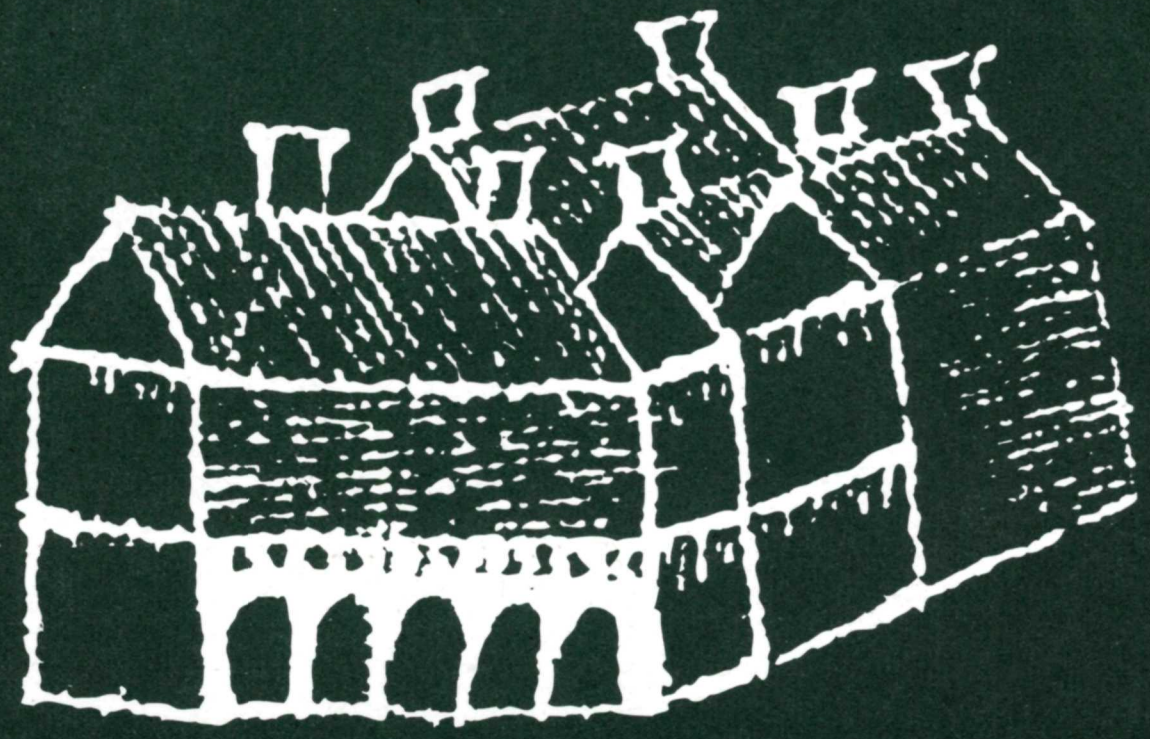
National Park Service
U.S. Department of the Interior

Colonial National Historical Park, Green Spring Unit
Virginia

Green Spring
Colonial National Historical Park

Final General Management Plan Amendment and Abbreviated Final Environmental Impact Statement

March 2003



Cover illustration: Sketch of Green Spring from a land survey of 1683. The portion to the right was the original 68-by-70-foot structure; the one to the left was a 1670 addition. Reproduced by permission of the Trustees of the William Salt Library, Stafford, United Kingdom.

Green Spring
Colonial National Historical Park

Final General Management Plan Amendment and
Abbreviated Final Environmental Impact Statement

March 2003

Colonial National Historical Park
Virginia

Produced by the Philadelphia Support Office
National Park Service

U.S. Department of the Interior
Washington, DC

Final General Management Plan Amendment & Abbreviated Final Environmental Impact Statement

Green Spring ~ Colonial National Historical Park

James City County, Virginia

March 2003

This *Final General Management Plan Amendment and Abbreviated Final Environmental Impact Statement (Final GMPA/AEIS)* presents three alternative approaches for managing the Green Spring unit of Colonial National Historical Park (Colonial NHP), including a no action alternative and one preferred by the National Park Service. The preferred alternative has been modified in response to public and agency comments received on the draft plan. Together with the draft plan, the Final GMPA/AEIS also describes potential environmental consequences that may result from implementing each alternative. This document serves as an amendment to the parkwide 1993 General Management Plan for Colonial NHP. At the time the 1993 General Management Plan was prepared, documentation on Green Spring's resources was insufficient to support its inclusion in a planning process.

Alternative A, the no action alternative, continues the existing management direction at the site with no general visitor access, no visitor services or interpretation and minimal maintenance of resources. This alternative would make no changes or improvements at Green Spring. The site would not be further researched and would not receive additional protection. This approach has the result of discouraging public understanding of Green Spring and the potential for cultural and natural resource degradation from site disturbance by uninvited use and traffic.

Alternative B relies on currently identified core archeological features, including the manor site, spring, "jail," orangerie, and terraces as the basis for the interpretation of Governor Berkeley and his life and interests at Green Spring. Operations and interventions in the landscape are modest, supporting a low intensity of visitation and visitor use at the site. Alternative B would be constrained by the assumption that Centerville Road remains open to general-purpose traffic, continuing to split the site's eastern and western sides. Accordingly, this approach would limit additional research, site improvements and interpretation to a core archeological area of interest on the western portion of the site. This alternative constitutes the minimum actions essential to meet the stewardship mission of the NPS and Colonial NHP regarding preservation of Green Spring's resources, interpretation of their significance to the public, and associated visitor uses and services, as well as cooperation with interested partner agencies, entities, and groups.

Alternative C, the preferred alternative, takes full advantage of Green Spring's landscape and site-wide archeological features to provide visitors a window into a 17th century plantation and its essential components. Based on a thorough research process, during which visitors are invited to engage archeologists and scholars in their discovery, the site would ultimately be rehabilitated and managed to evoke, without reconstruction, a landscape suggestive of Governor Berkeley's innovative early southern plantation. There would be a higher degree of intervention in the landscape than in Alternative B, based on the results of site analysis, historical research and archeological and cultural landscape studies that focus on the spatial organization and physical resources of the site. This alternative would require significant commitments to make archeological work visible on-site including temporary archeological enclosures, to shelter resources during the process of excavation, and a support facility for archeologists. Alternative C would be implemented in two stages; research and discovery followed by landscape treatment. Stage One has been modified, adapting to the constraints of through-traffic on Centerville Road continuing to split the site's eastern and western sides for the foreseeable future. Temporary facilities and visitor use would be restricted to the west side of Centerville Road in Stage One, similar to Alternative B. Stage Two has been modified to maintain an emergency vehicle and public evacuation route through the site once Centerville Road is closed. Upon road closure, permanent support and visitor facilities would be relocated to an unobtrusive location on the east side of the site so landscape treatment could be implemented and visitors could experience a visually unified setting. Consistent with this approach to interpretation and overall site improvements, significant levels of visitation would be anticipated, requiring a visitor contact station and appropriate visitor services. This approach would imply cooperation with local officials to slow and reduce through-traffic on Centerville Road during Stage One and ultimately close Centerville Road, which detracts from the safety and quality of the environment, and is inconsistent with the landscape character implicit to this alternative.

The *Draft General Management Plan Amendment/ Environmental Impact Statement (DGMPA/EIS)* was on public review from May 2 to July 11, 2001. All substantive comments received have been responded to in this document. This final plan has been revised to modify the preferred alternative and provide clarification or correct errors and omissions in the impacts analysis in response to public comment. The release of this Final *GMPA/AEIS* will be followed by a 30-day no-action period. If no substantive comments are received during that period, a Record of Decision (ROD) will be prepared to document the selected alternative and set forth any stipulations for implementation of the general management plan.

For further information regarding this document, please contact the Superintendent, Colonial National Historical Park, Post Office Box 210, Yorktown, Virginia 23690, or call (757) 898-3400, or visit the park through their web site at www.nps.gov/colo.

United States Department of the Interior * National Park Service



Summary

This is a summary of the Final General Management Plan Amendment/Abbreviated Final Environmental Impact Statement (Final GMPA/AEIS), which presents and analyzes three alternative plans, including a modified preferred alternative, for the management of the Green Spring unit of the Colonial National Historical Park (Colonial NHP).

This historically rich archeological site of approximately 200 acres is located three miles from the Jamestown unit of Colonial NHP. As the home of Sir William Berkeley, the most influential governor of Virginia in the 17th century, Green Spring illustrates the expansion of British culture beyond Jamestown and is integral to the story of the first permanent English settlement. Berkeley served 27 years as governor and was a pivotal figure in establishing a civil society based upon English law but modified to meet the challenges of a frontier society. While encouraging a self-reliant colony with a diversified economy, Berkeley's second term saw increasing restrictions on African Americans and the equation of slavery with race, and his American Indian policies were a cause of the first rebellion in the colonies against the King's representative.

Acquired by the National Park Service (NPS) in 1966, the Green Spring site is much smaller than Berkeley's original land holdings, but includes archeological, landscape and architectural remnants of his manor house and ancillary structures. The site offers a rare opportunity to interpret the rise and fall of Berkeley in the period from 1640-1677, culminating in the burning of Jamestown, then capital of Virginia.

Purpose of and Need for Action

The 400th anniversary of Jamestown's 1607 founding will be celebrated in 2007, and has sparked new public interest in the history of the Virginia colony. The Friends of the National Park Service for Green Spring, Inc., is a non-profit group interested in communicating the pivotal role of Governor Berkeley and the Green Spring site in Jamestown's history. The Friends have made commitments to assist in fund-raising to support costs of making the site accessible and understandable to the public. In the 30 years of NPS ownership of the Green Spring site, funds have not been available to interpret, open to public use, or adequately monitor the site's resources. Improvement of the site is timely now because of explosive growth in the community and resultant land use changes directly adjacent to the park that require that the NPS take action to protect the site. This renewed interest and need for action has prompted the development of this GMPA/EIS.

There are two broad purposes of a General Management Plan/Environmental Impact Statement. First, a GMP clearly describes specific resource conditions and visitor experiences to be achieved in park units, and identifies the kinds of management, use, and development that are appropriate in achieving and maintaining those conditions. Second, the planning process ensures that the basic foundation for decision-making has been developed in consultation with interested stakeholders and adopted by NPS leadership after adequate analysis of the benefits, environmental impacts, and economic costs of the alternative courses of action.

This document serves as an amendment to the 1993 park-wide GMP for Colonial NHP, as Green Spring was not considered during that effort. It will provide guidance for stewardship of the park's natural, cultural, and archeological resources over the next ten to twenty years while ensuring their interpretation for the public. This Final GMPA is accompanied by an Abbreviated Final EIS to satisfy requirements of the National Environmental Policy Act (NEPA) of 1969, as amended, which requires the analysis and comparison of impacts associated with each alternative. NEPA regulations allow the preparation of an Abbreviated Final EIS if relatively minor changes are made to the Draft EIS in response to public and agency commentary. An Abbreviated Final EIS contains copies of substantive comments raised by the public or agencies during the public review period, responses to those comments, and an errata section with specific modifications and corrections to the Draft EIS. No rewriting or reprinting of the Draft EIS is necessary. Additional copies of the draft document are also available upon request through Colonial National Historic Park.

Substantive comments are defined as those that do one or more of the following:

a) question with reasonable basis, the accuracy of information in the EIS

b) question with reasonable basis, the adequacy of the environmental analysis

c) present reasonable alternatives other than those presented in the EIS

d) cause changes or revisions in the proposal.

Substantive comments raise, debate, or question a point of fact or policy. Comments in favor of or against one alternative (or component of an alternative), outside the scope of the plan, stating opinion, or that agree or disagree with NPS policy, are not considered substantive; however, all letters, e-mails and other written correspondence are read and considered. Substantive comments for this plan were addressed with written responses, and where appropriate, by revisions to the text of the draft plan noted as an errata sheet in the Corrections and Revisions sections of this document (see Chapters 3 and 4) . Comments from individuals, agencies and organizations are reproduced and addressed in the Public Comments and Responses section of this document (see Appendix A).

After a 30-day no-action period, a Record of Decision (ROD) will be prepared to document the selected alternative and set forth any stipulations for implementation of the general management plan, thus completing the requirements for NEPA.

Mission Goals

Four mission goals have been developed for the Green Spring unit of Colonial NHP which describe the desired conditions the park will seek to attain:

Resource Management -- Significant resources associated with Green Spring (historical landscapes and features, remnant structures, archeological sites, curatorial objects and natural resources) are protected, rehabilitated, restored or maintained in good condition and managed within the broader ecosystem and cultural context.

Interpretation and Visitor Experience -- The public understands and appreciates significant innovations, ventures and events associated with Green Spring and Governor Berkeley, their role in America's transition from English rule to independence, and the connection with Jamestown and other Colonial NHP stories.

Visitor Use and Park Facilities -- Visitors safely enjoy high quality educational experiences and are satisfied with the availability, accessibility, diversity, and quality of park facilities and services.

Partnerships and Cooperative Actions -- The National Park Service increases its operational capacity through cooperative efforts with other public and private entities that understand and support the park's mission to protect and interpret park resources.

Decision Points

The public, the stakeholders, the interdisciplinary GMP team, and the park's staff have raised many issues and identified opportunities that have been considered as a part of this plan. The most relevant of these issues and opportunities have been distilled into broad questions, decision points, that are the basis upon which alternative management strategies have been developed. They include the following:

- *What kinds of visitor experiences are most effective and appropriate for engaging visitors in Green Spring's stories considering types and conditions of site resources and the site's connections with other units of the park and regional sites?*

  Issues to be addressed include whether the significant stories of Green Spring should be presented in the context of Berkeley's era, the full colonial period, or the full evolution of the site, and how to strengthen connections to Jamestown; whether a physical setting can and should be re-established to convey an historic scene; and what is the appropriate balance of managed landscape treatment, facility development and visitor use with conservation of the natural environment.

- *Should public access to the site be provided before, during or after the full extent of resource knowledge is accumulated?*

  While much new information about Green Spring's history and resources has been collected in the course of this planning effort, extensive research and fieldwork may take years to fund and complete. If public access to the site is restricted until research is completed, NPS risks the loss of momentum and interest of supporting partners; however, if significant site development for public access precedes completion of research, inadvertent damage could result to resources.

- *Should Route 614 remain open or be closed to through traffic once the site is open for public use?*

  While the road's location is perceived as intrusive to Green Spring's historic setting and a safety hazard for both drivers and potential visitors to the site, closure will cause re-routing of local traffic to nearby roads.

- *To what extent can park values be protected and can park goals be achieved through agreements or partnerships with the Friends of the National Park Service for Green Spring Inc., park watch volunteers, James City County, park neighbors, and other institutions, organizations and agencies?*

Alternatives

Three alternative plans for Green Spring's management were presented in the draft plan, February 2001, including a "no action" alternative (Alternative A) that would continue current management practices and two action alternatives (Alternatives B and C). The alternatives were developed through a process of public consultation that included workshops to review issues, resources, initial concepts, draft alternatives, and environmental impacts. Substantial input was received from interested citizens and organization, community stakeholders, local, state and federal agencies, Colonial NHP staff, subject matter scholars and professional experts, as well as the project team.

As a result of public and agency review of the Draft GMPA/EIS, Alternative C, the Preferred Alternative, has been revised. Alternative B remains unchanged. Descriptions of consultations made during the public review process are included in Chapter 5: Consultation and Coordination, and written comments received on the draft plan are included and responded to in Appendix A of this document. The principal modifications to Alternative C are adaptations responding to James City County's position that Centerville Road remain open to through traffic for the time being. James City County does support traffic calming measures and will further study safety issues at and around problem intersections. Consequently, Stage One of Alternative C has been restructured to include improvements and management zones that closely resemble those of Alternative B, siting visitor facilities and limiting visitor use to the west side of Centerville Road. Stage Two of Alternative C is revised to incorporate emergency vehicle and public evacuation access through Green Spring upon closure of Centerville Road. Alternative C, with modifications noted in Chapter 2, remains the NPS Preferred Alternative.

The two action alternatives respond directly to the park's mission goals and the decision points identified during public scoping. Management prescriptions that define the conditions to be attained as a consequence of each alternative have been defined for each mission goal. Either of the action alternatives would require fine-tuning based on results of additional research, an in-depth Cultural Landscape Study, and Phase II archeological investigations to reveal the detailed character and location of the site's resources.

Alternative A - "No Action"

Alternative A represents the continuation of current management practices which keep the site closed to visitors, with no visitor services or interpretation and minimal maintenance of open fields. This approach has the result of discouraging public use and understanding of Green Spring, indirectly protecting the site's archeological and sensitive natural resources from curiosity seekers and damage. This alternative would make no changes or improvements at Green Spring. The site would not be further researched; would not receive additional protection; and would not be open to visitors, and consequently the alternative fails to meet park goals.

Alternative B - "Core Site Improvements and Interpretation"

In this alternative, currently identified core archeological features, including the manor site, spring, "jail," "orangerie," and terraces are the basis for the interpretation of Governor Berkeley and his life and interests at Green Spring. Operations and interventions in the landscape are modest, supporting a low intensity of visitation and visitor use at the site.

Alternative B would be constrained by the assumption that Route 614, Centerville Road, remains open to general-purpose traffic, continuing to split the site's eastern and western sides. Accordingly, this approach would limit site improvements and interpretation to a core archeological area of interest on the western portion of the site. Consequently, this alternative involves less manipulation of the natural environment than in Alternative C.

Limited Phase II archeology would be undertaken to meet resource preservation requirements. Modest visitor comfort facilities and self-guided interpretation would be provided, commensurate with anticipated low levels of visitation.

This alternative constitutes the minimum actions essential to meet the mission of stewardship of the NPS and Colonial National Historical Park regarding preservation of Green Spring's resources, interpretation of their significance and story to the public, and associated visitor uses and services, as well as cooperation with interested partner agencies, entities, and groups.

Alternative C (The NPS Preferred Alternative) - "The Interpretive Landscape of Green Spring"

In this approach, the Green Spring landscape itself provides a window into a 17th century plantation and its essential components. Based on a thorough research process during which visitors are invited to join archeologists and scholars in their historical discovery, the site would ultimately be managed to evoke, without reconstructing, a landscape that is reminiscent of Governor Berkeley's innovative early southern plantation and the beginnings of large-scale agriculture, horticulture, and pre-industrial manufacturing in Virginia, the south, and the nation. While the manor would not be reconstructed, its mass and scale would be represented to convey the power of the residence of the royal governor. There would be a higher degree of intervention in the landscape than in Alternative B, based on the results of archeological and cultural landscape assessments that focus on the spatial organization and physical resources of the site. Visitors would be encouraged to directly explore the landscape's complexities, discovering man-made and natural features that make the site truly unique and understanding how natural resources and systems likely influenced Berkeley's use of the site. An incremental approach to site development and management, relying on the findings of archeological and historical research, would allow for the selective reintroduction of elements representative of a 17th century Tidewater plantation landscape.

This alternative would require significant commitments to make archeological work visible on-site and to incorporate these activities into broader public educational programs, complementing efforts underway on Jamestown Island. These commitments include temporary archeological enclosures for protection and visitor service during the process of excavation and a support facility for archeologists. Consistent with this interpretive approach to overall site improvement, significant levels of visitation would be anticipated, requiring a visitor contact station and appropriate visitor services.

Alternative C would be developed in two stages, extensive research and fieldwork (prior to closure of Centerville Road) and landscape treatment upon completion of studies and closure of Centerville Road. Facility locations and management zones for Stage One closely resemble those described and illustrated for Alternative B, restricting visitor use to the west side of Centerville Road, but program emphasis would be different in scope. The archeological support facility required for Stage One of development would include a visitor contact station and would be constructed and sited to minimize environmental impacts and be accessible to the public on the west side of Centerville Road. During Stage Two, permanent support and visitor facilities would be relocated to an unobtrusive area on the east side of Centerville Road so that visitors could experience a visually unified setting. This approach would imply cooperation with local officials to reduce and slow through traffic on Centerville Road during Stage One and, ultimately, close Centerville Road to general through-traffic, which detracts from the safety and quality of the environment, and is inconsistent with the landscape character implicit to this alternative. NPS would maintain an access road through Green Spring for emergency service vehicles and public evacuations once Centerville Road closes.

Environmental Consequences

There are many types of changes, both positive and negative, associated with the management alternatives proposed in this Final GMPA; most of the negative impacts resulting from these changes are of minor consequence and are readily mitigated. In general, these types of impacts are those associated with any changes to an undeveloped site, such as soil compaction along trails, etc, and are considered to be minor. This summary highlights the more significant and potentially controversial impacts and focuses on the major differences among alternatives.

Additional consideration has been given to cumulative impacts (see section 2.9.3) that may result from the modifications proposed to Stage One of Alternative C including new facility locations and extended utility lines that would occur once Centerville Road is closed for Stage Two implementation. Although it is not anticipated that any impact would be substantially more severe than those described for each stage independently, due to the sequencing of implementation, there may be some unavoidable cumulative impacts because visitor and archeological support facilities and parking, would be moved or removed and rebuilt in a new location with the transition to Stage Two. The cumulative impacts would be minimized or substantially mitigated by developing temporary facilities that lay lightly on the land in Stage One.

Major Impacts Associated with Alternative A

Alternative A is likely to result in some cultural and natural resource degradation from site disturbance by uninvited use and traffic, additional loss of cultural landscape integrity as vegetation encroaches on the open fields, and minimal preservation and stabilization work due to a combination of limited staff, limited funding, and incomplete resource inventory and monitoring and historical data. Partners would be less likely to support long-term resource preservation without Green Spring's development for public access. Wildlife would remain minimally disturbed by on-site human activities; however, lack of attention to natural resource conditions could prevent timely intervention to protect species impacted by development and activity on surrounding lands. Natural processes would continue to drive some vegetative changes, while continued seasonal mowing of the fields would continue to negatively impact grassland bird species. Traffic on Centerville Road would continue to negatively affect terrestrial fauna and wetlands. As Green Spring would remain closed to the public, the unit's interpretive potential would be untapped, with lost opportunity for filling gaps in Colonial NHP's stories. The local interest and commitment generated during the GMP process would be lost. As adjacent areas continue to develop, NPS would have increasing difficulty securing and preserving site resources.

Major Impacts of the Action Alternatives

Alternatives B and C share many resource protection elements while their respective approaches to interpretation and visitor services are substantially different in scope and scale. Consequently, some impacts are similar and others are different in nature and magnitude. While many of Alternative B's impacts are less significant than those of Alternative C due to its modest facilities proposals, the cumulative effects of Centerville Road traffic on resource protection, visitor experience and safety present difficult obstacles to overcome in achieving the park's mission goals.

