence around the cemetery, it was 4 feet high or higher. There were several people buried in this cemetery with no marking on them and the number was more than 35 or 40. I can show you the boundary of the cemetery. I know for I helped dig several graves myself. My step-mother Josephine McCracken, and my half-sister, Blanche Hoard, [are] buried in here. There is an acre that [is] suppose[d] to go with this cemetery, but Uncle Moses never deeded it to the County like he was suppose. It is a pity that Shartel moved the rock wall. It had a gate on the east side.³⁸⁹

Another account indicated that

388. Superintendent's Annual Report, 2004.

389. Toogood, 39.

In the early days there were many large loose stone, which the farmers utilized for fences, piling them cone shape, 3 feet or more high; loose. This was the type of fence Mose built around this plot of ground to protect the graves from meandering stock.³⁹⁰

Mr. Elza Winter, a neighbor and friend to Moses Carver for many years, also recalled that limestone rubble gathered from the farm's fields were used to build a dry stone wall around the cemetery approximately 4 feet high.

By the time NPS officials visited the site in 1943, few remnants of the wall remained standing. NPS planner Howard Baker advised against its reconstruction. The NPS determined that it was important to rebuild the cemetery wall to protect the sacred ground from livestock and to support interpretation of the Carver farmstead. To support a goal of accurate reconstruction, the NPS conducted a combination of archeological investigations, documentary research, and personal interviews with local residents. Based on these efforts, the wall was reconstructed in 1954. The resulting wall was 4 feet in height, constructed of local stone, and included an eastern entrance into the cemetery.³⁹¹

Photographs from the 1950s indicate the eastern entrance. Why and when the entrance was relocated to the north side is not currently known. The surviving evidence of the cemetery's size, location, and patterns of interment are otherwise consistent with the historical information collected by the NPS in the early 1950s.³⁹²

The wall currently suffers from destabilization and is in fair condition. It has been repaired several times. In 1982, the cemetery rock wall was restacked. In 1983 sections that had deteriorated were rebuilt. In 1987, the cemetery, including the stone wall, was vandalized; the NPS has since worked to replace vandalized gravestones and repair wall sections. Fallen rock continues to be

regularly replaced; the wall no longer has a squared form as originally designed and constructed. With diminished integrity of design and workmanship, the wall survives from the early park development period and contributes to the significance of the park landscape.

Property boundary fence along Carver Road

The park boundary is marked by a boundary fence along Carver Road. The fence is a three rail post and board structure that was built circa 2002 (Figure 168).³⁹³ There have been several fences along this boundary over the years. Fencing to enclose and mark park boundaries was first installed in 1960.³⁹⁴ In 1964, four miles of fencing, constructed of 3-strand barbed wire on wooden posts, was installed by Jones Bros. Construction Co.³⁹⁵ The 1978 Superintendent's annual report describes the rebuilding of the rustic boundary fence that year.³⁹⁶ The existing fence postdates the period of significance, and does not contribute to the significance of the park landscape.



FIGURE 168. The three-rail wooden fence that marks the park boundary along Carver Road.

390. Ibid., 39.

391. Ibid., 40.

392. Harrington et al., 28.

393. Superintendent's Annual Report, 2002.

394. Superintendent's Annual Report, 1960.

395. George Washington Carver National Monument fixed property records, as provided by Lana Henry, December 2014.

396. Superintendent's Annual Report, 1978.

Property boundary fence along Elder Road and gates. The park boundary along Elder Road is marked by a metal post and barbed wire fence typical of many local farm properties. Tubular metal gates are used to access the park through the fence from Elder Road in two locations. The gates lead to two-track access roads that extend into the park. Access to the park through these gates is restricted with chains and locks.

Fencing to exclude cattle along the park boundary appears to have been present since initial park establishment. In 1976, the Superintendent's annual report notes that two extra strands of barbed wire fence were installed on the fenceline south of the entrance road to eliminate the problem of cattle entering the national monument grounds.³⁹⁷

The Superintendent's annual report for 1981 indicates that the Missouri National Guard cleared the boundary in anticipation of erecting a new barbed wire boundary fence. Work on the fence began in 1982 and was completed in 1984.³⁹⁸ The current fence may be this fence or a later replacement. This fence postdates the period of significance and does not contribute to the significance of the park landscape.

Chain-link fencing around fuel tanks. Low pressure gas tanks are located in the vicinity of the housing complex. The tanks are protected within chain link fencing. Although the date of origin of this fencing is not currently known, propane gas was not used at the park until after 1965. The tanks and fencing thus postdate the period of significance and do not contribute to the significance of the park landscape.

Worm fencing around the Moses Carver house and yard. The split-rail fence around the Moses Carver house and yard was first constructed in 1972 to add to the historic ambience of the interpreted Moses Carver farmhouse.³⁹⁹ The approximately 4-foot-high wood structure interprets the style of fencing

likely used on the Carver farm during the nineteenth century. It is representative of a style known as zigzag, worm, or snake fencing based on its meandering layout (Figure 169). Construction of this type of fencing does not require the setting of posts. Instead, split timber logs or rails are placed to rest atop each other on adjacent rows of stacked rails that sit at an obtuse angle to each other. This fencing type was simple to construct and required no nails or hardware. It was frequently used in areas where timber was abundant, or where the rails were anticipated to be regularly moved. For example, split-rail fencing could easily be moved to enclose new crop areas once cultivated fields had become exhausted.

The fence has been replaced three times since 1972: in 1982, in 1998 with the assistance of Boy Scouts, and in 2009.⁴⁰⁰ The fencing at the Moses Carver house postdates the period of significance and does not contribute to the significance of the park landscape.



FIGURE 169. Worm fencing surrounds the Moses Carver house and yard.

397. Superintendent's Annual Report, 1976.

398. Superintendent's Annual Report, 1981, 1982, 1983.

399. Superintendent's Annual Report, 1972.

400. Superintendent's Annual Report, 1998.

Brick piers and gate at the main park

entrance. Brick piers mark the park entrance. They were constructed as part of the Mission 66 era park development program, circa 1959–1960 (Figure 170). The northern pier formerly supported a park identity sign.

Today the brick piers support a pair of timber gates hung using metal straps bolted to the piers. These gates are swing-arm style, with 6x6 pine posts and 6x4 cedar arms and supports. Black coated steel plates hold the arms and supports together. The gates are used to close the park at night. A sign attached to one of the posts notes “Park Closed.” When the gates are open, they can be anchored to posts alongside the park entrance road. The current gates were installed in 2014. They postdate the period of significance and thus do not contribute to the significance of the park. The brick piers, however, survive from the period of significance and contribute to the significance of the park landscape.



FIGURE 170. The brick piers that flank the park entrance were constructed as part of the Mission 66-era park development program.

Gates at the entrance to park housing. A pair of steel gates limits public access to the former housing/administrative area. The gates are hung from wooden posts associated with the perimeter wood fence along Carver Road (refer to Figure 92). The gates postdate the period of significance and do not contribute to the significance of the park landscape.

Stone retaining walls along Carver Trail. In 2001, the park altered the Carver Trail to improve its accessibility. One of the areas of focus was the steeply sloped segment between the birthplace cabin and the Boy Carver stature. The trail was rerouted to include a sweeping switchback. To support the new trail section, the park built low stacked and mortared stone retaining walls on the uphill sides of the trail. A second segment of the trail between the Carver family cemetery and the Moses Carver house was altered in 2008 to improve accessibility, with a stone wall added to support a portion of the trail. These low walls measure approximately 1 to 2 feet in height. Although they are an aesthetically attractive addition to the trail, these walls postdate the period of significance and do not contribute to the significance of the park landscape.

Missing Buildings.

Moses Carver cabins. The present-day dwelling that is referred to as the Moses Carver house was the third dwelling built on the property by the family during the nineteenth century. The first two structures were log cabins. The first was built as part of the early settlement of the property in the 1830s. After the Carvers built the second cabin, their slaves occupied the first. The first cabin is thought to be the birthplace of George Washington Carver. Both Carver cabins were lost prior to park establishment.

The impetus behind the park’s first archeological investigations was to determine the locations of the cabins that existed on the Moses Carver farm during the time that George Washington Carver lived there. The investigations involved interviews with long-time residents of the area, as well as excavation and documentary research. Based on information collected from the personal interviews, NPS Archeologist Paul Beaubien directed excavation of the reported birthplace cabin site in 1953. The search was hampered by the fact that the Shartel family dwelling and associated ornamental planting beds had been constructed on or near the site. However, Carver’s nephew James Robinson, convinced of where the cabins had once been situated, led investigators to a point adjoining the stone fence that surrounded

the house's backyard, a spot just northwest of the hanging tree.⁴⁰¹

Based on these efforts, Merrill Mattes, Regional Historian for the Midwest Region of the NPS, and Archeologist Paul J. Beaubien published an article in the *Negro History Bulletin* in 1954 explaining their findings regarding the construction methods, forms, and locations of the two cabins. They hypothesized that:

About 1838 a clearing was made in the trees immediately above the Carver spring on the closest plot of level ground. Then a rude, one-room cabin was erected within the clearing. At a later undetermined date, a second log cabin was built and occupied by the Carvers, with the earlier one being designated as the slave cabin. With the passage of time (about 50 years) the cabins had deteriorated considerably and the frame house or second Moses Carver dwelling was erected east of the cabins, nearer the road. It appears that each dwelling was occupied until the succeeding one was completed, and each was constructed further east from spring than the previous one. Thus the sites of the earlier buildings have not been occupied by later structures.⁴⁰²

Although the archeological investigations did not confirm the locations of the cabins as suggested through personal interviews, Beaubien concluded that the "concentration of occupational debris in the southwest portion of the present flower garden [today the site of the birthplace cabin exhibit] seems to substantiate the testimony of those older residents who place the cabins at this site. Test trenching in other likely areas produced only negative results."⁴⁰³

Despite these conclusions, doubts lingered as to whether the cabin site had in fact been located. One concern raised thirty years later during an

extensive survey of the park by a NPS archeologist was the likelihood that the excavations conducted by Beaubien in 1953 had destroyed any possible evidence of the cabin. In 1988, Missouri's SHPO, Claire F. Blackwell, also suggested that the integrity of the possible cabin site had been compromised by the excavation methods, while the effort had failed to resolve important questions about the birthplace.⁴⁰⁴ Despite these concerns, it was recognized that the general upland terrace overlooking Carver Branch was a desirable settlement site, a theory supported by an archeology graduate student, Ervan Garrison, who re-surveyed the site excavated by Beaubien in 1953. Garrison concluded that "the upper terrace in which Moses Carver built his home was certainly a favored spot for seasonal camp sites of prehistoric groups."⁴⁰⁵ Based on the results of geophysical and geochemical prospection studies conducted during the 1990s, archeologists believe they can confirm the locations of "the original dwellings built by Moses Carver."⁴⁰⁶

In September 2005, Midwest Archeological Center (MWAC) archeologists Ann Bauermeister and Michael Hammons investigated twelve contiguous 20 by 20 meter (66 by 66 foot) blocks, located just south of the reconstructed birthplace cabin, using magnetic gradient and resistance survey methods. A very distinct square anomaly, measuring approximately 10 by 10 meters (33 by 33 feet) and oriented north, was identified in the resistivity data. The square anomaly is located approximately 25 meters (82 feet) west and 5 meters (16 feet) south of the birthplace cabin exhibit. The original cabin reportedly measured 14 by 14 feet, which is considerably smaller than the anomaly, although the extent of the anomaly as it appears in the data could be greater than the actual footprint of what is on the ground. It is also possible that the square anomaly represents a different structure than the

401. Beaubien and Mattes, "George Washington Carver National Monument: The Archeological Search for George Washington Carver's Birthplace," 35-36.

402. Toogood, 33, from Paul L. Beaubien and Merrill J. Mattes, "The Archeological Search for George Washington Carver's Birthplace," from *The Negro History Bulletin* Vol. XVIII, No. 2 (November 1954), 22-22.

403. Toogood, 34.

404. Harrington et al., Appendix 1, ii.

405. Ibid., vii.

406. Ervan G. Garrison, "Archaeogeophysical and Geochemical Studies at George Washington Carver National Monument, Diamond, Missouri," *Historical Archaeology* 30, no. 2 (1996): 37.

Moses Carver farmstead, either a building associated with the twentieth century Shartel Farm, or Beaubien's 1953 block excavation. The archeologists recommended analysis of spatial imagery to further consider the origin of the square-shaped anomaly.⁴⁰⁷

In September 2011, MWAC archeologists conducted archeological investigations, including large-scale geophysical surveys, mapping, and a pedestrian survey, at the national monument. The work was undertaken to learn more about the archeological resources and included additional and more intensive surveys of the park, with an emphasis on the Carver farmstead site, the Williams Homestead, the Carver family cemetery, and the newly acquired 30-acre parcel. The goal of these investigations was to generate data that would contribute to the park's interpretation and preservation of significant archeological resources and to assist with any future planning efforts. MWAC inventoried over 44,000 square meters (10.87 acres) within the park using magnetic and radar survey techniques. A preliminary analysis of the geophysical data identified several anomalies that appear to represent former historic building locations, and possibly the location of archeologist Beaubien's 1953 block excavation that was undertaken to search for evidence of the Carver birthplace cabin.⁴⁰⁸

In September 2012, MWAC archeologists Ann Bauermeister, Steve DeVore, and Ashley Barnett returned to conduct additional geophysical survey and targeted excavations. Resistivity surveys targeted the western section of the developed core that encompasses the birthplace cabin outline and archeologist Beaubien's 1953 block excavation.

Two areas were targeted for excavations to investigate the source of geophysical anomalies. A 1 by 1 meter (3 foot by 3 foot) test unit was situated east of the cabin exhibit to intersect an area where a very distinct square, perhaps the 1953 block excavation, was identified in the resistivity data. The unit revealed mixed and mottled soils

with a few historic artifacts in the upper 20 centimeters (8 inches). The matrix could be backfill, though additional excavation is necessary to further investigate the subsurface environment.⁴⁰⁹

Descriptions of the cabin where George was born, and the second Moses Carver cabin, were provided by Moses Carver's nephew James Robinson, a lifelong resident of Diamond. Robinson recalled that both had floors, but "were on the ground and there was definitely no foundation. The fireplace was also just sitting on top of the ground." As if to answer the questions raised by the results of the archeological investigations, Robinson added "... you could dig for the next five years and would never find anything."⁴¹⁰

The longest and most detailed account was offered by Moses Carver's nephew, Tom Williams, in a letter from Inez Armstrong to Richard Pilant in June 1942:

He says the log cabin in which Carver was born faced the east with a single window in the west and a chimney on the north. It was built of hewn logs perhaps 5 inches through, notched at the ends and fitted together, the cracks then being filled with clay or chinking. The door was a plank door with wooden hinges. Mr. W. described the making of the hinges but he may as well have been speaking Greek to me The roof was of clapboards. The chimney was built of rock up to the mantelpiece and of sticks and clay from there. The sticks were about 2-1/2 inches in diameter.

There is some disagreement as to the dimensions of the cabin. Mr. Williams says it was about 14 feet by 14 feet by 8 feet, while Mr. Winters says 16 by 16 feet by 8, and Mrs. Goodwin, Mr. Williams' daughter, insists the length was greater than the width. Her guess is 16 feet by 14 feet by 8 feet.

There were two beds in Carver's cabin. They used rope for bed slats. The table had legs crossed on each side somewhat like a

407. Ann Bauermeister, Park Archeology Program Manager, MWAC, National Park Service, personal communication, January 22, 2015.

408. Ibid.

409. Ibid.

410. Toogood, 39.

sawhorse. Through the cross on each side a hole was bored and a round stick was placed through both holes to help to make the table stronger.⁴¹¹

Another local resident, Mary Lou Hardin, recalled the following regarding the cabin:

... The slave cabin was situated a short distance from Uncle Moses cabin in a northwest direction . . . The slave cabin had a chimney and fireplace and there were shutter windows in it. No glass. It contained only one room. The house was made of logs, and were hewed off.⁴¹²

While neighbor Elza Winter recalled:

The slave cabin . . . had no window light but there was a window board which could be removed in the summer time. It was a log building. The door faced south. The roof was pitched and made of clapboards. There was a rock fire place. The slave cabin and the original Moses Carver dwelling, also a log cabin, were both one room buildings.⁴¹³

Additional insight is afforded from the description and sketch of the slave cabin prepared in 1937 by George Washington Carver based on the request of Henry Ford, who built a memorial cabin in Dearborn (Figure 171). In describing the cabin, he noted:

... I remember the little log cabin very well indeed, located just above the spring of which you speak, I am sure. I can remember as a little boy carrying gallons of water from this spring for more than an hour to start the ash hopper running during the spring season to make the usual quantity of soap we needed for the year.⁴¹⁴



FIGURE 171. Sketch of the birthplace cabin prepared for Henry Ford, circa 1937. Source: HRS, 39, citing Tuskegee University Special Collections.

Both Carver's recollections and interviews with local residents suggest that the cabin was a one-room log structure; accounts otherwise vary.

It appears that Elza Winter also remembered the second log cabin where Moses and Susan Carver lived as a one-room structure. He added that the second cabin was "a little larger than the other." Mary Lou Hardin, however, remembered the second Carver cabin as having two rooms. In another account, Forbes Brown remembered the original house being built of "logs sheathed with roughly sawed boards," while John Harris remembered it as "an old time log house of 1-1/2 story."⁴¹⁵

Early twentieth century historian Wiley Britton, who penned *Pioneer Life in Southwest Missouri*, notes that "most of the people in the country in the Ozark region up to the war lived in log houses."⁴¹⁶ From the testimony available, it appears that both cabins were constructed of hewn logs. In his assessment of pioneer cabins in southwest Missouri, Wiley Britton noted:

411. Ibid., 34–35.

412. Ibid., 35, as quoted in Fuller-Mattes, Part I, 24.

413. Ibid.

414. George Washington Carver to Irving Dillard, St. Louis Post Dispatch, 20 March 1942, George Washington Carver National Monument archives, Box 17, folder A.

415. Toogood, 34–35.

416. Ibid., 33, from Wiley Britton, *Pioneer Life in Southwest Missouri* (Columbia, Missouri: Smith-Grievess Company, 1923), 65.

There were probably not as many round logs as hewed log houses in our section up to the war, for a rule the pioneers of thrift and who were ambitious of improving their surroundings, were able in a few years to replace their round log with hewed log houses, using the former for stables and cribs, or as an addition to the new house. . . the family living in the hewed log house was generally regarded as holding a higher social status than the family living in the round log house. . . an index of his character and energy. . . Both the round and hewed log houses usually had only one window with four panes. . . poorly lighted . . . most houses had puncheon floors . . . replaced in a few years by most families with sawed plank floors.⁴¹⁷

Another description of pioneer cabins in the region was included in *A Reminiscent History of the Ozark Region* published about 1893:

The pioneers' cabins were generally made of logs, sometimes hewed on two sides and sometimes not hewed at all. The form of the cabin was always an oblong square, with a huge fireplace in one end. The fireplace was set back in a crib composed of logs, with the face even with the inner wall. This crib was heavily lined with stone and mortar, built up on a hearth made of flat stones. On the top of the stone and mortar lining was made a stick-and-mud chimney, the latter always being entirely on the outside of the building and extending a little above the comb of the roof. . . All the tools required in the building were an ax, broadax, froe, and auger.⁴¹⁸

Williams Homestead (23NE121). The Williams family was related to the Carvers. Sarah Jane Williams was the niece of Moses Carver. She and her husband William Moore Williams acquired a portion of the Moses Carver farm shortly after the death of Susan Carver in 1882. In poor health, Moses later left the farm around 1900 to live with a nephew, John Thomas Carver, near Galena, Kansas. John Carver was the son of Moses's brother Richard Carver who had died in 1872. In 1901, Moses deeded the remainder of his land to nephew John Carver, and William and Sarah Jane

Williams. After he died in Kansas in 1910, Moses Carver's remains were returned to Missouri for burial next to Susan in the family cemetery. In the meantime, Sarah and William Williams continued to live on the Moses Carver farm. Their children, Daniel Thomas and Martha Jane Gilmore, subsequently made their home on the property.⁴¹⁹ Neither the Williams nor the Gilmore homesteads were present on the property at the time of park establishment.

In 1975, a team of archeologists from the University of Nebraska visited the park to locate the former site of the Williams homestead. The team used proton magnetometry techniques to locate anomalies in the soil that might represent cultural deposits.⁴²⁰ These efforts yielded few results.

In 1976, a more complete image of the Williams homestead emerged from fieldwork conducted by Ervan G. Garrison, a graduate student from the University of Missouri-Columbia, in conjunction with Robert T. Bray, professor of anthropology at the University of Missouri. Resurvey of one anomaly discovered the previous year, using a metal detector, revealed foundation stones and a rubble fill area believed to represent three structures associated with the Williams homestead: a barn site west of the pond, a house site, and an outbuilding considered to be a cabin, north of the pond.⁴²¹

In 2011, the entire Williams Homestead farmstead was encompassed by a geophysical survey, which covered 9,600 square meters (2.37 acres), and utilized a magnetic gradiometer. The three previously documented mounds representing farmstead structures and/or their associated debris mounds are visible in the data, along with other anomalies that likely represent associated historic deposits. The report recommended evaluative testing to refine the interpretation of the site components.

417. Ibid., 36, from Britton, 67.

418. Ibid., 36, from *A Reminiscent History of the Ozark Region* (Cape Girardeau, Missouri: Ranfre Press, 1884, reprinted 1966), 20.

419. Harrington et al., 8

420. Superintendent's Annual Report, 1975.

421. Harrington et al., Appendix 1, vi.

In August 2014, MWAC archeologists Ann Bauermeister, Steve DeVore, and Ashley Barnett returned to the park and targeted the Moses Carver house site and the Williams Homestead site. A geophysical survey grid was established that encompassed a section of the prairie north of the Williams Homestead that was not included in the 2011 survey. A total of 5.88 acres was surveyed with a magnetic gradiometer. Analysis of the geophysical data collected in 2014 is underway. Preliminary results show an area in the prairie to the west of the Williams Homestead that may represent a non-extant barn that was not previously identified.⁴²²

Gilmore Homestead (23NE120). The Gilmore Homestead was located in the northwest corner of the property near the west bank of Harkins Branch. Although the Gilmores never gained title to any portion of the farm, they resided there and cultivated crops with Martha's brother Daniel Williams.⁴²³

The Gilmore Homestead was also investigated in 1975 by the team of archeologists from the University of Nebraska. Here, the team also used magnetic survey techniques, but derived little information from the effort.⁴²⁴

However, as part of the 1976 investigations conducted by Garrison and Bray, several features associated with the farmstead were located. These included two major concentrations of cultural material, one on the upper terrace above Harkin's Branch and another approximately 130 feet to the south on a lower terrace about 30 feet west of an old ford over the stream. Between the two clusters was the trace of an old road that extended between the upper terrace and the ford. Analysis of the artifacts discovered at the two concentration sites, suggested that the upper terrace was the site of the dwelling and the lower terrace the barn.⁴²⁵

Spring house at Carver Spring. Another structure described by local residents that is no longer present on the property is a spring house thought to have been located near Carver Spring. The feature was described in an interview with Carver's nephew James Robinson, who noted that the Carver family "... used water from the spring down under the hill." Although it is not known whether the Carvers constructed a springhouse in association with the spring. Historian Wiley Britton believes: "With very few exceptions the early pioneers settled near a good spring in the Ozark region," and they erected a springhouse for "... keeping their butter and milk. The milk was placed in the spring house so that cream might rise."⁴²⁶

Barn. The Moses Carver farm is also thought to have included a large barn used to shelter livestock and serve as a workspace and storage area. James Robinson specifically recalled, "Uncle Moses barn stood just south of where the present [Shartel] barn is located. It was built of double logs and shedded all around."⁴²⁷ Carver likely kept his prized horses and some of his cows in the barn, in accordance with the customs of the region, as suggested by Wiley Britton:

There was one feature of stockraising in that section that must have impressed anyone who was familiar with better methods and that was the absence of shelter for cattle in the winter, except that one or two cows might be kept in a shed. But most of the farmers provided stables for their horses⁴²⁸

Britton also suggested that barns typically consisted of "a stable for horses and cows, crib for corn and hay loft, all under one roof."⁴²⁹

Stock shed(s). Moses Carver also likely built sheds to shelter his cattle, sheep, and swine during the winter months. As Britton notes:

422. Ann Bauermeister, Park Archeology Program Manager, Midwest Archeological Center, National Park Service, personal communication, January 22, 2015.
423. Harrington et al., 8
424. Superintendent's Annual Report, 1975.

425. Harrington et al., Appendix 1, vi.
426. Toogood, 37.
427. Ibid.
428. Ibid.
429. Ibid.

Before the war, a few farmers moved into the different counties . . . from Iowa and Northern Illinois where the winters were severe, built separate sheds, standing east and west within the north sides and ends closed so as to keep out the cold winds and rains and feeding them there, protected their stock in severe weather.⁴³⁰

Stock pens. Britton also notes that stock were kept in pens during the spring, summer, and fall. These may have adjoined the winter sheds. The sheep would have needed protection against wolves. The pigs were contained while they were fed corn and swill before slaughter in early January. Pens and sheds might have been located in close proximity to the barn to facilitate care and feeding of these livestock.⁴³¹

Smoke house. Moses Carver was also likely to have constructed a smoke house in close proximity to his log cabin where he could preserve cuts of hog and cattle. Britton notes that the hog ears, feet, and other parts usually hung in the smoke house for a month or so prior to being stored in salt barrels.⁴³²

Cider press shed. Moses Carver maintained a large fruit and nut orchard. The products of the orchards likely supported the family, but were also sold. One of the methods of preserving apples for later use was to press them to make cider. Britton has noted: “Nearly every farmer who had an orchard had a cider press.” With 520 trees in 1880, Carver may have sold cider in quantity. He would have housed a cider press in a shed where he could squeeze the apples.⁴³³

Fences. Fences were likely a prevalent element of the Moses Carver farm. As noted previously Carver used both worm and snake fences to enclose his crop fields and picket fencing around his kitchen garden near the dwelling. Personal accounts of his property suggested that the

Carvers trained gourd vines on the picket fence, which likely enclosed a kitchen garden.⁴³⁴ In addition to these constructed fences, Moses Carver is said to have experimented with living fences composed of rows of walnut trees.

Shartel farmstead. Cassius Shartel purchased the 240-acre Moses Carver farm circa 1913. Shartel was a Neosho real estate agent. As part of his development of the property as a thoroughbred cattle business, Shartel moved the Carver frame dwelling to its current location, while building an extensive complex of dwelling houses and outbuildings in the current location of the visitor center. The buildings that comprised the complex included a dwelling house, a utility storage building, tenant house, garage, primary barn, loafing shed, feed storage and brooder house, chicken house and machine shed, chicken house, pig sty, granary, cowshed and feeder barn, bull pen, rabbit house, pump house, rock shed, pit toilet, and shed.⁴³⁵

At the time the NPS acquired the Moses Carver farm property, there were approximately nineteen buildings on the property constructed by the Shartel family. These buildings were adaptively reused for several years while the park was developed, primarily between its opening in 1953 and the completion of the visitor center, maintenance buildings, and park residences in 1959 and 1960. After 1960, many of the Shartel structures were moved or razed. The Shartel farmhouse was moved to a nearby farm, where it stands today.⁴³⁶

Spring house at Williams Spring (LCS ID 070023; HS-36). There is a partial foundation of a spring house submerged at the edge of the Williams Pond. Although the features is of unknown origin, the LCS suggests that the springhouse foundation dates to circa 1853–1900.⁴³⁷ The spring and foundation ruins become

430. Ibid, 38.

431. Ibid.

432. Ibid.

433. Ibid., 38.

434. Ibid., 40.

435. Ibid., 37.

436. Superintendent’s Annual Report, 1960. It is not clear from the report whether the dwelling was moved by the National Park Service or the owners of the nearby farm.

437. NPS LCS.

visible when the water level in the pond becomes low.⁴³⁸

Carver Discovery Center. In 1996, the park acquired a 12-by-60-foot trailer intended for use as an interactive education center for grades K through 6. The trailer was placed to the north of the Historian's residence, and accessible walkways and ramps were built to provide access to the interior. The hands-on learning facility was named the Carver Discovery Center and opened to the public as part of the Parks as Classrooms program in 1997. The center continued to provide educational programming until 2007, when the new visitor center was completed. The trailer was sold and removed in 2008.⁴³⁹

Contributing Buildings and Structures.

- Moses Carver house
- Maintenance building
- Superintendent's residence⁴⁴⁰
- Historian's residence⁴⁴¹
- Four-unit seasonal housing building⁴⁴²
- Stone wall, Carver family cemetery
- Williams Springhouse foundation
- Brick piers at the main park entrance

Undetermined Buildings and Structures.

- Utility building

Non-contributing Buildings and Structures.

- Visitor center
- Storage area shed

- Board fence enclosure at storage area
- Footbridges along Carver Trail
- Williams Pond dam
- Property boundary fence along Carver Road
- Property boundary fence along Elder Road and gates
- Chain-link fencing around fuel tanks
- Fencing around the Moses Carver house and yard
- Gate at the main park entrance
- Gates at the entrance to park housing
- Stone retaining walls along the Carver Trail

Missing Buildings and Structures.

- Moses Carver cabins
- Williams Homestead
- Gilmore Homestead
- Spring house at Carver Spring
- Barn
- Stock shed(s)
- Stock pens
- Smoke house
- Cider press shed
- Fences
- Shartel farmstead
- Spring house at Williams Spring
- Carver Discovery Center

438. Ibid.

439. Superintendent's Annual Reports, 2007, 2008.

440. The findings of the CLR indicate that the buildings of the former housing/administrative area fall within the period of significance and thus contribute to the significance of the park landscape. However, the National Register nomination update currently in progress by NPS MWRO has determined these buildings to be non-contributing and they are the currently scheduled for demolition.

441. Ibid.

442. Ibid.

3.3.10 Utilities

Several utility features are present within the national monument. These are associated with electrical, water, sewer, telephone, and gas lines and provisional systems. None of the extant utility features within the park are historic. All have been replaced or updated since 1960.⁴⁴³ They thus all constitute non-contributing resources.

Water systems. The park secures potable water from a public water system. In addition to servicing the needs of the buildings within the park, the water system feeds a water pump located next to the drinking fountain in the picnic area (refer to Figure 186) and fire hydrants located in the vicinity of the former housing/administrative area, visitor center, and parking area. Manholes associated with utility systems are visible in several locations.

Fire hydrants were described as having been installed for fire protection around all buildings in 1961. The water pressure was provided from an auxiliary booster plant located in the well pump section of the visitor center maintenance area. A storage tank that held 20,000 gallons of water was installed for emergency purposes.⁴⁴⁴ In 2002, the water system was upgraded to address fire suppression needs. New fire hydrants, pressure tanks, pumps, and a holding tank were added to the park at the time.⁴⁴⁵

The park's water needs were initially addressed soon after completion of the visitor center in 1960. The park's fixed property records indicate that a drilling well, building reservoir of 20,000 gallons capacity, pipe, and fire-protection system were acquired by contract in 1961, while a water system was acquired by contract in 1962.⁴⁴⁶

In 1998, the Environmental Protection Agency (EPA) conducted water sampling in the park and determined that lead levels exceeded permissible levels. The EPA recommended that the well dug in 1959 be retrofitted with a water softener system to reduce lead contaminants. As a stopgap measure, the EPA supplied the park with bottled drinking water. In 2000, a new well was installed in the park to serve as a backup to the primary well. The recommended water softener, however, was never installed.

During the 2000s, the EPA and other public agencies expressed growing concerns about the potential effects of the region's abandoned lead and zinc mines on water quality. One of the results of increased vigilance was passage of a new Missouri law that suggested all new wells in Newton County reach deep aquifers; the park's second well, with a depth of 575 feet, was classified as a shallow aquifer well, suggesting it was not a long term solution to the park's water problems, particularly given the proximity of the abandoned lead and zinc mine on the property.⁴⁴⁷

At the same time, an inspection of the park's potable water by the U.S. Public Health Service suggested that the well casing on the original well was failing. The well was recommended for closure to prevent contamination of the aquifer.⁴⁴⁸ The park immediately took the older well offline and switched their water system to the new well. The original well was closed in December 2004. Meanwhile, the park partnered with the EPA and city of Diamond to extend the rural water system to reach the park. The Midwest Region also funded connection of the fire suppression line to the potable water main with the installation of a backflow preventer. The new water hook-ups were in place by the summer of 2005.⁴⁴⁹

443. Toogood, Appendix F.

444. Superintendent's Annual Report, 1961.

445. Superintendent's Annual Report, 2002.

446. George Washington Carver National Monument fixed property records, as provided by Lana Henry, December 2014.

447. "Lead and Zinc Mine, Potable Water Quality, Newton County National Priorities List of Hazardous Water Sites," 30 September 2003, File L54, ACF, GWCA.

448. Ibid.

449. Krahe and Catton, 147, citing National Park Service, "Carver Announces Ground-Breaking Ceremony Visitor Center Expansion Project – Carver Discovery Center," July 28, 2005,

Sewer. A septic field extends from the visitor center into the grassland prairie to the west of the building. A clean-out is disguised by a large white plastic dome fashioned to look like a boulder (Figure 172). The park’s fixed property records indicate that septic lines and tanks were acquired by contract in 1961.⁴⁵⁰ The septic system was rehabilitated in 1984.⁴⁵¹

In 2011, the city of Diamond, which had planned a wastewater spray field on a neighboring property, abandoned these plans because of the health concerns raised by many agencies.⁴⁵²



FIGURE 172. Above ground portions of the septic system.

Electrical systems. Today, electrical boxes are present west of the walled maintenance yard (Figure 173), and there is an electrical hookup in the picnic area (refer to Figure 124). The buildings are serviced by underground lines. An overhead

electrical line crosses the southwestern corner of the property.

In 1943, a 7,200-volt power line ran along the eastern edge of the property. Another line ran between the cemetery and the proposed site of the park headquarters on the knoll above. These were considered “a serious intrusion” upon the visual character of the park and were identified for relocation.⁴⁵³ NPS Director Newton Drury described the power transmission line as “a blot on the landscape [that] would detract from the dignity of the memorial.”⁴⁵⁴



FIGURE 173. Electrical boxes west of the maintenance yard wall.

Electric lines were first installed in conjunction with the construction of the visitor center and residences in 1959–1960. The first major updating of these utility systems occurred in 1984 when the electrical lines to the visitor center and

File L14, ACF, George Washington Carver National Monument archives.

450. George Washington Carver National Monument fixed property records, as provided by Lana Henry, December 2014.

451. Superintendent’s Annual Report, 1984.

452. Superintendent’s Annual Report, 2011.

453. Krahe and Catton, 66, citing United States of America, Plaintiff, vs. 210 acres of land, more or less, situated in the County of Newton, in the State of Missouri, and Dawson W. Derfelt and Nell M. Derfelt, his wife et al., Defendants, No. 673, Petition, June 11, 1948; “Remove 154 KV Lines Due to Condemnation of the Dr. D. W. Derfelt Land For G. W. Carver Memorial,” September 21, 1948; George Thompson, Acting Regional Chief of Lands, National Park Service, memorandum for the

Regional Director, September 24, 1948, File 0-35, Box 187, CCF, RG 79, NA-CPR; Newton B. Drury, Director, National Park Service, to the Attorney General, August 27, 1948, File L58, Box 2105, Administrative Files 1949–1971, RG 79, NA II.

454. Krahe and Catton, 68, citing Newton B. Drury, Director, National Park Service, to Secretary of the Interior, April 19, 1949, File 0-35, Box 187, CCF 1936–1952, RG 79, NA-CPR; Associate Director, Memorandum for the Regional Director, Region Two, National Park Service, April 12, 1949; Lawrence C. Merriam, Regional Director, National Park Service, to Sam M. Wear, April 15, 1949; Sam M. Wear to The Attorney General, May 14, 1949; Drury to The Attorney General, May 20, 1949; File L1415, RCF, GWCA.

maintenance building complex were replaced with underground electrical lines in order to diminish their visual impact.⁴⁵⁵ The lines have remained problematic since their installation, however. Because the soils associated with the park include a layer of hard pan, covered by a half inch of groundwater, they act like a ground in a lightning strike. The visitor center is connected to the power grid by a dead-end line. When a lightning bolt hits the ground within a three mile area, electric lines pick up the charge and a power surge of millions of volts follows the lines to the nearest ground. The ground is sometimes the park. The surge causes alarms to go off in the electrical system and the computer and telephone systems to go offline. The water heaters also often shut down.⁴⁵⁶

HVAC systems. Ground mounted HVAC units are located behind the housing complex buildings, visitor center, and maintenance buildings. The HVAC systems installed in 1959–1960 were never very successful. In 1995, they were upgraded. When the visitor center was expanded in 2007, the building included new HVAC systems and wiring, as well as a new power transformer.

Two 1,000-gallon propane gas tanks are located within a fenced enclosure south of the housing complex (Figure 174). The tanks are raised above the ground on concrete supports and surrounded by a chain link fence. Standing between the two tanks is a small wood platform with wood steps and black metal handrails.

Efforts conducted by the park to establish a gas line beginning in 1961 were continually thwarted due to problems securing an easement.⁴⁵⁷ In 1963, the park attempted to work with the Cities Service Gas Company in Oklahoma to supply gas and the Rural Electrification Association in Joplin to secure the necessary easements and lines.⁴⁵⁸ They were not successful, however. In 1965, the park determined to install a permanent liquid

petroleum gas (propane) system due to the problems encountered in adding a line.⁴⁵⁹ The park's fixed property records indicate that a liquid petroleum gas system and distribution lines were acquired in 1966.⁴⁶⁰ A similar system remains in place within the former housing/administrative area.



FIGURE 174. Liquid petroleum gas (propane) tanks are stored in a fenced enclosure south of housing complex.

Communications. Fiber-optic cables connect the park administrative and interpretive areas. The cables support the park's telephone, alarm, and computer systems.

A satellite dish is located to the rear of the visitor center. National Weather Service equipment located along the edge of the prairie near the visitor center is used to collect data within the park (Figure 175). It was installed in 2009. The park installed a tornado siren in 2014 directly south of the maintenance yard wall.

Refuse. Garbage disposal was also problematic for the park. In 1963, a landfill disposal site was dug on site by a local contractor.⁴⁶¹ The landfill area was removed and the access road to it eliminated in 1978.⁴⁶²

455. Superintendent's Annual Report, 1984.

456. Krahe and Theodore Catton, 148, citing Sanders interview, November 8, 2012.

457. Superintendent's Annual Report, 1961.

458. Superintendent's Annual Report, 1963.

459. Superintendent's Annual Report, 1965.

460. George Washington Carver National Monument fixed property records, as provided by Lana Henry, December 2014.

461. Superintendent's Annual Report, 1963.

462. Superintendent's Annual Report, 1978.



FIGURE 175. This device collects weather data within the park.

Contributing Utility Features.

- None identified

Non-contributing Utility Features.

- Overhead electrical line that crosses the southwestern corner of the property
- Septic leach field that extends from the visitor center into the grassland prairie west of the building
- LP gas tanks near the housing complex
- HVAC units behind the building, visitor center, and maintenance buildings
- Water pump next to the drinking fountain in the picnic area
- Fire hydrants in the vicinity of the housing complex, visitor center, and parking area
- Satellite dish to the rear of the visitor center
- Electrical boxes west of the walled maintenance yard
- Manholes
- Tornado siren
- National Weather Service data collection equipment

3.3.11 Small-scale Features

Small-scale features are landscape elements providing detail and diversity for both functional needs and aesthetic concerns in the landscape.⁴⁶³ These features may be movable, seasonal, or permanently installed and be singular items or part of a larger system, such as signage. At George Washington Carver National Monument, small-scale features include site furnishings provided for the use and comfort of visitors, statuary, cemetery features, and signs and exhibits.

The majority of the small-scale features located within the park postdate the period of significance. Many are new additions to the landscape, while others are replacements of earlier features. Four principal elements within the park landscape survive from the park establishment period of significance and contribute to the historic landscape. These include two stone boundary markers, the Boy Carver statue, the bust of George Washington Carver, and the bronze dedication plaque set within a boulder near the visitor center. Lighting at the former housing/administrative area also appears to survive from the park establishment period. There are no small-scale features that survive from the Carver period.

Site Furnishings.

Flagpoles. Two identical flagpoles are located within the park. Both are unpainted, tapered metal poles topped with gold ball finials. One is located in front of the visitor center, the other in front of the Historian's residence within the former housing/administrative area. The latter is not currently in use.

The flagpole in front of the visitor center was relocated after the building was expanded in 2007 from the parking island to the front entrance (Figure 176).⁴⁶⁴ The flagpole at the former housing/administrative area was installed in 1997 in preparation for the opening of the Carver Discovery Center.⁴⁶⁵

463. Page, Gilbert, and Dolan, 146.

464. Superintendent's Annual Report, 1997.

465. Personal communication, Lana Henry, December 2014.



FIGURE 176. The visitor center flagpole was originally located in the island created by the looped entrance road. Source: George Washington Carver National Monument photo collection.

Lighting. Several lighting elements are present in the park. While lighting elements associated with the former housing/administrative area survive from the early park development period, all other park lighting postdates the period of significance.

A residential-scale light is located along the sidewalk in front of the four-unit seasonal housing building. The light is composed of a metal base, brown painted post, and plain cylindrical lantern with brown metal cap (Figure 177). It appears to relate to the design and period of construction of the building and to contribute to the significance of the park landscape.



FIGURE 177. A residential-scale light in front of the four-unit seasonal housing building.

Two residential-scale lights flank the park entrance along Carver Road in front of the brick entrance piers. Each light is composed of a painted metal base, a tan painted post, and a decorative copper lantern (Figure 178). The paint on the base of both lights is peeling, and the north light is being engulfed by an overgrown shrub. These lights postdate the period of significance and do not contribute to the significance of the park landscape.

Other lighting elements in the park include three low metal spotlights mounted in concrete in the lawn in front of the visitor center (Figure 179). None is historic.



FIGURE 178. Residential-scale lights flank the park entrance road.



FIGURE 179. Spot lights are located in the lawn in front of the visitor center.

Benches. A number of benches are located in the park, providing visitors with opportunities to rest and reflect.

Wood slat benches are located along trails, walks, roads, and parking areas, and within the picnic area. The wood slat benches are consistent with those shown in photographs of the national monument dating from the early 1960s.

Backed benches, painted red, are mounted in-ground on bent tube metal posts in the picnic area, in the parking island, along the Carver Trail near Williams Pond, and outside the cemetery wall (Figure 180). The paint is peeling on several of these benches. Similar painted benches, with black metal supports, are located near the Moses Carver house (Figure 181).

An unpainted, backless wood slat bench is located along the edge of the octagonal plaza that marks the Carver Trail trailhead (refer to Figure 100).

Free-standing wood slat benches with metal arms are located in the breezeway between the visitor center and the maintenance building (refer to Figure 134).



FIGURE 180. Backed wood benches are found throughout the park along trails, walks, and parking areas.



FIGURE 181. Similar benches are also found near the Moses Carver house.

A number of free-standing black metal benches, with decorative metal supports and arms, are located in the environs of the visitor center, including in the parking island, on the porch to the north of the building, near the visitor center entrance, and facing the Carver bust (Figure 182).

Stone benches are placed at intervals along the Contemplative Loop Trail around Williams Pond (refer to Figure 111). The benches were “carefully placed [to] provide the opportunity to sit and reflect while enjoying the quiet setting.”⁴⁶⁶ All of these benches postdate the period of significance.



FIGURE 182. Free-standing black metal benches are located along walks near the visitor center.

Picnic tables. Picnic tables are located in the grove north of the parking lot and entrance road, and under the trees south of the parking area. All of the picnic tables postdate the period of significance.

466. Long-Range Interpretive Plan, 18.

The tables are composed of recycled plastic benches and table tops, with metal supports (Figure 183 and Figure 184). At least one of these tables is designed for universal accessibility.

Picnic tables were present near the parking area by 1973, although picnicking is known to have been part of the visitor experience since the 1950s.⁴⁶⁷ In 1998, recycled plastic lumber was used to resurface the picnic tables.⁴⁶⁸ In 2005, dilapidated picnic tables were replaced with the current recycled-content tables.⁴⁶⁹



FIGURE 183. Picnic tables in the shade tree grove along the entrance road.



FIGURE 184. The picnic tables are composed of recycled plastic with metal supports.

Trash receptacles. Refuse and recycling receptacles are located along park walks, roads, and parking areas, and within the picnic area. All of the trash receptacles postdate the period of significance.

Trash receptacles include ground-mounted wood slat bins with plastic inserts and domed lids in the picnic area (Figure 185), free-standing exposed aggregate bins with plastic lids in the breezeway between the visitor center and maintenance building, and black metal trash/ash receptacles located adjacent to the two visitor center entrances. Recycling receptacles are grouped in threes around a central post, and are located in the vicinity of the picnic tables and parking lot, at intervals along the Carver Trail, and in the visitor center entrance plaza (refer to Figure 185). A blue plastic recycling bin is also located next to a vending machine on the north visitor center porch.

In 2005, dilapidated trash receptacles were replaced with the current recycled content containers.⁴⁷⁰



FIGURE 185. Refuse and recycling receptacles are provided in the picnic area.

Drinking fountain and pump. A universally accessible drinking fountain is located at the end of a short concrete walk in the picnic area (Figure 186). Adjacent to the drinking fountain is a water spigot.

The first universally accessible drinking fountain was installed in 1992, with access provided in the form of an accessible walk from the picnic area parking.⁴⁷¹ This fountain replaced a concrete drinking fountain installed circa 1984. The current drinking fountain was installed in 2012. The

467. Toogood, 74.

468. Superintendent's Annual Report, 1998.

469. Superintendent's Annual Report, 2005.

470. Superintendent's Annual Report, 2005.

471. Superintendent's Annual Report, 1992.

drinking fountain postdates the period of significance.



FIGURE 186. The drinking fountain and water spigot in the picnic area.

Bicycle rack. A bicycle rack stands adjacent to the flagpole in the visitor center entrance plaza (Figure 187). The bicycle rack was installed during the expansion of the visitor center completed in 2007. The bike rack postdates the period of significance.

Mailbox. There is a metal mailbox mounted on a wood post at the entrance to the former housing/administrative area (Figure 188). The mailbox was installed in 1995. It postdates the period of significance.



FIGURE 187. The bicycle rack adjacent to the flag pole in front of the visitor center.



FIGURE 188. A mail box is located at the entrance to the housing complex.

Bird houses. Several wood bird houses are mounted to the interior of the wood boundary fence. At least one of these has a rotted and broken lid. Although the specific date of origin of the bird houses has not been determined, they appear to postdate the period of significance.

Statuary. The park features two commemorative elements designed to honor George Washington Carver and recognize the importance of the park. These include the George Washington Carver bust and the Boy Carver statue. Both of these elements were placed within the park during the early park development period and contribute to the significance of the park landscape.

George Washington Carver bust. A bust of George Washington Carver (LCS ID 005036; HS-26) stands in a small plaza at the end of the Carver Trail (Figure 189). The 2 foot 9 inch high cast concrete bust, painted bronze and coated with a waterproof sealer, was created by Audrey Corwin in 1952 and presented to the park at its dedication in 1953 by the George Washington Carver Memorial Institute.⁴⁷² The bust sits on a cut stone cap over a concrete block base with a limestone veneer. The stone cap is engraved with Carver's name. An audio box inset into the base plays a recording of George Washington Carver reciting Edgar A. Guest's poem, "Equipment," at a 1942 commencement address at Selma University.

472. Cultural Landscape Inventory, 23, 45; Toogood, 62.

The bust has been moved several times.⁴⁷³ The bust was initially sited in the tree grove about 200 feet due east of the birthplace cabin site, which had not been identified at that time, and set on a concrete block base.⁴⁷⁴ In 1963, the NPS prepared preliminary plans for relocating the bust.⁴⁷⁵ The statue was moved circa 1965 to just outside the north door of the visitor center. At the time it was painted a metallic “gold” color, coated with a waterproof sealer, and reset on a smaller brick base.⁴⁷⁶ The stone cap was cut down to accommodate the smaller base and the engraved letters recut.

In 1982, a new sign was installed near the bust and the audio recording was moved back by the visitor center. The bust itself was cleaned, refinished, and moved a second time in 1991, to accommodate the installation of an accessible comfort station. In 2001, the concrete bust was again refinished.⁴⁷⁷

The sculpture was relocated to its current site in 2006, to accommodate the visitor center expansion.⁴⁷⁸ Construction drawings indicate that the bust, concrete cap, and audio box were salvaged, but that the bust was given a new concrete block base with limestone veneer.⁴⁷⁹

The bust has lost integrity of location and has diminished integrity of setting and materials, but possesses sufficient integrity of feeling, association, design, and workmanship to contribute to the significance of the park landscape.



FIGURE 189. The Carver bust is located in a small plaza northwest of the visitor center.



FIGURE 190. The Carver bust in its original location east of the birthplace cabin site. Source: George Washington Carver National Monument photo collection.

473. LCS.

474. Drawing 397-3025B, 3/16/64.

475. Superintendent's Annual Report, 1963.

476. 1973 National Register nomination, Superintendent's Annual Report, 1965.

477. Superintendent's Annual Report, 2001.

478. Cultural Landscape Inventory, 27.

479. Visitor center expansion drawing (397-41003A), dated 3/1/05, sheet 18A, subsheet L6.0, detail 6.



FIGURE 191. The Carver bust was moved in 1965 and reset on a brick base. Source: George Washington Carver National Monument photo collection.

Boy Carver statue. The Boy Carver statue (LCS ID 005038; HS-30) was cast by sculptor Robert Amendola and acquired by the park from the artist in 1962.⁴⁸⁰ The 4-foot-tall bronze statue portrays George Washington Carver as a young boy. It is set atop a 5 foot tall, 6 ton limestone boulder chosen by the artist. An identical statue is located in association with a housing development in New York City. The statue depicts a barefoot and shirtless young George, “the plant doctor,” sitting in his wild garden, plant in hand and looking toward the sky. The statue is intended to remind visitors of “the curiosity this young boy had for this specific environment,” as well as his larger love of nature.⁴⁸¹ It is situated on a circular plaza edged by a stone wall near Carver Branch (Figure 192). The Boy Carver statue has remained in its original location since installed along the Carver Trail in 1960, and is the symbolic centerpiece of the national monument.

In 1981, the Boy Carver statue was professionally cleaned.⁴⁸² It was again cleaned as part of an

extensive conservation effort conducted in association with the park’s statuary in 2009.

Aspects of the setting have changed since the statue was installed, including the route of the Caver Trail as it approaches the statue, and the extent and density of woodlands surrounding the site. The sculpture otherwise retains integrity of location, design, materials, workmanship, feeling, and association, and contributes to the significance of the park landscape.



FIGURE 192. The Boy Carver statue near Carver Branch.

Boundary markers (LCS ID 070022; HS-35).

Two stone masonry piers mark the northeast and southeast boundary corners of the park (Figure 193). Each measures approximately 32 inches square and is 5 feet 6 inches in height. The markers likely date from Shartel ownership, circa 1916 to 1940.⁴⁸³ The stone work is random course with beaded mortar and parged tops. The boundary markers are consistent with a local tradition of marking property entrances and boundary corners, including the Shartel property prior to establishment of the national monument (Figure 194).⁴⁸⁴ The boundary markers appear to have been present during the early park

480. George Washington Carver National Monument fixed property records, as provided by Lana Henry, December 2014.

481. Cultural Landscape Inventory, 19–20, 23, 45.

482. Superintendent’s Annual Report, 1981.

483. LCS; Cultural Landscape Inventory, 30.

484. Cultural Landscape Inventory, 46.

development period and contribute to the significance of the park landscape.



FIGURE 193. Stone piers mark the northeast and southeast corners of the park boundary.



FIGURE 194. Similar stone piers marked the entrance to the property during Shartel ownership. Source: George Washington Carver National Monument photo collection.

Cemetery features. The Carver family cemetery (ID LCS 005039; HS-31) contains a total of thirty-four marked and unmarked graves. All of the gravestones currently present within the cemetery are replacements. As such, the gravestones do not possess integrity and do not contribute to the significance of the historic landscape.

Gravestones located within the cemetery range from small rectangular tablets marked with initials, to larger curved tablets carved with epigraphs and decorative etchings (Figure 195). The stones mark the graves of family members, such as Susan and

Moses Carver, as well as community members. Moses Carver is known to have placed a memorial marker for George's brother Jim in the cemetery.

When the NPS acquired the property, there were twenty-one grave markers present within the cemetery. A 1973 Historic Resources Study indicates that gravestones were regularly replaced between 1953 and 1973 when they became deteriorated.⁴⁸⁵ It is likely that many of the stones suffered damage after the stone perimeter wall was removed in the 1930s. With the wall gone, cattle were most likely in the habit of grazing within the cemetery.⁴⁸⁶ Little is known about the replacements made prior to 1973.



FIGURE 195. Replica headstones in the cemetery.

Due to deteriorated conditions and vandalism, ten gravestones and one footstone are known to have been replaced in 1979. The Carver Association paid for the replacement stones.⁴⁸⁷ In 1982, many of the gravestones were cleaned.⁴⁸⁸ In 1983, additional headstones were replaced due to their deteriorated condition.

By the late 1980s, most of the headstones were broken or damaged following several incidents of vandalism. All were removed in 1989. There were no headstones within the cemetery until 1995, when the current replicas were installed.⁴⁸⁹ The Wommack Monument Company of Monett, Missouri, fabricated the replacement markers.⁴⁹⁰

485. Toogood, 40.

486. Harrington et al., 27.

487. Superintendent's Annual Report, 1979.

488. Superintendent's Annual Report, 1982.

489. Long-Range Interpretive Plan, 34.

490. LCS.

The marble stones removed in 1989 are stored in the park's museum archives.

The character of most of the original grave markers is not currently known. During the early-to mid-nineteenth century, many graves were traditionally marked with field stones or wood planks. Later, stones began to be inscribed with information about the deceased. Commercially carved stones did not become available until after Reconstruction.

The cemetery contains familial clusters of closely-spaced graves. The cemetery contains the graves of several members of the Carver family, including Moses and Susan.⁴⁹¹ In addition, as noted by George Washington Carver:

My parents were both slaves. Father was killed shortly after my birth while hauling wood to town in an ox wagon. I had three sisters and my brother I know to be dead only as history tells me, yet I do not doubt it as they are buried in the family burying ground.⁴⁹²

Moses Carver also allowed community members who were not family members to be buried there.⁴⁹³

Although there is no affiliation with a specific denomination apparent today, the east-west orientation of the graves suggests Christian beliefs or traditional views of the afterlife whereby bodies were oriented to face east, the direction of Christ's second coming. The original entrance into the cemetery was near the center of the east wall to mark this important cardinal direction.

The burial ground was likely maintained using traditional practices, such as filling in subsidence, mounding fresh dirt on graves, and removing grass and weeds. Active maintenance of the cemetery likely ended with Shartel ownership.

In September 2011, the interior of the Carver family cemetery was surveyed by MWAC using a

conductivity meter. The survey was undertaken to look for unmarked graves using non-invasive geophysical survey techniques. The analysis of that data is underway.⁴⁹⁴

Signs and exhibits. Several types of signs and exhibits are present within the park. These range from regulatory, directional, identity, and wayfinding signage, to waysides and other exhibits and plaques. Sign styles and locations have changed several times since 1953. The only feature that survives from the early park development period is a dedication plaque set within a boulder near the visitor center. All other signs and exhibits postdate the period of significance and constitute non-contributing resources.

Birthplace Cabin outline. The Carver birthplace cabin outline (HS-28) is located on a flat grassy knoll above the spring associated with Carver Branch. A wooden structure has been placed on the purported site to mark George Washington Carver's birthplace. Although the accuracy of this site has since been called into question, it continues to be interpreted using a 2-1/2-foot high wooden frame outline of the footprint of the cabin. The structure contains an opening at a suggested doorway that allows visitors to stand inside the exhibit. The cabin outline is a 2011 replacement of an earlier exhibit (Figure 196). The cabin outline is interpreted with a wayside exhibit.⁴⁹⁵

491. Cultural Landscape Inventory, 28.

492. Ibid., 22.

493. Ibid., 32.

494. Ann Bauermeister, Park Archeology Program Manager, MWAC, National Park Service, personal communication, January 22, 2015.

495. Long-Range Interpretive Plan, 17; Superintendent's Annual Report, 2011.



FIGURE 196. The site of the birthplace cabin is interpreted through a wooden frame outline of the cabin structure.

Moses Carver farm exhibits. Several interpretive exhibits are located in and around the yard of the Moses Carver house, including picket-fence-edged garden beds (refer to Figure 77), a plow (Figure 197), an ash hopper (Figure 198), a wood pile, and a stationery fire pit encircled by a metal band.⁴⁹⁶



FIGURE 197. A plow exhibit in the Moses Carver house environs.



FIGURE 198. An ash hopper exhibit in the Moses Carver house yard.

Wayside Exhibits. A series of wayside exhibits are located along the Carver Trail that provide a chronological interpretation of George Washington Carver's life. The exhibits consist of eleven signs: one upright trailhead sign at the beginning of the Carver Trail just outside the visitor center, and ten low-profile exhibits along the Carver Trail (Figure 199 and Figure 200).⁴⁹⁷ They feature porcelain enamel information panels set within aluminum frames.



FIGURE 199. An upright trailhead sign at the beginning of the Carver Trail.

496. In 2010, the Midwest Archeological Center approved the location of the fire pit.

497. Long-Range Interpretive Plan, 42–44.



FIGURE 200. A low-profile wayside exhibit along the Carver Trail.

Signage associated with the Carver Trail has changed several times over the years. In 1963, the Superintendent's annual report noted that a permanent signing program had been completed along the trail. The signs were described as composed of green phenolic plastic with white letters. These signs were used for plant identification and marking points of historical interest along the trail. They were considered to be attractive, permanent, and easy to read. There were also wooden routed signs located along the trail that conveyed historical information. The report also mentioned the presence of an audio station that was located in a column along the rock wall facing the Boy Carver statue. The audio box was relocated near the visitor center in 1982, when a new sign was installed in association with the Carver bust. The audio box was incorporated into the base of the Carver bust in 2006.⁴⁹⁸

The green and white botanical signs were replaced with brown signs with white text to conform to a new overall park sign plan in 1978.⁴⁹⁹ In addition, the large standing trail signs along the Carver Trail were repaired and refurbished.⁵⁰⁰ In 1981, the park's waysides were described as being repainted and rebraced, but by 1983 had been replaced by new interpretive signs. The new signs were Permaloy style. They replaced earlier wooden

routed signs described as being twenty years old at the time. The new signs provided more information than the old signs. The park's wayside exhibits were again replaced in phases between 2000 and 2011 with the current wayside exhibits.

Dedication Plaque. A plaque commemorating the establishment of the national monument is located near the Carver Trail trailhead. The 1 foot, 6 inch by 2 foot bronze dedication plaque (LCS ID 005037; HS-27) is set in a stone boulder near the birthplace cabin outline (Figure 201).⁵⁰¹ The plaque was purchased from Michaels Art Bronze Co. in 1959.⁵⁰²



FIGURE 201. The dedication plaque, set in a large stone.

The text of the plaque reads:

Within this area by an Act of Congress of July 14, 1943, is preserved the birthplace of George Washington Carver who rose from slavery to become a distinguished scientist and great force in creating racial understanding. Erected 1953 National Park Service, United States Department of the Interior.

The plaque was first cleaned in 1981. In 2009, the plaque received professional conservation assessment and treatment.

498. Superintendent's Annual Report, 1963, and personal communication, Lana Henry, December 2014. See also Superintendent's Annual Report, 1982, and Drawing 397-41003A, "Site Details, Remodel and Expand Visitor Center," Sheet 18A, Sub Sheet L6.0, 3/1/05, 2006.

499. Superintendent's Annual Report, 1978.

500. Superintendent's Annual Report, 1979.

501. Cultural Landscape Inventory, 23, 45–46.

502. Personal communication, Lana Henry, December 2014.

With diminished integrity of location, the plaque contributes to the significance of the park landscape.

Memorial plaque. An inscribed stone memorial plaque is situated close to the dedication plaque boulder (Figure 202). The text of the tablet reads: “In memory of past chairpersons of the Carver Birthplace Dist. Assoc. Inc.” The plaque was installed during the tenure of Superintendent Gentry Davis, circa 1981–1982.



FIGURE 202. A memorial plaque commemorates chairpersons of the Carver Birthplace District Association.

Quote Stones. Inscribed polished granite stones featuring quotations attributed to George Washington Carver have been placed along the Contemplative Loop Trail around Williams Pond and in the planting beds that edge the concrete walk north of the visitor center near the Carver Trail trailhead, and in the flower beds that edge the south side of the visitor center (Figure 203).

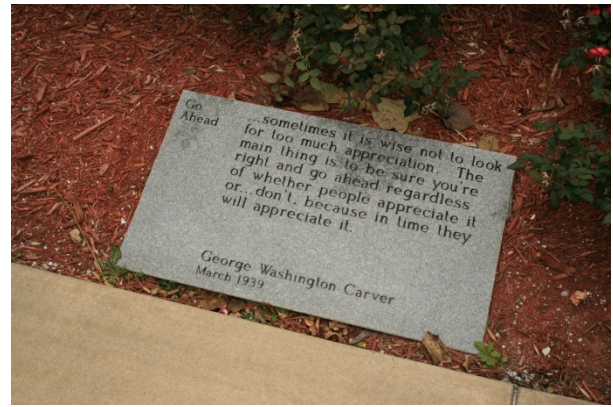


FIGURE 203. One of the granite quote stones located near the visitor center.

The engraved quote stones do not directly tie into the life progression interpretation offered by the wayside exhibits along the Carver Trail, but offer a glimpse of Carver’s personal philosophy and provide opportunities for contemplation.⁵⁰³ The quote stones were installed after 2001.

Park Identity Sign. An identity sign marks the park entrance along Carver Road (Figure 205). The brown sign features carved white letters and a large NPS shield. It is supported by black metal posts. The sign is edged by a timber-edged planting bed.

The first park identity sign was installed in 1960 in association with the entrance gate.⁵⁰⁴ The original sign was replaced in 1976 with a large, double-faced identity sign along State Highway V fabricated by Federal Prison Industries.⁵⁰⁵ In 1978, the park entrance sign was refurbished and relocated to a more visible location near the front entrance gate.⁵⁰⁶ In 1991, a new wood routed park entrance sign was installed.⁵⁰⁷ The current sign was installed in 2009.

503. Cultural Landscape Inventory, 23–24, 46.

504. Superintendent’s Annual Report, 1960.

505. Superintendent’s Annual Report, 1976.

506. Superintendent’s Annual Report, 1978.

507. Superintendent’s Annual Report, 1991.



FIGURE 204. The original park identify sign. Source: George Washington Carver National Monument photo collection.

In 1978, a new sign was erected to mark the location of the new park office area within the former housing/administrative area, while a directional sign for visitors placed at the junction of State Highway V and Taylor Road. In 1983, a new sign was installed at the entrance to the administration building.⁵⁰⁸



FIGURE 205. The current park entrance sign along Carver Road.

Directional, Regulatory, and Traffic Signs.

Other signs found in the park include small directional signs on metal posts along the Carver Trail (Figure 206), and regulatory and traffic signs along the park entrance road and picnic area spur road.

Directional and wayfinding signage has also been updated several times since the park opened. In 1991, for example, new directional and informational signs were installed on park roads

after a pavement rehabilitation project was completed.⁵⁰⁹ In 1997 new park information and directional signs were installed outside the park to assist visitors.



FIGURE 206. A small directional sign along the Carver Trail.

Missing Small-scale Features.

In 1982, a weather station was installed in the park. This feature was later removed from the park.

Contributing Small-scale Features.

- Boundary markers (2)
- Boy Carver statue
- George Washington Carver bust
- Dedication plaque
- Lighting at park housing

Non-contributing Small-scale Features.

- Flagpole at visitor center
- Flagpole at park housing complex
- Lighting
- Benches
- Picnic tables
- Trash receptacles

508. Superintendent's Annual Report, 1983.

509. Superintendent's Annual Report, 1991.

- Drinking fountain
- Water pump
- Bicycle rack
- Mailbox
- Bird houses
- Cemetery headstones
- Birthplace cabin outline
- Moses Carver farm exhibits
- Wayside exhibits
- Memorial plaque
- Quotation stones
- Park identity sign
- Directional, regulatory, and traffic signs

3.3.12 Archeological Resources

Six archeological inventories have been conducted within the monument since 1953. They include:

- *Report of Archaeological Investigations George Washington Carver N.M., Memorandum for the National Park Service, Region Two*, prepared by Paul L. Beaubien of the National Park Service, 1953.
- *Archaeological Investigations at the George Washington Carver N.M., Missouri, 1958*, by Robert W. Neuman, Missouri Basin Project, Smithsonian Institution, 1958.
- *A Magnetic Survey of Portions of the George Washington Carver N.M.*, by John W. Weymouth, Department of Physics and Astronomy, University of Nebraska-Lincoln, 1975.
- *Archeological Investigations at George Washington Carver N.M., 1975–1976*, by Ervan Garrison and Robert T. Bray, Department of Anthropology, American Archaeology

Division, University of Missouri-Columbia, 1976.