Cultural Resources

The overall effect of park actions under both action alternatives would be to improve the protection, preservation, interpretation and maintenance of site resources; however, adverse effects upon site resources could result from damage relating to unsupervised or increased visitor use. Additional archeological and cultural landscape studies would aid in the selection of appropriate preservation treatments and increase understanding of 17th century and later colonial history.

The larger scale site development under alternative C, Stage Two could affect more cultural resources than under Alternative B, with a higher risk of disturbance to unknown archeological resources. This would, however, be offset by undertaking more in-depth and wide-ranging phase II archeological investigations. The ability to control site access with the closing of Centerville Road in Alternative C, Stage Two would result in a substantially lower potential for resource damage due to uninvited use and vandalism as compared to Alternative B.

Natural Resources

Under both action alternatives, there is potential for adverse impacts on wetlands and other water resources resulting from development on-site and on adjacent land, including sedimentation from site construction, tree removal, and archeological investigations. However, cooperative watershed management would have a more significant long-term beneficial impact on site and regional water resources. Maintaining Centerville Road open to through traffic in Alternative B and Stage One of Alternative C would result in continued contamination of nearby wetlands and other water resources from stormwater runoff, but overall, the majority of actions under Alternative B would not impact the long-term health of

water resources. While closure of Centerville Road in Alternative C, Stage Two would reduce the water contamination from runoff, this alternative could result in other, more significant adverse impacts to water resources than in Alternative B through tree removal, larger impervious coverage, and the possible use of pesticides and herbicides for landscape maintenance. The historic spring could be particularly vulnerable to sedimentation and contamination under Alternative C as well, and might require careful mitigation actions to protect water quality.

Rare, threatened and endangered species, and other species of concern, could be affected by cultural resource management actions, daily park operations, new visitor use, and related development. Increased levels of human activity could affect a bald eagle nesting site adjacent to the park unit. Disturbance to bald eagle habitat could be greater under Alternative C due to the wider focus of site activity, with the potential to reduce local populations of bald eagles. Development of visitor facilities in Alternative B and Stage One of C, and archeological investigations and trails in Alternative C could disturb a potential Mabee's salamander habitat. Removing Centerville Road in Alternative C, Stage Two would have a positive affect on Mabee's salamander and other terrestrial wildlife's ability to migrate to other breeding and foraging areas on the site. However, the salamander habitat would be more affected by non-federal actions off-site than by park actions. All park activities would avoid or minimize potential adverse impacts on federal and state listed or proposed rare, threatened and endangered species.

Under both action alternatives, there would be some reduction and change of wildlife habitat, with minor to major adverse impacts to wildlife, though the extent of these losses and impacts would likely be greater under Alternative C due to the scale of park development and use. Maintaining a viable native grass and scrub/shrub habitat under both action alternatives would result in positive impacts to grassland species. The Potential for fragmentation of woodlands under Alternative C would be more significant than in B. The goal of evoking a 17th century setting in Alternative C, Stage Two suggests that new visitor or park facilities would be located out of view, in wooded buffer areas resulting in a loss of forested area. Under both action alternatives, forest buffers developed along the perimeters of Green Spring would replace about two acres of lost forest cover. Under both action alternatives, reductions in local and regional populations of some species sensitive to human presence would occur, while populations of species adapted to suburban edge habitat would increase.

Visitor Experience

Under both action alternatives, the experience of visitors to Colonial NHP would be improved, with expanded availability of interpretive information about Governor Berkeley and Green Spring and their significance in the development of colonial society. Under Alternative B, relatively modest interpretive initiatives at the core archeological area would result in a visitor experience that is less complete than Alternative C but superior to Alternative A (the no action alternative). Centerville Road, left open in Alternatives A, B, and Stage One of C, would impede visitor access to key landscape and archeological features in the eastern half of the site and the noise and visual intrusion of traffic would have a particularly significant adverse effect on the quality of the visitor experience. Current traffic flow and conditions on Centerville Road constitute a safety hazard for visitors, park staff and through-traffic under Alternatives A, B, and Stage One of C, which could be partially mitigated by significantly reducing and managing the speed of traffic through some type of traffic management system or traffic calming.

Alternative C would result in a more comprehensive visitor experience and would likely enhance visitation and overall length of stay at Green Spring, as compared to Alternative B. Factors in the improved visitor experience would include breadth of interpretive programs and visitor facilities, particularly the emphasis on public archeology; increased availability of information; a safer and more cohesive setting created by the removal of Centerville Road; and supplemental resources associated with expanded partnerships. Additionally, visitors would be better able to tour the site and directly experience the resources, with visitor experience more tailored to individual interests.

Socioeconomic Environment

Under the modified Alternative C, Stage Two, there would be neutral to positive effects on county emergency response times from the closing of Centerville Road to through traffic. NPS would maintain emergency service and public evacuation access along the route after the road is closed and there would be less potential for emergency vehicles to encounter traffic related delays as compared to the alternatives with Centerville Road open to through traffic. The slightly longer but newer alternate routes circumnavigating Green Spring may prove to be more efficient and therefore the predominant routes of choice for emergency service vehicles, in which case closing Centerville Road would have a neutral effect on county emergency response goals.

Transportation and Site Access

Minor additional traffic from visitor vehicles would result in negligible impacts to road capacity and level of service for both action alternatives. The closing of Centerville Road to through traffic, and diversion of traffic onto alternate routes in Alternative C, Stage Two, would not result in exceeding the planned capacity of local roads because of the opening of Alternate Route 5. There would be some added distance for traffic using alternate routes around the NPS property. Improvements to the intersections and detours onto Alternate Route 5 would benefit the local road network by promoting safe, efficient traffic flow and use of safer alternate routes. Under Alternative C, the full implementation of the Green Spring GMPA and Jamestown Master Plan, along with continuing residential and commercial growth, would increase the demand for public transit service to western areas of the county. Access to the park could be controlled to a greater degree under Alternative C, Stage Two than under Alternative B.

Park Operations and Administration

Alternative C would require the largest increase of additional staffing of the other alternatives considered, primarily because of the personnel required to maintain the landscape components.

Table of Contents

Abstract *i*
Summary *iii*
Table of Contents *xi*
List of Figures *xiv*
List of Tables *xv*

Chapter 1: Purpose of and Need for Action 1

1.1 Introduction to the General Management Plan 1

1.2 The Origins and Legislative Background of Green Spring 4

1.3 Management Framework 5
1.3.1 Statement of Purpose 5
1.3.2 Statement of Significance 5
1.3.3 Mission Goals 6
1.3.4 Management Prescriptions 6

1.4 Description of Green Spring 6
1.4.1 Location 6
1.4.2 Site History 7
1.4.3 Site Conditions and Resources 9
1.4.4 Themes 12

1.5 Purpose of and Need for Action 14
1.5.1 Introduction 14
1.5.2 Decision Points 14
1.5.3 Environmental Consequences Considered in Analyzing this Plan 22

1.6 Relationship to Other Studies and Planning Projects 30
1.6.1 Phase One Archeological Survey 30
1.6.2 Floral and Faunal Surveys 30
1.6.3 Draft Cultural Landscape Inventory 30
1.6.4 Centerville Road Traffic Studies 31
1.6.5 Development Concept Plan/Environmental Impact Statement for Jamestown 31
1.6.6 James City County s Greenway Master Plan 31

Chapter 2: Alternatives 32

2.1 Introduction 33

2.2 Management Framework 35
2.2.1 Resource-sensitive and Results-oriented Management Prescriptions 35
2.2.2 Management Prescriptions Related to the Mission Goals 36
2.2.3 Management Zones 37

2.3 Preservation Treatments 38

2.4 Overview of Alternatives 39

2.5 Alternative A: No Action (Description of Existing Conditions and Management Practices) 43

2.6 Management Prescriptions Common to Each Action Alternative 46

2.7 Alternative B: Core Site Improvements and Interpretation 51
2.7.1 Resource Management 51
2.7.2 Interpretation and Visitor Experience 52
2.7.3 Visitor Use and Park Facilities 52
2.7.4 Partnerships and Cooperative Actions 53

2.8 Alternative C (The Preferred Alternative): The Interpretive Landscape of Green Spring 57
2.8.1 Resource Management 58
2.8.2 Interpretation and Visitor Experience 60
2.8.3 Visitor Use and Park Facilities 62
2.8.4 Partnerships and Cooperative Actions 63

2.9 Summary of Alternatives and Their Environmental Consequences 77
2.9.1 Characteristics of Alternatives 77
2.9.2 Summary Impacts of Each Alternative 82
2.9.3 Cumulative Impacts of Proposal 101
2.9.4 Sustainability and Long-term Management 117

Chapter 3: Corrections and Revisions to the Affected Environment 122

Chapter 4: Corrections and Revisions to the Environmental Consequences 138

Chapter 5: Consultation and Coordination Update 186

5.1 Public Involvement and Agency Consultation 187
- 5.1.1 Introduction 187
- 5.1.2 Project Scoping 188
- 5.1.3 Consultation with the Advisory Council on Historic Preservation and the Virginia Dept. of Historic Resources 190
- 5.1.4 Consultation with American Indian Tribes 194
- 5.1.5 Consultation with U.S. Fish and Wildlife Service 195
- 5.1.6 Consultation with Virginia Dept. of Game and Inland Fisheries, Virginia Dept. of Agriculture and Consumer Services, and Virginia Dept. of Conservation and Recreation. 195
- 5.1.7 Coordination and Deliberation with James City County Development Staff, Board of Supervisors, and Planning Commission. 196

5.2 List of Recipients 199

Appendix A: Comments and Responses on the Draft General Management Plan Amendment/ Environmental Impact Statement 200

A.1 NPS Obligations to Consider Public Comments 202

A.2 The Review Process for the Draft GMP Amendment/EIS 203

A.3 General Summary of Comments 203
- A.3.1 Summary of Meeting Comments 203
- A.3.2 Summary of Written Comments 204

A.4 Synopsis of Comments on Key Topics Received from Individuals and Organizations 205
- A.4.1 Substantive Comments Related to Closing of Centerville Road 205
- A.4.2 Substantive Comments Related to Powhatan Creek Watershed 209
- A.4.3 Substantive Comments Related to Cultural Resource Management 209
- A.4.4 Substantive Comments Related to Planning for Jamestown 2007 210
- A.4.5 Substantive Comments Related to Alternative D 210
- A.4.6 Substantive Comments Related to Implementation Funding 210

A.5 Letters and Emails Received from Individuals and Organizations 211

A.6 Agency Comment Letters and NPS Responses 233
- A.6.1 James City County Comments - NPS Response 234
- A.6.2 James City County Planning Commission Resolution - May 6, 2002 261
- A.6.3 James City County Board of Supervisors Resolution - May 28, 2002 263
- A.6.4 VA Dept. of Historic Resources Comments - NPS Response 264
- A.6.5 VA Dept. of Historic Resources Letter of Concurrance 266
- A.6.6 VA Dept. of Conservation and Recreation - NPS Response 268
- A.6.7 VA Dept. of Transportation 270
- A.6.8 VA Dept. of Environmental Quality (Joint State Agency Comments) - NPS Response 271
- A.6.9 U.S. Environmental Protection Agency - NPS Response 292
- A.6.10 U.S. Fish and Wildlife Service - NPS Response 297
- A.6.11 U.S. Army Corps of Engineers - NPS Response 299

Appendix B: List of Preparers and Planning Team 301

List of Figures

Figure 1: Location Map 23
Figure 2: Area Archeological Resources 24
Figure 3: Powhatan Creek Natural Area 25
Figure 4: Site Context – Adjacent Land Use and Development 26
Figure 5: Vegetation and Habitat Types 27
Figure 6: Archeological and Cultural Landscape Features 28
Figure 7: Hydrogeologic Constraints 29
Figure 8: Alternative A – No Action 45
Figure 9: Alternative B – Core Site Improvements and Interpretation 55
Figure 10: Management Zones - Alternative B – Core Site Improvements and Interpretation 56
Figure 11: Alternative C, STAGE ONE - The Interpretive Landscape of Green Spring 73
Figure 12: Alternative C, STAGE TWO - The Interpretive Landscape of Green Spring 74
Figure 13: Management Zones - Alternative C, STAGE ONE - The Interpretive Landscape of Green Spring 75
Figure 14: Management Zones - Alternative C, STAGE TWO - The Interpretive Landscape of Green Spring 76
Figure 15: Wetlands Overlay, Alternative B 295
Figure 16: Wetlands Overlay, Alternative C, Stage Two 296

Photographs

Photographs and images are from the Archives of Colonial National Historical Park unless otherwise noted.

List of Tables

Table 1: Mission Goals and their Relationship to Management Prescriptions 36
Table 2: Summary of Elements of Alternative A: No Action 44
Table 3: Management Prescriptions Common to Each Action Alternative 47
Table 4: Conditions to be Attained as a Result of Alternative B 53
Table 5: Conditions to be Attained as a Result of Alternative C, Stage One 64
Table 6: Conditions to be Attained as a Result of Alternative C, Stage Two 68
Table 7: Comparison of Management Prescriptions Across Alternatives 77
Table 8: Summary of Impacts to Cultural Resources 83
Table 9: Summary of Impacts to Natural Resources 85
Table 10: Summary of Impacts to Visitor Experience 90
Table 11: Summary of Impacts to Socioeconomic Environment 94
Table 12: Summary of Impacts to Transportation and Site Access 97
Table 13: Summary of Impacts to Park Operations and Administration 99
Table 14: Summary of Cumulative Impacts to Cultural Resources 102
Table 15: Summary of Cumulative Impacts to Natural Resources 106
Table 16: Summary of Cumulative Impacts on Visitor Experience 112
Table 17: Summary of Cumulative Impacts to Socioeconomic Environment 113
Table 18: Summary of Cumulative Impacts to Transportation and Site Access 114
Table 19: Summary of Cumulative Impacts to Park Operations and Administration 115
Table 20: Proposed Actions and Compliance Requirements 192
Alternative B -Transition Phase - Stage One of Alternative C
Table 21: Proposed Actions and Compliance Requirements 193
Stage Two of Alternative C (Preferred Alternative)

Chapter 1

Purpose of and Need for Action

1.1 Introduction to the General Management Plan

This document is a Final General Management Plan Amendment/Abbreviated Final Environmental Impact Statement (Final GMPA/AEIS) for the Green Spring unit of Colonial National Historical Park (Colonial NHP). It serves as an amendment to the 1993 parkwide GMP for Colonial NHP.

This plan is divided into five chapters:

Chapter 1: The Purpose of and Need for Action describes why the GMP has been prepared, sets forth the park's purpose, significance, and mission goals, and describes the issues and related planning concerns that have influenced the plan.

Chapter 2: Alternatives describes the no action alternative and two action alternatives for park management under consideration, including the potential individual actions that would be taken to implement each.

Chapter 3: Corrections and Revisions to the Affected Environment documents modifications made to Chapter 3 of the Draft Environmental Impact Statement subsequent to its publication in February of 2001. These modifications together with the original draft document text identify the elements of the natural, cultural, and socioeconomic environment potentially affected by implementing the alternatives.

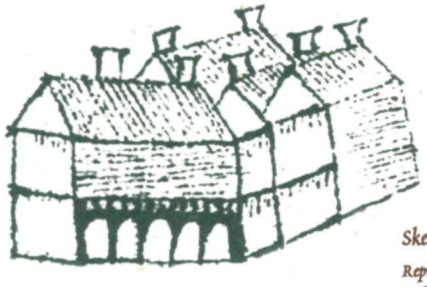
Chapter 4: Corrections and Revisions to the Environmental Consequences documents modifications made to Chapter 4 of the Draft Environmental Impact Statement subsequent to its publication in February of 2001. These modifications together with the original draft document text describe the potential impacts that could result from implementing each of the alternatives.

Chapter 5: Consultation and Coordination describes public involvement and agency coordination during the planning process and identifies the principal parties who will receive this document.

Appendix A: Comments and Responses on the Draft GMPA/EIS documents public and agency comments received on the draft plan and the NPS response to comments considered substantive.

Appendix B: List of Preparers and Planning Team identifies principal parties who have contributed to the preparation of this document.

The **Appendices** in the Draft GMPA/EIS include additional information on legislation, cost estimates, carrying capacity, other alternatives considered, public scoping, and selected references.



Sketch of Green Spring from a land survey of 1683.
Reproduced by permission of the Trustees of the William Salt Library, Stafford, United Kingdom.

1

There are two broad purposes for a GMP/EIS. The first is to clearly describe specific resource conditions and visitor experiences to be achieved in park management units, and identify the kinds of management, use, and development that will be appropriate in achieving and maintaining those conditions. The second is to ensure that the basic foundation for decision making has been developed in consultation with interested stakeholders and adopted by the National Park Service (NPS) leadership after adequate analysis of the benefits, environmental impacts, and economic costs of the alternative courses of action.

A GMP helps the public and the NPS decide what resource conditions and visitor experiences a park should achieve, and why. It defines the park's basic philosophies on land and resource management, interpretation, the visitor experience, and partnerships with other entities in its region. The GMP provides broad guidance to park managers who make hundreds of decisions each year that can affect a park's resources and its visitors. A GMP sets direction for resource protection and visitor use in consultation with the public. The NPS uses decisions contained in the GMP to guide the management of the park for the next ten to 20 years. In short, it tells park managers what they should be doing, and why.

In the process of developing a GMP, many different approaches to park use, management and development are examined. This range of proposals is narrowed or refined and bundled into several action alternatives, each of which could allow a park to achieve its mission and mission goals in different ways. To help the public and the NPS understand what would happen if an alternative were adopted, the impacts of each alternative on the natural and cultural environment are described and compared, and comparative costs are estimated. These descriptions are contained in the Draft EIS (Chapters 3 and 4) and revised in the Final EIS (Chapters 3 and 4), which is prepared to satisfy the requirements of the National Environmental Policy Act of 1969, as amended (NEPA). After a full range of alternatives has been described, the NPS, in consultation with the public, selects the alternative or combination of alternatives to be implemented.

Green Spring is a unit of Colonial National Historical Park (NHP) which also includes Yorktown, Jamestown Island, and the Colonial Parkway. The focus of this plan is on Green Spring, as this site was not considered during the previous GMP effort for Colonial NHP in 1993. At the time the 1993 GMP was prepared, documentation on Green Spring's resources was insufficient to support its inclusion in a planning process. That GMP called for research and additional planning to be conducted on Green Spring. This amendment was initiated because of the rapid growth and land use change surrounding Green Spring, the interest of the community in seeing Green Spring opened for public use, and the potential availability of non-federal funds and in-kind services to assist in the implementation and operations of Green Spring.

Since the time the park-wide GMP was prepared, the United States Congress and the NPS have implemented new policies and guidelines which have been recognized in this planning document. These legal requirements for planning, the Government Performance and Results Act of 1993 (GPRA) and revised guidelines for developing a GMP (NPS Director's Order 2), are intended to support the best possible decision making for the agency and the public it serves. By law, the NPS is required to conduct comprehensive general planning to guide specific projects, to base decisions on adequate information and analysis, and to track progress made toward goals through to their implementation. Together these processes make the NPS more effective, more collaborative, and more accountable. These new requirements have also resulted in some new terminology and a planning format that will differ from the 1993 GMP/EIS.

1.2 The Origins and Legislative Background of Green Spring

Colonial NHP (originally Colonial National Monument) was established in 1930 by proclamation of the president to commemorate the beginning and end of the British colonial experience in North America. The new park comprised part of Jamestown Island, Yorktown Battlefield, and what is now the Colonial Parkway, defined as " areas for highways to connect said island, city (Williamsburg), and battlefield ". The Association for the Preservation of Virginia Antiquities (APVA) continues to own 22‰ acres of Jamestown Island, where the original church tower and the site of the James Fort were located.

During the 1930s, the park's authorized boundary was expanded to include Cape Henry (site of the first landing of the Jamestown settlers), Carter's Grove plantation and Rosewell (the latter two were authorized but never acquired). Sites associated with Bacon's Rebellion were considered, and Green Spring was selected over Bacon's Castle in 1936 (NPS Colonial NHP Master Plan, ca. 1971; NPS Colonial NHP Interpretive Prospectus, 1971). Green Spring was favored because of its proximity to Jamestown, its association with Governor Berkeley and the potential for connecting a spur to Colonial Parkway. Acquisition of the site of Governor Berkeley's mansion and homestead, Green Spring, was authorized under the Act of June 5, 1936 (Public Law No. 666, 74th Congress: 49 Stat. 1483). The NPS did not purchase the site until 1966, with an infusion of funding from the agency's Mission 66 program. An additional 5.74 acres was added in 1978, making the total NPS-owned acreage 195.74. The relevant language of the authorizing legislation (See Appendix 1 for complete legislation) for Green Spring is as follows:

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the Secretary of the Interior be, and is hereby, authorized, in his discretion, to acquire by purchase and/or accept by donation, on behalf of the United States, such lands, easements, and buildings comprising the former Governor Berkeley's mansion and homestead in James City County .as are desirable for the proper rounding out of the boundaries and for the administrative control of Colonial National Monument, and such lands as are necessary for parkways, not to exceed five hundred feet wide, to connect said mansions to the said Colonial National Monument* Provided, that the said acquisition of lands and or improvements shall be made only from such funds as may be appropriated pursuant to the authorization of the act of March 3, 1931 (46 Stat. 1490)."*

Act approved June 6, 1936

(Public No. 666 - 74th Congress)

* This act also changed the name of Colonial National Monument to Colonial National Historical Park

1.3 Management Framework

During this current GMP process, the reasons for which the park was established were articulated through the drafting of a statement of purpose and a statement of significance. The process also established mission goals and supporting management prescriptions that will guide the park in achieving its purpose.

1.3.1 Statement of Purpose

A park's purpose is the reason for which it was set aside and preserved by congress. It provides the fundamental criterion against which the appropriateness of all plan recommendations are evaluated. Because no formal planning has been conducted for Green Spring since being acquired by NPS, these statements were developed early in this GMP process. They are based on interpretation of the vague language in the legislation authorizing Green Spring and current scholarship on Green Spring's significance. Further research and scholarship may reveal new insights and a need to reexamine these statements in the future. The GMP team developed the following statement of purpose:

> *The purpose of Green Spring is to preserve the resources associated with the plantation developed by Governor Sir William Berkeley, the most renowned and controversial colonial governor of 17th century Virginia, and to interpret the expansion of British settlement beyond Jamestown and its impacts on agriculture and the people of Virginia.*

1.3.2 Statement of Significance

A statement of significance defines what is important about a park based on the park's legislative purpose. Statements of significance are a tool for setting resource protection priorities and for identifying interpretive themes and appropriate visitor experiences. They help focus efforts and funding on the resources and experiences that matter most.

> *This historically rich archeological site is located three miles from the Jamestown unit of Colonial National Historical Park. As the home of Sir William Berkeley, the most influential governor of Virginia in the 17th century, Green Spring illustrates the expansion of British culture beyond Jamestown and is integral to the story of the first permanent English settlement. Berkeley served 27 years as governor and was a pivotal figure in establishing a civil society based upon English law but modified to meet the challenges of a frontier society. While encouraging a self-reliant colony with a diversified economy, Berkeley's second term saw increasing restrictions on African Americans and the equation of slavery with race, and his American Indian policies are a cause of the first rebellion in the colonies against the King's representative.*
>
> *Fewer than 200 acres of his original tract are preserved, which include archeological and architectural remnants of his manor house and ancillary structures. The site offers a rare opportunity to interpret the rise and fall of Berkeley from 1640-1677, the evolution of the plantation system, the expanse of agricultural and industrial experimentation, and political discord with the emergence of Bacon's Rebellion in 1676-1677 that resulted in the burning of Jamestown, the capital of Virginia.*

1.3.3 Mission Goals

Mission goals are the most general of three successively more specific kinds of goals NPS uses to implement the GPRA. Park mission goals, although based on the NPS's servicewide mission goals, are specific to the park and reflect the park's purpose and significance. Mission goals are expressed in terms of desired resource conditions and appropriate visitor experiences.

Four mission goals have been established for Green Spring that articulate in very broad terms the ideals the park will strive to attain. The alternatives in this Final GMPA /AEIS investigate different ways that park managers may achieve these mission goals. These mission goals have been used to organize the alternatives presented in this FGMP and as a means of investigating a range of management choices.

The four mission goals for Green Spring are:

I. **Resource Management** -- Significant resources associated with Green Spring (historical landscapes and features, remnant structures, archeological sites, curatorial objects and natural resources) are protected, rehabilitated, restored or maintained in good condition and managed within the broader ecosystem and cultural context.

II. **Interpretation and Visitor Experience** -- The public understands and appreciates significant innovations and events associated with Green Spring and Governor Berkeley, their role in America's transition from English rule to independence and their connection with Jamestown and other Colonial NHP stories.

III. **Visitor Use and Park Facilities** -- Visitors safely enjoy high quality educational experiences and are satisfied with the availability, accessibility, diversity, and quality of park facilities and services.

IV. **Partnerships and Cooperative Actions** -- The National Park Service increases its operational capacity through cooperative efforts with other public and private entities who understand and support the park's mission to protect and interpret park resources.

Taken together, the statements of purpose, significance, and mission goals describe a vision for the park's future.

1.3.4 Management Prescriptions

Management prescriptions are the core of each GMP and provide the foundation for all subsequent decision-making in the park. Management prescriptions further define mission goals. These detailed statements clearly define the specific resource conditions and visitor experiences that are to be achieved and maintained for the park's various resources and areas over time. The kinds and levels of visitor use, management actions, and development that are appropriate for maintaining those desired conditions are identified. Management prescriptions become the primary source of reference for park managers and staff, who must determine if a specific action to be taken is consistent with the direction established and agreed upon for the park. Proposed management prescriptions for Green Spring are articulated for each alternative in Chapter 2.

1.4 Description of Green Spring

1.4.1 Location

Regional and Political Context

Green Spring is located in southern James City County, Virginia, in the southeastern portion of the state. The property is approximately three miles northwest of the nearest unit of Colonial NHP, Jamestown Island; roughly five miles west of the city of Williamsburg; and 45 miles east of the current state capital, Richmond.

Physiographic Context

The site is located in the Coastal Plain approximately one mile north of the James and east of the Chicahominy Rivers. The core site is upland and divides the drainages of the Powhatan Creek to the east and the Shellbank creek to the west. Steep ravines bisect the west slopes and a low-lying marshy area covers the southern third of the site. Three terraces are divided by two natural slopes.

Cultural Context
Green Spring is associated with the rich colonial and antebellum history of Tidewater Virginia. It is located between the colonial capitals of Jamestown and Williamsburg north of historic Virginia Route 5.

Size
The site is 195.74 acres in size and largely rectangular in shape.

Boundary Description
The southern boundary of the site borders Route 5 (John Tyler Memorial Highway). The southeast corner is located approximately 550' east of the junction of Route 614 (Centerville Road) and Route 5 and the southwest corner is approximately 1,350' west of the junction. The eastern boundary extends approximately 3,900' north to the northeast corner, the northern boundary runs approximately 1,975' to the northwest corner and the western boundary stretches approximately 3,700' southeast to the southwestern corner. A portion of the property extends beyond the western boundary approximately 1,475' from the Northwest corner and 1,550' from the southwest corner. This extension is approximately 1,050' by 650' and encompasses sloping lands dissected by ravines of the Shellbank Creek watershed. Route 614 bisects the property and there is a 30' state highway right-of-way.


portrait by Sir Peter Lely in the collection of the Berkeley Will Trust.

Governor Berkeley

1.4.2 *Site History*

Prior to the arrival of the English in 1607, the area known as Green Spring was woodland featuring a natural spring. Only one prehistoric site has been located with minimal artifacts, which may indicate, that like Jamestown, this area was primarily used by hunting parties and not as a settlement by the original inhabitants of Virginia.

The complex of partial historic ruins, archeological sites, and landscape features that make up Green Spring (Figure 6) are all that remain of the former plantation home of Royal Governor Sir William Berkeley, one of the most renowned and controversial royal governors in British colonial history. Green Spring's archeological remnants have provided and have the potential to provide information on the life and times of Governor Berkeley and later owners, and the evolution of the social and economic structure of the southern plantation system.

Green Spring's resources are significant mainly because of their connection to Governor Berkeley. It is for this reason, and because of Green Spring's historical connection to Jamestown, that the NPS acquired land remaining from the original Green Spring plantation.

Berkeley served 27 years during two separate terms (1641-1652; 1660 - 1677) as royal governor of Virginia, the longest governorship in Virginia's history and possibly the longest governorship in United States history. He resided at Green Spring from 1643 until just prior to his death in 1677. During this period, he built a vast agricultural and industrial estate that continued early colonial efforts to diversify Virginia's economy by developing various agricultural and commercial products. Berkeley's significance, highlighted in the "Summary of the Scholars' Roundtable for Green Spring" (NPS 1998), lies in his adaptations of British law, government, landscape architecture and town planning to colonial life in North America.

As chief justice and instructor for the colonial courts, Berkeley was one of the most important figures in the development of American law. He was seminal to the development of an American system of government based on the two-house British parliament and was largely responsible for the development of a bicameral legislative assembly in Virginia and later the Carolinas. Berkeley was architect of the first American Indian reservations in Virginia following the establishment of the first in the United States in Massachusetts; portions of the two original reservations survive today in King William County,

Virginia. His policies towards the American Indians, which restricted the advancement of the settlers into their lands, was one of the causes in Nathaniel Bacon's challenge to his authority. Green Spring was the backdrop for important events in colonial history including Bacon's Rebellion in 1676 which resulted in the British Crown reshaping the role of colonial governor and undercutting the power of the general assembly.

Berkeley had strong ties to Jamestown as royal governor and was instrumental in its physical planning. He helped transform this backwater colonial outpost into a thriving commercial center of colonial America and the political center of the Virginia colony. Berkeley was instrumental in the development of a British colony that expanded well



Carlton Abbot

Bird's eye view of Green Spring today.

beyond the borders of today's Virginia he was integral to the establishment of the colonies that are now known as North and South Carolina.

Berkeley acquired Green Spring plantation in 1643 and eventually increased his contiguous holdings to at least 2,000 acres, with over 5,000 additional acres in other parts of James City and Surry counties. Because early patent records have been lost or destroyed, the full extent of Berkeley's holdings at Green Spring is unknown. The plantation and its palatial manor, reflecting the status and power of its owner, was the occasional informal seat of Virginia government and the social and political hub of southeastern Virginia.

Green Spring was, most importantly, an early form of the southern plantation that would come to represent the antebellum south, a showcase for Berkeley's experiments to diversify Virginia's economy. The diversity of crops and manufacturing was unusual for its time, and the large scale of the operations was unique agricultural production included rice, flax, hemp, and tobacco, wine making, and horticulture. Manufactured goods included glass, pottery, walnut lumber, and potash. Many of these goods were exported to England in large quantities, as well as distributed locally.

Although the site's significance is strongly tied to Governor Berkeley's ownership, the site is also significant because of the continuum of development and the potential of archeological resources to yield evidence of transitions in the organization of society, the economy, and the natural environment. Site cultural resources from the earlier and later colonial period may shed light on significant and dramatic developments in agriculture, horticulture, and race and class relations, particularly the transition from a society organized primarily by class and wealth to one focused on racial identity and stratification, and the introduction and legalization of the slave labor economy. Bacon's Rebellion, which included runaway slaves as well as economically disadvantaged white Englishmen, reflects the social and economic turmoil of the colonial period.

Following Berkeley's tenure, Green Spring plantation passed into the hands of the politically powerful Ludwell family through the marriage of Philip Ludwell I to Berkeley's widow, Lady Frances. Green Spring remained in the Ludwell and Lee families from the late 17th through the early part of the 19th century. Green Spring evolved into a typical antebellum southern plantation, complete with a "big house" for the plantation owner and his family, a series of outbuildings, and agricultural "quarters," or separate plantation sections worked by slaves (McCartney, Phase I Archival Report, 1998). The Battle of Green Spring (sometimes called the Battle of Jamestown Ford), in which American forces commanded by Lafayette attacked Cornwallis's British army and were rebuffed, was fought nearby on July 6, 1781 as a prelude to the climactic battle of Yorktown (Billings, telephone interview, 23 March 1998).

Throughout the 19th century, Green Spring plantation was owned by a series of mostly absentee landlords, who used slaves to produce mainly corn and wheat. These were hard economic times for the region. Green Spring was no longer known as a plantation, but as a farm. Much of the timber was harvested, many of the earlier plantation structures were removed, and the property dwindled in size as most of the original acreage was sold off. The

Ludwell-Lee mansion that had replaced the earlier Berkeley manor house in 1797 was burned during the Civil War. By the 1890s, Green Spring plantation was used solely for timber harvesting. The property had dwindled to about 3,000 acres after expanding to nearly 6,000 acres during the Ludwell-Lees' tenure.

During the first half of the 20th century, Green Spring passed into the hands of timber companies and developers, who sold off more of the original plantation acreage. During the 1920s one landowner-amateur archeologist Jesse Dimmick-excavated the foundations of the Berkeley manor house, several brick outbuildings, the forecourt and garden walls, and the causeway leading to the manor house. He also recorded the footprint of the later Ludwell-Lee house.

By the late 1940s, the parcel known as Green Spring comprised 1700 acres, and only one relatively intact structure-the "jail"-remained from Green Spring's distant past. As the 350th anniversary of the founding of Jamestown approached, the historical value of the Green Spring property gained recognition. In 1947 Mr. Parke Rouse, Jr., Executive Secretary of the Virginia 350th Anniversary Commission, purchased an option on the lands surrounding the old Berkeley manor site with the intent to save Green Spring's archeological remains from further destruction and commemorate its place in Virginia's history. In 1955, Mr. Rouse retained NPS archeologist Louis R. Caywood to supervise the re-excavation of the area investigated by Dimmick some 30 years earlier.

Acquisition of 190 acres of Green Spring as a unit of Colonial NHP was authorized in 1936. The NPS purchased the site in 1966. An additional 5.74 acres were added in 1978, making the total park unit acreage 195.74.

1.4.3 Site Conditions and Resources

Today the remnant parcel of the Green Spring plantation is fast becoming an island of wooded and grassland open space surrounded by suburban residential development. The historic resources are primarily archeological and hidden from view. The architectural ruins of two 17th century manor complex structures, the greenhouse ("orangerie") wall and the "jail" are the most visually obvious surviving features from the 17th century. With closer observation, many individual historic landscape features from the 17th to 19th centuries can be discerned, including: the Berkeley/Ludwell and Ludwell-Lee mansion sites and associated terracing; ditches that appear to form an interconnected drainage or flooding system; upland fields; road traces, including the trace connection to Chiswell's Ordinary, the entry drive and connected west branch trace and the potentially historic Route 614 corridor; natural and manipulated site topography and topographic features, including soils and water systems; and possible witness trees-specimen oaks. The natural features and manipulated landforms include the "green spring," Berkeley and Ludwell-Lee manor site terraces, two earth mounds, the ravine, and a tributary of Shellbank Creek.

The site boundaries are nearly completely wooded and provide an effective visual screen to modern development and activity beyond the site boundaries. This closed setting is, however, inconsistent with the vast open agricultural setting that existed during the period of significance (1641 to 1803). One non-wooded section of the eastern boundary is vulnerable to visual intrusions of golf course and multifamily attached housing proposed on the property directly east of the site. The sight and sound of traffic passing through the center of the site on Centerville Road are a major impediment on the site's natural and historical setting. (See Figures 1 through 7)

Ravine and mature hardwood forest, northwest portion of site



Dana Bradshaw

Cultural Landscape

The cultural landscape at Green Spring, when considered according to strict National Register of Historic Places criteria, appears to have low integrity to any period of significance. The site comprises only a fragment of Berkeley's land holdings. Moreover, the absence of intact aboveground features on the core site and the lack of views to an agricultural landscape belies the once stately and vast plantation landscape. There is, however, a rich and extensive collection of archeological resources and some surviving aboveground landscape features. Together these provide important evidence of stylistic and horticultural trends from the early colonial period through the early republic, and of Tidewater agriculture as it evolved from the early days of crop experimentation to the destructive years of intensive tobacco cultivation and poor agricultural practices. It should also be noted that Green Spring is likely one of few plantations of the 17th century that has any surviving features, an important consideration in preservation decisions.

More archival and agricultural research is needed to fully understand the design principles and purpose of all the features. Understanding the arrangement and use of the immediate landscape surrounding both mansion complexes may also reveal Green Spring's place within the landscape architectural and architectural trends of the 17th and 18th centuries. Additional archeology is essential to understand the origins, use, and evolution of the extant ditch system and the historic site circulation system. Additional studies that place Green Spring in a historic context relating to land use patterns of the area during the 17th through the 19th centuries would also be especially useful to a better understanding of the remaining features of the landscape.

Wetlands and Water Resources

The fresh water spring in the southern portion of the site spring is a significant natural feature and probably one of the main reasons the area was occupied for thousands of years. More than one quarter of the Green Spring property, or about 52 acres, is classified as palustrine forested wetlands. The palustrine forested systems that dominate Green Spring include non-tidal, freshwater wetlands. They include ephemeral pools and swamps and are generally seasonally moist or flooded. The four significant wetland types on the site are distinguished by soils, hydrologic regime and vegetation. Most are confined to southern, low-lying portions of the site below the Berkeley manor site and Kingsmill scarp. The largest wetland type (about

View looking north from the original manor site.

Carlton Abbot



46 acres), classified by the National Wetlands Inventory (NWI) as seasonally flooded palustrine forest, covers much of the southern portion of the site. Associated with hydric soils, it is characterized mainly by a broad-leaved deciduous forest, although it includes two significant patches of evergreens. The wetland is associated with a complex system of historical drainage ditches and includes the locally famous spring. It is bounded by the intermittent stream/drainage ditch to the south and a cleared fuel pipeline easement to the north. The wetland extends beyond the property boundary onto locally protected open space to the east. A small portion of the wetland, located in the 100-year floodplain near the eastern boundary, is tidally influenced.

Wildlife

The site is a complex mosaic of 12 primary habitat units. A total of 140 vertebrate species were documented on the property and mapped relative to habitat locations and species density.

Although no state or federally threatened or endangered species were confirmed on the property, several unique habitats were identified that should be considered in planning and development of the site. Two habitats were identified as especially significant for both breeding and wintering species of multiple taxa because of their increasing rarity in the surrounding region:

- A small seasonal scrub-shrub wetland harbors a unique vegetation community for the area; provides the only significant breeding site for amphibians on the property; and hosts the only community of a relatively uncommon mammal on the site. This is potential habitat for a state listed threatened salamander, though neither its presence or absence has been confirmed.
- The transitional field to the east of Rt. 614 has regional significance due to its rarity. Native grassland and shrub habitats support not only a unique breeding community of birds, but receive visitation from numerous other species that live in adjacent habitats. This cover type is rapidly becoming the new "old growth forest" among conservationists.

Of additional importance, the hardwood-dominated forest of the western property extension and along the western property boundary account for the majority of the larger mammal territories, the majority of high canopy nesting birds, the highest density of winter bird visitors, and the most diverse community of reptiles and amphibians outside the breeding season. In every forested landscape in the eastern United States, a mature hardwood forest is the cornerstone of a diverse and stable faunal wildlife community, and this one is a good example.

National Register Status

Green Spring is listed on the National Register of Historic Places (documentation completed in 1978) as nationally significant. Twelve archeological remnants on park property were identified separately within the nomination. They consist of below-ground foundations and partial structures associated with the plantation's central core– the 17th century domestic complex associated with Berkeley, and 18th century additions of several later plantation owners. The complex includes the original mansion site, the "jail," the greenhouse or orangerie wall, the spring house site, remains of a pottery kiln, forecourt, garden walls, catch basin, and the site of an unknown structure near the mansion.

The national register nomination period of significance includes prehistoric American Indian occupation and historic occupation during the 17th and 18th centuries. The site is noted as significant in the areas of archeology, agriculture, architecture, landscape architecture, politics and government. The more recent archeological surveys and current understanding of site history may be cause for a re-evaluation of Green Spring's archeological resources and an amended national register documentation.

The Green Spring unit is not only individually listed on the National Register of Historic Places, but is a significant component of the Governor's Land Archeological District. This district encompasses important archeological resources on 2,068 acres, and was placed on the National Register of Historic Places and Virginia Landmarks Report in 1973. The district encompasses what was once the "Governor's Land," from Route 5 to Jamestown Road (Route 31), and includes 36 archeological sites with potential to yield information important to understanding life in Virginia from earliest colonial days through the 19th century (Outlaw, 1990).

Two resources remaining above ground were placed on the NPS List of Classified Structures (LCS) in 1976: these are named in the LCS as the Green Spring "Jail House Ruins" and the "Springhouse Ruin."

1.4.4 Themes

The National Park System represents many significant events, people, and sites important to our nation's natural and cultural heritage. The NPS is charged with preserving the physical resources within parks for future generations, providing appropriate public access, and communicating the important stories associated with these places to park visitors. Park resources, such as archeological sites, architectural ruins, natural features and whole landscapes, represent pieces of our national heritage and are central to our understanding and interpretation of park stories. The stories directly associated with the park's purpose are identified as the primary themes and reflect the park's principal message. Secondary themes are stories associated with other park resources, events, people, or periods that are important but not central to the reason the park was established. Understanding history and historic sites is an evolving process -- one that is modified and expanded as new scholarship and research are conducted.

As a unit of Colonial National Historical Park, Green Spring's stories are linked to the stories of Jamestown and Yorktown as well as Williamsburg. The following parkwide primary theme connects the significance and relationship of these places:

Parkwide Theme #1:

> *The history and resources of Jamestown, Green Spring, Williamsburg, and Yorktown represent the cultural, military, political, social, economic, and diplomatic forces that ultimately changed English, other Europeans, Africans, and American Indians, in the thirteen colonies, into citizens of an independent United States.*

The close affiliation that Green Spring and Governor Sir William Berkeley had with Jamestown is demonstrated by the application of the following primary themes for Jamestown to Green Spring:

Jamestown Theme #1:

> *As the first permanent English settlement in North America, Jamestown and its people experienced many changes and adaptations, often through experimentation that left a legacy of laws, language, and customs that were beneficial as well as tragic depending upon one's race.*

As with Jamestown, Green Spring set a pattern for private land ownership in America. The application of the slave laws and use of an indentured workforce, including Africans, in growing crops and experimenting with a variety of industries to secure the colony's economic stability, can be demonstrated at Green Spring.

Jamestown Theme #2:

> *Jamestown's people, native, immigrant, and enslaved, reflected diverse national and cultural traditions that influenced the emerging New World society.*

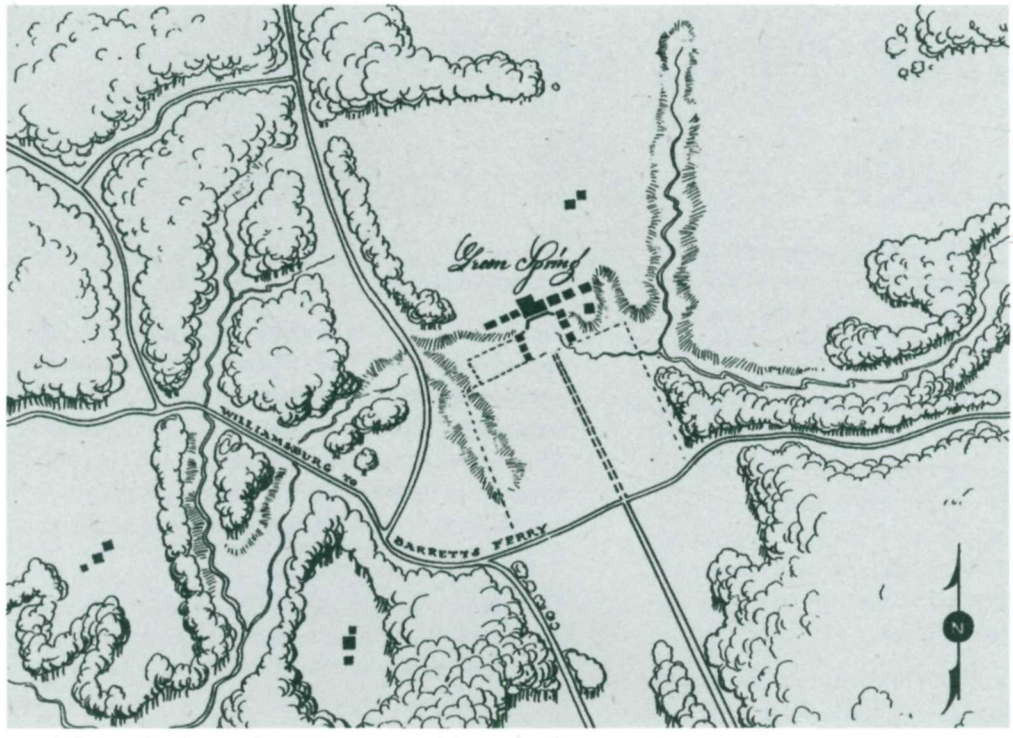
Berkeley's application of the English country estate design was evident in his massive manor and formal gardens and forecourt at Green Spring. However, the labor force and crops or industries that were developed reflected the changing needs and circumstances dictated by the colonial experience and its environs. The influence of African and Native cultures is evident in the crops and methods of cultivation and types of pottery discovered at Green Spring.