- *Archeological Investigations at George Washington Carver N.M., 1978*, by E. Garrison, R. T. Bray, and David Denman, Department of Anthropology, American Archaeology Division, University of Missouri-Columbia, 1978.
- *An Intensive Archeological Survey of George Washington Carver National Monument*, by David W. Benn, Center for Archaeological Research, Southwest Missouri State University, Springfield, 1981.⁵¹⁰ Benn updated and enlarged on the work of previous investigators in 1982.

Additionally, in 1994, a level 1 survey of the 30-acre zinc and lead mine parcel was conducted, for which no report has been reviewed.⁵¹¹

Based on review of previous investigations, in 1999 the NPS prepared an Integrated Management Plan for the archeological resources associated with the park. The plan identified twelve historic and prehistoric sites within the boundaries of the park, including a complex site associated with Carver's birthplace cabin, to be managed as significant sites.⁵¹² The other sites included the Gilmore farm, Williams farm, south boundary site, several lithic flakes and scatters, and the third Moses Carver house.

Investigations conducted in 2004 to assess the information potential of the Area of Potential Effect (APE) for the expansion of the visitor center yielded no additional archeological resources.⁵¹³

In 2006, MWAC helped to complete crucial archeological preservation work, including site condition assessments of all known archeological sites, shovel tests along the park entrance road and in developed areas, and geophysical surveys of the cemetery and birthplace cabin site.⁵¹⁴

510. Superintendent's Annual Report, 1981.

511. Superintendent's Annual Report, 1994.

512. Woolpert, 2-9.

513. Ibid., 2-10.

514. Superintendent's Annual Report, 2006.

In 2011, MWAC conducted another survey of the park, including geophysical surveys of the area east of the visitor center, and the Williams Homestead (site 23NE121), mapping and geophysical survey of the cemetery, and pedestrian inventory of the 30-acre mine site parcel.⁵¹⁵

In 2012, MWAC also performed fieldwork within the Carver farmstead site and the Williams Homestead area. The work entailed geophysical survey and targeted excavation to further investigate the possible location of the birthplace cabin.

In August 2014, MWAC returned to the park to further investigate the Moses Carver house site and the Williams Homestead site. Archeologists used a magnetic gradiometer. Analysis of the geophysical data collected in 2014 is underway. Preliminary results show an area west of the Williams Homestead that may represent a non-extant barn that was not previously identified.⁵¹⁶

Archeological Sites.

Moses Carver farm. Investigations conducted to date have yielded little information regarding the agricultural landscape of the Carver era. It is possible that disturbance by subsequent owners of the property has led to diminishment of its information potential.⁵¹⁷

Carver family cemetery. One of the archeological sites that has yielded important information is the Carver family cemetery. Although as many as forty graves may be present, only twenty-one graves had inscribed markers when the NPS acquired the property. At least two of these were located during archeological investigations in 1958, when subsided evidence of head and foot markers of unmodified limestone rock was found below the surface of the ground.

When the property was acquired by the NPS from the Shartel family, it was determined that, although

the original perimeter stone wall had been removed, the graves were still, for the most part, intact. The NPS conducted oral interviews with knowledgeable local residents to learn more about the cemetery's history. Based on research, the cemetery had continued to be deeded to family members rather than subsequent owners, and protected in a special clause.

The location of the original stone wall was determined through archeological investigation. The cemetery remains an important archeological site that contributes to the significance of the park landscape.

Birthplace cabin site. The cabin where George Washington Carver was born into slavery was first occupied by Moses and Susan Carver, who later moved to a larger house. The original cabin is thought to have measured approximately 14 feet by 14 feet in plan, and featured a single interior space. The cabin is thought to have been built at the edge of the sloped Carver Branch ravine in close proximity to Carver Spring. The NPS conducted archeological investigations in 1953 to locate the cabin foundation.⁵¹⁸ Additional investigations have been conducted by NPS archeologists in 2011, 2012, and 2014 to locate the cabin site, and are continuing. Although the earlier investigations suggested the cabin was located at the site of the present-day outline, subsequent investigations suggest that the actual site is located elsewhere.

Williams and Gilmore farmstead sites. The Williams and Gilmore cabins are two additional structures thought to have stood on the farm and been occupied by members of the Carver family. Both have been attributed with sites (the Williams Cabin Site, HS-33, and Gilmore Cabin Site, HS-34), although the exact locations of the dwellings are not currently known. Further archeological investigation may be required to locate them.

515. Superintendent's Annual Report, 2011.

516. Ann Bauermeister, Park Archeology Program Manager, Midwest Archeological Center, National Park Service, personal communication, January 22, 2015.

517. Harrington et al., 5.

518. Cultural Landscape Inventory, 28.

3.4 Assessment of Integrity

This integrity assessment describes the extent to which George Washington Carver National Monument retains the ability to convey its historical associations with George Washington Carver, an important figure in American history. National Register Bulletin: *How to Apply the National Register Criteria for Evaluation* states that:

Integrity is the ability of a property to convey its significance. . . . Historic properties either retain integrity (that is, convey their significance) or they do not. Within the concept of integrity, the National Register criteria recognize seven aspects or qualities that, in various combinations, define integrity.

To retain historic integrity a property will always possess several, and usually most, of the aspects. The retention of specific aspects of integrity is paramount for a property to convey significance. Determining which of these aspects are most important to a particular property requires knowing why, where, and when the property is significant.⁵¹⁹

Assessment of integrity is based on an evaluation of the existence and condition of physical features dating from a property's period of significance, taking into consideration the degree to which the individual qualities of integrity are present. The seven aspects of integrity identified by the National Register of Historic Places are location, design, setting, materials, workmanship, feeling, and association.

Based on the assessment of the criteria for evaluation, relevant areas of significance, and historic and existing conditions, George Washington Carver National Monument possesses sufficient integrity for the identified periods of significance (1865–1876 and 1943–1960) to convey its important historical associations with George Washington Carver, as well as his commemoration, through establishment of the

first national monument dedicated to someone other than a United States president. It was also the first national park unit to commemorate the achievements of an African American. The primary significance of the site is related to George Washington Carver's birth and early life experiences on the Moses Carver farm. The landscape is considered to reflect the location, setting, feeling, and association of Carver's formative years.⁵²⁰ Although the property continues to convey integrity of location, setting, feeling, and association, it no longer possesses integrity of design, materials, and workmanship for this period due to the loss of the built features, and subsequent changes to the agrarian landscape that characterized the Carver farm when George Washington Carver lived there. Overall, however, the property possesses sufficient integrity to convey its historic associations with the 1865–1876 period of significance. Features that help to convey these associations include patterns of spatial organization involving field and forest compositions, natural resources, such as the three stream branches and the Carver Spring, the landform and topography, and the cemetery.

The national monument that commemorates and honors Carver was established in 1943, and developed to accommodate visitors between 1953 and 1960. The gestures of providing visitors with access, parking, contact with park administrators and interpreters, exhibits, and a trail system designed to connect visitors with Carver's experiences on the farm were all developed during this period. The park possesses integrity of location, setting, feeling, and association for the early park development period, although integrity of feeling is diminished due to the replacement of agricultural fields with restored native grassland prairie. Integrity of design, materials, and workmanship is also diminished to a degree due to the change in landcover, the expansion of the visitor center and the parking area, and changes to the Carver Trail. Nonetheless, George Washington Carver National Monument possesses a good

519. National Register Bulletin: *How to Apply the National Register Criteria for Evaluation*, 44.

520. National Park Service, Cultural Landscape Inventory, "George Washington Carver National Monument," 2010, File H3019, ACF, GWCA. Quote on p. 20.

degree of integrity for the early park development period.

3.5 FMSS Table of Resources

The relationship between features identified on behalf of the CLR and those tracked by the NPS as part of FMSS, a numbering and naming convention used within the park for everyday maintenance issues, is indicated in the table that follows to facilitate park resource stewardship.

George Washington Carver National Monument CLR-FMSS Crosswalk Table for Analysis and Evaluation										
										
CLR Feature Name	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	CLI No.	LCS No.	ASMIS No.	Cultural Landscape Evaluation	Historic Character	Deficiency (Historic)	Additional Guidance
Spatial Organization										
Picnic Area	Maintained Landscape (3100)	71214	N/A	N/A	N/A	N/A	C	Comprised of turf grass understory, shade tree overstory, picnic area access road, and parking.	Yes. Some of the trees that have been removed due to condition have not been replaced. Accessibility improvements, while necessary, are not consistent with the historic character of the picnic area.	
Cultural Landscape	Maintained Landscape (3100)	71212	N/A	500391	N/A	N/A	C	Comprised of Carver and Williams Branches, Moses Carver House, Carver Trail, entrance and entrance road, monuments, sculpture, and interpretive exhibits.	Yes. Changes to the entrance and gate system, relocation of the Carver bust, replacement of wayside exhibits and the birthplace cabin foundation.	
George Washington Carver National Monument Grounds	Maintained Landscape (3100)	71213	N/A	N/A	N/A	N/A	C	Comprised of visitor center and associated circulation features.	Yes. Changes to the original visitor center, parking expansion, the addition of rose beds and quote stones.	
Carver Family Cemetery	Maintained Landscape (3100)	71212		120786	5039	N/A	C	Walled area containing grave markers.	Yes. Changes to the perimeter wall, replacement of the original gravestones.	The cemetery entrance has been moved from historic location, loose stones have been stacked in a way that is not historically accurate
Circulation										
Park Entrance Road/Route 0010	Roads (1100)	71197	1031916	N/A	N/a	N/A	C	Asphalt paved as presently. Area of pavement has increased since original installation.	No.	
Culvert beneath Park Entrance Road	Roads (1100)	71197	64700	N/A	N/a	N/A	C	Current structure is galvanized steel; historic material not known.	No.	
Visitor center parking area/Route 0900A	Parking Areas (1300)	79609	1028838	N/A	N/A	N/A	C	Asphalt paved as presently. Area of pavement has increased since original installation.	Yes. The north bay was established during the period of significance. The parking area was later expanded to the south.	
Housing complex access road	Roads (1100)	235985	1252757	N/A	N/A	N/A	C	Asphalt paved as presently. Area of pavement has increased since original installation.	No.	
Housing complex parking area #1/Route 0903A	Parking Areas (1300)	71201	1032158	N/A	N/A	N/A	C	Asphalt paved as presently. Area of pavement has increased since original installation.	Yes. Parking has expanded beyond the historic configuration.	
Housing complex parking area #1/Route 0903A	Parking Areas (1300)	71201	407699	N/A	N/A	N/A	C	Asphalt paved as presently. Area of pavement has increased since original installation.	Yes. Parking has expanded beyond the historic configuration.	
Culvert associated with Housing complex parking area	Parking Areas (1300)	71201	525919	N/A	N/A	N/A	U	Current structure is galvanized steel; historic material not known.	Undetermined.	The date of origin of the culvert was not determined based on information located for this study.
Picnic Area spur road	Roads (1100)	235986	1252764	N/A	N/A	N/A	C	Has been repaved with asphalt, otherwise similar to historic	No.	
Picnic Area parking/Route 0901	Parking Areas (1300)	71200	1032162	N/A	N/A	N/A	C	Asphalt paved as presently. Area of pavement has increased since original installation.	Yes. The parking area has been expanded to accommodate universal accessibility and increasing numbers of visitors.	
Picnic Area parking/Route 0901	Parking Areas (1300)	71200	408296	N/A	N/A	N/A	C	Asphalt paved as presently. Area of pavement has increased since original installation.	Yes. The parking area has been expanded to accommodate universal accessibility and increasing numbers of visitors.	
Maintenance Area access road	Roads (1100)	235987	1252765	N/A	N/A	N/A	C	Was part of the Mission 66 development that supported park operations.	No.	

<div> George Washington Carver National Monument CLR-FMSS Crosswalk Table for Analysis and Evaluation <div>  </div> </div>										
CLR Feature Name	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	CLI No.	LCS No.	ASMIS No.	Cultural Landscape Evaluation	Historic Character	Deficiency (Historic)	Additional Guidance
Maintenance Area parking/Route 0902	Parking Areas (1300)	104140	1032166/409175	N/A	N/A	N/A	C	Was part of the Mission 66 development that supported park operations.	No.	
Employee parking area	Parking Areas (1300)	235988	1252766	N/A	N/A	N/A	NC	Parking occurs in an impromptu manner. This area was not historically used for parking.	Not historic.	
North-South Road (west boundary)	Roads (1100)	N/A	121334	121334	N/A	N/A	C	Two-track road historically used for farming purposes, remains an informal route used by park maintenance.	No.	
Sidewalks (GWCA Grounds)	Maintained Landscape (3100)	71213	177855	N/A	N/A	N/A	C	Concrete sidewalks were part of the original design of the parking area and visitor center, and associated with the housing complex.	No.	
Carver Trail	Trails (2100)	71193	see below	121332	N/A	N/A	C	Originally gravel surfaced and edged by younger trees	Yes. Alignments, surfacing materials, and edge conditions have changed in some locations.	
A. Concrete surface			167867							
B. Gravel surface			168050							
C. Crum rubber surface			168021							
D. Masonry/stone surface			395423							
Contemplative Loop Trail	Trails (2100)	71196	see below	N/A	N/A	N/A	NC	This trail was added after the end of the period of significance	Not historic.	
A. Mulch tread			167608							
B. Timber deck surfacing			167870							
Vegetation										
Picnic grove	Maintained Landscape (3100)	N/A	N/A	N/A	N/A	N/A	C	Shade trees, predominantly pecans, were present at the time the park was established. The grove has matured. Some trees have been planted to replace those lost to age and damage.	Yes. Trees will need to be replaced to perpetuate the grove.	
Restored native grassland prairie	Maintained Landscape (3100)	N/A	N/A	121350	N/A	N/A	NC	Prairie is being restored over former farm fields.	Not historic.	
Woodlands	Maintained Landscape (3100)	N/A	N/A	140592	N/A	N/A	C	Woodlands historically edged the stream corridors as today.	Yes. Wooded areas have expanded and are infested with invasive species.	
Native tree plantings	Maintained Landscape (3100)	N/A	N/A	N/A	N/A	N/A	NC	Trees have been planted since the mid to late 1960s along the Carver Trail for shade and ornamental value.	Not historic.	
Replanted walnut fencerows	Maintained Landscape (3100)	N/A	N/A	121348	N/A	N/A	C	Walnut fencerows were known to have been part of the Moses Carver farmstead and were replanted by the National Park Service during the early park establishment period.	No.	
Ornamental plantings at the visitor center	Maintained Landscape (3100)	N/A	N/A	N/A	N/A	N/A	NC	These plantings have been added since the building was expanded.	Not historic.	
Ornamental plantings at the housing complex	Maintained Landscape (3100)	N/A	N/A	N/A	N/A	N/A	C	These plantings were added when the buildings were constructed.	Yes. Plantings have been added since 1960.	
Ornamental plantings along the entrance road	Maintained Landscape (3100)	N/A	N/A	N/A	N/A	N/A	NC	These plantings have been added since the 1960s.	Not historic.	

George Washington Carver National Monument

CLR-FMSS Crosswalk Table for Analysis and Evaluation



CLR Feature Name	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	CLI No.	LCS No.	ASMIS No.	Cultural Landscape Evaluation	Historic Character	Deficiency (Historic)	Additional Guidance
Buildings and Structures										
Visitor Center Building #21	Buildings (4100)	71204	various	121318	N/A	N/A	NC	This building was expanded in 2007 and does not retain integrity.	Yes. The Mission 66-era building was extensively modified during expansion, and no longer retains historic integrity.	
Maintenance Building (Building #22)	Buildings (4100)	71205	various	121320	N/A	N/A	C	Single-story brick gable-roofed building.	No.	
Superintendent's Residence (Building #23)	Buildings (4100)	71206	various	121324	N/A	N/A	C	Mission 66 ranch-style single-family residence.	Yes. The condition of the building is fair to poor. The interior was modified to accommodate administrative use.	This building is being used for storage and is slated for demolition.
Historian's Residence (Building #24)	Buildings (4100)	71207	various	121326	N/A	N/A	C	Mission 66 ranch-style single-family residence.	Yes. The condition of the building is poor.	This building is being used for storage and is slated for demolition.
Seasonal Quarters Building #25	Buildings (4100)	71209	various	121328	N/A	N/A	C	Mission 66 style housing building with several individual apartment units.	Yes. The condition of the building is fair to poor. The original doors have been replaced with features of a different material.	This building is being used for storage and is slated for demolition.
Moses Carver House (HS-5)	Buildings (4100)	71210	various	120890	000442; HS-05	N/A	C	Late nineteenth century structure, relocated to its current site in 1916. The house has been rehabilitated and restored several times by the National Park Service to enhance integrity and protect repair condition problems.	Yes. The house is not in its original location, and is interpreted using a speculative landscape.	
Utility Building	Buildings (4100)	88870	various	N/A	N/A	N/A	U	The date of origin of this building has not been determined as part of this study. It is brick construction designed to match the maintenance building.	No.	This building is used for storing a fire pump and emergency generator no longer needed by the park.
Storage area shed	Buildings (4100)	N/A	N/A	N/A	N/A	N/A	NC	The shed dates to 1997. It is a small, one-story gable-roofed structure used to support storage needs.	Not historic.	
Williams Pond dam	Dams and levees (6100)	98943	N/A	120896	070024; HS-37	N/A	NC	1930s era dam rebuilt by the National Park Service in 1978 with new materials, enlarged pond.	Yes. The original dam for the pond was constructed in the 1930s. The dam was rebuilt in 1978 by the National Park Service, and the side slopes regraded in 2004.	
Carver family cemetery wall	Maintained Landscape (3100)	71211	40338	120786	070020; HS-31	N/A	C	Wall rebuilt by the National Park Service in 1954. Has since deteriorated in condition.	Yes. The wall has been reconfigured since being rebuilt ca. 1954. The entrance has been relocated and fallen stones inaccurately replaced.	
LP Gas Fuel System- tanks	5700	71192	167415; 167427	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Carver Trail Bridge #1	Trail bridges (2200)	71194	167928	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Carver Trail Bridge #2	Trail bridges (2200)	71195	167943	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Carver Trail bridge #3	Trail bridges (2200)	71193	167809	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Carver Trail bridge #4	Trail bridges (2200)	71193	167818	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Carver Trail bridge #5	Trail bridges (2200)	71193	167840	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Carver Trail bridge #6	Trail bridges (2200)	71193	167848	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	

George Washington Carver National Monument
CLR-FMSS Crosswalk Table for Analysis and Evaluation



CLR Feature Name	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	CLI No.	LCS No.	ASMIS No.	Cultural Landscape Evaluation	Historic Character	Deficiency (Historic)	Additional Guidance
Carver Trail bridge #7	Trail bridges (2200)	71193	167864	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Carver Trail bridge #8	Trail bridges (2200)	71193	167867	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Carver Trail footbridge	Trail bridges (2200)	71193	394566	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Carver Trail retaining wall	Trails (2100)	71193	591519	N/A	N/A	N/A	C	Installed post 1960. Dry stacked stone wall along the edge of the trail.	Not historic.	
Park boundary fencing with gates	Boundary (3800)	91874	203158; 525896	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Board fence enclosure at storage area	Boundary (3800)	N/A	N/A	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Chain link fence with gate around LP Gas Tanks	Fuel systems (5700)	71192	526280; 526285		N/A	N/A	NC	Installed post 1960.	Not historic.	
Williams springhouse foundation	Dams and levees (6100)	98943	368763	120902	070023; HS-36	N/A	C	Remains of a historic springhouse located along the edge of the Williams Pond.	Yes. The foundation is partially submerged by the pond.	
Small-scale Features										
Wayside exhibits	Interpretive media (7500)	236275	various		N/A	N/A	NC	Installed 2012	Not historic.	
Birthplace cabin outline	Interpretive media (7500)	N/A	N/A	120888	N/A	N/A	NC	The current wooden outline was installed in 2011.	Not historic.	
Boy Carver statue	Outdoor sculpture/monuments (7100)	99249	N/A	120900	005038; HS-30	N/A	C	Sculpture mounted on a boulder installed in 1960 on trail margin.	Yes. Trail more formal than originally, and site more wooded than historically.	
Dedication plaque	Outdoor sculpture/monuments (7100)	99248	N/A	120904	005037; HS-27	N/A	C	Set into boulder along trailhead of Carver Trail in open grassy knoll between the visitor center, picnic area tree grove, and Carver Branch ravine. trees to disease.	Yes. The site is more open it was historically due to the loss of elm trees.	
Carver bust (and base)	Outdoor sculpture/monuments (7100)	71782	527277; (base 526174)	121340	005036; HS-26	N/A	C	The concrete bust was presented to the park by the sculptor in 1953. It has since been painted, and the base base has been replaced.	Yes. Has been relocated three times, with base replaced similarly.	
Memorial plaque	Outdoor sculpture/monuments (7100)	N/A	N/A	121342	N/A	N/A	NC	The plaque is an inscribed stone set into the ground.	Not historic.	
Quote stones	Outdoor sculpture/monuments (7100)	N/A	N/A	121344	N/A	N/A	NC	Several inscribed stones are set in the ground along the walks.	Not historic.	
Stone boundary markers	Boundary (3800)	N/A	N/A	120892	070022; HS-35	N/A	C	These stone markers predate park establishment.	No.	
Benches (concrete) along Carver Trail	2100	71193	168090	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Benches (concrete) along Contemplative Loop	2100	71196	393679	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Benches, wood, Carver Trail	2100	71183	394662; 39685; 394695	N/A	N/a	N/A	NC	Installed post 1960.	Not historic.	
Benches (masonry/stone) along Contemplative Loop	2100	71196	573278	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	

George Washington Carver National Monument
CLR-FMSS Crosswalk Table for Analysis and Evaluation



CLR Feature Name	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	CLI No.	LCS No.	ASMIS No.	Cultural Landscape Evaluation	Historic Character	Deficiency (Historic)	Additional Guidance
Benches, wood, Contemplative Loop	2100	71196	394035	N/A	N/a	N/A	NC	Installed post 1960.	Not historic.	
Flagpole at visitor center	4100	71204	173106	N/A	N/a	N/A	NC	Installed post 1960.	Not historic.	
Flagpole at housing area	4100	71207	173103	N/A	N/A	N/A	C	Installed post 1960.	Not historic.	
Bench near visitor center (grounds) - steel/cast iron	3100	71213	504324	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Signs (directional, regulatory, wayfinding) Carver Trail	2100	71193	385557; 385663; 385676; 389006; 389070; 391225; 391260	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Signs (road) Entrance Road	1100	71197	526139; 526141; 526143; 526147	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Signs (road) Visitor Center Parking Area	1300	79609	526160; 526162; 526163	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Signs (road) Picnic Area Parking Area	1300	71200	526148; 526151	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Signs (road) Housing Parking Area	1300	71201	524714; 526278	N/A	N/A	N/A	NC	Installed post 1960.	Not historic.	
Archeological Sites										
Carver Birthplace Cabin site	Maintained Archeological Sites (7200)	N/A	N/A	120888	21NE119	N/A	C	Important historic location. Not currently interpreted.	No.	
Gilmore Cabin/ Farm site	Maintained Archeological Sites (7200)	N/A	N/A	121316	21NE120	N/A	C	Important historic location. Not currently interpreted.	No.	
Williams Cabin/ Farm site	Maintained Archeological Sites (7200)	N/A	N/A	121312	21NE121	N/A	C	Important historic location. Not currently interpreted.	No.	
Moses Carver Farm site	Maintained Archeological Sites (7200)	N/A	N/A	N/A	21NE119	N/A	C	Important historic location. Not currently interpreted.	No.	

Chapter 4: Affected Environment

4.0 Introduction

This chapter specifically discusses the resources that could be potentially impacted by the proposed action alternatives/treatment recommendations. These resources were identified and described as impact topics in Chapter 1: Introduction. Identification was based on the issues raised by agencies and the public during scoping; site conditions; federal laws, regulations, and Executive Orders; NPS Management Policies 2006 and topics specified in Director's Order 12 and Handbook; and park specific resource information.

Natural resources examined in detail at George Washington Carver National Monument include soils; water quality; vegetation; wildlife and wildlife habitat; rare, threatened, and endangered species; wetlands; and floodplains. Cultural resource types evaluated include cultural landscapes, historic structures, and archeological resources. The remaining topics examined in detail are visual resources, visitor use and experience, and park operations.

4.1 Natural Resources

4.1.1 Soils

The soils at the park are shallow with moderate to high permeability and tend to develop from bedrock of chert. Many of these soils (Hoberg,

Keeno, and Wanda) are silt loams formed in cherty limestone residuum and occur on gently to moderately sloping lands on uplands and terraces. They are moderately well to well drained, and have moderate fertility and a low or acidic pH. The Keeno silt loams have a low available water capacity and a root zone often restricted by fragipan to a depth of 18 to 27 inches. In contrast, the Wanda silt loam series has a high available water capacity. These soils tend to occur adjacent to one another and cover a large percentage of the park (Figure 207). These moderately to well drained soils on gently sloping lands can be classified as dry-mesic to mesic. They most likely formed under the tallgrass prairie and are suitable for prairie restorations.

The Secesh, Cedargap, and Carytown silt loams each occur along streams or in depressions. The Cedargap series is frequently flooded but extends outward from the streams and has rapid permeability, whereas the Secesh soils tend to hug the lower stream terraces in locations where flooding is relatively rare and have moderate permeability. The Carytown soils typically occur in depressions in uplands and have slow runoff and poor permeability. They often sit above perched water tables. At the park, Carytown soils occur in small pockets away from the lower stream terraces and are currently supporting wetland vegetation. The Secesh soils support the largest areas of woodlands on the site, but they are also capable of supporting grassland vegetation.⁵²¹

521. Harrington et al., 50–51.

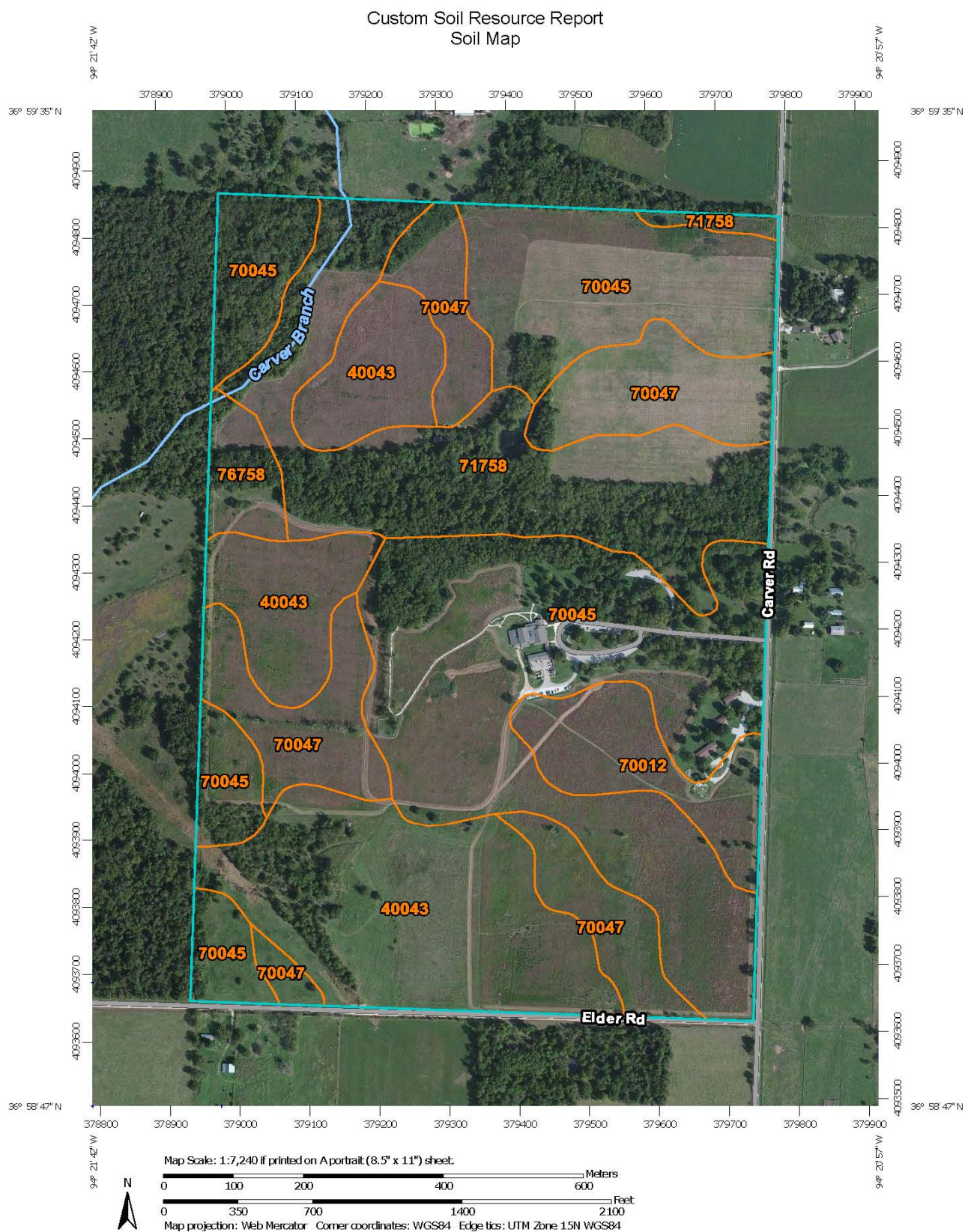


FIGURE 207. Soils map of George Washington Carver National Monument. Source: *Custom Soil Resource Report for Newton County, Missouri, George Washington Carver National Monument.*

Soils Map Unit Legend

Newton County, Missouri (MO145)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
40043	Carytown silt loam, 0-2 percent slopes	52.3	21.8%
70012	Hoberg silt loam, 2 to 5 percent	11.8	4.9%
70045	Keeno gravelly silt loam, 3 to 8 percent slopes	94.6	39.4%
70047	Wanda silt loam, 2-5 percent slopes	36.6	15.2%
71758	Secesh-Cedargap complex, 1 to 3 percent slopes, frequently flooded	40.3	16.8%
76758	Secesh-Cedargap complex, 0 to 2 percent slopes, frequently flooded	4.8	2.0%
Totals for Area of Interest		240.3	100.0%

4.1.2 Vegetation

The park manages grassland, forest, and the intensively manicured developed core for visitor use (manicured lawns, picnic grounds, tree groves, buildings, and paved areas). The park currently manages 130 acres as restored grassland prairie. The restored prairie falls within the former agricultural fields of the Moses Carver and Shartel farmsteads. It has been based on more than 35 years of work conducted by the NPS in conjunction with several partnering organizations.

Forested areas occur primarily along streams, but extend into the uplands. The picnic area, visitor center, and former housing complex are intensively managed and manicured, with some proportion of those areas planted in non-native trees and shrubs and manicured lawn.

(Figure 208).⁵²²



FIGURE 208. Ornamental non-native plantings around the visitor center.

The park's prairie units are in a highly disturbed state due to previous intensive land uses, such as cultivation and grazing. The restored prairies, which contained few if any patches of remnant prairie at the time that restoration began in 1981, occur on the former pastures and cropland (Figure 209). Prior to the restoration, these areas supported high numbers of non-native and annual plant species. The prairies at the park reflect the prominence of prairies in the pre-settlement landscape of Newton County, Missouri. Following increasingly mechanized commercial farming in

522. National Park Service, Environmental Assessment, Assessment of Effect, Fire Management Plan, George Washington Carver National Monument, Missouri, 2004, 21–22.

the late nineteenth and early twentieth centuries, the prairie on the site was plowed and grazed until 1943. During the 1980s and under NPS stewardship, management of the restored prairies shifted from farming and pasture management to restoration of native prairies.



FIGURE 209. Prairie restoration units occur throughout the park.

The woodlands in the park are considered part of the oak-hickory forest association that is characteristic of most forests in southwestern Missouri. The woodlands are small in area and no section is more than approximately 20 acres. They show a variation of this mix, with proportionally small amounts of oak and very little hickory. A high occurrence of American elm, hackberry, and Osage orange is indicative of some form of disturbance, most likely grazing and/or plowing. Other species found within the woodlands include black cherry (*Prunus serotina*), black walnut, hawthorn (*Crataegus* spp.), burr oak, Eastern red cedar, and ash. These are indicative of a lowland early succession community of an oak-hickory forest.⁵²³

While prairie vegetation has been established, exotic plant species have also become established and may impede successful prairie restoration. The invasive Japanese honeysuckle and tartarian honeysuckle (*L. tartarica*) are abundant in the

woodlands; while Johnson grass, crown vetch, and lespedza have colonized prairies. The high abundance of thistle (*Cirsium* spp.) on adjacent lands is also a potential problem. Extensive grazing on surrounding farms invites exotic species establishment and growth. Encroaching native woody plants include sumac (*Rhus* spp.), blackberries (*Rubus* spp.), woody briars (*Smilax* spp.), and grape vine (*Vitis* spp.), which are also invading restored prairies. Osage orange is a common invasive tree, particularly in the woodlands on the northwest side of the park. Multiflora rose is common in both woodland and grassland habitats in the park.⁵²⁴

An area of special concern is the section referred to as Harkins Woods, located in the northwest corner of the site (Figure 210).⁵²⁵ As shown in tree survey work, the makeup of the forest is markedly different from the rest of the national monument. In addition, several plant species have only been recorded from this area. Examples include white ash (*Fraxinus americana*), mad dog skullcap (*Scutellaria lateriflora*), small passionflower (*Passiflora lutea*), monkeyflower (*Mimulus alatus*), ground ivy (*Glechoma hederacea*), and Palmer hawthorn (*Crataegus palmeri*).⁵²⁶



FIGURE 210. Harkins Woods northwest of the Moses Carver house and demonstration gardens.

523. Ibid.

524. Gust M. Annis et al., 20–21, 53.

525. Barry A. Jones, *Vascular Plant Inventory, George Washington Carver National Monument* (Republic, Missouri: Heartland Inventory and Monitoring Network, National Park Service, December 2004), 7–8.

526. Jones, 7–8.

4.1.3 Water Quality

There are three streams that flow through the park and two spring branches that are completely contained within the park. Carver Branch, Harkins Branch, and Williams Branch are all tributaries of Shoal Creek. Williams Spring is currently inundated by Williams Pond. Carver Spring consists of a very short spring branch that flows into Carver Branch. Stream condition within the monument is generally good, though there may be mild impairment from threats outside of the park boundaries (Figure 211 and Figure 212).⁵²⁷

Water quality is best summarized in the results of the *Aquatic Invertebrate Monitoring at George Washington Carver National Monument* by David E. Bowles, dated June 2013. This report states:

... data accumulated for the streams at George Washington Carver National Monument largely fall within acceptable ranges for water quality in southwestern Missouri. The relatively high pH values recorded for Carver Branch and Williams Branch in 2007 are likely due to probe error and not unacceptable readings.⁵²⁸

Aquatic habitats are an important part of the natural and cultural interpretive programs at the park. The water resources are home to several species of reptiles and amphibians. Plant and animal life within these waters are of great interest to visitors and are excellent educational tools for park interpreters. Park waters are influenced by adjacent land use such as agriculture and pasture. Because of the role water plays in the life cycle of many reptiles and amphibians, these species are good indicators of water quality. Amphibians are of particular interest due to their sensitivity to pollutants.⁵²⁹ Protection of surface water and ground water is a management priority at the park and currently water quality meets or exceeds all

applicable water quality standards. NPS and NPS-permitted programs and facilities are maintained and operated to avoid pollution of surface water and groundwater.



FIGURE 211. Stream branch on the site of George Washington Carver National Monument.



FIGURE 212. Interpretation of Carver spring.

4.1.4 Wildlife and Wildlife Habitat

Fauna of George Washington Carver National Monument are typical of old fields and disturbed woodlands in the Ozark Highlands. Birds are a major visitor attraction, and are the most intensively studied of the park's vertebrates. Forty-nine species of birds were recorded during site visits in May 2008.⁵³⁰ The most common and widely distributed species was the Dickcissel. The

527. D. E. Bowles, "Aquatic Invertebrate Monitoring at George Washington Carver National Monument: 2005–2007" (Fort Collins, Colorado: National Park Service, 2009).

528. D. E. Bowles, "Aquatic Invertebrate Monitoring at George Washington Carver National Monument 2005–2010 Status Report" (Republic, Missouri: Heartland Inventory and Monitoring Network, National Park Service), 7.

529. Annis et al., 18–22.

530. Peitz (2009).

blue jay, northern cardinal, northern mockingbird, American robin, American crow, downy woodpecker, and tufted titmouse are seen in the forest, developed areas, and forest edges. Common mammals include the opossum, raccoon, prairie vole, and hispid cotton rat.⁵³¹ The herpetofauna community is typical for disturbed prairies with some common deciduous forest species. Common species include the American bull frog, southern leopard frog, ringneck snake, and three-toed box turtle.

Pooled data from 2003, 2006, 2007, and 2010 document twenty-two fish species known to the park. These species generally were typical of small headwater streams, including southern redbelly dace (*Phoxinus erythrogaster*), central stoneroller (*Camptostoma anomalum*), and green sunfish (*Lepomis cyanellus*).⁵³²

4.1.5 Rare, Threatened, and Endangered Species

There are no federally endangered or threatened species known to occur within the park, although several state-listed species of special concern have been documented within the park, or are associated with habitats present within the park. Three grasslands obligate birds—the Dickcissel, Eastern meadowlark, and grasshopper sparrow—have been recorded at the park. No forest obligate species have been recorded. The three most

frequent species of concern and their habitats include the Dickcissel (tallgrass prairie or weedy fields), Indigo bunting (brush and low trees of overgrown fields), and Carolina wren (woodland understory).⁵³³

Other bird species identified by the park of concern include the northern harrier,⁵³⁴ loggerhead shrike,⁵³⁵ and painted bunting.⁵³⁶ Species identified by the park as important for monitoring purposes, but which are not associated with state or federal listing, include the northern bobwhite quail and Henslow's sparrow.

One rare fish species—the Arkansas darter—was observed within the park during a 2003 fish survey.⁵³⁷ “The Arkansas darter has been a candidate for federal listing as a threatened or endangered species and is considered a species of conservation concern by the State of Missouri.”⁵³⁸

The wood frog⁵³⁹ is the only amphibian identified as a species of concern associated with park habitats, although it has not yet been observed in the park.

The state-endangered spotted skunk is another species that has not been observed within the park, although suitable habitat exists to support it.

One insect of concern, the regal fritillary,⁵⁴⁰ has been identified within the park. It is associated

531. Robbins (2005).

532. Justus and Peterson (2005a).

533. D. G. Peitz, “Bird monitoring at George Washington Carver National Monument, Missouri” (Fort Collins, Colorado: National Park Service, 2009); as summarized in Gust M. Annis, Michael DeBacker, David D. Diamond, Lee F. Elliott, Aaron J. Garringer, Phillip A. Hanberry, Kevin M. James, Ronnie D. Lee, Sherry A. Leis, Michael E. Morey, Dyanna L. Pursell, and Craig C. Young, “George Washington Carver National Monument Natural Resource Condition Assessment” (Fort Collins, Colorado: National Park Service, July 2011), 18.

534. Identified at the state level as S2E or imperiled; and at the federal level as G3G4 C or vulnerable, apparently secure, and a candidate for listing.

535. Identified at the state level as S2 or imperiled; and at the federal level as G4 or apparently secure.

536. Identified at the state level as S3 or vulnerable; and at the federal level as G5 or secure.

537. Identified at the state level as S3S4 or vulnerable to apparently secure; and at the federal level as G5 or secure.

538. B. G. Justus and James C. Peterson, “The Fishes of George Washington Carver National Monument, Missouri, 2003,” 12.

539. Identified at the state level as S3 or vulnerable; and at the federal level as G3 or vulnerable.

540. Identified at the state level as S3 or vulnerable; and at the federal level as G3 or vulnerable.

with tallgrass prairies and wet grassy areas within the central United States.

Plant species of concern noted within the park include royal catchfly,⁵⁴¹ observed in the park during a 2004 survey, and the American beakgrass,⁵⁴² observed in previous surveys but not during the 2004 survey. There are also five additional species of concern associated with park habitats that have not as yet been observed during survey efforts. They include *Geocarpon minimum*,⁵⁴³ prairie false foxglove,⁵⁴⁴ *Bromus latiglumis*,⁵⁴⁵ graceful sedge,⁵⁴⁶ and velvety tick trefoil.⁵⁴⁷

4.1.6 Wetlands

Several areas of the park experience wet conditions throughout much of the year. For example, the south-central, west-central, and east-central portions (just east of Williams Pond) often have standing water in them during the winter and spring. Some of the water results from runoff, while much of it results from ground water seepage. Plant communities in these areas, notably different from drier areas of the park, reflect the wet conditions. No attempt has been made to determine wetland classification for any of the park's wet areas or to map and inventory them.⁵⁴⁸ No wetlands on the site except Williams Pond appear on the National Wetlands Inventory (NWI) mapping conducted by the U.S. Fish and Wildlife Service. The inventory is based primarily on a review of aerial photographs, soil surveys, and hydrological data. While the NWI is useful as a preliminary planning tool, it should be noted that

the inventory is a product of very limited field verification.

Studies developed since the late 1990s have shown that several areas of the park deserve attention and protection. Of particular interest are wet prairie areas and Williams Pond (Figure 213). Wet prairie areas located in the southwest and in the south-central areas of the park are particularly notable due to the diversity of plants that are only found in damp areas. Typically, these areas remain either with standing water or with wet soil for most of the year (with a normal drying during the summer drought season). Many species of sedges (*Carex* spp., *Cyperus* spp.) and grasses, as well as forbs, are found only in these areas of the park.⁵⁴⁹

Williams Pond, although an artificially created impoundment, is a site that has become the “repository” for some of the most unique plants within the national monument. These include thirteen species found exclusively at the pond: water starwort (*Callichtriche heterophylla*), coontail (*Ceratophyllum demersum*), fall witchgrass (*Digitaria cognata*), several species of spikerush (*Eleocharis acicularis*), *E. erythropoda* [calva], *E. obtusa*, autumn fimbriatylis (*Fimbristylis autumnalis*), rush (*Juncus diffusissimus*), naiad (*Najas guadalupensis*), fog fruit (*Phyla lanceolata*), pondweed (*Potamogeton crispus*), marsh water cress (*Rorippa palustris*), and horned pondweed (*Zannichellia palustris*). Other typical plants found at the pond are: mud water starwort (*Callichtriche terrestris*), barnyard grass (*Echinochloa crus-galli*), eclipta (*Eclipta prostrata*), spikerush (*Eleocharis verrucosa*), duckweed (*Lemna minor*), chapman bluegrass (*Poa chapmannia*), smartweed (*Polygonum punctatum*), and water cress

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- 541. Identified at the state level as S1 or critically imperiled; and at the federal level as G4G5 or apparently secure to secure.
 - 542. Identified at the state level as S1 or critically imperiled; and at the federal level as G4G5 or apparently secure to secure,
 - 543. Identified at the state level as E or endangered; and at the federal level as T or threatened.
 - 544. Identified at the state level as S1 or critically imperiled; and at the federal level as G4G5 or apparently secure to secure.

- 545. Identified at the state level as S3 or vulnerable; and at the federal level as G5 or secure.
- 546. Identified at the state level as S1 or critically imperiled; and at the federal level as G5 or secure.
- 547. Identified at the state level as S1 or critically imperiled; and at the federal level as G5 or secure.
- 548. *Resources Management Plan* 1999, 9.
- 549. Jones, 6–11.

(*Nasurtium officinale*).⁵⁵⁰ Dr. David Bowles of HTLN noted that some of the plants listed above may have occurred there historically, but this cannot be verified given current knowledge.



FIGURE 213. Williams Pond.

4.1.7 Floodplains

Floodplains are fluvial lands adjacent to freshwater streams and rivers that receive floodwaters once the water has over topped the bank of the main channel. This is typically the result of a higher than normal influx of upstream water supplies, with water moving from higher elevations to lower elevations. Floodplains are important resources in the storage and filtering of these floodwaters.

The topography of the national monument landscape consists of gently rolling uplands dissected by stream channels that carry water from natural springs and excess water during rainy periods. The stream valleys have a stepped appearance and bedrock outcrops are infrequent except along deeper streams and rivers. There are floodplains associated with the three stream branches that occur within the park (Figure 214).⁵⁵¹

There is a great potential for flooding along Carver branch, with the extensive agricultural use within its 3-mile drainage area and the 100-foot elevation drop between its source and the park entrance.

Current laws and policies require that the following conditions be achieved in the park: minimize destruction, loss, or degradation of wetlands and floodplains, and preserve their natural and beneficial values.



FIGURE 214. Floodplains occur along all three stream branches at George Washington Carver National Monument.

4.2 Cultural Resources

4.2.1 Cultural Landscapes

A cultural landscape is defined in NPS Director's Order 28 as a geographic area, including both cultural and natural resources and the wildlife and domestic animals therein, associated with a historic event, activity, or person, or exhibiting other cultural or aesthetic values.⁵⁵²

George Washington Carver National Monument is the birthplace of George Washington Carver and his place of residence until he was approximately eleven years old. The entire 240 acres of the former Moses Carver farm has been listed in the National Register.⁵⁵³ The park contains cultural landscape resources such as natural systems and features, the Carver family cemetery and perimeter wall, the walnut tree row planting, and views across the fields and prairies (Figure 215 and Figure 216).

550. Ibid. 6–7.

551. Fire Management Plan, 25.

552. NPS, Director's Order 28.

553. United States Department of the Interior: National Park Service. *George Washington Carver National Monument.* "National Register of Historic Places Inventory – Nomination Form, October 15, 1966.



FIGURE 215. The spatial organization of the landscape of George Washington Carver National Monument is seen in the contrast of open space prairie grassland edged by woodland.



FIGURE 216. The open landscape currently in grassland prairie restoration.

The future of the park as a cultural landscape is a key issue of the CLR/EA. Changes to the cultural landscape that could result from implementing one or more of the alternatives would be of concern to visitors, the general public, the SHPO, interested tribes, local community scholars, and NPS managers.

4.2.2 Historic Structures

According to both federal law and NPS Management Policies, all historic structures in which the NPS has a legal interest are to be managed as cultural resources. Regardless of type, level of significance, or current function, every structure is to receive full consideration for its historical values whenever a decision is made that might affect its integrity. Historic structures that are central to the legislated purposes of parks, especially those that are to be interpreted, may be subjects of additional specialized efforts appropriate to their functions and significance.⁵⁵⁴

There are six buildings and fifteen structures located within the park. The only building to survive from the Carver period is the circa 1881 Moses Carver house (Figure 217). The other five buildings were constructed by the NPS in 1960 to accommodate visitor uses and park operations. The visitor center was substantially altered and expanded in 2007 to better accommodate interpretive exhibits and provide improved museum collections storage. One structure—the rebuilt stone wall enclosing the historic Carver family cemetery—was installed as part of the early park development period in support of the commemorative and interpretive programming devised for the park (Figure 218).

Changes to historic buildings or structures at George Washington Carver National Monument that could result from implementing one or more of the alternatives would be of concern to visitors, the general public, the Missouri SHPO, interested tribes and THPOs, and NPS managers.

554. Ibid. 19.



FIGURE 217. Moses Carver house and site.



FIGURE 218. Stone wall around the Carver family cemetery.

4.2.3 Archeological Resources

Archeological resources are significant due to their identity, age, location, and context in conjunction with their capacity to reveal information through the investigatory research designs, methods, and techniques used by archeologists.

Various archeological inventories have been conducted within the monument since 1953. (Refer to chapters 2 and 3 for a complete summary and description of findings) A recent summary of archeological resources at the park is found in a response to an inquiry to the park from the THPO of the Caddo Nation in March 2014. MWAC archeologist Ann Bauermeister provided the

following response in an email dated March 27, 2014:

The entire park has been inventoried for archeological resources, though at different levels of intensity. The parkwide inventory completed by David Benn in 1981 utilized the following survey methods: pedestrian survey of the entire monument, reconnaissance to determine geomorphic aspects of the landscape, and shovel testing of areas covered by vegetation. Benn did not record any sites near those confluences, but additional, more intensive subsurface excavations, or geophysical survey, might yield different results. The park has recently been engaged in undertaking additional archeological inventories in compliance with Section 110. The goal of these inventories is to supplement what was previously documented about the park's archeological resources. The investigations, more of which are planned for 2014, are utilizing non-invasive geophysical survey methods to look for the presence of subsurface resources that may not have been detected through traditional archeological methods. Limited, targeted excavations to identify potential buried resources could then be undertaken.

Additional investigations at the lithic scatter sites would be very useful in determining site significance and providing additional information about the long history of use and occupation. The sites are visited on a regular basis to assess their condition and document whether they are being subjected to any threats or disturbances. They are all currently listed in "good" condition and are in a good state of preservation.⁵⁵⁵

555. Ann Bauermeister, email correspondence March 27, 2014, to Lana Henry, forwarded to THPO of the Caddo nation.

4.3 Visual Resources

George Washington Carver National Monument exhibits several views designed primarily for visitor enjoyment and understanding of the landscape. Predominant among them are the axial view along the park entrance road toward the visitor center environs, linear views that direct visitors through the historic core to elements of the land that Carver knew, and long expansive views from the visitor center and Carver Trail across the open restored prairie located south of Carver Branch, and north and west of the relocated Moses Carver house. These views were all established as part of the early development of the park. Specifically, these views include views into the park along the entrance; linear views along the Carver Trail; views from the visitor center and trail of restored prairie; the view across the prairie through the hedgerow of walnut trees; and the view across the fields from the Moses Carver house area (Figure 219 and Figure 220).



FIGURE 219. View to one of the prairie units through the row of walnut trees near the cemetery along the Carver Trail.



FIGURE 220. View to one of the prairie units from the Moses Carver house environs.

4.4 Visitor Use and Experience

George Washington Carver National Monument, a unit of the National Park System, was established in 1943 to preserve and protect the birthplace of George Washington Carver and commemorate the life of one of the nation's most important scientists. The park is open to visitors daily from 9:00 a.m. to 5:00 p.m. The only days the park is closed are New Year's Day, Thanksgiving Day, and Christmas Day. Guided tours are offered daily at 10:00 a.m. and 2:00 p.m. An array of curriculum-based programs and events are offered for students, and a variety of interpretive programs and special events are offered for visitors. Many of the activities offered at the park are related to Carver's work and interests. Teachers are given the opportunity to participate in curriculum based education programs and planned field trips to use the park as a classroom. Visitor services, such as ranger contact, restroom facilities, and drinking fountains, are afforded in the visitor center, while picnic tables are available in the picnic area near the parking lot. The park is also used by visitors for recreational walking/hiking along the Carver Trail and the Contemplative Loop Trail that surrounds Williams Pond (Figure 221).



FIGURE 221. Visitors to the park experience the Carver Trail as part of the interpretive experience and for recreational walking.

Tour groups of 200 visitors (usually students) are frequent. Special events such as Carver Day, National Parks Week, and Prairie Day attract school groups and the general public from as far away as St. Louis, Missouri; Tulsa, Oklahoma; and locations in northwest Arkansas. The annual visitation has increased markedly since the visitor center opened in 1960.

Visitors arrive at the park via Carver Road (Figure 222). The entrance drive leads to the core visitor use area composed of the visitor center, picnic area, and mile-long Carver Trail. Parking edges the entrance drive to either side; the entrance drive forms a loop in front of the visitor center that visitors use to return to Carver Road. The main park entrance road is edged to the north by a grove of mature shade trees and a large picnic area is set within the grove (Figure 223). Figure 224 through Figure 228 illustrate features of the visitor experience and interpretation at the park.



FIGURE 222. The entrance drive leads visitors to the core visitor use area.



FIGURE 223. The picnic area is set within a grove of large deciduous trees.



FIGURE 224. The visitor experience begins at the visitor center and the trailhead for the Carver Trail north of the visitor center.



FIGURE 225. Major node for visitor use is the location of the sculpture of Carver as a boy.



FIGURE 226. An interpretive wayside exhibit at the Moses Carver house.



FIGURE 227. Ranger interpretation is part of the visitor experience at George Washington Carver National Monument.



FIGURE 228. A ranger on the porch of the Moses Carver house.

4.5 Park Operations

Park administration has been a component of park operations since early park development. Park administrative offices are currently housed in the visitor center. Park maintenance activities are clustered in a building and grounds complex located south of the visitor center. The maintenance facility was established with the visitor center in 1960 (Figure 229 and Figure 230). Maintenance activities have been a component of the park operations since its early establishment. Also from the time of establishment, utilities have been an essential component of park operations, including water and sewer, telephone, internet and electrical services.



FIGURE 229. Maintenance facility and staff at George Washington Carver National Monument.



FIGURE 230. The parking area for maintenance vehicles.

Presently, the national monument has thirteen full-time park employees; this includes the Superintendent, Administrative Officer, Park Ranger-Management Assistant, Supervisory Park Ranger, Supervisory Facility Operations Specialist, Administrative Support Specialist, Park Ranger (Interpretation 1), Park Ranger (Interpretation 2), Park Guide, Maintenance Worker 1, Maintenance Worker 2, Maintenance Mechanic, and Laborer. There is one permanent part-time employee, the Office Automation Clerk. There are also a number of vacant positions for seasonal/temporary employees. The park staff relies on temporary staff and volunteers to supplement full-time educational and interpretive staff.

The park managed approximately 380 Volunteers in Parks (VIPs) during Fiscal Year 2013, a number substantially higher than in previous years due to the involvement of groups including Gateway School, Wal-Mart Leadership Team, and MSSU EDUC 470 class, as well as others. Without park volunteers, there would be a reduction in the number of programs the park could offer. The VIPs are ambassadors for the park and are successful at recruiting others to volunteer. They primarily support the park's interpretive division by providing daily staffing of the greeter desk (there are currently eight greeters), providing education programs for school groups (there are currently seven educators), staffing exhibits and demonstrations during special events (estimated at twenty for the Holiday Open House, thirty for Art in the Park, fifty for Carver Day, and seventy-five

to one hundred for Prairie Day), and representing the park offsite. Many of the same VIPs work at each event. The VIPs also work with the maintenance division to maintain manicured and landscaped areas. Two to four VIPs conduct the annual breeding bird survey.

Chapter 5: Treatment Alternatives

5.0 Introduction

The treatment alternatives information that comprises this chapter was prepared to provide George Washington Carver National Monument with an overall vision for the cultural landscape that is intended to guide appropriate long-term management and interpretation. The vision is derived from consideration of a range of alternatives presented to the park, stakeholders, and the public that reflect and address park goals and identified needs and concerns. Each of the alternatives presented herein was designed to address park needs in a distinct manner, affording the NPS and stakeholders an opportunity to evaluate a wide range of options and test them against factors such as the park's mission, and interpretive and sustainability objectives. Each alternative addresses goals and needs in a distinct way; a preferred alternative was selected through an evaluation process conducted by the park with stakeholder input. Implementation of the preferred alternative is addressed in Chapter 8: Implementation, Phasing, and Cost Estimate for the Preferred Alternative of this CLR/EA.

The information presented in this chapter arises from a synthesis of work undertaken by the project team to prepare this CLR/EA, including stakeholder meetings and workshops, input from NPS regional and park personnel, and comments received from partnering organizations and other stakeholders. The treatment plan also reflects the overarching guidance afforded in the park's GMP, LRIP, and other foundational documents.

This treatment chapter is organized into the following eight sections:

1. **Park Management Issues, Goals, and Objectives** provides a summary of the management issues collected by the CLR team from various sources, including the GMP, various environmental assessment and planning documents, and park and regional personnel.
2. **Proposed Alternatives and Treatment Guidelines** provides the description of the no-action alternative, and the action alternatives developed through the CLR/EA planning process, as well as the goals, objectives, and treatment recommendations and guidelines common to the action alternatives.
3. **Recommended Landscape Treatment Approach** outlines the four alternatives recognized by the Secretary of the Interior for treating historic landscapes and identifies the most appropriate approach for the park.
4. **The Preferred Alternative** identifies the alternative selected for further consideration as the preferred alternative and the rationale for the selection.
5. **The Environmentally Preferred Alternative** identifies the alternative considered to afford the best protection of the natural environment, and that best protects, preserves, and enhances historic, cultural and natural resources.
6. **Alternatives Considered but Dismissed** describes the treatment alternatives that were considered and dismissed through review, discussion, and analysis by regional and park

NPS personnel, the consultant team, and stakeholders.

7. **Mitigation** ensures the protection of natural and cultural resources and the quality of the visitor experience. This section outlines the mitigation measures that would be implemented as part of the preferred alternative.
8. **Alternatives and Impact Comparisons** convey in table format the comparison of alternatives in relation to project goals and objectives and the summary of alternatives and potential impacts to park resources.

5.1 Park Management Issues, Goals, and Objectives

The CLR/EA focuses on addressing specific management issues, goals, and objectives identified by the NPS in several venues, including foundational documents, the project statement of work, a project pre-planning workshop, draft report comments, and stakeholder scoping sessions. The management issues, goals, and objectives that have been critical to the development of the treatment alternatives presented herein are listed below.

- Of critical importance is the goal that the CLR develop an approach that suggests how the landscape might enhance, support, and provide for a visitor experience that is consistent with the desired futures identified in foundational park planning documents, such as the GMP and LRIP. The financial reality and relative sustainability of current versus proposed landscape treatments should be considered in discussing the approach.
- The 1997 GMP affords essential guiding principles for how the cultural landscape of the park should be managed in the future, and indicates areas where further exploration of principles are needed to fulfill the park's mission and take full advantage of the site and its resources. The GMP indicates that the park needs to further consider ways of integrating

commemoration, interpretation, and the treatment of the cultural landscape. Of particular importance is determining how the historic character of the landscape during George Washington Carver's time at the Carver farm should be used to tell the story of his life. The vision for what the woodlands, prairie, and manicured areas of the developed core should look like and how they should be used to tell Carver's life story has not been clearly articulated as of yet. The park has evolved to include more than 100 acres of restored native grassland prairie, which is managed as a natural area, woodlands, which are not necessarily managed, and a manicured developed core that has become increasingly ornamental in its character. Other former interpretive aspects of the landscape, such as a persimmon grove and apple orchard are no longer extant. The park is interested in looking closely at all of these conditions and taking a proactive, justified approach to landcover management and its connection to interpretation and the visitor experience. Specific questions arising from this area of concern include: Should the entrance continue to present a stately feeling? Are the recently added small plantings appropriate? Should there be interpretive plantings that address some of the agricultural activities and native plants associated with Carver's life and work? Are the exhibit vegetable gardens around Moses Carver house appropriate? When considering future landcover types and management strategies, the park is also concerned that proposals take sustainability into consideration.

- Following up on the questions posed in the GMP, the park recognizes that the landscape is very different now than when Carver lived here. It is important for the CLR to consider whether historic aspects of the farm should be restored. Currently, the park explains these differences as part of the interpretive program during tours and talks and exhibits. Because the park's enabling legislation indicates that this is a place to commemorate Carver's life, historic landscape restoration, particularly

given the lack of specific knowledge of the farm during his lifetime, does not appear to be a necessity, or even a goal. However, the question repeatedly comes up, and the CLR should explore the question and provide guidance on an appropriate approach.

- The NPS has recognized the need to better integrate commemoration, interpretation/education, and the treatment of the cultural landscape. Commemoration is an integral part of the park mission. It is important that the CLR discuss what this means for the landscape, and preserve this value as part of the proposed visitor experience. The park recognizes that interpretation and the treatment of the cultural landscape are integrally linked. The role of the landscape in interpreting and honoring George Washington Carver's achievements should be an important component of the CLR treatment plan. Some of the ideas the park has considered in the past for using the landscape to better interpret Carver's life and achievements include the establishment of demonstration plots, including plots representative of his experiments while at Tuskegee, a greenhouse, restored orchards, and a restored persimmon grove.
- The themes and sub-themes explored in the LRIP should be an important consideration of the treatment plan alternatives presented in the CLR. Each alternative should explore how the park's landscape can fulfill the intent of a specific theme, goal, and visitor experience objective. The overarching principle interpretive theme and four primary interpretive themes to be considered include the following:
 - Principle Interpretive Theme: George Washington Carver's devotion to God, positive character traits, simplistic traits, simplistic lifestyle, inquisitive mind, and humanitarian spirit led him to become a role model for success.
 - Primary Theme A: Carver's Life Platform—He was born into slavery on a Southwestern Missouri farm amidst the tumultuous times at the end of the Civil War. Carver experienced racism, segregation, and other hardships, yet demonstrated an "I Can" attitude throughout his life.
 - Primary Theme B: Carver's Spirituality—George Washington Carver possessed deep Christian beliefs, combining his faith in God with science and crediting Divine revelation for his creative abilities.
 - Primary Theme C: Carver's Passion for Art—George Washington Carver possessed the soul of an artist, expressing himself artistically through his work, gaining personal rejuvenation through artistic pursuits, and encouraging others to incorporate beauty into their lives.
 - Primary Theme D: Carver's Life Work and Achievements—George Washington Carver's life of service led him to become a renowned scientist, educator, humanitarian, and example of interracial cooperation.
- The CLR should also consider how woodlands and open space and savanna areas might be managed to address differences between the contemporary landscape and the former spatial character of the property during the Carver period, which was more open and savanna-like. The CLR should also consider how plants relating to Carver's life and achievements might be featured within the park.
- The prairie restoration project began in the early 1980s and is currently being reconsidered. For the first fifteen years, the restoration program was well managed. After the development of the GMP in 1997, there was an ongoing lack of consensus or decision-making on how best to manage the landscape. The park is interested in clarifying the role of the restored prairie, what type of prairie it should be, how much area should be maintained in prairie, what prairie restoration

and management practices are appropriate, and how prairie management can enhance viewsheds. It is important to clearly articulate the role of the prairie in telling the story of George Washington Carver's life, for example, whether the park should manage through mowing to interpret former farm fields in some areas.

- Invasive plant control is part of the prairie management process. It is now needed in some woodland areas. More support will be needed to ensure the success of this initiative, including funding and personnel, which should be indicated in the CLR.
- The CLR should provide guidance to the park on the management and incorporation of the 30-acre parcel acquired in 2006. This land was once part of the Carver farm, but not part of the original park. The treatment alternatives should encompass this parcel. An EA has been prepared to address prairie management through prescribed burns. It is hoped that if the new parcel is recommended for conversion to native grassland prairie, that the existing EA can be used to support this action.
- The CLR/EA should also include recommendations for managing the approximately 20-acre developed core of the park, which requires intensive maintenance. It includes the visitor center/maintenance building complex, the picnic area, and the one-mile Carver Trail. For the picnic area, the CLR should consider vegetation management practices and a desired character as well as the consolidation of the picnic areas into one location. In association with the trail, the CLR should consider an overall justified approach to land cover management and its connection to interpretation and the visitor experience. For example, should trees be planted where the trail crosses open areas to enhance the comfort for visitors? The CLR should also evaluate the ornamental plantings at the park entrance, park site furnishings, rose beds, and plantings near the trailhead.
- The care of turf and goals for the appearance of visitor use areas is a high priority for the park. The CLR should provide guidance and direction regarding treatment of turf and manicured areas within the developed core, and the interface of this area with the less managed prairie units and woodland areas.
- The Carver birthplace cabin exhibit structure appears to be located incorrectly. Archeologists have been conducting detailed investigations to locate the actual site of the Carver birthplace cabin. The CLR should consider how this information could be incorporated into the visitor experience.
- The Carver family cemetery requires special attention (Figure 231). The perimeter wall is in need of repair and the cemetery as a whole requires maintenance and appropriate management, including consideration of returning the opening to the eastern face of the wall where it originally was located. The CLR should also provide guidance on treatment of headstones and turf management within the cemetery wall.



FIGURE 231. Perimeter wall with mounded stones surrounds the Carver family cemetery.

- The late period Carver dwelling is not located on its original site. The CLR should discuss whether there are better methods for reconciling this discrepancy within the landscape.
- The CLR should also consider options for the treatment of Williams Pond and the associated Contemplative Loop Trail around it

(Figure 232). The pond does not contribute to the historic significance of the park, but it provides visual/sensory interest as well as plant and fish habitat. The Contemplative Loop Trail is currently surfaced with mulch. The CLR should consider whether this is appropriate given that it does not meet universal accessibility guidelines.



FIGURE 232. Williams Pond and the Contemplative Loop Trail.