The primary and secondary themes specifically identified for Green Spring are as follows:

Green Spring Primary Theme #1:

> *During the European colonization period in the 16th and 17th centuries, England established its foothold in North America at Jamestown, where English culture, traditions, and political structure were transplanted and altered to define the character of a new nation.*

As the longest serving royal governor in Virginia, Sir William Berkeley was a pivotal figure in the evolution of representative government, American Indian policies, foreign trade and American law. The stately Green Spring manor house reflected the power and majesty of his position as royal governor.



Detail from Colonel Desandrouin's 1781 map of the Battle of Green Spring

Green Spring Primary Theme #2:

> *Securing a foothold in the wilderness, the settling of Virginia saw the establishment of the plantation system that would typify the southern colonies in the centuries to follow.*

Berkeley's Green Spring, modeled after the English tenant farming system, illustrates one of the earliest forms of southern plantations but was a forerunner in the diversification of crops and manufacturing necessary to secure financial independence for Berkeley and the colony.

Green Spring Secondary Theme #1

> *During the 18th century, Green Spring remained a place of political influence under the ownership of the Ludwell-Lee family, who had strong ties to the new capital the new capital.*

As Williamsburg grew into the new capital of Virginia, the Ludwells and the Lees entertained many of the royal governors and were influential in the political scene. William Lee's demolition of the original Green Spring manor and his emancipation of the Green Spring slaves, resulting in one of the first free black communities in the country, were major events in the evolution of the Green Spring.

Green Spring Secondary Theme #2

> *On July 6, 1781, at the Green Spring manor, the Marquis de Lafayette organized and directed his troops against Lord Charles Cornwallis at the Battle of Green Spring two miles away, the last open field battle and the largest infantry engagement in Virginia during the American Revolution.*

Three months later the American victory at Yorktown ensured independence and an end to the British colonial period.

1.5 Purpose of and Need for Action

1.5.1 Introduction

Although owned by NPS for 30 years, Green Spring has never been interpreted, open to public use, or adequately monitored for resource protection. Its rural isolation has protected it since NPS acquisition. Now, explosive growth in the community and land use changes directly adjacent to this unit of the park require that the park initiate management and operations in order to protect the site. This planning process has allowed the park to articulate its mission and goals to stakeholders, most importantly local and state decision-makers and surrounding land owners who can influence positive action on surrounding and related lands before the additional impacts of the community's growth are irreversible.

This changing environment has been a catalyst for other conservation and preservation initiatives in the community and has coalesced community leaders, who appealed to the park to be a partner in coordinated action. This plan will allow the park to capitalize on the emerging public interest and commitment of ready, willing, and able partners by communicating the appropriate preservation management and use of Green Spring and defining early action and appropriate roles in implementation and operations of the site. Further, the international observance of the 400th anniversary of Jamestown in 2007 presents an opportunity to raise non-federal implementation funds.

The public, the stakeholders, the interdisciplinary GMP team, and the park's staff have raised many issues and identified opportunities that have been considered as a part of this plan. The issues and opportunities that reflect divergent points of view are summarized below as decision points, and are the basis upon which alternative management strategies have been developed.

1.5.2 Decision Points

Introduction

The major decisions to be addressed in general management level planning, decision points, are those reflecting substantially different viewpoints or visions for the future management of park resources and visitors' experiences. While the park's mission, management goals, and other mandates set the parameters for the plan, various approaches to resource protection, use, and development are possible.

The following decision points are a distillation of the most relevant issues (concerns, opportunities, interests, expectations and suggestions) that emerged as a result of concurrent studies, and that were identified through consultations with park staff and during public workshops and meetings with stakeholders (collectively referred to as project scoping). The decision points are the questions that this plan will consider through the development of alternative management concepts, or alternatives, each offering a different approach to managing the site. The decision points reflect choices to be made and evaluated for their respective benefits, environmental impacts and costs. The discussion following each decision point describes the issues and conditions in question. By defining, analyzing, and making these choices, the planning team resolves the broad trade-offs among competing resource values and park experiences.

The decision points reflect only those issues that are appropriately addressed in general management level planning. A full list of other concerns, opportunities, interests, expectations, and suggestions that were identified during project scoping are found in Appendix 2, sorted into categories according to how or when they would be resolved:

- **Those actions that must be taken because mandated by laws and policies;**
- **Those actions that are inconsistent with laws and policies or beyond the scope of this plan;**
- **Potential elements of the alternatives and ideas for consideration in future implementation plans;**

Decision Points

1 What kinds of visitor experiences are most appropriate and effective for engaging visitors in Green Spring's stories, considering types and conditions of site resources and the site's connections with other units of the park and regional sites?

A. In which historical context should the significant stories of Green Spring be presented?

Considerations:

- The 1936 authorizing legislation adding Green Spring to Colonial NHP is not specific in its intent toward managing the site:

  > *... that the Secretary of Interior be, and is hereby, authorized, in his discretion, to acquire by purchase and /or accept by donation, in behalf of the United States, such lands, easements, and buildings comprising the former Governor Berkeley's mansion and homestead in James City County... as are desirable for rounding out the of the boundaries and administrative control of Colonial National Monument [now Colonial National Historical Park]*

- In June 1998, a scholars' roundtable was convened to help the GMP team better understand the significance of Green Spring and the site's resources. Although little new historical information was presented, the roundtable provided clarification on historical significance and the appropriate emphasis and prioritization of identified stories. Most importantly, the roundtable helped the GMP team understand outstanding questions needing further consideration.

- It was acknowledged that although a relatively high level of documentation exists for the 18th century Green Spring, there is much to learn about Green Spring's history, especially during the 17th Century. Not much is known about the evolution of the manor house or the landscape. Roundtable scholars felt that the NPS has an obligation to avoid assertion of conjecture unless affirmed by new physical evidence. The need for physical evidence was supported by the idea of archeology as a "tool of discovery," in which artifact finds could help tell the stories. The potential emphasis on archeological process could complement Jamestown's planning efforts and proposed interpretive activities.

Although there was agreement on the need to limit the number of primary themes, making it easier for visitors to absorb the most important ideas, this objective conflicts with the broad timeframe of the 17th and 18th century stories identified as important during the roundtable. Panelists felt there is an outstanding need to further resolve whether a timeframe for managing the site is necessary and, if so, what it should be and how it would establish a context for interpreting Green Spring stories. The following observations were drawn from the roundtable discussions (also see "Summary of the Scholars Roundtable for Green Spring," June 24,1998).

Berkeley

The image of Governor Sir William Berkeley as "the Great Man" emerged from the roundtable discussion. Although all but one panelist repudiated the great man approach to history, all panelists kept coming back to Berkeley, the man, as of central importance to the story of Green Spring. Most often Berkeley was viewed from three different but overlapping perspectives:

- As Governor, he brought the British system of law and government to the New World. He initiated relatively benevolent relations with American Indians; built a majestic and imposing manor house appropriate to his office and station; and later became the lightning rod for Bacon's Rebellion.

- As an innovator, he conducted numerous experiments in economic diversification and made many urbanization efforts at Jamestown.

- As an immigrant, his long and well documented career describes a journey from Englishman to Virginian; what does it mean to be an American?



Benjamin Latrobe's 1796 image of Green Spring Manor

Connections with Jamestown

Almost all panelists at some point referred to the story of Green Spring in light of the Jamestown experience. If this element were a dominant one, it would have the following implications:

- The primary focus of interpretation/site management at Green Spring would become the 17th century;
- Town and country could serve as a significant sub-theme;
- Efforts at economic diversification and experimentation would be another key sub-theme;
- Berkeley and his wife Lady Frances would become central characters.

Connections with Jamestown, Williamsburg and Yorktown

Alternately, if Green Spring is looked at in the light of its connections with Jamestown, Williamsburg, and Yorktown, the focus would be broadened to include the 18th century. This would be consistent with the park-wide mission and themes, but viewed with this wider lens, could result in site specific stories becoming more diffused. This approach also would suggest not limiting management of the site to a particular timeframe.

The Site's full evolution

This framework, considering the landscape over time, would speak to a host of topics and include several centuries. In addition to those connections listed directly above, more opportunity would be afforded to explore how the site's natural resources and landscape evolution have affected the historic activities and events over time and how attitudes toward the environment have dramatically changed. This context could suggest a less formally managed landscape in which remnant resources from several centuries would be preserved in an evolved setting, with only moderate changes to the existing environment. This approach recognizes that a majority of the few extant above ground cultural resources are from later periods. If the focus of interpretation is limited to the 17th century, there are risks that include neglecting important later historic resources and the continuum of the historic record, and missing opportunities to tie in natural resource values. If a broader timeframe is considered, however, there is a risk of diluting the interpretive focus and of visitor confusion about the primary significance of site.

B. RECOGNIZING THAT THE SITE'S CULTURAL RESOURCES ARE PRIMARILY ARCHEOLOGICAL, WHAT IS THE BEST APPROACH TO ENGAGE VISITORS WITH THE SITE'S MOSTLY HIDDEN RESOURCES AND STORIES?

Considerations:

- "Visitor Experience" refers to the qualities of the setting and types and levels of activities that people visiting a park unit will encounter. Significance and primary themes (the park's stories and central message) remain constant, but how they are conveyed to visitors and the qualitative aspects of the park's settings, interpretation techniques, and programs offered can be approached in variety of ways within the framework of preservation laws and polices, and the purpose and mission of the park.

  This is the primary planning consideration that differentiates the alternatives in this DGMP. It is particularly relevant at this site because of the scarcity of visible, easily recognizable historic features remaining on the site. In some respects, the limited above ground historic resources at Green Spring present an opportunity for developing particularly unique and creative solutions for managing and presenting the site and its stories to visitors.

- Land use and the aboveground spatial organization of the landscape at Green Spring bears little resemblance to its historic character in the 17th, 18th, or 19th centuries. During scoping, the possibility of reconstructing the physical setting of the Berkeley era was suggested. Only limited documentation has survived that would reveal locations of 17th century plantation features, layout, and uses, however. The physical evidence remaining at the site, therefore, is the primary source of information for piecing together how the place appeared and functioned in the 17th century. With less than 10% of the 17th plantation complex acreage remaining, it is possible that only a limited picture of what the plantation looked like during Berkeley's tenure will be determined. Consequently, neither reconstruction nor restoration of the 17th century plantation are preservation options. Furthermore, the challenge of implementing a meaningful 17th century setting that effectively communicates the site's significance and stories while distinguishing clearly between what is currently known and unknown would be difficult.

- The remaining 196 acres of the original 2,000-acre 17th century plantation were directly affected by significant events, including Bacon's Rebellion, the American Revolution and the Civil War. Changes to road patterns, crops used in the vicinity of the houses, architecture and the relationship of buildings, and the physical evidence of war are all exciting themes that suggest not limiting management of the site to a particular time period or attempting to create a setting typical of the 2,000 acre plantation. Other sites and museums, including the nearby Chippokes Plantation State Park and Bacon's Castle, can adequately provide that type of interpretation and visitor experience. A visitor experience based on what can be discovered - through archeology, interpretation, and other activities, is also a possibility for the site.

- Although Berkeley's development of the site is an important story to tell, there are additional historical themes that may merit more than an acknowledgement. Telling these additional stories could make maximum use of the historical data and the site resources that are available, without placing undue emphasis upon a period for which relatively little information is available. Also, by diversifying the story-line, a wider audience could be attracted.

- Because Green Spring is located in a region with a thriving history, recreation, and entertainment tourism industry, visitors' expectations for unique, engaging, quality experiences are high. The abundance of historic sites and attractions in the region means Green Spring is at risk of developing redundancies not in stories, but in type of experiences, activities and programs offered to visitors. This also fosters competition among historic sites and their managing organizations -- therefore a unique visitor experience must be created or all sites may suffer in fundraising and visitation.

- The public will to protect the park setting and resources on and off-site, to protect scenic and historic corridors such as Greensprings Road and to provide additional visitor services in the Green Spring area may not be realized if the site remains unimproved and closed. Local, state, and federal jurisdictions would be less likely to provide the funding and incentives or to apply regulatory tools to support these goals if the site were not open to the public.

A public workshop



Dana Bradshaw

C. What is the appropriate balance of managed landscape treatment, facility development and visitor use with conservation of the natural environment?

Considerations:

- Floral and faunal surveys of Green Spring have identified and prioritized sensitive microenvironments and habitats within the site. Public scoping has identified that the open space Green Spring provides in a rapidly suburbanizing region is highly valued by the community. Wetlands cover approximately 27 percent of the site, including the "green spring," an historically significant natural and cultural feature. An ephemeral pond survives as an unusual ecosystem associated with a distinctive and diverse assemblage of plant and animal species. The transitional field area east of route 614 is important due to the rarity of that cover type within the surrounding region. Green Spring is part of larger ecosystem concerns as well. Green Spring is located within the Chesapeake Bay estuary, internationally recognized for its biological richness and diversity. As such, it is subject to the requirements of the Chesapeake Bay Preservation Act. A portion of Green Spring also lies within the Powhatan Creek watershed, which is designated a State Natural Area.

- The desire to physically convey the scale, magnitude and grandeur of the 17th century Green Spring landscape, which was cleared and highly managed, may be in conflict with conserving natural environmental values. Inappropriate uses or overcrowding of the site with new facilities and people may damage both cultural and natural resources. NPS must determine what the resources' thresholds for change are, or monitor regularly and adjust.

D. How can the physical, historical and intellectual connection between Jamestown and Green Spring be strengthened?

Considerations:

- The Scholars' roundtable and every public workshop and consultation with park staff identified the stories of Jamestown and Green Spring as inextricably linked (see 1.A. above). One roundtable participant described Green Spring as a disconnected piece of Jamestown bound together with a 3-mile cord – the historical road (Greensprings Road). The relevance of Green Spring cannot be fully understood in a national context without relating it to the events and people associated with Jamestown.

- Greensprings Road, along with State Highway 5 (Route 5), is one of the oldest transportation corridors in the nation, dating from the earliest days of Virginia's settlement. Greensprings Road provides the main north-south connection between Jamestown and Green Spring. Route 5, the scenic east-west route from Richmond to Williamsburg, currently provides the main access point to Green Spring.

- Modern Greensprings Road is the approximate alignment of the historical road connection. The trip between the two sites should be considered and planned as part of the visitor experience and can help visitors understand the historical interdependence of Jamestown and Green Spring.

  Modern development encroaches visually into segments of the connecting corridor. James City County has designated Greensprings Road a Community Character Corridor in its 1997 comprehensive plan and taken steps to protect the scenic quality of this road, but additional measures may be needed to improve the scenic quality and protect it from further degradation. Additionally, the alignment of one segment of the roadway is circuitous and confusing.

2 Should public access to the site be provided for before, during or after the full extent of resource knowledge is accumulated?

Considerations:

- Much new information about Green Spring's history and resources has been collected in the course of this planning effort as a result of recent natural resource surveys on flora and fauna, a Phase One Archeological Survey, historical research and a scholars' roundtable, a Cultural Landscape Inventory and two traffic studies on Centerville Road. These studies have been valuable in informing this process and understanding where additional in-depth research is needed. They have provided the focus for a research plan that now outlines with more specificity additional research and field investigation needed to understand what evidence of the site's past still exists and what that evidence may reveal about significant events, activities, occupants, and the spatial organization of former structures and landscape features at different times in history. Additionally, these detailed studies will assess the condition of site features and include recommendations for properly managing sensitive resources. Scholars and NPS resource professionals believe there is much more that can be learned and discovered about the site as a whole, the individual resources and habitats, and their significance, locations, and sensitivity.

- Currently, access to the site is only permitted by special arrangement (e.g. for research and the volunteer park watch group) or with an NPS escort for site tours. Uninvited access will become a greater security concern as more residential and other development is completed near the site. Experience at other NPS sites shows that having a staffed presence on a site is important to deterring inappropriate use and resource damage. Interest in the site is growing with awareness stemming from this project, through efforts of the Friends of the National Park Service for Green Spring, Inc. and as a result of initiatives of James City County of mutual concern to NPS, the county government, and its citizens. Extensive research and fieldwork

may take years to fund and complete. If public access to the site is restricted until research projects are completed, NPS risks the loss of momentum and interest from supporting partners. Advances in non-destructive data collection, preservation and restoration techniques may, however, be developed in the future, presenting unforeseen opportunities for sustaining and interpreting resources.

- Concern has been expressed during the scoping process that if significant site development for public access precedes completion of research, inadvertent damage could result to resources. NPS would not proceed with any permanent site development without additional site planning and site investigation at locations targeted for facilities. Even with these safeguards, however, there is the potential for fragmentation of information if site research and investigation is not completed prior to site development or conducted concurrently, (e.g., research and develop; research more and develop more).

  Some participants in the scoping process questioned whether there would be anything of interest to attract visitors before more research and fieldwork is conducted to inform interpretation and site management and development. Many more participants in public workshops and stakeholder meetings however, expressed enthusiasm for the opportunity to observe or participate in the process of discovering the site. Public access or participation in the archeological process, for example, has proven to be very popular when offered at other archeological sites such as the Little Big Horn Battlefield National Monument, the City of Annapolis, and nearby APVA's Jamestown Rediscovery project - the First Fort.

3 Should Route 614 remain open or be closed to through traffic once the site is open for public use?

Considerations:

- Centerville Road (State Route 614) bisects the site. Its location is perceived as intrusive to Green Spring's historic setting and a safety liability for both existing drivers and potential visitors to the site due to excessive travel speeds, a narrow cartway, and poor sight distances. These safety hazards are worsened by the relatively high speeds and volumes associated with rush hour commuting traffic. Because the road and traffic truncate the site, the ability to integrate the site and establish a cohesive setting is limited. Only part of the site could reasonably be opened for public access if The Centerline Road remained open. Natural quiet and the ability to hear the dwindling natural sounds of the area were noted as a value of area residents.
- The traffic patterns in the immediate area of the site are expected to change with the completion of Alternate Route 5 (Monticello Avenue extension), and the use of Centerville Road through NPS property is expected to diminish. Centerville Road will most likely become less important to residents and commuters than it is now. There will probably be less demand to travel north along Centerville Road to current shopping and commercial destinations and more demand to travel east to Williamsburg. Recent improvements to Route 199 and construction of an intersection with Monticello Avenue (part of Alternate Route 5) will help open up commercial and shopping destinations in Williamsburg, making them more accessible. Route 199 now loops around to the west of Williamsburg, intersects with Monticello Avenue, and connects back into I-64 near Lightfoot, obviating the need to use Route 614 for many travelers. There will continue to be some tourist travel to the Lightfoot area, north of Green Spring, for shopping, particularly the Williamsburg Pottery Factory; however, local residents will probably shift their destinations toward the expanded retail development near Williamsburg.
- Neither the diversion of existing traffic from Centerville Road nor the addition of Green Spring visitor traffic would exceed the capacity of area roadways.
- In an attempt to improve emergency response service, a fire station was recently constructed just west of the Green Spring site along Alternate 5 to serve residential areas around Green Spring. Closing Centerville Road through NPS property would not affect emergency response times within the future fire station's emergency service area as a whole. The proposed road closing may affect emergency response times for residential areas south of Green Spring, on Greensprings Road. The degree of impact would be dependent on the availability of two alternate routes that circumnavigate Green Spring. The degree of impact would also be affected by the superior condition of the alternate routes and the installation of enhancements such as traffic signals at the intersections of Alternate Route 5/Centerville Road, Alternate Route 5/Greensprings Plantation Drive, and Route 5/Greensprings Road. Emergency preemption devices associated with these enhancements could allow emergency vehicles priority green time when approaching the intersections; however, even with emergency preemption, traffic congestion could slow the speed of emergency vehicles, particularly where there is no shoulder or no extra travel lane for cars to move out of the way. The new fire station was completed nearly the same time as the completion of Alternate Route 5 in 2001. The completion of Alternate Route 5 provides two potential alternative emergency routes to access residential areas to the south of Green Spring.

- The long-term sustainability and natural productivity of the site would be enhanced by the removal of Centerville Road, which would restore a more natural drainage pattern and encourage native vegetation. Roadkill mortality among faunal populations would be significantly reduced. The removal of Centerville Road and through traffic would have a significant positive impact on wildlife movement and population viability for mammal, reptile and amphibian species. Water quality in Powhatan Creek would be improved by eliminating through traffic on Centerville Road, which causes contaminated surface runoff to enter the site drainages and tributaries of the creek. This would enhance the long-term sustainability of Powhatan Creek Natural Area and its potential to support rare plant communities.
- If Centerville Road remains open, it will be difficult to control site access. There exists a need to balance the public interest of ready access to the site with site security and resource protection. The closing and removal of Centerville Road through the site would ensure that motorists and bicyclists enter from one access point, further enhancing the historic connection to Jamestown.

4 To what extent can park values be protected and can park goals be achieved through agreements or partnerships with the Friends of the National Parks for Green Spring, Park Watch, James City County, park neighbors, and other institutions, organizations and agencies?

A. Can partners raise adequate funds to develop and sustain Green Spring or will Colonial NHP's operating budget need to be increased or fees collected in order to maintain the site?

Considerations:

- The Friends of the National Park Service for Green Spring, Inc. self-organized to support citizen involvement in the planning for Green Spring, build public support, and raise the money needed for the protection, development and opening of the site for public use before 2007. In 1999, the National Park Service signed an agreement with the Friends to promote the conservation and development of Green Spring for the preservation of cultural and natural resources, public education, and passive recreation. The agreement grants a limited authorization for the Friends to raise funds prior to the completion of the GMPA/EIS. It is anticipated that a new agreement will be crafted after the plan is completed for the Friends to raise funds consistent with the goals described in the approved GMPA/EIS.

  More detailed development and programmatic planning will be undertaken and decisions on plan implementation will be made commensurate with the potential success of partner fundraising or other sources of funding commitment prior to development of the site. Development of new visitor facilities and ongoing operations and maintenance of Green Spring would otherwise be constrained by limitations of existing budget and staffing levels of Colonial NHP without increases to its operating budget.

B. Recognizing that Green Spring stories and resources extend beyond park boundaries, what are the mechanisms or strategies to help protect related resources beyond the park boundary.

Considerations:

- The original plantation extended beyond the current boundary, over 1,800 additional acres primarily to the north and west of the existing Green Spring boundaries. Related archeological resources have been documented outside of the park boundaries.

  Greensprings Road (Route 614) and Route 5 are important elements in the Green Spring story. Route 614 links Jamestown and Green Spring, and Route 5 links Middle Plantation, present-day Williamsburg and starting point of Bacon's Rebellion, with Green Spring, site of the trials of Bacon's followers.
- James City County continues to experience a substantial rate of growth and change. Residential development, a golf course, and a new collector road are currently being developed on three borders of park property and will inevitably affect the general environment and viewsheds surrounding Green Spring as well as have potentially damaging effects to on-site and related off-site cultural and natural resources.
- New roads and traffic patterns in the area will impact the site for good and for ill - bringing more overall traffic and development but offering the potential to eliminate the segment of Centerville Road bisecting the site and to ease traffic movement in the area.
- Actions occurring outside of park boundaries are not subject to compliance with federal preservation laws, unless such actions are authorized, funded, or permitted by a federal agency. As a result, residential and commercial development could affect related resources on private lands as well as cultural and natural resources on the site.
- James City County has taken a leadership role in protecting resource values and environmental quality through planning, zonings and other land stewardship efforts.

- Although it is not the intent of the NPS to purchase additional land, if the opportunity to acquire lands through donation occurs, the NPS will consider accepting parcels that help further the park's mission, based on NPS criteria.
- The principal developer of the surrounding lands, Greensprings Plantation, Inc., has undertaken archeological surveys and other environmental assessments which have been reviewed by and documented with the State Historic Preservation Officer.

C. WHAT IS THE CAPACITY AND INTEREST OF REGIONAL AND NATIONAL INSTITUTIONS, ORGANIZATIONS, AND AGENCIES TO COLLABORATE ON PROJECTS OF MUTUAL CONCERN, SHARE PROFESSIONAL AND TECHNICAL EXPERTISE, AND ASSIST WITH ADDITIONAL RESEARCH AND DATA COLLECTION?

Considerations:

- Partners offer the potential to increase organizational efficiencies and take timely action.
- Over the last several years, including the time spent developing the GMPA/EIS, NPS has established and build important relationships with organizations and institutions with similar, compatible or supportive goals to Green Spring's. As implementation of this plan begins, partnership opportunities that benefit each organization will become more evident and important to success. In addition, present and anticipated NPS budget constraints limit available financial resources. Many of the park's potential partners are also likely to face tight economic conditions. Economies of scale gained by establishing meaningful partnerships are one of many possible solutions. Consequently, cultivating mutually beneficial partnerships with related sites, institutions, agencies and members of the public will take on increasing importance. The NPS must evaluate the future role of partnerships as they relate to carrying out the mission of Green Spring, as well as assisting partnering organizations.
- The Williamsburg area is home to many institutions and organizations with complementary technical and professional resources, mutual interests, and goals that are consistent with those of NPS for Green Spring. Colonial NHP already has established many relationships and formal partnership arrangements. The following organizations are some that have participated in development of this plan and may be considered existing or potential partners for Green Spring:

Association for the Preservation of Virginia Antiquities

College of William and Mary

Colonial Williamsburg Foundation

Friends of the National Park Service for Green Spring, Inc.

Green Spring Park Watch

James City County

Jamestown -Yorktown Foundation

National Society, Daughters of the American Colonists

Virginia Department of Conservation and Recreation

Virginia Department of Game and Inland Fisheries

Virginia Department of Historic Resources

Williamsburg Area Convention and Visitors Bureau

Williamsburg Chamber of Commerce

Williamsburg Land Conservancy

Specific opportunities will be more readily identified once this plan and direction for Green Spring is completed and approved.

1.5.3 Environmental Consequences Considered in Analyzing this Plan

In addition to those issues identified during scoping, potential environmental impacts have been analyzed in the DEIS (Chapters 3 and 4), and revised in response to public review in the FEIS (Chapters 3 and 4). These topics were sorted into those needing further analysis and those dropped from further consideration because they are not relevant to this park, because they would not be affected by the alternatives, or because the impacts would be negligible or minor.

Impacts Topics Fully Analyzed

Chapter 4 of the DEIS evaluates potential impacts to the affected environment described in Chapter 3 of the DEIS. The following impact topics are fully analyzed in that chapter. This list was derived from the Council on Environmental Quality's NEPA regulations, by assessing the issues raised during scoping, and by observing the potentially affected resources on and adjacent to Green Spring.

Cultural Resources

- Site Significance
- Archeological Resources and Historic Ruins
- Cultural Landscape
- Archives and Collections

Natural Resources

- Regional Ecological Resources
- Topography
- Soils (includes Prime and Unique Farmlands)
- Wetlands and Other Water Resources
- Rare, Threatened, and Endangered Species
- Other Vegetation
- Other Wildlife
- Air Quality

Visitor Experience

- Regional Visitor Experience
- Colonial NHP Visitor Experience
- Potential Visitor Characteristics

Socioeconomic Environment

- Park Setting and Adjacent Land Use
- Regional and Local Economy
- Community Facilities and Energy Use
- Emergency Services
- Recreational Facilities and Use

Transportation and Site Access

- Bus/Shuttle Transit
- Motor Vehicle Access and Local Roads
- Bike/Pedestrian Access

Park Operations and Administration

- Staffing
- Maintenance
- Facilities and Equipment
- Resource and Visitor Protection

Impacts Topics Considered and Dropped from Further Analysis

Listed below are environmental considerations and related laws and regulations that were identified but dropped from further analysis because they were inapplicable to the proposed alternatives or the circumstances of the park. Refer to Chapter 3 of the DEIS for more information about the following:

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 13007, Access and Use of Sacred Sites

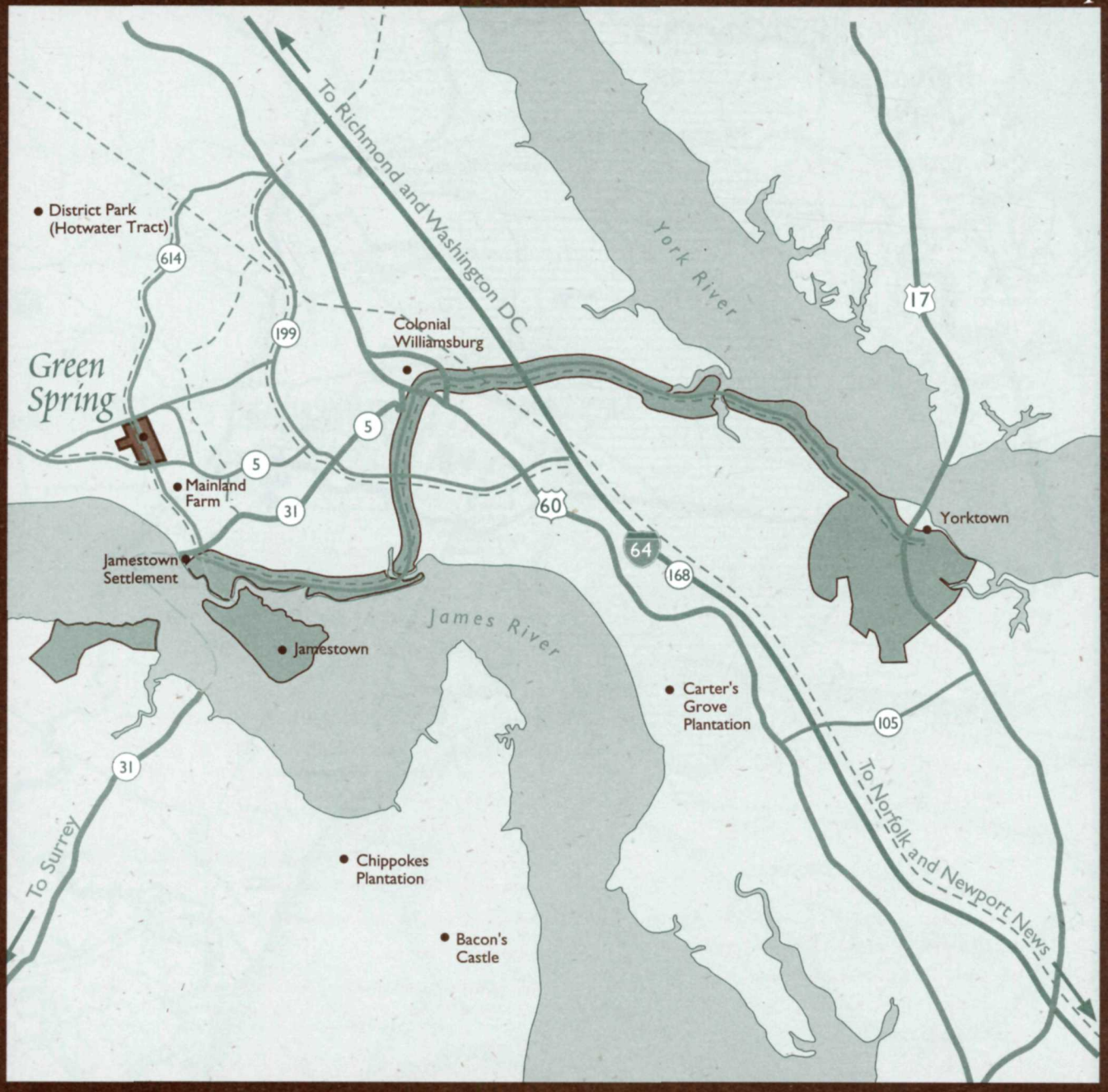
Indian Trust Resources

Mining Activity within National Park Service Areas Act of 1976 (P.L. 94-429, 90 Stat. 1342, 16 U.S.C. 1901 et seq.)

Geology

Executive Order 11988, Floodplain Management

Figure 1 *Location Map*



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

0 1 2 3 6 miles

approximate scale

Colonial National Historical Park

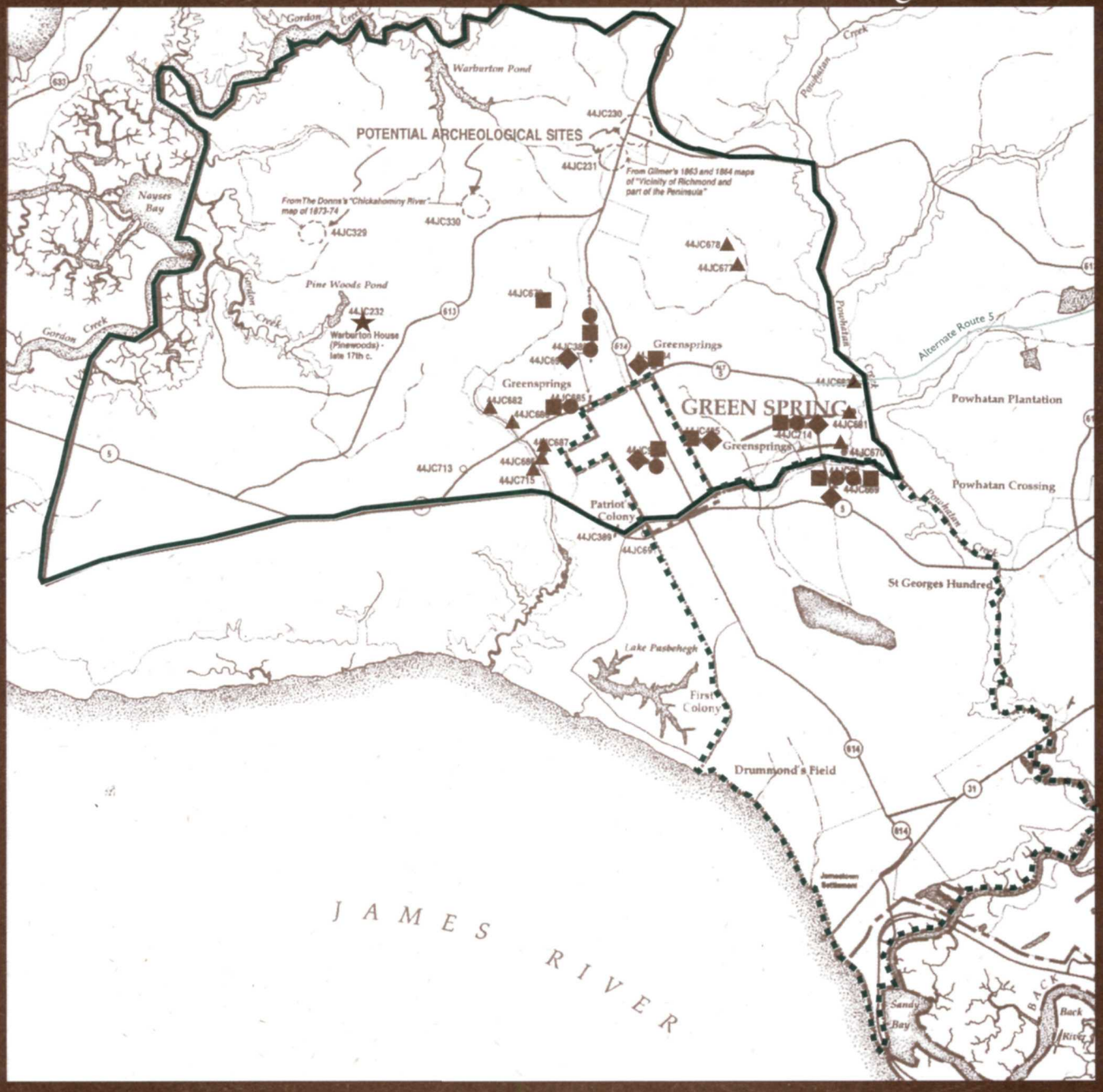
Related Historic Sites

Bikeways Proposed By County And State Agencies

Green Spring

Figure 2

Area Archeological Resources



Green Spring

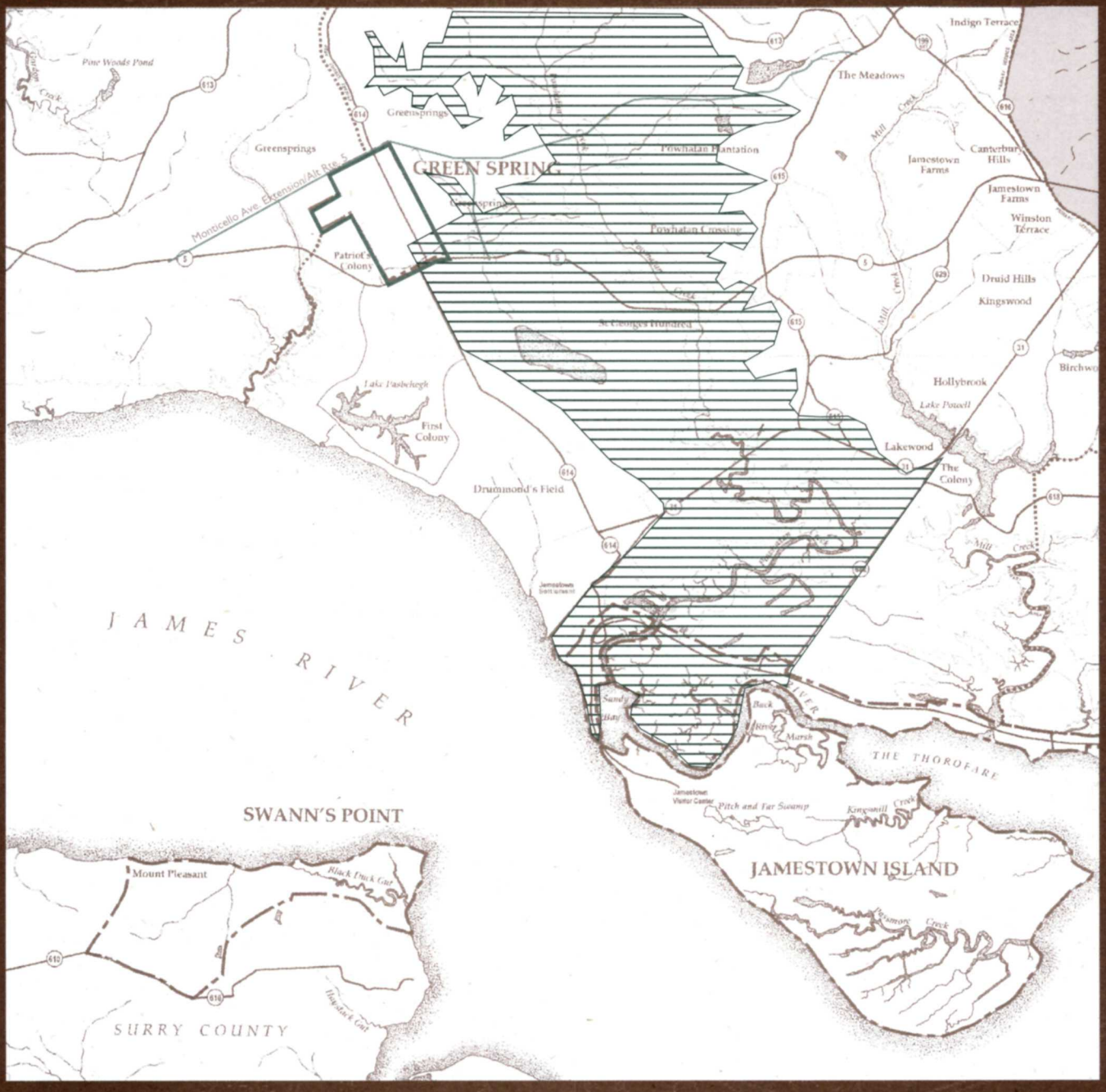
Colonial National Historical Park
National Park Service
United States Department of the Interior

0' 2000' 4000'
approximate scale

- ▲ Prehistoric
- ● Berkeley Era 1643-1679
- ■ Ludwell Era 1680-1767
- ◆ Ludwell Lee Era 1768-1803
- ★ Historic Structure
- Governor's Land Archeological District
- Approximate Original Boundary of Berkeley's Green Spring Plantation
- Green Spring Site Boundary

Figure 3

Powhatan Creek Natural Area



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

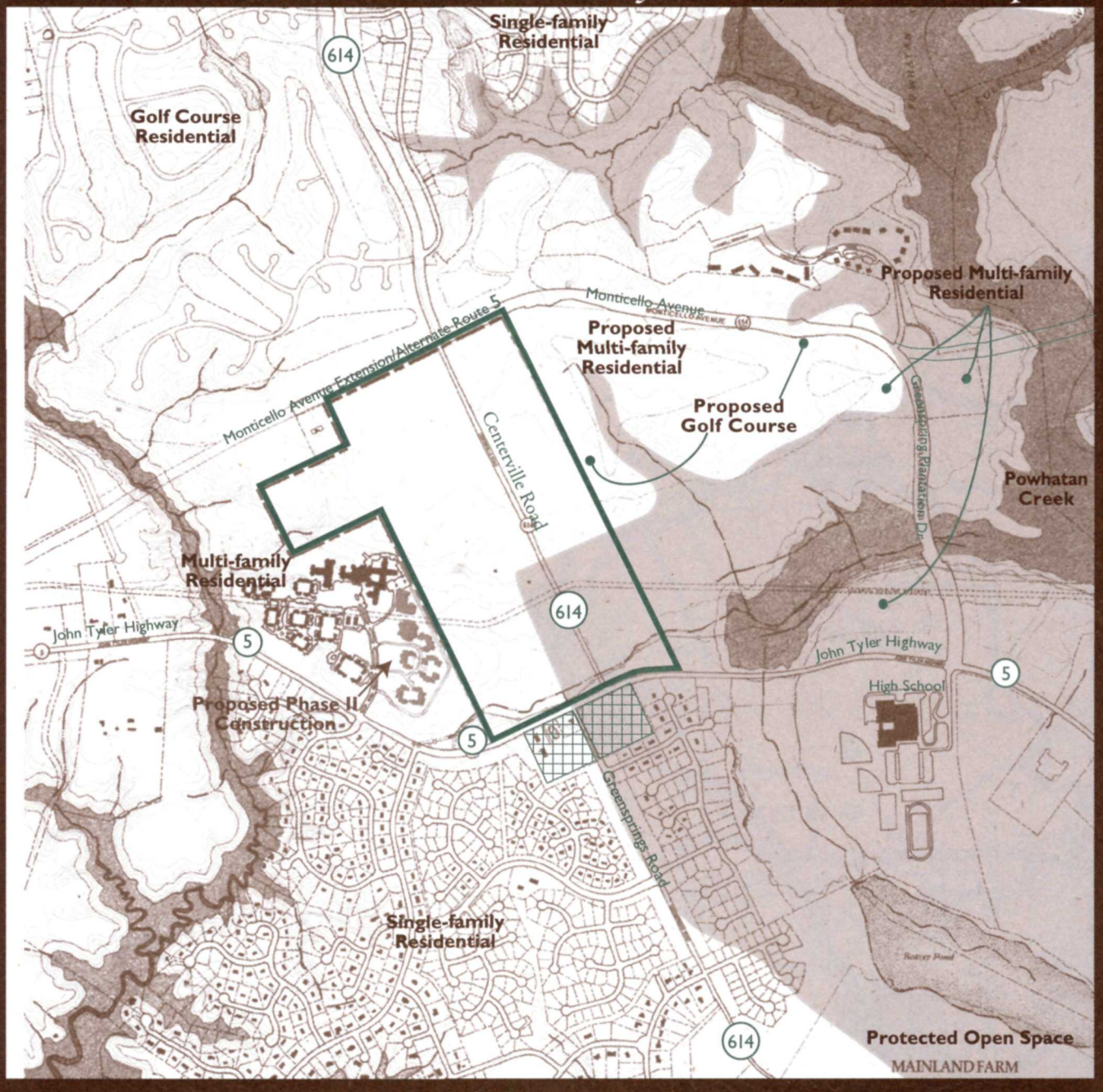
0' 2000' 4000'
approximate scale

Primary Ecological Zone for Powhatan Creek Natural Area (Virginia Division of Natural Heritage)