- Accessibility is of concern to the park, as mentioned in the GMP. An accessibility evaluation of the park and the existing trail system was prepared in 2014. The CLR team should use this evaluation to develop recommendations for enhancing accessibility. Although the park feels that the trail is in fairly good shape, there are certain areas that may need to be adjusted due to steep slopes or loose surfacing material. Some portions of the trail have already been resurfaced and regraded to improve accessibility.
- Stream bank restoration work was done along Carver Branch to abate erosion that was threatening the spring house and the Historian's residence. In the 1970s, 200 feet of rip-rap was imbedded in the outside of a "meander bend" to prohibit channel migration (Figure 233).⁵⁵⁶ The CLR should consider whether restoration of the stream banks currently covered with rip-rap is appropriate.



FIGURE 233. Stream flooding occurs along Carver Branch.

- Within the principal viewshed across the prairie west and southwest of the visitor center is evidence of the park's leach field (Figure 234). The CLR should consider means for further disguising or limiting the visual impact of this feature as part of the visitor experience.



FIGURE 234. The leach field and fields west of the visitor center; the leach field should be screened from view from visitor use areas.

- There is currently a problem accommodating parking associated with visitors during special events, such as Carver Day and Prairie Day. The CLR should consider where to accommodate overflow parking for special events, including the size of the facilities, access to the facilities, and the potential surface material of the facilities. Presently, the park uses the grassy areas along the entrance

556. Krahe and Catton, 258, 301.

road, parking area, and picnic area for this purpose (Figure 235).



FIGURE 235. Visitors use the margins of the park entrance road for overflow parking during special events.

- The former housing/administrative area includes three structures that are being considered for removal. These buildings are currently used for storage. The CLR should comment on the plan to demolish the buildings, and potentially suggest an alternative location for the materials stored in these buildings. The park has estimated the area needed for storage at approximately 1,200 square feet.
- The park has considered establishing an environmental trail within the Harkins Woods area (Figure 236 and Figure 237). The CLR should consider whether this is an appropriate addition to the cultural landscape of the park.



FIGURE 236. The south side of the park, which is edged by Elder Road, is not currently accessible to visitors.



FIGURE 237. A secondary access route into the park could be established along Elder Road and connected to other park features via new trails.

5.2 Alternatives and Treatment Recommendations

The alternatives that follow explore a range of options for the potential expansion and rehabilitation of the George Washington Carver National Monument to meet the park's purpose and objectives, while protecting or minimizing impacts on its resources. Before the scoping meetings were held, several alternatives were considered and dismissed by the project team because they did not meet project or park objectives or they had the potential to produce an unacceptable level of adverse impact on the natural and cultural resources and the overall visitor experience. The dismissed alternatives are presented at the end of this chapter.

The first three alternatives below were presented to stakeholders on May 14, 2014, at the park. As a result of input from invited guests, friends of the park, and associated agencies, the CLR/EA team and park staff developed a fourth alternative, blending ideas from Alternatives 2 and 3. Figure 238 through Figure 240 show the Alternative plans presented to stakeholders.

Alternative 1 (No Action), the refined and renamed Alternatives 2 and 3, and the new blended Alternative 4 represent the range of alternatives considered as part of the CLR/EA. They are consistent with applicable NPS laws, policies, and regulations, as summarized in Chapter 1: Introduction. They are as follows:

- Alternative 1 (No Action): Preserve existing conditions and continue current management strategies.
- Alternative 2: Rehabilitation of the Landscape, including Limited Restoration to Interpret and Memorialize the Life and Achievements of George Washington Carver
- Alternative 3: Interpret and Celebrate the Life and Work of George Washington Carver using an Economic-Botanical Approach
- Alternative 4: Honor, Commemorate, and Interpret the Life and Legacy of George Washington Carver by Employing a Combination of Agricultural Heritage and Exhibits of Plantings known to Carver on the Farm and Crucial in His Later Scientific and Research Efforts.

Although the option of continuing current management (Alternative 1: No Action) does not address the purpose and needs of the project as set forth in Chapter 1: Introduction, it is examined here because current conditions are used as the baseline against which the action alternatives are analyzed, and serves as the context for determining the relative magnitude and intensity of action alternative impacts. Three additional alternatives were considered but dismissed as explained in section 5.6, “Alternatives Considered but Dismissed.” Once the action alternatives were developed, reviewed, presented to stakeholders, and revised, the park further evaluated the advantages and disadvantages of each alternative, which led to the identification of the NPS Preferred Alternative.

Alternative 1

Alternative 1 (No Action) focuses on preservation of the existing character of the landscape and current interpretive programs within the park, and does not propose any changes to existing facilities accommodating visitor access and interpretation. The No Action alternative promotes continued resource management of cultural and natural features within the park. The park would continue to maintain present landscape patterns and features and the management and maintenance practices that sustain them.



- Major components of Alternative 1 include:
- Retain existing facilities accommodating visitor access and interpretation
 - Retain the entrance drive and associated parking lot as the primary vehicular access route for experiencing the park's resources
 - Retain visitor experience of the interior exhibits of the visitor center, and the experience outside the building on the Carver Nature Trail
 - Retain the picnic area in the existing grove of large shade trees
 - Continue resource management of cultural and natural features within the park
 - Maintain present landscape patterns and features and the management and maintenance practices that sustain them
 - Retain current mowing and vegetation management regimens including specific protocols for prairie restoration and the treatment of invasive plants
 - Expand woodland areas to continue and evolve through secondary succession
 - Manage for clear sight lines, the viewshed afforded to visitors from the visitor center across the prairie to the west
 - Focus treatment on stabilization and maintenance of the current landscape and preservation of the park's commemorative features as they exist today
 - Maintain existing landscape character and patterns
 - Maintain existing interpretive programs and media
 - Maintain all existing landscape features and systems
 - Undertake minimal actions as required to protect natural and cultural resources
 - Repair deteriorated features and systems

No Action — Preserve existing conditions and continue current management strategies

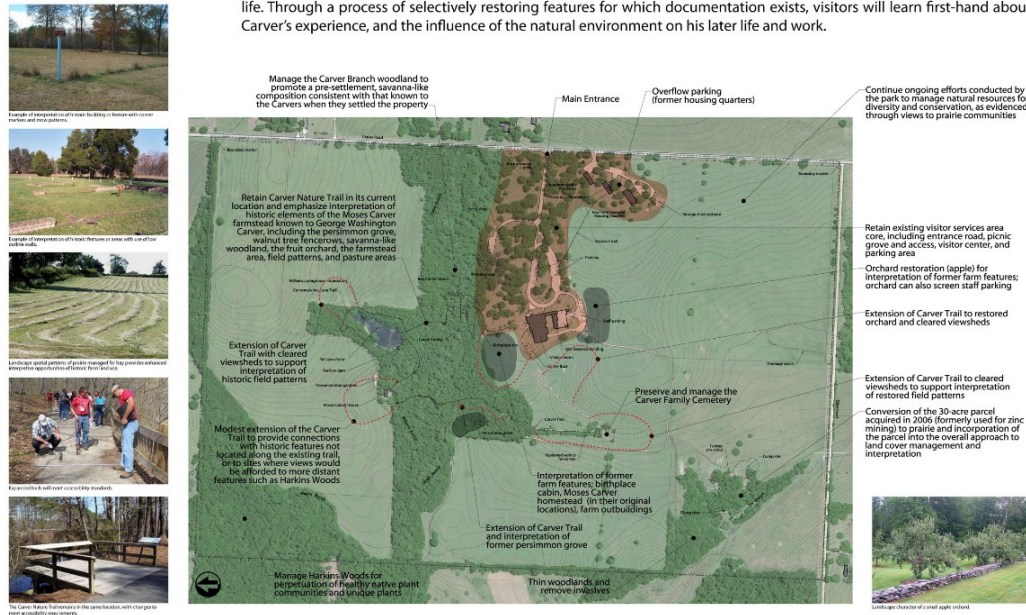
George Washington Carver National Monument
National Park Service

Cultural Landscape Report/Environmental Assessment
DRAFT Treatment Alternatives May 2014

FIGURE 238. Alternative 1 (No Action Alternative).

Alternative 2

This rehabilitation alternative suggests enhancing interpretation of Carver's experience by re-establishing and interpreting missing nineteenth century features and lifeways. Rehabilitation of the landscape will provide informal areas throughout the monument to give the public the opportunity to enjoy the peaceful environment and reflect on George Washington Carver's life. Through a process of selectively restoring features for which documentation exists, visitors will learn first-hand about Carver's experience, and the influence of the natural environment on his later life and work.

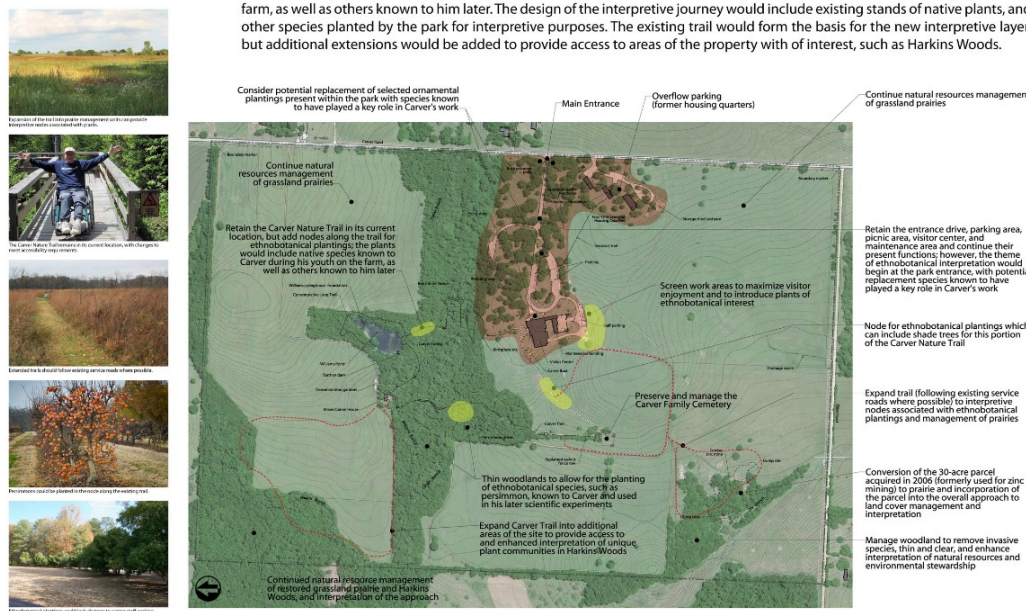


Rehabilitation of the Landscape, including Limited Restoration for Interpretation to Memorialize the Life and Achievements of George Washington Carver

FIGURE 239. Rehabilitation of the Landscape including Limited Restoration for Interpretation to Memorialize the life and Achievements of George Washington Carver.

Alternative 3

The focus of this rehabilitation alternative is the interpretation of Carver's work and career through plants that he discusses in his writing and that are known to have been the focus of experiments and scientific exploration. The plants chosen to accompany visitors in their journey to learn more about Carver's achievements would include native species known to Carver during his youth on the farm, as well as others known to him later. The design of the interpretive journey would include existing stands of native plants, and other species planted by the park for interpretive purposes. The existing trail would form the basis for the new interpretive layer, but additional extensions would be added to provide access to areas of the property with of interest, such as Harkins Woods.



Interpreting and Celebrating the Life and Work of George Washington Carver using an Ethnobotanical Approach

FIGURE 240. Interpreting and Celebrating the Life and Work of George Washington Carver, an Ethno-botanical Approach.

5.2.1 Alternative 1. The No Action Alternative: Preserve existing conditions and continue current management strategies (No Action).

The No Action alternative focuses on preservation of the existing character of the George Washington Carver National Monument landscape and current interpretive programs. Under this alternative, there would be no changes to the facilities that currently accommodate visitor access and interpretation, or park administration and maintenance. Proposed changes that have already been approved, such as demolition of the park housing structures, would be permitted to proceed. The existing visitor center would continue to serve as the primary means for visitor contact and orientation. The entrance drive and associated parking lot would remain the primary vehicular access route for visitors to experience the park's resources. Visitors would also continue to gain the majority of their knowledge of the life and accomplishments of George Washington Carver through the exhibits located within the visitor center and along the mile-long Carver Trail. The picnic area would continue to support the visitor experience. No provision would be made to accommodate overflow parking beyond the use of current road margins and parking areas.

The current landscape patterns of spatial organization, composed of a developed subzone featuring ornamental plantings, shade trees, and turf, riparian woodlands along the stream corridors, and restored grassland prairie, would also be perpetuated. No further thinning would be undertaken and current mowing and vegetation management regimens would continue. The 30-acre parcel would remain a fescue field. The Williams Pond would remain in its current configuration. No change would be made to the interpretation of the Carver birthplace cabin site.

Views identified as important interpretive vistas, such as from the visitor center environs across the prairie to the west, would continue to be managed for clear sight lines. Treatment would focus on stabilization and maintenance of the current

landscape and preservation of the park's commemorative features as they exist today, including the Carver statue and bust, quote stones, and interpretive markers and monuments (Figure 241 through Figure 243).



FIGURE 241. The bust of George Washington Carver with audio interpretation located near the visitor center.



FIGURE 242. The statue of George Washington Carver as a boy is located along the Carver Trail in dense woodlands.



FIGURE 243. Quote stone along the walkway near the visitor center.

Major components of the alternative include:

- Maintenance of existing landcover character and patterns.
- Maintenance of existing interpretive programs and media.
- Maintenance of existing landscape features and systems.
- Continued protection of natural and cultural resources.
- Continued repair of deteriorated features and systems.

Selection of the No Action alternative would preclude the park from meeting some of the goals identified for consideration as part of the CLR treatment plan in the Purpose and Need statement and the list of management issues, such as expansion of visitor parking facilities to accommodate overflow needs during special events, conversion of fescue fields associated with the former mine site to another landcover type, and clarifications of inaccuracies, such as the current location of the birthplace cabin. No further exploration of ways to utilize the cultural landscape as a tool for interpreting Carver's life and accomplishments would be conducted. Selection of the No Action alternative would also limit the park in its ability to explain the historical context within which George Washington Carver grew up and his efforts to get an education and to rehabilitate the landscape and its associated structures to enhance the memorial nature of the site. Management concerns surrounding Williams

Pond (Figure 244), the expansion of the area managed as woodland, consideration of the role of the prairie in site interpretation, and the inaccuracy of the location of the second Carver dwelling (Figure 245) would also not be addressed.



FIGURE 244. Williams Pond in its woodland setting, with the Contemplative Loop Trail surrounding it.



FIGURE 245. The birthplace cabin outline interpreted along the Carver Trail.

for

George Washington Carver National Monument

Prepared by JMA, a CCRG company

Drawing No. GWCA 397 127385

PMIS No. _____

Legend

- GWCA Boundary
- 1-foot contour
- Stream
- Paved road
- Trail
- Building
- Split-rail (worm) fence

- Core Developed Area 22± acres
- Restored Grassland Prairie 127± acres
- Woodlands 61± acres
- Former Mine Site 30 acres*

- 4 Management Units
- Wet Prairie Areas

*This acreage is included in prairie restoration as Unit 9

Sources:

National Park Service, Cultural Resource GIS office, CLI GIS conversion project, 2013.

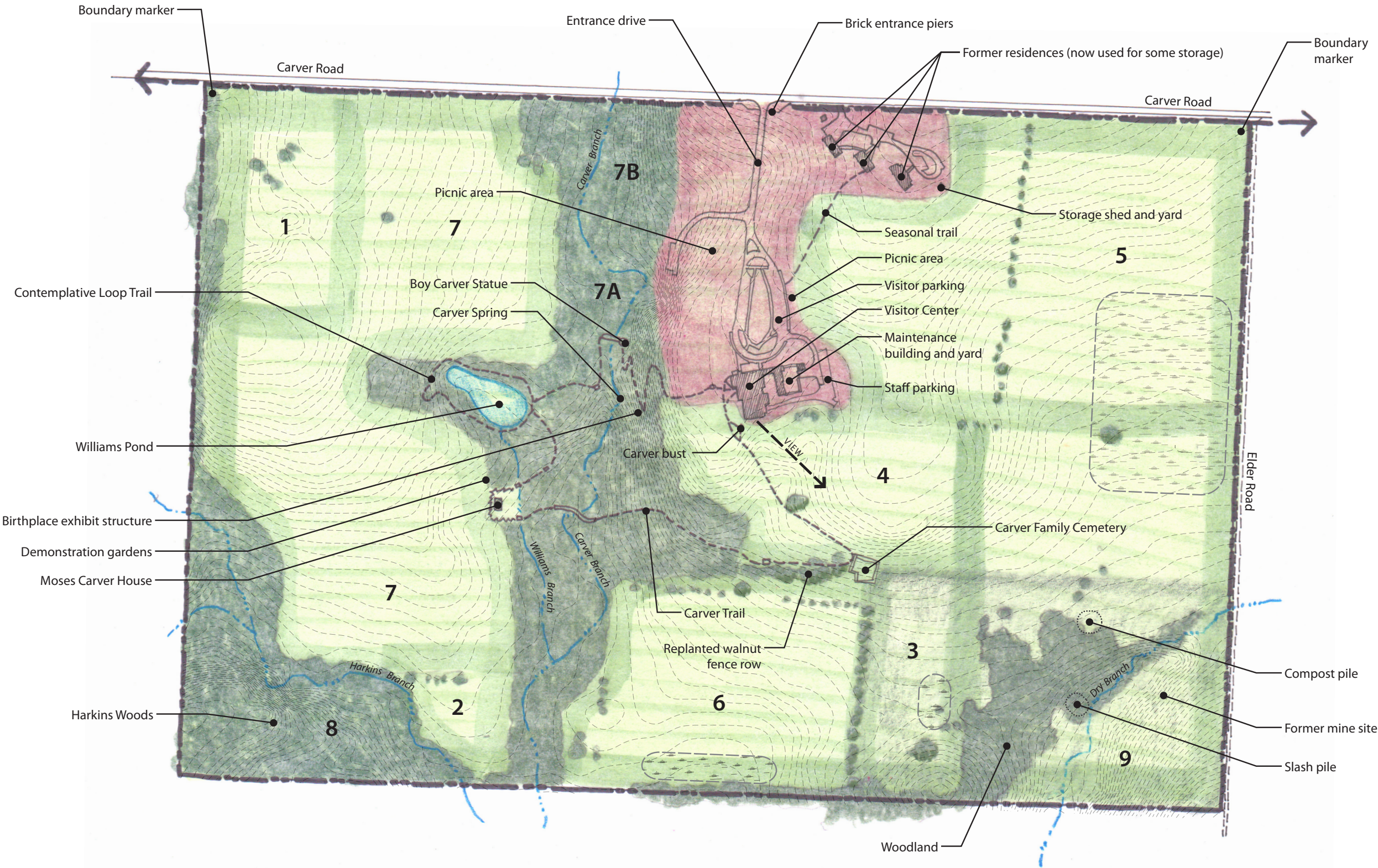
Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).

Heartland Network Inventory and Monitoring Program, "Vascular Plant Inventory, GWCA," 2004.

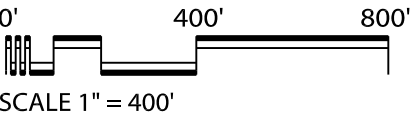
Figure 246.

Alternative 1 (No Action)

Preserve Existing Conditions and Continue Current Management Strategies



This drawing was prepared to illustrate the Cultural Landscape Report/Environmental Assessment for George Washington Carver National Monument in 2015. This drawing is provided to illustrate potential treatment alternatives, and is not intended to serve as a design or construction document.



5.2.2 Goals and Objectives Common to the Action Alternatives

The Action Alternatives described within this chapter are intended to address the issues outlined above, while also meeting specific goals identified in foundational park planning documents. The goals and objectives that are common to each of the action alternatives include the following:

Derived from the GMP

- Integrate interpretation with an approach to managing the cultural landscape.
- Memorialize the life of George Washington Carver as a distinguished African American, scientist, educator, humanitarian, Christian, artist, and musician.
- Preserve the agrarian setting of the Moses Carver farm and birthplace of George Washington Carver.
- Interpret the life, accomplishments, and contributions of George Washington Carver, using a museum, wayside exhibits, and other interpretive strategies.
- Manage cultural and natural resources to memorialize George Washington Carver's life in a dignified and inspirational setting.
- Encourage the public to develop a deep understanding of George Washington Carver's achievements and services to humanity.
- Explain the historical context in which George Washington Carver grew up and his efforts to get an education.
- Evaluate the human/natural/cultural resources and utilize them to a greater extent.
- Rehabilitate the landscape and its associated structures to enhance the memorial nature of the park.

Derived from the project scope, workshops, and NPS communications:

- Utilize the LRIP visitor experience objectives and goals to form a justification for the proposed introduction of elements of the historic landscape.
- Maintain and preserve George Washington Carver's birthplace, a place known to have been influential in shaping the personality of a man who played an important role in the social and agricultural history of twentieth century America.
- Manage the resources at the national monument to help interpret how the Moses Carver farm and surrounding area influenced George Washington Carver as an adult.
- Preserve the cultural landscape as the principal asset of the national monument, including the individual features and the overall historic character that help convey the story of George Washington Carver's life.
- Enhance the visitor experience by creating opportunities for engagement through interaction with and interpretation of both cultural and natural landscape features. This includes ease of access to historic buildings, structures, and features, as well as natural resources and spaces.
- Ensure treatment alternatives are consistent with the guidance afforded in the Secretary of the Interior's Standards for the Treatment of Historic Properties, including the four appropriate treatment approaches recognized for historic landscapes: preservation, rehabilitation, restoration, and reconstruction.

5.2.3 Treatment Recommendations Common to the Action Alternatives

Based on the park's need to meet current and projected future interpretive, functional, and management goals, rehabilitation is recommended as the overarching treatment approach for the George Washington Carver National Monument cultural landscape. Because rehabilitation is defined as "the act or process of making possible a compatible use for a property," this approach will

allow for the protection of the site's historic character and resources while carefully addressing the needs for enhancement of interpretive opportunities and circulation routes, ecological maintenance and restoration, and the improvement of visitor amenities as outlined in the GMP, LRIP, and other foundational park documents.

Under the rehabilitation treatment approach, stabilization, protection, and preservation of historic and natural resources are actions that must occur in order to allow for the limited accommodation of new uses.

In considering the other treatment approaches recognized by the Secretary of the Interior for the George Washington Carver National Monument cultural landscape, the CLR found them inappropriate for the following reasons: preservation is overly restrictive because it does not allow for the enhanced interpretation and site access recommended in the GMP and LRIP, while restoration and reconstruction are also inappropriate because they assume, as a prerequisite, that sufficient documentation exists to accurately portray a lost historic condition. At this time, it does not appear that documentary sources are detailed enough to support restoration or reconstruction of the George Washington Carver National Monument. Also, because the mission of the park is to commemorate George Washington Carver, the historic character of the park is less important than other qualities that are intended to honor and commemorate Carver.

Secretary of the Interior's Standards for Rehabilitation.

The following section summarizes the standards for rehabilitation espoused by the Secretary of the Interior for historic properties. The ten basic principles that comprise the standards are intended to help preserve the distinctive character of a site, while also allowing for reasonable change to meet new needs. The standards (36 CFR Part 67) apply to historic properties of all periods, locations, sizes, conditions, and uses. These standards create a baseline of guidance to which intended changes to the historic landscape must be

compared. These standards are neither technical nor prescriptive, but promote responsible preservation practices as follows:

- 1) A property will be used as it was historically, or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
- 2) The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
- 3) Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
- 4) Changes to a property that have acquired historic significance in their own right will be retained and preserved.
- 5) Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
- 6) Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
- 7) Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
- 8) Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

- 9) New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
- 10) New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Treatment Recommendations by

Landscape Characteristic. Within a framework of rehabilitation, the treatment alternatives possess several commonalities in approach that are summarized below by landscape characteristic.

Natural Systems and Features

- 1) Retain and maintain the natural features and systems that contribute to the National Register significance of the park:
 - Carver Branch
 - Carver Spring
 - Dry Branch
 - Harkins Branch
 - Williams Branch
 - Drainage swale in the field south of the visitor center
 - Woodlands (diminished integrity)
- 2) Preserve, manage, and interpret existing natural systems including Carver Spring and the three streams—Carver, Harkins, and Williams branches.
- 3) Retain, maintain, manage and interpret Harkin Woods as a natural and visual resource that contains plants of natural resource value not found elsewhere within the park.
- 4) Establish a balanced approach to land cover management between prairie and woodland with decisions based on studies such as Burfield and Nilon's *Integrated Vegetation Management Recommendations*, to maximize benefits to wildlife where appropriate.
- 5) Maintain and manage the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas.
- 6) Preserve the existing landforms and natural drainage patterns to the greatest extent possible.
- 7) Consider changing the management of prairie unit 2 from grassland to woodland. Based on analysis conducted in 2010 by MoRAP this prairie unit may be better suited to woodland than grassland. Unit 2 should be considered for conversion to white oak/burr oak-pecan, floodplain forest.
- 8) Convert the 30-acre parcel acquired by the park in 2006 to prairie and incorporate it into the overall prairie management program.

Responses to Natural Resources

- 1) Retain and maintain the responses to natural resources that contribute to the National Register significance of the park including:
 - Siting of the Moses Carver farm domestic precinct in close proximity to fresh water sources
 - Siting of the Carver Trail to take advantage of natural features, and inclusion of the Shartel-era Williams Pond
 - Use of bridges in association with park trail stream crossings (Figure 247 and Figure 248)
 - Siting of the picnic area in the deciduous shade tree grove

- Siting of the visitor center to overlook Moses Carver farm features (diminished integrity)
- Use of swales and culverts along the entrance road for drainage



FIGURE 247. This bridge over Carver Branch is part of the Carver Trail.



FIGURE 248. The bridge over Williams Branch leads to the Moses Carver house and demonstration gardens.

Patterns of Spatial Organization

- 1) Retain and maintain the patterns of spatial organization that contribute to the National Register significance of the park including:
 - The formal entrance road corridor (Figure 249)
 - Visitor center environs
 - Picnic grove
 - Carver Trail corridor (Figure 250)
 - Linear walnut fencerow (Figure 251)

- Moses Carver house and yard (Figure 252)
- Carver family cemetery
- Open fields
- Woodlands (Figure 253)



FIGURE 249. The park entrance road is a tree-lined corridor that affords views to the visitor center.



FIGURE 250. Woodland vegetation forms an enclosed corridor along the Carver Trail that is in contrast to the open space surrounding the Moses Carver house.



FIGURE 251. A line of walnut trees separates two prairie areas and creates a clearly visible spatial pattern in the landscape.



FIGURE 252. Views extend from the open area around the Moses Carver house to prairie fields and woodlands.



FIGURE 253. The three stream branches run through dense woodlands that form deeply shaded stream corridors.

Views and Vistas

- 1) Retain and maintain the views and viewsheds that contribute to the National Register significance of the park including:
 - Views into the park along the entrance road
 - Linear views along the Carver Trail
 - Views across the prairie through the walnut fencerow

Topographic Modifications

- 1) Retain and maintain the topographic modifications that contribute to the National Register significance of the park including:
 - Grading to accommodate the entrance road and visitor parking area (northern)

- Grading to accommodate the visitor center
- Grading to construct the original Carver Trail
- Grading to accommodate the former housing/administrative complex

Land Uses and Activities

- 1) Retain and maintain the land uses that contribute to the National Register significance of the park including:
 - Cemetery
 - Commemoration
 - Commerce
 - Maintenance
 - Interpretive/museum/educational
 - Park administration
 - Recreation
 - Utility
 - Visitor services
- 2) Provide for visitor services to enhance the experience available at the park.
- 3) Ensure the boundary of the park will be mown for passive recreation.
- 4) Retain and maintain utility land uses that are an essential component of park operations, including water and sewer, gas, telephone, refuse collection, and electrical services.
- 5) Retain and maintain conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources.
- 6) Convert the former housing/administrative area to overflow parking after planned demolition of structures has occurred. Retain the existing separate entrance to the area for access (Figure 254 and Figure 255).
- 7) Consolidate the two existing picnic areas into one. Move picnic facilities south of the visitor

parking area to the picnic area in the grove of large deciduous trees north of the park entrance road (Figure 256 and Figure 257).



FIGURE 254. The former housing/administrative area has a separate entrance from Carver Road that is proposed for use in association with a proposed overflow parking area.



FIGURE 255. Current structures would be demolished before development of an overflow parking area.



FIGURE 256. The picnic area south of the visitor center parking area should be consolidated into the larger existing picnic area north of the entrance road.



FIGURE 257. The picnic area north of the park entrance road would be preserved and developed to accommodate more visitors.

Cultural Vegetation

- 1) Retain and maintain the cultural vegetation that contributes to the National Register significance of the park including:
 - Replanted walnut fencerow (Figure 258)
 - Ornamental plantings at the park housing complex
 - Picnic grove



FIGURE 258. Walnut trees form a fencerow along the Carver Trail.

- 2) Maintain native tree plantings installed by the NPS in the 1960s and 1970s within the developed core area and in the vicinity of the visitor center, although they postdate the period of significance.
- 3) Maintain and manage turf land cover in the 20 acre area that comprises the developed core following the guidance afforded in the NPS's *Midwest Region Pilot Turf Stewardship Project*

for the George Washington Carver National Historic Site. Turf in this area should be highly manicured and meticulously maintained, in contrast to the land cover character of the prairie grasses and the woodlands. The turf stewardship project provides supporting information for the development and implementation of a natural turf management program. The soil background, products, and cultural practices that are discussed all contribute to the underlying objective of creating a healthy turf system (Figure 259).



FIGURE 259. Maintained turf in the developed core, south of the park entrance road.

- 4) Maintain and manage the turf associated with the Moses Carver house yard, the Carver family cemetery, and the former housing/administrative area. Management of the turf in these areas should also follow guidelines from the turf management project, but should be less meticulously maintained than the developed core. Once the former housing structures are removed, that area will be converted to overflow parking edged by prairie (Figure 260 through Figure 262).



FIGURE 260. Turf is maintained and managed around the Moses Carver house.



FIGURE 261. Turf is maintained and managed at the demonstration gardens associated with the Moses Carver house.



FIGURE 262. Turf is maintained and managed in the Carver family cemetery.

Circulation

- 1) Retain and maintain the circulation features that contribute to the National Register significance of the park:
 - Park entrance road and visitor parking area (north bay)
 - Maintenance area access road and maintenance yard area parking
 - Picnic area spur road and parking
 - Former housing/administrative area access road
 - Access road leading southwest from the maintenance area through and around fields
 - Internal access roads, including North-South Road (west boundary)
 - Carver Trail (Figure 263 and Figure 264)
 - Concrete walks associated with the housing complex and visitor center



FIGURE 263. The Carver Trail as it leaves the woodlands and approaches the Carver family cemetery.

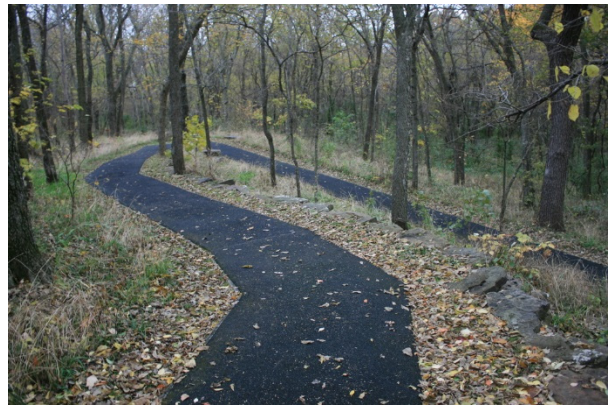


FIGURE 264. Switchback on the Carver Trail leading to the Boy Carver statue

- 2) Enhance universal accessibility associated with the trail and other aspects of the park, ensuring that the entire trail meets the ABAAS (Architectural Barriers Act Accessibilities Standards of 1968) and the 2004 ADA-ABA Accessibility Guidelines by addressing any deficiencies identified in *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*.
- 3) Remove the wood chip mulch surfacing on the Contemplative Loop Trail and replace with compacted crushed aggregate surface (or other universally accessible surface) (Figure 265).



FIGURE 265. Wood chip mulch trail surfacing should be replaced with a material that meets universal accessibility standards.

Buildings and Structures

- 1) Retain and maintain the buildings and structures that contribute to the National Register significance of the park:
 - Moses Carver house
 - Maintenance building
 - Superintendent's residence (until planned demolition occurs)
 - Historian's residence (until planned demolition occurs)
 - Four-unit seasonal housing building (until planned demolition occurs)
 - Stone wall enclosing the Carver family cemetery
 - Williams springhouse foundation
 - Brick piers at the main park entrance
- 2) Stabilize and maintain, and consider restoring, the Carver family cemetery wall to reflect intended squared off stone stacking methods and the original eastern opening for access.
- 3) Repair features assessed in fair to poor condition:
 - Elements of the Moses Carver house including the deteriorated porch floor finish, gaps in the wood siding and floor boards due to settlement, and worn and deteriorated entrance stairs
 - Low brick walls surrounding the maintenance yard
 - Superintendent's residence, unless plans for demolition are realized
 - Historian's residence, unless plans for demolition are realized
 - Four-unit seasonal housing, unless plans for demolition are realized
- 4) Provide universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument*:

Accessibility Debriefing Report and Final Report (Figure 266 and Figure 267).



FIGURE 266. Steps in front of the Moses Carver house are not consistent with universal accessibility standards, and prevent a barrier to some to enjoy the interior of the building and associated interpretive information.



FIGURE 267. There are also steps leading to the porch at the side of the Moses Carver house.

- 5) Consider construction of a storage facility (approximately 1,200 square feet) in order to accommodate park needs. It is recommended that the facility form the western edge of the existing maintenance yard. The scale, form, materials, and massing of this facility should be compatible with the adjacent maintenance building (Building No. 22). Characteristic design elements include a simple one-story brick masonry rectangular form capped with a shingled gable roof with deep roof eaves.

Small-scale Features

- 1) Retain and maintain the small-scale features that contribute to the National Register significance of the park:
 - Boundary markers (2)
 - Boy Carver statue
 - George Washington Carver bust
 - Lighting at park housing
 - Dedication plaque
- 2) Interpret the bust of George Washington Carver (refer to Figure 241).
- 3) Continue to mark the graves within the Carver family cemetery. The grave markers are replicas and contemporary features. When in poor condition they can be replaced.

Archeological resources

- 1) Avoid land use activities, permanent or temporary, which might threaten or impair known or potential archeological resources.
- 2) Initiate further archeological investigations in order to accurately locate features of the Moses Carver farm that might include the birthplace cabin site, the second Carver cabin, and the original site of the Carver house that was moved by the Shartels, the sites of the Williams and Gilmore cabins, the orchard, fields and fencelines, kitchen garden, roads, and outbuildings. Use this information to inform interpretation as well as resource management.

5.2.4 Action Alternatives Developed through the CLR/EA Planning Process

This section outlines the three cultural landscape treatment action alternatives explored by the CLR/EA and presented to the park and stakeholders for review and consideration.

Alternative 2. Rehabilitation of the Landscape, including Limited Restoration, to Interpret and Memorialize the Life and Achievements of George Washington Carver

Interpretation is considered a means of memorialization. Interpretation of George Washington Carver's life on the Moses Carver farm, the experience of his transition from slavery to freedom, and the influence of these experiences on his later notable work and career as a scientist are already a focus of the park. As part of an overall strategy for managing the cultural landscape, this alternative recommends developing additional connections between interpretive programming and what is known about the landscape that comprised the Moses Carver farm during George Washington Carver's time on the property.

This rehabilitation alternative suggests enhancing the ability of the park to tell the story of George Washington Carver's experience by re-establishing and interpreting missing nineteenth century features and lifeways. Rehabilitation of the landscape is intended to establish new areas within the park that afford opportunities for the public to reflect on Carver's life. Some of the new areas will focus on selective restoration of features for which documentation of the nineteenth century farmstead exists. Through these, visitors will learn first-hand about Carver's experience, and the influence of the natural environment on his later life and work. Limited restoration would also allow for more in-depth exploration of how the postbellum landscape known to Carver likely reflected the evolving role of former slaves in a new economy.

The areas where limited restoration would occur would closely edge the route of park trails or be visible from the Carver Trail at interpreted vista points. The existing Carver Trail would remain in its current location and configuration. Features present during the third quarter of the nineteenth century would be revealed, as known, along the trail. They are anticipated to include the persimmon grove, walnut tree fencerows, savanna-like woodlands, the fruit orchard, the farmstead area, the rural agricultural setting, hayfields, and historic circulation features. A limited extension of the trail would be developed to provide connections with historic features not located along the existing trail, including sites where views would be afforded to more distant features. Wayside exhibits would convey information about historic farmstead features at specific locations and viewpoints, providing a clear connection between Carver's life and achievements and the historic landscape of the farm.

Archeological investigations would be employed to determine additional information about the farm in support of restoration efforts. Where insufficient information exists to guide accurate restoration of historic farmstead features, information would be conveyed and interpreted through means such as artist renderings, historic graphics, and marking sites on the ground using foundational outlines, mow patterns, and plantings. It is anticipated that the locations of such features as the Moses Carver dwellings, outbuildings, fencelines, roads, kitchen garden, fields, hedgerows, and pastures would be conveyed in this way.

The majority of the existing developed core of the park would remain similar to its current condition. The entrance drive, parking area, picnic area, visitor center, and maintenance area would continue to function and have a similar appearance to that present today. Current park concerns regarding screening of work areas, directing visitors to a single picnic area, and addressing overflow parking needs would be addressed to maximize visitor enjoyment and to limit views of incompatible activities from the

primary interpretive experience. The existing housing area would be converted to an overflow parking area, while the 30-acre parcel acquired in 2006 that was formerly used for zinc mining would be converted to prairie. The ongoing efforts conducted by the park to manage natural resources for diversity and conservation, as evidenced through views to prairie communities from the trail, would serve as a foundation for interpreting Carver's work as a scientist.

The landscape beyond the developed core and interpretive area would feature either mown hay fields within the viewshed of interpreted vista points to convey the agricultural character of the landscape during the Carver period, or continued management of the restored native grassland prairie beyond designated viewsheds in order to promote conservation and the diminishment of mowing responsibilities. In areas where historic farming practices are proposed to be interpreted, the goal would be to present an agricultural character, while preserving the native grassland prairie plant composition. The Carver Branch woodland, through which the trail passes, would be managed to promote a savanna-like composition more consistent with that present during the nineteenth century. Use of the bottomlands for crop cultivation during the nineteenth century would be interpreted within this milieu. The beauty and serenity of the bottomland woodland community would afford opportunities to interpret Carver's spirituality.

The specific actions resulting from the implementation of this alternative are anticipated to include:

- Retention of the existing developed core, including the picnic grove, visitor center, and parking area. This is a highly manicured area to be meticulously maintained (Figure 268).



FIGURE 268. The developed core would be maintained and managed to retain the manicured character of the area and to retain the health of the turf.

- Establishment of overflow parking on the site of the former housing/administrative buildings currently proposed for removal.
- Interpretation of the accurate location of the birthplace cabin based on further research and investigation, using foundation outlines and mow patterns. The approach of using foundation outlines and mowing patterns would need to be determined based on the distribution of archeological resources at the original farm area; the best approach for interpreting the birthplace cabin in its original location would need to be determined with direct input from an NPS archeologist.
- Interpretation of the accurate location of Moses Carver homestead based on further research and investigation using foundation outlines and mow patterns. The best approach for interpreting this building in its original location would need to be determined with direct input from an NPS archeologist.
- Interpretation of other former Moses Carver farm features, such as outbuildings, pastures, fields, and cultivated areas, fencelines, roads, hedgerows, the persimmon grove, and the nut and fruit orchard, to depict the character of the Moses Carver farm and agricultural activities. The best approach for interpreting those buildings and features in their original locations would need to be determined with direct input from an NPS archeologist.
- Clearing of the woodlands for partial restoration of the historic character of land cover during the Carver period.
- Establishment of native warm-season grass fields and prairie communities following the recommended clearing of wooded areas. Development of appropriate seed mixes in concert with HTLN personnel. Establishment of native warm-season grass fields and prairie should be preceded by clearing of woody growth, grubbing the soil, grading to prevent channelization, scarification of the soil, seeding and/or the planting of plugs or sod produced at the park, covering with a light erosion control material, and watering.
- Management of bottomland woodlands to promote a pre-settlement savanna-like composition, consistent with that known to the Carvers when they settled the property.
- Expansion of the Carver Trail to provide access to viewsheds of the rural agricultural setting and fields managed to convey historic agricultural character.
- Development of interpreted vista overlooks along the existing and proposed expanded trail to interpret historic field patterns and farm features.

for

George Washington Carver National Monument

Prepared by JMA, a CCRG company

Drawing No. GWCA 397 127385

PMIS No. _____

Legend

- GWCA Boundary
- 1-foot contour
- Stream
- Paved road
- Trail
- Building
- Split-rail (worm) fence
- Core Developed Area 22± acres
- Restored Grassland Prairie/Managed Hayfields 127± acres
- Managed Prairie Viewsheds 40± acres (of 127± acres)
- Managed Woodlands 49± acres
- Cleared Woodlands 12± acres
- Expanded Trails 4680 linear feet
- 4 Management Units
- Wet Prairie Areas

Sources:

National Park Service, Cultural Resource GIS office, CLI GIS conversion project, 2013.

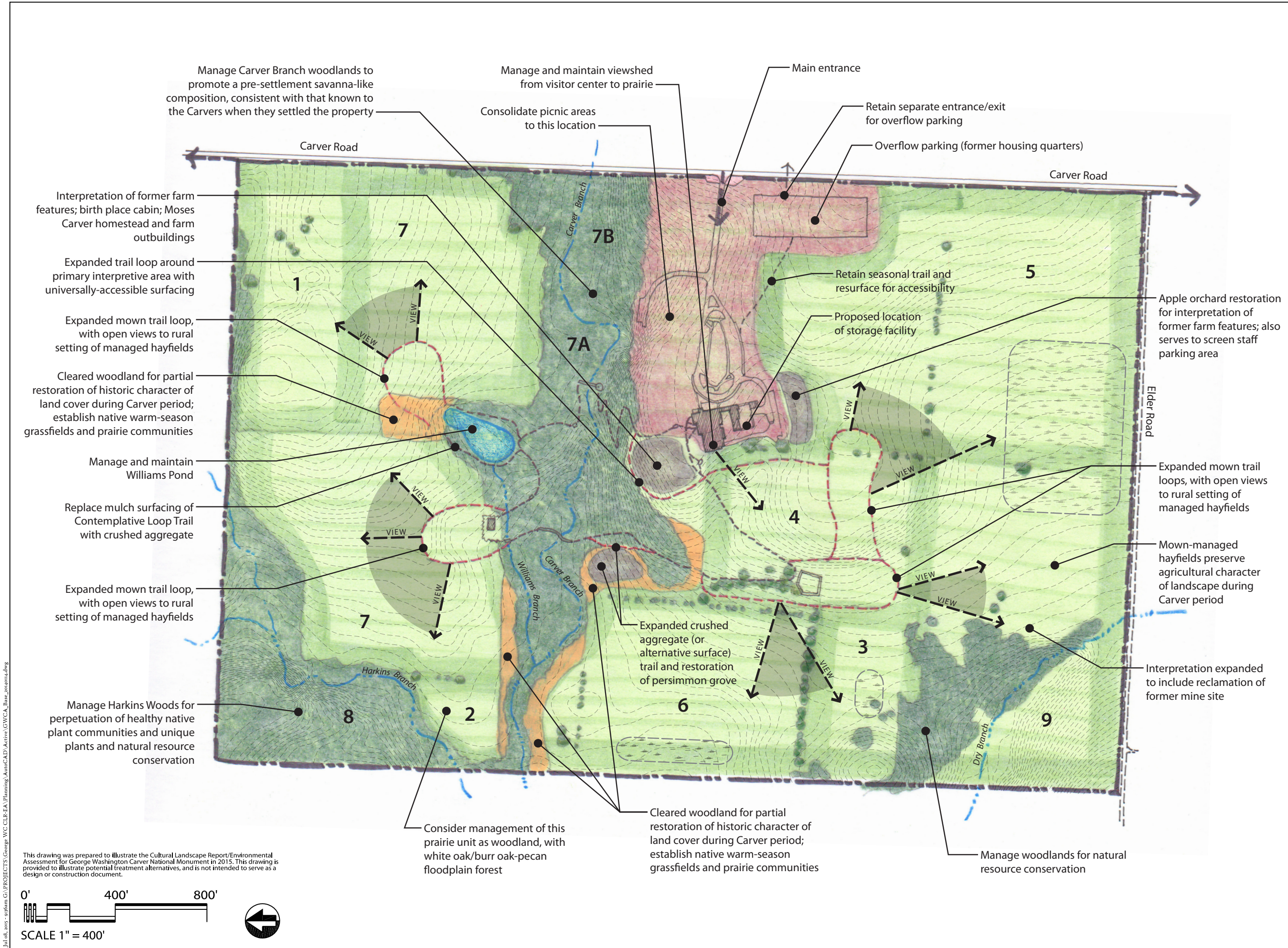
Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).

Heartland Network Inventory and Monitoring Program, "Vascular Plant Inventory, GWCA," 2004.

Figure 269.

Alternative 2

Rehabilitation of the Landscape, Including Limited Restoration, to Interpret and Memorialize the Life and Achievements of George Washington Carver



Alternative 3. Interpreting and Celebrating the Life and Work of George Washington Carver using an Economic-Botanical Approach⁵⁵⁷

George Washington Carver developed a love of nature and plants during his youth on the Moses Carver farm. Throughout his career as a scientist, Carver promoted the value of and new uses for plants, including applications as food, medicines, dyes, and industrial products. During his tenure at Tuskegee Institute, Carver described the influence of his childhood, particularly his exploration of the fields and woods on the Moses Carver farm, on his interest in and knowledge of economic botany. Carver became known as the “plant doctor” due to his knowledge of the medicinal uses of plants as a young boy. Carver later expanded on his early knowledge in his scientific work later. This action alternative suggests connecting visitors with the range of plants available to Carver on the property during his youth that he later recommended for a variety of useful purposes, and expanding interpretation to discuss how these plants, and many others, were used in his scientific work at Tuskegee Institute.

The focus of this rehabilitation alternative would be the interpretation of Carver’s work and career through plants known to Carver on the farm as a child and later in his scientific endeavors and experiments. Plants would be featured along park trails to enhance interpretation of Carver’s achievements. They would include native species known to Carver during his youth on the farm that he used for food, art materials, and medicinal purposes, and native species featured in his experiments. The design of the interpretive journey would include existing stands of native plants, and other species planted by the park for interpretive purposes. The existing trail would form the basis for the new interpretive layer, but would be expanded to provide access to other areas of the property of interest, such as Harkins

Woods. Demonstration plots would be developed along the trail as part of the new interpretive elements. Existing plant communities would be managed for natural resource values and in accordance with scientific principles of conservation and species diversity, including the restored native grassland prairie. This use is consistent with Carver’s conservation efforts and the belief that promoting diversity allows for future important economic- botanical discoveries.

Like Alternative 2, the majority of the existing developed core of the park would remain similar to that present today. The entrance drive, parking area, picnic area, visitor center, and maintenance area would continue to function and have a similar appearance to that present today, although the theme of economic-botanical interpretation would begin at the park entrance. All ornamental plantings present within the park would be considered for potential replacement with species known to have played a key role in Carver’s work. Current park concerns regarding screening of work areas, directing visitors to a single picnic area, and overflow parking needs would be addressed by introducing plants known to have served Carver in his work.

The former housing/administrative area would be converted to an overflow parking area, while the 30-acre parcel acquired in 2006 that was formerly used for zinc mining would be converted to native grassland prairie.

The specific actions resulting from the implementation of this alternative are anticipated to include:

- Retention of the existing developed core, including the picnic grove, visitor center, and parking areas.
- Establishment of a wide variety of native plant species producing useful and edible fruits,

of science. This link between botany and anthropology explores the ways humans use plants for food, shelter, medicines, textiles and much more.

557. Economic botany in the context of this CLR/EA is defined as the commercial exploitation of plants by people. Economic botany contributes significantly to anthropology, biology, conservation, botany, and other fields

nuts, dyes, and fibers known to have been a focus of Carver's work.

- Establishment of species such as a persimmon grove, known to Carver as a child and used in his later scientific experiments (Figure 270).



FIGURE 270. A persimmon grove (with a similar look) would be planted for interpretation along Carver Trail, near the location of the original persimmon grove. Source: JMA collection.

- Thinning of woodlands for establishment of economic-botanical plantings and enhanced interpretation.
- Interpretation of Carver's contribution to improvements to postbellum Southern agricultural practices, and to natural sciences, and the application of scientific knowledge to improve the human condition through a lens of the various uses of plants to meet human needs.
- Interpretation of Carver's conservation ethic and recommendations to Southern farmers and others featuring the restored grassland prairie.
- Interpretation of the ways plant species served local residents in a variety of capacities during the nineteenth century, and the ways that Carver explored other uses of plants as a

scientist during the first part of the twentieth century.

- Expansion of the trail system into additional areas of the property to provide access to economic-botanical plantings (Figure 271 and Figure 272).
- Continued natural resource management of restored grassland prairie and Harkins Woods, and interpretation of the approach.



FIGURE 271. The trail system would be expanded to interpret the landscape and economic-botanical plantings.



FIGURE 272. An example of expanded trails that would provide more opportunities for visitors to experience interpretive plantings. Source: JMA collection.

for

George Washington Carver National Monument

Prepared by JMA, a CCRG company
Drawing No. GWCA 397 127385
PMIS No. _____

Legend

- GWCA Boundary
- 1-foot contour
- Stream
- Paved road
- Trail
- Building
- Split-rail (worm) fence
- Core Developed Area 22± acres
- Restored Grassland Prairie 127± acres
- Managed Woodlands 51± acres
- Cleared Woodlands 10± acres
- Economic-Botanical Plantings
- Expanded Trails 5400± linear feet
- 4 Management Units
- Wet Prairie Areas

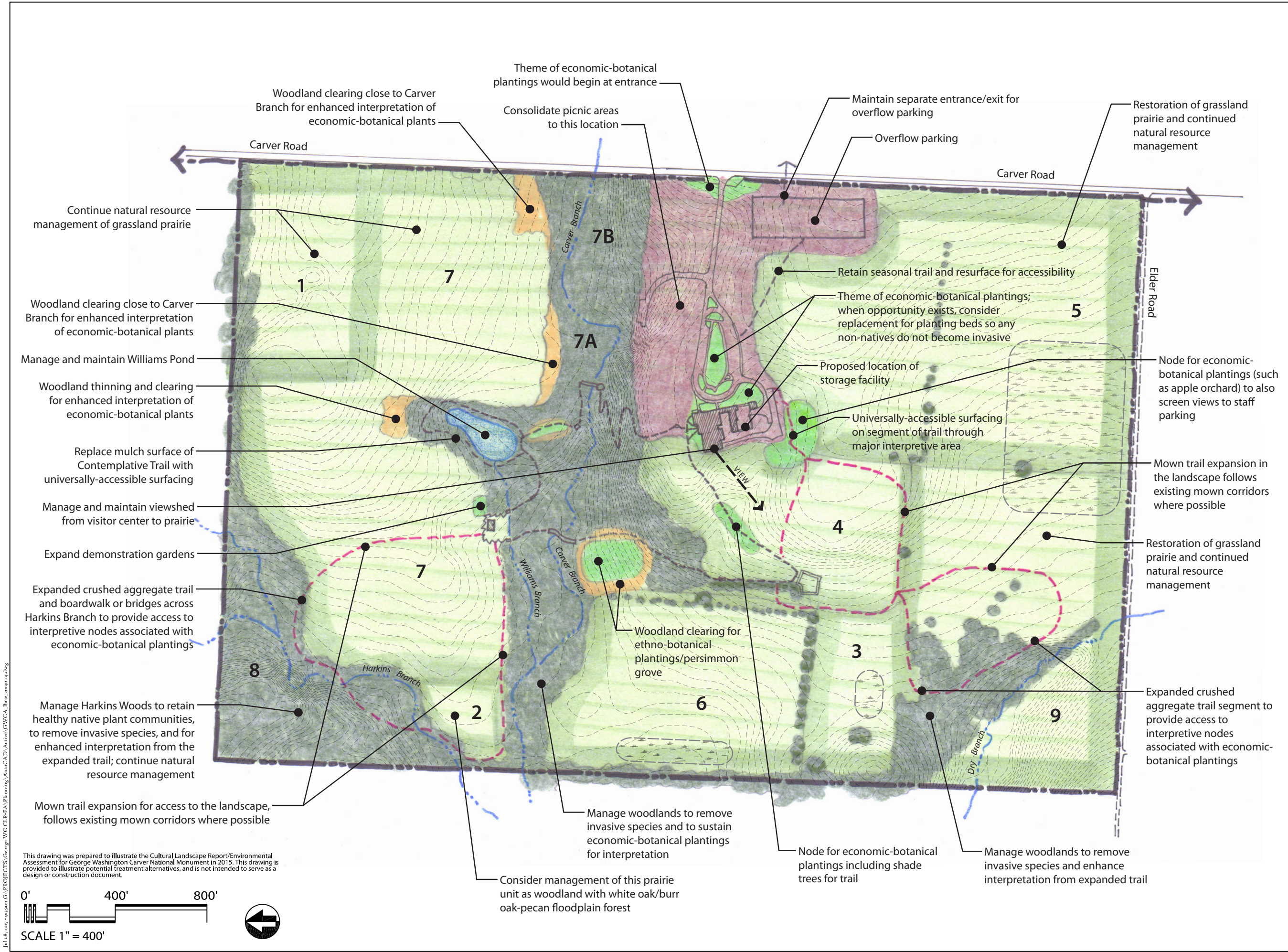
Sources:

National Park Service, Cultural Resource GIS office, CLI GIS conversion project, 2013.

Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).

Heartland Network Inventory and Monitoring Program, "Vascular Plant Inventory, GWCA," 2004.

Figure 273.
Alternative 3
Interpretation and Celebration of the Life and Work of George Washington Carver using an Economic-Botanical Approach



Alternative 4. Honor, Commemorate, and Interpret the Life and Legacy of George Washington Carver by Employing a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver (Preferred Alternative)

Based on the comments provided as part of the stakeholder scoping effort, the CLR team prepared a fourth alternative that blended the economic-botanical concept, with site-specific enhancement of the interpretive programming involving the nineteenth century Moses Carver farm known to George Washington Carver. The blended alternative also affords enhanced environmental education opportunities involving trail expansion and justification for ongoing prairie restoration activities to honor Carver's conservation work. This alternative features exhibits of plants known to Carver during his early years on the farm and traditional uses, as well as plants that were important to Carver's research and scientific efforts within the realm of economic botany.

George Washington Carver National Monument is a historic designed landscape of commemoration and interpretation that also retains remnant elements of the historic vernacular landscape known to Carver during his formative years. The establishment of the park in the 1940s, 1950s, and 1960s to honor George Washington Carver was laid lightly on the land to preserve and protect the natural features of the environment and the agrarian character of the nineteenth century Moses Carver farm. Park features were also designed to convey a contemplative and aesthetically attractive character suitable to the task of honoring the distinguished scientist and humanitarian. Park planning efforts conducted since the 1960s have continually grappled with appropriate measures for enhancing interpretation of both the landscape that inspired Carver while living on the farm between 1865 and 1877, as well as his achievements in the arts and sciences.

Recognizing these needs, this treatment alternative focuses on the interpretation of several features known to have been present on the Moses Carver

farm during George Washington Carver's boyhood. Since they are no longer extant, interpretation would be used to help convey the scale, arrangement, orientation, and elements of the historic farmstead. Features include farm precinct building locations, field and pasture patterns of agricultural production, walnut hedgerows, the fruit and nut orchard, and a persimmon grove. The farm area would be addressed in part through physical means such as foundation outlines and mow patterns, as well as wayside exhibits and artistic renderings.

Coupled with interpretation of these historic farmstead features, would be interpretation of the plants that Carver incorporated into his work throughout his life. Elements for interpretation will include plants for food, industrial production, medicines, dyes, fibers, and other uses. Waysides or exhibits would be located within the developed core, particularly along principal visitor circulation routes. The plants familiar to Carver would be used to trace the experience of Carver's youth through his scientific career, helping to knit together his early years, when he developed a love of nature, plants, and science, with his life's work, including his promotion of soil and land conservation to Southern black farmers. Any present and future areas of restored prairie within the park managed to promote species diversity, and soil and water conservation, would be interpreted as a contemporary expression of Carver's early twentieth century activities. Priorities for proposed interpretation would be established by the park and used to guide the number of new exhibit features or wayside signs. Proposed interpretation can also be integrated into existing exhibits, signage, and brochures, retaining and supporting the established goals and objectives set forth in the park's LRIP. Limiting the number of wayside exhibits or signs would reduce visual intrusions within the cultural landscape.

Like Alternatives 2 and 3, the majority of the existing developed core of the park would remain similar to that present today. The entrance drive, parking area, picnic area, visitor center, and maintenance area would continue to function and

have a similar appearance to that present today. Plants that were familiar to Carver and played a key role in his work, would be established at the park entrance. Small discreet plant identification signs would be considered for these new plantings at the entrance. All ornamental plantings present within the park would be considered for potential replacement with plant species known to Carver. Current park concerns regarding screening of work areas, directing visitors to a single picnic area, and addressing overflow parking needs would be addressed through the introduction of these plant species, or interpretation of nineteenth century farming practices on the Carver farm.

The former housing/administrative area would be converted to an overflow parking area. Accommodation of the park's storage needs would occur through either adaptive reuse of one of the three housing buildings proposed for demolition, or construction of a new 1,200 square foot facility integrated into the maintenance yard and perimeter wall. The 30-acre parcel acquired in 2006 that was formerly used for zinc mining would be converted to prairie.

The specific actions resulting from the implementation of this alternative are anticipated to include:

- Retention of the existing developed core, including the picnic grove, visitor center, and parking areas.
- Interpretation of former farm features, birthplace cabin, Moses Carver homestead and farm outbuilding. The best approach for interpreting these buildings and features in their original locations would need to be determined with direct input from an NPS archeologist.
- Establishment of vistas along the Carver Trail to interpret the agrarian setting by mowing some prairie units and areas (Figure 274).



FIGURE 274. This photograph illustrates how mown hay fields could be used to interpret the agrarian setting of the Moses Carver farm, familiar to George Washington Carver as a boy. Source: JMA collection.

- Management and maintenance of field spatial patterns to reflect the agrarian setting of Carver's youth. Haying should be timed so that the vegetation in the strip along the trail can be seen to advantage.
- Management of riparian woodlands to remove invasive species and promote a pre-settlement savanna-like composition.
- Interpretation of the ways plant species served local residents in a variety of capacities during the nineteenth century; and the ways that Carver explored other uses of plants as a scientist during the first part of the twentieth century. This could also be interpreted as a museum exhibit.
- Establishment of a heritage fruit and nut orchard to interpret a feature of the Carver farm (Figure 275).
- Establishment of a persimmon grove to interpret one of the features described by Carver from his childhood on the farm.



FIGURE 275. Example of a small fruit orchard on a historic site. A similar size and character would be appropriate for the proposed small fruit orchard for the park. Source: JMA collection.

- Establishment of new plantings along the trail system and interpretation of new and existing plantings known to have been a focus of Carver's work. Incorporation of selective thinning of woodland and brush to incorporate new plantings.
 - Expansion of the trail system into additional areas of the property to provide access to interpretive nodes associated with plants familiar to Carver, while considering ways to avoid negatively impacting the park's natural resources.
 - Establishment of views by thinning the woodlands west of Williams Pond and the Contemplative Loop Trail.
 - Development of a revised FMP. The current FMP does not address the abandoned mine or the woodlands.
 - Development of appropriate seed mixes for establishing and maintaining native warm season grass fields and prairie communities in concert with the HTLN personnel.
 - Enhancement of natural resource management of restored grassland prairie and Harkins Woods for health, diversity, and soil and water conservation.
- Implementation of this alternative, as well as Alternative 3, will involve development of a list of key species drawn from our knowledge of the experiences and work of George Washington Carver. The list of possible choices included below is derived from review of Peter Burchard Duncan's *George Washington Carver: For His Time and Ours*. The suggested plants and related exhibits are organized by category and location:
- Moses Carver farm exhibit orchard: apple, peach, pecan, walnut, and hazelnut trees. (Note that any interpretation of the exhibit orchard or other farm features must contain a disclaimer that they are not actual representations of anything that existed on the historic Moses Carver farm).
 - Moses Carver farm demonstration garden plots: watermelon, pumpkin, corn, Irish potatoes, sugar cane, flax, strawberries, and herbs.
 - Forage plants associated with human use along Carver Trail and the expanded trail through mown fields: big bluestem, sedges, bottomland grasses, and oak, hickory, and walnut trees.
 - Native wild foods and medicinal remedy plants along the Carver Trail and an expanded trail to and through Harkin's Woods: persimmon, wild onion, pine (needles), sumac (berries), pepper grass, wild lettuce, rabbit tobacco, liverwort, wild primrose, chufa nut grass, bur oak (nuts) evening primrose, sassafras, yarrow, Jerusalem artichoke, strawberries, fox grapes, service berries, dew berries, blackberries, huckleberries, fox grape, pawpaws, raspberries, spice bush, sassafras, wild ginger, fringed gentian, hickory, and chinquapin. (Invasive species that could be interpreted but should not be planted: sumac, amaranth, ragweed, and pokeweed).
 - Carver's ability to identify ferns, mosses, fungi, and his recognition of the importance of woods in protecting soil and water quality could be interpreted within Harkins Woods.

- Shade trees (for the walk from the cemetery to the visitor center, the contemplative loop, and screening of the staff parking and maintenance area) noted in Carver's experiments: pecans, flowering trees for bees, catalpa, horse chestnut, and persimmon. These plantings are not necessarily proposed for interpretive purposes.
- Tuskegee demonstration plots relating to food, fiber, dyes, chemurgy, green manure, and natural pesticides: sweet potato, peanut, okra, cotton, pumpkin, persimmon, cowpeas, soy beans, peas, beans, clover, yucca, cotton, figs, grapes, sugar beets, corn, Jerusalem artichokes, hemp, garlic, and onion. The demonstration plots are recommended for interpretation..
- Ornamental plantings of species used by Carver in his experiments: yaupon holly, lilies that he hybridized, deodar cedar, silver maple, red maple, roses, and yucca. The replacement ornamental plantings are not recommended for specific outdoor interpretation.

for

George Washington Carver National Monument

Prepared by JMA, a CCRG company

Drawing No. GWCA 397 127385

PMIS No. _____

Legend

- GWCA Boundary
- 1-foot contour
- Stream
- Paved road
- Trail
- Building
- Split-rail (worm) fence
- Core Developed Area 22± acres
- Restored Grassland Prairie 87± acres
- Managed Hayfields 40± acres
- Managed Woodlands 51± acres
- Cleared Woodlands 10± acres
- Plantings Known to Carver
- Expanded Trails 4140± linear feet
- 4 Management Units
- Wet Prairie Areas

Sources:

National Park Service, Cultural Resource GIS office, CLI GIS conversion project, 2013.

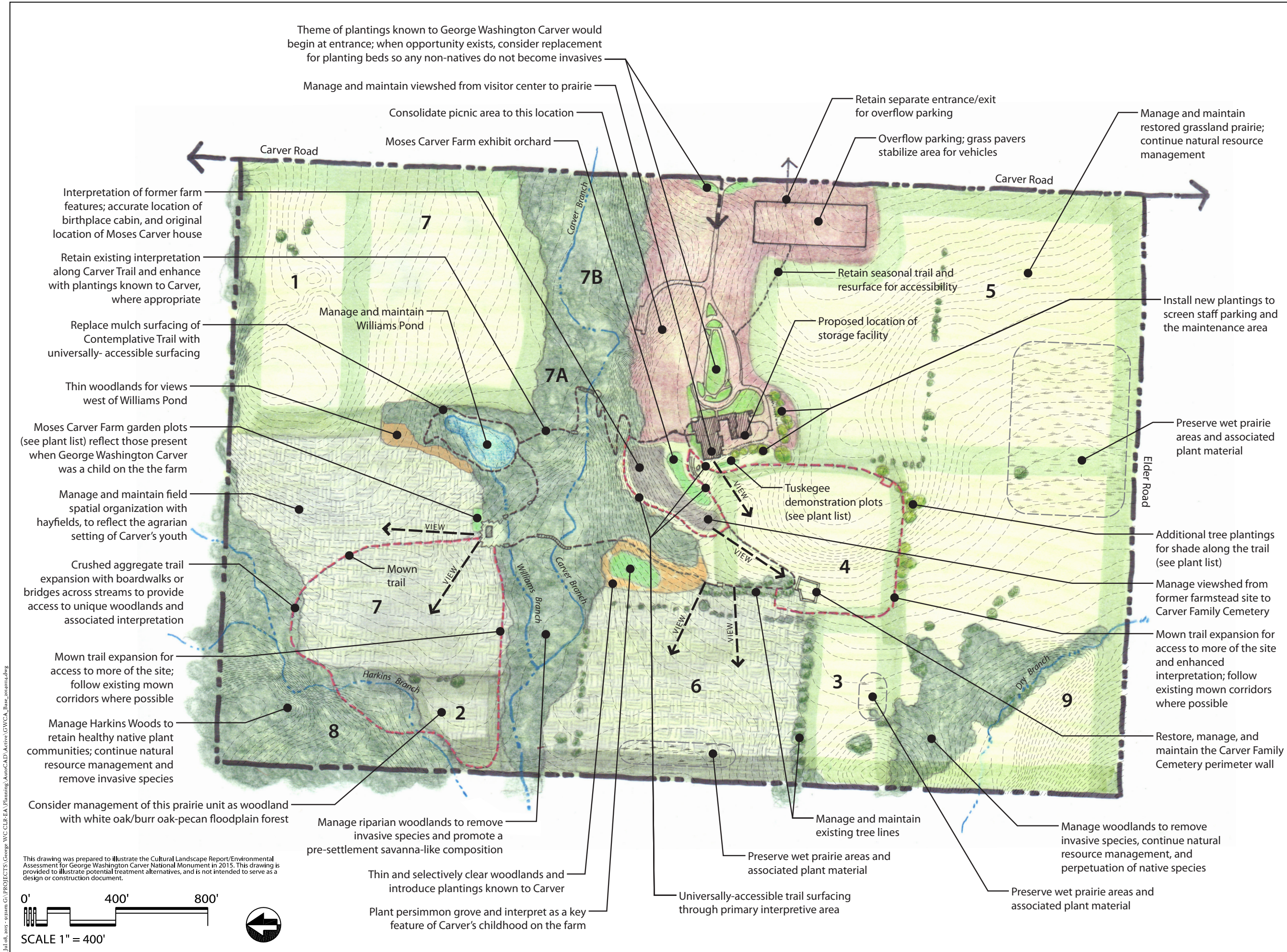
Contours created from 7.5 minute digital elevation data, USGS, 1998, Newton County, MO (published Rolla, MO).

Heartland Network Inventory and Monitoring Program, "Vascular Plant Inventory, GWCA," 2004.

Figure 276.

Alternative 4 (Preferred Alternative)

Honor, Commemorate, and Interpret the Life and Legacy of George Washington Carver by Employing a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver



5.3 Selection of the Preferred Alternative

The preferred alternative emerged from presentation of the Alternative 1: No Action and two action alternatives during two public scoping sessions on May 14, 2014. Stakeholders notified and invited included agencies, NPS MWRO representatives, the Missouri SHPO, various THPOs, HTLN, volunteers, former park staff, friends, historians, politicians and other professionals. Comments from those two sessions suggested the development of a third action alternative to blend particular elements of the first two, which were considered appropriate and desirable to pursue. Additional meetings on the same day with park staff and the THPO representative for the Osage Nation also engendered comments suggesting the development of a third action to blend desired elements. Most stakeholders and park staff involved in the public scoping session were in favor of Alternative 3, with modifications.

Alternative 4 was developed in response to these comments. An initial version of Alternative 4 was provided to the park for consideration. Based on park comments, additional refinements were made to Alternative 4. The refined version was again reviewed by the park. The park's response suggested that Alternative 4 would best meet the identified goals and objectives documented herein, including restoration of several lost features of the cultural landscape, enhancing interpretation through more trails and exhibit nodes related to George Washington Carver and plants from his early years on the farm as well as his work at Tuskegee, depicting historic agricultural practices and patterns through the proposed haying of some prairie units, providing for overflow parking, and more. The alternative was seen as providing for a more optimum visitor experience if/when the park is able to implement it, while the CLR will provide a sound overall vision and serve as a guide for future management. Concerns remain, however, regarding the increased footprint on the landscape

and the potential implementation costs for maintenance.

The new alternative was also provided to several stakeholders for consideration. All parties were in support of selecting the preferred alternative over the other action alternatives as well as Alternative 1: No Action. In their response, HTLN indicated:

We generally applaud the park's effort to resolve the long standing debate regarding the appropriate memorialization of Carver's life at the monument. We believe the desired alternative achieves a reasonable balance between restoration of important cultural landscape features and ongoing management and interpretation of important natural resources. Overall, we think the design concepts will improve the connection of the landscape and interpretive themes at the park.⁵⁵⁸

5.4 The Environmentally Preferred Alternative

As required under CEQ regulations 40 CFR 1502.2(d), NEPA documents must include a section stating how each alternative analyzed in detail would or would not achieve the requirements of sections 101 and 102(1) of NEPA and other environmental laws and policies. In the NPS, this requirement is met by 1) disclosing how each alternative, one of which is identified as the environmentally preferable, meets the criteria set forth in section 101 (b) of NEPA; and 2) any inconsistencies between the alternatives analyzed in detail and other environmental laws and policies.

The environmentally preferable alternative is the alternative that will promote the national environmental policy expressed in NEPA. Section 101 (b) defines the environmentally preferable alternative as the alternative that causes the least amount of damage to the biological and physical environment and that best protects, preserve, and enhances historic, cultural, and

558. HTLN comments forwarded to authors by NPS MWRO, April 2015.

natural resources, while attaining the widest range of beneficial uses of the environment. The criteria are as follows:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative 4 honors, commemorates, and interprets the life and legacy of George Washington Carver by employing a combination of agricultural heritage and exhibits of plants known to Carver. Park planning efforts conducted since 1960s have continually grappled with appropriate measures for enhancing interpretation of both the landscape that inspired Carver while living on the farm, as well as his achievements in the arts and sciences. This treatment alternative focuses on the interpretation of several additional features known to have been present on the Moses Carver farm during George Washington Carver's boyhood, including an indication of the scale, arrangement, orientation, and elements that comprised the farmstead area, field and pasture patterns of agricultural production, walnut hedgerows, the fruit and nut orchard, and persimmon grove. Coupled with interpretation of

these features, the plants that Carver is known to have incorporated into his work throughout his life for food, industrial production, medicines, dyes, fibers, and other economic-botanical uses will be planted along park circulation features and interpreted. These elements will trace Carver's youth through his scientific career, helping to knit together his early years when he developed a love of nature, plants, and science, with his life's work. Areas of restored grassland prairie within the park that help to promote species diversity and soil and water conservation, will be interpreted as a contemporary expression of Carver's early twentieth century activities. This alternative also focuses on enhancing natural resource management of the restored grassland prairie and Harkins Woods for health, diversity, and soil and water conservation. Overall this alternative will improve and enhance the connection of the landscape and interpretive themes at the park.

Therefore, Alternative 4 best addresses all the criteria presented in Section 101 (b) for the environmentally preferable alternative. As such, Alternative 4 is the environmentally preferable alternative.

While Alternative 1: No Action would maintain existing conditions, it would not be considered the environmentally preferable alternative because it would not meet the widest range of beneficial uses of the environment without degradation nor does it enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources. The no action alternative would not improve or enhance the connection of the landscape and interpretive themes at the park. The other action alternatives, while somewhat similar to Alternative 4, do not combine the aspects of agricultural heritage and economic-botanical exhibits of plants known to Carver and related to the landscape to convey the full story of his life and legacy.

5.5 Alternatives Considered but Dismissed

Five action alternatives were developed by the CLR/EA team for consideration by the park as part of the 75 percent draft report. They include the following:

- Limited Restoration for Interpretation of the Landscape during George Washington Carver's life on the farm
- Interpreting the Life and Work of George Washington Carver Through Economic Botany
- Exploration of Topics in Environmental Stewardship and Scientific Education based on the Principles of George Washington Carver.
- Expanding Recreational Opportunities.
- Full Restoration of the Landscape Present during George Washington Carver's Life on the farm.

Following review of the 75 percent draft by the park and the region, the CLR/EA team convened by conference call to discuss all of the action alternatives prior to the planned stakeholder scoping meeting. Based on discussions among team members, three of the action alternatives were dismissed prior to presentation to stakeholders. The first—Exploration of Topics in Environmental Stewardship and Scientific Education based on the Principles of George Washington Carver—was dismissed due to the fact that it concentrated too heavily on Carver's later career and did not encompass the experience of his youth on the Moses Carver farm. The second—Expanding Recreational Opportunities—was found to be inconsistent with the goals and mission of the park. The third—Full Restoration of the Landscape Present during George Washington Carver's Life on the farm—was considered to be impossible to implement and to deny the expression of the memorial mission of the park,

while also precluding interpretation of Carver's later accomplishments.

Each of the action alternatives considered but dismissed are conveyed below for reference. Despite the fact that each of these was dismissed, it was agreed that aspects of each afforded valuable ideas that might be considered for inclusion in the preferred alternative.

Exploration of Topics in Environmental Stewardship and Scientific Education

George Washington Carver was particularly concerned with environmental stewardship. His work in the Southern United States involved helping farmers to protect against soil loss associated with cotton farming techniques that led to devastating results for sharecropping farmers and others after Reconstruction. Carver worked with farmers to save and conserve soil, and to protect water resources. He also taught farmers to work with native plant communities, which offered a source of nutritious and abundantly available food that was often overlooked. An environmental stewardship ethic similar to that practiced by Carver is present at the park, manifested in the restoration of native grassland prairie and efforts to control and eradicate invasive species, protect water quality, and identify and protect wildlife habitat.

This rehabilitation alternative explores expanding the use of the park to practice and teach environmental stewardship to visitors through interpretation and exhibits, as well as sustainable land management practices. This alternative additionally explores the role of scientific research and inquiry at the park. Specific additions and changes to the park environment resulting from this alternative might include:

- Identification of BMPs for the landscape that support sustainable treatment of natural resources. The resulting BMPs would be intended to support soil and water conservation, with particular emphasis on establishing native plant communities that support a healthy ecosystem, including

- pollinators and wildlife, with the least input of non-renewable energy. BMPs would consider the role of vegetative cover in conserving soil, and the ecological implications of maintaining healthy plant communities, including the associated need for water resource protection, and diversity of good quality wildlife habitat.
 - Use of BMPs to protect the park's natural resources could be explored as an interpretive theme within the visitor center and in park interpretive programs.
 - Updating of existing landscape features, such as the entrance road and parking to promote sustainability through the use of green infrastructure such as filter strips, pervious pavements, rain barrels, and rain gardens.
 - Continued interpretation within the visitor core to feature cultural evidence of the Moses Carver farm.
- Expansion of the existing trail system to include a perimeter trail for additional opportunities for environmental education.
 - Creation of a scientific research center in the area where the housing buildings are currently located, either by adaptive reuse or full replacement. The center would be developed through partnerships with other educational institutions and offer housing, classroom, research and laboratory facilities, as well as field areas for use by students.
 - Maintenance of a separate access and parking area for the center.
 - Development of experimental field areas to include the former mine site and to augment scientific research by students participating in programs at the center.

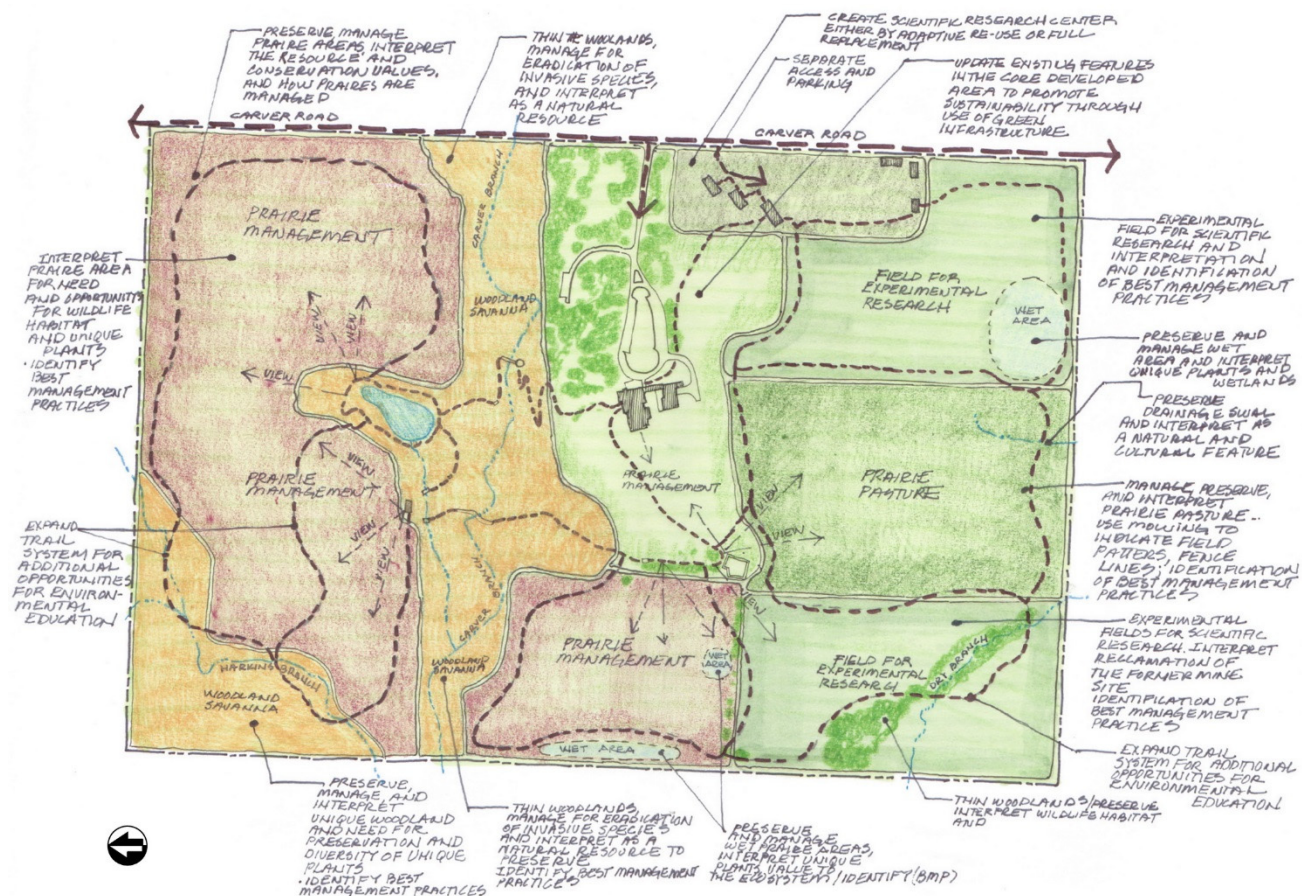


FIGURE 277. Exploration of Topics in Environmental Stewardship and Scientific Education.

Expanding Recreational Opportunities

George Washington Carver National Monument extends over 240 acres in a rural area with few outdoor recreational facilities. The current park trail system traces a one-mile route of historical importance. Visitors currently use the trail for both educational and recreational purposes. Visitors also travel to the park to enjoy the recreational amenities afforded as part of the existing picnic area. Regional organizations have expressed the need for more recreational opportunities for local residents as well as visitors to the area.

This rehabilitation alternative suggests establishing new trails on the property as a recreational amenity for the benefit of all visitors. Specific additions and changes to the park environment resulting from this alternative might include:

- Design of trails to accommodate passive recreational activities such as walking and running.
- Design of the trail system as a series of loops that extend through the fields and woods to the south of the visitor center.
- Development of the former mine site to accommodate more active recreation in the form of paved multi-use trails that might accommodate bicyclists.
- Provision of a separate entrance and access along Elder Road or Carver Road.
- Demolition of the park housing buildings and conversion of the area into a staging space for recreational activities and parking.

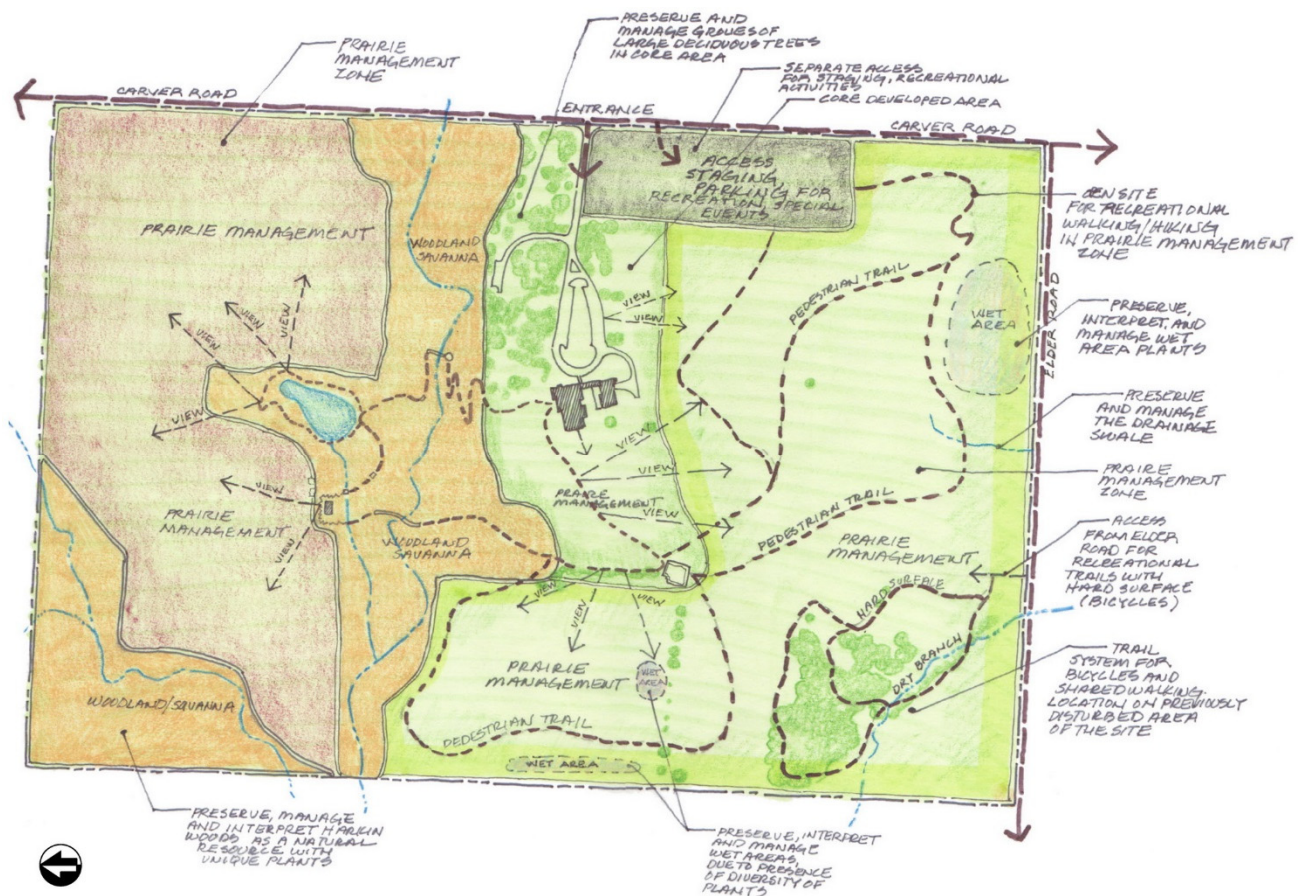


FIGURE 278. Expanding Recreational Opportunities.

Full Restoration of the Landscape Present during George Washington Carver's Life on the Farm

The park landscape is very different today than that which was experienced by George Washington Carver during the third quarter of the nineteenth century. As a property established to commemorate the life and contributions of Carver, the park landscape does not adequately depict conditions experienced by Carver.

This restoration alternative suggests enhancing visitor understanding of Carver's life by fully returning the park landscape to its character during the period during which George Washington Carver lived there: circa 1864–1877. Specific additions and changes to the park environment resulting from this alternative might include:

- Conversion of existing grassland prairie to agricultural uses.
- Establishment of field patterns that depict what was present during the nineteenth century.
- Reduction of the size of existing woodlands.

- Removal of understory growth to reflect the patterns associated with nineteenth century livestock grazing.
- Removal of Williams Pond.
- Return of the second Carver dwelling and the birthplace cabin sites to their accurate locations.
- Use of archeological investigations to determine what the farmstead area looked like for interpretive and potential restoration.
- Design of a new Carver Trail that connects points in the restored landscape.
- Reestablishment of the orchard.
- Removal of the current visitor center and restoration of this critical portion of the park to its historic appearance.
- Demolition of the housing buildings to provide new visitor orientation, access, and parking.
- Expansion of the trail system throughout the site to provide more opportunities to interpret the restored historic landscape.

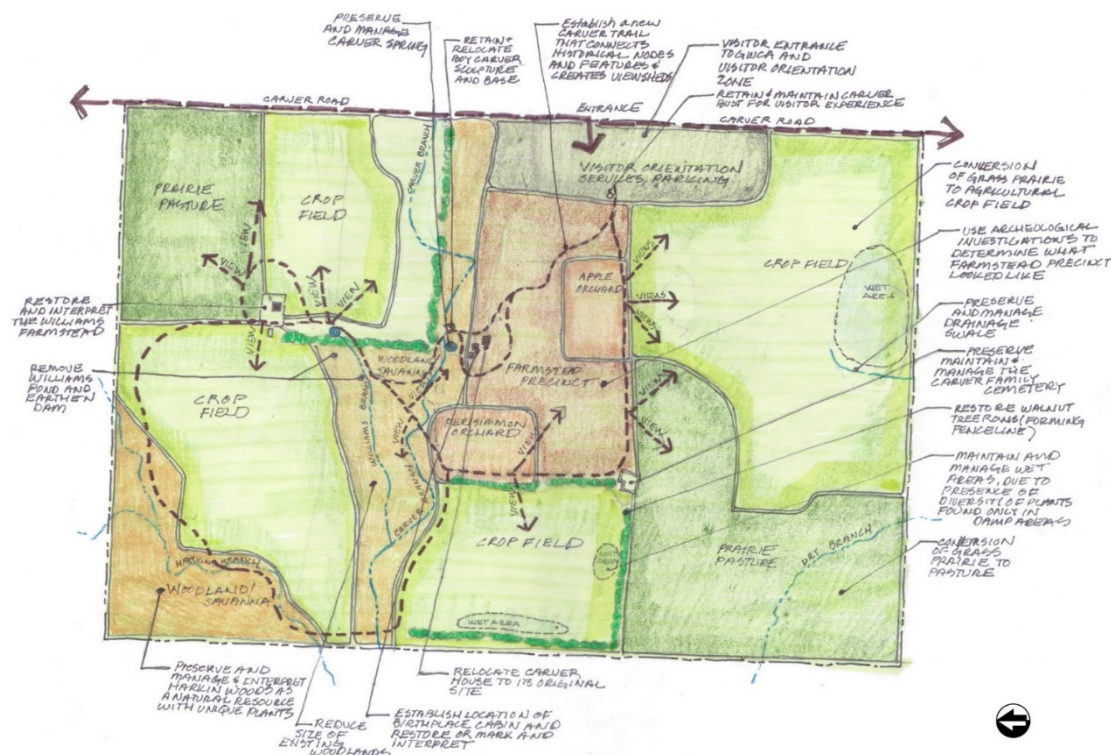


FIGURE 279. Full Restoration of the Landscape Present during George Washington Carver's Life on the Farm.

5.6 Mitigation

The NPS places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts associated with making a change within a historic landscape. To help ensure the protection of natural and cultural resources and the quality of the visitor experience at George

Washington Carver National Monument, the following protective measures would be implemented as part of the preferred alternative (Table 1). The NPS would implement an appropriate level of monitoring throughout the construction process to help ensure that protective measures are being properly implemented and are achieving their intended results.

Table 5-1. Mitigation

Resource Area	Mitigation
General Considerations	<p>Where necessary for resource or visitor protection, work areas would be identified with construction fence, silt fence, or some similar material prior to any activity. The fencing would define the work zone and confine activity to the minimum area required. All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid conducting activities beyond the work zone. Disturbances would be limited to areas inside the designated construction limits. No machinery or equipment would access areas outside the work limits.</p> <p>Construction equipment staging would occur within previously disturbed areas as much as possible. All staging and stockpiling areas would be returned to preconstruction conditions following construction.</p> <p>Contractors would be required to properly maintain construction equipment (i.e., mufflers and brakes) to minimize noise.</p> <p>All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion.</p>
Soils	BMPs would be developed to support of the implementation and management of all the action alternatives.
Grassland and Forest Vegetation	All disturbed ground would be reclaimed using appropriate BMPs including planting native plants.
Cultural Vegetation	Until the soil is stable and vegetation is established, erosion-control measures would be implemented to minimize erosion and prevent sediment from leaving the site.
Wildlife and Wildlife Habitat	Temporary barriers would be provided to protect existing trees and shrubs that are not identified for removal.
Water Quality	BMPs would be developed for site clearing, turf cover establishment and maintenance, and invasive plant control.
Wetlands and Floodplains	BMPs would also target tree clearing, installation of plants and trees, landscape maintenance and riparian buffer preservation.
Cultural Resources	<p>All activities would comply with the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Federal Register 44716, revised).</p> <p>Prior to any soil disturbing activities, a thorough geophysical baseline survey of the property would be conducted and adequate archeological ground truthing of the geophysical anomalies would be conducted to determine their nature, integrity, and extent.</p> <p>Known archeological resources in the vicinity of project activities would be identified and delineated for avoidance prior to project work.</p> <p>NPS would continue to coordinate with the SHPO throughout the course of the project to protect and mitigate cultural resources affected by any of the action alternatives.</p>

	<p>Should any archeological resources be uncovered during construction, as appropriate, work would be halted in the area and NPS associated archeologists, the Missouri SHPO, and appropriate Native American tribes would be contacted for further consultation.</p> <p>Cultural resource staff at George Washington Carver National Monument would be available during construction to advise or take appropriate actions should any archeological resources be uncovered during construction. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) would be followed.</p> <p>NPS would ensure that all contractors and sub-contractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and sub-contractors also would be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction.</p> <p>Equipment and material staging areas would avoid known archeological resources.</p>
Visitor Experience and Park Operations	<p>Visitors would be informed in advance of construction activities via the park website and visitor center.</p>

5.7 Summary of Goals and Objectives by Alternative

Table 5-2. Summary of Goals and Objectives by Alternative

Project Goals:	Treatment Alternative 1 (No Action)	Treatment Alternative 2	Treatment Alternative 3	Treatment Alternative 4
Protect and manage cultural and natural resources at George Washington Carver National Monument				
Address the entire 240-acre cultural landscape, balancing historic landscape protection with natural resource efforts. This includes the 30 acres of disturbed land acquired by the park in 2006.	The entire 240 acres are managed by the park. Strategies may not emphasize balancing historic landscape protection with natural resource efforts and therefore do not meet this objective. The 30-acre site is not currently managed as prairie in response to recommendations in previous studies.	Alternative 2 meets this objective as it addresses the entire 240 acres and includes recommendations for balancing historic landscape protection with natural resource efforts. It also includes conversion of the 30-acre parcel to prairie to incorporate it into the overall approach to landcover management beyond the developed core.	Alternative 3 meets this objective as it addresses the entire 240 acres and includes recommendations for balancing historic landscape protection with natural resource efforts. It also includes conversion of the 30-acre parcel to prairie to incorporate it into the overall approach to landcover management beyond the developed core.	Alternative 4 meets this objective as it addresses the entire 240 acres and includes recommendations for balancing historic landscape protection with natural resource efforts. It also includes conversion of the 30-acre parcel to prairie to incorporate it into the overall approach to landcover management beyond the developed core.
Manage cultural and natural resources to memorialize George Washington Carver's life in a dignified and inspirational setting.	Current management strategies meet their objective of memorializing Carver's life in a dignified and inspirational setting through maintenance of existing interpretive programs and media.	Based on goals derived from the GMP, the project scope, workshops and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops and NPS communications, this alternative meets this objective.
Preserve the agrarian setting.	Existing prairie management is more oriented to natural resource conservation and less to agrarian land use. This objective is partially met with the existing strategies in place.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.

Preserve the setting of the Moses Carver farm and birthplace of George Washington Carver.	The existing setting and structure of the Moses Carver house is preserved while George Washington Carver birthplace cabin site is interpreted. The objective of preserving the farmstead setting and the exact locations of the Moses Carver house and the birthplace cabin is not met.	Alternative 2 recommends the interpretation of the accurate location of the birthplace cabin, Moses Carver homestead and other former Moses Carver farm features to depict the character of the Moses Carver farm and agricultural activities, based on further research and investigation using foundation outlines and mow patterns. This alternative meets the project objective.	Alternative 3 recommends preservation of the existing Moses Carver home structure and site as well as the currently defined and interpreted location of the birthplace cabin of GW Carver. This alternative does not fully meet the objective for preservation of the setting of the farm and other agricultural activities.	Alternative 4 recommends the interpretation of the accurate location of the birthplace cabin, Moses Carver homestead, and other former Moses Carver farm features to depict the character of the Moses Carver farm and agricultural activities, based on further research and investigation using foundation outlines and mow patterns. This alternative meets the project objective.
Support and enhance existing interpretive/ educational programs at the national monument.				
Integrate interpretation with the cultural landscape and an approach to managing the cultural landscape.	Existing interpretation strategies would remain with no current approach to integration of interpretation with the cultural landscape. The alternative would not meet this objective.	Alternative 2 meets the objective due to interpretation of missing former Moses Carver farm features, clearing of woodlands not present during the Carver period, thinning and management of bottomland woodlands to depict the historic savanna-like character, and expansion of the Carver Trail to provide access to view the agricultural setting and fields.	Alternative 3 partially meets the objective due to the recommended continued natural resource management of restored grassland prairie and Harkins Woods, and interpretation of the approach. Otherwise the interpretive approach focuses on Carver's exploration of the uses of plants and the application of scientific knowledge to improve the human condition through a lens of economic -botany.	Alternative 4 fully meets the objective due to the mowing and haying of prairie units to interpret the agrarian setting, planting of a heritage fruit and nut orchard to interpret the Carver farm, planting of a persimmon grove to interpret one of the key features described by Carver from his childhood, and enhancing natural resource management of restored grassland prairie and Harkins Woods for health, diversity and soil and water conservation.
Utilize the LRIP visitor experience objectives and goals to form justification for proposed introduction of elements of the historic landscape.	Park will continue to follow LRIP visitor experience objectives for introduction of elements or features of the historic landscape. This alternative would not meet the goal of introduction of new elements for interpretation in the historic landscape.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.

Expand opportunities on the site for further interpretation and commemoration of the entire life and legacy of George Washington Carver.	Existing efforts to interpret and commemorate the entire life and legacy of Carver will continue. This alternative would not meet the goal of expansion.	Alternative 2 does not meet the objective as it does not provide or adequately represent Carver's accomplishments over the course of his lifetime.	Alternative 3 partially meets the objective as it focuses on the planting of native species known to have been a focus of Carver's work and interpretation of the ways plant species served local residents in a variety of capacities during the late nineteenth century. The alternative does not adequately blend Carver's early years with his later work at Tuskegee.	Alternative 4 combines elements of alternatives 2 and 3 and fully meets the objective. The alternative blends the concept of plantings familiar to Carver, with site-specific enhancement of the interpretive programming involving the nineteenth century Moses Carver farm and enhanced environmental education opportunities. Also Carver's work at Tuskegee is recognized and interpreted.
Expand the use of plants and other landscape features in interpretation and commemoration of the life-long achievements of George Washington Carver.	Existing plants will remain within the context of current interpretation. This alternative does not meet the objective of an expanded use of plants and other landscape features in interpretation.	Alternative 2 partially meets the objective. Use of plants and other landscape features is emphasized but to a modest degree.	Alternative 3 partially meets the objective of an expanded use of plants and landscape features in interpretation and commemoration of Carver. It does not adequately blend his early years with his later work at Tuskegee.	Alternative 4 fully meets the objective with the use of plants and landscape features in interpretation and commemoration of Carver. It uses plants and landscape features to blend his early years with interpretation of his later work at Tuskegee.
Support and enhance the overall visitor experience.				
Focus the rehabilitation treatment on providing opportunities for the public to experience the peaceful environment and reflect on George Washington Carver's life.	Existing opportunities to experience the peaceful environment will remain and address this objective. Rehabilitation treatment is not part of this alternative.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.
Address accessibility needs in existing areas such as the Moses Carver house, Boy Carver Statue, picnic area, and other deficiencies noted in the 2014 NCA assessment.	This objective will be met within the existing framework of developing necessary future park projects.	Any deficiencies noted in the 2014 NCA assessment will be addressed by this alternative.	Any deficiencies noted in the 2014 NCA assessment will be addressed by this alternative.	Any deficiencies noted in the 2014 NCA assessment will be addressed by this alternative.

Provide universal accessibility as part of proposed new features such as trails and interpretive waysides.	This objective will be met within the existing framework of developing necessary future park projects.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective. Accessibility compliance, where feasible, would be a part of all site rehabilitation and restoration efforts and installation of new features in Alternative 2	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective. Accessibility compliance where feasible would be a part of all site rehabilitation and restoration efforts and installation of new features in Alternative 3	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective. Accessibility compliance where feasible would be a part of all site rehabilitation and restoration efforts and installation of new features in Alternative 4.
Conduct detailed investigations to locate the actual site of the Carver birthplace cabin and incorporate into the visitor experience.	This objective will be met within the existing framework of developing necessary future park projects, including archeological investigations.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.	The focus of this rehabilitation alternative is on the interpretation of Carver's work and career through plants known to have been the focus of his experiments and scientific exploration. It does not meet this objective.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, this alternative meets this objective.
Provide alternative management strategies for park operations and maintenance.				
Develop sustained and adequate management strategies for the prairie units based on interpretation of the cultural landscape, conservation of natural resources, and viewsheds.	Existing management strategies are currently based on natural resource protection as prescribed in previous studies. This alternative does not meet the objective due to a lack of integration of interpretation and cultural landscape and conservation of natural resources.	Alternative 2 meets this objective through the recommendation to adequately manage strategies for the prairie units based on interpretation of the cultural landscape, conservation of natural resources, and viewsheds.	Alternative 3 partially meets this objective, but focuses more on the addition of plantings known to have been a focus of Carver's work and his exploration of the uses of plants as a scientist during the first part of the twentieth century.	Alternative 4 meets this objective through the recommendation to adequately manage strategies for the prairie units based on interpretation of the cultural landscape, conservation of natural resources, and viewsheds.
Manage vegetation throughout the park, incorporating recommendations from past studies, MoRAP, input from HTLN and guidance from the Heartland Invasive Plant Management Plan/EA.	Existing vegetation management does in part incorporate some recommendations based on previous studies. Alternative 1 partially meets this objective.	Alternative 2 partially meets this objective by addressing some of the recommendations from the previous studies and combine with other goals and objectives for rehabilitation of the park	Alternative 3 partially meets this objective, and only uses some of the recommendations in the previous studies to combine with other goals and objectives for rehabilitation of the park.	Alternative 4 partially meets this objective, and only uses some of the recommendations in the previous studies to combine with other goals and objectives for rehabilitation of the park.

Develop sustained and adequate management strategies for the developed core (approx. 20 acres) that requires intensive management. It includes the visitor center/maintenance building complex, the area immediately adjacent to the memorial entrance, the picnic area, and the mile-long Carver Trail.	Current management and maintenance strategies would continue. Alternative 1 would not meet the objective as it does not address all issues for intensive management of the developed core.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, Alternative 2 meets this objective. Long - range sustainable repair and maintenance will be utilized for these features.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, Alternative 3 meets this objective. Long - range sustainable repair and maintenance will be utilized for these features.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, Alternative 4 meets this objective. Long - range sustainable repair and maintenance will be utilized for these features.
Develop sustained and adequate management strategies to consider how woodlands, open space, and savanna areas might address differences between the contemporary landscape and the former spatial character of the property during the Carver period, circa 1865–1877.	Current management strategies would continue. This alternative would not meet the objective as it does not address strategies to highlight differences in the contemporary landscape and the former spatial character of the property during the Carver period.	Alternative 2 meets the objective by recommending the clearing of woodlands not present during the Carver period and thinning and management of bottomland woodlands to depict historic savanna-like character.	Alternative 3 does not meet the objective, as the recommended thinning of woodlands is for the planting of economic-botanical species, such as a persimmon grove.	Alternative 4 partially meets the objective through recommendations such as managing riparian woodlands to remove invasive species and promote a pre-settlement savanna-like composition, and interpreting bottomland farming practices during the nineteenth century.
Develop sustained and adequate management strategies for repair and maintenance of the Carver family cemetery perimeter wall and headstones.	Current management strategies will remain. Alternative 1 does not meet the objective of a long- range strategy to focus on sustainable solutions to the repair and maintenance of the cemetery and the perimeter wall and headstones.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, Alternative 2 meets this objective. Long - range sustainable repair and maintenance will be utilized for these features.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, Alternative 3 meets this objective. Long - range sustainable repair and maintenance will be utilized for these features.	Based on goals derived from the GMP, the project scope, workshops, and NPS communications, Alternative 4 meets this objective. Long - range sustainable repair and maintenance will be utilized for these features.

5.8 Summary of Impacts by Alternative

Table 5-3. Summary of Impacts by Alternative

Impact Topic	Treatment Alternative 1 (No Action)	Treatment Alternative 2	Treatment Alternative 3	Treatment Alternative 4
Soils	No changes to current conditions. Existing management or maintenance strategies remain in place. No further clearing would be undertaken and current mowing and vegetation management regimens would continue.	Woodland management for historical spatial patterns, historic character, and managed riparian woodland. Removal of invasive species, and continued natural resource management 12 acres of cleared woodlands Trail Expansion: Approx. 4680 lf	Woodland management for removal of invasive species and continued natural resource management and sustaining economic-botanical plantings Approximately 10 acres of woodland cleared for economic-botanical plantings. Trail Expansion: Approx. 5400 lf	Woodland management for interpretation of historical farmstead, and managed riparian woodland. Removal of invasive species, thinning of woodlands for views, and continued natural resource management 10 acres of woodland cleared for plantings familiar to Carver and views Trail Expansion: Approx. 4140 lf
	Overall Impact: Overall impact would be <i>park-wide, long term, negligible, and adverse</i> on soils	Overall Impact: Overall impact would be <i>local, short-term, moderate, and adverse</i> on soils.	Overall Impact Overall impact would be <i>local, short-term, minor, and adverse</i> on soils.	Overall Impact Overall impact would be <i>local, short-term, moderate, and adverse</i> on soils.
	Cumulative Impact Cumulative effects would be local, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be local, short-term, moderate, and adverse.	Cumulative Impact Cumulative effects would be local, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be local, short-term, moderate, and adverse
Vegetation (Grassland prairie and Forest)	Existing vegetation management strategies remain in place. The park manages both grassland and forest. Cultural vegetation in the developed core covers approximately 22 acres.	Comprehensive woodland management and removal of invasive species management strategies as well as prairie management strategies recommended to the park by previous studies. Continued natural resource management.	Comprehensive woodland management and removal of invasive species management strategies as well as prairie management strategies recommended to the park by previous studies. Continued natural resource management.	Comprehensive woodland management and removal of invasive species management strategies as well as prairie management strategies recommended to the park by previous studies. Continued natural resource management.
	Alternative 1: Overall Impact Overall impacts would be <i>park-wide, long-term, minor, and adverse</i> on grassland prairie. Overall impacts would be <i>local, long-term,</i>	Alternative 2: Overall Impact Overall impacts would be <i>park-wide, short-term, moderate, and adverse</i> on grassland prairie and forest	Alternative 3: Overall Impact Overall impacts would be <i>park-wide, short-term, minor, and adverse</i> on grassland prairie and forest during implementation.	Alternative 4: Overall Impact Overall impacts would be <i>park-wide, short-term, moderate, and adverse</i> on grassland prairie and forest during

	moderate, and adverse on forest.	during implementation. Overall impacts would also be park-wide, long-term, moderate, and beneficial on grasslands and forest once established.	Overall impacts would be park-wide, long-term, minor, and beneficial on grasslands and forest once established.	implementation. Overall impacts would also have park-wide, long-term, moderate, and beneficial on grasslands and forest once established.
	Cumulative Impact Cumulative effects would be park-wide, short-term, moderate, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, moderate, and adverse to moderate, and beneficial.	Cumulative Impact Cumulative effects would be park-wide, long-term, minor, and adverse to minor, and beneficial.	Cumulative Impact Cumulative effects would be park-wide, long-term, moderate, and adverse to moderate, and beneficial.
Water Quality	Alternative 1: Protection of surface water and ground water is a management priority and currently water quality meets or exceeds all applicable water quality standards... Protection will continue with the current management and maintenance strategies in place.	Alternative 2: Protection will be expanded to include the stabilization of the stream banks and preservation of landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors. Management strategies will address Williams Pond as well the springs that occur on the site.	Alternative 3: Protection will be expanded to include the stabilization of the stream banks and preservation of landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors. Management strategies will address Williams Pond as well the springs that occur on the site.	Alternative 4: Protection will be expanded to include the stabilization of the stream banks and preservation of landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors. Management strategies will address Williams Pond as well the springs that occur on the site.
	Overall Impact Overall impact would be park-wide, long-term, negligible, adverse on water quality	Overall Impact Overall impact would be park-wide, long-term, minor, and beneficial on water quality.	Overall Impact Overall impact would be park-wide, long-term, minor, and beneficial on water quality	Overall Impact Overall impact would be park-wide, long-term, minor, and beneficial on water quality
	Cumulative Impact Cumulative effects would be local, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, minor, and beneficial.	Cumulative Impact Cumulative effects would be park-wide, long-term, minor, and beneficial.	Cumulative Impact Cumulative effects would be park-wide, long-term, minor, and beneficial.
Wildlife and Wildlife Habitat	Alternative 1: Existing habitat would remain in place to continue to support populations of birds, mammals, and reptiles that currently inhabit the park landscape. Over time, the existing successional woodland would continue to mature.	Alternative 2: Implementing construction of overflow parking, restoration of the persimmon grove, and expansion of the trail system would displace or disturb some vegetation that constitutes wildlife habitat. BMPs would be implemented to minimize impacts to wildlife habitat.	Alternative 3: Implementing construction of overflow parking, restoration of the persimmon grove, and expansion of the trail system would displace or disturb some vegetation that constitutes wildlife habitat. BMPs would be implemented to minimize impacts to wildlife habitat.	Alternative 4: Implementing construction of overflow parking, restoration of the persimmon grove, and expansion of the trail system would displace or disturb some vegetation that constitutes wildlife habitat. BMPs would be implemented to minimize impacts to wildlife habitat.

	Overall Impact Overall impact would be <i>park-wide, long-term, minor, and adverse</i> on wildlife and wildlife habitat.	Overall Impact Overall impact would be <i>park-wide, short-term, minor, adverse</i> on wildlife and wildlife habitat	Overall Impact Overall impact would be <i>park-wide, short-term, minor, adverse</i> on wildlife and wildlife habitat	Overall Impact Overall impact would be <i>park-wide, short-term, minor, adverse</i> on wildlife and wildlife habitat
	Cumulative Impact Cumulative effects would be park-wide, short-term, minor, and adverse.	Cumulative Impact Cumulative Impact would be park-wide, short-term, minor, and adverse.	Cumulative Impact Cumulative Impact would be park-wide, short-term, minor, and adverse.	Cumulative Impact Cumulative Impact would be park-wide, short-term, minor, and adverse.
Rare, Threatened, and Endangered Species	Alternative 1: Existing habitat would remain in place and continue to support populations of birds, mammals, reptiles and fish that currently inhabit the site and the water resources on the site. Quality of the water is most important to the identified species of fish, the Arkansas darter, as a candidate for federal listing and a species of concern in Missouri.	Alternative 2: Implementing construction, restoration of a grove and orchard, removal of invasive species, expanded woodland management, and stream, spring and pond management would result in potential impacts due to displacement of vegetation along stream corridors and subsequent effects on water quality. BMPs would be implemented.	Alternative 3: Implementing construction, restoration of grove and orchard, removal of invasive species, expanded woodland management, and stream, spring and pond management would result in potential impacts due to displacement of vegetation along stream corridors and subsequent effects on water quality. BMPs would be implemented.	Alternative 4: Implementing construction, restoration of grove and orchard, removal of invasive species, expanded woodland management, and stream, spring and pond management would result in potential impacts due to displacement of vegetation along stream corridors and subsequent effects on water quality. BMPs would be implemented.
	Overall Impact Overall impact would be <i>local, long-term, negligible, and adverse</i> on rare, threatened and endangered species.	Overall Impact Overall impact would be <i>local, short-term, minor, and adverse</i> on rare threatened and endangered species	Overall Impact Overall impact would be <i>local, short-term, minor, adverse</i> on rare threatened and endangered species	Overall Impact Overall impact would be <i>local, short-term, minor, adverse</i> on rare threatened and endangered species
	Cumulative Impact Cumulative effects would be local, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be local, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be local, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be local, short-term, minor, and adverse.
Wetlands	Alternative 1: No change to current conditions. Wetland areas will remain within prairie units and managed for preservation of unique wetland vegetation.	Alternative 2: Wetland areas will remain within prairie units and managed for preservation of unique wetland vegetation.	Alternative 3: Wetland areas will remain within prairie units and managed for preservation of unique wetland vegetation.	Alternative 4: Wetland areas will remain within prairie units and managed for preservation of unique wetland vegetation.
	Overall Impact Overall impact would be a <i>local, short term, negligible, and adverse</i> on wetlands.	Overall Impact Overall impact would be <i>local, short-term, negligible, and adverse</i> on wetlands	Overall Impact Overall impact would be <i>local, short-term, negligible, and adverse</i> on wetlands	Overall Impact Overall impact would be <i>local, short-term, minor, and adverse</i> on wetlands

	Cumulative Impact Cumulative effects would be local, short-term, minor and adverse.	Cumulative Impact Cumulative effects would be local, short-term, minor and adverse.	Cumulative Impact Cumulative effects would be local, short-term, minor and adverse.	Cumulative Impact Cumulative effects would be local, short-term, minor and adverse.
Floodplains	Alternative 1: Protection of floodplains will continue with current management and maintenance strategies in place. The Williams Pond would remain in its current configuration. Maintenance of existing water systems and features would continue as well as protection of water resources.	In Alternative 2 there would be stream bank restoration and management of the woodlands along the streams and into the floodplain. Maintenance of existing water systems and features would continue as well as protection of water resources.	In Alternative 3 , there would be stream bank restoration and management of the woodlands along the streams and into the floodplain. Maintenance of existing water systems and features would continue as well as protection of water resources.	In Alternative 4 , there would be stream bank restoration and management of the woodlands along the streams and into the floodplain. Maintenance of existing water systems and features would continue as well as protection of water resources.
	Overall Impact Overall impact would be local, long-term, minor, and adverse on floodplains	Overall Impact Overall impact would be local, long-term, moderate, and beneficial on floodplains	Overall Impact Overall impact would be local, long-term, moderate, and beneficial on floodplains	Overall Impact Overall impact would be local, long-term, moderate, and beneficial on floodplains
	Cumulative Impact Cumulative effects would be local, long-term, minor, and adverse.	Cumulative Impact Cumulative effects would be local, long-term, moderate, and beneficial	Cumulative Impact Cumulative effects would be local, long-term, moderate, and beneficial	Cumulative Impact Cumulative effects would be local, long-term, moderate, and beneficial
Cultural Landscapes	Alternative 1: Existing conditions focus on preservation of the current character of the national monument landscape and interpretive programs. No further exploration of ways to utilize the cultural landscape as a tool for interpreting Carver's life and accomplishment would be conducted.	Alternative 2: Enhanced interpretation of the park by re-establishing and interpreting missing nineteenth century features. There also would be thinning and management of woodlands and establishment of a clear connection between Carver's life and achievements and the historic landscape of the farm.	Alternative 3: There would be thinning and management of woodlands and establishment of a clear connection between Carver's life and work with plants. This alternative focuses on economic - botanical plantings to connect the cultural landscape to the life and legacy of George Washington Carver.	Alternative 4: Enhanced interpretation of the park by re-establishing and interpreting missing nineteenth century features. There also would be thinning and management of woodlands and establishment of a clear connection between Carver's life and achievements and the historic landscape of the farm.
	Overall Impact Overall impact would be park-wide, long-term, minor, and adverse on cultural landscapes	Overall Impact Overall impact would be park-wide, long-term, major, and beneficial on the cultural landscape For purposes of Section 106 compliance there	Overall Impact Overall impact would be park-wide, long-term, moderate, and beneficial on the cultural landscape. For purposes of Section 106	Overall Impact Overall impact would be park-wide, long-term, major, and beneficial on the cultural landscape. For purposes of Section 106 compliance there

		would be <i>no adverse effect</i>	compliance there would be <i>no adverse effect</i>	would be <i>no adverse effect</i>
	Cumulative Impact Cumulative effects would be local, short-term, negligible, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, major, and beneficial	Cumulative Impact Cumulative effects would be park-wide, long-term, moderate, and beneficial	Cumulative Impact Cumulative effects would be park-wide, long-term, major, and beneficial
Historic Buildings and Structures	Alternative 1: Management focus on preservation of the Moses Carver house and the family cemetery perimeter wall. Also the preservation of the stone boundary markers on the west corners of the national monument site.	Alternative 2: The buildings and structures are preserved, managed, and maintained with enhanced interpretation. It also includes repair and restoration of the family cemetery perimeter wall.	Alternative 3: The buildings and structures are preserved, managed, and maintained with enhanced interpretation. It also includes repair and restoration of the family cemetery perimeter wall.	Alternative 4: The buildings and structures are preserved, managed, and maintained with enhanced interpretation. It also includes repair and restoration of the family cemetery perimeter wall.
	Overall Impact Overall impact would be <i>local, long-term, negligible, and adverse</i> on historic buildings and structures.	Overall Impact Overall impact would be <i>local, long-term, moderate, and beneficial</i> on historic buildings and structures. For purposes of 106 compliance there would be <i>no adverse effect</i>	Overall Impact Overall impact would be <i>local, long-term, moderate, and beneficial</i> on historic buildings and structures. For purposes of 106 compliance there would be <i>no adverse effect</i>	Overall Impact Overall impact would be <i>local, long-term, moderate, and beneficial</i> on historic buildings and structures. For purposes of 106 compliance there would be <i>no adverse effect</i>
	Cumulative Impact Cumulative effects would be local, short-term, negligible, and adverse.	Cumulative Impact Cumulative effects would be local, long-term, moderate, and beneficial.	Cumulative Impact Cumulative effects would be local, long-term, moderate, and beneficial.	Cumulative Impact Cumulative effects would be local, long-term, moderate, and beneficial.
Archeological Resources	Alternative 1: There would be no new ground-disturbing activities that would potentially affect archeological resources. Current levels of maintenance and repairs to historic features would continue. These activities do not typically include excavation. Current management practices would continue and there would be no new impacts on archeological resources.	Alternative 2 would include some excavation for trail expansion, removal and thinning of woodlands, and installation of new plantings. There would be ground disturbance during demolition of the former housing/ administrative structures and development of overflow parking. Mitigation measures would be in place	Alternative 3 would include some excavation for trail expansion, thinning of woodlands, and installation of new plantings. There would be ground disturbance during demolition of the former housing/ administrative structures and development of overflow parking. Mitigation measures would be in place.	Alternative 4 would include some excavation for trail expansion, thinning of woodlands, and installation of new plantings. There would be ground disturbance during demolition of the former housing/ administrative structures and development of overflow parking. Mitigation measures would be in place.

	Overall Impact Overall impact would be <i>park-wide, long-term, negligible, and adverse</i> on archeological resources.	Overall Impact Overall impact would be <i>local, short-term, minor, and adverse</i> on archeological resources. For purposes of Section 106 compliance there would be no adverse effect	Overall Impact Overall impact would be <i>local, short-term, minor, and adverse</i> on archeological resources. For purposes of Section 106 compliance there would be no adverse effect	Overall Impact Overall impact would be <i>local, short-term, minor, and adverse</i> on archeological resources. For purposes of Section 106 compliance there would be no adverse effect
	Cumulative Impact Cumulative effects would be park-wide, long-term, negligible, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, minor, and adverse with mitigation measures in place	Cumulative Impact Cumulative effects would be park-wide, long-term, minor, and adverse with mitigation measures in place	Cumulative Impact Cumulative effects would be park-wide, long-term, minor, and adverse with mitigation measures in place
Visitor Use and Experience	Alternative 1: No changes would occur to current conditions, facilities, or interpretation. Under this alternative, there would be no changes to the facilities that currently accommodate visitor access and interpretation or to park administration and maintenance facilities. No new construction of visitor amenities. There would be no expansion of interpretation using the cultural landscape to tell the complete story of the life and legacy of Carver.	Alternative 2: Expansion of the trail for interpretive opportunities; identification of location of the former Moses Carver farmstead features and associated interpretation; accurate location through archeology of the birthplace cabin and the original location of the Moses Carver house and associated interpretation.	Alternative 3: Economic-botanical plantings would be installed to enhance interpretation of Carver's entire life and work. Expansion of the trail to provide interpreted economic- botanical plantings and an interpreted environmental trail through Harkins Woods.	Alternative 4: Expansion of the trail for interpretive opportunities; identification of location of former Moses Carver farmstead features and associated interpretation; accurate location through archeology of the birthplace cabin and original location of the Moses Carver house and associated interpretation.
	Overall Impact Overall impact would be a <i>park-wide, long term, minor, and adverse</i> on visitor use and experience.	Overall Impact Overall impact would be a <i>park-wide, long term, major, and beneficial</i> on visitor use and experience.	Overall Impact Overall impact would be a <i>park-wide, long term, moderate, and beneficial</i> on visitor use and experience.	Overall Impact Overall impact would be a <i>park-wide, long term, major, and beneficial</i> on visitor use and experience.
	Cumulative Impact Cumulative effects would be park-wide, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, major, and beneficial.	Cumulative Impact Cumulative effects would be park-wide, long-term, moderate, and beneficial.	Cumulative Impact Cumulative effects would be park-wide, long-term, major, and beneficial.
Park Operations	Alternative 1: Park operations would remain consistent with those currently being undertaken. There would be no	Alternative 2 would require expanded park operations due to enhanced interpretation of the park to tell the story	Alternative 3 would require expanded park operations. Plants would be installed along trails to enhance	Alternative 4 would require expanded park operations due to enhanced interpretation of the park to tell the story

	change in current site operations or infrastructure. The visitor center would continue to be the primary point of visitor contact. Maintenance requirements would continue at current levels.	of George Washington Carver's life and interpreting missing nineteenth century features. There would also be thinning and management of woodlands, and mown hay viewsheds.	interpretation. Thinning of woodland would occur to allow for plantings of economic -botanical species.	of George Washington Carver's life and interpreting missing nineteenth century features. There would also be thinning and management of woodlands, and mown hay fields in units 2, 6, and 7.
	Overall Impact Overall impact would be <i>park-wide, short-term, negligible, and adverse</i> on park operations	Overall Impact Overall impact would be <i>park-wide, long-term, moderate, and adverse</i> on park operations	Overall Impact Overall impact would be <i>park-wide, long-term, moderate, and adverse</i> on park operations	Overall Impact Overall impact would be <i>park-wide, long-term, moderate, and adverse</i> on park operations
	Cumulative Impact Cumulative effects would be park-wide, short-term, minor, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, moderate, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, moderate, and adverse.	Cumulative Impact Cumulative effects would be park-wide, long-term, moderate, and adverse.

Chapter 6: Impacts from Treatment Alternatives and Environmental Consequences

6.0 Introduction

This chapter describes the environmental consequences associated with the treatment alternatives presented in this document. It is organized by impact topic, which distills the issues and concerns into distinct subjects for discussion and analysis. NEPA requires consideration of context, intensity, and duration of adverse and beneficial impacts (direct, indirect, and cumulative) and measures to mitigate impacts. This document is also being used to comply with the requirements of Section 106 of the NHPA. The CEQ regulations that implement NEPA require assessment of impacts to cultural as well as natural resources.

6.1 General Methods

This section contains the environmental impacts, including direct and indirect effects, and their significance for each treatment alternative. The analysis is based on the assumption that the mitigation measures identified in the “Mitigation” section of this CLR/EA would be implemented for the action alternatives. Overall, the NPS based these impact analyses and conclusions on: review of existing literature and park studies; information provided by experts within the park and other agencies; professional judgment and park staff insights; and public input.

The following terms describe the discussion of environmental consequences to assess the impact

intensity threshold and the nature of impacts associated with each alternative.

Context: Context is the setting within which an impact would occur, such as park-wide (site alternatives) in George Washington Carver National Monument; or regional (in Newton County, Missouri).

Impact Intensity: Impact intensity is defined individually for each impact topic. There may be no impact, or impacts may be negligible, minor, moderate, or major.

Duration: The duration of impact is analyzed independently for each resource since impact duration is dependent on the resource being analyzed. Impacts may last for the construction period, a single year or growing season, or longer. For purposes of this analysis, impact duration is described as short-term or long-term. Impact duration is defined in a table for each resource topic.

Type: Effects can be beneficial or adverse. Beneficial effects are positive changes in the condition or appearance of the resource or a change that moves the resource toward a desired condition. Adverse effects are negative changes in the condition or appearance of the resource or a change that moves the resource away from a desired condition.

Direct and Indirect Impacts: Effects can be direct, indirect, or cumulative. Direct effects are caused by an action and occur at the same time

and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. Direct and indirect impacts are considered in this analysis, but are not specified in the narratives. Cumulative effects are discussed in the next section.

Threshold for Impact Analysis: The duration and intensity of effects vary by resource. Therefore, the definitions for each impact topic are described separately. These definitions were formulated through the review of existing laws, policies, and guidelines; and with assistance from park staff and regional NPS staff. Impact intensity thresholds for negligible, minor, moderate, and major adverse effects are defined in a table for each resource topic.

6.2 Cumulative Impacts

The CEQ regulations that guide NEPA require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as impacts which result when the impact of the proposed action is added to the impacts of other present and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions (40 CFR 1508.7.) Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time.

Methods for Assessing Cumulative Impacts

Cumulative impacts were determined by combining the impacts of each action alternative and the no action alternative with other past, present, and reasonable foreseeable future actions. Past actions include activities that influenced and affected the current conditions of the environment near the project area. Ongoing or reasonably foreseeable future project near the park or the surrounding region might contribute to cumulative impacts. The geographic scope of the analysis includes actions in the project area as well as other actions in the park or surrounding lands, where overlapping resource impacts are possible.

The temporal scope includes actions within a range of approximately 10 years. Once identified, past, present, and reasonably foreseeable actions are then assessed in conjunction with the impacts of the alternatives to determine if they would have any added adverse or beneficial effects on a particular resource, park operation, or visitor use. The impacts of past, present, and reasonably foreseeable actions vary for each resource. Cumulative impacts are considered for each alternative and are presented in the environmental consequences discussion for each impact topic.

To determine the potential cumulative impacts, the following existing and anticipated future projects at George Washington Carver National Monument and in the surrounding area were taken into consideration:

- Past, present, and ongoing prairie restoration projects and prescribed burns.
- Future projects associated with accessibility compliance as stipulated in the *George Washington Carver National Monument Accessibility Assessment*.
- Projects associated with turf management in specified areas of the monument.
- Projects associated with expanded interpretation.
- Projects associated with future management of woodlands.
- Ongoing and future archeological investigations.
- Projects associated with the demolition of the former housing/administrative buildings near the monument entrance.

6.3 Impacts to Cultural Resources and Section 106 of the NHPA

For purposes of the NEPA process, cultural resources are considered under section 106 of the National Historic Preservation Act (NHPA), and specifically its implementing regulations under 36 CFR Part 800. Section 106 requires federal agencies to consider the effects of an undertaking on historic properties, and provides a process under which to implement section 106.

In this CLR/EA, impacts to cultural resources are described in terms of context, duration, intensity, and type, as described above, and are consistent with the regulations of the CEQ, which implements NEPA. CEQ regulations and the NPS Conservation Planning, Environmental Impact Analysis and Decision-making (DO-12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (e.g., reducing the intensity of an impact from major to moderate or minor). Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. It does not suggest that the level of effect, as defined by section 106, is similarly reduced. Although adverse effects under section 106 may be mitigated, the effect remains adverse. The park would coordinate with the SHPO to address mitigation measures for the preferred alternative.

6.4 Natural Resources

6.4.1 Soils

Impact Intensity Threshold

All information on soils that would potentially be impacted at George Washington Carver National Monument was compiled and where possible, map locations of sensitive soils were compared with locations of proposed modifications associated with the alternatives. Predictions about short-and long-term site impacts were based on a comparison of soil characteristics (as described in the Newton County soil survey) and anticipated expansion efforts.

The thresholds for this impact topic are presented in Table 6-1.

Table 6-1. Soils Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts to soils would be below or at the lower levels of detection.
Minor	The impacts to soils would be detectable and small. Mitigation may be needed to offset adverse impacts and would be relatively simple to implement and likely be successful.
Moderate	The impacts on soils would be readily apparent and result in a change to soils over a relatively wide area. Mitigation measures would be necessary to offset adverse impacts and likely be successful.
Major	The impacts on soils would be readily apparent and would substantially change the character of the soils over a large area in and out of the park. Extensive mitigation measures would be necessary to offset adverse impacts and their success could not be guaranteed.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Soils

The No Action alternative focuses on preservation of the existing character of the George Washington Carver National Monument

landscape and current interpretive programs. Under this alternative, there would be no changes to the facilities that currently accommodate visitor access and interpretation, or park administration or maintenance. No provision would be made to accommodate overflow parking beyond the use of current road margins and parking areas. No further clearing would be undertaken and current mowing and vegetation management regimens would continue. There would be continued repair of deteriorated features and systems. Current levels of erosion would continue, and possibly increase with continued visitor wear on paths and use of other areas. Existing stands of invasive plants that preclude growth of other plants with root systems with better soil holding capability may contribute to soil erosion over time, given that removal would not occur as part of this alternative. This alternative does not include construction or other activities that would alter the site as it exists today. Overall this alternative would have *park-wide, long-term, negligible, and adverse impacts* on soils.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, minor, and adverse impacts on soils. Some of these actions include: routine utility repair, replacement, and new installation; small-scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams and Williams Pond. The overall cumulative impacts on soils from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor, and adverse.

Conclusions

The No Action alternative would have park-wide, long-term, negligible, and adverse impacts on soils. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Elements Common to the Action Alternatives on Soils

The following proposed actions common to all would impact soils at George Washington Carver National Monument :

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams – Carver, Harkins, and Williams branches
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the developed core on the site of the former

housing/administrative structures after planned demolition

- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation.
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*.
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and eastern opening

Implementing this construction, removal of plant material, or undertaking of these natural and cultural resource management and preservation strategies would result in *short-term, minor, and adverse impacts* on soils during implementation because soils would be exposed, displaced or otherwise disturbed. *Long-term, minor, and adverse impacts* on soils would also result from displacement as well as compaction. Best management practices (BMPs) would be employed during construction, and for other activities such as tree removal, in order to minimize impacts on soils.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Soils

As part of an overall strategy for managing the cultural landscape of the park, this alternative recommends developing additional connections between interpretive programming and what is

known about the landscape that comprised the Moses Carver farm during George Washington Carver's time on the property. Specific actions resulting from the implementation of this alternative include: thinning and selective clearing of woodlands not present during the Carver period; thinning and management of bottomland woodlands to depict a historic savanna-like character; expansion of Carver Trail; and the addition of foundation outlines and waysides to interpret former Moses Carver farm features. Tree removal is anticipated to lead to soil disturbance and erosion, particularly in the thinning and selective removal of woodland and management of bottomland woods. Once new savanna-like conditions are established, soil erosion and disturbance would be abated. This alternative would have *local, short-term, moderate, and adverse impacts* on soils.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on soils from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, moderate, and adverse.

Conclusion

Treatment Alternative 2 would have local, short-term, moderate, and adverse impacts on soils from woodland management, trail expansion, and plant and interpretive installations. Cumulative effects would be local, short-term, moderate, and adverse.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Soils

The focus of this alternative would be the interpretation of Carver's work and career through plants known to have been the focus of his experiments and scientific exploration. Specific actions resulting from the implementation of this alternative include: planting of a wide variety of native species, thinning of woodlands to

accommodate plantings, and expansion of the trail. Tree removal is anticipated to lead to soil disturbance and erosion, particularly in the thinning of woodland. Some localized erosion could also take place during the process of introducing a large number of new plants to the landscape. Once new conditions are established and new plantings are stabilized, soil erosion and disturbance would be abated. This alternative would have *local, short-term, minor, and adverse impacts* on soils.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on soils from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusion

Treatment Alternative 3 would have local, short-term, minor, and adverse impacts on soils from woodland clearing for new plant installation, vegetation management, trail expansion, and plant and interpretive installations. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Soils

This rehabilitation treatment alternative focuses on the interpretation of several features known to have been present on the Moses Carver farm during George Washington Carver’s boyhood that are no longer present to convey the scale, arrangement, orientation, and elements of the historic farmstead. These include field and pasture patterns of agricultural production, walnut hedgerows, the fruit and nut orchard, and a persimmon grove, as well as the farm area which would be addressed in part through physical means such as foundation outlines and mow patterns. Specific actions resulting from the

implementation of this alternative are anticipated to include planting of an orchard and persimmon grove, planting along trails and roads, and expanding the trail system. Selective tree removal is anticipated to lead to soil disturbance and erosion, particularly in the thinning and selective clearing of woodland for views and new plantings known to Carver. Some localized erosion could also take place during the process of introducing a large number of new plants to the landscape at the park. Once new conditions are established and new plantings are stabilized, soil erosion and disturbance would be abated. This alternative would have *local, short-term, moderate, and adverse impacts* on soils.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on soils from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, moderate, and adverse.