Green Spring Site Boundary

Figure 4

Site Context - Adjacent Land Use and Development



Green Spring

Colonial National Historical Park

National Park Service
United States Department of the Interior

0' 1500'

approximate scale

Chesapeake Bay Preservation Act Resource Management Area

Primary Ecological Zone for Powhatan Creek Natural Area (Virginia Division of Natural Heritage)

Commercial Zoning

Green Spring Site Boundary

Figure 5

Vegetation and Habitat Types



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

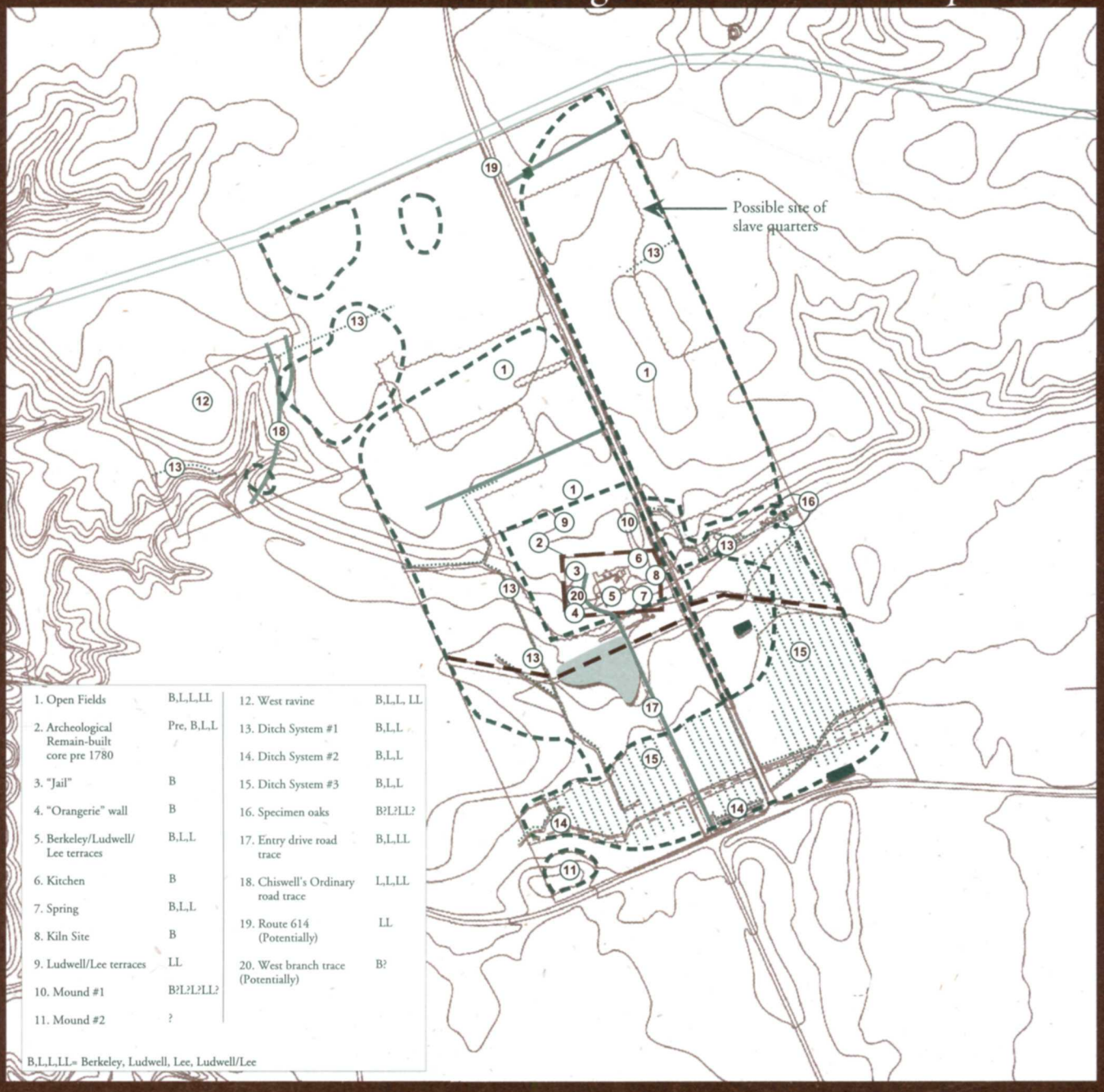
0' 900'
approximate scale

Pine
Mixed Hardwood / Pine
Mixed Hardwood
Mown Field
Transitional Field

US Fish and Wildlife Recommended Primary Management Zone (750')
US Fish and Wildlife Recommended Consultation on Management (1,320')
Green Spring Site Boundary

Figure 6

Archeological and Cultural Landscape Features



1. Open Fields	B,L,L,LL	12. West ravine	B,L,L, LL
2. Archeological Remain-built core pre 1780	Pre, B,L,L	13. Ditch System #1	B,L,L
		14. Ditch System #2	B,L,L
3. "Jail"	B	15. Ditch System #3	B,L,L
4. "Orangerie" wall	B	16. Specimen oaks	B?L?LL?
5. Berkeley/Ludwell/ Lee terraces	B,L,L	17. Entry drive road trace	B,L,LL
6. Kitchen	B	18. Chiswell's Ordinary road trace	L,L,LL
7. Spring	B,L,L	19. Route 614 (Potentially)	LL
8. Kiln Site	B	20. West branch trace (Potentially)	B?
9. Ludwell/Lee terraces	LL		
10. Mound #1	B?L?L?LL?		
11. Mound #2	?		

B,L,L,LL= Berkeley, Ludwell, Lee, Ludwell/Lee

Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

0' 900'
approximate scale

- Core Archeological Area
- Archeology Site Borders
- Ditches and Ditch Systems
- Depression
- Old Road Beds
- Sewer Line
- Site Features (See Inset)
- Natural Gas Line
- American Indian Concentration

Figure 7

Hydrogeologic Constraints



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

0' 900'

approximate scale

- Green Spring Site Boundary
- Soil characterized by wetness and/or high shrink-swell potential
- Soil characterized by erosion hazard and/or wetness
- 100-Year Floodplain
- Wetlands

1.6 Relationship to Other Studies and Planning Projects

1.6.1 Phase One Archeological Survey

In the spring of 1998, Cultural Resources, Inc. and James River Institute for Archeology, Inc. conducted a Phase I archeological shovel-test survey of Green Spring. In total, the team executed roughly 3,300 shovel tests across the entire property, excluding the area of the Berkeley manor site and the Ludwell Lee house, previously excavated in the 1920s and 1950s. The survey resulted in the identification of at least ten potentially significant concentrations of historic material dating from the prehistoric period through the twentieth century. In the course of the survey, the team located a few oversized artifacts, a stone boundary marker with the initials "WMB" and "WD" (perhaps denoting William Berkeley and William Drummond), an intact millstone, and another millstone fragment of uncertain origin. The most obvious historic landscape features recorded are hundreds of feet of boundary and drainage ditches, some as many as six feet deep and fifteen feet wide. Potential evidence of Governor Berkeley's experimentation with rice cultivation was found in the low-lying acreage at the southern end of the site. An extensive system of irrigation channels and drainage ditches traverses the area and appears to be diverting water into, rather than away from, this low-lying area, suggesting that these fields were being intentionally waterlogged, a condition necessary for growing rice. Evidence of possible slave quarters was identified as well as evidence of the 'Newcastle Road' (Main Road from Jamestown to Chiswell's Ordinary) indicated on the 1781 Desandrouin map and the road that historically linked Green Spring and Jamestown. The report highlighted that, despite field archeology done by Louis Caywood in 1955, there are considerable aspects of the site that are significant and should be investigated more closely. This shovel-test survey and analysis of the findings will help focus further, more extensive archeological work at Green Spring.

1.6.2 Floral and Faunal Surveys

In April 1998, an intern from the College of William and Mary completed a plant survey that identified 241 species at Green Spring. Subsequently, a biologist from the College of William and Mary undertook a 15-month investigation to inventory the faunal, or wildlife, diversity of the site. The principal goal of these surveys was to provide a baseline measure of plant and wildlife diversity and provide broad guidance on how to maintain this diversity in the face of rapid land use changes surrounding the site and as new land management goals for the site are developed. Findings are summarized in Section 1.4.3 and described in detail in Chapter Three of the DEIS.

1.6.3 Draft Cultural Landscape Inventory

A Draft Cultural Landscape Inventory was completed in the spring of 1999. It found that the cultural landscape at Green Spring, based upon strict national register criteria, has low integrity to the period of significance because it is a fraction of its original size and there are few intact aboveground features. However, there is a rich and extensive collection of archeological features and some critical surviving aboveground landscape features including terraces, ruins, road traces, and a network of ditches. Together these provide important evidence of the stylistic and horticultural trends from the early colonial period through the early republic, and of Tidewater agriculture as it evolved from the early days of crop experimentation to the destructive years of intensive tobacco cultivation and poor agricultural practices. It should also be noted that Green Spring is likely one of few plantations of the 17th century that has any surviving features, an important consideration in preservation decisions. Completion of a comprehensive cultural landscape report in conjunction with in-depth historical and archeological research will be necessary to better understand the site's resources and identify appropriate treatment options.

1.6.4 Centerville Road Traffic Studies

The first study, conducted in October 1999, was undertaken in response to public and county concerns about the impacts of closing a 0.7 mile segment of Centerville Road (Route 614) that bisects the park unit. The study provides information to help decision-makers weigh consequences of diverting through traffic to the surrounding road network against the benefits that reestablishing a contiguous site offers for visitor safety, the quality of the site's setting, and the preservation of cultural and natural resources of this national park site.

The analysis focused on two main traffic issues: the impacts of the traffic generated by Green Spring on the surrounding road network and the impacts of closing Centerville Road on the surrounding road network. The potential park-generated traffic was clearly found to be insignificant in the total mix of future traffic on the surrounding roadway network. Further, the analysis indicates that traffic diverted from a closed Centerville Road to the surrounding road network will not adversely impact the capacity or the overall level of service of these roadways.

One related concern that was also considered in this analysis was the potential impact of closing Centerville Road on fire emergency response times to neighborhoods south of Route 5/Greensprings Road intersection. A recently constructed fire station, completed in 2001, is located adjacent to the site near the northeastern boundary. The completion of the Monticello Avenue extension to Route 5 now provides the most suitable, though geographically longer travel route (compared to The Centerville Road route) for fire vehicles responding to calls from the south. The study recommends installation of emergency preemption devices with traffic signals in the study area to allow emergency vehicles priority green time when approaching intersections. Findings of the study are further described in Chapter 4 of the DEIS.

This second traffic study was conducted both before and shortly after the completion and opening of the Monticello Ave. Extension (Alternate Route 5) in November 2001 to assess the effect of the new route on Centerville Road traffic. Less than two months after the new section of road opened, traffic on Centerville Road through Green Spring was reduced by approximately 20% as motorists chose alternative routes. Further reduction of traffic on Centerville Road is expected as traffic patterns adjust to the availability of the new alternative route.

1.6.5 Development Concept Plan/ Environmental Impact Statement for Jamestown

The 400th anniversary of the Founding of Jamestown will occur in 2007. The National Park Service and the Association for the Preservation of Virginia Antiquities are preparing a Development Concept Plan/ Environmental Impact Statement DCP/EIS to identify improvements to the facilities and programs at Jamestown and to coordinate activities with the Jamestown-Yorktown Foundation in 2007 and beyond. As in the 1950s, Green Spring is a related site that will be considered in the planning for the international observance of the 400th anniversary of Jamestown in 2007.

1.6.6 James City County's Greenway Master Plan

James City County is developing a Greenway Master Plan that will network significant cultural and natural features and link them to communities through an integrated open space, trail, and bikeway system. Green Spring is considered the nexus of several trail and greenway efforts now in the planning stages. The greenways and trails also include the Commonwealth of Virginia's proposed Capital to Capital Bikeway, from Richmond to Williamsburg, and the TransAmerica Bike Route (U.S. Bike Route 76), identified in the State Comprehensive Outdoor Recreation Plan. Both plans include Route 5 below Green Spring as a major east-west connector.

The county's greenway master plan includes recognition of the need for a bikeway along Greensprings Road, south of the NPS property that would tie into a county greenway system as well as a larger regional trail system. A number of trails and greenways are planned that could potentially pass through or adjacent to Green Spring along Greensprings Road, Route 5, and Centerville Road as well as utility corridors that cross the site. The NPS prefers that the county locate the trails adjacent to, but not through, Green Spring. The NPS will cooperate with the county to locate a suitable alternate route for the trails and provide safe bicycle access to the site. Bicycle and pedestrian access to Green Spring and coordination with county planning efforts are discussed in more detail in Chapter 2 of the Final GMPA/AEIS, and Chapters 3 and 4 of the Draft GMPA/EIS.

Chapter 2

Alternatives

2.1 Introduction

Chapter 2 presents the philosophy and management rationale for the alternatives that have been considered for Green Spring. Alternatives were developed through a process of public consultation that included workshops to review issues, resources, initial concepts, draft alternatives, and environmental impacts.

Each workshop was documented and summary findings are included in the Appendices of the Draft General Management Plan Amendment and Environmental Impact Statement (DGMPA/EIS). Written comments received on the draft plan are included and responded to in Appendix A of this document. James City County's decision to keep Centerville Road open to through-traffic has resulted in modifications to Alternative C, the preferred alternative.

This chapter includes the following sections:

Section 2.2 - explains what management prescriptions are, how the management prescriptions relate to the park's mission goals, and how management prescriptions are applied to specific resource areas through management zoning.

Section 2.3 - explains the NPS's and the Secretary of the Interior's standards for landscape preservation and the varying preservation treatments that are described in this document.

Section 2.4 - provides a summary description of the general intent and character of the three alternatives that evolved from the planning process including modifications resulting from public and agency review of the draft plan.

Section 2.5 - describes Alternative A, the no action alternative, which assumes the continuation of current management practices. A descriptive map is provided to illustrate the concept.

Section 2.6 - describes management prescriptions common to each action alternative, which include a set of conditions to be attained that apply to Alternatives B and C.

Sections 2.7 through 2.8 - describe the two action alternatives, including management prescriptions for each of the mission goal categories in each of the management zones identified in Section 2.2. Descriptive maps are provided to illustrate the concepts and the management zones for each alternative.

Section 2.9 - provides comparative information on the three alternatives, which is a basis for assessing their effectiveness in meeting the mission goals.

Section 2.10 - analyzes potential cumulative impacts resulting from the modifications to Alternative C, the Preferred Alternative, proposed in this plan.



Corn

2.2 Management Framework

2.2.1 Resource-sensitive and Results-oriented Management Prescriptions

2

Within the broad parameters of the park's mission and mission goals, various approaches to park use, management and development are possible. Some of these approaches may represent competing demands for the same resource base. To address these conflicts, NPS general management plans define management prescriptions, which provide the policy framework for making specific decisions about resources and visitor use.

Management prescriptions describe the specific resource conditions and visitor experiences that are to be achieved and maintained over time. Based on these characteristics, each management prescription identifies the kinds and levels of visitor use, management activities, and development that are appropriate for maintaining those desired conditions. A management prescription can apply to a specific resource wherever it appears in a park, or may apply to all resources within a specific resource area of the park. Taken together, the recommended management prescriptions form the core of the GMPA.

Management prescriptions help managers of a park decide which implementing actions are appropriate to help them meet park goals. They provide a basis for decision making on the long- and short-term issues park managers are aware of today, but also help guide solutions for future problems that are unforeseen. They are intended to provide managers with the flexibility to make good decisions even when circumstances change. A range of actions is possible as a result of the adoption of a management prescription, and the purpose of the prescription is to ensure that action is appropriate to protect resources and provide for visitor use and interpretation. Management prescriptions are not detailed development plans. These site-specific plans and their appropriate environmental compliance documents are completed prior to implementing the action.

Management prescriptions link mission goals and the other two types of goals NPS uses to manage its work: five-year goals and annual goals. Where long-range management prescriptions are adopted, they are used to define more immediate measurable targets. For example, a management prescription may indicate that the desired resource condition for historic buildings is that they be restored and maintained in good condition. The five-year goal sets an attainable, measurable target: e.g., by the year 2003, 50% of the park's historic structures would be in good condition. Five-year goals are then broken down into annual goals, the yearly steps that must be taken to meet the five-year objective.

In many cases, a more detailed implementation plan must be prepared once a specific action has been determined and funded. Examples of situation-specific implementation plans include collections management plans, interpretive plans, maintenance guidelines, and project designs and site development plans.

2.2.2 *Management Prescriptions Related to the Mission Goals*

The alternatives described in this chapter are structured around the mission goals of the park. Each goal requires different types of management prescriptions for its achievement. Table 1 relates each goal to its supporting management prescriptions and associated resources or activities.

Table 1: Mission Goals and their Relationship to Management Prescriptions

Mission Goal	Statement of Goal	Management Prescriptions Would:	What Resources or Activities are Covered
Resource Management	Significant resources associated with Green Spring (historical landscapes and features, remnant structures, archeological sites, curatorial objects, and natural resources) are protected, rehabilitated, restored, or maintained in good condition and managed within the broader ecosystem and cultural context.	Define the resource conditions to be achieved and maintained over time.	• Cultural landscape management • Structures and buildings • Archeological sites and related archeological investigation • Archeological artifacts • Natural resources • Collection management
Interpretation and Visitor Experience	The public understands and appreciates significant innovations, ventures, and events associated with Green Spring and Governor Berkeley, their role in America's transition from English rule to independence, and the connection with Jamestown and Colonial NHP stories.	Define the resource conditions to be achieved and maintained over time. Define the interpretive and visitor experiences that are to be provided site-wide and within Green Spring's management zones.	• Interpretive exhibits • Interpretive signage • Interpretive structures • Interpretive landscapes • Site tours and educational activities • Connections to other Colonial NHP sites and stories
Visitor Use and Park Facilities	Visitors safely enjoy high quality educational experiences and are satisfied with the availability, accessibility, diversity, and quality of park facilities and services.	Identify the kinds and levels of visitor use, management activities, and development that are appropriate for maintaining the desired conditions park-wide and in each zone.	• Visitor facilities • Parking and circulation Trails • Visitor use management Special uses • Park administrative and maintenance facilities
Partnerships and Cooperative Actions	The NPS increases its operational capacity through cooperative efforts with other public and private entities who understand and support the park's mission to protect and interpret park resources.	Provide guidance on mechanisms to attract non-NPS human and financial resources in support of the park's goals. Define cooperative management initiatives that can protect and interpret park-related resources.	• Cooperative activities between NPS and partners

2.2.3 Management Zones

While some management prescriptions apply to all resources in a park, most management prescriptions are applicable to specific resources within certain areas of the park. Associating management prescriptions with specific geographic areas results in management zoning. Depending on the desired resource conditions and visitor experiences, different kinds and levels of visitor uses, management activities, and development may be appropriate in each management zone. These kinds and levels of activity and development are described along with the desired conditions and experiences as part of the management prescriptions for each zone.

A management zone is characterized by specific qualities, resources, and intended visitor use and visitor experience. General zone boundaries are determined based on archeological investigation and other historical research and on natural resource inventories. As research is expanded in the future, management zone boundaries may change to reflect new understanding about the site. Within each type of zone, general characteristics are similar, although specific boundaries and management prescriptions may vary by alternative.

At Green Spring, three types of management zones have been determined to be appropriate, although the delineation of these zones varies with each alternative.

- **Interpretive Focus Zone** - This zone typically includes areas where cultural resources are concentrated and where the visitor experience will be characterized by interactive learning about the site's cultural history. This zone is typically the focus for site visitors, with a high degree of visitor interaction. In each alternative, the interpretive focus zone includes the core archeological area of the manor and its associated buildings and landscape. The zone expands in Alternative C to include a much larger area, where plantation field patterns and other plantation uses are demonstrated. In this zone, natural resources will be managed to accommodate visitor use while protecting species and their habitat.
- **Conservation Management Zone** - This zone includes areas where natural resources require careful management to protect fragile ecological systems and sensitive species habitat. Visitor use will be closely controlled, kept to a minimum, or avoided altogether, if necessary. When visitor use does occur, as determined necessary to support the interpretive concept, it will be carefully managed to have as little effect as possible on natural resources. The visitor experience will likely be one of tranquility and limited interaction with other visitors. Interpretation will emphasize the historic interaction of humans and the natural landscape and the challenge of balancing cultural and natural resource preservation.
- **Development and Site Services Zone** - The intent for this zone is constant across alternatives. It is characterized by the concentration of service facilities that are necessary to support visitors on the site but do not contribute to the historic scene, including vehicular access roads, parking, and visitor and staff rest rooms. The extent of these elements varies among alternatives according to anticipated visitor use. In each alternative, this zone is carefully located in areas with less significant cultural and natural resources and is adjacent to, but visually screened from, interpretive focus zones.

Specific management zone boundary differences among alternatives are dictated by distinctions in interpretive concept and differences in intended visitor use and experience.

In each action alternative in this chapter, management prescriptions that apply to the entire site (site-wide) are described first, followed by management prescriptions for each zone.

2.3 *Preservation Treatments*

Preservation treatments are described in the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes.* This document describes the principles that federal and state agencies must follow when they acquire, protect, stabilize, preserve, rehabilitate, restore, or reconstruct historic buildings, sites, or landscapes.

This GMPA defines alternatives that include some of these preservation treatments. The four treatments established in the secretary's standards are summarized below.

Preservation is the process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property. Work includes stabilizing the property and focuses on the ongoing maintenance and repair of historic materials and features. Preservation retains the existing character of the resource.

Rehabilitation makes possible compatible uses for properties through repair, alterations, and additions while preserving those historic features that remain and that are significant and convey historical values. Rehabilitation starts with identifying, protecting, retaining, and preserving historic features. Changes to a property that have acquired significance in their own right are retained and preserved. Then, historic features that have been deteriorated or changed may be repaired. An example of this at Green Spring may be reclaiming a field that has become overgrown. Rehabilitation also allows replacement of missing historic features. Finally, rehabilitation permits alterations and additions for new use; an example of an alteration might be removing contemporary asphalt to reveal the trace of an historic lane.

Restoration is the process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time. This can include removing features from other periods in its history and replacement of missing features that can be substantiated by documentary and physical evidence. Care must be taken to ensure that features that are merely conjectured are not introduced, because that could create a false sense of history.