Conclusion

Treatment Alternative 4 would have local, short-term, moderate, and adverse impacts on soils from woodland management, trail expansion, and plant and interpretive installations. Cumulative effects would be local, short-term, moderate, and adverse.

6.4.2 Vegetation (Grassland and Forest)

Impact Intensity Threshold

The comprehensive information, study, analysis, guidance, and mapping of the vegetation at George Washington Carver National Monument by the HTLN, the MoRAP report, and other studies were used to consider the impacts of the alternatives on vegetation. The park manages both grassland and forest. Grasslands cover approximately 130 acres of the park. Forested areas occur primarily along streams, but extend into the uplands. The picnic area, the visitor center and maintenance area, and the former housing/administrative area are highly managed and manicured, with a large proportion of those areas planted in non-native trees and shrubs. An area of special concern within the park is Harkins Woods, located in the northwest corner of the site. As shown in tree survey work, the makeup of the forest is markedly different from the rest of the national monument. In addition, several plant species have only been recorded in this area. Impact assessments were based on the expected disturbance to vegetation communities, presence and location of sensitive species, species of special concern, and invasive species.

Assessments about short-and long-term site impacts were based on the anticipated effects of construction and management strategies and vegetative cover change on soil erosion, soil moisture, community stability, and wildlife.

The thresholds for change to the intensity of an impact on vegetation are defined as follows in Table 6-2.

Table 6-2. Vegetation Impact and Intensity

Impact Intensity	Intensity Description
Negligible	<p>Grassland: Individual species of the prairie restoration composition may occasionally be impacted, but measurable or perceptible changes in the overall species community size, integrity, or continuity would not occur.</p> <p>Forest: Individual native plants may occasionally be impacted, but measurable or perceptible changes in</p>

	plant community size, integrity, or continuity would not occur.
Minor	<p>Grassland: Impacts on prairie restoration composition would be measurable or perceptible, but would be localized within a small area. The viability of the community would not be impacted and the community, if managed for prairie restoration, would recover.</p> <p>Forest: Impacts on native plants would be measurable or perceptible, but would be localized within a small area. The viability of the plant community would not be impacted and the community, if left alone, would recover.</p>
Moderate	<p>Grassland: Impacts would occur to a sizable segment of the prairie species composition over a relatively large area that would be readily measurable in terms of abundance, distribution, quantity, or quality. Mitigation measures to offset/reduce adverse impacts would be necessary and would likely be successful.</p> <p>Forest: Impacts would occur to a sizable segment of the native plant community over a relatively large area that would be readily measurable in terms of abundance, distribution, quantity, or quality. Mitigation measures to offset/reduce adverse impacts would be necessary and would likely be successful.</p>
Major	<p>Grassland: Impacts on prairie species composition would be readily apparent and would substantially change community types over a large area, inside and outside the site. Extensive mitigation measures would be necessary to offset adverse impacts, and their success would not be ensured.</p> <p>Forest: Impacts on native plant communities would be readily apparent and would substantially change vegetative community types over a large area, inside and outside the site. Extensive mitigation measures would be necessary to offset adverse impacts, and their success would not be ensured.</p>

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Vegetation

The grassland and forest vegetation identified within the current boundaries of George Washington Carver National Monument, are part of the existing landcover character and patterns. Under Alternative 1 No Action the current landscape patterns of spatial organization, composed of a developed core featuring ornamental plantings, shade trees, and turf, riparian woodlands along the stream corridors, and restored grassland prairie will be perpetuated. No further site thinning would be undertaken and current mowing and vegetation management regimens would continue. The park would continue to utilize seeding, planting, mowing, haying, and prescribed burning to maintain and restore the prairie. Treatment would focus on maintenance of existing landcover character and patterns, conservation of natural resources, and continuation of current prairie restoration strategies. Comprehensive forest management and removal of invasive species management strategies addressed in studies by HTLN are not currently integrated into the current vegetation management programs or strategies. Under this alternative, forest management is not addressed and there is no strategic comprehensive program for the removal of invasive species. Overall this alternative would have *park-wide, long-term, minor, and adverse impacts* on grassland prairie, and *local, long-term, moderate, and adverse impacts* on forest vegetation.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, minor, and adverse impacts on the grassland and forest vegetation at George Washington Carver National Monument. Some of these actions include: routine utility repair, replacement, and new installation; small -scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams

and Williams Pond. The overall cumulative impacts on grassland and forest vegetation from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor to moderate, and adverse.

Conclusions

The No Action alternative would have local and park-wide, long-term, minor to moderate, and adverse impacts on grassland and forest vegetation. Cumulative effects would be park-wide, short-term, moderate, and adverse.

Impacts of Elements Common to the Action Alternatives on Vegetation

The following proposed actions common to all would impact vegetation at George Washington Carver National Monument :

- Management of forests to remove invasive species and enhance interpretation from expanded trails.
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation.
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches.
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas.
- Maintenance and management of Harkins Woods.
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management.
- Preservation, maintenance, and management of the cultural vegetation that contributes to

the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings within the former housing/administrative complex; and the picnic grove shade trees.

- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources.
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition.
- Restoration of the persimmon grove along Carver Trail.
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road.
- Expansion of the trail system to enhance interpretation.
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*.
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening.

Implementing some proposed construction or management strategies, or the undertaking of the restoration of the persimmon grove would result in *local, short-term, minor to moderate, and adverse impacts* on forest vegetation during implementation. Continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of forests to remove invasive species and other expanded natural and cultural

resource preservation, management, and maintenance strategies would result in *park-wide, long-term, minor to moderate, and beneficial impacts* on vegetation.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Vegetation

Comprehensive woodland management and invasive species management strategies as well as prairie management strategies addressed in studies by HTLN will be integrated into the current vegetation management procedures, expansion, and programs. Implementing some proposed construction or vegetation management strategies, or the undertaking of the restoration of the persimmon grove and orchard would result in potential impacts on grassland and forest vegetation. Continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of forests to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies would also result in potential impacts on both grasslands and forests.

Alternative 2 would have *park-wide, short-term, moderate, and adverse impacts* on grassland prairie and forests during implementation.

Alternative 2 would also have *park-wide, long-term, moderate, and beneficial impacts* on grassland prairie and forests.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on vegetation from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and adverse during implementation and park-wide, long-term, moderate, and beneficial once established.

Conclusion

Treatment Alternative 2 would have park-wide, short-term, moderate, and adverse impacts and park-wide, long-term, moderate, and beneficial impacts on grassland prairie and forest vegetation from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management of the springs and streams, and management of the woodland corridors surrounding the streams. Beneficial impacts would be due to continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of woodlands to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies. Cumulative effects would be park-wide, long-term, moderate, and adverse, to moderate, and beneficial.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Vegetation

Comprehensive forest management and invasive species management strategies as well as prairie manage strategies addressed in studies by HTLN will be integrated into the current vegetation management procedures, expansion, and programs. Implementing some proposed construction or vegetation management strategies, or the undertaking of the restoration of the persimmon grove and orchard would result in potential impacts on grassland prairie and forest vegetation. Continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of forests to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies would also result in potential impacts in both grassland prairie and forests.

Alternative 3 would have *park-wide, short-term, minor, and adverse impacts* on grassland prairie and forests during implementation.

Alternative 3 would also have *park-wide, long-term, minor, and beneficial impacts* on grassland prairie and forests.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on vegetation from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, minor, and adverse during implementation and park-wide, long-term, minor, and beneficial once established.

Conclusion

Treatment Alternative 3 would have park-wide, short-term, minor, and adverse impacts and park-wide, long-term, minor, and beneficial impacts on grassland prairie and forest vegetation from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Beneficial impacts would be due to continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of forests to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies. Cumulative effects would be park-wide, long-term, minor, and adverse to minor, and beneficial.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Vegetation

Comprehensive woodland management and removal of invasive species management strategies as well as prairie management strategies addressed in studies will be integrated into the current vegetation management procedures, expansion, and programs. Implementing some proposed construction or vegetation management strategies, or the undertaking of the restoration of the persimmon grove and orchard would result in potential impacts on grassland and forest vegetation. Continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of forest to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies would also result in potential impacts on both grassland prairie and forests.

Alternative 4 would have *park-wide, short-term, moderate, and adverse impacts* on grassland prairie and forests during implementation.

Alternative 4 would also have *park-wide, long-term, moderate, and beneficial impacts* on grassland prairie and forests.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on vegetation from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and adverse during implementation and park-wide, long-term, moderate, and beneficial once established.

Conclusion

Treatment Alternative 4 would have park-wide, short-term, moderate, and adverse impacts and

park-wide, long-term, moderate, and beneficial impacts on grassland prairie and forest vegetation from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Beneficial impacts would be due to continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of woodlands to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies. Cumulative effects would be park-wide, long-term, moderate, and adverse to moderate, and beneficial.

6.4.3 Water Quality

Impact Intensity Threshold

NPS Management Policies 2001 state that the NPS will “take all necessary actions to maintain or restore the quality of surface waters and ground waters within the parks consistent with the Clean Water Act and all other applicable federal, state and local laws and regulation.”

Other considerations in assessing the magnitude of water quality impacts are the composition and effectiveness of drainages, the content of storm water runoff, and the current condition of the streams on site. All available existing information on water quality associated with the resources potentially impacted by proposed actions in the alternatives was compiled and researched. Predictions about short-and long-term site impacts were based on the anticipated effects of expanded trails and vegetative cover change on soil erosion, and the potential for increased sediment loads on the streams. Also considered was the potential for actions to increase flow quantities during storm events, and the addition of other measurable pollutants that would be detrimental to existing water quality. The thresholds for change to the intensity of an impact on water quality are defined as follows in Table 6-3.

Table 6-3. Water Quality Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts are chemical, physical, or biological effects that would not be detectable, would be well within water quality standards or criteria, and would be within historical or desired water quality conditions.
Minor	Impacts (chemical, physical, or biological effects) would be detectable but would be well within water quality standards or criteria and within historical or desired water quality conditions.
Moderate	Impacts (chemical, physical, or biological effects) would be readily detectable but would be at or within water quality standards or criteria and within historical or desired water quality conditions.
Major	Impacts (chemical, physical, or biological effects) would be detectable and would be regularly above water quality standards or criteria and within historical or desired water quality conditions.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Water Quality

There are three streams that flow through George Washington Carver National Monument and two spring branches that are completely contained within the park. Carver Branch, Harkins Branch, and Williams Branch are all tributaries of Shoal Creek. Williams Spring is currently inundated by Williams Pond. Carver Spring consists of a very short spring branch that flows into Carver Branch. The condition of the streams within the park is generally good. Protection of surface water and ground water is a management priority and water quality currently meets or exceeds all applicable water quality standards. NPS-permitted programs and facilities are currently maintained and operated to avoid pollution of surface water and groundwater. Under this alternative, this protection will continue with the current management and maintenance strategies in place.

The current landscape patterns of spatial organization composed in part of riparian woodlands along stream corridors, will also be perpetuated. Williams Pond would remain in its current configuration. Maintenance of existing water systems and features would continue as well as protection of water resources. Under this alternative, the strategy for the maintenance and management of the stream banks or any expanded management or maintenance for Williams Pond would not be in place. Overall this alternative would have *park-wide, long-term, negligible, and adverse impacts* on water quality.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, minor, and adverse impacts on water quality. Some of these actions include: routine utility repair, replacement, and new installation; small -scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams and Williams Pond. The overall cumulative impacts to water quality from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusions

The No Action alternative would have park-wide, long-term, negligible, and adverse impacts on water quality. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Elements Common to the Action Alternatives on Water Quality

The following proposed actions common to all would impact water quality at George Washington Carver National Monument :

- Management of forests to remove invasive species and enhance interpretation from expanded trails

- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation.
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches.
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas.
- Maintenance and management of Harkins Woods.
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management.
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees.
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources.
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition.
- Restoration of the persimmon grove along Carver Trail.
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road

- Expansion of the trail system to enhance interpretation.
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*.
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and eastern opening.

Implementing some proposed construction or management strategies would result in *local, short-term, negligible, and adverse impacts* on water quality during implementation. Proposed actions such as continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation; preservation and maintenance of conservation land uses to protect water resources; preservation, management, and interpretation of Carver Spring and the three streams – Carver, Harkins, and Williams branches; and other expanded natural and cultural resource preservation, management, and maintenance strategies would result in *long-term, moderate, and beneficial impacts* on water quality.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Water Quality

There are three streams that flow through George Washington Carver National Monument and two spring branches that are completely contained within the park. Carver Branch, Harkins Branch, and Williams Branch are all tributaries of Shoal Creek. Williams Spring is currently inundated by Williams Pond. Carver Spring consists of a very short spring branch that flows into Carver Branch. Condition of the streams in the park is generally good. Protection of surface water and ground water is a management priority and currently

water quality meets or exceeds all applicable water quality standards. NPS-permitted programs and facilities are currently maintained and operated to avoid pollution of surface water and groundwater. Under Alternative 2, protection will be expanded to include the stabilization of the stream banks and preservation of landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors. Management strategies will address Williams Pond as well and the springs. Extended monitoring for water quality will also continue. Alternative 2 would have *park-wide, long-term, minor, and beneficial impacts* on water quality.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts to water quality from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, minor, and beneficial.

Conclusion

Treatment Alternative 2 would have park-wide, long-term, minor, and beneficial impacts on water quality from restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be park-wide, long-term, minor, and beneficial.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Water Quality

There are three streams that flow through George Washington Carver National Monument and two spring branches that are completely contained within the park. Carver Branch, Harkins Branch, and Williams Branch are all tributaries of Shoal Creek. Williams Spring is currently inundated by Williams Pond. Carver Spring consists of a very short spring branch that flows into Carver Branch. Condition of the streams in the park is generally

good. Protection of surface water and ground water is a management priority and currently water quality meets or exceeds all applicable water quality standards. NPS-permitted programs and facilities are currently maintained and operated to avoid pollution of surface water and groundwater.

Under Alternative 3, protection will be expanded to include the stabilization of the stream banks and preservation of landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors. Management strategies will address Williams Pond as well and the springs. Extended monitoring for water quality will also continue. Alternative 3 would have *park-wide, long-term, minor, and beneficial impacts* on water quality.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on water quality from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, minor, and beneficial.

Conclusion

Treatment Alternative 3 would have park-wide, long-term, minor, and beneficial impacts on water quality from restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be park-wide, long-term, minor, and beneficial.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Water Quality

There are three streams that flow through George Washington Carver National Monument and two spring branches that are completely contained within the park. Carver Branch, Harkins Branch, and Williams Branch are all tributaries of Shoal

Creek. Williams Spring is currently inundated by Williams Pond. Carver Spring consists of a very short spring branch that flows into Carver Branch. Condition of the streams in the park is generally good. Protection of surface water and ground water is a management priority and currently water quality meets or exceeds all applicable water quality standards. NPS-permitted programs and facilities are currently maintained and operated to avoid pollution of surface water and groundwater.

Under Alternative 4, protection will be expanded to include the stabilization of the stream banks and preservation of landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors. Management strategies will address Williams Pond as well and the springs. Extended monitoring for water quality will also continue. Alternative 4 would have *park-wide, long-term, minor, and beneficial impacts* on water quality.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on water quality from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, minor, and beneficial.

Conclusion

Treatment Alternative 4 would have park-wide, long-term, minor, and beneficial impacts on water quality from restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be park-wide, long-term, minor, and beneficial.

6.4.4 Wildlife and Wildlife Habitat

Impact Intensity Threshold

Fauna associated with George Washington Carver National Monument are typical of old fields and disturbed woodlands in the Ozark Highlands. Wildlife consists mainly of a variety of birds, fish, and small mammals.

Impacts on wildlife are closely related to impacts on habitat. The analysis considered whether actions would be likely to displace some or all individuals of a species in the park or would result in loss or creation of habitat conditions needed for the viability of local or regional populations. Impacts associated with wildlife could include any change in roosting or foraging areas, food supply, protective cover, or distribution or abundance of species.

Impact analysis on wildlife and wildlife habitat was based on previous studies completed for the park. Changes in land cover, land use, management practices, and the amount of impervious surface that would occur in association with the proposed alternatives have been considered for their potential to impact wildlife and wildlife habitat at the park. The thresholds of change to the intensity of an impact on wildlife are defined as follows in Table 6-4.

Table 6-4. Wildlife and Wildlife Habitat Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Terrestrial wildlife and their habitats would not be impacted, or the impacts would be at or below the level of detection and would not be measurable or of perceptible consequence to wildlife populations.
Minor	Adverse impacts on wildlife or habitat would be measurable or perceptible, but localized within a small area. For adverse impacts, the mortality of an individual animal might occur but the viability of wildlife populations would not be impacted, and the community, if left alone, would recover.
Moderate	A change to terrestrial wildlife populations or habitat would occur over a relatively large area. The change would be readily measurable in terms of abundance, distribution, quantity, or quality of population. Mitigation measures would be necessary to offset adverse impacts, and they would likely be successful.
Major	Impacts on terrestrial wildlife populations or habitat would be readily apparent, and would substantially change wildlife populations over a large area in and out of the park. Extensive mitigation would be needed to offset adverse impacts, and the success of mitigation measures could not be ensured.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Wildlife and Wildlife Habitat

Under Alternative 1 No Action, there would be little change in the character and management of George Washington Carver National Monument. Existing habitat would remain in place to continue to support populations of birds, mammals, and reptiles that currently use the site. There would be no changes to vegetation or new construction projects to jeopardize the important habitats on the site. Invasive plant stands are expected to increase, diminishing slightly the diversity of the plant community and thereby potential wildlife habitat. Over time, the existing successional forest

would continue to mature, and may provide additional habitat for some species of interest. This alternative would have *park-wide, long-term, minor, and adverse impacts* on wildlife and wildlife habitat.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, minor, and adverse impacts on wildlife and wildlife habitat. Some of these actions include: routine utility repair, replacement, and new installation; small scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams and Williams Pond. The overall cumulative impacts on wildlife and wildlife habitat from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor, and adverse.

Conclusions

The No Action Alternative would have park-wide, long-term, minor, and adverse impacts on wildlife and wildlife habitat. Cumulative effects would be park-wide, short-term, minor, and adverse.

Impacts of Elements Common to the Action Alternatives on Wildlife and Wildlife Habitat

The following proposed actions common to all would impact wildlife and wildlife habitat at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches

- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources.
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National*

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- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening

Implementing construction of overflow parking, restoration of the persimmon grove, and expansion of the trail system would result in *park-wide, short-term, minor, and adverse impacts on wildlife and wildlife habitat*, because some vegetation including grasslands would be displaced, exposed or disturbed. BMPs would be implemented during construction and other soil disturbing activities such as tree removal, to minimize impacts to wildlife habitat.

Long term, moderate, and beneficial impacts on wildlife and wildlife habitat would occur with the implementation of the preservation, management and maintenance strategies for conservation land use, wet prairie areas, water resources, and restoration of the grassland prairie.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Wildlife and Wildlife Habitat

Changes in land cover, land use, management practices, and the amount of impervious surface that would occur in association with the proposed alternatives have been considered for their potential to impact wildlife and wildlife habitat in the park. Implementing construction of overflow parking, restoration of the persimmon grove, and expansion of the trail system would impact wildlife and habitat because some vegetation including grasslands would be displaced, exposed or disturbed. BMPs would be implemented during construction and other soil disturbing activities such as tree removal, to minimize impacts on wildlife habitat. Alternative 2 would result in *park-wide, short-term, minor, and adverse impacts on wildlife and wildlife habitat*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on wildlife and wildlife habitat from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor, and adverse.

Conclusion

Treatment Alternative 2 would have park-wide, short-term, minor, and adverse impacts on wildlife and wildlife habitat from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be park-wide, short-term, minor, and adverse.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Wildlife and Wildlife Habitat

Changes in land cover, land use, management practices, and the amount of impervious surface that would occur in association with the proposed alternatives have been considered for their potential to impact wildlife and wildlife habitat in the park. Implementing construction of overflow parking, restoration of the persimmon grove, expansion of the trail system, and thinning of woodlands for installation of economic-botanical plantings would impact wildlife and habitat due to short-term displacement of vegetation and expanded woodland management strategies. BMPs would be implemented during construction and other soil disturbing activities such as tree removal, to minimize impacts to wildlife habitat. Alternative 3 would result in **park-wide, short-term, minor, and adverse impacts** on wildlife and wildlife habitat.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on wildlife and wildlife habitat from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor, and adverse.

Conclusion

Treatment Alternative 3 would have park-wide, short-term, minor, and adverse impacts on wildlife and wildlife habitat from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be park-wide, short-term, minor, and adverse.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Wildlife and Wildlife Habitat

Changes in land cover, land use, management practices, and the amount of impervious surface that would occur in association with the proposed alternatives have been considered for their potential to impact wildlife and wildlife habitat in the park. Implementing construction of overflow parking, restoration of the persimmon grove, expansion of the trail system, and thinning of woodlands for installation of plantings known to Carver would impact wildlife and habitat due to short-term displacement of vegetation and expanded woodland management strategies. BMPs would be implemented during construction and other soil disturbing activities such as tree removal, to minimize impacts to wildlife habitat. Alternative 4 would result in **park-wide, short-term, minor, and adverse impacts** on wildlife and wildlife habitat.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on wildlife and wildlife habitat from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor, and adverse.

Conclusion

Treatment Alternative 4 would have park-wide, short-term, minor, and adverse impacts on wildlife and wildlife habitat from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be park-wide, short-term, minor, and adverse.

6.4.5 Rare, Threatened, and Endangered Species

Impact Intensity Thresholds

There are no federally endangered or threatened species known to occur within George Washington Carver National Monument, although several state-listed species of special concern have been documented on site. One rare fish species, the Arkansas Darter, has been a candidate for federal listing as a threatened or endangered species and is considered a species of conservation concern by the State of Missouri.

Impact analysis for rare, threatened, and endangered species was based on informal consultation with U.S. Fish and Wildlife Service and previous studies completed for the park. Changes in land cover, land use, vegetation management practices, and the amount of impervious surface that would occur in association with the proposed alternatives have been considered for their potential to impact candidates for Federal listing and also species of concern. The thresholds of change to the intensity of an impact

on rare, threatened and endangered species are defined as follows in Table 6-5.

Table 6-5. Rare, Threatened, and Endangered Species Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Rare, threatened, or endangered species and their associated habitats would not be impacted, or the impacts would be at or below the level of detection and would not be measurable or of perceptible consequence to plant or animal populations.
Minor	Adverse impacts on plants, wildlife, or associated habitats would be measurable or perceptible, but localized within a small area. For adverse impacts, the mortality of an individual plant or animal might occur but the viability of biotic populations of concern would not be impacted, and the community, if left alone, would recover.
Moderate	A change to plant or wildlife populations or their associated habitat would occur over a relatively large area. The change would be readily measurable in terms of abundance, distribution, quantity, or quality of population. Mitigation measures would be necessary to offset adverse impacts, and they would likely be successful.
Major	Impacts on terrestrial wildlife populations or habitat would be readily apparent, and would substantially change wildlife populations over a large area in and out of the park. Extensive mitigation would be needed to offset adverse impacts, and the success of mitigation measures could not be ensured.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Rare, Threatened, and Endangered Species

Under Alternative 1 No Action, there would be little change in park character and management. Existing habitat would remain in place and continue to support populations of birds, mammals, reptiles and fish that currently inhabit

the site and the water resources on the site. The quality of the water is most important to the identified species of fish, the Arkansas Darter, as a candidate for federal listing and a species of concern in the State of Missouri. There would be no change to vegetation or new construction projects generating expanded storm water runoff to the streams. A strategy would need to be put in place in order to address the condition of the stream banks as erosion and runoff could affect water quality and the Arkansas Darter habitat.

Overall this alternative would have *local, long-term, negligible, and adverse impacts* on rare, threatened, and endangered species.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, minor, and adverse impacts on rare, threatened and endangered species. Some of these actions include: routine utility repair, replacement, and new installation; small scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams and Williams Pond. The overall cumulative impacts on rare, threatened and endangered species from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusions

The No Action alternative would have local, long-term, negligible, and adverse impacts on rare, threatened, and endangered species. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Elements Common to the Action Alternatives on Rare, Threatened, and Endangered Species

The following proposed actions common to all would impact rare, threatened, and endangered species at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the develop core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail

- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect intended original stone stacking methods and the eastern opening

Implementing construction of overflow parking, restoration of the persimmon grove, removal of invasive species, and expansion of the trail system would result in *local, short-term, minor, and adverse impacts on rare, threatened and endangered species*, because some vegetation including invasive species in stream corridors would be displaced, exposed or disturbed. BMPs would be implemented during construction and other soil disturbing activities such as tree and vegetation removal, to minimize impacts to water and terrestrial habitats of rare, threatened, and endangered species. *Long term, moderate, and beneficial impacts* on rare, threatened, and endangered species would occur with the implementation of the preservation, management and maintenance strategies for conservation land use, wet prairie areas, water resources, and restoration of the grassland prairie.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Rare, Threatened, and Endangered Species

There are no federally endangered or threatened species known to occur within George Washington Carver National Monument,

although several state-listed species of special concern have been documented within the site. One rare fish species, the Arkansas Darter, has been a candidate for federal listing as a threatened or endangered species and is considered a species of conservation concern by the State of Missouri. Implementing construction of overflow parking, restoration of the persimmon grove, removal of invasive species, expanded woodland management, and stream, spring and pond management, would result in potential impacts due to displacement of vegetation along stream corridors and subsequent effects on water quality. BMPs would be implemented during construction and other soil disturbing activities such as tree and vegetation removal, to minimize impacts to water and terrestrial habitats of rare, threatened, and endangered species. Alternative 2 would result in *local, short-term, minor, and adverse impacts on rare, threatened, and endangered species*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on rare, threatened, and endangered species from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusion

Treatment Alternative 2 would have local, short-term, minor, and adverse impacts on rare, threatened, and endangered species from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Rare, Threatened, and Endangered Species

There are no federally endangered or threatened species known to occur within George Washington Carver National Monument, although several state-listed species of special concern have been documented within the site. One rare fish species, the Arkansas Darter, has been a candidate for federal listing as a threatened or endangered species and is considered a species of conservation concern by the State of Missouri. Implementing construction of overflow parking, restoration of the persimmon grove, removal of invasive species, expanded woodland management, and stream, spring and pond management, would result in potential impacts due to displacement of vegetation along stream corridors and subsequent effects on water quality. BMPs would be implemented during construction and other soil disturbing activities such as tree and vegetation removal, to minimize impacts on water and terrestrial habitats of rare, threatened, and endangered species. Alternative 3 would result in *local, short-term, minor, and adverse impacts on rare, threatened, and endangered species.*

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on rare, threatened, and endangered species from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusion

Treatment Alternative 3 would have local, short-term, minor, and adverse impacts on rare, threatened, and endangered species from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland

corridors surrounding the streams. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Rare, Threatened, and Endangered Species

There are no federally endangered or threatened species known to occur within George Washington Carver National Monument, although several state-listed species of special concern have been documented within the site. One rare fish species, the Arkansas Darter, has been a candidate for federal listing as a threatened or endangered species and is considered a species of conservation concern by the State of Missouri. Implementing construction of overflow parking, restoration of the persimmon grove, removal of invasive species, expanded woodland management, and stream, spring and pond management, would result in potential impacts due to displacement of vegetation along stream corridors and subsequent effects on water quality. BMPs would be implemented during construction and other soil disturbing activities such as tree and vegetation removal, to minimize impacts on water and terrestrial habitats of rare, threatened, and endangered species. Alternative 4 would result in *local, short-term, minor, and adverse impacts on rare, threatened, and endangered species.*

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on rare, threatened, and endangered species from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusion

Treatment Alternative 4 would have local, short-term, minor, and adverse impacts on rare,

threatened, and endangered species from construction of new interpretive features, enhanced interpretation, trail expansion, restoration of stream banks, management strategies for Williams Pond and the springs and streams, and management of the woodland corridors surrounding the streams. Cumulative effects would be local, short-term, minor, and adverse.

6.4.6 Wetlands

Impact Intensity Threshold

Several areas of George Washington Carver National Monument experience wet conditions throughout much of the year. This is true for identified wet prairie areas located in the southwest and south-central areas of the park, and are particularly notable due to their diversity of plants that are only found in damp areas. Williams Pond, although an artificially created impoundment, is a site that has become the location for some of the most unique plants within the park. There are no wetlands delineated within the park on the National Wetlands Inventory (NWI) mapping conducted by the U.S. Fish and Wildlife Service.

Impact analysis on significant wet prairie areas of the site and Williams Pond was based on previous resource management studies. Changes in land cover, management practices, and the amount of impervious surface that would occur in association with the proposed alternatives have been considered for their potential to impact the significant wet prairie areas and Williams Pond. The thresholds for change to the intensity of an impact on wetlands are defined as follows in Table 6-6.

Table 6-6. Wetlands Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts to wetlands would be below or at the lower levels of detection.
Minor	Impacts to wetlands would be detectable and relatively small in terms of area and the nature of change. The actions would impact a limited number of individual plant or wildlife species within the wetlands.
Moderate	The impacts to wetlands would be readily apparent over a relatively small area, but the impact could be mitigated by restoring previously degraded wetlands. The action would have a measurable impact on plant or wildlife species within the wetlands, but all species would remain indefinitely viable.
Major	The impacts to wetlands would be readily apparent over a relatively large area. The action would have measurable consequences for the wetland area that could not be mitigated. Wetland species dynamics would be upset, and plant and/or animal species would be at risk of extirpation for the area.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Wetlands

There are three identified wet prairie areas located in the southwest and south-central areas of the park, and are particularly notable due to the diversity of plants found only in damp areas. Williams Pond, has become the location for some of the most unique plants within the park boundaries. Many species of sedges and grasses, as well as forbs are found only in these areas. Under this alternative, these wetland prairie areas and Williams Pond would continue to be maintained under the existing natural resource management programs in place at the park. Current strategies do not fully address the comprehensive management and maintenance of Williams Pond, which could result in minor disturbance to plant species around the pond. The wet prairie areas and associated wetland plants would be preserved and protected by current management strategies in the

prairie restoration and management plan. Overall this alternative would have *local, short-term, negligible, and adverse impacts* on wetlands.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, minor, and adverse impacts on wetlands. Some of these actions include: routine utility repair, replacement, and new installation; small scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams and Williams Pond. The overall cumulative impacts on wetlands from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusions

The No Action Alternative would have local, short-term, negligible, and adverse impacts on wetlands. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Elements Common to the Action Alternatives on Wetlands

The following proposed actions common to all would impact wetlands at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community

composition found only in seasonally wet areas

- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect

original stone stacking methods and the eastern opening

Implementing some proposed construction or management strategies, would result in *short-term, minor, and adverse impacts* on wetlands during implementation. Continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of woodlands to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies would result in *long-term, moderate, and beneficial impacts* on wetlands.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Wetlands

There are identified wet prairie areas located in the southwest and south-central areas of the park, and are particularly notable due to the diversity of plants that are only found in damp areas. Williams Pond, has become the location for some of the most unique plants within the park boundaries. Many species of sedges and grasses, as well as forbs are found only in these areas. In Alternative 2, these wetland prairie areas and Williams Pond are preserved and managed under the existing strategies for the prairie restoration. Land use in the area of the wetlands does not change in this Alternative. Alternative 2 would have **local, short-term, negligible and adverse impacts** on wetlands.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on wetlands from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusion

Treatment Alternative 2 would have local, short-term, negligible, and adverse impacts on wetlands

from established prairie management strategies. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Wetlands

There are identified wet prairie areas located in the southwest and south-central areas of the park, and are particularly notable due to the diversity of plants that are only found in damp areas. Williams Pond, has become the location for some of the most unique plants within the park boundaries. Many species of sedges and grasses, as well as forbs are found only in these areas. Under this alternative, these wetland prairie areas and Williams Pond are part of the ongoing natural resource management programs in place at the park. Land use in the area of the wetlands does not change in this Alternative. Alternative 3 would have **local, short-term, negligible, and adverse impact** on wetlands.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on wetlands from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusion

Treatment Alternative 3 would have local, short-term, negligible, and adverse impacts on wetlands from established prairie management strategies. Cumulative effects would be local, short-term, minor, and adverse.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Wetlands

There are identified wet prairie areas located in the southwest and south-central areas of the park, and are particularly notable due to the diversity of plants that are only found in damp areas. Williams Pond, has become the location for some of the most unique plants within the park boundaries. Many species of sedges and grasses, as well as forbs are found only in these areas. In Alternative 4, the wetland prairie areas in unit 6 would be impacted by a change in prairie management. This unit will be mown hay and interpreted as part of preservation of the agrarian setting. The wetland plant diversity will be preserved, but short-term impacts may occur. Alternative 4 would have **local, short-term, minor, and adverse impacts** on wetlands.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on wetlands from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusion

Treatment Alternative 4 would have local, short-term, minor, and adverse impacts on wetlands from strategies for prairie management, including the mown hayfields in unit 6. Cumulative effects would be local, short-term, minor, and adverse.

6.4.7 Floodplains

Impact Intensity Threshold

There are three stream branches located within George Washington Carver National Monument. There is a great potential for flooding along Carver Branch, with the extensive agricultural use within its 3-mile drainage area and the 100-foot elevation drop between its source and the park entrance. Current laws and policies require that the following conditions be achieved in the park: minimize destruction, loss, or degradation of wetlands and floodplains; and preserve their natural and beneficial values. NPS has adopted a policy of preserving floodplain values and minimizing potentially hazardous conditions associated with flooding.

Impact analysis on significant floodplains associated with the three stream branches that occur within the park was based on previous studies by HTLN, the *Resources Management Plan* and numerous other natural resource studies. Changes in land cover, management practices, and the amount of impervious surface that would occur in association with the proposed alternatives have been considered for their potential to impact floodplains within park. The thresholds of change to the intensity of an impact are defined as follows in Table 6-7.

Table 6-7. Floodplains Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Changes in the ability of a floodplain to convey floodwaters, or its values and functions would be undetectable. Project would not contribute to enhancing flood events.
Minor	Changes in the ability of a floodplain to convey floodwaters, or its values and functions, would be measurable and local. Projects could contribute to the flood. The impact could be mitigated by modification of proposed facilities in floodplains.
Moderate	Changes in the ability of a floodplain to convey floodwaters, or its values and functions, would be measurable and local. Projects could contribute to the flood. The impact could be mitigated by modification of proposed facilities in floodplains.
Major	Changes in the ability of a floodplain to convey floodwaters, or its values and functions, would be measurable and widespread. Projects would contribute to the flood. The impact could not be mitigated by modification of proposed facilities in floodplains.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Floodplains

Under Alternative 1 (No Action), protection of floodplains will continue with the current management and maintenance strategies in place. The current landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors and floodplains, will also be perpetuated. Williams Pond would remain in its current configuration. Maintenance of existing water systems and features would continue as well as protection of water resources. Under this alternative, there would remain no comprehensive management strategy that would address the stabilization of the stream banks or the removal of invasive species or other dead or unhealthy vegetation within the floodplains of the streams and springs. Also under this alternative, expanded management or maintenance for Williams Pond is not addressed.

Overall this alternative would have *local, long-term, minor, and adverse impacts* on floodplains.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, minor, and adverse impacts on floodplains. Some of these actions include: routine utility repair, replacement, and new installation; small scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams and Williams Pond. The overall cumulative impacts on floodplains from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, minor, and adverse.

Conclusions

The No Action Alternative would have local, long-term, minor, and adverse impacts on floodplains. Cumulative effects would be local, long-term, minor, and adverse.

Impacts of Elements Common to the Action Alternatives on Floodplains

The following proposed actions common to all would impact floodplains at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails.
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation.
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches.
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community

composition found only in seasonally wet areas.

- Maintenance and management of Harkins Woods.
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management.
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees.
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources.
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition.
- Restoration of the persimmon grove along Carver Trail.
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road.
- Expansion of the trail system to enhance interpretation.
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*.
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect

original stone stacking methods and the eastern opening.

Implementing some proposed construction or management strategies, would result in *local, short-term, minor, and adverse impacts* on floodplains during implementation. Continued natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of woodlands to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies would result in *long-term, moderate, and beneficial impacts* on floodplains.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Floodplains

Under Alternative 2 there would be stream bank restoration and management of corridor woodlands along the streams and into the floodplain. The current landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors and floodplains, will also be perpetuated. Williams Pond would remain in its current configuration. Maintenance of existing water systems and features would continue as well as protection of water resources. Under this alternative, there would be a comprehensive management strategy that would address the stabilization of the stream banks and the removal of invasive species or other dead or unhealthy vegetation within the floodplains of the streams and springs. Also under this alternative, expanded management and maintenance for Williams Pond is addressed. Overall this alternative would have *local, long-term, moderate, and beneficial impacts* on floodplains.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on floodplains from Alternative 2 in combination with past, present,

and reasonably foreseeable future actions would be local, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 2 would have local, long-term, moderate, and beneficial impacts on floodplains from expanded natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of woodlands to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies. Cumulative effects would be local, long-term, moderate, and beneficial.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Floodplains

Under Alternative 3 there would be stream bank restoration and management of corridor woodlands along the streams and into the floodplain. The current landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors and floodplains, will also be perpetuated. Williams Pond would remain in its current configuration. Maintenance of existing water systems and features would continue as well as protection of water resources. Under this alternative, there would be a comprehensive management strategy that would address the stabilization of the stream banks and the removal of invasive species or other dead or unhealthy vegetation within the floodplains of the streams and springs. Also under this alternative, expanded management and maintenance for Williams Pond is addressed. Overall this alternative would have *local, long-term, moderate, and beneficial impacts* on floodplains.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on floodplains from Alternative 3 in combination with past, present,

and reasonably foreseeable future actions would be local, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 3 would have local, long-term, moderate, and beneficial impacts on floodplains from expanded natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of woodlands to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies. Cumulative effects would be local, long-term, moderate, and beneficial.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Floodplains

Under Alternative 4 there would be stream bank restoration and management of corridor woodlands along the streams and into the floodplain. The current landscape patterns of spatial organization composed in part by riparian woodlands along stream corridors and floodplains, will also be perpetuated. Williams Pond would remain in its current configuration. Maintenance of existing water systems and features would continue as well as protection of water resources. Under this alternative, there would be a comprehensive management strategy that would address the stabilization of the stream banks and the removal of invasive species or other dead or unhealthy vegetation within the floodplains of the streams and springs. Also under this alternative, expanded management and maintenance for Williams Pond is addressed. Overall this alternative would have *local, long-term, moderate, and beneficial impacts* on floodplains.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on floodplains from

Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be local, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 4 would have local, long-term, moderate, and beneficial impacts on floodplains from expanded natural resource management of restored grassland prairie for health, diversity, and soil and water conservation and management of woodlands to remove invasive species and other expanded natural and cultural resource preservation, management, and maintenance strategies. Cumulative effects would be local, long-term, moderate, and beneficial.

6.5 Cultural Resources

6.5.1 Cultural Landscapes

Impact Intensity Threshold

In order for a cultural landscape to be listed in the National Register, it must possess significance (the meaning or value ascribed to the landscape) and retain the integrity of those features necessary to convey its significance as well as meet one or more of National Register criteria (36 CFR 63). The character-defining features in the identified cultural landscape included spatial organization and land patterns, topography, vegetation, circulation patterns, water features, structures/buildings, and site furnishings and objects. Individual features are not examined alone, but in relation to the overall landscape. The arrangement and interrelationship of the cultural landscape’s organizational elements and character-defining features provided the key to determination of potential impacts and effects of the proposed actions presented in the project alternatives. The thresholds of change to the intensity of an impact on cultural landscapes are defined in Table 6-8.

Table 6-8. Cultural Landscapes Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts would be at the lowest level of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be no adverse effect.
Minor	Alternation of a historic structure or a pattern(s) or features(s) of the landscape would not diminish the overall integrity of the resource. The determination of effect for Section 106 would be no adverse effect.
Moderate	Alteration of a historic structure or a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. A programmatic agreement is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the advisory council, in accordance with 36 CFR 800.6(b). Measures identified in the programmatic agreement to minimize or mitigate adverse impacts reduce the intensity of the impact and NEPA from moderate to minor.
Major	Alteration of a historic structure or a pattern(s) of the landscape would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed on, and the NPS and applicable state or tribal historic preservation officer and/or advisory council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Cultural Landscapes

Alternative 1, the No Action Alternative focuses on preservation of the existing character of the George Washington Carver National Monument landscape and current interpretive programs. Visitors would continue to gain the majority of their knowledge of the life and accomplishments of Carver through the exhibits located within the visitor center and along the mile-long Carver Trail. Under this alternative, no further exploration of ways to utilize the cultural landscape as a tool for interpreting Carver's life and accomplishments would be conducted. This alternative would limit the park in its ability to explain the historical context within which George Washington Carver grew up and his efforts to get an education. This alternative would also limit the park's ability to rehabilitate the landscape and its associated structures to enhance the memorial nature of the site. This alternative would have *park-wide, long-term, minor, and adverse impacts* on cultural landscapes.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term and negligible adverse impacts on cultural landscapes. Some of these actions include: continued prairie restoration and stabilization; small scale construction and excavation for fulfillment of accessibility requirements across the park; future preservation and interpretation management and changes, and conservation and management of the streams and Williams Pond. The overall cumulative impacts on cultural landscapes from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, negligible, and adverse.

Conclusions

The No Action Alternative would have park-wide, long-term, minor, and adverse impacts on cultural landscapes. Cumulative effects would be local, short-term, negligible, and adverse.

Impacts of Elements Common to the Action Alternatives on Cultural Landscapes

The following proposed actions common to all would impact cultural landscapes at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees

- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening

Implementation of rehabilitation and management strategies for land use, historic features, and integration of the cultural landscape with park-wide interpretation would have *park-wide, long-term, major, and beneficial impacts* on the cultural landscape. Actions common to the alternatives 2, 3, and 4 fall under the comprehensive treatment approach of rehabilitation. Under the rehabilitation treatment, stabilization, protection, and preservation of historic and natural resources are actions that must occur in order to allow for the limited accommodation of new uses.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Cultural Landscapes

This rehabilitation alternative suggests enhancing the ability of the park to tell the story of George Washington Carver's experiences by re-establishing and interpreting missing nineteenth century features and lifeways. Features anticipated to include are a persimmon grove, walnut tree fence rows, fruit orchard, the farmstead area, the rural agricultural setting, and hayfields. There would be interpretation the accurate location of the birthplace cabin and Moses Carver house and farmstead based on further research and investigation using foundation outlines and mow patterns. This alternative would also include thinning and management of woodland to depict historic savanna-like character. These activities would improve the cultural landscape and establish a clear connection between Carver's life and achievements and the historic landscape of the farm. Alternative 2 would have **park-wide, long-term, major, and beneficial impacts** on the cultural landscape.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on the cultural landscape from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, major, and beneficial.

Conclusion

Treatment Alternative 2 would have park-wide, long-term, major, and beneficial impacts on the cultural landscape from woodland management, restoration and interpretation of former farm features, and plant and interpretive installations. Cumulative effects would be park-wide, long-term, major, and beneficial.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Cultural Landscapes

The focus of this rehabilitation alternative would be the interpretation of George Washington Carver's work and career through plants known to have been the focus of his experiments and scientific exploration. Plants would be featured along park trails to enhance interpretation of Carver's achievements. Thinning of woodlands would occur to allow for the planting of economic- botanical species such as the persimmon grove, known to the young Carver on the farm and used in his later experiments. There would also be expansion of the trail system into additional acres of the property to provide interpreted economic-botanical plantings and an interpreted environmental trail through Harkins Woods. Alternative 3 would have **park-wide, long-term, moderate, and beneficial impacts** on the cultural landscape.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on the cultural landscape from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 3 would have park-wide, long-term, moderate, and beneficial impacts on the cultural landscape due to woodland management, economic- botanical plantings and interpretation and trail expansion to include environmental interpretation in Harkins Woods. Cumulative effects would be park-wide, long-term, moderate, and beneficial.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Cultural Landscapes

Alternative 4 blends the concept of plantings known to Carver with site specific enhancement of the interpretive programming involving the nineteenth century Moses Carver farm known to George Washington Carver, and enhanced environmental education opportunities involving trail expansion and justification for on-going prairie restoration activities to honor Carver's conservation work. This alternative focuses on interpretation of several features known to have been present on the farm during Carver's boyhood that are no longer extant to convey the scale, arrangement, orientation and elements of the historic farmstead. It also includes mowing of two prairie units to interpret the agrarian setting and managing riparian woodlands as gallery forests. This alternative also includes planting of a heritage fruit orchard and the persimmon grove to interpret one of the key features described by Carver from his childhood. Alternative 4 would have **park-wide, long-term, major, and beneficial impacts** on the cultural landscape.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on the cultural landscape from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, major, and beneficial.

Conclusion

Treatment Alternative 4 would have park-wide, long-term, major, and beneficial impacts on the cultural landscape from woodland management, installation of plantings known to Carver and interpretation and trail expansion to include

environmental interpretation in Harkins Woods, and delineation and interpretation of the former farmstead of Carver's childhood. Cumulative effects would be park-wide, long-term, major, and beneficial.

6.5.2 Historic Buildings and Structures

Impact Intensity Threshold

NEPA impacts and NHPA Section 106 effects on historic structures are assessed with reference to guidance contained in 36 CFR part 800 regarding historic properties. In general, an adverse impact or effect is recognized through a consideration of its ability to diminish or destroy the character-defining features, those features that convey the structure's significance. The ability of a structure to convey significance is known as integrity. As defined by the NHPA, there are seven aspects of integrity: location, design, setting, materials, workmanship, feeling and association. Five of these aspects relate mainly to physical impacts or effects, such as alteration or demolition of historic structures. Physical impacts or effects on historic buildings and structures are not anticipated under any of the proposed alternatives. The thresholds of change to the intensity of an impact on historic buildings and structures are defined in Table 6-9.

Table 6-9. Historic Buildings and Structures Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts would be at the lowest level of detection with neither adverse nor beneficial consequences. The determination of effect for section 106 would be no adverse effect.
Minor	Alteration of a historic structure would not diminish the overall integrity of the resource. The determination of effect for Section 106 would be no adverse effect.
Moderate	Alteration of a historic structure would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. A programmatic agreement is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the advisory council, in accordance with 36 CFR 800.6(b). Measures identified in the programmatic agreement to minimize or mitigate adverse impacts reduce the intensity of the impact and NEPA from moderate to minor.
Major	Alteration of a historic structure would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed on, and the NPS and applicable state or tribal historic preservation officer and/or advisory council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Historic Buildings and Structures

Alternative 1, the No Action Alternative focuses on preservation of the existing character of the George Washington Carver National Monument landscape and current interpretive programs. Visitors would continue to gain the majority of their knowledge of the life and accomplishments of Carver through the exhibits located within the visitor center and along the mile-long Carver Trail.

Historic structures and buildings such as the Moses Carver house and the Carver family cemetery perimeter wall would continue to be preserved through continued management and maintenance strategies currently in place at the national monument. There would be no changes to historic buildings and structures under this alternative. The alternative would limit the park's ability to rehabilitate the landscape and its associated buildings and or structures to enhance the memorial nature of the site. This alternative would have *local, long-term, negligible, and adverse impacts* on historic buildings and structures.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term and negligible adverse impacts on historic buildings and structures. Some of these actions include: small scale construction and excavation for fulfillment of accessibility requirements across the park and in association with the Moses Carver house and future preservation and interpretation actions. The overall cumulative impacts on historic buildings and structures from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, negligible, and adverse.

Conclusions

The No Action Alternative would have local, long-term, negligible, and adverse impacts on historic buildings and structures. Cumulative effects would be local, short-term, negligible, and adverse.

Impacts of Elements Common to the Action Alternatives on Historic Structures

The following proposed actions common to all would impact historic buildings and structures at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas.
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road

- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening

Implementation of construction projects such as provision of universal accessibility to the Moses Carver house and to the Carver family cemetery would have *local, short-term, negligible, and adverse impacts* on historic buildings and structures. Implementation of rehabilitation and management strategies for land use, historic features, and integration of historic structures and buildings with park-wide interpretation would have *park-wide, long-term, major, and beneficial impacts* on historic buildings and structures. Actions common to Alternatives 2, 3, and 4 fall under the comprehensive treatment approach of rehabilitation. Under the rehabilitation treatment, stabilization, protection, and preservation of historic and natural resources are actions that must occur in order to allow for the limited accommodation of new uses.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Historic Buildings and Structures

The historic buildings and structures include the Moses Carver house, the Carver family cemetery perimeter wall and the stone boundary markers in the northwest and southwest corners of the George Washington Carver National Monument. In Alternative 2, these features are preserved, managed, and maintained, with enhanced interpretation. This alternative also includes

interpretation of the accurate location of the birthplace cabin and late period Moses Carver house based on further research and investigation using foundation outlines and mow patterns. Alternative 2 would have **local, long-term, moderate, and beneficial impacts** on historic buildings and structures.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on historic buildings and structures from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be local, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 2 would have local, long-term, moderate, and beneficial impacts on historic buildings and structures from preservation, management, repair, and maintenance of the building and structures and from sensitive accommodation of universal accessibility. Cumulative effects would be local, long-term, moderate, and beneficial.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Historic Buildings and Structures

The historic buildings and structures identified in Chapters 3 and 4 of this document include the Moses Carver house, the Carver family cemetery perimeter wall and the stone boundary markers in the northwest and southwest corners of the George Washington Carver National Monument. In Alternative 3, these features are preserved, managed, and maintained, with enhanced interpretation. Alternative 3 would have **local, long-term, moderate, and beneficial impacts** on historic buildings and structures.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on historic buildings and structures from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be local, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 3 would have local, long-term, moderate, and beneficial impacts on historic buildings and structures from preservation, management, repair and maintenance of the building and structures and from sensitive compliance techniques for accessibility. Cumulative effects would be local, long-term, moderate, and beneficial.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Historic Buildings and Structures

The historic buildings and structures identified in Chapters 3 and 4 of this document include the Moses Carver house, the Carver family cemetery perimeter wall and the stone boundary markers in the northwest and southwest corners of the George Washington Carver National Monument. In Alternative 4, these features are preserved, managed, and maintained, with enhanced interpretation. This alternative also includes interpretation of the accurate location of the birthplace cabin and Moses Carver house precinct based on further research and investigation using foundation outlines and mow patterns. Alternative 4 would have **local, long-term, moderate, and beneficial impacts** on historic buildings and structures.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on historic buildings and structures from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be local, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 4 would have local, long-term, moderate, and beneficial impacts on historic buildings and structures from preservation, management, repair and maintenance of the building and structures and from sensitive compliance techniques for accessibility. Cumulative effects would be local, long-term, moderate, and beneficial.

6.5.3 Archeological Resources

Impact Intensity Threshold

Section 106 of the NHPA, and its implementing regulations under 36 CFR 800, require all federal agencies to consider the effects of federal actions on cultural properties eligible for or listed in the National Register of Historic Places. In order for an archeological/paleontological site to be listed in the National Register, it must contain information likely to yield knowledge of prehistory or history, and the information must be considered important. The site or property must have characteristics suggesting the likelihood that it possesses configurations of artifacts, soil strata, structural remains, or other natural or cultural features that make it possible to test a hypothesis about events, groups, or processes in the past the bear on important research questions in the social or natural sciences or the humanities; or verify or amplify currently available information suggesting that a hypothesis is either true or false; or reconstruct the sequence of archeological cultures for the purpose of identifying and explaining continuities and discontinuities in the archeological record for a particular area.

The presence or absence of archeological sites in any region cannot be known before initiating an archeological field investigation. Accordingly, impacts on potential archaeological resources cannot be known beforehand. If an adverse effect on an archeological resource is identified, all effort will be made to mitigate that adverse effect before proceeding with landscape-disturbing activities. The thresholds of change to the intensity of an impact on archeological resources are defined in Table 6-10.

Table 6-10. Archeological Resources Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts would be at the lowest level of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be no adverse effect.
Minor	Alteration of an archeological site would not diminish the overall integrity of the resource. The determination of effect for Section 106 would be no adverse effect. Monitoring may be required if a proposed activity occurs near an archeological site.
Moderate	Alteration of an archeological site would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. A programmatic agreement is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the advisory council, in accordance with 36 CFR 800.6(b). Measures identified in the programmatic agreement to minimize or mitigate adverse impacts reduce the intensity of the impact and NEPA from moderate to minor.
Major	Alteration of an archeological site would diminish the overall integrity of the resource. The determination of effect for Section 106 would be adverse effect. Measures to minimize or mitigate adverse impacts cannot be agreed on, and the NPS and applicable state or tribal historic preservation officer and/or advisory council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Archeological Resources

Various archeological inventories have been conducted within the park since 1953, the most recent undertaken in 2014 in compliance with Section 110. Additional investigations at known lithic scatter sites would be useful in determining prehistoric site significance and providing

additional information about the long history of use and occupation of the property. Known sites are visited on a regular basis to assess their condition and document whether they are being subjected to any threats or disturbances. They are all currently listed in “good” condition and are in a good state of preservation.

Under Alternative 1 No Action, there would be no new ground-disturbing activities that would potentially affect archeological resources. Current levels of maintenance and repairs to historic buildings and structures and landscapes would continue. These activities do not typically include excavation. Because current management practices would continue and there would be no new impacts to archeological sites and artifacts, there would be *park-wide, long-term, negligible, and adverse impacts on* archeological resources.

For purposes of Section 106, there would be **no adverse effect**.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, negligible, and adverse impacts on archeological resources. Some of these actions include: continued prairie restoration and stabilization; small scale construction and excavation for fulfillment of accessibility requirements across the park; future preservation and interpretation management and changes, and conservation and management of the streams and Williams Pond. The overall cumulative impacts to archeological resources from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, negligible, and adverse.

Conclusions

The No Action Alternative would have park-wide, long-term, negligible, and adverse impacts on archeological resources. Cumulative effects would be park-wide, long-term, negligible, and adverse.

Impacts of Elements Common to the Action Alternatives on Archeological Resources

The following proposed actions common to all would impact archaeological resources at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the developed core on the site of the former

housing/administrative structures after planned demolition

- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one large space in the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening

Rehabilitation of the park to accommodate visitors and to improve or expand interpretation, may require implementation of construction projects to provide for universal accessibility to the Moses Carver house and existing trails, as well as the expansion of the trail system and some vegetation removal. These activities could potentially impact archeological resources if soil disturbance results in disruption of subsurface resources. The impacts would range from negligible to moderate adverse impacts depending on whether any currently unidentified archeological resources are discovered through implementation of the proposed actions. Prior to implementation of these actions, archeological investigation would have to be conducted and any ground disturbance monitored. There are known archeological resources on the site so any construction/implementation strategies would have *long-term, negligible to moderate, and adverse impacts* on potential archeological resources on the site. Proposed monitoring must be in place to reduce impacts to short-term, negligible, adverse

impacts and for the purposes of Section 106, no adverse effect.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Archeological Resources

Alternative 2 would include some ground disturbance for trail expansion, thinning of woodlands, and installation of new plantings. There would be ground disturbance during the demolition of the former housing/administrative structures and the subsequent development of the area for overflow parking. This would require installation of pervious pavers to stabilize the soil and re-establish ground cover on the site. Archeological investigation and research would also help determine the accurate location of the birthplace cabin and Moses Carver farm precinct. No known archeological sites would be disturbed in this alternative. To minimize potential adverse impacts, surveys would be conducted prior to ground-disturbing activities. Monitoring for subsurface artifacts would be conducted during ground-disturbing activities on the site. In the event that archeological resources are encountered, work would be stopped immediately and the park cultural resource specialist would be contacted. If necessary the SHPO and THPO would be consulted on potential adverse impacts and additional mitigation measures.

Alternative 2 includes ground disturbing activities with the potential to encounter and adversely impact previously unknown archeological resources. Potential adverse impacts would be minimized by pre-construction surveys and monitoring in areas with high potential for artifacts. With the mitigation measures, Alternative 2 would have **local, short-term, minor, and adverse impacts** on archeological resources.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on archeological resources from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, minor, and adverse with mitigation measures in place.

Conclusion

Treatment Alternative 2 would have local, short-term, minor, and adverse impacts on archeological resources from various ground disturbing activities associated with woodland management, installation of new vegetation, and trail expansion. Cumulative effects would be park-wide, long-term, minor, and adverse with mitigation measures in place.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Archeological Resources

Alternative 3 would include some excavation for trail expansion, thinning of woodlands, and installation of new plantings. There would be ground disturbance during demolition of the former housing/administrative structures, and the subsequent development of the area for overflow parking. This would require installation of pervious pavers to stabilize the soil and re-establish ground cover on the site. No known archeological sites would be disturbed in this alternative. To minimize potential adverse impacts, surveys would be conducted prior to ground-disturbing activities. Monitoring for subsurface artifacts would be conducted during ground-disturbing activities on the site. In the event that archeological resources are encountered, work would be stopped immediately and the park cultural resource specialist would be contacted. If necessary the SHPO and THPO would be consulted on potential adverse impacts and additional mitigation measures.

Alternative 3 includes ground disturbing activities with the potential to encounter and adversely impact previously unknown archeological resources. Potential adverse impacts would be minimized by pre-construction surveys and monitoring in areas with high potential for artifacts. With the mitigation measures, Alternative 3 would have **local, short-term, minor, and adverse impacts** on archeological resources.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on archeological resources from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, minor, and adverse with mitigation measures in place.

Conclusion

Treatment Alternative 3 would have local, short-term, minor, and adverse impacts on archeological resources from various ground disturbing activities associated with woodland management, installation of new vegetation, and trail expansion. Cumulative effects would be park-wide, long-term, minor, and adverse with mitigation measures in place.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Archeological Resources

Alternative 4 would include some excavation for trail expansion, thinning of woodlands, installation of new plantings, and delineation and interpretation of the former farmstead. There would be ground disturbance during demolition of the former housing/administrative structures and the subsequent development of the area for

overflow parking. This would require installation of grass pavers to stabilize the soil and re-establish ground cover on the site. No known archeological sites would be disturbed in this alternative. To minimize potential adverse impacts, surveys would be conducted prior to ground-disturbing activities. Monitoring for subsurface artifacts would be conducted during ground-disturbing activities on the site. In the event that archeological resources are encountered, work would be stopped immediately and the park cultural resource specialist would be contacted. If necessary the SHPO and THPO would be consulted on potential adverse impacts and additional mitigation measures.

Alternative 4 includes ground disturbing activities with the potential to encounter and adversely impact previously unknown archeological resources. Potential adverse impacts would be minimized by pre-construction surveys and monitoring in areas with high potential for artifacts. With the mitigation measures, Alternative 4 would have **local, short-term, minor, and adverse impacts** on archeological resources.

For purposes of Section 106 compliance there would be *no adverse effect*.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on archeological resources from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, minor, and adverse with mitigation measures in place.

Conclusion

Treatment Alternative 4 would have local, short-term, minor, and adverse impacts on archeological resources from various ground disturbances for woodland management, installation of new vegetation, and trail expansion. Cumulative effects would be park-wide, long-term, minor, and adverse with mitigation measures in place.

6.6 Visual Resources

Impact Intensity Threshold

Visual resources are those features that define the visual character of an area. They include natural features, vistas, viewsheds, and architecture. The existing visual environment is what is seen by the visitor during the approach to George Washington Carver National Monument as well as what is seen by the visitor within the park itself. The visual environment impacts both the anticipation and experience at the park. The quality of the visual environment is a vital resource and is instrumental in setting the stage for the visitor experience. The thresholds of change to the intensity of impacts to visual resources are described in Table 6-11.

Table 6-11. Visual Resources Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts would result in barely perceptible changes to existing viewsheds
Minor	Impacts would result in slightly detectable changes to views in a small area or would introduce a compatible human-made feature to an existing developed core.
Moderate	Impacts would be readily apparent and would change the character of the visual resources in the area. The visitor would be aware of the impacts associated with the alternative and would likely express a neutral to negative opinion about the changes.
Major	Impacts would be highly noticeable and visible from a considerable distance or over a large area. The character of visual resources would change substantially. The visitor would be aware of the effects associated with the alternative and would likely express a strong negative opinion about the changes.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Visual Resources

George Washington Carver National Monument exhibits several views designed primarily for visitor enjoyment and understanding of the landscape. These views were all established as part of the early development of the park and most contribute to the significance of the park landscape. The No Action Alternative focuses on preservation of the existing character of the park landscape and current interpretive programs. Views identified as important interpretive vistas, such as from the visitor center environs across the prairie to the west, and the views from the Carver Family cemetery across the prairie, would continue to be managed for clear sight lines. Treatment would focus on stabilization and maintenance of the current landscape and preservation of the park's commemorative features as they exist today. There would be *park-wide, long-term, negligible, and adverse impacts* on visual resources under this alternative.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have local, short-term, negligible, and adverse impacts on visual resources. Some of these actions include: routine utility repair, replacement, and new installation; small scale construction and excavation for fulfillment of accessibility requirements across the park; and present and future management and maintenance strategies for turf, prairie restoration, and conservation and management of the streams and Williams Pond. The overall cumulative impacts to visual resources from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be local, short-term, negligible, and adverse.

Conclusions

The No Action Alternative would have park-wide, long-term, negligible, and adverse impacts on visual resources. Cumulative effects would be park-wide, short-term, negligible, and adverse.

Impacts of Elements Common to the Action Alternatives on Visual Resources

The following proposed actions common to all would impact visual resources at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Preservation, management, and maintenance strategies for perpetuation of the views and viewsheds that contribute to the National Register significance of the park
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources

- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening

Implementation of rehabilitation and preservation of significant historic views and viewsheds at the park would have *park-wide, long-term, moderate, and beneficial impacts* on visual resources. Actions common to Alternatives 2, 3, and 4 fall under the comprehensive treatment approach of rehabilitation. Under the rehabilitation treatment, stabilization, protection, and preservation of historic viewsheds are actions that must occur in order to preserve significant resources and allow for the limited accommodation of new uses and more visitors.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Visual Resources

Alternative 2 expands the rehabilitation and preservation of significant historic views over the

George Washington Carver National Monument landscape. This includes preservation of the existing viewshed from the visitor center to prairie Unit 4 and views outward from the family cemetery toward the prairie and woodlands. This alternative also creates viewsheds to mown hay fields and preservation of the agrarian setting. Alternative 2 would have *park-wide, long-term, major, and beneficial impacts* on visual resources.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on visual resources from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, major, and beneficial.

Conclusion

Treatment Alternative 2 would have park-wide, long-term, major, and beneficial impacts on visual resources from visual interpretation of former farm features, and plant and interpretive installations, and use of the cultural landscape for enhanced interpretation, and vistas created to mown hay areas to preserve and interpret the agrarian setting. Cumulative effects would be park-wide, long-term, major, and beneficial.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Visual Resources

Alternative 3 preserves significant historic views over the George Washington Carver National Monument landscape. This includes preservation of the existing viewshed from the visitor center to prairie Unit 4 and views outward from the Carver family cemetery toward the prairie and woodlands. This alternative also creates potential views from the expanded trail for enhanced interpretation of economic -botanical plantings. Alternative 3 would have *park-wide, long-term, moderate, and beneficial impact* on visual resources.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on visual resources from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 3 would have park-wide, long-term, moderate, and beneficial impacts on visual resources from visual interpretation of former farm features, plant and interpretive installations, use of the cultural landscape for enhanced interpretation, and vistas created to mown hay areas to preserve and interpret the agrarian setting. Cumulative effects would be park-wide, long-term, moderate and beneficial.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Visual Resources

Alternative 4 expands the rehabilitation and preservation of significant historic views over the George Washington Carver National Monument landscape. This includes preservation of the existing viewshed from the visitor center to prairie Unit 4 and views outward from the Carver family cemetery toward the prairie and woodlands. This alternative also creates viewsheds from the expanded trail for enhanced interpretation to mown hay fields and preservation of the agrarian setting. Alternative 4 would have *park-wide, long-term, major, and beneficial impacts* to visual resources.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under “Cumulative Impacts for Alternative 1 No Action.” The overall cumulative impacts on visual resources from Alternative 4 in combination with past, present,

and reasonably foreseeable future actions would be park-wide, long-term, major, and beneficial.

Conclusion

Treatment Alternative 4 would have park-wide, long-term, major, and beneficial impacts on visual resources from visual interpretation of former farm features, and plant and interpretive installations, and use of the cultural landscape for enhanced interpretation, and vistas created to mown hay areas to preserve and interpret the agrarian setting. Cumulative effects would be park-wide, long-term, major, and beneficial.

6.7 Visitor Use and Experience

Impact Intensity Threshold

NPS *Management Policies 2006* state that the enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks, and that the NPS is committed to providing appropriate high-quality opportunities for visitors to enjoy the park. Consequently, one of the management goals at George Washington Carver National Monument is to ensure that visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of site facilities, services, and appropriate commemorative, educational, and interpretive opportunities.

Scoping input and observation of visitation patterns, combined with assessment of amenities available to visitors currently at the national monument, were used to estimate the impacts of the alternatives. Impacts on the ability of visitors to experience a full range of resources was analyzed by examining resources and objectives presented in the national monument’s significance statements, as derived from its enabling legislation. The potential for change in visitor experience proposed by the alternatives was evaluated by identifying projected increases or decreases in access, vehicular and pedestrian circulation, parking, interpretation, visitor services and other uses, and determining whether or how these projected changes would affect the desired

visitor experience, to what degree, and for how long. The thresholds of change to the intensity of an impact of visitor use and experience are described in Table 6-12.

Table 6-12. Visitor Use and Experience Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Changes in visitor experience would be below or at an imperceptible level of detection. The visitor would not likely be aware of the impacts associated with the action.
Minor	Changes in visitor experience would be detectable, although the changes would be slight. Most visitors would be aware of the impacts associated with the action, but would not likely express an opinion about the changes.
Moderate	Changes in visitor experience would be readily apparent. The visitor would be aware of the impacts associated with the action and would likely express an opinion about the changes.
Major	Changes in visitor experience would be readily apparent and severely adverse or exceptionally beneficial. The visitor would be aware of the impacts associated with the action and would likely express a strong opinion about the changes.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Visitor Use and Experience

Alternative 1: No Action would preclude the park from meeting some of the goals identified for consideration as part of the CLR treatment plan in the Purpose and Need statement and the list of management issues such as expansion of visitor parking facilities to accommodate overflow needs, clarifications of inaccuracies, such as the current location of the birthplace cabin and the conversion of fescue fields associated with the former mine site to another landcover type. The No Action alternative also precludes further exploration of ways to utilize the cultural landscape as a tool for interpreting Carver's life and accomplishments would be conducted. This

alternative would also limit the park in its ability to explain the historical context within which George Washington Carver grew up and his efforts to get an education and to rehabilitate the landscape and its associated structures to enhance the memorial nature of the site.

Overall this alternative would have *park-wide, long-term, minor, and adverse impacts* on visitor use and experience.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have park-wide, short-term, negligible, and beneficial impacts on visitor use and experience. Some of these actions include: any increased interpretation or programming of events, future mowing requirements due to turf management strategies in place or other management strategies or interpretation associated with restored prairie. The overall cumulative impacts on visitor use and experience from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor, and adverse.

Conclusions

The No Action Alternative would have park-wide, long-term, minor, and adverse impacts on visitor use and experience. Cumulative effects would be park-wide, short-term, minor and adverse.

Impacts of Elements Common to the Action Alternatives on Visitor Use and Experience

The following proposed actions common to all would impact visitor use and experience at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation

- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Preservation, management, and maintenance strategies for perpetuation of the views and viewsheds that contribute to the National Register significance of the park
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management.
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road

- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening

Most of the actions common to alternatives 2, 3, and 4 such as: development of overflow parking area in the developed core; preservation, maintenance and management of the cultural vegetation that contributes to the National Register significance of the park; expansion of the trail system to enhance interpretation of the entire site; and provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience would be a *park-wide, long-term, major, and beneficial impact* on the visitor experience. Actions common to the alternatives 2, 3, and 4 fall under the comprehensive treatment approach of rehabilitation. Under the rehabilitation treatment, stabilization, protection, and preservation of historic and natural resources are actions that must occur in order to allow for the limited accommodation of new uses and enhancement of the visitor experience.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Visitor Use and Experience

Alternative 2 suggests enhancing the ability of the park to tell the story of George Washington Carver's experiences by re-establishing and interpreting missing nineteenth century features and lifeways. Features anticipated to include a persimmon grove, walnut tree fence rows, fruit

orchard, the farmstead area, the rural agricultural setting, and hayfields. There would be interpretation the accurate location of the birthplace cabin and Moses Carver house and farmstead would be interpreted based on further research and investigation using foundation outlines and mow patterns. This alternative would also include thinning and management of woodland to depict historic savanna-like character and historic spatial organization. These activities would improve the cultural landscape and establish a clear connection between Carver's life and achievements and the historic landscape of the farm. Alternative 2 would have **park-wide, long-term, major and beneficial impacts** on visitor use and experience.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on visitor use and experience from Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, major, and beneficial.

Conclusion

Alternative 2 would have park-wide, long-term, major, and beneficial impacts on visitor use and experience from interpretation of former farm features, and plant and interpretive installations, and use of the cultural landscape for enhanced interpretation. Cumulative effects would be park-wide, long-term, major, and beneficial.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Visitor Use and Experience

The focus of Alternative 3 would be the interpretation of George Washington Carver's work and career through plants known to have been the focus of his experiments and scientific exploration. Plants would be featured along trails to enhance interpretation of Carver's achievements. Thinning and clearing of

woodlands would occur to allow for the planting of economic-botanical species such as the persimmon grove, known to Carver on the farm and used in his later experiments. There would also be expansion of the trail system into additional acres of the property to provide interpreted economic-botanical plantings and an interpreted environmental trail through Harkins Woods. Alternative 3 would have **park-wide, long-term, moderate, and beneficial impacts** on Visitor Use and Experience.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on visitor use and experience from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and beneficial.

Conclusion

Treatment Alternative 3 would have park-wide, long-term, moderate, and beneficial impacts on visitor use and experience from economic-botanical plantings and interpretation and trail expansion to include environmental interpretation in Harkins Woods. Cumulative effects would be park-wide, long-term, moderate, and beneficial.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Visitor Use and Experience

Alternative 4 blends the concept of installation of plantings known to Carver with site specific enhancement of the interpretive programming involving the nineteenth century Moses Carver farm know to George Washington Carver and enhanced environmental education opportunities involving trail expansion and justification for on-going prairie restoration activities to honor Carver's conservation work. This alternative focuses on interpretation of several features

known to have been present on the farm during Carver's boyhood that are no longer present to convey the scale, arrangement, orientation and elements of the historic farmstead. There is also mowing of two prairie units to interpret the agrarian setting and managing riparian woodlands as gallery forests. This alternative also includes planting of a heritage fruit orchard and the persimmon grove to interpret one of the key features described by Carver from his childhood. Alternative 4 would have **park-wide, long-term, major, and beneficial impacts** on visitor use and experience

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on visitor use and experience from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, major, and beneficial.

Conclusion

Treatment Alternative 4 would have park-wide, long-term, major, and beneficial impacts on visitor use and experience from installation of plantings known to Carver and interpretation of those plantings, trail expansion to include environmental interpretation in Harkins Woods, and delineation and interpretation of the former farmstead of Carver's childhood. Cumulative effects would be park-wide, long-term, major, and beneficial.

6.8 Park Operations

Impact Intensity Threshold

Park operations, as an impact topic, refers to the quality and effectiveness of the infrastructure and the ability to maintain the infrastructure used in the operation of the park in order to adequately protect and preserve vital resources and provide for an effective visitor experience.

The thresholds of change to the intensity of an impact on park operations are described in Table 6-13.

Table 6-13. Park Operations Impact and Intensity

Impact Intensity	Intensity Description
Negligible	Impacts to park operations would be at low levels of detection and would not have a substantial impact on park operations.
Minor	The impact would be detectable but would be of a magnitude that would not have a substantial impact on park operations. If mitigation was needed to offset adverse impacts, it would be simple and likely successful.
Moderate	The impacts would be readily apparent and would result in a substantial change in park operations in a manner noticeable to staff and the public. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.
Major	The impacts would be readily apparent, would result in a substantial change in park operations in a manner noticeable to staff and the public, and be markedly different from existing operations. Mitigation measures to offset adverse impacts would be needed, would be extensive, and their success could not be guaranteed.

Impacts of Alternative 1 (Preserve Existing Conditions and Continue Current Management Strategies) No Action on Park Operations

Under the No Action Alternative, park operations would remain consistent with those currently being undertaken. There would be no change in current site operations or infrastructure. The visitor center would continue to be the primary point of visitor contact. Maintenance requirements would continue at current levels. NPS would need to develop a strategy for the accommodation of storage needs if plans for demolition of the former housing/administrative structures goes forward. Under the No Action Alternative, there would be *park-wide, short-*

term, negligible, and adverse impacts on park operations.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions would have park-wide, short-term, minor, and adverse impacts on park operations. Some of these actions include: any increased interpretation or programming of events, future mowing requirements due to turf management strategies in place or other management strategies associated with the prairie restoration. The overall cumulative impacts on park operations from the No Action alternative in combination with the past, present, and reasonably foreseeable future actions would be park-wide, short-term, minor, and adverse.

Conclusions

The No Action Alternative would have park-wide, short-term, negligible, and adverse impacts on park operations. Cumulative effects would be park-wide, short-term, minor, and adverse.

Impacts of Elements Common to the Action Alternatives on Park Operations

The following proposed actions common to all would impact park operations at George Washington Carver National Monument:

- Management of forests to remove invasive species and enhance interpretation from expanded trails
- Natural resource management of restored grassland prairie for health, diversity, and soil and water conservation
- Preservation, management, and interpretation of Carver Spring and the three streams: Carver, Harkins, and Williams branches
- Maintenance and management of the wet prairie areas located in the southwest and south central areas of the park to promote continued diversity of species and community composition found only in seasonally wet areas.
- Maintenance and management of Harkins Woods
- Conversion of the 30-acre parcel acquired by the park in 2006 to prairie to incorporate it into the overall approach to landcover management
- Preservation, maintenance, and management of the cultural vegetation that contributes to the National Register significance of the park including: the replanted walnut hedgerow along Carver Trail near the Carver family cemetery; ornamental plantings at the park former housing/administrative complex; and the picnic grove shade trees
- Preservation and maintenance of conservation land uses in order to protect natural resources of high quality and value, including native plant communities and water resources
- Development of an overflow parking area in the developed core on the site of the former housing/administrative structures after planned demolition
- Restoration of the persimmon grove along Carver Trail
- Consolidation of the picnic areas into one, within the existing picnic area north of the entrance road
- Expansion of the trail system to enhance interpretation
- Provision of universal accessibility to all buildings and structures as well as features associated with the primary interpretive experience, following the guidelines set forth in the *George Washington Carver National Monument: Accessibility Debriefing Report and Final Report*
- Stabilization, maintenance, and restoration of the Carver family cemetery wall to reflect original stone stacking methods and the eastern opening

Implementing the limited construction actions or undertaking the preservation, maintenance, and

management strategies common to the action alternatives would result in *park-wide, long term, moderate, and adverse impacts* on park operations, management, and infrastructure. Expanded landscape management and interpretive programs will require additional man-power as well as expanded mowing and burning regimens for the restoration of the grassland prairie and the overall land cover management at the national monument.

Impacts of Treatment Alternative 2 (Rehabilitation of the Landscape, including Limited Restoration, For Interpretation to Memorialize the Life and Achievements of George Washington Carver) on Park Operations

Alternative 2 would require expansion of park operations due to enhanced interpretation of the park to tell the story of George Washington Carver's experiences by re-establishing and interpreting missing nineteenth century features and lifeways. Features anticipated to be established include a persimmon grove, walnut tree fence rows, fruit orchard, the farmstead area, the rural agricultural setting, and hayfields. There would be interpretation of the accurate location of the birthplace cabin and Moses Carver house and farmstead based on further research and investigation using foundation outlines and mow patterns. This alternative would also include thinning and management of woodland to depict historic savanna-like character. There would also be expanded operations due to mown hayfields in designed viewsheds in Alternative 2. These activities would improve the cultural landscape and establish a clear connection between Carver's life and achievements and the historic landscape of the farm, but increase the necessity for expanded park operations for landscape management and enhanced interpretation. Alternative 2 would have **park-wide, long-term, moderate, and adverse impacts** on park operations.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on park operations from

Alternative 2 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and adverse.

Conclusion

Alternative 2 would have park-wide, long-term, moderate, and adverse impacts on park operations from expanded interpretation and expanded management of woodlands, water resources, prairies, viewsheds, new trails, and changes in vegetation cover. Cumulative effects would be park-wide, long-term, moderate, and adverse.

Impacts of Treatment Alternative 3 (Interpretation and Celebration of the Life and Work of George Washington Carver Using an Economic-Botanical Approach) on Park Operations

Alternative 3 would require expansion of park operations due to enhanced interpretation of the park with a focus on George Washington Carver's work and career through plants known to have been the focus of his experiments and scientific exploration. Plants would be installed along trails to enhance interpretation of Carver's achievements. Thinning of woodlands would occur to allow for the planting of economic-botanical species such as the persimmon grove, known to Carver on the farm and used in his later experiments. There would also be expansion of the trail system into additional areas of the property to provide interpreted economic-botanical plantings and an interpreted environmental trail through Harkins Woods. These activities would improve the cultural landscape and establish a clear connection between Carver's life and legacy as a scientist and educator but these actions will increase the necessity for expanded park operations for landscape management and enhanced interpretation. Alternative 3 would have **park-wide, long-term, moderate, and adverse impacts** on park operations.

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall

cumulative impacts on park operations from Alternative 3 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and adverse.

Conclusion

Alternative 3 would have park-wide, long-term, moderate, and adverse impacts on park operations from expanded interpretation and expanded installation and management of economic-botanical plantings, expanded management of woodlands, water resources, prairies, viewsheds, and new trails. Cumulative effects would be park-wide, long-term, moderate, and adverse.

Impacts of Treatment Alternative 4 (Honor, Commemoration, and Interpretation of the Life and Legacy of George Washington Carver by Employment of a Combination of Agricultural Heritage and Exhibits of Plants Known to Carver) on Park Operations

Alternative 4 would involve expansion of park operations due to enhancement of the interpretive programming involving the nineteenth century Moses Carver farm known to George Washington Carver and enhanced environmental education opportunities involving trail expansion and justification for on-going prairie restoration activities to honor Carver's conservation work. This alternative focuses on interpretation of several features known to have been present on the farm during Carver's boyhood that are no longer present to convey the scale, arrangement, orientation and elements of the historic farmstead. There is also mowing of two prairie units to interpret the agrarian setting and managing riparian woodlands as gallery forests. This alternative also includes planting of a heritage fruit orchard and the persimmon grove to interpret one of the key features described by Carver from his childhood. Features include a persimmon grove, walnut tree fence rows, fruit orchard, the farmstead area, the rural agricultural setting, and hayfields. There would be interpretation of the accurate location of the birthplace cabin and Moses Carver house and farmstead based on further research and investigation, using foundation outlines and mow patterns. These

activities would improve the cultural landscape and use it to interpret the entire life of George Washington Carver, but these actions will increase the necessity for expanded park operations for landscape management and enhanced interpretation. Alternative 4 would have **park-wide, long-term, moderate, and adverse impacts on park operations.**

Cumulative Impacts

Past, present and reasonably foreseeable future actions are described under "Cumulative Impacts for Alternative 1 No Action." The overall cumulative impacts on park operations from Alternative 4 in combination with past, present, and reasonably foreseeable future actions would be park-wide, long-term, moderate, and adverse.

Conclusion

Alternative 4 would have park-wide, long-term, moderate, and adverse impacts on park operations from expanded interpretation and expanded installation and management of plantings known to Carver, expanded management of woodlands, water resources, prairies, viewsheds, and new trails. Cumulative effects would be park-wide, long-term, moderate, and adverse.

Chapter 7: Consultation and Coordination

7.0 Introduction

NPS Director's Order 12 requires the NPS to make "diligent" efforts to involve the interested and affected public in the NEPA process. This chapter documents the scoping process for this CLR/EA as well as interagency consultation and coordination with USFWS, the Missouri SHPO, THPO, and other natural and cultural resource agencies. Also included is the list of recipients who received notice of the project undertaking and the planned stakeholder meetings.

7.1 Scoping Process

Start-Up Meeting

To officially initiate this project, a kick-off meeting was held on November 5 and 6, 2013. Project team members from BVH, JMA, WJE, and HRG, met with park and regional NPS personnel at the George Washington Carver National Monument visitor center to initiate work on the CLR. The meeting began with introductions of park, regional office, and contractor project staff. During the meeting, MWRO Historical Landscape Architect Marla McEnaney introduced the purpose, goals, and methodology of the CLR, and the park identified the issues of concern to be addressed in the report. Project administration procedures were established, materials needed by the CLR team were identified, and a process for transmission determined. The park also identified the resources available to the team and any special conditions unique to the project and site. NPS personnel subsequently provided the CLR team with a tour of the park. In addition to the start-up meeting, the project team met with park maintenance and interpretive personnel to solicit

their input on park management issues, goals, and concerns.

Scoping

Environmental assessment scoping is an early and open process to determine the breadth of issues and alternatives to be addressed. The park staff and resource professionals of the NPS MWRO conducted internal scoping for the CLR project at George Washington Carver National Monument. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the preferred alternative to other planning efforts at the park. Typically, both internal and public scoping is held to address these elements. From previous planning efforts and development of resource documents, the park has a well-established list of stakeholders, interested in the alternatives being proposed for the park. For this CLR/EA, the superintendent initiated public scoping on March 1, 2014.

The NHPA; NEPA; NPS Organic Act; NPS Management Policies, 2006; Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making; and Director's Order 28: Cultural Resources Management Guideline require the consideration of impacts on cultural resources, either listed in or eligible to be listed in, the National Register of Historic Places. The park notified the Missouri SHPO of the project by email correspondence on February 20, 2014, and there was a SHPO on-site visit April 2, 2014. The park provided the SHPO with a 75 percent draft copy of the CLR/EA. The SHPO was also sent a follow up invitational letter on April 8, 2014, for the stakeholder meeting, and the

review of alternatives to be held at the park on May 14, 2014. In October 2014, NPS provided the SHPO with a copy of the 95 percent draft CLR/EA for review and comment. The SHPO responded with a letter of concurrence with the park determination of *no adverse effect* on historic properties dated December 1, 2014.

The park sent the USFWS a scoping notice on April 8, 2014, to solicit input on threatened and endangered species concerns for the 240 acres of the park included in the CLR/EA treatment alternatives and to invite agency participation in the scoping meeting and review of alternatives on May 14, 2014. The NPS provided the USFWS a 75 percent draft copy of the CLR/EA for review and comment. The USFWS responded with a letter of concurrence with the park determination of *no adverse effect* to rare, threatened, or endangered species, dated April 16, 2014.

George Washington Carver National Monument conducted initial consultation with THPOs for the United Osage Nation, the United Keetoowah Band of Cherokee Indians in Oklahoma, the Caddo Nation, and the Eastern Shawnee Tribe of Oklahoma for the purpose of developing a Programmatic Agreement between the tribes and the park. Letters were issued to the THPOs along with a draft of the agreement, inviting them to review the document and attend a follow-up consultation meeting on April 3, 2014. In the same letter, THPOs were invited to the larger stakeholder meetings and review of alternatives at the park on May 14, 2014. A follow-up letter with notice of the stakeholder meeting date and time was sent to the THPOs on April 8, 2014, to solicit input and participation in the CLR/EA meeting. The NPS provided the THPOs a copy of the 95 percent draft CLR/EA for review and comment. The THPO for the Osage Nation Historic Preservation Office responded with a letter of concurrence with the park determination of *no adverse effect* on an historic property, dated January 23, 2015. Also, the acting THPO of the United Keetoowah Band of Cherokee Indians in Oklahoma responded with an email dated November 12, 2014, concurring with the park determination of *no adverse effect*,

The scoping process continued during the public review period when the 95 percent draft CLR/EA document was posted to the NPS PEPC site. Comments from the public were consolidated and taken into account as the CLR/EA was finalized. Solicitation of comments also continued during this 30-day formal review period from agencies, the Missouri SHPO, and Indian tribes. Additional comments were also taken by mail or email to the Superintendent's office at the park.

7.2 Interagency Consultation and Coordination

Interagency consultation and coordination has included: the Missouri State Historic Preservation Officer; THPOs from Osage Nation, United Keetoowah Band of Cherokee Indians, Quapaw Tribe of Oklahoma, the Miami Nation, Wyandotte Tribe, Eastern Shawnee Tribe of Oklahoma, and the Caddo Nation; USFWS; Missouri Department of Conservation; NRCS; and HTLN. All were notified of the project undertaking and issued an invitation to the stakeholder meeting on May 14, 2014, to review and comment on the proposed alternatives for the George Washington Carver National Monument CLR/EA. NPS subsequently provided agency representatives with the 95 percent draft of the CLR/EA for review and comment. Their comments and letters are included in Appendix C of this document.

7.3 List of Recipients of Letters of Notice and Invitation for the Stakeholder Meetings

- Mr. Charlie Scott, USFWS
- Dr. James Jackson, Biology Department, Missouri Southern State University
- Dr. Luther Williams, Provost of Tuskegee Institute
- Dr. Charles Nilon, Department of Fisheries and Wildlife Sciences, University of Missouri
- Mr. Lynn Jenkins, District Conservationist, Natural Resources Conservation Service, USDA
- Mr. Jerid Wilkinson, Conservation Agent, Missouri Department of Conservation
- Mr. Jeff Cantrell, Education Consultant, Missouri Department of Conservation
- Mr. Rick Horton, Fisheries Management Biologist, Missouri Department of Conservation
- Mr. Nate Forbes, Forestry District Supervisor, Missouri Department of Conservation
- Mr. Mike Petersen, Private Land Conservationist
- Mr. Jon Skinner, Urban Forester, Missouri Department of Conservation
- Ms. Ronda Headland, Community Conservation Planner, Missouri Department of Conservation
- Mr. Mike DeBacker, HTLN
- Mr. Guy Headland, Outdoor Recreation Planner, Rivers, Trails, and Conservation Assistance Program, NPS
- Mr. John Wingo, President, Missouri Prairie Foundation
- George Washington Carver National Monument VIPs
- Ms. Martha Ruhe, Landscape Architect, NPS (retired)
- Mr. Bill Jackson, Past George Washington Carver National Monument Superintendent
- Mrs. Jodie Murray Burns, Chair, Carver Birthplace Association
- Honorable Ron Richard, Missouri State Senate
- Honorable Mr. Bill Reiboldt, Missouri House of Representatives
- Honorable Mr. Bill Lant, Missouri House of Representatives
- Mr. Sam Claussen, President, Missouri Archeological Society
- Mr. Charles Nodler, Archivist, Missouri Southern State University
- Dr. Gary Kremer, Director, The State Historical Society of Missouri
- Mr. Keith Zoromski, History Department, Crowder College, Neosho
- Ms. Deb Sheals, Historic Preservation Consultant
- Dr. Steve Roark, President, Newton County Tourism Council
- Mr. Jeremy Elliott-Engel, County Program Director, Newton County Extension Center
- Mr. Greg Bowman, Regional Coordinator, Ducks Unlimited
- Mr. Bob Kulp, Director, Newton County Health Department
- Ms. Pauline Charles, Past CBA Business Manager and current VIP
- Ms. Mary Jean Barker, Past CBA Business Manager and long-time VIP
- Ms. Christy Hyman, Past seasonal employee, current VIP
- Mr. Justin Hall, Past seasonal employee, current VIP
- Ms. Judith Deel, Missouri SHPO
- Dr. Andrea Hunter, THPO, Osage Nation
- Ms. Lisa C. Baker, Acting THPO, United Keetoowah Band of Cherokee Indians
- Mr. Everett Bandy, THPO, Quapaw Tribe of Oklahoma
- Mr. Robert Cast, THPO, Caddo Nation
- Dr. Barker Fariss, THPO Archeologist for the Osage Nation
- Mr. Scott Willard, THPO, Miami Nation
- Ms. Sherri Clemons, THPO, Wyandotte Tribe
- Ms. Jean Ann Lambert, Assistant THPO, Quapaw Tribe
- Ms. Robin Dushane, THPO, Eastern Shawnee Tribe of Oklahoma
- Ms. Megan Bui, Community Focus Group participant 2013
- Rev. Dr. Betty Hannah-Witherspoon, Community Focus Group participant 2013

- Ms. Susan Marshall, Community Focus Group participant 2013
- Ms. Laurie Jones, Community Focus Group participant 2013
- Ms. Barbara True, Community Focus Group participant 2013
- Rev. Young K. Yoon, Community Focus Group participant 2013
- Mr. Bob Brower, Carthage YMCA
- Mr. Jonathan Roberts, Carthage YMCA
- Mr. and Mrs. Mike Funderburgh, park neighbor
- Mr. and Mrs. Melvin Alford, park neighbor
- Mr. and Mrs. Jess Holler, park neighbor
- Mr. and Mrs. Glenn Brown, park neighbor
- Mr. and Mrs. Elza Winter, park neighbor
- Mr. and Mrs. Bob Plummer, park neighbor
- Mr. Darwin Morgan, Annual family reunions held at the park (Carver ancestry).
- Mr. Stephen Gilmore, Annual family reunions held at the park (Carver ancestry).
- Ms. Lauren Copple, Missouri Department of Conservation
- Mr. and Mrs. Mike and Linda Simmons, park VIP
- Mr. and Mrs. Larry and JoAnn Carnagey, park VIP
- Mr. Dave Henness, park VIP
- Ms. Cecelia Miller, park VIP
- Mr. and Mrs. Don and Denise Jessen, park VIP
- Ms. Phyllis Chancellor, park VIP
- Mr. and Mrs. Jerry and Barbara Hixenbaugh, park VIP
- Dr. Robert Heth, Biology Department, Missouri Southern State University
- Ms. Lydia Kaume, Barton County Extension Center, University of Missouri
- Ms. Meg Bourne Hulsey, Art Feeds
- Ms. Courtney Bay, Ozark Center
- Ms. Jennifer Jameson, Joplin Family YMCA
- Missouri Archeological Society, Missouri State University
- Newton County Commissioners
- Chamber of Commerce, Neosho
- Chamber of Commerce, Seneca
- Chamber of Commerce, Carthage
- Chamber of Commerce, Joplin
- Convention/Visitors Bureau, Joplin
- Mr. Dave Hendrix, Neosho National Fish Hatchery
- Mr. Brad Belk, Joplin Museum Complex/Tri-State Mineral Museum
- Executive Director, Wildcat Glades Conservation and Audubon Center
- Mr. Shane Hunter, Mayor, City of Diamond
- Historical Society, Newton County
- Dr. Eulanda Sanders, Iowa State University
- Dr. Paul Teverow, History Department, Missouri Southern State University
- Dr. Steve Smith, History Department Chair, Missouri Southern State University
- Dr. Al Cade, School of Education, Missouri Southern State University
- Ms. Sandy Taylor, Superintendent, Tuskegee Institute National Historic Site
- Dr. Matthew Jenkins, Acting President, Tuskegee Institute
- Honorable Charlie Davis, United States House of Representatives
- Honorable Billy Long, United States House of Representatives
- Honorable Claire McCaskill, United States Senate
- Honorable Roy Blunt, United States Senate
- Ms. Kris Drake, Freeman Health System
- Mr. Karl Schmidt, American Heart Association
- Mr. Joseph T. Njenga, Alliance of Southwest Missouri
- Dr. Jim Horton, Southwest Center for Educational Excellence
- Ms. Julia Price-Allison, Diamond High School
- Mr. and Mrs. Bill Abernathy, park VIP
- Mr. and Mrs. Jack and Diane Andris, park VIP
- Mrs. Penny Graves, park VIP
- Mr. and Mrs. Phil and Gayle O'Hare, park VIP
- Ms. Cathy Walsh, CDA Board Member
- Mr. Gary Stubblefield, CBA Board Member
- Mr. Larry Swift, CBA Board Member
- Dr. and Mrs. Roy Shaver, CBA Board Member
- Mr. and Mrs. William and Melody Colbert-Kean, CBA Board Member
- Dr. Linda Warner, CBA member
- Mr. and Mrs. Larry and Linda James, CBA Board Member

Chapter 8: Implementation, Phasing, and Cost Estimate for Selected Alternative

8.0 Introduction

The implementation guidelines that comprise this chapter are intended to support the park's ability to complete the majority of the treatment plan recommendations conveyed in Chapter Five: Treatment Alternatives of the CLR/EA. The four sections that comprise this chapter include:

- **Implementation Guidelines**, which identify and describe a series of fifteen projects that effect implementation of the CLR/EA selected alternative.
- **FMSS Crosswalk Table for Treatment**, which prioritizes the implementation projects and serves as an important source of information for FMSS work planning related to the cultural landscape.
- **Phasing Plan**, which identifies a proposed sequence for implementation.
- **Estimates of Probable Costs**, which provide planning-level estimates of probable cost for implementation of the selected alternative.

8.1 Development and Implementation of the Selected Alternative

Introduction

This section describes the means for implementing many of the recommendations included in Chapter Five: Treatment Alternatives. These implementation guidelines have been organized

into a series of fifteen projects, each presenting a goal or vision for treatment and laying out a process for achieving it. These projects address a range of park needs that include vegetation management, trail expansion, visitor accessibility, and interpretation. The projects developed for this CLR/EA are indicated in the attached FMSS crosswalk table (Section 8.2).

Each of the implementation projects is presented in this chapter with information conveyed in the following five sections: summary description; considerations; identification of the project's location; additional studies recommended; and specific implementation actions. Additional research and physical investigations that are prerequisites for completing the project tasks are identified as also part of each description. The detailed information in the implementation project summary descriptions are designed to support National Park Service efforts in preparing PMIS statements relating to implementation of the CLR treatment plan.

Implementation Projects

- Develop a New Overflow Parking Area on the Site of the Former Housing/Administration Area
- Consolidate the Two Picnic Areas into a Single Area
- Develop a Universally Accessible Trail from the Overflow Parking Area to the Visitor Center Walkway
- Develop New Interpretive Trails

- Establish New Interpretive Exhibits
- Clear and Thin Non-Contributing Woody Vegetation for Viewsheds and Restoration of Historic Patterns of Spatial Organization
- Provide New Plantings to Screen Non-historic Views and Provide Shade
- Develop a New Storage Facility
- Restore the Cemetery Wall
- Repair the Brick Wall Surrounding the Maintenance Yard

Five of the implementation projects are recommended additional studies. The studies would result in the development of comprehensive plans designed to guide decision making for the projects proposed in the CLR, and potentially other projects implemented by the park in the future. Additional studies projects include:

- Prepare a Revised Fire Management Plan
- Prepare a Streambank Restoration Plan
- Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System
- Prepare a Revised Long-Range Interpretive Plan
- Prepare a Site Furnishings Guide

Each of the projects is described in detail below. They are presented in priority order. The rationale for the prioritization of the projects, and a logical sequence for implementation is discussed in the phasing section of this chapter (Section 8.3).

Prepare a Revised Long-Range Interpretive Plan

Summary Description. Preparation of a revised LRIP would build on the existing 2007 plan, but also take into consideration how to depict missing features of the Moses Carver farm, recall historic patterns of spatial organization, and tell a compelling story using new plantings added along the existing and proposed expanded trails. The plan would take into account the recommendations provided in this CLR/EA. It would also make provisions for visitors who are physically impaired and may not be able to experience certain features or exhibits in traditional ways. The primary experience would be universally accessible.

Considerations. While some of the implementation projects that relate to interpretation, such as new interpretive trails and exhibits could be undertaken before this study is complete, it would be beneficial to update the current LRIP to reflect the treatment recommendations in the CLR/EA before beginning this work to ensure that all park interpretive efforts are coordinated.

Identification of the Project's Location. The plan should consider the visitor experience within the park in its entirety.

Additional Studies Recommended.

- The revised LRIP should be considered in conjunction with ongoing or proposed vegetation management plans, and specific interpretive recommendations in the CLR/EA that address the role of plants as one of the key interpretive aids within the park.

Specific Implementation Actions

- Consider the recommendations provided in the CLR/EA regarding physical development of the site for access and interpretation, as well as the suggestions for alternatives presented below for interpreting missing features.
- Conduct background research and study.

- Prepare a revised LRIP for the park.
- Utilize the revised LRIP to guide efforts to conduct CLR-recommended implementation projects involving visitor access and interpretation and viewshed rehabilitation.

Related Implementation Projects.

- Develop New Interpretive Trails
- Establish New Interpretive Exhibits
- Clear and Thin Non-Contributing Woody Vegetation for Viewsheds and Restoration of Historic Patterns of Spatial Organization

Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System

Summary Description. This project includes a plan for existing trails and new trails, associated interpretive programming, and other circulation features that will result in a comprehensive system of universally-accessible parking, paths, and amenities associated with the primary visitor experience. The plan would address deficiencies in current parking facilities and amenities at the picnic area and the Carver Trail outlined in *George Washington Carver National Monument Accessibility Assessment: Summary Report: Findings and Recommendations* and address the accessibility of proposed new features resulting from the CLR/EA Preferred Alternative.

Considerations. Before constructing any new trails or other additional circulation features, the park should address the need for a comprehensive universally-accessible trail surfacing standard. The standard should be applied to the existing Carver Trail, and any new primary trails. There are currently various surface treatments of the Carver Trail including asphalt and rubberized asphalt, concrete-block pavers with wood borders, and compacted gray/white gravel. The resulting variations in color and texture can detract from the visitor experience. (Figure 280 and Figure 281).



FIGURE 280. The Carver Trail has several surface treatments resulting in a mix of color and textures in the landscape.



FIGURE 281. Asphalt surfacing is used on the steeper slopes of the switchbacks leading to Carver Spring.

The park should consider using a single material with a relatively unobtrusive color and texture to help blend the trail system with the rural character of the landscape. The CLR/EA recommends surfacing universally-accessible trails with crushed brownstone, stabilized with a binding agent, or brown-hued asphalt. (Refer to *A Guide to Trail Surfaces for Historic Sites*, provided at the end of this section.)

Even if the trail is not resurfaced, the existing gravel trails require a stabilization technique to ensure that they meet universal accessibility standards suggesting the need for a firm and stable surface. The trail in some places will need to be realigned to meet width and slope standards, and ensure proper drainage.

Identification of the Project's Location. The plan should consider the need for universal accessibility within the park for the entire trail system and surfaced nodes associated with wayside exhibits, and circulation and surfaced nodes appropriate for universal access to consolidated picnic area features.

Additional Studies Recommended.

- The comprehensive plan should be based on the issues and needs identified in the *George Washington Carver National Monument Accessibility Assessment: Summary Report: Findings and Recommendations* developed for the park by the National Center on Accessibility.

Specific Implementation Actions.

- The comprehensive plan should address the recommendations of the 2014 accessibility study. Critical recommendations include:
 - Remove the asphalt surfacing in the picnic parking area, re-grade for universal accessibility and positive drainage, and resurface the parking area with asphalt (Figure 282). If the comprehensive plan recommends the need for expanded parking, then additional spaces should be added.



FIGURE 282. The parking lot in the picnic area would be re-graded for accessibility.

- Provide one designated van accessible parking space and an adjacent access aisle. This number could change if the parking is expanded and additional van accessible spaces are required.
- Provide signs for accessible parking.
- Provide additional accessible picnic tables.
- Provide a high/low drinking fountain in a concrete base.
- Relocate the picnic tables and trash and recycling receptacles from the picnic area south of visitor center parking to the consolidated picnic area north of the park entrance road.
- Provide a firm and stable surface connecting the accessible outdoor

constructed features in the picnic facility to the accessible parking spaces.

- Repair the deficiency in the curb ramp connecting the standard accessible parking space access aisle to the accessible route in the visitor center parking area.
- The comprehensive plan should re-evaluate the existing trail for specific deficiencies of slope and surfaces and make consistent and comprehensive recommendations as to the best methods for addressing universal accessibility standards.
- The comprehensive plan should include consistent recommendations for construction and surfacing of new circulation and clear ground space (Figure 283 and Figure 284).



FIGURE 283. Example of clear ground space associated with a wayside exhibit node in compliance with universal access standards. Source: JMA collection.



FIGURE 284. All wayside exhibits nodes will need to be evaluated and updated to include the clear ground space required to meet universal accessibility standards.

Related Implementation Projects.

- Consolidate the Two Picnic Areas into a Single Area
- Develop a Universally Accessible Trail from the Overflow Parking Area to the Visitor Center Walkway
- Develop New Interpretive Trails

Develop New Interpretive Trails

Summary Description. Expansion of the existing opportunities for visitors to access and learn about the park's significant natural and cultural resources is recommended in the Preferred Alternative. This expansion includes: a primary trail providing access to new interpretation features and venues; a primary trail connecting the existing Carver Trail to the Moses Carver house; and resurfacing the existing Contemplative Loop Trail.

In addition, a new trail is recommended to connect the Moses Carver house, prairie units 7 and 2, and Harkins Woods. The trail would cross Harkins Branch in two locations before returning to the site of the Moses Carver house. This trail would not be universally accessible. Surfacing within the prairie units would consist of mown grass; within Harkins Woods, the surfacing might include hard-packed earth and mulch.

Considerations. The recommendations and guidelines developed as part of the trail plan would consider the advantages and disadvantages of all proposed routes, identify problems to avoid, provide connections to interpreted resources and meet other interpretive goals, consider the potential for making the route universally accessible, and indicate connections to the visitor center and parking. Trail designs would ultimately distinguish between primary routes, comprised of universally-accessible trails that provide access to the park's most important resources and stories from parking areas; and secondary routes that may not necessarily be universally accessible, but may offer a range of challenge levels that could provide an extended tour for interested visitors.

Installation of new trails may require a certain amount of modification of the landscape, such as grading, to ensure a well-drained and relatively even tread and prevent erosion. It is currently anticipated that the primary trails will be universally accessible and the secondary trails will not. The secondary trails will consist of mown meadow within the prairie units and mulch or hard-packed earth within the woodlands. Alternative methods of interpretation from

trailheads or other venues along the primary trails will provide information about the significant natural and cultural resources in the area of the secondary trails for the enjoyment and participation of all visitors to the park (Figure 285 through Figure 287).

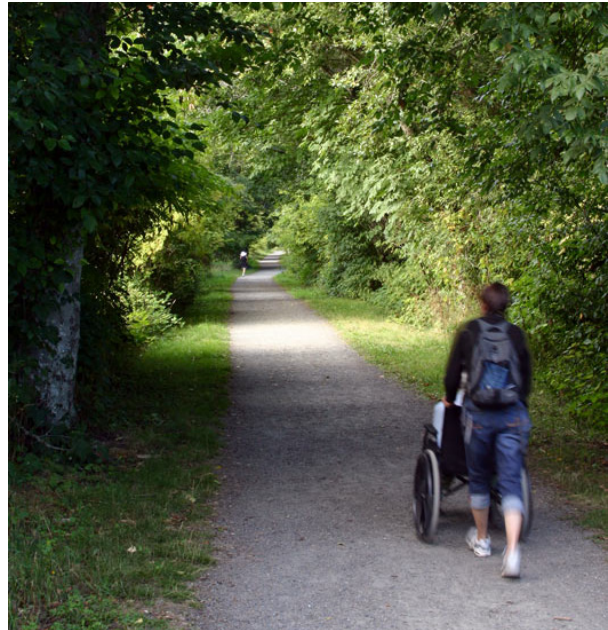


FIGURE 285. Example of new primary trails that would be universally accessible, with connections to wayside exhibits and viewsheds afforded. Source: JMA collection.



FIGURE 286. Example of bridges or boardwalks on primary trails that would be universally accessible. Source: JMA collection.



FIGURE 287. The primary trail around the Carver bust would be re-designed for universal accessibility. Existing stairs and ramped gravel trail segments do not meet universal accessibility standards.

Trail maps would indicate to visitors the range of experiences available in association with the park's trail system. A new brochure and possible a Global Positioning System (GPS) tour would be generated to accompany trail establishment. The map would indicate that the new expanded trail can be experienced in its entirety, but also includes several opportunities for shorter segments with a more manageable distance to accommodate the needs of a wide variety of park visitors.

This project includes specific maintenance requirements. New trails including: the trail encompassing new Moses Carver farm and Tuskegee research interpretation, the trail extension near Moses Carver house and the environmental trail within Harkins Woods, would require preventive and recurring maintenance. This may include annual grading to maintain even and weed-free surfaces and other trail surfacing and shoulder conditions to ensure compliance with universal accessibility.

The mown grass meadow trails would be developed by mowing and would require recurring mowing to maintain them (Figure 288).

The Contemplative Loop Trail resurfacing also requires recurring maintenance to ensure the trail surface and shoulder remain safe for visitors.



FIGURE 288. Mown trails are considered secondary trails and would not be universally accessible.

Identification of the Project's Location. The proposed trails are located primarily west of the visitor center, including prairie unit 4), west of the Moses Carver house in prairie units 7 and 2, and through Harkins Woods in the northwest corner of the park. Also included is the resurfacing of the current Contemplative Loop Trail around the Williams Pond.

Additional Studies Recommended

- The revised LRIP should help guide the design of new trail segments.
- The Comprehensive Plan to address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail system should help guide the design of the trails.

Specific Implementation Actions.

- Engage a historical landscape architect to design the new trails. The proposed primary

trails would be universally accessible and include:

- Expanded segment of the existing Carver Trail to the Moses Carver house.
 - Expanded segment of the existing Carver Trail that provides access through the primary interpretive area as well as part of the restored prairie and associated interpretation.
 - Existing contemplative trail with removal of the wood chip mulch surfacing, regrading for positive drainage, and new accessible surfacing.
- The proposed secondary trails would not be universally accessible and include:
 - Mown grass corridors from the area of the Moses Carver house through prairie units 7 and 2.
 - Connecting environmental trail through Harkins Woods and crossing Harkins Branch.
 - Consider the options for trail surfacing included in this report. (Refer to *A Guide To Trail Surfaces for Historic Sites*.)
 - Grade the trails to meet the accessibility criteria identified for each specific segment.
 - Install interpretive signage in accordance with the resource-driven plan for the trail.
 - Revegetate the trail margins as necessary.
 - Maintain the new trail corridors in good condition.

Related Implementation Projects.

- Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System
- Prepare a Revised Long-Range Interpretive Plan
- Prepare a Site Furnishings Guide

Establish New Interpretive Exhibits

Summary Description. All of the buildings and structures that characterized the Moses Carver farm during the period that George Washington Carver lived there have been lost to time. Archeological investigations and review of documentary sources have suggested the location and character of some of these missing features. The park currently interprets the site of the Carver birthplace cabin through a foundation outline. However, the outline has been shown to be inaccurately located. Moving the cabin outline to a more accurate location, and similarly interpreting other features of the Moses Carver Farm using a combination of methods will help visitors better understand the early life of George Washington Carver.

The use of foundation outlines, building corner markers, mow patterns, ghost structures, and plantings, coupled with rehabilitation of cultural vegetation patterns, and wayside exhibits offers feasible and effective treatment options for interpreting the site's missing historic features (Figure 289 through Figure 291).



FIGURE 289. An example of the interpretation of missing features using mow patterns and corner markers. Source: JMA collection.



FIGURE 290. An example of the interpretation of missing features using low brick foundation structures. Source: JMA collection.



FIGURE 291. Example of an historic fruit orchard that would be restored on a small scale as part of the interpreted Moses Carver farm precinct. Source: JMA collection.

Considerations. While reconstructing missing buildings and structures would provide the most tangible interpretive aid for visitors, this approach is not appropriate for interpretation at George Washington Carver National Monument due to a lack of historic documentation to accurately depict the features. Other, more evocative interpretation options exist that could be considered for representing the missing features, such as outlining the footprint or three-dimensional form of a missing house using mow patterns or contrasting vegetation; providing an artist's rendering of the feature; or marking the corners or foundation of a shed or other building using masonry, wood posts, or plant material. These options not only avoid historical inaccuracy, they are often less costly both in terms of initial installation and maintenance. They can

also be coupled with plantings and other creative exhibit design that depicts general patterns of spatial organization and conveys what is known and not known about the sites.

Park managers and interpretive planners should determine which buildings or structures would be best to interpret, and consider the most appropriate representation methods for each. For instance, the park may want to reserve more intrusive, upright, or physically imposing representations for features that have the most interpretive or educational value. Additional considerations for rehabilitating properties to incorporate them into the park's interpretive program include determining the desired degree of woodland versus open land cover; the composition of fields and woodlands; the treatment of trace roads, buildings, and structures; and the establishment of new access routes, trails, buildings, interpretive exhibits and other signs, and viewsheds. The design of these new site improvements should be driven by an interpretive planning process that examines the park's interpretive systems as a whole.

Identification of the Project's Location. The principal location proposed for marking missing farmstead features is the terrace overlooking Carver Branch to the northwest of the visitor center.

Additional Studies Recommended

- Review the CLR/EA for interpretive recommendations and to understand the identified connections between existing and missing landscape resources and interpretation.
- Review the Preferred Alternative and the relationship to established interpretive themes and goals.
- Additional economic-botanical research and investigation should be conducted to supplement existing information.

Specific Implementation Actions.

Pre-implementation Considerations

- Archival research should be conducted as part of the data collection required to support development of new interpretive exhibits, along with archeological investigations of the sites of missing mid-nineteenth-century buildings and structures located within the park.

Implementation Process

- Assess which features should be interpreted by determining those that will deliver the most educational value to visitors.
- Enlist an exhibit designer, in coordination with park staff, to plan representative features.
- Consider interpreting missing buildings, using documentary or archeological evidence, through various means, including:
 - *Foundation outlines.* When the dimensions and location of the footprint of a missing building or structure are known, an outline or other demarcation such as a low wall or corner markers can be placed on the ground to aid interpretation. If footings are necessary, avoid digging into the ground. Instead, add a minimal layer of fill over the site to protect any archeological resources. A foundation outline can be constructed of typical local building materials utilized during the period when the building was standing, such as stone or brick. However, the foundation outline should clearly be a product of its own time, so that it is not confused as a historic foundation or ruins.
 - *Markers.* When locations of missing structures are known, but overall dimensions have yet to be determined, consider installing metal signs, cut out silhouettes, or medallions in the ground. These may be coordinated with a wayside exhibit conveying an artist's rendering of the interpreted feature to represent the

character of missing structures and bring the historic scene to life.

- *Ghost structures.* When the overall dimensions, roofline, and massing of a missing building or structure are known, consider developing a three-dimensional "ghost structure" on the site.
- *Plantings.* Alter vegetation management regimes, such as mowing schedules and planting palettes, in such a way as to yield a diversity of appearances and support interpretation of missing features. For example, maintain mown precincts around missing buildings and structures to recall historic patterns of spatial organization and delineate living areas. Or, mow pasture or uncultivated areas less frequently than areas where cultivated crops are interpreted, or use different grass species to represent a variety of "crops."

- Consider re-establishing historic fencing, or the outline of fencing, in association with interpreted missing buildings and structures.
- Enlist qualified park staff or a landscape contractor to install the chosen representative features, as well as any wayside exhibits.
- Supplement existing interpretive media and programs with new materials to enhance the depiction of the life and work of the inhabitants of the area during George Washington Carver's youth. Locate new interpretive media in as unobtrusive a manner as possible to avoid detracting from the historic scene.

Related Implementation Projects.

- Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System
- Prepare a Revised Long-Range Interpretive Plan
- Prepare a Site Furnishings Guide

Clear and Thin Non-Contributing Woody Vegetation for Viewsheds and Restoration of Historic Patterns of Spatial Organization

Summary Description. The park has expressed a desire to reestablish the historic character of the stream corridors and to establish viewsheds in association with specific locations along trails that can be used to interpret the life of George Washington Carver through landcover and land management practices. To support this goal, portions of the existing woodland vegetation should be thinned or cleared to interpret nineteenth century patterns and interpreted sight lines and physical relationships.

Considerations. Some currently wooded areas that were open during the nineteenth century interfere with park interpretive goals. Interpretation of the historic Carver farmstead landscape would be enhanced through the reinstatement of historic patterns of spatial organization, including removal of non-contributing woodland (Figure 292 through Figure 294).



FIGURE 292. The park landscape was less wooded during the mid-nineteenth century when George Washington Carver was a young boy, as well as during the mid-twentieth century during early park development. Source: George Washington Carver National Monument Photo Collection, image 142.



FIGURE 293. A view of the more open character of the landscape during the mid-twentieth century. Source: George Washington Carver National Monument Photo Collection, image 58.



FIGURE 294. Woodland growth over the decades has covered areas that were once cleared and possessed a different spatial organization including a savanna-like character near the stream corridors.

Some areas of non-historic woodland, however, have high natural resource values and should be retained. Others should remain wooded due to a lesser role in park interpretation and the expense associated with maintaining open landcover. In some of these areas, careful manipulation of existing woodland cover may be used to establish views to support interpretation. View corridors can be established through site-specific manipulation of the woodland, including limbing up of canopy trees, removal of saplings and shrubs, and clearing of small areas of trees to establish a vista between a viewpoint and a specific view rather than wholesale clearing.

Before any woodland clearing begins, two factors must be considered: the impact of clearing on the environment and park maintenance capabilities,

and the role that clearing will play in interpretation. The park should evaluate priorities for interpretation and determine the costs and benefits associated with clearing. Although clearing and thinning vegetation will help rehabilitate historic views and allow interpretation of historic landcover and land management, there is limited information available to accurately restore the historic landscape. Clearing would thus be tied to interpretive goals and occur within specific locations in conjunction with interpreted sites, and should only occur in visitor use areas. In some cases, non-contributing woodland helps to screen incompatible views and should be retained. Reestablished views that would present an incompatible visual condition within primary park visitor areas should remain screened from view.

Natural resource concerns must be taken into consideration as part of any clearing effort. Vegetation that has grown up since the period of significance may now provide critical habitat for wildlife or protect other resources. Some woodland areas serve as habitat for unusual plant species or communities, a value that may supersede historic landscape restoration. Park managers must carefully weigh the benefits of clearing and thinning vegetation for interpretive purposes with the ecological consequences of removing the vegetation. For example, care must be taken to avoid damage to steep slopes and erodible soils when removing vegetation. Many procedures that support the goal of a visually open character, including removing invasive species, as well as dead, diseased, or damaged trees, removing the lower branches of trees, and removing or pruning shrubs larger than four feet in height can be utilized prior to wholesale removal if retaining existing vegetation is proven desirable. If existing non-contributing woodland is found to play an important role in the park ecology or screening, consideration should be paid to whether important stories can be told elsewhere.

Woodland areas that are cleared should be replaced with native warm-season grass and forb fields and prairie communities. Consideration should be paid to managing the fields through

prescribed burning or haying (Figure 295 and Figure 296).



FIGURE 295. Native grasses would be planted in areas where woodland thinning and selective clearing occurs.



FIGURE 296. Harkins Woods, shown in the distance in this photograph, would be managed to retain healthy native plant communities, and remove invasive species.

Maintenance for this project is both recurring and deferred. The project re-establishes historic character and missing historic patterns of vegetation. It will require biannual pruning and thinning to maintain the cleared areas.

Identification of the Project's Location.

Clearing and thinning of existing woodland in support of interpretation is appropriate for consideration within the Carver Branch and

William Branch stream corridors, in the vicinity of Williams Pond, and on the terrace overlooking Carver Branch where the Moses Carver farmstead will be interpreted.

Additional Studies Recommended

- A set of BMPs should be prepared to identify the most appropriate methods of tree removal and erosion control given local soils, hydrology, and vegetation types to minimize impacts and threats to cultural and natural resources and known and potential archeological resources. The BMPs should identify how to dispose of the cleared trees prior to beginning work.
- The boundary of the site to be cleared should be delineated by an interdisciplinary team, including an ecologist, rare plant specialist, hydrologist, forester, archeologist, and historical landscape architect. The team should collectively delineate the methods for disposal of the woody growth removed.

Specific Implementation Actions

Pre-implementation considerations

- By law, any landscape management activity that moves, breaks, or disturbs soil requires completion of some level of Section 106 and/or NEPA compliance prior to initiating work. Park personnel should prioritize areas to be cleared, and work with botanists/ecologists to perform the environmental impact assessments. All potential cultural and natural resource impacts should be evaluated before determining which sites will be cleared. Consideration must be paid to all federal, state, and local laws associated with wetlands or other sensitive ecological areas. Wetlands should be delineated prior to undertaking woodland clearing.
- Proposed interpreted views and viewsheds should be identified as part of a seen-area analysis.

Interpretive Viewshed Clearing Process

- Engage an archeologist, natural resource specialist, and historical landscape architect to field-check and evaluate the areas to be cleared and ensure that no cultural or natural resources will be adversely affected prior to removal of woodland vegetation. Evaluate the likely efficacy of the clearing to establish the desired view.
- Clear as little vegetation as possible to achieve the desired viewshed or bottomland opening. Perform work in phases to ensure that just enough vegetation is removed to meet interpretive needs:
 - Phase One: Begin by removing exotic and invasive vegetation and trees that are diseased, unhealthy, present a danger to visitors, or are a windthrow hazard. Follow BMPs for vegetation removal and thinning. Remove the majority of saplings and shrubs. Prune and remove branches up to fifteen feet above the ground. Seed with appropriate native grass, rush, sedge, and forb species.
 - Phase Two: Evaluate the success of phase one thinning operations. Further enhance visibility as needed by selectively thinning additional trees. Continue to remove exotic, invasive, and diseased vegetation.
 - Phase Three: Evaluate the success of phases one and two thinning operations. If the viewshed remains obscured, continue to selectively thin trees without negatively affecting water quality until the viewshed meets interpretive needs. As woodland is opened, seed with relatively shade-tolerant native grasses, rushes, sedges, and forbs to prevent soil erosion and establishment of unwanted opportunistic and invasive species. Maintain understory grasses by periodically removing woody competition as needed. Also thin woody cover on a periodic basis as needed to maintain visual access.

- Alternatively, opt to clear trees between a specific view point and a viewed landscape feature in a narrow cone of vision. Interpret the cleared area for visitors.
- Maintain view corridors through infrequent mowing—on average once per year or every two years—or prescribed burning.

Woodland Clearing Process

- Manage tree removal operations to protect environmental resources.
- Perform archeological surveys and associated testing of the site by a qualified archeologist. Enlist a qualified archeologist to monitor vegetation removal to avoid loss or damage to surrounding cultural resources.
- Perform cutting or thinning in the fall and winter, when fewer visitors are at the park, dormant trees are less likely to be damaged, there are no nesting birds or animals in the vegetation, and sufficient time would be available to remove ground vegetation before spring growth.
- Minimize the use of heavy vehicles, use low tire-pressure vehicles, and restrict use to times when the soil is firm in order to reduce compaction. Employ measures to stabilize soil and minimize erosion.
- Incorporate silvicultural methods that minimize the impacts and threats to cultural and natural resources and known and potential archeological resources. Ensure that woodland harvesting is monitored by a historical landscape architect and archeologist. An archeologist should be present during any clearing operation.
- Engage a tree removal service to conduct the clearing that can demonstrate successful experience working at historically significant sites. The park should regularly inspect tree removal operations to monitor compliance with the terms of the contract and applicable laws. The archeologist, soil scientist, and/or

other professionals should participate in these inspections.

- Cut stumps to the ground; do not uproot or grind them. Treat stumps and sprouts with herbicide, such as glyphosate, to discourage and control woody regeneration. Chemical control of woody plant regeneration should be conducted by a certified herbicide applicator—either qualified park staff, or a landscape contractor.
- Remove felled trees without dragging, which gouges the ground surface.
- Re-vegetate with desired native field grasses and forbs.

Related Implementation Projects

- Prepare a Revised Fire Management Plan
- Prepare a Streambank Restoration Plan
- Prepare a Revised Long-Range Interpretive Plan

Restore the Cemetery Wall

Summary Description. The Carver family cemetery located southwest of the visitor center is surrounded by a stacked stone wall. The existing wall is a 1954 reconstruction of the historic cemetery wall that was removed during Shartel ownership. In reconstructing the wall, the National Park Service based the work on oral accounts and archeological investigations. Since 1954, the entrance into the cemetery has been relocated from the east side to the north side to coordinate with the Carver Trail, and many of the stones have fallen or become dislodged and subsequently restacked by park personnel (Figure 297).



FIGURE 297. Stones that have become dislodged or displaced have been placed on top of the wall as a repair measure. The wall currently requires a comprehensive restoration to reflect its original design.

To accurately convey the character and configuration of the wall as originally built will require a restoration effort. Photographs of the work completed in 1954 and review of the oral history accounts and archeological work

conducted by the National Park Service prior to the initial restoration efforts should be reviewed and used to design this second restoration (Figure 298 through Figure 300).

The NPS should build a sample section of wall prior to undertaking full restoration to ensure the work meets the desired character. The original opening location should be reinstated and the trail designed to provide access to the restored east entrance.



FIGURE 298. Photograph dated 1955 of work completed on the cemetery stone wall. Source: George Washington Carver National Monument Photo Collection, image 417.



FIGURE 299. Another view of the wall soon after the 1954 restoration. Source: George Washington Carver National Monument Photo Collection, image 2120.



FIGURE 300. This photograph offers clues to the construction methods used in the 1954 restoration. Source: George Washington Carver National Monument Photo Collection, image 5065.

Considerations. The design of the restored wall should incorporate any new information that has been collected about the historic Carver era wall into the design of the restoration. Every effort should be made to restore the wall as faithfully as possible to the nineteenth-century character and configuration, and, where information is lacking, to the 1954 restoration.

Wall restoration is part of deferred maintenance as it re-establishes a historical feature, thus preserving the historical character of the park. Recurring maintenance for this project will include annual repair of dislodged stones and monitoring drainage in and around the base of the wall.

Identification of the Project's Location. The Carver family cemetery and wall is located to the south of the restored prairie that falls southwest of the visitor center.

Specific Implementation Actions

- Review all material available regarding the original Carver family cemetery wall and the 1954 restoration.
- Develop a plan for restoring the wall as faithfully as possible to the original, using the 1954 restoration as a guide where information is lacking.

- Construct a sample section of wall to be used as a guide in the work.
- Restore the wall.

Related Implementation Projects

- Prepare a Revised Fire Management Plan
- Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System Prepare a Revised Long-Range Interpretive Plan
- Prepare a Site Furnishings Guide

Prepare a Revised Fire Management Plan

Summary Description. The park currently uses periodic prescribed fire in the management of native warm-season grass fields and restored prairie units. In conformance with federal law, the park's use of prescribed fire is detailed in a Fire Management Plan prepared in May 2004, and amended in 2010. Implementation of this CLR/EA will include the conversion of areas currently managed in fescue fields and woodlands into native warm-season grass fields and restored prairie. The land management change will need to be reflected in the park's Fire Management Plan. For this reason, the CLR/EA recommends that the park's plan be revised to include these new areas.

Considerations. Before an amended or revised fire management plan is prepared, the park should identify and assess the areas to be converted to native warm-season grass fields and restored prairie.

Identification of Project's Location. This plan addresses all of the areas in native warm-season grass cover that are anticipated to benefit from the use of prescribed fire in their management.

Additional Studies Recommended.

- The revised fire management plan should be considered in conjunction with ongoing prairie restoration, maintenance, and management programs.

Specific Implementation Actions

- Document the locations of new areas to be managed using prescribed fire.
- Prepare the revised fire management plan.
- Utilize the plan to guide management of the cultural landscape as described in the CLR/EA.

Related Implementation Projects

- Develop New Interpretive Trails

- Clear and Thin Non-Contributing Woody Vegetation for Viewsheds and Restoration of Historic Patterns of Spatial Organization
- Prepare a Revised Long-Range Interpretive Plan

Prepare a Site Furnishings Guide

Summary Description. Implementation of interpretive and accessibility improvements within George Washington Carver National Monument will require the NPS to consider the design and character of new physical features. Preparation of a design guide that establishes a comprehensive standard for contemporary landscape features and systems would facilitate the addition of necessary new features, as well as the replacement of non-historic features as needed. Landscape features and systems to be addressed by the guide include paths, walks, trails, road surfaces, parking, contemporary fencing, site furnishings, and parking area features such as bollards, wheelstops, and curbs. The guide would identify products, materials, and dimensions for new features, and include typical details and installation information. Use of the guide would enhance the park's unique identity, and serve to simplify the palette of materials within the park, which in turn would diminish the impact of contemporary features on the historic scene. All features would be designed to be universally-accessible and conform to the recommendations of the *George Washington Carver National Monument Accessibility Assessment: Summary Report, Findings and Recommendations* completed in 2014.

Considerations. The design guidelines for contemporary park features at George Washington Carver National Monument would need to be compatible with NPS system-wide standards as well as the rural vernacular character of the park. The design guidelines would address appropriateness of scale, materials, and physical composition to ensure visual compatibility, consistency, and integration with the overall character of the park landscape.

Park-wide standards for signage should also be developed. New features would always clearly be a product of their own time, and as simple, sturdy, and unobtrusive as possible. Replacement of existing features that are not consistent with the guidelines would also be addressed in the plan.

Identification of Project's Location. This project applies to the park as a whole.

Additional Studies Recommended.

- In anticipation of preparing the recommended design guidelines, the park should collect all information available regarding NPS standards for contemporary landscape features, and document existing examples of contemporary features within the national monument.

Specific Implementation Actions

- Assemble a design team comprised of a landscape architect, architect, and park personnel, including a representative from the maintenance department, to develop the park-wide design guidelines.
- Consider carefully the character and identity that is appropriate for non-historic features associated with George Washington Carver National Monument.
- Review photographs of current examples of site furnishings, fencing, road edging materials, circulation surfacing, signage, and visitor use and interpretation features. Consider the viability of existing features to serve as the park-wide standard.
- Review product catalogues for images of alternative features.
- Review the individual elements proposed for inclusion within the design guidelines.
- Develop details, installation procedures, and other supporting information for each park-wide standard feature.
- Develop a comprehensive signage program that is consistent with the NPS Sign Standards Reference Manual, Uniguide Sign Program, Uniguide Standards Manual, and Graphic Identity Program.
- Consider the palette in its totality to ensure the individual elements are cohesive and work well together, and are consistent with NPS standards, before making final selections.

Related Implementation Projects

- Develop a New Overflow Parking Area on the Site of the Former Housing/Administration Site
- Consolidate the Two Picnic Areas into a Single Area
- Develop a Universally Accessible Trail from the Overflow Parking Area to the Visitor Center Walkway
- Develop New Interpretive Trails
- Establish New Interpretive Exhibits

Consolidate the Two Picnic Areas into a Single Area

Summary Description. The park currently maintains two picnic areas. One of these has been used since the 1950s, and features shade trees, an access road, parking, and several universally-accessible site furnishings. The second is less formal, and located along the southern edge of the visitor parking area. The CLR recommends that the park consolidate all picnic functions into one location. The recommended location is the historic picnic area set within the grove that already includes several amenities (Figure 301).



FIGURE 301. Picnic facilities located south of the visitor center parking should be moved into the picnic area north of the entrance road and visitor center parking area.

Deficiencies in the universal accessibility of the picnic area, associated parking, and site furnishings, such as picnic tables and drinking fountains, were identified in the report: *George Washington Carver National Monument Accessibility Assessment: Summary Report, Findings and Recommendations* and completed in 2014 are recommended to be addressed and corrected as discussed above.

Considerations. Picnic tables currently located south of the visitor parking area should be relocated to the historic picnic area. The consolidated picnic area may need to undergo limited redesign to address the deficiencies identified in the 2014 accessibility assessment (Figure 302 and Figure 303).



FIGURE 302. Design of the picnic area should include features, such as parking spaces, appropriately surfaced and sloped walks, picnic tables, trash receptacles, and benches, where accessibility has been taken into consideration. An accessible connection to the visitor center is also needed.



FIGURE 303. Currently, there is no accessible path from the picnic area to the walks associated with the visitor center and adjacent parking area.

The design plan recommended above should be completed before consolidation takes place and all deficiencies can be addressed according to a comprehensive plan for accessibility compliance.

This project will require recurring maintenance of the turf as well as the grove of mature trees. Health of the trees should be monitored and pruning should occur in order to maintain the health of the trees and the safety of visitors.

Identification of the Project's Location. The two picnic areas are located along the park entrance road to its north and south. The picnic area to the south of the parking area is recommended to be relocated to the consolidated

picnic area location to the north of the park entrance road.

Additional Studies Recommended

- The development, maintenance, and management of the turf area that covers the picnic grounds should be guided by the NPS Midwest Region Pilot Turf Stewardship Project for George Washington Carver National Monument.

Specific Implementation Actions

- Design the changes that are needed to ensure that the consolidated picnic area meets universal accessibility standards.
- Relocate picnic features from the informal area south of the visitor parking area to the historic picnic area to serve the consolidated picnic area.
- Install the new picnic area features identified in the design.

Related Implementation Projects

- Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System
- Prepare a Revised Long-Range Interpretive Plan
- Prepare a Site Furnishings Guide

Prepare a Streambank Restoration Plan

Summary Description. Carver Branch is one of the surviving historic features located within the park known to George Washington Carver during his childhood. It is an important element of the interpretive story of the park. It also serves as a datum around which the interpretive trail revolves.