Reconstruction is defined as depicting, by means of new construction, the form, features, and details of a non-surviving site landscape, building, structure or object for the purpose of replicating its appearance at a specific period of time and in its historic location. Reconstruction is only appropriate when documentary and physical evidence is available to permit accurate reconstruction with minimal conjecture. NPS policy generally discourages reconstruction of missing features and structures.

Landscape Treatments at Green Spring

Each of Green Spring's action alternatives includes preservation of existing above ground and archeological remains. Rehabilitation and restoration would be undertaken in a limited manner and reconstruction would not be undertaken at all.

In some cases, alternatives include interpretive treatments as creative solutions where not enough is known or there are insufficient remains to preserve, rehabilitate, restore, or reconstruct a feature. These treatments are meant to supplement or enhance existing site resources so they may be better understood by visitors. Decisions on appropriate treatments will require close and creative collaboration among site designers, landscape artists, interpretive specialists, historians, archeologists, cultural landscape architects, and natural resource specialists. In all cases where alternative interpretive approaches are used, it will be clear that the treatment is intended to evoke, not recreate, the 17th century landscape.



ICON architecture, inc.

Remnants of the "jail"

2.4 *Overview of Alternatives*

Three management alternatives have been developed for the NPS property at Green Spring, representing varying levels of and approaches to site modification and interpretation, as well as different strategies relating Green Spring to other initiatives at Colonial NHP. The action alternatives (B and C) represent two different philosophies for site management; however, each of these alternatives would require fine-tuning based on results of additional research, an in-depth Cultural Landscape Study, and Phase II archeological investigations to reveal the detailed character and location of the site's resources.

Public workship on Green Spring alternatives



Modifications to the Alternatives

As a result of public and agency review of the Draft GMPA/EIS, Alternative C, the Preferred Alternative, has been revised. Alternative B remains unchanged. Results of consultations made during the public review process are included in Chapter 5: Consultation and Coordination, and written comments received on the draft plan are included and responded to in Appendix A of this document. James City County's decision to keep Centerville Road open to through traffic has resulted in the restructuring of Alternative C. A modified Stage One of Alternative C, includes improvements and management zones that closely resemble those of Alternative B, siting visitor facilities and limiting visitor use to the west side of Centerville Road. Alternative C, with modifications noted below, remains the NPS Preferred Alternative.

Since publication of the draft plan and following substantial public input and deliberation, James City County has passed resolutions (see Appendix A, section A.6.1) expressing support for opening Green Spring to the public using an incremental approach, with the understanding that Centerville Road would remain open to through traffic for the foreseeable future. Recognizing that road related safety issues would continue to affect park visitors and local residents, the James City County (JCC) Planning Commissioners and the JCC Board of Supervisors passed resolutions to work with state and county agencies to implement traffic calming measures on Centerville Road and undertake a traffic safety study for the area.

James City County decided not to recommend closing Centerville Road at the present time due in large part to area residents' concerns regarding travel delays of up to two minutes using recently constructed alternate routes. The NPS has accepted this decision for the time being but retains road closure as part of the Preferred Alternative. The NPS will look to the county and VDOT for reconsideration of road closure in the future. A reconsideration to close the road to general vehicular traffic would include the stipulation that the road remain accessible to emergency vehicles and to the public as an evacuation route during emergencies. For a more complete account of discussions, deliberations and decisions on road closure refer to Chapter 5: Consultation and Coordination and Appendix A: Public Comments and Responses of this document.

As a result of the county's current position on closure of Centerville Road through the site, NPS will pursue a revised 2-stage approach to developing and managing Green Spring in Alternative C. Simply stated, Stage One of Alternative C has been modified to be very similar to Alternative B in visitor facility and use locations while Stage Two reflects full implementation of Alternative C as envisioned in the DGMPA/EIS. Essentially, visitor access and services would be limited to the west side of Centerville Road as in Alternative B, and management zones developed for Alternative B would guide implementation and site management in the near-term as Stage One, Alternative C. This new Stage One would be augmented with programmatic elements of the original Stage One proposed in the draft plan. Stage Two of Alternative C, as proposed in the draft plan, will essentially remain Stage Two for implementation pending closure of Centerville Road to through traffic.

Management zones and facility locations described in Alternative B replace those noted in the draft plan for Stage One of Alternative C. These facilities would, however, be constructed to lay "lightly on the land," such as a temporary, more mobile archeological support facility/visitor contact station, and a parking lot that is designed to minimize the use of impervious materials and would be easier to move or remove when Stage Two is implemented. Furthermore, program development rather than facility development would be emphasized as part of the visitor experience during Stage One. The extensive scope of research and fieldwork and visitor involvement outlined in the draft plan version of Stage One, Alternative C remains a focus of the final version of Stage One.

Consequently, the archeological support facility originally proposed in Stage One on the east side of Centerville Road, is now proposed on the west side of the road in the Development and Site Services Zone to support extensive research and fieldwork. The only revision to Alternative C, Stage Two involves the disposition and treatment of Centerville Road after closure. The draft plan proposed the abandonment and complete removal of Centerville Road, whereas the final plan proposes that the road be retained, but closed to local through traffic. The road would be accessible to emergency vehicles and as a public evacuation route.

The final alternatives under consideration are as follows:

Alternative A: No Action: Alternative A represents the continuation of current management policies which keep the site closed to visitors, with no visitor services or interpretation and minimal maintenance of open fields. This approach would have the result of discouraging public use and understanding of Green Spring, indirectly protecting the site's archeological and sensitive natural resources from curiosity seekers and damage. This alternative would make no changes or improvements at Green Spring, and consequently fails to meet park goals.

Alternative B: Core Site Improvements and Interpretation- In this alternative, currently identified core archeological features, including the manor site, spring, "jail," and terraces, are the basis for the interpretation of Governor Berkeley and his life and interests at Green Spring. Operations and interventions in the landscape are modest, supporting a low intensity of visitation and visitor use at the site. Alternative B would be constrained by the assumption that Route 614, Centerville Road, remains open to general-purpose traffic, continuing to split the site's eastern and western sides. Accordingly, this approach would limit site improvements and interpretation to a core archeological area of interest on the western portion of the site. Consequently, this alternative involves less manipulation of the natural environment than in Alternative C. Limited Phase II archeology would be undertaken to meet resource preservation requirements. Modest visitor comfort facilities and self-guided interpretation would be provided, commensurate with anticipated levels of visitation. This alternative constitutes the minimum actions essential to meet the mission of stewardship of the NPS and Colonial NHP regarding preservation of Green Spring's resources, interpretation of their significance and story to the public, and associated visitor uses and services, as well as cooperation with interested partner agencies, entities, and groups.

Alternative C: (The Preferred Alternative) The Interpretive Landscape of Green Spring: In this approach, the Green Spring landscape itself provides a window into a 17th century plantation and its essential components. Based on a thorough research process during which visitors are invited to join archeologists and scholars in their historical discovery, the site would ultimately be managed to evoke, without re-creating, a landscape that is reminiscent of Governor Berkeley's innovative early southern plantation and the beginnings of large-scale agriculture, horticulture, and pre-industrial manufacturing in Virginia, the south, and the nation. While the manor would not be reconstructed, its mass and scale would be represented to convey the power of the residence of the royal governor. There would be a higher degree of intervention in the landscape than in Alternative B, based on the results of archeological and cultural landscape assessments that focus on the spatial organization and physical resources of the site. Visitors would be encouraged to directly explore the landscape's complexities, discovering man-made and natural features that make it unique and understanding how natural resources and systems likely influenced Berkeley's use of the site. An incremental approach to site development and management, relying on the findings of archeological and historical research, would allow for the selective reintroduction of known elements of the 17th century Tidewater plantation landscape. This alternative would require significant commitments to make archeological work visible on-site and to incorporate these activities into broader public educational programs, complementing efforts underway on Jamestown Island. These commitments include temporary archeological enclosures for protection and visitor service during the process of excavation and a support facility for archeologists. Consistent with this interpretive approach to overall site improvement, significant levels of visitation would be anticipated, requiring a visitor contact station and appropriate visitor services.

Alternative C would be developed in two stages, extensive research and fieldwork (prior to closure of Centerville Road) and landscape treatment upon completion of studies and closure of Centerville Road. Facility locations and management zones for Stage One closely resemble those described and illustrated for Alternative B (see Figure s 11 and 13). The archeological support facility required for Stage One of development would be sited to minimize environmental impacts and be accessible to the public on the west side of Centerville Road. During Stage Two, permanent visitor contact facilities would be relocated to an unobtrusive area on the east side of Centerville Road so that visitors could experience a visually unified setting. This approach would imply cooperation with local officials to reduce and slow through traffic on Centerville Road during Stage One and, ultimately, close Centerville Road to general through-traffic, which detracts from the safety and quality of the environment, and is inconsistent with the landscape character implicit to this alternative.

Other Alternatives Considered

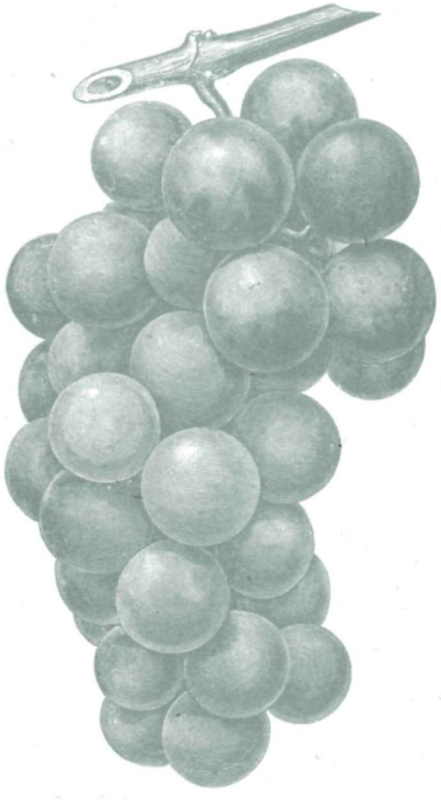
Other alternatives were considered and reviewed with the public in workshops during the planning process. These alternatives included an earlier version of Alternative C and an alternative called "Green Spring Revealed," Alternative D. The basic concept for both versions of Alternative C is the same. The current version, also the preferred alternative, comprises the earlier draft with some elements of Alternative D incorporated. Alternative D is summarized below and described in more detail in Appendix 3 of the DGMPA/EIS. Alternative D describes an approach to managing and interpreting the site resources as they have evolved over time, juxtaposing the past with the present, rather than re-establishing a 17th century setting. The elements of Alternative D that were incorporated into Alternative C include emphasis on interpretation of on-going archeological work and a stronger emphasis on conserving and interpreting the natural values of the site.

Alternative D: Green Spring Revealed:
This open-ended concept recognized that much remains unknown about the site and deferred conclusions on permanent facility and program development. A feature of Alternative D was to take advantage of the developmental necessity of extensive research by encouraging visitors to become involved in understanding and exploring information about the site and coming to their own conclusions. The evolution and ultimate management of the site would respond to what is found, and a series of interim improvements would be made to facilitate public use and to make the art and science of archeology engaging. This concept was conservative in its approach to resource management, yet imaginative in its approach to research-based planning and interpretation. Final planning for the development of permanent site facilities and programs would take place only after sufficient research, field investigation, and analysis has been completed. Even then, however, a quality of mystery would be maintained at the site and the visitor experience would remain one of discovery and deduction.

As ultimately developed in Alternative D, Green Spring would be interpreted as an evolved site. Layers of the past and the present would remain and be presented in juxtaposition; a landscape that has been "recycled" by its various owners and shaped by dramatic events through history. Visitors would be prompted to interpret cues from the landscape, connecting the man-made and natural features. Concurrent interpretation of the site's history and its natural environment would include the "rise and fall" of human use here, as well as the fragility of the cultural and natural resources.

Permanent site development for visitor use would be minimal during the probable 10-20 year period of necessary research, and would initially be similar in extent to that proposed in Alternative B. Yet in this alternative, visitation would be expected to be similar to alternative C (as revised), given that the visitor experience would emphasize a type of discovery and participation that is uncommon in similar historic sites.

Access to the site would need to be carefully managed and controlled while archeological exploration is underway. NPS would request that James City County and VDOT close Centerville Road to traffic, initially to help secure the site, and ultimately, to enable visitor appreciation and use of this national historic site with safety and minimum contemporary intrusion.



2.5 Alternative A: No Action (Description of Existing Conditions & Management Practices)

Alternative A assumes the continuation of current management practices at Green Spring with no substantive change in direction or resource investments (see Figure 8). This status quo alternative is required by the National Environmental Policy Act and provides a baseline for comparing the impacts of other alternatives. Currently, the Green Spring site is managed to discourage visitation and use; the existing resource areas are unmarked; no visitor information or facilities are provided; and vegetation is minimally maintained as grassland fields and wooded areas.

In the past, these management practices have been necessitated by the scarcity of operational resources for this site and have recognized that archeological artifacts left unmarked and inaccessible would be relatively safe from vandalism and damage from curious persons and souvenir seekers. Alternative A assumes that these practices would be continued, that the site would remain closed to visitors, and that minimal staff or capital resources would be available to Colonial NHP at Green Spring.

Despite the confirmed existence of significant archeological sites and artifacts, current conditions and natural processes have resulted in the degradation of cultural resources, which would continue. As archeological sites continue to be unmarked and unprotected, the site's historical record would remain hidden from further study and therefore potential visitors would not have access to historic details or interpreted findings about the site.

Currently, the natural landscape at the Green Spring site receives little monitoring and management. The fields are mowed semi-annually, in the spring and fall, a regime that is harmful to grassland habitat, the second priority habitat noted in the faunal survey (see Figure 5). This management practice is coupled with infrequent monitoring of natural resource conditions to assess the impact of surrounding land uses-including roadways and real estate development-on the site's sensitive ecological areas. Consequently, shifts have occurred in the abundance and diversity of plant and animal species.



ICON architecture, inc.

Remnants of the "orangerie"

Table 2: Summary of Elements of Alternative A: No Action

Mission Goal Category	Current and Future Management Direction
Resource Management	• Existing archeological collections continue to be housed in secure facilities at Jamestown Island and preserved in good condition. • Site resource maintenance is minimal. Natural processes continue to act upon plant and animal life and to degrade aboveground cultural resources. • Archeological sites are protected only by the site's overgrowth and by a volunteer park watch program. • Archeological resources remain off-limits to the public and are minimally studied and monitored by professional historians, archeologists and other researchers. The historical record for the site remains largely hidden. • Natural resources are not managed to maintain biological diversity or monitored to assess impacts of surrounding land use change and traffic on Route 614. The wooded landscape is allowed to naturally evolve. The field-mowing regime is inconsistent with protecting important grassland habitat. • There are no interventions in the natural landscape or natural processes to increase visitor understanding and appreciation of the site.
Interpretation and Visitor Experience	• Visitors to Colonial NHP are offered little or no information about Green Spring and its importance. • The site's historic linkage to Jamestown Island, via the historic connector road, is not readily visible. • No on-site interpretation is provided (limited information is available at Jamestown Island).
Visitor Use and Park Facilities	• Uninvited and inappropriate use is monitored by park watch volunteers and reported to park security but may go unnoticed. • Speeding traffic is a hazard to pedestrians, bicycles and other motorized vehicles and is audible throughout the site. • No visitor facilities are provided on the site and use by the public is prohibited except with special permission.
Partnerships and Cooperative Actions	• Green Spring is not linked to other Colonial NHP units. • NPS engages in ad hoc consultation with adjacent landowners.

Figure 8

Alternative A
No Action



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features.

0' 800'

approximate scale

- Existing Woods
- Site of Berkeley Manor and Related Landscape Features
- Existing Grassland Field Habitat
- Existing Route 614
- Mowed Non-Native Grasses

Note: No on-site services or interpretation

2.6 Management Prescriptions Common to Each Action Alternative

The management prescriptions that are common to each action alternative are a foundation from which Alternatives B and C are developed. Alternatives B and C then include additional actions, most of which represent different thematic approaches to Green Spring's interpretation. The rate and order of implementation of specific actions in any of the alternatives will depend upon the availability of funding and management priorities in future years. The management prescriptions included in this section and under Alternatives B and C represent the broad outlines of the proposed future efforts. The actions listed are representative, and do not necessarily designate the specific actions that will be undertaken over the near term or the order in which they will be taken. Table 3 presents a list of these common management prescriptions, along with examples of actions which may be implied by each.

View looking north across Green Spring site



Table 3: Management Prescriptions Common to Each Action Alternative

Mission Goal Category/ *Management Zone*	Common Management Prescriptions	Examples of Appropriate Actions that May Result from Management Prescriptions
Resource Management *Site-wide*	New archeological artifacts are stored or displayed in secured facilities and preserved in good condition.	• Identify or construct appropriate off-site or on-site storage facilities. • Provide curatorial and related care so that artifacts are protected and catalogued through resource preservation experts.
	Site resources are managed and maintained to support the NPS mission. Resources are modified only for essential visitor and park operations needs, in a way that is sensitive to the natural and cultural environment. Management decisions are based on adequate scholarly and scientific information and are consistent with applicable policies and regulations.	• Prepare cultural landscape reports, resource studies, inventories, surveys, implementation plans, and other work prior to rehabilitation or preservation actions. • Conduct additional hydrogeologic studies to inform understanding of key natural features, their current condition, and requirements for their protection. • Avoid compaction or removal of wetland microhabitats to the extent possible.
	Additional archeological investigation, cultural landscape research, and other studies of site resources, including the site of the manor and areas of cultivation during the period of significance, inform all preservation efforts. Special attention is given to evidence of American Indian or African-American historical presence on the site.	• Conduct investigative Phase II archeology in warranted areas to identify and ascertain the scope, scale, and significance of on-site archeological resources. • Determine appropriate research sequence, identifying highest and lowest priority areas of study. • Refine management actions based on Phase II archeological findings. • Develop specific strategies for resource preservation and interpretation. • Provide appropriate site protection for areas of ongoing excavation.
	Sensitive habitats associated with federally or state listed rare, threatened, or endangered species are managed to preserve the viability of the species population.	• Monitor, document, and protect critical habitat areas on a regular basis. • Conduct archeological research in or near sensitive habitats in a minimally invasive manner. • Conduct proactive management to enhance habitat of listed species.
*Conservation Management Zone**	Natural resources are managed and monitored to maintain biological diversity and to avoid adverse environmental impacts, while protecting the quality and character of the park's cultural resources in compliance with NPS standards and regional compacts on the Chesapeake Bay ecosystem.	• Document existing conditions and changes over time. • Determine thresholds for action. • Design natural resource management strategies that comply with the goals of the Chesapeake Bay Program. • Use native species for new plantings to support habitat restoration. • Maintain native grassland and shrub habitat to support a unique breeding community for birds and other species, mowing or bush-hogging once every two to three years. • Preserve scrub/shrub forested wetlands as a unique vegetation community for amphibians and mammals.

Mission Goal Category/ *Management Zone*	Common Management Prescriptions	Examples of Appropriate Actions that May Result from Management Prescriptions
*Interpretive Focus Zone**	Cultural resources, including landscapes, archeological sites, and collections, are stabilized, preserved and maintained. Preservation treatments are consistent with the approach to site management and interpretation.	• Introduce vegetation that is exotic only if warranted by research and where known to be non-invasive. • Provide routine maintenance, implement preservation actions, and repair, restore, or stabilize cultural and natural landscape features. • Use appropriate technologies to conserve collections. • Protect sites from vandalism.
*Development and Site Services Zone**	Sustainable design and construction methods, techniques and materials are used. Parking and site vehicular access are limited to these areas, and buffers are developed for primary archeological or natural resource areas to protect resources from possible damage or deterioration and to maintain the tranquility of the remainder of the site's landscape.	• Design stormwater drainage systems for roads and parking to minimize surface runoff and soil erosion through use of vegetated swales, gradual grading, and/or pervious surface materials. • Determine minimum buffer width and treatment. • Plant trees and shrubs to limit visual and physical access from interpretive zone to parking and other vehicular areas. • Locate facilities to take advantage of existing vegetation screening. • Install physical barriers to control visitor movement and access so that resources are protected and appropriate use levels are ensured.
Interpretation and Visitor Experience		
Colonial NHP-wide	Visitors traveling between Jamestown and Green Spring travel an easily found and clearly marked scenic route.	• Encourage and provide technical assistance to James City County and VDOT to improve the alignment of Greensprings Road, the modern route and Scenic Byway connecting Green Spring and Jamestown, on both sides of the Route 31 intersection. • Protect or improve the scenic quality of Greensprings Road and the surrounding lands-including but not limited to lands adjacent to site entrance-through partnerships between NPS, the county and other groups. • Indicate the route between Jamestown and Green Spring with distinct wayfinding and directional signage.
	Visitors to Colonial NHP's Jamestown Island unit understand Berkeley and Green Spring's role in and relationship to the larger story of Jamestown and early Colonial settlement. Jamestown visitors are able to make informed decisions about how they should experience and learn about the Green Spring site.	• Reinforce programmatic and physical linkages to Jamestown Island and other Colonial NHP resources. • Provide information on interpretive activities and programming at Green Spring to Colonial NHP's Jamestown Island visitors. • Develop Internet resources on Green Spring visitor trip planning.

Mission Goal Category/ *Management Zone*	Common Management Prescriptions	Examples of Appropriate Actions that May Result from Management Prescriptions
Site-wide	Green Spring's interpretive approach offers visitors an experience that is distinct from that offered by other regional historic attractions.	• Coordinate programming with managers of all regional historic attractions. • Encourage park visitors to visit related historic sites and districts within James City, Charles, and Surrey Counties and the City of Williamsburg.
	Visitors to the site directly experience sites and settings that increase their appreciation and understanding of Governor Berkeley, his role in the evolution of the landscape of the Virginia Colony, and key features of the Green Spring site.	• Develop an interpretive and educational approach based on scholarly research and additional archeological investigation. • Mark key features of archeological remains to indicate the shape or extent of their former structure. • Provide wayside exhibits that explain former uses and remaining resources.
*Interpretive Focus Zone**	Visitors experience a limited degree of tranquility and quiet with a high degree of social interaction and high probability of encountering other visitors.	• Concentrate visitor improvements around cultural resources without adversely impacting the resources. • Offer tours and program events for groups and individuals with diverse interests.
Visitor Use and Park Facilities *Colonial NHP-wide*	Visitors are encouraged to travel to Green Spring on bicycles, and the site is connected to Jamestown Island and planned regional bikeways.	• Participate in regional bikeway development efforts between NPS, James City County and the state so that routes are well maintained and marked with directional signage. • Inform visitors to Colonial NHP units about bike routes. • Coordinate efforts between NPS and area business owners to encourage location of bicycle rental and support facilities at or between regional historic attractions.
*Interpretive Focus Zone**	Paths, waysides, and other pedestrian and interpretive improvements are designed and located to be compatible with the overall preservation and interpretive concept of the site and may be expanded over time as warranted.	• Design and locate planned improvements so that they comply with the park's mission. • Create or relocate interpretive facilities as determined appropriate by ongoing archeological research. • Design and locate low impact paths to direct visitors to and between key interpretive features. Primary paths will meet A.D.A. standards.
*Development and Site Services Zone**	Visitor comfort facilities, vehicular access, parking, and key services are limited to areas where they pose minimal conflict with natural and cultural resources.	• Locate visitor facilities in areas that physically buffer historic structures and sites. • Buffer interpretive areas from parking lots through the use of vegetative features such as woods.