Carver Branch as a system has been negatively affected by local farming activities and other land management practices. Carver Branch has experienced, and continues to experience, streambank erosion and stream bottom scouring. Adjacent agricultural land uses and paved roads and parking areas have altered overland flow patterns, resulting in increased quantities and speed of runoff. This has contributed to problems with bank erosion. Stream bottom scouring can eventually contribute to the lowering of the water table. The previous application of riprap as an erosion control measure has also negatively affected the stream corridor by introducing an inflexible material that limits natural channel fluctuations.

In order to enhance the interpretive quality and health of the waterway, the park should endeavor to restore the stream corridor and stream banks. The approach to the process should be developed as part of a restoration plan.

Considerations. The restoration will likely involve recontouring the banks and establishing appropriate vegetation for stabilizing the soil.

Additional Studies Recommended

- A hydrology study of the stream corridor would help determine whether the existing corridor requires intervention to enhance water quality and restore the historic corridor.

Identification of the Project's Location. The streambank restoration plan should address the Carver Branch corridor, but consideration should also be paid to ensuring its applicability to the Williams and Harkins Branch corridors as needed.

Specific Implementation Actions

- Document the problems and problem areas to be addressed by the plan.
- Conduct a hydrology study.
- Engage appropriate professionals to prepare the plan
- Prepare the streambank restoration plan. Include storm water BMPs to reduce the speed and quantity of overland storm water flow.
- Utilize the plan to guide restoration efforts as indicated in the CLR/EA (Figure 304).

Related Implementation Projects

- Clear and Thin Non-Contributing Woody Vegetation for Viewsheds and Restoration of Historic Patterns of Spatial Organization



FIGURE 304. The process of streambank restoration would follow a comprehensive plan developed for the park. Source: JMA collection.

Develop a New Overflow Parking Area on the Site of the Former Housing/Administrative Area

Summary Description. The park currently faces a parking shortage whenever it holds a special event. Cars are parked along the sides of the park entrance road and in nearby mown areas of the native warm-season grass fields and restored prairie. However, this practice presents safety concerns, and can be damaging to the park as a fire hazard or when the ground is wet. In order to address this concern, the park would like to develop a dedicated overflow parking area. As part of the planning process conducted on behalf of the CLR/EA, it was determined that the area where the three former housing/administrative buildings are currently located, but are slated for demolition, presents a good opportunity for developing an overflow parking area. The parking area would be accessible from the existing access road from Carver Road (Figure 305).



FIGURE 305. The existing access road from Carver Road should be used in association with the dedicated overflow parking area.

Considerations. The area should be designed to have as little environmental impact as possible. The surface of the overflow parking area should be pervious, with a perforated surface material that allows transmission of water to an aggregate subbase, allowing for storage and slow release into the groundwater system (Figure 306 through Figure 308).



FIGURE 306. An example of a pervious grass paver system used for parking. Source: JMA collection.



FIGURE 307. Example of pervious pavers that can be used to protect tree roots. Source: JMA collection.



FIGURE 308. Example of grass pavers that allow turf growth and can be maintained through mowing. Source: JMA collection.

The design of the new overflow parking area should incorporate storm water BMPs, such as the

inclusion of vegetated swales, filter strips, and rain gardens. Consider replacing fescue turf in the vicinity of the new parking area with native grasses that can be maintained through periodic mowing.

Protecting existing trees should be a consideration of the plan for the parking area. (Figure 309).



FIGURE 309. The existing open area would be ideal for establishing an overflow parking area. However, tree protection must be considered in the design.

Identification of the Project's Location. The overflow parking is located on the site of the former housing/administrative area of the park. This site is south of the main entrance to the park and is bordered to the east by Carver Road.

Specific Implementation Actions

- Design the new parking area to accommodate an appropriate number of spaces based on analysis of current and anticipated future needs and on the existing site resources, which include several mature trees.
- Demolish the existing housing/administrative buildings, existing parking area pavement, and associated site features where the new parking area will be located.
- Grade the area for positive drainage, taking into consideration proposed storm water BMPs.
- Install the new pervious pavement and connect the parking to the existing access road. Develop storm water management features, potential to include vegetated swales and rain gardens.

- Seed areas to remain in grass cover. Plant vegetation as needed to screen the parking area from view of primary visitor use areas and the road.

Related Implementation Projects

- Develop a Universally Accessible Trail from the Overflow Parking Area to the Visitor Center Walkway
- Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System
- Prepare a Site Furnishings Guide

Develop a Universally Accessible Trail from the Overflow Parking Area to the Visitor Center Walkway

Summary Description. A universally-accessible trail is needed to connect the proposed overflow parking area with the visitor center parking area and walks. The trail would replace the existing seasonal trail. The trail would meet the requirements for universal access, and would be approximately 500 feet in length.

Considerations. Surfacing for the trail should be consistent with other universally-accessible trails developed for the park. Paving materials should be as visually and environmentally sensitive as possible and compatible with the landscape of the developed core. Special care should be taken with the alignment of this trail, as it runs through an area of the park that contains a number of very large trees. The trail should wind through the trees where possible and avoid disturbing their root systems (Figure 310 and Figure 311).



FIGURE 310. The proposed trail would begin in the vicinity of the existing parking pavement and continue west to the visitor center parking area and existing walkways.



FIGURE 311. The proposed trail would wind through a grove of trees south of the park entrance road.

Trees should not be removed to construct the trail, unless they are dead or diseased, or present a hazard to the safety of visitors using the trail.

The trail should be the narrowest width possible to accommodate universal access, that is, 6 feet wide to accommodate two wheelchairs passing each other. Visually-intrusive storm water control features such as curbs, gutters, and ditches should be avoided. Wherever possible, storm water should be directed to flow across broad, shallowly-sloped expanses of the turf grass that covers this area of the park to encourage infiltration of the water into the ground. Filter strips should be maintained along the margins of closely-mown areas along the trail.

Identification of the Project's Location. The connector trail is associated with the overflow parking area described above. The overflow parking is located on the site of the former housing/administrative area of the park. This site is south of the main entrance to the park and is bordered to the east by Carver Road.

The trailhead from the overflow parking area would be centrally located on the west side of the paving edge. The trail would wind its way west through existing trees to connect to the visitor center sidewalk adjacent to existing parking area. This universally-accessible sidewalk then takes visitors to the visitor center entrance.

Specific Implementation Actions

- Engage a historical landscape architect to design the new trail. Consider the options for accessible trail surfacing included in this CLR/EA. Though not considered a primary trail, this connector trail will be universally accessible. This is necessary and required to ensure accessibility for all visitors from the overflow parking area to the visitor center.
- Stake the trail in the field. Avoid removal of any trees and disturbance of root systems.
- Grade the trails to meet accessibility standards.
- Surface the trail with the materials suggested in the design.
- Re-vegetate the trail margins in accordance with the turf management practices established for this area of the park. Include the establishment of filter strips where appropriate.
- Maintain the new trail corridor in good condition.
- Install wayfinding signage at the trailhead at the overflow parking area that clearly directs visitors to the visitor center.

Related Implementation Projects

- Develop a New Overflow Parking Area on the Site of the Former Housing/Administration Area
- Prepare a Comprehensive Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System
- Prepare a Site Furnishings Guide

Develop a New Storage Facility

Summary Description. The park uses portions of the three housing/administrative buildings located near Carver Road for storage. These buildings are slated for demolition. In order to accommodate the storage function that will be lost, the park seeks to establish a new storage facility. The CLR/EA recommends that the new structure be built in the environs of the existing maintenance yard, potentially adjacent to the existing maintenance building. The building would be designed in such a way that it would be compatible with the existing structure in terms of scale, massing, materials, and character. It would be located within the brick wall-enclosed maintenance yard, and thus partially screened from view for visitors.

Considerations. The new storage facility structure should be designed to accommodate the current and anticipated future storage needs of the park.

Identification of the Project's Location. The new storage facility would be located within the existing maintenance yard, and potentially adjacent to or connected to the existing maintenance building.

Specific Implementation Actions

- Locate temporary storage facilities for the material currently located in the housing structures should they be removed prior to construction of the new facility.
- Design the new storage facility.
- Construct the new storage facility.
- Repair the landscape impacted by construction.

Repair the Brick Wall Surrounding the Maintenance Yard

Summary Description. A brick wall encloses the park's maintenance yard south of the visitor center. The low brick masonry wall is constructed of the same modular brick as the maintenance building and original visitor center. The wall maintains a consistent height except on the east side where it steps up in elevation (Figure 312 and Figure 313).



FIGURE 312. The brick wall exhibits evidence of biological growth and discoloration.



FIGURE 313. Portions of the wall are in need of repair.

The masonry wall is subject to damage and deterioration due to weather, lack of maintenance, and inappropriate past repairs. The upper part of the wall exhibits deterioration in various areas (Figure 314).



FIGURE 314. One part of the wall appears newer. The brick exhibits fewer problems with biological growth. The mortar is also a different color and less deteriorated.

Considerations. It is important that a detailed assessment of the condition of the wall be completed to document and evaluate its condition and the likely or possible causes of deterioration. When considering repairs to the wall, it is important to consider both immediate and long-term needs. The repair work should correct the immediate problem, while also working to eliminate or reduce the cause of the deterioration. Repair work should not accelerate deterioration or cause more problems in the future.

Typical condition issues associated with the masonry wall include the following:

- *Biological growth.* Biological growth is unwanted vegetative growth that impacts the wall, or an infestation of fungi, algae, or microbes on the surface of the wall itself.

Biological growth may result in organic staining and bio-deterioration of the masonry pore structure from invasive root structures.

- *Deterioration of sealant joints.* Sealant should only be used selectively in association with masonry structures, such as at upward facing joints that are vulnerable to water entry; mortar should typically be used at most locations. Deterioration is primarily associated with sealant that is beyond its useful service life.
- *Incompatible mortar or grout.* Where visually and physically incompatible mortar and grout materials were previously used for repair, and where mortar or grout is harder than the adjacent substrate, deterioration of the brick can occur.
- *Open joints.* Open joints result from deterioration of the mortar joint between adjacent masonry units or materials. The brick wall at George Washington Carver National Monument exhibits problems with open mortar joints.
- *Rising damp.* Rising damp is the movement of moisture upward through permeable building materials by capillary action. Salts may be deposited in the voids, pores, and cracks.
- Repoint open joints using appropriate mortars that match existing mortar on the wall. Care should be taken to ensure that mortars are not overly hard for older weathered masonry. Consideration can be given to the use of lime mortars rather than Portland cement-based mortars, as appropriate. Laboratory analysis of the brick and existing mortar may be necessary to identify a compatible mortar.
- Rake out existing masonry joints and spot repoint all joints as necessary with compatible mortar.
- Replace bricks with new ones that match the existing wall in color, size, and texture.
- Ensure that new mortar joints match the existing in terms of color, texture, joint size, profile, and tooling.
- Ensure that all repairs result in a consistency in materials and visual continuity with the surrounding buildings.

Identification of the Project's Location. The brick wall is located around the maintenance yard, south and west of the maintenance building and visitor center.

Additional Studies Recommended

- Before repair begins, materials, including brick and mortar, should be selected to ensure the wall maintains a visually pleasing consistency of color, pattern, and joint width.

Specific Implementation Actions

- Consider the workability, constructability, and safety requirements of the materials used in cleaning and repairs, and note them in the specifications for the repair project.

Related Implementation Projects

- Develop a New Storage Facility

Provide New Plantings to Screen Non-historic Views and Provide Shade

Summary Description. Protection of the historic rural character of the park landscape depends on the control of views to contemporary features. Several contemporary features are of special concern at George Washington Carver National Monument.

The staff parking and maintenance yard located south of the visitor center fall within important viewsheds of visitor use areas (Figure 315 and Figure 316).



FIGURE 315. The staff parking area should be screened from view in the vicinity of the visitor center.



FIGURE 316. Screening can be achieved using a small number of trees, informally planted, with low branching habits, like the tree visible immediately adjacent to the parking in the photograph.

Mitigation of these views would benefit visitors and enhance the park's historic character. One of the most effective means for mitigating

undesirable views is to establish screen plantings that obscure or diminish views identified as incongruous with the historic setting and landscape context.

Tree plantings are also proposed for portions of the expanded trail as it passes through restored prairie units to afford shade for visitors.

Considerations. The species used in screen plantings should complement the character of the area in which they are added, and should not be an obvious addition. The most successful screen plantings will appear natural and not call attention to themselves. Native tree species are desirable and will complement the natural landscape and historic character of the site (Figure 317).



FIGURE 317. This photograph is an example of informal plantings of species with low branching habits used to establish discreet screening that complements the natural landscape. Source: JMA collection.

Trees planted to provide shade along the trail should be widely spaced to avoid blocking key views. Trees that can be limbed up should be used to allow visitors to walk and see beneath the canopy (Figure 318).



FIGURE 318. Native trees that provide shade already exist in areas of the prairie and similar trees would be used to provide shade sporadically along segments of the trail without blocking major viewsheds.

Identification of the Project's Location.

Screen plantings are recommended to help mitigate views to the staff parking area and the maintenance yard. Shade trees are recommended at locations along the expanded trail or the existing trail as the park deems necessary and appropriate to enhance the visitor experience.

Additional Studies Recommended

- Develop screen planting recommendations based on vegetation management plans by HTLN and others and available lists of native species that are well suited to the site and exhibit the characteristics appropriate for the historical character of the park.

Specific Implementation Actions

- Delineate the area associated with the staff parking and the maintenance yard where views need to be mitigated.
- Establish locations for tree plantings that will effect screening based on observations from key points along the trails.
- Prepare a planting plan in consultation with a historical landscape architect to ensure the design of the screening is effective, while retaining the existing character of the historic site. Consider species with low branching habits for screening.

- Choose native species with the appropriate size, form, and density to accomplish the desired screening with a minimum number of plantings.
- Establish locations for shade trees along the trails based on the sites of interpretive features and an understanding of the intervals necessary to provide shade for visitor comfort.
- Use native trees with similar characteristics of existing trees in the historic landscape. Retain viewsheds in the restored prairie landscape by keeping shade tree plantings to a minimum, and using species that can be limbed up.
- Research and choose native species that are not too large and have a fine leaf texture and open branching habit. This will ensure that views are not blocked and the character of the historic landscape is retained.

Related Implementation Projects

- Develop New Interpretive Trails
- Develop a New Storage Facility
- Repair the Brick Wall Surrounding the Maintenance Yard

A Guide to Trail Surfaces for Historic Sites

Paths, walks, and trails are the means by which visitors access and experience historic sites and natural areas. The visual appearance of circulation systems within historic sites can affect their character as well as the visitor experience. They are a necessary component of historic sites that should be designed as an asset that blends seamlessly into their surroundings. Inappropriate surface materials, poor alignments, and deferred maintenance of walks and trails can detract from historic and natural settings, can lead to safety concerns, and are to be avoided in the design and management of circulation systems.

This guide provides information to support informed decision-making when planning for and designing trails, walks, and paths within historic sites and natural areas. The range of options available is broad and varied; Trails, walks, and paths can be carefully added to almost any site, providing accessibility for all visitors, and contributing to a rewarding visitor experience.

The guide contains four sections. The first summarizes planning considerations related to trail development. The second presents guidelines for the design and construction of the trail types that are appropriate for consideration within historic and natural sites. The third section is a table of trail surfaces appropriate for use within historic settings. The table provides a quick comparison of their aesthetic and structural qualities, as well as their installation requirements and maintenance costs. The final section is a glossary of trail surface stabilization products.



Planning Considerations

When planning for the establishment of new trails or the rehabilitation of existing circulation routes, there are numerous factors important to consider. These factors include aesthetics; reversibility; anticipated use; site engineering; availability of materials; initial capital costs; maintenance; and universal accessibility. A discussion of the trail types and surfacing materials to be considered follow these planning considerations.

Aesthetics

Trail surfaces have varied aesthetic traits that can contribute to the overall design concept for a site. Trails should be designed to be consistent in character with their setting.

Reversibility

Many historic sites endeavor to retain the integrity of resources by avoiding contemporary changes that cannot be removed later. An important planning consideration may be the reversibility of the proposed trail, meaning that it could be installed and removed without impacting historic resources.



Anticipated Use

The needs of anticipated users determine trail designs to a great degree and are a critical planning consideration. Equestrians, wheelchairs, maintenance vehicles, road or mountain bicycles, strollers, and in-line skates can each require different trail surface materials and levels of maintenance. Multiple-use trails attempt to meet the needs of various anticipated users. Sometimes, a single trail surface is not sufficient to accommodate all anticipated users, and several parallel systems need to be considered. In-line skates for example, require a smooth and hard surface, but the trail shoulder can be designed to accommodate those who prefer to walk on a softer material.

Within historic sites and natural areas, repeat visitors are becoming an important user group. Some repeat visitors are local residents who like to use the trails for walks or recreation. Others may be bringing new visitors to the site. Both groups appreciate the opportunity to experience different trails with a range of difficulty levels and lengths. Providing a range of trails can meet the needs of a broad cross-section of visitors and increase the duration of their stay.

Site Engineering

The underlying soil conditions of the proposed trail play a critical role in the selection of a surfacing material. Engineering properties of soils affect the amount of intervention required to establish a stable base for the surface, while environmental conditions affect the performance of a trail.



Availability of Materials

Costs associated with trail development are affected by the availability of selected surfacing materials. Those that are not native to the trail's region may be prohibitively expensive. Furthermore, some experimental or new materials under consideration for their environmental benefits or sustainability properties may not be readily available on the market, and finding a source for a desired surface material may prove difficult.

Initial Capital Cost

Trail surface costs vary dramatically. They relate to trail prism excavation, subbase preparation, base placement, and application of the selected trail surface. These costs can range from \$1 or \$2 per square foot to \$12 or \$13 per square foot, with some systems such as boardwalks potentially exceeding \$100 per square foot to construct.

Maintenance

Trail surfaces have an anticipated lifespan that can vary from one to more than twenty-five years. The maintenance regimes associated with different trail surfaces vary from regular inspection to expected follow-up repairs. Some of these repairs need to be administered by skilled professionals.

A Guide to Trail Surfaces for Historic Sites

Universal Accessibility

All sites should offer a universally accessible trail for at least a portion of their system. The federal government has developed guidelines for universally-accessible trails. In particular, surfaces must be “measurably firm and stable.” The Forest Service Trail Accessibility Guidelines (FSTAG) define a firm surface as one that is “not noticeably distorted or compressed by the passage of a device that simulates a person who uses a wheelchair.” The FSTAG define a stable surface as “one that is not permanently affected by normally-occurring weather conditions but is able to sustain wear and tear produced by normal use between planned maintenance cycles.” There are special dispensations for historic sites. For example, where compliance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics, some exceptions and deviations from technical provisions are often permissible.



Trail Types

Evaluating anticipated use will help determine the type of trail that is needed. The range of trail types to consider include:

No Trail. Avoid building trails within areas with sensitive natural or archeological resources that could be damaged by visitor access and associated systems.

Backcountry Trail. Backcountry trails are generally narrow hard-packed earth-surfaced routes that are not graded or machine compacted. Only limited interventions such as waterbars are typically associated with backcountry trails. They are used within areas that are remote, are relatively sensitive, have limited existing development, have an anticipated low-impact use, and will be used by a relatively small number of pedestrians.

Pedestrian Trail. Pedestrian trails are more developed than backcountry trails for higher traffic areas. They can be designed to be universally accessible. They are typically wider than backcountry trails and involve additional interventions, such as site grading, subbase installation, and other improvements such as wayfinding and/or interpretive signage. Establishment of this type of trail typically requires the use of construction equipment which can result in a limited degree of disturbance to the trail prism and its surrounding environs.

Unpaved Multi-use Trail. These trails are designed to accommodate moderate use by pedestrians, users of wheeled vehicles such as bicycles that do not require a completely firm and stable surface, and potentially equestrians. This type of trail can accommodate a moderate-use level.



Installation of this trail type requires moderate site disturbance, including grading and surfacing, and should thus be designed to avoid impacting historic resources. It can be made accessible in conformance with Americans with Disabilities Act (ADA) standards using stabilizers.

Paved Multi-use Trail. This trail type is intended to accommodate a wide variety of users and typically involves the highest degree of intervention within a site. It is appropriate for high-use areas, such as the primary visitor interpretive experience or intensive recreation. This trail type should not be established on historic road traces or corridors as their construction requires a high level of disturbance and is preferred for universal accessibility.

Trail Widths

Trail designs should include a desirable width to accommodate the anticipated user. Trails that are too narrow, uneven, or poorly-drained can result in trampled vegetation, compacted and eroded soil, damage to the surrounding ecosystem or hazards. Wider trails, however, are more costly to construct and maintain and more visually obtrusive.

Design Guidelines

General Trail Guidelines

Trails within historic settings and natural areas should be considered for their aesthetic and environmental impacts, as well as their affect on historic resources. For example, surfaces of brown hues are preferable to blue-colored materials. Petroleum-based surfaces or those that may leach undesirable chemicals into the ground or water systems should be avoided.

With the exception of backcountry trails, most prisms should be constructed by removing several inches of the existing soil to compact the base material and help prevent subsurface failure of the trail. After compacting the base, a geotextile filter should be installed. It is necessary to bring in enough aggregate to be sure that the finished compacted surface will not be lower than the surrounding grade. Grading should be used to ensure proper drainage along trails. It will likely include crowning or sloping of the trail surface for drainage and the establishment of swales to convey stormwater along trail margins

Backcountry Trail Guidelines

- Backcountry trails should be designed as narrow (3 to 4 feet wide), hard-packed earth-surfaced well-drained, treadways that require minimal grading and erosion control methods to establish and maintain. It should be possible for these trails to be established without

construction equipment. Backcountry trails are generally not universally accessible.

- Trail slopes should not exceed 15 percent grades.
- Trails should serve as spurs leading from more developed or major trails.
- Trailhead developments should include minimal signage at intersections with larger trails.
- Stepping stones, stone boxes, or a treadway of large stones should be used when trails pass through wet areas to allow drainage and water to move freely and prevent erosion and compaction. In remote areas, locally collected stepping stones should be used.

Pedestrian Trail Guidelines

- Pedestrian trails should be designed as well-drained, earth, mulch, or crushed-stone treadways that may require some grading to establish. Excavation for the establishment of a sub-base may be appropriate. These trails can accommodate universal accessibility requirements when stabilizing compounds are added to the crushed-stone surfacing.
- Trail slopes should not exceed 10 percent grades. Cross-slopes should not exceed 2 percent slopes. Universally-accessible trail slopes should not exceed 5 percent.
- Signage associated with pedestrian trails should be limited to trailheads,



interpretive signs, and wayfinding at intersections with other trails.

- Low-profile boardwalks should be used for crossing wet areas.
- Railings are required if boardwalks exceed 3 feet in height.

Unpaved Multi-use Trail Guidelines

- Trails of this type should have a minimum 10-foot-wide firm surface with 3-foot-wide soft shoulders to either side to allow passing. These trails should be surfaced with crushed stone, and have shoulders of grass or mulch.
- This type of trail should not be used within historic road traces.
- Trail slopes should not exceed 10 percent grades. Cross-slopes should not exceed 2 percent slopes.
- Signage should be used at trailheads, for orientation, and to post regulations and warnings, and universal accessibility information.

A Guide to Trail Surfaces for Historic Sites

Paved Multi-use Trail Guidelines

- Trails of this type require the greatest site intervention and should be avoided within historic settings, particularly in association with historic road traces.
- Trail slopes should not exceed 5 percent grades, conforming to universal accessibility trail slope requirements.
- Surfacing material used on paved multi-use trails will generally be considered for firmness and stability, and will be compatible with universal-accessibility requirements.

Universally-Accessible Trail Guidelines

- Universal-accessibility is an important consideration within historic and natural sites. Primary interpretive elements should be made accessible to all visitors along universally-accessible routes. Other resources can be interpreted through alternative means if trail establishment will negatively affect historic or natural resources.
- Universally-accessible trails should have a measurably firm and stable surface to accommodate usage without degrading the tread surface. Trail runs should not exceed a 5 percent grade, with cross slopes that do not exceed a 2 percent grade. Five to 10 percent cross slopes are allowable if they occur within the bottom of drainage structures. Trails may reach 8.33 percent for up to 200 feet, 10 percent for 30 feet, 12 percent for 10 feet, and 14 percent for 5 feet within the bottom of a drainage structure.

- Prepared single-direction tread surfaces need to be at least 32 inches in width within historic sites, although the beaten path width may be narrower. Thirty-two inches is an exception to the ADAAG guideline of 36 inches.
- For more information, see the United States Forest Service Trail Accessibility Guidelines (FSTAG).

Guidelines for Adapting Historic Road Traces as Trails

- Historic circulation routes can be incorporated into pedestrian trail systems after the potential impacts of the new system have been assessed for the visual impact of trail on important viewsheds; potential impact on sensitive natural and archeological resources; accessibility issues; and overall interpretive value. Only low-tire-pressure vehicles should be used when working along historic road traces.
- New trails that follow or traverse historic road traces should be designed in such a way as to avoid cutting into the ground in order to preserve archeological resources. Regrading that might damage historic road traces should be avoided. Whenever regrading is necessary, use fill to achieve positive drainage rather than cutting, which will destroy the resource.
- Grading improvements should promote sheet flow rather than concentrated flow into swales, channels, or pipes whenever possible.



- Local materials, such as wood and stone, should be considered for trail-related structures including water bars, stepping stones, signage, fences, steps, treads, stream crossings, stone boxes or treadways crossing marshy areas, retaining walls, trail markers, and shelters. Design of these features should be clearly a product of their own time, and not an attempt to depict a historic condition that never existed.

Trail Surfaces

Interest in permeability and requirements for accessibility have resulted in the development of new trail surfacing technologies. All trail surfaces vary in cost, environmental impact and maintenance requirements. Trail surface options described here are recommended for historic sites, but should be evaluated for their applicability to specific site conditions. Trail surface materials also vary in their permeability, sustainability, and impact on the environment. The following pages provide a comparative chart of trail surface alternatives.

Concrete

Concrete is a durable and readily available material that is firm and stable and meets universal accessibility requirements. It is highly impermeable however, and has a high run-off rate that can increase the erosive capability of water. Concrete is expensive to install and requires subbase preparation that may cause an unacceptable level of ground disturbance within sensitive archeological areas. Concrete is also a relatively modern material that may be inconsistent with the character of a historic site. There are many treatments that can be applied to concrete, such as color, tinting, scoring and the use of warm-colored aggregates to render it more visually compatible with a historic setting.

Asphalt

Asphalt pavements provide firm and stable surfaces that meet universal accessibility standards. If applied correctly, asphalt is durable and readily available. It is not porous, and stormwater will run off its surface,

contributing to an increase in the volume and speed of stormwater and erosion problems. It is also a petroleum-based product that may leach volatile inorganic compounds and heavy metals into the ground and water resources. Though cost-effective and highly functional, asphalt is commonly associated with contemporary urban environments and is rarely compatible with historic sites. Treatments that can diminish its visual incompatibility with historic sites include the use of brown-colored aggregate, or the application of a two-shot brownstone finish.

Crushed Stone

Crushed stone, particularly warm-hued material, is visually compatible with historic settings. Crushed stone makes a good trail surface material when composed of particles that are irregular and angular and range in size from fine dust to 3/8". Over time, the particles should bind together in a consolidated slab which is porous yet sheds water falling on the surface. Crushed stone trails can be easily maintained if properly graded for drainage and placed atop an appropriate subbase. Often, crushed stone trails are not smooth or hard enough to meet the "firm and stable" requirements of a universally-accessible trail. To make the surface harder and smoother, a chemical stabilizing agent can be added so that the fines will set up harder and remain that way for longer periods of time. The success of crushed stone as a surface material depends on the skill of its application by the contractor. Underlying soils need to be analyzed to determine the need for geotextiles. If a crusher fine trail surface becomes loose and uncompacted over time, it can often be reshaped, rewetted, and compacted again.

Stabilized Soil

Hard-packed earth is often used as a backcountry trail surface, but is not appropriate for use as a surface for more intensive uses. Soil can be stabilized using chemical binding agents to render it more stable and firm. Hard-packed earth surfacing may be visually compatible within a historic site to interpret older road or path corridors. Stabilization products need to be targeted to site-specific soil conditions. This surface treatment does not meet universal accessibility standards.

Grass

Mown grass as a trail surface may be compatible with many historic sites. This surface treatment, however, does not meet universal accessibility standards.

Mulch

Although the color and texture of mulch applications are generally compatible with natural and historic areas, and this surface material is relatively inexpensive and reversible, it does not meet universal accessibility standards.

Rubberized Surfaces

Rubberized surfaces are generally not compatible with historic settings, but crumb rubber can be tinted brown, which may help it blend in with its surroundings.

Boardwalks

Boardwalks have a natural appearance that complements historic settings and protects below-ground resources. However, they are expensive to install. Wood is also slippery when wet or icy and may require surface treatments for visitor safety.

A Guide to Trail Surfaces for Historic Sites



Installation



Prepared subbase, geotextile, 6" aggregate base, 4" Portland Cement (with or without aggregate).

Maintenance



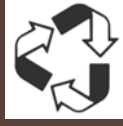
Periodic inspection for uplift and settlement. Repair as needed.

Cost



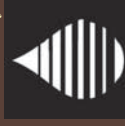
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Recycling



Decomposed concrete can be used as a loose or bonded aggregate material.

Permeability



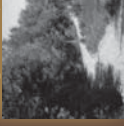
Conventional applications are impermeable. Permeable concrete requires a 12" aggregate base for drainage. Pervious pavers are another option for decreasing run-off.

Accessibility



ADA accessible. Suitable for bicycles and wheelchairs as well as pedestrian uses.

Compatibility



Concrete is associated with contemporary urban environments and can be incompatible and glaring. Tinting, scoring and the use of aggregates can be helpful.

Prepared subbase, geotextile, 6" aggregate base, 2" asphalt.

Pothole patching. Permeable asphalt should be vacuum swept and pressure washed four times a year.

\$\$

Reground asphalt chips and Glassphalt (asphalt that uses recycled, ground glass as an aggregate) are available.

Conventional applications are impermeable. Permeable asphalt is a porous formula that requires a 12" aggregate base for drainage and has a lower load-bearing capacity.

ADA accessible. Suitable for bicycles and wheelchairs as well as pedestrian uses.

Though cost-effective and highly functional, asphalt is commonly associated with contemporary urban environments and is rarely compatible with historic sites.

Prepared subbase, geotextile, 6" aggregate base, 2" of < 1/4" crushed stone over base, rolled and compacted.

Sweep to fill voids from dislodged fines. Reapply top course every 2-5 years.

\$\$

Recycled decomposed concrete is a possible substitute for crushed stone.

This surface treatment is permeable.

ADA-accessible if very fine and compacted. Larger stones are not stable.

Natural stone is more historically compatible than contemporary concrete and asphalt applications.

A Guide to Trail Surfaces for Historic Sites



Installation



Excavate top 2-3" of native material prior to preparing subgrade. Amend with fine aggregate, underlay geotextile and return and shape/compact topsoil before applying soil stabilizer.

Maintenance



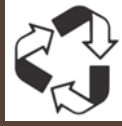
Periodic mowing and possible fertilization required.

Cost



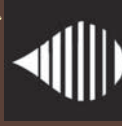
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Recycling



This is not a recycled material, although some stabilization products are made from natural materials such as pine resins.

Permeability



This is not a permeable surface treatment.

Accessibility



ADA-accessible. Stabilized soil is firm, stable and slip resistant.

Compatibility



Stabilized soil is the simplest and least obtrusive of surfacing options and is highly compatible with historic sites, as it makes use of the native material.

Grade trail base, seed.

\$

N/A

Vegetative surfaces are permeable.

Moderately firm and stable but not slip resistant.

Mown grass is associated with 20th-century landscapes but its natural appearance may be compatible.

Prepared subbase, geotextile, 4" aggregate base, 3" layer mulch raked and shaped, second 3" layer applied after compaction and settlement.

Top dress annually. Lasts 1-3 years.

Some agricultural byproducts, such as filbert shells, may last as long as 7 years. Rubber mulch does not decompose.

\$

Recycled materials such as shredded rubber can be used. Reclaimed agricultural and industrial byproducts such as wood planer shavings and filbert shells are also available.

This trail surface application is permeable.

NOT ADA accessible. Only suitable for pedestrian and equestrian use.

The color and texture of mulch applications are most compatible with natural areas. This treatment is inexpensive and removable but does not provide a stable surface.

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Resin-based Pavement

Installation



Non-petroleum based resins bind any color aggregate into a hard-surfaced pavement. Installation method is similar to asphalt.

Maintenance



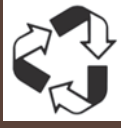
This is a relatively new and experimental technique. Ongoing studies are determining maintenance demands.

Cost



\$\$\$

Recycling



The resins material, while environmentally sound, is not made from recycled products.

Permeability



Both permeable and impermeable applications are available. Formulas like Polypave involve a topcoat and are impermeable. Other kinds of bound aggregate systems are permeable.

Accessibility



This treatment is universally accessible. It is firm, stable and slip-resistance.

Compatibility



Historic trail surfaces can be made universally accessible with this technique, but it is costly and only feasible in limited applications.

Rubberized Surfaces

Prepared subbase, geotextile, 6" aggregate base, poured concrete or asphalt base, poured recycled rubber topcoat.

Replace topcoat every 10 years.

\$\$\$

This pavement material has evolved out of the need to create usable materials from waste tires and is a recycled option.

No if poured in place and sealed; shredded rubber mulch applications are permeable.

Yes if poured in place and sealed; no if used in a shredded mulch application. Rubber surface also provides shock absorption which is desired on exercise paths.

Crumb rubber can be tinted brown, which may help this surface to blend in, but otherwise its appearance is very similar to asphalt.

Boardwalks

Boardwalk installation involves construction techniques dependent on the material chosen, and their width and length. All boardwalks need curbing, but where 30" or more above grade should also have a handrail.

Repairs as needed. Periodic washing may be necessary.

\$\$\$\$

Boardwalks can be constructed from planks composed of recycled plastic.

Boardwalks are permeable surfaces and are also effective for protecting wetland areas. They do not interfere with natural drainage patterns.

Boardwalks provide a universally-accessible surface and also help to steer visitors along a pre-determined route.

The natural wood appearance of boardwalks complement natural settings and protect below-ground resources. However, they are more obtrusive than at-grade trails.

Glossary of Trail Surface Stabilization Products and Terminology

Adaset

Paving systems suitable for foot or bike paths, entranceways and driveways.

Chemical Binding

Chemical binding is generally used to form smooth, firm treads from small soil particles on level or low tread grades in reasonably well-drained sites for low and medium displacement uses. Chemical binding tends to be a very specialized approach to trail hardening, and requires specific products and installation techniques. Each application requires independent evaluation to ensure that the product is suitable to accommodate the need of the trail type and proposed surface. Chemical binding is useful for crusher fines, recycled asphalt, and soil.

Flyash

Flyash is a byproduct obtained from the stacks of coal-burning power plants. Flyash contains varying percentages of quicklime depending on the type of coal burned at the plant. Flyash is mixed with fine and coarse aggregates to pave trail surfaces. Unfortunately it does not hold up well with changes in moisture and frost heaves. This product did not noticeably stabilize aggregate materials.

Ground seed hulls

“Stabilizer” is a patented, organic and non-toxic product manufactured from the seed hulls of the Plantago plant. The product is a light brown color and is ground to a very fine texture. This product will not stabilize materials over 3/8 inch in diameter, and the material needs to consist mostly of fines. Water will penetrate the surface of this product. It works best in shade where the surface does not get as dried out. It is very easy to apply. Trails treated with Stabilizer have significantly

Bentonite Clay

An absorbent aluminum silicate clay formed from volcanic ash and used in various adhesives, cements, and ceramic fillers.

Binder

An agent that creates uniform consistency, solidification, or cohesion.

Bioenzymes

Bioenzymes create a reaction that stabilizes soil materials. Clay content of 10-15 percent in the aggregate material is necessary for the reaction to take place, and must be amended if necessary. Earth Materials Catalyst (EMC2) is a proprietary formula that contains biocatalytic proteins. It is a trademark of Soil Stabilization Products, Inc. There are several companies that provide similar proprietary enzyme formulas for soil stabilization. Two other names are “Permazyme” and “Eco-Crete.”

Chameleon Ways

Natural aggregate bound surfaces.

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more vegetation growing through the surface than other options since the surface is not impenetrable and seeds can get established. This product works best in dry climates.

Latex polymer

“Soil Sement” is a latex polymer that is a by-product of the paint industry. Latex polymers are not considered to be long-term stabilizers. When used to stabilize a road with heavy vehicle traffic, it may be necessary to frequently spray a maintenance application coat over the road surface to help hold the fines on the surface and eliminate dust. Even with low use roads or trails it is necessary to do a maintenance application coat every two to three years because the product will breakdown because of environmental conditions. Latex polymers do not do well in aggregate containing clays. These are generally one of the more successful surfacing products. Second best rated stabilizer product.

Mechanical Stabilization

Mechanical stability of a trail surface or tread is achieved due to four interacting factors: aggregate thickness, particle size, compaction and drainage, and lateral stability. Aggregates spread loads throughout their structure. When particles are tightly packed with no voids, the weight of a point-source load is distributed through an aggregate layer like a pyramid, reducing the per-unit-area force at the base. Increasing the aggregate thickness spreads the load over an increasingly wide area. Downward force is greatest below the load point, with diminishing distribution outward. Various sizes of angular particles mechanically interlock into a solid matrix with no voids. Ungraded, unwashed crushed stone

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contains the original rock binders (natural cements) in the rock dust. The binders in the dust help rebind the crushed aggregate into a solid, compact mass.

To prevent particles from shifting under a load, all voids must be filled. This is achieved by compacting the particles. Larger particles act as the skeleton of the structure, transmitting and spreading forces, while compacted dust and small particles act as binders and a medium to transmit force from one large particle to the next. The particles of the various sizes up to a specified maximum need to be thoroughly mixed to insure that larger particles are embedded in a matrix of smaller ones during compaction.

In any compacted aggregate tread, drainage is essential to long-term stability. If properly graded and compacted, aggregate treads should not hold water. Lateral stability can be increased if a geotextile or geocell soil stabilizer is used, or the width of the trail is contained within an edging material.

Pine tree resin

Formulas such as "Road Oyl" are petroleum-free emulsions formulated with pine tree resin solids in suspension. They are designed to applied cold and work best as a pavement binder when mixed with dense graded aggregate materials. As the water evaporates from the emulsion, the surface will become very hard and will resemble an asphalt surface except for the color, which will usually be a darker shade of brown than the aggregate with which it is mixed. This is the best-rated stabilizer product for universal accessibility. It is also the most expensive and the most difficult to apply.

Psyllium

Psyllium is a powder made from a desert plant called Plantago. This binder can be mixed with crushed stone, clay, and sand to create a trail that is compatible with historic settings. The resulting texture is similar to a baseball infield mix. The stabilizer allows the trail to withstand the wear and tear associated with use by bicycles, strollers, wheelchairs, and pedestrians.

Sulfuric acid

"Roadbond En-1" is a patented liquid road base stabilizer that is mainly a diluted sulfuric acid. It should only be handled when correctly protected with gloves, respirator, goggles, and protective apron as it is corrosive. It is supposed to work well with aggregate containing clay. In studies, it has not held up well through wet and cold seasons and has not noticeably stabilized aggregate materials.

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8.2 CLR-GMSS Crosswalk Table for CLR Treatment

Refer to the table on the following pages.

CLR Treatment Task / FMSS Parent Work Order	Priority	CLR Treatment Task Component / FMSS Child Work Order	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	FMSS Work Type / Sub-Type	Maintenance Needed (PM or RIM)	Units	Unit of Measure
Develop a New Overflow Parking Area on the Site of the Former Housing/Administrative Area	#11/15	1. Remove existing structures, pavement, and plantings	Roads (1100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction, Facility Maintenance / Preventive Maintenance	Yes, annual work to maintain weed free	235	SY
		2. Grade and install site drainage							
		3. Install new permeable pavers for overflow parking and tie to existing access road							
		4. Seed and install screen plantings							
Consolidate the Two Picnic Areas into a Single Area	#9/15	See tasks below	Maintained Landscapes (3100)	Picnic Area (71214)	Asset Record Needed (future)	Capital Improvement / New Construction, Facility Maintenance / Preventive Maintenance	Yes, evaluate health of trees and prune to maintain health	see below	see below
Develop a Universally-accessible Trail from the Overflow Parking Area to the Visitor Center	#12/15	1. Relocate picnic facilities alongside parking area to historic picnic grounds in tree grove	Trails (2100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction, Facility Maintenance / Preventive Maintenance	Not determined	334	EA
		2. Remove existing asphalt, regrade, and repave to meet universal accessibility guidelines							
		3. Provide accessible picnic tables							
		4. Provide accessible drinking fountain							
		5. Provide sign							
Develop New Interpretive Trails	#3/15	1. Stake trail location	Trails (2100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction, Facility Maintenance / Preventive Maintenance	Yes, annual grading to maintain even weed-free surface	1867	SY
		2. Grade and install site drainage							
		3. Pave new trail							
		4. Seed and install new plantings							
		A. Trail encompassing new Moses Carver Farm and Tuskegee research interpretation							
Develop New Interpretive Trails	#3/15	1. Stake trail locations	Trails (2100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction, Facility Maintenance / Preventive Maintenance	Yes, annual grading to maintain even weed-free surface	67	SY
		2. Grade and install site drainage							
		3. Pave new trail							
		4. Seed and install new shade tree plantings							
		B. Trail extension near Moses Carver House							
Develop New Interpretive Trails	#3/15	1. Stake trail locations	Trails (2100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction, Facility Maintenance / Preventive Maintenance	Yes, annual grading to maintain even weed-free surface	67	SY
		2. Grade and install site drainage							
		3. Pave new trail							
		4. Seed and install new shade tree plantings							
		B. Trail extension near Moses Carver House							

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CLR-FMSS Crosswalk Table for CLR Treatment



CLR Treatment Task / FMSS Parent Work Order	Priority	CLR Treatment Task Component / FMSS Child Work Order	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	FMSS Work Type / Sub-Type	Maintenance Needed (PM or RM)	Units	Unit of Measure
Establish New Interpretive Exhibits	#4/15	C. Replace Contemplative Trail/surface with crushed stone	Trails (2100)	Carver Trail (71193)	Contemplative Loop (71196)	Facility Maintenance / Deferred Maintenance	Yes, annual grading to maintain even weed-free surface	736	SY
		1. Remove and dispose of mulch							
		2. Grade and install site drainage							
		3. Pave new trail							
		D. Establish mown grass meadow trails	Trails (2100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction	Yes, regular mowing	29600	SF
		1. Stake trail locations							
		2. Mow to establish path							
		E. Establish trail within Harkins Woods	Trails (2100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction	Yes, annual grading to maintain even weed-free surface	800	SY
		1. Stake trail locations							
		2. Clear and grub							
		3. Grade and install site drainage							
		4. Pave new trail							
		5. Install new bridges across Harkins Branch						2	EA
		A. Install wayside exhibits	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	8	EA
		1. Stake locations for new exhibits							
		2. Install new wayside exhibits							
		B. Interpret missing features (2) using mow patterns	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	12	EA
		1. Survey outline locations and corners							
		2. Set in-ground markers for mowers							
		Establish foundation outlines (4)	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	400	SY
		1. Survey outline locations and corners							
		2. Install masonry outline							
		D. Establish persimmon orchard	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	50	EA
		1. Stake area of woodland clearing							
		2. Remove vegetation, clear, and grub							
		3. Stake tree locations							
		4. Plant trees							
		E. Establish Nut and Fruit Orchard	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	20	EA
		1. Stake area of woodland clearing							
		2. Remove vegetation, clear, and grub							
		3. Stake tree locations							
		4. Plant trees							

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CLR-FMSS Crosswalk Table for CLR Treatment



CLR Treatment Task / FMSS Parent Work Order	Priority	CLR Treatment Task Component / FMSS Child Work Order	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	FMSS Work Type / Sub-Type	Maintenance Needed (PM or RM)	Units	Unit of Measure
Clear and Thin Non-vegetation for Viewsheds and Restoration of Historic Patterns of Spatial Organization	#5/15	<i>F. Establish Moses Carver Farm garden plots</i>	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	250	EA
		1. Remove existing beds							
		2. Prepare new beds							
		3. Install new plantings							
		<i>G. Establish Tuskegee garden plots</i>	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	300	EA
		1. Clear bed areas							
		2. Prepare new beds							
		3. Install new plantings							
		<i>H. Establish new economic botany exhibits along roads and trails</i>	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed (future)	Not determined	Not determined	400	EA
		1. Clear bed areas							
		2. Prepare new beds							
		3. Install new plantings							
Provide New Plantings to Screen Non-historic Views	#15/15	<i>A. Clear viewsheds north of the Contemplative Trail</i>	Maintained Landscapes (3100)	Cultural Landscape (71212)	No asset record	Facility Maintenance / Preventive Maintenance	Yes, prune and thin biannually to maintain the cleared areas	0.5	ACRE
		1. Stake clearing locations							
		2. Conduct clearing or thinning activities							
		<i>B. Clear around the persimmon grove</i>	Maintained Landscapes (3100)	Cultural Landscape (71212)	No asset record	Facility Maintenance / Preventive Maintenance	Yes, prune and thin biannually to maintain the cleared areas	1000	LF
		1. Stake clearing locations							
		2. Conduct clearing or thinning activities							
		<i>A. Add mixed screen plantings south of the maintenance area and parking</i>	Maintained Landscapes (3100)	Cultural Landscape (71212)	Asset Record Needed (future)	Capital Improvement / New Construction, Facility Maintenance / Preventive Maintenance	Not determined	12	EA
		1. Stake the locations of new plantings							
		2. Plant trees and shrubs to establish visual screen							
		<i>B. Add mixed screen plantings west of the maintenance drive</i>	Maintained Landscapes (3100)	Cultural Landscape (71212)	Asset Record Needed (future)	Capital Improvement / New Construction	Not determined	6	EA
		1. Stake the locations of new plantings							
		2. Plant trees and shrubs to establish visual screen							
		<i>C. Add shade trees along the meadow trail loops</i>	Maintained Landscapes (3100)	Cultural Landscape (71212)	Asset Record Needed (future)	Capital Improvement / New Construction	Not determined	5	EA
		1. Stake the locations of new plantings							
		2. Plant trees for shade along the trail							

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CLR-FMSS Crosswalk Table for CLR Treatment



CLR Treatment Task / FMSS Parent Work Order	Priority	CLR Treatment Task Component / FMSS Child Work Order	FMSS Asset Type	FMSS Location Record	FMSS Asset Record	FMSS Work Type / Sub-Type	Maintenance Needed (PM or RM)	Units	Unit of Measure
Develop a New Storage Facility	#13/15	1. Stake building location	Buildings (4100)	Location Record Needed	Asset Record Needed (future)	Capital Improvement / New Construction	Not determined	1200	SF
		2. Construct new storage building							
		3. Grade, install site drainage, and seed							
Restore the Cemetery Wall	#6/15	1. Develop a guide and sample section illustrating the finished character of the repaired wall	Maintained Landscapes (3100)	Moses Carver Family Cemetery (71211)	Moses Carver Family Cemetery Wall (40338)	Facility Maintenance / Deferred Maintenance, Preventative Maintenance	Yes, annual repair of dislodged stones	360	LF
		2. Follow the guide in restoring the wall							
Repair the Brick Wall Surrounding the Maintenance Yard	#14/15	1. Replace and repair deteriorated or damaged sections of the wall 2. Repoint brick wall	Maintained Landscapes (3100)	Location Record Needed	Asset Record Needed	Facility Maintenance / Deferred Maintenance, Preventative Maintenance	Not determined	125	LF
Prepare a Revised Fire Management Plan	#7/15	1. Address proposed new native warm-season grass fields and prairie in revised plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prepare a Streambank Restoration Plan	#10/15	1. Evaluate streambank condition 2. Address streambank erosion in plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prepare a Plan to Universal Accessibility Associated with the Consolidated Picnic Area and Park Trails	#2/15	1. Review accessibility study 2. Evaluate accessibility needs of proposed new features 3. Address accessibility deficiencies in plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prepare a Revised Long-Range Interpretive Plan	#1/15	1. Review interpretive recommendations in CLR 2. Develop comprehensive interpretive program to include recommendations in revised plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Prepare a Site Furnishings Guide for the Park	#8/15	1. Review accessibility study 2. Review site furnishings recommendations in CLR 3. Develop a comprehensive system of accessible site furnishing in plan	N/A	N/A	N/A	N/A	N/A	N/A	N/A

8.3 Phasing Plan for Implementing the Selected Alternative

The implementation projects described above address the majority of the treatment recommendations included in the Preferred Alternative. This section outlines a phasing plan that prioritizes the projects and places them in an appropriate planning, design, implementation, and management sequence. The phasing plan has been developed to guide and inform planners and managers in their efforts to make decisions regarding resource management. Phasing recommendations are not intended to be taken out of the context of other current and future park planning initiatives. Some projects require additional review within the framework of a Revised LRIP and a Plan to Address Universal Accessibility Associated with the Consolidated Picnic Area and Park Trail System.

The phasing plan includes three primary phases of implementation spanning a fifteen year period. Each phase relates to a five year period. The goals and specific recommended projects for each phase are identified below. Depending on such factors as funding, the goals of park management and interpretation, and the completion of related planning documents, individual elements may shift into subsequent phases.

Phase One

During Phase One, it is recommended that the park:

- Conduct studies that serve as the basis for other implementation projects, including archeological investigations.
- Initiate vegetation management protocols in the woodlands and continue prairie restoration efforts in consultation with HTLN.
- Correct any condition-related issues and threats to historic resources.

Phase One efforts should include work on the following projects:

- Prepare a Revised Long-Range Interpretive Plan
- Prepare a Plan to Address Universal Accessibility associated with the Consolidated Picnic Area and Park Trail System
- Develop New Interpretive Trails
- Establish New Interpretive Exhibits
- Prepare a Revised Fire Management Plan

Phase Two

During Phase Two, it is recommended that the park:

- Design and implement priority projects based on the studies prepared during Phase One.
- Continue to study and investigate issues requiring long-range planning such as archeological resources.

Phase Two efforts should include work on the following projects:

- Clear and Thin Non-Contributing Woody Vegetation for Viewsheds and Restoration of Historic Patterns of Spatial Organization
- Restore the Cemetery Wall
- Prepare a Site Furnishings Guide
- Consolidate the Two Picnic Areas into a Single Area
- Prepare a Streambank Restoration Plan
- Repair the Brick Wall Surrounding the Maintenance Yard

Phase Three

During Phase Three, it is recommended that the park:

- Implement the remainder of the CLR treatment plan projects based on the studies completed during Phase One and Two.
- Continue vegetation management protocols initiated during earlier phases.

Phase Three efforts should include work on the following projects:

- Develop a New Storage Facility
- Develop a New Overflow Parking Area on the Site of the Former Housing/Administration Area
- Develop a Universally Accessible Trail from the Overflow Parking Area to the Visitor Center Walkway
- Provide New Plantings to Screen Non-historic Views

8.4 Cost Estimate

Cost Estimates

The following pages include a spreadsheet of data comprising Class C Construction Cost Estimates for the fifteen project tasks described in this chapter. The cost estimate information is based upon the following:

Park: George Washington Carver National Monument

Project: George Washington Carver National Monument Cultural Landscape Report and Environmental Assessment

Basis of Estimate.

Date of Estimate: June 1, 2015

Estimated by: John Flores
BVH Architects
440 North 8th Street, #100
Lincoln, Nebraska 68502

Jane Jacobs
JMA
300 West Main Street
Charlottesville, Virginia 22903

Supporting Material:

- Cultural Landscape Report/EA, 2015
- Park Visits, 2014

Cost Data: Unit prices are based on BVH/JMA past project experience

Mark-ups and Add-ons.

Published location Factor: 0%

Project Remoteness: The park is 10 miles from the published commercial center of Joplin, Missouri

Federal Wage Rate Factor: 3%

Design Contingency: 30%

Taxes: State/county taxes of 5.2% are included in the unit prices

Standard General Conditions: 0% included in unit prices

Government General Conditions: 5%

Bonds and Permits: No bond or permit costs are included

Historic Preservation Factor: 5%

Overhead: 15%

Profit: 10%

Contracting Method Adjustment: 0%; project will be likely be awarded to the low bidder

Inflation Escalation: Assume a start date in 2015; and completion in 2016, with a 4% per year allowance

Construction Contingency: 15%

Comments: Projects are at conceptual level. Some projects require further design level tasks and do not have mark-ups associated with construction.

Tasks Construction Cost Estimate

George Washington Carver National Monument
Diamond, Missouri

Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASKS - COST SUMMARY

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Task 1 - Revised Fire Management Plan		\$0	\$23,888	\$23,888
Task 2 - Stream Bank Restoration Plan		\$0	\$30,713	\$30,713
Task 3 - Address Universal Accessibility		\$0	\$37,538	\$37,538
Task 4 - Revised Long-range Interpretive Plan		\$0	\$37,538	\$37,538
Task 5 - Site Furnishings Guide		\$0	\$23,888	\$23,888
Task 6 - New Overflow Parking Area		\$0	\$855,823	\$855,823
Task 7 - Consolidate Picnic Areas		\$0	\$112,442	\$112,442
Task 8 - Trail Universal Accessibility		\$0	\$62,707	\$62,707
Task 9 - New Interpretive Trails		\$0	\$444,461	\$444,461
Task 10 - New Interpretive Exhibits		\$0	\$364,021	\$364,021
Task 11 - Clear Woody Vegetation		\$0	\$89,644	\$89,644
Task 12 - New Plantings Screens		\$0	\$20,629	\$20,629
Task 13 - New Storage Facility		\$233,552	\$25,897	\$259,449
Task 14 - Restore Cementary Wall		\$0	\$139,446	\$139,446
Task 15 - Restore Maintenance Yard Wall		\$0	\$62,253	\$62,253
GROSS CONSTRUCTION COSTS		\$233,552	\$2,330,886	\$2,564,438

Tasks Construction Cost Estimate
George Washington Carver National Monument
Diamond, Missouri
Estimate is Based on 2015 Construction Costs

Estimate By: John Flores
Date: 6/3/2015
Reviewed By: Dan Worth
Date: 6/3/2015

IMPLEMENTATION TASK 1 - REVISED FIRE MANAGEMENT PLAN

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Fire Management Plan		\$0	\$17,500	\$17,500
Subtotal Direct Construction Cost		\$0	\$17,500	\$17,500
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (0 Percent)	0%	\$0	\$0	\$0
Design Contingency (30 Percent)	30%	\$0	\$5,250	\$5,250
Total Direct Construction Costs		\$0	\$22,750	\$22,750
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$0	\$1,138	\$1,138
Historic Preservation Factor (0 Percent)	0%	\$0	\$0	\$0
Subtotal NET Construction Cost		\$0	\$23,888	\$23,888
Overhead (0 Percent)	0%	\$0	\$0	\$0
Profit (0 Percent)	0%	\$0	\$0	\$0
Subtotal NET Construction Cost		\$0	\$23,888	\$23,888
Contracting Method Adjustment (0 Percent)	0%	\$0	\$0	\$0
Estimated NET Construction Cost		\$0	\$23,888	\$23,888
Inflation to Summer 2016 (0 Percent)	0%	\$0	\$0	\$0
TOTAL Estimated NET Cost of Construction		\$0	\$23,888	\$23,888
Construction Contingency (0 Percent)	0%	\$0	\$0	\$0
Construction Management (0 Percent)	0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS		\$0	\$23,888	\$23,888

Summary Item: TASK 1

Total Cost: \$ 17,500

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Fire Management Plan	1	ls		\$ -		\$ -		\$ -	\$ 17,500	\$ 17,500
SUBTOTAL				\$ -	\$ -		\$ -	\$ -	\$ -		\$ 17,500

Tasks Construction Cost Estimate

George Washington Carver National Monument
Diamond, Missouri

Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASK 2 - STREAM BANK RESTORATION PLAN

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Stream Bank Restoration Plan			\$0	\$22,500	\$22,500
Subtotal Direct Construction Cost			\$0	\$22,500	\$22,500
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (0 Percent)		0%	\$0	\$0	\$0
Design Contingency (30 Percent)		30%	\$0	\$6,750	\$6,750
Total Direct Construction Costs			\$0	\$29,250	\$29,250
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$1,463	\$1,463
Historic Preservation Factor (0 Percent)		0%	\$0	\$0	\$0
Subtotal NET Construction Cost			\$0	\$30,713	\$30,713
Overhead (0 Percent)		0%	\$0	\$0	\$0
Profit (0 Percent)		0%	\$0	\$0	\$0
Subtotal NET Construction Cost			\$0	\$30,713	\$30,713
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$30,713	\$30,713
Inflation to Summer 2016 (0 Percent)		0%	\$0	\$0	\$0
TOTAL Estimated NET Cost of Construction			\$0	\$30,713	\$30,713
Construction Contingency (0 Percent)		0%	\$0	\$0	\$0
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$30,713	\$30,713

Summary Item: TASK 2

Total Cost: \$ 22,500

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Plan	1	ls		\$ -		\$ -		\$ -	\$ 22,500	\$ 22,500
SUBTOTAL				\$	-		\$	-	\$		\$ 22,500

Tasks Construction Cost Estimate

George Washington Carver National Monument
Diamond, Missouri

Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASK 3 - PLAN TO ADDRESS UNIVERSAL ACCESSIBILITY ASSOCIATED WITH THE CONSOLIDATED PICNIC AREA AND PARK TRAIL SYSTEM

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Universal Accessibility Plan			\$0	\$27,500	\$27,500
Subtotal Direct Construction Cost			\$0	\$27,500	\$27,500
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (0 Percent)		0%	\$0	\$0	\$0
Design Contingency (30 Percent)		30%	\$0	\$8,250	\$8,250
Total Direct Construction Costs			\$0	\$35,750	\$35,750
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$1,788	\$1,788
Historic Preservation Factor (0 Percent)		0%	\$0	\$0	\$0
Subtotal NET Construction Cost			\$0	\$37,538	\$37,538
Overhead (0 Percent)		0%	\$0	\$0	\$0
Profit (0 Percent)		0%	\$0	\$0	\$0
Subtotal NET Construction Cost			\$0	\$37,538	\$37,538
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$37,538	\$37,538
Inflation to Summer 2016 (0 Percent)		0%	\$0	\$0	\$0
TOTAL Estimated NET Cost of Construction			\$0	\$37,538	\$37,538
Construction Contingency (0 Percent)		0%	\$0	\$0	\$0
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$37,538	\$37,538

Tasks Construction Cost Estimate
George Washington Carver National Monument
Diamond, Missouri
Estimate is Based on 2015 Construction Costs

Estimate By: John Flores
Date: 6/3/2015
Reviewed By: Dan Worth
Date: 6/3/2015

IMPLEMENTATION TASK 4 - REVISED LONG-RANGE INTERPRETIVE PLAN

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Long-range Interpretive Plan			\$0	\$27,500	\$27,500
Subtotal Direct Construction Cost			\$0	\$27,500	\$27,500
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (0 Percent)		0%	\$0	\$0	\$0
Design Contingency (30 Percent)		30%	\$0	\$8,250	\$8,250
Total Direct Construction Costs			\$0	\$35,750	\$35,750
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$1,788	\$1,788
Historic Preservation Factor (0 Percent)		0%	\$0	\$0	\$0
Subtotal NET Construction Cost			\$0	\$37,538	\$37,538
Overhead (0 Percent)		0%	\$0	\$0	\$0
Profit (0 Percent)		0%	\$0	\$0	\$0
Subtotal NET Construction Cost			\$0	\$37,538	\$37,538
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$37,538	\$37,538
Inflation to Summer 2016 (0 Percent)		0%	\$0	\$0	\$0
TOTAL Estimated NET Cost of Construction			\$0	\$37,538	\$37,538
Construction Contingency (0 Percent)		0%	\$0	\$0	\$0
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$37,538	\$37,538

Summary Item: TASK 4

Total Cost: \$ 27,500

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipmen t Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Long-range Interpretive Plan	1	ls		\$ -		\$ -		\$ -	\$ 27,500	\$ 27,500
SUBTOTAL				\$	-		\$ -		\$ -		\$ 27,500

Tasks Construction Cost Estimate
George Washington Carver National Monument
Diamond, Missouri
Estimate is Based on 2015 Construction Costs

Estimate By: John Flores
Date: 6/3/2015
Reviewed By: Dan Worth
Date: 6/3/2015

IMPLEMENTATION TASK 5 - SITE FURNISHINGS GUIDE FOR THE PARK

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Site Furnishings Guide		\$0	\$17,500	\$17,500
Subtotal Direct Construction Cost		\$0	\$17,500	\$17,500
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (0 Percent)	0%	\$0	\$0	\$0
Design Contingency (30 Percent)	30%	\$0	\$5,250	\$5,250
Total Direct Construction Costs		\$0	\$22,750	\$22,750
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$0	\$1,138	\$1,138
Historic Preservation Factor (0 Percent)	0%	\$0	\$0	\$0
Subtotal NET Construction Cost		\$0	\$23,888	\$23,888
Overhead (0 Percent)	0%	\$0	\$0	\$0
Profit (0 Percent)	0%	\$0	\$0	\$0
Subtotal NET Construction Cost		\$0	\$23,888	\$23,888
Contracting Method Adjustment (0 Percent)	0%	\$0	\$0	\$0
Estimated NET Construction Cost		\$0	\$23,888	\$23,888
Inflation to Summer 2016 (0 Percent)	0%	\$0	\$0	\$0
TOTAL Estimated NET Cost of Construction		\$0	\$23,888	\$23,888
Construction Contingency (0 Percent)	0%	\$0	\$0	\$0
Construction Management (0 Percent)	0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS		\$0	\$23,888	\$23,888

Tasks Construction Cost Estimate
George Washington Carver National Monument
Diamond, Missouri
Estimate is Based on 2015 Construction Costs

Estimate By: John Flores
Date: 6/3/2015
Reviewed By: Dan Worth
Date: 6/3/2015

IMPLEMENTATION TASK 6 - DEVELOP A NEW OVERFLOW PARKING AREA ON THE SITE OF THE FORMER HOUSING/ADMINISTRATIVE AREA

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
New Overflow Parking Area		\$0	\$386,650	\$386,650
Subtotal Direct Construction Cost		\$0	\$386,650	\$386,650
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)	3%	\$0	\$11,600	\$11,600
Design Contingency (30 Percent)	30%	\$0	\$115,995	\$115,995
Total Direct Construction Costs		\$0	\$514,245	\$514,245
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$0	\$25,712	\$25,712
Historic Preservation Factor (5 Percent)	5%	\$0	\$25,712	\$25,712
Subtotal NET Construction Cost		\$0	\$565,669	\$565,669
Overhead (15 Percent)	15%	\$0	\$84,850	\$84,850
Profit (10 Percent)	10%	\$0	\$65,052	\$65,052
Subtotal NET Construction Cost		\$0	\$715,571	\$715,571
Contracting Method Adjustment (0 Percent)	0%	\$0	\$0	\$0
Estimated NET Construction Cost		\$0	\$715,571	\$715,571
Inflation to Summer 2016 (4%)	4%	\$0	\$28,623	\$28,623
TOTAL Estimated NET Cost of Construction		\$0	\$744,194	\$744,194
Construction Contingency (15%)	15%	\$0	\$111,629	\$111,629
Construction Management (0 Percent)	0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS		\$0	\$855,823	\$855,823

Summary Item: TASK 6

Total Cost: \$ 386,650

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipmen t Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Demolition										
	Structures & Wood Decks	3	ea		\$ -		\$ -		\$ -	\$3,000.00	\$ 9,000
	Concrete Walkways	1270	sf		\$ -		\$ -		\$ -	\$ 2.50	\$ 3,175
	Wrought Iron Railing	20	lf		\$ -		\$ -		\$ -	\$ 5.00	\$ 100
	Asphalt Roadway.Parking	30650	sf		\$ -		\$ -		\$ -	\$ 1.50	\$ 45,975
	8-foot Curb Stops	24	ea		\$ -		\$ -		\$ -	\$ 50.00	\$ 1,200
	Small Light Fixtures	2	ea		\$ -		\$ -		\$ -	\$ 50.00	\$ 100
	40-foot Wooden ADA Ramps	2	ea		\$ -		\$ -		\$ -	\$ 800.00	\$ 1,600
	Trees & Grind Stumps	5	ea		\$ -		\$ -		\$ -	\$ 750.00	\$ 3,750
	Shed & Bone Yard Elements	1	ls		\$ -		\$ -		\$ -	\$2,000.00	\$ 2,000
	Remove/Recycle Bone Yard Fence	1	ls		\$ -		\$ -		\$ -	\$ 500.00	\$ 500
	Remove/Recycle Fence Gate	1	ls		\$ -		\$ -		\$ -	\$ 250.00	\$ 250
	Earthwork										
	Survey Location of Parking & Roadway	1	ls		\$ -		\$ -		\$ -	\$5,000.00	\$ 5,000
	Rough Grading	3000	sy		\$ -		\$ -		\$ -	\$ 7.00	\$ 21,000
	Finish Grading	2850	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 28,500
	Site Improvements										
	Grass Porous Pavers	2850	sy		\$ -		\$ -		\$ -	\$ 90.00	\$ 256,500
	Fine Grade & Seed Disturbed Areas	800	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 8,000
SUBTOTAL				\$	-		\$		\$	-	\$ 386,650

Tasks Construction Cost Estimate
George Washington Carver National Monument
Diamond, Missouri
Estimate is Based on 2015 Construction Costs

Estimate By: John Flores
Date: 6/3/2015
Reviewed By: Dan Worth
Date: 6/3/2015

IMPLEMENTATION TASK 7 - CONSOLIDATE THE TWO PICNIC AREAS INTO A SINGLE AREA

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Picnic Area Consolidation		\$0	\$50,800	\$50,800
Subtotal Direct Construction Cost		\$0	\$50,800	\$50,800
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)	3%	\$0	\$1,524	\$1,524
Design Contingency (30 Percent)	30%	\$0	\$15,240	\$15,240
Total Direct Construction Costs		\$0	\$67,564	\$67,564
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$0	\$3,378	\$3,378
Historic Preservation Factor (5 Percent)	5%	\$0	\$3,378	\$3,378
Subtotal NET Construction Cost		\$0	\$74,320	\$74,320
Overhead (15 Percent)	15%	\$0	\$11,148	\$11,148
Profit (10 Percent)	10%	\$0	\$8,547	\$8,547
Subtotal NET Construction Cost		\$0	\$94,015	\$94,015
Contracting Method Adjustment (0 Percent)	0%	\$0	\$0	\$0
Estimated NET Construction Cost		\$0	\$94,015	\$94,015
Inflation to Summer 2016 (4%)	4%	\$0	\$3,761	\$3,761
TOTAL Estimated NET Cost of Construction		\$0	\$97,776	\$97,776
Construction Contingency (15%)	15%	\$0	\$14,666	\$14,666
Construction Management (0 Percent)	0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS		\$0	\$112,442	\$112,442

Summary Item: TASK 7

Total Cost: \$ 50,800

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipmen t Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Demolition										
	Relocate Picnic Tables	22	ea		\$ -		\$ -		\$ -	\$ 50.00	\$ 1,100
	Relocate Trash Receptacles	3	ea		\$ -		\$ -		\$ -	\$ 50.00	\$ 150
	Relocate Re-cycling Cluster Receptacles	3	ea		\$ -		\$ -		\$ -	\$ 50.00	\$ 150
	Remove Low Unit Drinking Fountain	1	ea		\$ -		\$ -		\$ -	\$ 250.00	\$ 250
	Surfacing	5400	sf		\$ -		\$ -		\$ -	\$ 2.75	\$ 14,850
	Earthwork										
	Survey Parking Lot	1	ls		\$ -		\$ -		\$ -	\$2,500.00	\$ 2,500
	Re-grade for Universal Accessibility	5400	sf		\$ -		\$ -		\$ -	\$ 1.00	\$ 5,400
	Site Improvements										
	Asphalt Surfacing	5400	sf		\$ -		\$ -		\$ -	\$ 3.50	\$ 18,900
	Pavement Markings	1	ls		\$ -		\$ -		\$ -	\$ 300.00	\$ 300
	ADA Signage	1	ls		\$ -		\$ -		\$ -	\$ 200.00	\$ 200
	Accessible Picnic Tables	2	ea		\$ -		\$ -		\$ -	\$1,000.00	\$ 2,000
	Hi-Lo Drinking Fountain	1	ls		\$ -		\$ -		\$ -	\$5,000.00	\$ 5,000
SUBTOTAL					\$ -		\$ -		\$ -		\$ 50,800

Tasks Construction Cost Estimate
 George Washington Carver National Monument
 Diamond, Missouri
 Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASK 8 - DEVELOP UNIVERSALLY ACCESSIBLE TRAIL FROM THE OVERFLOW PARKING AREA TO THE VISITOR CENTER WALKWAY (6-FOOT WIDE X 500-FOOT LONG)

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
ADA Trail - Overflow Parking => Visitor Center Walkway		\$0	\$28,330	\$28,330
Subtotal Direct Construction Cost		\$0	\$28,330	\$28,330
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)	3%	\$0	\$850	\$850
Design Contingency (30 Percent)	30%	\$0	\$8,499	\$8,499
Total Direct Construction Costs		\$0	\$37,679	\$37,679
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$0	\$1,884	\$1,884
Historic Preservation Factor (5 Percent)	5%	\$0	\$1,884	\$1,884
Subtotal NET Construction Cost		\$0	\$41,447	\$41,447
Overhead (15 Percent)	15%	\$0	\$6,217	\$6,217
Profit (10 Percent)	10%	\$0	\$4,766	\$4,766
Subtotal NET Construction Cost		\$0	\$52,430	\$52,430
Contracting Method Adjustment (0 Percent)	0%	\$0	\$0	\$0
Estimated NET Construction Cost		\$0	\$52,430	\$52,430
Inflation to Summer 2016 (4%)	4%	\$0	\$2,097	\$2,097
TOTAL Estimated NET Cost of		\$0	\$54,527	\$54,527
Construction Contingency (15%)	15%	\$0	\$8,179	\$8,179
Construction Management (0 Percent)	0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS		\$0	\$62,707	\$62,707

Summary Item: TASK 8

Total Cost: \$ 28,330

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipmen t Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Earthwork										
	Stake-out Trail Alignment	1	ls		\$ -		\$ -		\$ -	\$5,000.00	\$ 5,000
	Rough Grading	400	sy		\$ -		\$ -		\$ -	\$ 7.00	\$ 2,800
	Site Improvements										
	Crushed Gravel Base	334	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 3,340
	Stabilized Crushed Aggregate Finish	334	sy		\$ -		\$ -		\$ -	\$ 35.00	\$ 11,690
	Fine Grade & Seed	400	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 4,000
	Site Utilities										
	Under Path Drainage	5	ea		\$ -		\$ -		\$ -	\$ 300.00	\$ 1,500
SUBTOTAL				\$ -	\$ -		\$ -		\$ -		\$ 28,330

Tasks Construction Cost Estimate

George Washington Carver National Monument
Diamond, Missouri

Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASK 9 - DEVELOP NEW INTERPRETIVE TRAILS

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
New Intrepretive Trails			\$0	\$200,802	\$200,802
Subtotal Direct Construction Cost			\$0	\$200,802	\$200,802
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)		3%	\$0	\$6,024	\$6,024
Design Contingency (30 Percent)		30%	\$0	\$60,241	\$60,241
Total Direct Construction Costs			\$0	\$267,067	\$267,067
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$13,353	\$13,353
Historic Preservation Factor (5 Percent)		5%	\$0	\$13,353	\$13,353
Subtotal NET Construction Cost			\$0	\$293,773	\$293,773
Overhead (15 Percent)		15%	\$0	\$44,066	\$44,066
Profit (10 Percent)		10%	\$0	\$33,784	\$33,784
Subtotal NET Construction Cost			\$0	\$371,623	\$371,623
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$371,623	\$371,623
Inflation to Summer 2016 (4%)		4%	\$0	\$14,865	\$14,865
TOTAL Estimated NET Cost of Construction			\$0	\$386,488	\$386,488
Construction Contingency (15%)		15%	\$0	\$57,973	\$57,973
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$444,461	\$444,461

Summary Item: TASK 9

Total Cost: \$ 200,802

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Primary Trail (ADA)										
	Earthwork										
	Stake-out Trail Alignment	1	ls		\$ -		\$ -		\$ -	\$3,500.00	\$ 3,500
	Clear & Grub including Trees	0.5	ac		\$ -		\$ -		\$ -	\$6,000.00	\$ 3,000
	Rough Grading	2000	sy		\$ -		\$ -		\$ -	\$ 7.00	\$ 14,000
	Site Improvements										
	Crushed Gravel Base	1867	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 18,670
	Stabilized Crushed Aggregate Finish	1867	sy		\$ -		\$ -		\$ -	\$ 35.00	\$ 65,345
	Fine Grade & Seed	900	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 9,000
	Site Utilities										
	Under Path Drainage	10	ea		\$ -		\$ -		\$ -	\$ 300.00	\$ 3,000
	Moses Carver Trail										
	Earthwork										
	Stake-out Trail Alignment	1	ls		\$ -		\$ -		\$ -	\$1,000.00	\$ 1,000
	Rough Grading	100	sy		\$ -		\$ -		\$ -	\$ 7.00	\$ 700
	Site Improvements										
	Crushed Gravel Base	67	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 670
	Stabilized Crushed Aggregate Finish	67	sy		\$ -		\$ -		\$ -	\$ 35.00	\$ 2,345
	Fine Grade & Seed	120	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 1,200
	Site Utilities										
	Under Path Drainage	3	ea		\$ -		\$ -		\$ -	\$ 300.00	\$ 900

Tasks Construction Cost Estimate
George Washington Carver National Monument
Diamond, Missouri
Estimate is Based on 2015 Construction Costs

Estimate By: John Flores
Date: 6/3/2015
Reviewed By: Dan Worth
Date: 6/3/2015

IMPLEMENTATION TASK 10 - ESTABLISH NEW INTERPRETIVE EXHIBITS

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
New Intrepretive Exhibits			\$0	\$164,460	\$164,460
Subtotal Direct Construction Cost			\$0	\$164,460	\$164,460
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)		3%	\$0	\$4,934	\$4,934
Design Contingency (30 Percent)		30%	\$0	\$49,338	\$49,338
Total Direct Construction Costs			\$0	\$218,732	\$218,732
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$10,937	\$10,937
Historic Preservation Factor (5 Percent)		5%	\$0	\$10,937	\$10,937
Subtotal NET Construction Cost			\$0	\$240,605	\$240,605
Overhead (15 Percent)		15%	\$0	\$36,091	\$36,091
Profit (10 Percent)		10%	\$0	\$27,670	\$27,670
Subtotal NET Construction Cost			\$0	\$304,365	\$304,365
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$304,365	\$304,365
Inflation to Summer 2016 (4%)		4%	\$0	\$12,175	\$12,175
TOTAL Estimated NET Cost of Construction			\$0	\$316,540	\$316,540
Construction Contingency (15%)		15%	\$0	\$47,481	\$47,481
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$364,021	\$364,021

Tasks Construction Cost Estimate
George Washington Carver National Monument
Diamond, Missouri
Estimate is Based on 2015 Construction Costs

Estimate By: **John Flores**

Date: 6/3/2015

Reviewed By: **Dan Worth**

Date: 6/3/2015

IMPLEMENTATION TASK 11 - CLEAR & THIN NON-CONTRIBUTING WOOD VEGETATION FOR VIEWSHEDS & RESTORATION OF HISTORIC PATTERNS OF SPATIAL ORGANIZATION

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Vegetation Trimming			\$0	\$40,500	\$40,500
Subtotal Direct Construction Cost			\$0	\$40,500	\$40,500
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)		3%	\$0	\$1,215	\$1,215
Design Contingency (30 Percent)		30%	\$0	\$12,150	\$12,150
Total Direct Construction Costs			\$0	\$53,865	\$53,865
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$2,693	\$2,693
Historic Preservation Factor (5 Percent)		5%	\$0	\$2,693	\$2,693
Subtotal NET Construction Cost			\$0	\$59,252	\$59,252
Overhead (15 Percent)		15%	\$0	\$8,888	\$8,888
Profit (10 Percent)		10%	\$0	\$6,814	\$6,814
Subtotal NET Construction Cost			\$0	\$74,953	\$74,953
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$74,953	\$74,953
Inflation to Summer 2016 (4%)		4%	\$0	\$2,998	\$2,998
TOTAL Estimated NET Cost of Construction			\$0	\$77,951	\$77,951
Construction Contingency (15%)		15%	\$0	\$11,693	\$11,693
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$89,644	\$89,644

Summary Item: TASK 11

Total Cost: \$ 40,500

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipmen t Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	View Trails North										
	Earthwork										
	Stake-out Clearing Extents	1	ls	\$	-		\$	-	\$	\$ 3,000.00	\$ 3,000
	Erosion Control	500	lf	\$	-		\$	-	\$	\$ 8.00	\$ 4,000
	Remove Woody Vegetation	0.5	ac	\$	-		\$	-	\$	\$10,000.00	\$ 5,000
	Herbicide Application	1	ls	\$	-		\$	-	\$	\$ 1,000.00	\$ 1,000
	Remove & Chip Vegetation, Store On-site	500	cy	\$	-		\$	-	\$	\$ 3.00	\$ 1,500
	New Persimmon Orchard										
	Earthwork										
	Stake-out Clearing Extents	1	ls	\$	-		\$	-	\$	\$ 3,000.00	\$ 3,000
	Erosion Control	1000	lf	\$	-		\$	-	\$	\$ 8.00	\$ 8,000
	Remove Woody Vegetation	1	ac	\$	-		\$	-	\$	\$10,000.00	\$ 10,000
	Herbicide Application	1	ls	\$	-		\$	-	\$	\$ 2,000.00	\$ 2,000
	Remove & Chip Vegetation, Store On-site	1000	cy	\$	-		\$	-	\$	\$ 3.00	\$ 3,000
SUBTOTAL				\$	-		\$	-	\$		\$ 40,500

Tasks Construction Cost Estimate

George Washington Carver National Monument
Diamond, Missouri

Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASK 12 - PROVIDE NEW PLANTINGS TO SCREEN NON-HISTORIC VIEWS

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Planting Screen			\$0	\$9,320	\$9,320
Subtotal Direct Construction Cost			\$0	\$9,320	\$9,320
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)		3%	\$0	\$280	\$280
Design Contingency (30 Percent)		30%	\$0	\$2,796	\$2,796
Total Direct Construction Costs			\$0	\$12,396	\$12,396
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$620	\$620
Historic Preservation Factor (5 Percent)		5%	\$0	\$620	\$620
Subtotal NET Construction Cost			\$0	\$13,635	\$13,635
Overhead (15 Percent)		15%	\$0	\$2,045	\$2,045
Profit (10 Percent)		10%	\$0	\$1,568	\$1,568
Subtotal NET Construction Cost			\$0	\$17,248	\$17,248
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$17,248	\$17,248
Inflation to Summer 2016 (4%)		4%	\$0	\$690	\$690
TOTAL Estimated NET Cost of Construction			\$0	\$17,938	\$17,938
Construction Contingency (15%)		15%	\$0	\$2,691	\$2,691
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$20,629	\$20,629

Summary Item: TASK 12

Total Cost: \$ 9,320

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipmen t Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Maintenance Area/Parking										
	Site Improvements										
	Stake-out Tree Locations	1	ls		\$ -		\$ -		\$ -	\$ 500.00	\$ 500
	Plant Trees/Mulch/Water	12	ea		\$ -		\$ -		\$ -	\$ 300.00	\$ 3,600
	Fine Grade & Seed	48	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 480
	Maintenance Drive										
	Site Improvements										
	Stake-out Tree Locations	1	ls		\$ -		\$ -		\$ -	\$ 500.00	\$ 500
	Plant Trees/Mulch/Water	6	ea		\$ -		\$ -		\$ -	\$ 300.00	\$ 1,800
	Fine Grade & Seed	24	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 240
	Meadow Trail										
	Site Improvements										
	Stake-out Tree Locations	1	ls		\$ -		\$ -		\$ -	\$ 500.00	\$ 500
	Plant Trees/Mulch/Water	5	ea		\$ -		\$ -		\$ -	\$ 300.00	\$ 1,500
	Fine Grade & Seed	20	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 200
SUBTOTAL					\$ -		\$ -		\$ -		\$ 9,320

Tasks Construction Cost Estimate

George Washington Carver National Monument
Diamond, Missouri

Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASK 13 - DEVELOP A NEW STORAGE FACILITY

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Storage Facility			\$108,000	\$11,700	\$119,700
Subtotal Direct Construction Cost			\$108,000	\$11,700	\$119,700
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)		3%	\$1,620	\$351	\$1,971
Design Contingency (30 Percent)		30%	\$32,400	\$3,510	\$35,910
Total Direct Construction Costs			\$142,020	\$15,561	\$157,581
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$7,101	\$778	\$7,879
Historic Preservation Factor (5 Percent)		5%	\$7,101	\$778	\$7,879
Subtotal NET Construction Cost			\$156,222	\$17,117	\$173,339
Overhead (15 Percent)		15%	\$23,433	\$2,568	\$26,001
Profit (10 Percent)		10%	\$15,622	\$1,968	\$17,591
Subtotal NET Construction Cost			\$195,278	\$21,653	\$216,931
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$195,278	\$21,653	\$216,931
Inflation to Summer 2016 (4%)		4%	\$7,811	\$866	\$8,677
TOTAL Estimated NET Cost of Construction			\$203,089	\$22,519	\$225,608
Construction Contingency (15%)		15%	\$30,463	\$3,378	\$33,841
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$233,552	\$25,897	\$259,449

Summary Item: TASK 13

Total Cost: \$ 108,000

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Building										
	Structure										
	Wood Frame/Brick Veneer	1200	sf		\$ -		\$ -		\$ -	\$ 90.00	\$ 108,000
SUBTOTAL					\$ -		\$ -		\$ -		\$ 108,000

Summary Item: TASK 13

Total Cost: \$ 11,700

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Sitework										
	Earthwork										
	Survey & Layout	1	ls		\$ -		\$ -		\$ -	\$1,500.00	\$ 1,500
	Clear & Grub	0.6	ac		\$ -		\$ -		\$ -	\$6,000.00	\$ 3,600
	Rough Grading	300	sy		\$ -		\$ -		\$ -	\$ 7.00	\$ 2,100
	Finish Grading	300	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 3,000
	Site Improvements										
	Sod & Seed	150	sy		\$ -		\$ -		\$ -	\$ 10.00	\$ 1,500
SUBTOTAL					\$ -		\$ -		\$ -		\$ 11,700

Tasks Construction Cost Estimate

George Washington Carver National Monument
Diamond, Missouri

Estimate is Based on 2015 Construction Costs

Estimate By: John Flores

Date: 6/3/2015

Reviewed By: Dan Worth

Date: 6/3/2015

IMPLEMENTATION TASK 14 - RESTORE THE CEMENTERY WALL

Bid Item		Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Restore Cementery Wall			\$0	\$63,000	\$63,000
Subtotal Direct Construction Cost			\$0	\$63,000	\$63,000
Published Location Factor (0 Percent)		0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)		0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)		3%	\$0	\$1,890	\$1,890
Design Contingency (30 Percent)		30%	\$0	\$18,900	\$18,900
Total Direct Construction Costs			\$0	\$83,790	\$83,790
Standard General Conditions (0 Percent)		0%	\$0	\$0	\$0
Government General Conditions (5 Percent)		5%	\$0	\$4,190	\$4,190
Historic Preservation Factor (5 Percent)		5%	\$0	\$4,190	\$4,190
Subtotal NET Construction Cost			\$0	\$92,169	\$92,169
Overhead (15 Percent)		15%	\$0	\$13,825	\$13,825
Profit (10 Percent)		10%	\$0	\$10,599	\$10,599
Subtotal NET Construction Cost			\$0	\$116,594	\$116,594
Contracting Method Adjustment (0 Percent)		0%	\$0	\$0	\$0
Estimated NET Construction Cost			\$0	\$116,594	\$116,594
Inflation to Summer 2016 (4%)		4%	\$0	\$4,664	\$4,664
TOTAL Estimated NET Cost of Construction			\$0	\$121,258	\$121,258
Construction Contingency (15%)		15%	\$0	\$18,189	\$18,189
Construction Management (0 Percent)		0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS			\$0	\$139,446	\$139,446

Summary Item: TASK 14

Total Cost: \$ 63,000

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Site Improvements										
	Tuckpoint/Replace Stone	360	lf		\$ -		\$ -		\$ -	\$ 175.00	\$ 63,000
SUBTOTAL				\$ -	\$ -		\$ -		\$ -		\$ 63,000

Tasks Construction Cost Estimate	Estimate By: John Flores
George Washington Carver National Monument	Date: 6/3/2015
Diamond, Missouri	Reviewed By: Dan Worth
Estimate is Based on 2015 Construction Costs	Date: 6/3/2015

IMPLEMENTATION TASK 15 - REPAIR THE BRICK WALL SURROUNDING THE MAINTENANCE YARD

Bid Item	Recommended Markup	Building Cost Costs	Site Costs	Combined Building and Site
Restore Maintenance Yard Wall		\$0	\$28,125	\$28,125
Subtotal Direct Construction Cost		\$0	\$28,125	\$28,125
Published Location Factor (0 Percent)	0%	\$0	\$0	\$0
Remoteness Factor (0 Percent)	0%	\$0	\$0	\$0
Federal Wage Rate Factor (3 Percent)	3%	\$0	\$844	\$844
Design Contingency (30 Percent)	30%	\$0	\$8,438	\$8,438
Total Direct Construction Costs		\$0	\$37,406	\$37,406
Standard General Conditions (0 Percent)	0%	\$0	\$0	\$0
Government General Conditions (5 Percent)	5%	\$0	\$1,870	\$1,870
Historic Preservation Factor (5 Percent)	5%	\$0	\$1,870	\$1,870
Subtotal NET Construction Cost		\$0	\$41,147	\$41,147
Overhead (15 Percent)	15%	\$0	\$6,172	\$6,172
Profit (10 Percent)	10%	\$0	\$4,732	\$4,732
Subtotal NET Construction Cost		\$0	\$52,051	\$52,051
Contracting Method Adjustment (0 Percent)	0%	\$0	\$0	\$0
Estimated NET Construction Cost		\$0	\$52,051	\$52,051
Inflation to Summer 2016 (4%)	4%	\$0	\$2,082	\$2,082
TOTAL Estimated NET Cost of Construction		\$0	\$54,133	\$54,133
Construction Contingency (15%)	15%	\$0	\$8,120	\$8,120
Construction Management (0 Percent)	0%	\$0	\$0	\$0
GROSS CONSTRUCTION COSTS		\$0	\$62,253	\$62,253

Summary Item: TASK 15

Total Cost: \$ 28,125

Masterformat 2004 Code	Description	Quantity	Unit	MATERIAL		LABOR		EQUIPMENT		TOTALS	
				Material Cost/Unit	Total Material Cost	Labor Cost/Unit	Total Labor Cost	Equipment Cost/Unit	Total Equipment Cost	Total Cost/Unit	Total Cost
	Site Improvements										
	Tuckpoint/Replace Brick	1125	sf		\$ -		\$ -		\$ -	\$ 25.00	\$ 28,125
SUBTOTAL				\$ -	\$ -		\$ -		\$ -		\$ 28,125

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Appendices

Appendix A: Glossary of Terms and Acronyms

Appendix B: List of Technical Reviewers

Appendix C: Agency and Stakeholder Correspondence

Appendix D: Fire Management Burn Matrix

Appendix A: Glossary of Terms and Acronyms

A

ABAAS	Architectural Barriers Act Accessibility Standard
ACHP	Advisory Council on Historic Preservation
Accessibility	A term used to describe facilities or amenities to assist people with disabilities and can extend to Braille signage, wheelchair ramps, elevators/lifts, walkway contours, reading accessibility, etc. According to its website, the National Park Service is “committed to making all practicable efforts to make NPS facilities, programs, services, employment, and meaningful work opportunities accessible and usable by all people, including those with disabilities. This policy reflects the commitment to provide access to the widest cross section of the public and to ensure compliance with the Architectural Barriers Act of 1968, the Rehabilitation Act of 1973, the Equal Employment Opportunity Act of 1972, and the Americans with Disabilities Act of 1990. The Park Service will also comply with section 507 of the Americans with Disabilities Act (42 USC 12207), which relates specifically to the operation and management of federal wilderness areas. The accessibility of commercial services within national parks are also covered under all applicable federal, state and local laws.” (Source: http://www.nps.gov/aboutus/eo.htm)
AOE	Assessment of Effect
APE	Area of Potential Effect

B

BMP	Best Management Practice
BVH	Bahr Vermeer Haecker Architects

C

CEQ	Council on Environmental Quality
CLI	Cultural Landscape Inventory
CLR	Cultural Landscape Report

D

DO	Director’s Order
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E

ESA	Endangered Species Act
EA	Environmental Assessment
EPA	Environmental Protection Agency
EO	Executive Order

F

FEMA	Federal emergency Management Agency
FMSS	Facility Management Software System
FONSI	Finding of No Significant Impact

G

GIS	Geographic Information system
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GMP	General Management Plan
GWCA	George Washington Carver National Monument
H	
HEPMT	Heartland Plant Management Team
HRG	Historic Resources Group, Inc.
HRS/AH	Historic Resource Study and Administrative History
HSR	Historic Structures Report
HTLN	Heartland Network
HVAC	Heating, Ventilation, and Air Conditioning
J	
JMA	John Milner Associates, Inc.
L	
LCS	List of Classified Structures
LRIP	Long Range Interpretive Plan
M	
MDNR	Missouri Department of Natural Resources
MoRAP	Missouri Resource Assessment Partnership
MWAC	Midwest Archeological Center
N	
NAACP	National Association for the Advancement of Colored People
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
P	
PEPC	Planning, Environment and Public Comment
S	
SHPO	State Historic Preservation Officer
T	
THPO	Tribal Historic Preservation Officer
U	
USFWS	United States Fish and Wildlife Service
W	
WJE	Wiss Janney Elstner Associates, Inc.
Y	
YCC	Youth Conservation Corps

Appendix B: List of Technical Reviewers

NPS Midwest Regional Staff

Chief of Historic Architecture and Landscapes	Bill Harlow
Regional Environmental Coordinator	Nick Chevance
Cultural Resources Landscape Architect	Marla McEnaney
Historian/Cultural Resources	Rachel Franklin Weekley

NPS Midwest Archeological Center Staff

Park Archeology Program Manager	Anne Bauermeister
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George Washington Carver National Monument Staff

Superintendent	James R. Heaney
Management Assistant	Lana K. Henry
Supervisory Park Ranger and Supervisor of Interpretation and Education	Randall Becker
Supervisor Facility Operations Specialist	Matt Henderson

NPS Heartland Network

Program Coordinator	Mike DeBacker
Fire Ecologist	Sherry Leis

Department of Fisheries and Wildlife Sciences - University of Missouri

Professor – Fisheries and Wildlife	Dr. Charles Nilon
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Appendix C: Agency and Stakeholder Correspondence

A complete list of stakeholders who received letters is located in Chapter 7.



United States Department of the Interior
NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

H4217(GWCA)

February 20, 2014

Judith Deel
State Historic Preservation Office
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Dear Ms. Deel:

We would like to invite you to two consultation meetings at George Washington Carver National Monument, and wanted to get these dates on your calendar. We hope that you will be able to participate.

The first meeting is scheduled for Thursday, April 3, at 10am. This is a follow-up from the March 6, 2013 consultation regarding the park's *draft Programmatic Agreement*. Several tribes have indicated interest in consultation, including the Caddo Nation, the Eastern Shawnee Tribe of Oklahoma, the Osage Nation, and the United Keetoowah Band of Cherokee Indians in Oklahoma. We are inviting the Tribal Historic Preservation Officers to participate in the meeting. Please find enclosed a copy of the draft park-specific Programmatic Agreement for your review.

In addition, on Wednesday, May 14, we plan to host a stakeholder meeting to review draft alternatives for the park's *Cultural Landscape Report – Environmental Assessment*. Tribal Historic Preservation Officers are being invited to this meeting as well. The contractor who is preparing the report will conduct the meeting, seeking input for the alternatives provided in the draft report. We will let you know once the time of this meeting has been set by the contractor.

Should you have any questions or need more information, please contact Management Assistant Lana Henry @ Lana_Henry@nps.gov, or 417-325-4151.

Sincerely,

Randall Becker,
Acting Superintendent

Enclosure



United States Department of the Interior
NATIONAL PARK SERVICE

George Washington Carver National Monument

5646 Carver Road

Diamond, MO 64840-8314

(417) 325-4151



In reply to:

April 8, 2014

H4217(GWCA)

Judith Deel

Missouri Department of Natural Resources

State Historic Preservation Office

P.O. Box 176

Jefferson City, Missouri 65102

Re: Cultural Landscape Report/Environmental Assessment

George Washington Carver National Monument

Park notification of Combination NEPA/Section 106 Compliance

Dear Ms. Deel:

As discussed during your site visit last week, we wanted to take this opportunity to keep your office informed of the Cultural Landscape Report and associated Environmental Assessment (CLR/EA) that is being prepared for the park. The plan will support management decisions on treatment and use of above ground cultural resources for the park.

We hope that you, Amanda Burke, or other representative from your office will be able to participate in a scoping meeting at the park on Wednesday, May 14, at 1:30pm. The meeting will be held at the park's visitor center. We would greatly appreciate your participation as we discuss proposed alternatives, and provide an opportunity for you or your staff to express any concerns.

On July 14, 1943, the bill authorizing the establishment of GWCA became Public Law 148 of the 78th Congress. Since that time, the park has been seeking guidance on balancing natural and cultural resource management while respecting the commemorative overlay. The NPS is legislatively mandated to preserve the site of the birthplace of George Washington Carver and the Moses Carver farm. The park's legislation directs the monument to be a memorial to Carver's entire life, not just his boyhood.

The CLR/EA will discuss overall management objectives for the park as documented in planning studies and other research documents, presenting a phased strategy for long-term management based on the landscape's significance, existing condition, and use. The CLR/EA will consider

appropriate alternatives to addressing several unresolved questions regarding resource management. The treatment alternatives to be evaluated in the EA portion of the document will address the entire 240-acre cultural landscape and may focus on specific component landscapes to assist the NPS with managing the historic property, balancing historic landscape protection with natural resource efforts, and support and enhancing interpretive programs. The treatment alternatives focus on providing opportunities for the public to experience the peaceful environment and reflect on Carver's life. The treatment alternatives will also define desired conditions for vegetation and help to ensure that plants that commemorate Dr. Carver are protected. The alternatives will also provide general guidance for treatments for several discrete management zones.

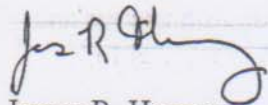
In order to comply with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) of 1966, as amended, an Environmental Assessment (EA) must be developed that will assess impacts of the proposed action in the treatment alternatives to natural and cultural resources. In accordance with section 800.8(3)(c) of the Advisory Council on Historic Preservation's regulations (36 CFR 800), we are notifying your office in advance of the park's intention to use the EA to meet its obligations under Section 106 of the NHPA. This EA, which will contain an Assessment of Effect for all cultural resources potentially affected by the proposed project, will be available for your review and comment later this year.

This letter also serves as notification that we have begun the NEPA process and in order to comply, we are gathering information concerning existing resources within the project area. At this early stage, we are seeking information on any cultural resource restraint or concern that may be a possible planning issue. If you are aware of any such issue, please do not hesitate to contact us.

Information on the project can be found at the NPS Planning, Environment and Public Comment website @ <http://parkplanning.nps.gov> (Project No. 59056). At this time, we anticipate no significant cultural resource impacts associated with the project, and we look forward to receiving any guidance or comments you may have regarding the process or the project itself.

Thank you for your assistance and support, and if you need any additional information or should you have any questions regarding this request, please feel free to contact me or Management Assistant Lana Henry at (417) 325-4151, by email at Lana.Henry@nps.gov, or by letter.

Sincerely,



James R. Heaney
Superintendent

cc: Marla McEnaney, NPS MWRO
Jane Jacobs, JMA



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

April 21, 2014

James R. Heaney
Superintendent
George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

Re: Cultural Landscape Report/Environmental Assessment (NPS) Newton County, Missouri

Dear Mr. Heaney:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR part 800, which require identification and evaluation of cultural resources.

We greatly appreciate your invitation to participate in the scoping meeting for the Cultural Landscape Report scheduled for May 14, 2014, at George Washington Carver National Monument. Unfortunately, Judith Deel and Amanda Burke, the Section 106 staff who have been working with you and your staff have a previously scheduled commitment and will not be able to attend. Please keep us informed, and we look forward to continuing to consult with you.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call Ms. Deel at 573/751-7862. Please be sure to include the SHPO Log Number (022-NE-14) on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy State
Historic Preservation Officer

MAM:jd

c Lana Henry, GWC

Celebrating 40 years of taking care of Missouri's natural resources. To learn more about the Missouri Department of Natural Resources visit dnr.mo.gov.



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

DEC 05 2014

December 1, 2014

Matt Henderson
Acting Superintendent
George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

Re: Cultural Landscape Report & Environmental Assessment, George Washington Carver National Monument (NPS) Newton County, Missouri

Dear Mr. Henderson:

Thank you for submitting information about the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

We have reviewed the 95% Draft, October 2014, for the report entitled *Cultural Landscape Report and Environmental Assessment: George Washington Carver National Monument*. We concur with the findings of this study that the preferred Alternate 4 will have **no adverse effect** on any properties listed in or determined to be eligible at the George Washington Carver National Monument.

Please be advised that, should project plans change, information documenting the revisions should be submitted to this office for further review and comment on possible effects to historic properties. In the event that cultural materials are encountered during project activities, all construction should be halted, and this office notified as soon as possible in order to determine the appropriate course of action.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call 573/751-7862. Please be sure to include the SHPO Log Number (004-NE-15) on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy State
Historic Preservation Officer

MAM:jd

c Don Stevents, NPS-Omaha

Celebrating 40 years of taking care of Missouri's natural resources. To learn more about the Missouri Department of Natural Resources visit dnr.mo.gov.



United States Department of the Interior
NATIONAL PARK SERVICE

George Washington Carver National Monument

5646 Carver Road
Diamond, MO 64840-8314

(417) 325-4151



In reply to:

April 8, 2014

H4217(GWCA)

Charlie Scott
U.S. Fish and Wildlife Service
Columbia Ecological Services Field Office
101 Park DeVillie Drive, Ste.A
Columbia, Missouri 65203

Re: Cultural Landscape Report/Environmental Assessment
George Washington Carver National Monument
Informal consultation with U.S. Fish and Wildlife for Threatened and Endangered Species

Dear Mr. Scott,

A National Park Service (NPS) contractor is currently preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) to support management decisions on treatment and use of aboveground cultural resources for George Washington Carver National Monument (GWCA). We would like to invite you to a scoping meeting to discuss the proposed project alternatives on Wednesday, May 14, 2014, at 1:30pm at the park's visitor center. We would greatly appreciate your participation to ensure that any concerns or suggestions you or your staff may have are considered and adequately addressed.

On July 14, 1943, the bill authorizing the establishment of GWCA became Public Law 148 of the 78th Congress. Since that time, the park has been seeking guidance on balancing natural and cultural resource management while respecting the commemorative overlay. The NPS is legislatively mandated to preserve the site of the birthplace of George Washington Carver and the Moses Carver farm. The park's legislation directs the monument to be a memorial to Carver's entire life, not just his boyhood.

The CLR/EA will discuss overall management objectives for the park as documented in planning studies and other research documents, presenting a phased strategy for long-term management based on the landscape's significance, existing condition, and use. The CLR/EA will consider an appropriate range of action alternatives in order to address several unresolved questions regarding resource management. The treatment alternatives to be evaluated in the EA portion of

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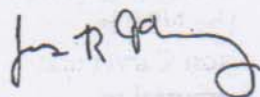
the document will address the entire 240-acre cultural landscape and may focus on specific component landscapes to assist the NPS with managing the historic property, balancing historic landscape protection with natural resource efforts, and support and enhancing interpretive programs. The treatment alternatives will focus on providing opportunities for the public to experience the peaceful environment and reflect on Carver's life. The treatment alternatives will also define desired conditions for vegetation and help to ensure that plants that commemorate Dr. Carver are protected. The alternatives will also provide general guidance for treatments for several discrete management zones.

This letter also serves as notification that we have begun the National Environmental Policy Act (NEPA) process and are proposing to have an Environmental Assessment (EA) available for public and regulatory review later this year. In addition, this letter serves as a record that the NPS is initiating informal consultation with your agency pursuant to Section 7 of the Endangered Species Act of 1973, that requires that a federal agency consult with the U.S. Fish and Wildlife Service or the National Marine Fisheries Service on any action that may affect endangered or threatened species or candidate species or that may result in adverse modification of critical habitat. In order to comply, we are requesting information concerning federal and state rare, threatened, and endangered species documented or reasonably suspected within 0.5 miles of the project site.

Should you know of or come across any other resource constraint that may be a possible planning issue, please do not hesitate to contact us. Information on the project can be found at NPS Planning, Environment and Public Comment website @ <http://parkplanning.nps.gov> (Project No. 50956). We anticipate no significant environmental impacts associated with the project and look forward to receiving any guidance or comments you may have regarding the process or the project itself.

Thank you for your assistance and support, and if you need any additional information or should you have any questions regarding this request, please feel free to contact me or Management Assistant Lana Henry at (417) 325-4151, by email at Lana_Henry@nps.gov, or in writing.

Sincerely,



James R. Heaney
Superintendent

cc: Marla McEnaney, NPS MWRO
Jane Jacobs, JMA



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

H4217(GWCA)

April 22, 2014

Charlie Scott
U.S. Fish and Wildlife Service
Columbia Ecological Services Field Office
101 Park DeVille Drive, Ste. A
Columbia, Missouri 65203

Dear Mr. Scott,

We would like to invite you to participate in a scoping meeting at George Washington Carver National Monument on Wednesday, May 14, at 9:00am. The meeting should conclude by 10:30 to 10:45am. We will meet in the park's multi-purpose room.

A National Park Service contractor is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) for the park, including several proposed alternatives. The CLR/EA will discuss overall management objectives for the park as documented in planning studies and other research documents. The report will present a phased strategy for long-term management based on the landscape's significance, existing condition, and use. We would appreciate your input, and hope that you will be able to attend.

Please RSVP Management Specialist Lana Henry at lane_henry@nps.gov or 417-325-4151. If you have any questions or would like to discuss in more detail, please give me or Ms. Henry a call at 417-325-4151.

Sincerely,

James R. Heaney
Superintendent

Jane Jacobs

From: Henry, Lana [lana_henry@nps.gov]
Sent: Wednesday, April 16, 2014 9:31 AM
To: Marla McEnaney; Jane Jacobs; Dan Worth; Liz Sargent; Christina Osborn
Cc: James Heaney
Subject: Fwd: CLR/EA George Washington Carver National Monument

----- Forwarded message -----

From: **Henry, Lana** <lana_henry@nps.gov>
Date: Wed, Apr 16, 2014 at 8:30 AM
Subject: Re: CLR/EA George Washington Carver National Monument
To: "Hundley, Joshua" <joshua_hundley@fws.gov>

Thank you very much for your review and prompt response. We greatly appreciate it.

On Wed, Apr 16, 2014 at 8:24 AM, Hundley, Joshua <joshua_hundley@fws.gov> wrote:
Ms. Henry,

I reviewed the area in and around the George Washington Carver National Monument in Newton County, Missouri. Our data indicate that Federally listed species, proposed species, candidate species, and designated and proposed critical habitat are not likely to be impacted by the proposed project action. With respect to wetlands and other important fish and wildlife habitat, it appears that the proposed action will not significantly impact these resources. If project plans change or portions of the proposed project were not evaluated, it is our recommendation that the changes be submitted for our review.

Thank you for your interest in the conservation of threatened and endangered species.

Josh Hundley
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
Missouri Ecological Services Field Office
101 Park DeVille Drive, Suite A
Columbia, MO 65203-0057
573-234-2132 ext 176 (office)

--
Lana Henry
Management Assistant
George Washington Carver NM
5646 Carver Rd
Diamond, MO 64840



United States Department of the Interior
NATIONAL PARK SERVICE

George Washington Carver National Monument

5646 Carver Road
Diamond, MO 64840-8314

(417) 325-4151



In reply to:

April 8, 2014

H4217(GWCA)

Ms. Robin Dushane
Tribal Historic Preservation Officer
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, Missouri 64865

Re: Cultural Landscape Report/Environmental Assessment
George Washington Carver National Monument
Park notification of Combination NEPA/Section 106 Compliance

Dear Ms. Dushane:

Following up from our email correspondence of February 20, 2014, we would like to take this opportunity to inform your office that a National Park Service (NPS) contractor is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) for George Washington Carver National Monument. The plan will support management decisions on treatment and use of above ground cultural resources for the park.

We will be holding a scoping meeting on Wednesday, May 14, at 1:30pm to discuss the proposed alternatives for the Cultural Landscape Report, and we hope that you can attend. The meeting will be held at the park's visitor center. We would be happy to cover expenses, if this would be helpful.

On July 14, 1943, the bill authorizing the establishment of GWCA became Public Law 148 of the 78th Congress. Since that time, the park has been seeking guidance on balancing natural and cultural resource management while respecting the commemorative overlay. The NPS is legislatively mandated to preserve the site of the birthplace of George Washington Carver and the Moses Carver farm. The park's legislation directs the monument to be a memorial to Carver's entire life, not just his boyhood.

The CLR/EA will discuss overall management objectives for the park as documented in planning studies and other research documents, presenting a phased strategy for long-term management based on the landscape's significance, existing condition, and use. The CLR/EA will consider

appropriate alternatives to addressing several unresolved questions regarding resource management. The treatment alternatives to be evaluated in the EA portion of the document will address the entire 240-acre cultural landscape and may focus on specific component landscapes to assist the NPS with managing the historic property, balancing historic landscape protection with natural resource efforts, and support and enhancing interpretive programs. The treatment alternatives focus on providing opportunities for the public to experience the peaceful environment and reflect on Carver's life. The treatment alternatives will also define desired conditions for vegetation and help to ensure that plants that commemorate Dr. Carver are protected. The alternatives will also provide general guidance for treatments for several discrete management zones.

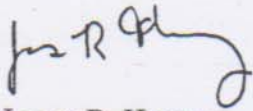
In order to comply with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) of 1966, as amended, an Environmental Assessment (EA) must be developed that will assess impacts of the proposed action in the treatment alternatives to natural and cultural resources. In accordance with section 800.8(3)(c) of the Advisory Council on Historic Preservation's regulations (36 CFR 800), we are notifying your office in advance of the park's intention to use the EA to meet its obligations under Section 106 of the NHPA. This EA, which will contain an Assessment of Effect for all cultural resources potentially affected by the proposed project, will be available for your review and comment later this year.

This letter also serves as notification that we have begun the NEPA process and in order to comply, we are gathering information concerning existing resources within the project area. At this early stage, we are seeking information on any cultural resource restraint or concern that may be a possible planning issue. If you are aware of any such issue, please do not hesitate to contact us.

Information on the project can be found at the NPS Planning, Environment and Public Comment website @ <http://parkplanning.nps.gov> (Project No. 50956). At this time, we anticipate no significant cultural resource impacts associated with the project, and we look forward to receiving any guidance or comments you may have regarding the process or the project itself.

Thank you for your assistance and support, and if you need any additional information or should you have any questions regarding this request, please feel free to contact me or Management Assistant Lana Henry at (417) 325-4151, by email at Lana_Henry@nps.gov, or by letter.

Sincerely,



James R. Heaney
Superintendent

cc: Marla McEnaney, NPS MWRO
Jane Jacobs, JMA



United States Department of the Interior
NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

H4217(GWCA)

February 20, 2014

Dr. Andrea Hunter
Tribal Historic Preservation Officer
Osage Nation
627 Grandview
Pawhuska, Oklahoma 74056

Dear Dr. Hunter:

We have made progress toward the draft Park-Specific *Programmatic Agreement* for George Washington Carver National Monument, which we discussed with you last year. The revised draft document is enclosed for your review and comments, and we would appreciate having your feedback to us by March 19.

A follow-up consultation meeting will be held on Thursday, April 3, at 10am for the signatories and invited signatories to discuss the park's draft *Programmatic Agreement* in final preparation for signatures. Please let us know if you will be able to participate in the meeting in person, or via teleconference.

In addition, on Wednesday, May 14, we plan to host a stakeholder meeting to review draft alternatives for the park's *Cultural Landscape Report – Environmental Assessment*. The contractor who is preparing the report will conduct the meeting, seeking input for the alternatives provided in the draft report. We will let you know once the time of this meeting has been set by the contractor, and we hope that you will be able to participate.

We appreciate your willingness to assist the National Park Service with these projects, and look forward to continuing to work with you. Should you have any questions or need more information, please contact Management Assistant Lana Henry @ Lana_Henry@nps.gov, or 417-325-4151.

Sincerely,

Randall Becker,
Acting Superintendent

Enclosure



United States Department of the Interior
NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

April 8, 2014

H4217(GWCA)

Dr. Andrea Hunter
Tribal Historic Preservation Officer
Osage Nation
627 Grandview
Pawhuska, OK 74056

Re: Cultural Landscape Report/Environmental Assessment
George Washington Carver National Monument
Park notification of Combination NEPA/Section 106 Compliance

Dear Dr. Hunter:

Following up from our email correspondence of February 20, 2014, we would like to take this opportunity to inform your office that a National Park Service (NPS) contractor is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) for George Washington Carver National Monument. The plan will support management decisions on treatment and use of above ground cultural resources for the park.

We will be holding a scoping meeting on Wednesday, May 14, at 1:30pm to discuss the proposed alternatives for the Cultural Landscape Report, and we hope that you can attend. The meeting will be held at the park's visitor center. We would be happy to cover your travel expenses, if this would be helpful.

On July 14, 1943, the bill authorizing the establishment of GWCA became Public Law 148 of the 78th Congress. Since that time, the park has been seeking guidance on balancing natural and cultural resource management while respecting the commemorative overlay. The NPS is legislatively mandated to preserve the site of the birthplace of George Washington Carver and the Moses Carver farm. The park's legislation directs the monument to be a memorial to Carver's entire life, not just his boyhood.

The CLR/EA will discuss overall management objectives for the park as documented in planning studies and other research documents, presenting a phased strategy for long-term management based on the landscape's significance, existing condition, and use. The CLR/EA will consider

appropriate alternatives to addressing several unresolved questions regarding resource management. The treatment alternatives to be evaluated in the EA portion of the document will address the entire 240-acre cultural landscape and may focus on specific component landscapes to assist the NPS with managing the historic property, balancing historic landscape protection with natural resource efforts, and support and enhancing interpretive programs. The treatment alternatives focus on providing opportunities for the public to experience the peaceful environment and reflect on Carver's life. The treatment alternatives will also define desired conditions for vegetation and help to ensure that plants that commemorate Dr. Carver are protected. The alternatives will also provide general guidance for treatments for several discrete management zones.

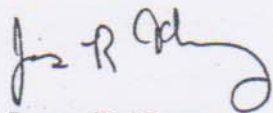
In order to comply with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) of 1966, as amended, an Environmental Assessment (EA) must be developed that will assess impacts of the proposed action in the treatment alternatives to natural and cultural resources. In accordance with section 800.8(3)(c) of the Advisory Council on Historic Preservation's regulations (36 CFR 800), we are notifying your office in advance of the park's intention to use the EA to meet its obligations under Section 106 of the NHPA. This EA, which will contain an Assessment of Effect for all cultural resources potentially affected by the proposed project, will be available for your review and comment later this year.

This letter also serves as notification that we have begun the NEPA process and in order to comply, we are gathering information concerning existing resources within the project area. At this early stage, we are seeking information on any cultural resource restraint or concern that may be a possible planning issue. If you are aware of any such issue, please do not hesitate to contact us.

Information on the project can be found at the NPS Planning, Environment and Public Comment website @ <http://parkplanning.nps.gov> (Project No. 50956). At this time, we anticipate no significant cultural resource impacts associated with the project, and we look forward to receiving any guidance or comments you may have regarding the process or the project itself.

Thank you for your assistance and support, and if you need any additional information or should you have any questions regarding this request, please feel free to contact me or Management Assistant Lana Henry at (417) 325-4151, by email at Lana_Henry@nps.gov, or by letter.

Sincerely,



James R. Heaney
Superintendent

cc: Marla McEnaney, NPS MWRO
Jane Jacobs, JMA



RECEIVED
JAN 29 2015
BY: GLWCA

TRIBAL HISTORIC PRESERVATION OFFICE

Date: January 23, 2015

File: 1415-1051MO-12

RE: George Washington Carver Cultural Landscape project

George Washington Carver Memorial
James Heaney
5646 Carver Road
Diamond, MO 64840-8314

Dear Mr. Heaney,

The Osage Nation Historic Preservation Office has reviewed your submission for the project listed as George Washington Carver Cultural Landscape project. **The finding of this NHPA Section 106 review has resulted in a determination of "No Adverse Effect."**

In accordance with the National Historic Preservation Act, (NHPA) [54 U.S.C. § 300101 et seq.] 1966, undertakings subject to the review process are referred to in 54 U.S.C. § 302706 (a), which clarifies that historic properties may have religious and cultural significance to Indian tribes. Additionally, Section 106 of NHPA requires Federal agencies to consider the effects of their actions on historic properties (36 CFR Part 800) as does the National Environmental Policy Act (43 U.S.C. 4321 and 4331-35 and 40 CFR 1501.7(a) of 1969). The Osage Nation concurs that as a part of the scoping process the National Park Service fulfilled NHPA and NEPA compliance by consulting with the Osage Nation Historic Preservation Office in regard to the proposed George Washington Carver Cultural Landscape project.

The Osage Nation has vital interests in protecting its historic and ancestral cultural resources. We do not anticipate that this project will adversely impact any cultural resources or human remains protected under the NHPA, NEPA, the Native American Graves Protection and Repatriation Act, or Osage law within the surveyed portion of the project. **If, however, artifacts or human remains are discovered during project construction, we ask that work cease immediately and the Osage Nation Historic Preservation Office be contacted.**

Should you have any questions or need any additional information please feel free to contact me at the number listed below. Thank you for consulting with the Osage Nation on this matter.

Andrea A. Hunter, Ph.D.
Director, Tribal Historic Preservation Officer



United States Department of the Interior
NATIONAL PARK SERVICE

George Washington Carver National Monument

5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

H4217(GWCA)

February 20, 2014

Ms. Lisa LaRue-Baker
Acting Tribal Historic Preservation Officer
United Keetoowah Band of Cherokee Indians in Oklahoma
P.O. Box 748
Tahlequah, Oklahoma 74465

Dear Ms. LaRue-Baker:

We have made progress toward the draft Park-Specific *Programmatic Agreement* for George Washington Carver National Monument, which we discussed with you last year. The revised draft document is enclosed for your review and comments, and we would appreciate having your feedback to us by March 19.

A follow-up consultation meeting will be held on Thursday, April 3, at 10am for the signatories and invited signatories to discuss the park's draft *Programmatic Agreement* in final preparation for signatures. Please let us know if you will be able to participate in the meeting in person, or via teleconference.

In addition, on Wednesday, May 14, we plan to host a stakeholder meeting to review draft alternatives for the park's *Cultural Landscape Report – Environmental Assessment*. The contractor who is preparing the report will conduct the meeting, seeking input for the alternatives provided in the draft report. We will let you know once the time of this meeting has been set by the contractor, and we hope that you will be able to participate.

We appreciate your willingness to assist the National Park Service with these projects, and look forward to continuing to work with you. Should you have any questions or need more information, please contact Management Assistant Lana Henry @ Lana_Henry@nps.gov, or 417-325-4151.

Sincerely,

Randall Becker,
Acting Superintendent

Enclosure



United States Department of the Interior
NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

April 8, 2014

H4217(GWCA)

Lisa C. Baker
Acting Tribal Historic Preservation Officer
United Keetoowah Band of Cherokee Indians
P.O. Box 746
Tahlequah, OK 74465

Re: Cultural Landscape Report/Environmental Assessment
George Washington Carver National Monument
Park notification of Combination NEPA/Section 106 Compliance

Dear Ms. Baker:

Following up from our email correspondence of February 20, 2014, we would like to take this opportunity to inform your office that a National Park Service (NPS) contractor is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) for George Washington Carver National Monument. The plan will support management decisions on treatment and use of above ground cultural resources for the park.

We will be holding a scoping meeting on Wednesday, May 14, at 1:30pm to discuss the proposed alternatives for the Cultural Landscape Report, and we hope that you can attend. The meeting will be held at the park's visitor center. We would be happy to cover your travel expenses, if this would be helpful.

On July 14, 1943, the bill authorizing the establishment of GWCA became Public Law 148 of the 78th Congress. Since that time, the park has been seeking guidance on balancing natural and cultural resource management while respecting the commemorative overlay. The NPS is legislatively mandated to preserve the site of the birthplace of George Washington Carver and the Moses Carver farm. The park's legislation directs the monument to be a memorial to Carver's entire life, not just his boyhood.

The CLR/EA will discuss overall management objectives for the park as documented in planning studies and other research documents, presenting a phased strategy for long-term management based on the landscape's significance, existing condition, and use. The CLR/EA will consider

appropriate alternatives to addressing several unresolved questions regarding resource management. The treatment alternatives to be evaluated in the EA portion of the document will address the entire 240-acre cultural landscape and may focus on specific component landscapes to assist the NPS with managing the historic property, balancing historic landscape protection with natural resource efforts, and support and enhancing interpretive programs. The treatment alternatives focus on providing opportunities for the public to experience the peaceful environment and reflect on Carver's life. The treatment alternatives will also define desired conditions for vegetation and help to ensure that plants that commemorate Dr. Carver are protected. The alternatives will also provide general guidance for treatments for several discrete management zones.

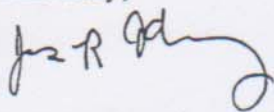
In order to comply with the National Environmental Policy Act (NEPA) and the National Historic Preservation Act (NHPA) of 1966, as amended, an Environmental Assessment (EA) must be developed that will assess impacts of the proposed action in the treatment alternatives to natural and cultural resources. In accordance with section 800.8(3)(c) of the Advisory Council on Historic Preservation's regulations (36 CFR 800), we are notifying your office in advance of the park's intention to use the EA to meet its obligations under Section 106 of the NHPA. This EA, which will contain an Assessment of Effect for all cultural resources potentially affected by the proposed project, will be available for your review and comment later this year.

This letter also serves as notification that we have begun the NEPA process and in order to comply, we are gathering information concerning existing resources within the project area. At this early stage, we are seeking information on any cultural resource restraint or concern that may be a possible planning issue. If you are aware of any such issue, please do not hesitate to contact us.

Information on the project can be found at the NPS Planning, Environment and Public Comment website @ <http://parkplanning.nps.gov> (Project No. 50956). At this time, we anticipate no significant cultural resource impacts associated with the project, and we look forward to receiving any guidance or comments you may have regarding the process or the project itself.

Thank you for your assistance and support, and if you need any additional information or should you have any questions regarding this request, please feel free to contact me or Management Assistant Lana Henry at (417) 325-4151, by email at Lana_Henry@nps.gov, or by letter.

Sincerely,



James R. Heaney
Superintendent

cc: Marla McEnaney, NPS MWRO
Jane Jacobs, JMA

Jane Jacobs

From: Henry, Lana [lana_henry@nps.gov]
Sent: Wednesday, November 12, 2014 12:08 PM
To: Marla McEnaney; Jane Jacobs; Dan Worth; Liz Sargent
Subject: Fwd: George Washington Carver National Monument, Cultural Landscape Report and Environmental Assessment

THPO response.

----- Forwarded message -----

From: Heaney, James <james_heaney@nps.gov>
Date: Wed, Nov 12, 2014 at 11:05 AM
Subject: Fwd: George Washington Carver National Monument, Cultural Landscape Report and Environmental Assessment
To: Lana Henry <Lana_Henry@nps.gov>

----- Forwarded message -----

From: Lisa LaRue-Baker - UKB THPO <ukbthpo-larue@yahoo.com>
Date: Wed, Nov 12, 2014 at 10:54 AM
Subject: George Washington Carver National Monument, Cultural Landscape Report and Environmental Assessment
To: "James_Heaney@nps.gov" <James_Heaney@nps.gov>
Cc: verna <lstapleton@unitedkeetoowahband.org>, "eberry@unitedkeetoowahband.org" <eberry@unitedkeetoowahband.org>

Thank you for sending the above captioned report. We concur there will be no adverse effects anticipated. We understand you will complete Section 106 of the NHPA as required, as well as NAGPRA.

Lisa C. Baker

Acting THPO
United Keetoowah Band of Cherokee Indians in Oklahoma
PO Box 746
Tahlequah, OK 74465

c 918.822.1952
ukbthpo-larue@yahoo.com

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United States Department of the Interior
NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

H4217(GWCA)

February 20, 2014

Ms. Robin Dushane
Tribal Historic Preservation Officer
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, Oklahoma 64865

Dear Ms. Dushane:

We would like to request your review of a draft Park-Specific *Programmatic Agreement* for George Washington Carver National Monument. The draft document is enclosed for your review and comments. We would be pleased to discuss this with you and answer any questions you may have, and would appreciate having your feedback to us by March 19.

A follow-up consultation meeting will be held on Thursday, April 3, at 10am for the signatories and invited signatories to discuss the park's draft *Programmatic Agreement* in final preparation for signatures. Please let us know if you will be able to participate in the meeting in person, or via teleconference.

In addition, on Wednesday, May 14, we plan to host a stakeholder meeting to review draft alternatives for the park's *Cultural Landscape Report – Environmental Assessment*. The contractor who is preparing the report will conduct the meeting, seeking input for the alternatives provided in the draft report. We will let you know once the time of this meeting has been set by the contractor, and we hope that you will be able to participate.

We appreciate your willingness to assist the National Park Service with these projects, and look forward to working with you. Should you have any questions or need more information, please contact Management Assistant Lana Henry @ Lana_Henry@nps.gov, or 417-325-4151.

Sincerely,

Randall Becker,
Acting Superintendent

Enclosure



United States Department of the Interior

NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

IN REPLY REFER TO:

May 8, 2014

H4217(GWCA)

Ms. Robin Dushane
THPO, Eastern Shawnee Tribe of OK
1625 Dilar Dr.
Grove, OK 74344

Dear Ms. Dushane,

Greetings from George Washington Carver National Monument, located in Diamond, Missouri. On behalf of the National Park Service, we would like to express our thanks for your assistance with the Community Focus Group Survey conducted by the University of Idaho last summer. We very much appreciate your help and input.

We hope that you have been able to visit the park, and that you will have opportunity to enjoy the upcoming special events. Please find enclosed a listing of the park's special events, and quarterly event calendars.

In addition, we would like to cordially invite you to participate in a planning meeting next Wednesday, May 14, at 9:00am or 1:30pm, in the park's multipurpose room at the Visitor Center. We will be discussing use of the park's cultural landscape, and either of the meetings is expected to last about 1-1/2 hours. We would appreciate your participation, and hope that you will be able to attend one of the meetings. An RSVP would be appreciated.

If you have any questions or would like to discuss in more detail, please contact me or Management Specialist Lana Henry at 417-325-4151. We look forward to hearing from you.

Sincerely,

James R. Heaney
Superintendent

Enclosures



United States Department of the Interior
NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

H4217(GWCA)

February 20, 2014

Mr. Robert Cast
Tribal Historic Preservation Officer
Caddo Nation
P.O. Box 487
Binger, Oklahoma 73009

Dear Mr. Cast:

We would like to request your review of a draft *Park-Specific Programmatic Agreement* for George Washington Carver National Monument. The draft document is enclosed for your review and comments. We would be pleased to discuss this with you and answer any questions you may have, and would appreciate having your feedback to us by March 19.

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Sincerely,

Randall Becker,
Acting Superintendent

Enclosure



United States Department of the Interior
NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, MO 64840-8314
(417) 325-4151



In reply to:

April 8, 2014

H4217(GWCA)

Robert Cast
Tribal Historic Preservation Officer
Caddo Nation
P.O. Box 487
Binger, OK 73009

Re: Cultural Landscape Report/Environmental Assessment
George Washington Carver National Monument
Park notification of Combination NEPA/Section 106 Compliance

Dear Mr. Cast:

Following up from our email correspondence of February 20, 2014, we would like to take this opportunity to inform your office that a National Park Service (NPS) contractor is preparing a Cultural Landscape Report and associated Environmental Assessment (CLR/EA) for George Washington Carver National Monument. The plan will support management decisions on treatment and use of above ground cultural resources for the park.

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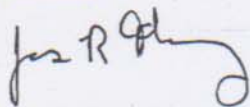
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Thank you for your assistance and support, and if you need any additional information or should you have any questions regarding this request, please feel free to contact me or Management Assistant Lana Henry at (417) 325-4151, by email at Lana.Henry@nps.gov, or by letter.

Sincerely,



James R. Heaney
Superintendent

cc: Marla McEnaney, NPS MWRO
Jane Jacobs, JMA



United States Department of the Interior

NATIONAL PARK SERVICE

George Washington Carver National Monument

5646 Carver Road

Diamond, Missouri 64840-8314

IN REPLY REFER TO:

May 8, 2014

H4217(GWCA)

Mr. Scott Willard
THPO, Miami Nation
202 S. Eight Tribes Trail
P.O. Box 1326
Miami, OK 74355

Dear Mr. Willard,

Greetings from George Washington Carver National Monument, located in Diamond, Missouri. On behalf of the National Park Service, we would like to express our thanks for your assistance with the Community Focus Group Survey conducted by the University of Idaho last summer. We very much appreciate your help and input.

We hope that you have been able to visit the park, and that you will have opportunity to enjoy the upcoming special events. Please find enclosed a listing of the park's special events, and quarterly event calendars.

In addition, we would like to cordially invite you to participate in a planning meeting next Wednesday, May 14, at 9:00am or 1:30pm, in the park's multipurpose room at the Visitor Center. We will be discussing use of the park's cultural landscape, and either of the meetings is expected to last about 1-1/2 hours. We would appreciate your participation, and hope that you will be able to attend one of the meetings. An RSVP would be appreciated.

If you have any questions or would like to discuss in more detail, please contact me or Management Specialist Lana Henry at 417-325-4151. We look forward to hearing from you.

Sincerely,

James R. Heaney
Superintendent

Enclosures



United States Department of the Interior

NATIONAL PARK SERVICE
George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

IN REPLY REFER TO:

May 8, 2014

H4217(GWCA)

Ms. Sherri Clemons
THPO, Wyandotte Tribe
69330 E. 134 Rd.
Wyandotte, OK 74370

Dear Ms. Clemons,

Greetings from George Washington Carver National Monument, located in Diamond, Missouri. On behalf of the National Park Service, we would like to express our thanks for your assistance with the Community Focus Group Survey conducted by the University of Idaho last summer. We very much appreciate your help and input.

We hope that you have been able to visit the park, and that you will have opportunity to enjoy the upcoming special events. Please find enclosed a listing of the park's special events, and quarterly event calendars.

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If you have any questions or would like to discuss in more detail, please contact me or Management Specialist Lana Henry at 417-325-4151. We look forward to hearing from you.

Sincerely,

James R. Heaney
Superintendent

Enclosures



United States Department of the Interior

NATIONAL PARK SERVICE

George Washington Carver National Monument
5646 Carver Road
Diamond, Missouri 64840-8314

IN REPLY REFER TO:

May 8, 2014

H4217(GWCA)

Ms. Jean Ann Lambert
Asst. THPO, Quapaw Tribe
1000 Lincoln Blvd.
Miami, OK 74384

Dear Ms. Lambert,

Greetings from George Washington Carver National Monument, located in Diamond, Missouri. On behalf of the National Park Service, we would like to express our thanks for your assistance with the Community Focus Group Survey conducted by the University of Idaho last summer. We very much appreciate your help and input.

We hope that you have been able to visit the park, and that you will have opportunity to enjoy the upcoming special events. Please find enclosed a listing of the park's special events, and quarterly event calendars.

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If you have any questions or would like to discuss in more detail, please contact me or Management Specialist Lana Henry at 417-325-4151. We look forward to hearing from you.

Sincerely,

James R. Heaney
Superintendent

Enclosures

Appendix D: Fire Management Burn Matrix

Burn Unit	1	2	3	4	5	6	7	7B	8	9	<i>Annual total units burned</i>
2014	1	1	1	1	1	1	1				7
2013											0
2012			1	1	1	1					4
2011	1	1					1				3
2010			1	1	1	1					4
2009											0
2008			1		1	1					3
2007	1	1		1			1		1		5
2006			1	1	1	1					4
2005	1	1		1			1				4
2004											0
2003											0
2002											0
2001											0
2000	1				1		1				3
1999		1	1			1					3
1998	1			1							2
1997	1		1		1	1	1				5
1996											0
1995					1	1		1			3
1994											0
1993											0
1992	1	1	1	1							4
1991	1	1	1	1	1	1	1				7
1990	1	1	1	1	1						5
1989	1	1	1	1	1						5
1988				1	1						2
1987											0
1986											0
1985											0
1984		1	1	1							3
1983	1		1	1	1	1					5
1982	1	1	1	1		1					5
<i>Total fires per burn unit</i>	13	11	14	15	13	11	7	1	1	0	86