Mission Goal Category/ *Management Zone*	Common Management Prescriptions	Examples of Appropriate Actions that May Result from Management Prescriptions
Partnerships and Cooperative Actions		
Site-wide	Planning and management of Green Spring's resources is integrated with initiatives for other Colonial NHP units, including cooperative efforts with entities already engaged in expanded learning about the park's historical themes and archeology.	• Maintain liaison between park managers and Colonial Williamsburg, APVA, local research institutions and other entities active in archeology and related scholarship.
	Existing park partnerships are maintained and strengthened, and new partnerships with public and private entities are sought in order to expand NPS ability to protect park resources and provide high quality visitor interpretation and experiences.	• Expand and extend services for Green Spring through NPS coordination with volunteer groups. • Develop volunteer programs that assist with park maintenance, resource protection, and interpretation and visitor services. • Enlist major partners and donors to help fund implementation and operations at Green Spring. • Identify opportunities for partnerships with public education agencies and other historic sites. These partnerships may involve coordinating visiting school groups or providing supplemental educational materials. • Invite interest groups such as the Friends of Green Spring to assist the NPS in identifying financial targets, timelines, priorities, action agendas, and improvement programs for the park.
	NPS consults with local government and private landowners to address and influence planning and development initiatives that have the potential to affect Green Spring and its resources, including the use of adjacent properties and regional linkages.	• Send NPS representatives to local planning commission meetings. • Provide the county with suggestions from NPS regarding land development proposals that impact Green Spring and related concerns. • Encourage and provide technical assistance for the conservation and interpretation of resources related to Green Spring on adjacent and nearby properties when possible. • Consider opportunities to conserve or protect parcels that were once part of Governor Berkeley's holdings. It is not the intent of the National Park Service to purchase additional land, however, if the opportunity to acquire land through donation arises, the NPS will consider accepting parcels based on the NPS criteria.
	NPS coordinates archeological and interpretive activities at Green Spring with investments and initiatives planned at Jamestown Island in cooperation with other entities as part of the 400th anniversary celebration in 2007.	

*Boundary of zones varies with each action alternative; however, management prescriptions apply to the entirety of the zone for each alternative.

2.7 Alternative B: Core Site Improvements and Interpretation

Alternative B incorporates the least costly set of management prescriptions that respond to the park's mission goals. In Alternative B, currently identified core archeological features, including the manor site, spring, "jail," terraces and historical entry road trace would be the basis for the interpretation of Governor Berkeley and his life and interests at Green Spring (see Figure 9 & Figure 10). Operations and interventions in the landscape would be minimal, supporting a low intensity of visitation, and focusing visitor use in those areas where these resources are concentrated. Site improvements, interpretation and public access would be confined to the area west of Route 614, which would stay open to general traffic. Key elements of Alternative B are explained below.

2.7.1 Resource Management

The overall preservation treatment of this alternative as defined by the Secretary's Standards (see Section 2.3) would be *preservation.* This alternative does not call for the alteration or restoration of any historic resources, or the addition of interpretive landscape features.

Based upon research and archeological studies noted previously, the most significant archeological resources would be identified and explored. The first priority for such investigations would be within the core archeological area of this alternative, the interpretive focus zone, emphasizing resources at or near Berkeley's manor. This work would shed further light on the site's story and enable design of interpretive media and visitor facility improvements, informed by further research on Berkeley and on the motivations and circumstances leading to his decisions on Green Spring site selection and development. Artifacts discovered during the work would be removed to central and secure facilities on Jamestown Island. Additional areas of importance may be investigated over time beyond this core archeological area, but probably not in the early stages of site development and improvement. Within areas of archeological investigation, particular diligence would be taken to develop additional knowledge about former buildings, site use, and occupancy. The exact extent of such areas would be subject to modification, based on initial studies. These areas would be improved to enable appropriate visitor access, both during and after archeological work. Very low priority would be given to exploration of archeological resources outside the core archeological area.

Most of the site is designated as a Conservation Management Zone. The natural environment would be maintained and managed to preserve the approximate current configuration of open and wooded areas, with selective further removal of trees and shrubs as required to accomplish archeological studies and to guard against damage to archeological resources. The cleared areas to the west of Route 614 that surround and define the core archeological area would be regularly mown to improve visitor accessibility in these areas. East of Route 614, the natural landscape would be managed as a native grassland and shrub meadow, discouraging visitor use and providing wildlife habitat. Trees would be planted as needed to achieve a continuous wooded edge along the eastern border of the property, screening future adjacent development. Existing wooded areas would be managed to retain their natural cover and associated flora and fauna.

The Development and Site Services Zone is designated for site access, parking, and support uses and located out of view from Interpretive Focus Zone and buffered to sensitive natural resource areas.

2.7.2 Interpretation and Visitor Experience

In this alternative, a full overview of Green Spring would be incorporated into the interpretation offered at Jamestown. On-site interpretation would be largely self-guided, through wayside exhibits and/or a tour map that might highlight the shape and purpose of the site's remains and their significance in the context of the entire story of Colonial NHP. A small on-site open exhibit shelter would be provided, located between the site entry parking lot and the core archeological area. Within the core archeological area, the emphasis of interpretation would be on the building remains and sites directly associated with Berkeley, including the jail, orangerie wall, and surrounding settings. The natural characteristics of the site and its evolution since Berkeley's time would not be emphasized. Following completion of archeological work, remaining elements and sites would be marked in the landscape, indicating features such as building corners, walls, and/or major elements to enable visitors to appreciate their scale and relationships. Landscape elements of the site, such as road traces and irrigation ditches in the vicinity of the core archeological area, would be interpreted in a way that gives a sense of the spaces and uses without constructing or recreating the elements themselves.

2.7.3 Visitor Use and Park Facilities

Route 614 would remain open to general vehicular and bicycle traffic and would provide the primary means of access to the site, but NPS would encourage adoption of traffic calming measures by the county to reduce hazards and to mitigate the noise and intrusion caused by speeding trucks and other vehicles. Because of such hazards, NPS would not develop the portion of the site that lies east of Rt. 614, and would discourage public use there. Improvements would be limited to those essential to providing basic services for an expected small number of visitors. A small parking lot, with a bicycle stand, would be located in the northerly clearing, west of Route 614, shielded from view of the core archeological area by an existing stand of trees. South of the parking lot, a small exhibit shelter and day use comfort facilities would be provided en route to the core archeological area. A walking trail on the site would connect the site features between the parking lot and the core archeological area.

Alternative B calls for a minimal increase in staffing to provide interpretive programs on weekends in the spring and fall and five days per week during the summer. Visitors to the site would be self-guided most of the time. Additional assistance to the Jamestown Curator and park Archeologist on short-term curatorial and archeological projects would be provided through seasonal positions. An additional law enforcement position would be required to provide adequate security for the opened site. An increase in maintenance staff would be needed to maintain the facilities.

2.7.4 Partnerships and Cooperative Actions

NPS would seek partnerships with public and private entities for security, maintenance, fundraising, interpretation, education, and research.

Table 4: Conditions to be Attained as a Result of Alternative B

(In addition to what follows, see Table 3: *Management Prescriptions Common to Each Action Alternative*)

Mission Goal Category/ Management Zone	Management Prescriptions, Alternative B	Examples of Appropriate Actions That May Result From Management Prescriptions
Resource Management *Conservation Management Zone**	Ecological values are primary and visitor use and park improvements ~~are excluded~~ from this area.	• Provide an irregular pattern of wooded cover to increase potential edge habitat. • Protect and monitor sensitive ecological areas to assess impacts of visitor use and traffic.
*Interpretive Focus Zone**	The landscape is managed to facilitate and concentrate visitor use in a centralized area where interpretive efforts focus on core archeological site features.	• Maintain the major features that organize the landscape-patterns of wooded land vs. open field-in their current configuration. • Mow cleared areas surrounding and defining "core" features to improve visitor accessibility. • Create a trail system with access to interpreted site features associated with the "jail," orangerie wall, and the spring.
	Archeological efforts are focused on the manor "core"; investigation seeks additional understanding of former buildings, site use, and occupancy.	• Conduct Phase II archeology where warranted.
	Treatment of archeological resources includes stabilization and intensive preservation of remaining aboveground ruins and contributing landscape features.	• Fill archeological sites after excavations and archeological research is complete.
Interpretation and Visitor Experience *Colonial NHP-wide*	Visitors are informed of the connection between Green Spring and Jamestown Island via the road that historically and currently connects the two sites.	• Interpretive signage in the core archeological area indicates the historical entry road trace.
*Interpretive Focus Zone**	Visitors appreciate the symbolic and historic importance of Berkeley and his manor, including various types of 17th century operations on site, by interacting with the building remains and sites related to Berkeley.	• Mark and interpret key building sites and archeological features to give visitors basic information about their significance, function and interrelationship. • Exclude modern interpretive structures or any physical representation of historic site features.
	Interpretive media and programming is limited and largely self-guided.	• Offer minimal personal interpretive services from NPS staff to visitors.
	Secondary themes and events are not interpreted.	• Interpret on-site history with a focus on Berkeley's tenure and role at Green Spring and the colony.
*Conservation Management Zone**	Visitors are discouraged from entering or using natural areas of the site. The Conservation Management Zone provides a visual buffer to adjacent lands.	• Resources are not interpreted in this zone. • Plant trees as needed to achieve a continuous wooded edge along the eastern border of the property, screening future development. (Note that most noise is generated from Route 614 through the site.)

Mission Goal Category/ Management Zone	Management Prescriptions, Alternative B	Examples of Appropriate Actions That May Result From Management Prescriptions
Visitor Use and Park Facilities *Site-wide*	Visitor access to Green Spring is primarily from the south, with entrance from the north discouraged.	• Direct visitors to enter the site from Route 614 (Centerville Road) and Route 5. • Design southern entrance as main gateway to site. • Improve the intersection of Route 5 and Route 614 and the entrance to Green Spring to provide safe, efficient access for bikes and autos and to minimize traffic congestion through collaboration between NPS, James City County and VDOT officials. • Limit identifying signage at intersection of Route 614 and Alternate Route 5 to the north.
	Access to the site is not controlled. Park watch volunteers continue to monitor the park.	• Use signs to inform people of park watch program. • Post park hours in parking area.
	Access and circulation are designed and managed to mitigate visitor/vehicular conflicts and minimize impacts on site resources.	• Locate all site and visitor facilities on the west side of Route 614. • Encourage VDOT and the county to institute traffic calming measures on Route 614 to slow traffic and improve safe site ingress/egress. • NPS stays informed and involved in traffic and transportation planning in the county and region. • Maintain existing woodland buffer between the site and adjacent land uses through cooperation between NPS and private property owners.
*Conservation Management Zone**	Visitors are discouraged from using wooded and grassland parts of the site, to avoid impact on natural resources or systems.	• Provide no defined or improved paths or archeological resource interpretation within this zone.
*Interpretive Focus Zone**	Visitor improvements include minimal, non-intrusive wayside exhibits and walking paths.	• Provide pedestrian access to major historic features that is compatible with preservation and interpretive concepts. • Design and locate low impact paths to direct visitors to and between key interpretive features. Primary paths will meet A.D.A. standards.
*Development and Site Services Zone**	Minimal visitor facilities are provided for site orientation and visitor comfort.	• Cluster visitor service facilities for efficiency and to reduce impacts on cultural and natural resources, and locate these sites near, but screened from, the core archeological area and open field west of Route 614. • Introduce visitors to site resources through a small-scale, open exhibit pavilion clustered with visitor support services. • Provide minimal staff services to support the visitor contact station. • Design the parking lot to minimize impervious surface.
Partnerships and Cooperative Actions	See Table 3: ***Management Prescriptions Common to Each Action Alternative***	

*Boundary of zones varies with each action alternative; however, management prescriptions apply to the entirety of the zone for each alternative.

Figures 9 and 10 represent a conceptual approach to the treatment of this site under Alternative B. These drawings are diagrams and do not necessarily indicate actual size or location of site features and proposed facilities.

Figure 9

Alternative B
Core Site Improvements and Interpretation



Green Spring

Colonial National Historical Park

National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features and proposed facilities.

0' 800'

approximate scale

- Woods
- Regenerating Woodland
- Open Field Setting
- Grassland Field Habitat
- Core Archeological Area (foundations, ruins, terraces, and other landscape features)
- Basic Visitor Support Facility
- Interpretive Path (Locations to be determined)
- Vehicular Access and Parking
- Existing Route 614

Figure 10

Management Zones - Alternative B
Core Site Improvements and Interpretation



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features and proposed facilities.

0' 800'
approximate scale

Conservation Management Zone

Interpretive Focus Zone

Development and Site Services Zone

2.8 Alternative C (The Preferred Alternative): The Interpretive Landscape of Green Spring

2

This alternative focuses on communicating aspects of the history and presentation of a 17th century southern plantation landscape. The landscape itself, its natural and cultural features, as well as vignettes or demonstration areas, would help tell the story of how Green Spring represents the transformation of colonial wilderness into a grand country estate. The estate served as a microcosm for experiments in economic diversity and as a social and political center befitting Berkeley's elite position as royal governor. The visitor would be engaged by the physical environment to understand Berkeley's influence, within the context of the changing economic system and turbulent politics of his time.

Ultimately, this alternative would strive to understand and physically evoke the spatial organization and uses of the 17th century plantation as the primary means to understand and portray the rich history of this site and of those who labored to create it. The desired end-state would be a rehabilitated cultural landscape - the culmination of a thorough process of archeological and historical research. Where the archeological and historical records are incomplete, the landscape would be managed as art form, with gestures that suggest the grandeur of the 17th century landscape. These gestures may include creative use of plant materials such as of native grasses, wildflowers or agricultural crops displaying masses of color, texture and pattern to broadly convey the open character surrounding the 17th century manor. The scale of the manor might be represented by simple frame or tensile structures. The original vast scale of the plantation and its operations would be conveyed through supplemental interpretive media such as the display of photographic simulations or drawings (*see Figure 2 for extent of Berkeley's original land holdings at Green Spring*).

Ongoing research on Berkeley, those who applied their labors either as indentured servants or slaves, and the physical resources of Green Spring would be critical elements of this alternative. The necessary and extensive historical research and on-site archeology would take a number of years to complete. During that time, a unique opportunity would be made available for visitors to witness and potentially participate in this process of discovery and thus learn about Berkeley and Green Spring as information emerges. Archeological and other research would focus specifically on evidence of the spatial organization of the plantation, vegetation garden features and crop patterns, the alteration and management of natural features, and the new science of the time in the service of commerce, and the early crafts industries.

Ultimately, the site would be more highly developed, both in its modifications to the landscape and the extent of visitor programs and facilities, than in Alternative B, supporting a higher level of visitation. Therefore, NPS would request that James City County and the Virginia Department of Transportation (VDOT) close Centerville Road (Route 614) to through traffic, providing a visually integrated setting, ensuring visitor and staff safety and resource security, and enabling development and visitor use of significantly more of the site than in Alternative B.

Because the research would necessarily take several years to complete and it is not known exactly how much it would reveal, this alternative is designed to engage visitors in the research and discovery process as the site evolves

over time. While the ultimate development and management of the site would respond to what is found, a number of interim and long-term site improvements have been identified. These improvements would take place in two stages.

Stage One would span the next five to ten years and would be characterized by extensive research, information gathering and fieldwork site-wide. During this stage the site would be opened to the public in a limited way and the public would be engaged in the research process on the west side of the site. Stage One would resemble Alternative B in location of facilities which include construction of the archeological support facility/visitor contact station, some parking, some temporary trails, outdoor exhibits, temporary covers for archeological investigation areas, comfort facilities, traffic calming measures to slow and reduce traffic on Centerville Road, and treatment of the manor site as permitted by research. All facilities and visitor access would be limited to the west side of Centerville Road. Programmatic elements of Stage One would include site-wide research and fieldwork, visitor orientation, visitor activities and special programs, and site security (*see Figure 11 for concept diagram and Table 5 for management prescriptions*). Any evidence of American Indian or African-American historical presence on-site discovered in archeological research during this phase would be noted and incorporated into the site's interpretation.

Stage Two is designed to demonstrate what the site might look like after Stage One research is complete. The desired end state of Stage Two, a preserved, partially restored, and interpreted landscape, would be shaped by the findings of Stage One. Ultimately, Stage Two would include closing Centerville Road to through traffic, treatment of the landscape, moving the location of visitor services to the east side of Centerville Road, permanent trails and parking, permanent site exhibits, full staffing, and a supplemental support facility at the north end of the site, if needed at a future date. Details of Alternative C are presented below (*see Figures 11, 12, 13 & 14*).

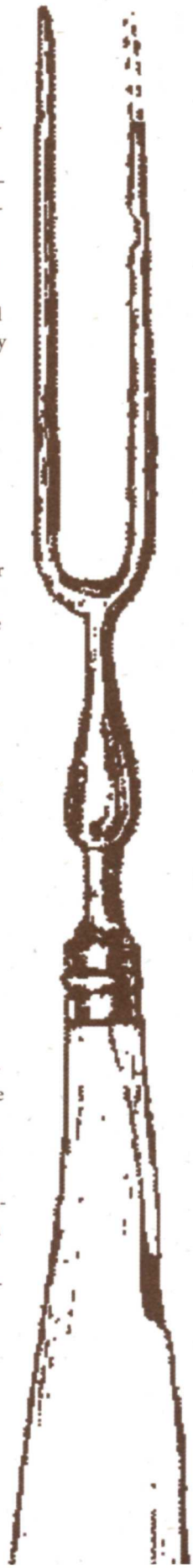
2.8.1 *Resource Management*

The overall preservation treatment of this alternative, as defined by the Secretary's Standards (*see Section 2.3*), would be *rehabilitation*, although restoration may be applied to selected landscape features as supported by research. Beyond the defined landscape treatments of the Secretary's Standards, an additional treatment approach, that of interpretive demonstration, described above, would include more abstract interpretive gestures.

While the interpretive emphasis would be on the 17th century, in response to the site's primary significance, it is not intended to obscure or cause any adverse effect to earlier or later period archeological resources. During the course of archeological inventory, researchers would likely find further evidence of such non-17th century resources as the Ludwell/Lee terraces or American Indian artifacts. These resources would be preserved and investigated over time, but accorded lower priority in terms of interpretation.

Alternative C involves significantly more alteration of the natural environment for interpretive and visitor support uses than does Alternative B. Portions of the landscape at Green Spring would be managed to evoke, but not reconstruct, an innovative early southern plantation, communicating its significance as the place where Governor Berkeley developed an agricultural counterpoint to the urban life on Jamestown Island. Landscape interventions would be based upon the results of historical, archeological, cultural landscape and natural resource research. Such research would reveal the physical resources and former uses on the site and allow for the selective restoration of 17th century plantation landscape features, where known, that do not require the removal of significant later period features. Alternative C acknowledges that current and, most likely, future knowledge of Green Spring's 17th century landscape is limited at best and that it is impossible to reconstruct it. Ultimate decisions about the treatment and configuration of the landscape will be based upon research and will avoid adverse impacts to other natural and cultural resources.

Based upon the archeological studies noted previously, significant archeological resources would be identified and explored. In addition to explorations in the vicinity of the manor, Alternative C would place great emphasis on understanding the agricultural, horticultural, and manufacturing history of the former plantation. The research-which might include phytolith analysis and soils testing to identify plant remains and other forms of landscape archeology-would encompass both formal

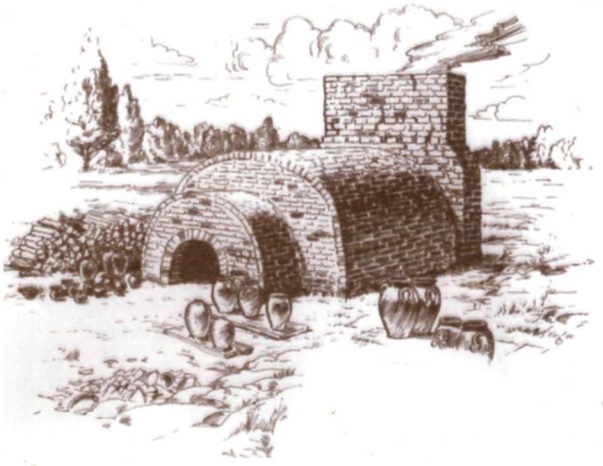


plantings and garden areas that adjoined and marked the approach to the manor, as well as the types and locations of agricultural crops which were cultivated on the Green Spring estate during Berkeley's tenure. As archeology brings new information to light, plantings typical of the site during the 17th century could be reintroduced if locations are identified or otherwise displayed in demonstration gardens, while native grasses, wildflowers, or small agricultural fields might be planted to interpret the scale and configuration of the plantation's former landscape. The research on Berkeley's development and use of the land would go beyond specific crops to ascertain principles of irrigation management and use of the land, with further investigation of the drainage ditch traces which have emerged from the archeological studies to date. The archeological activities would be designed to respond to the types and concentrations of resources identified in Phase I and future Phase II studies. Care would be taken in the conduct of the archeological investigations to minimize impacts on the forested wetlands of the site through the application of minimum intervention standards.

Within many of the active excavation areas, temporary shelters could be erected to protect resources under study, to mark the presence of key resources related to site themes in the landscape, and to serve as interim exhibit spaces where visitors can engage those who are actively seeking knowledge about Green Spring. These shelters may incorporate contemporary technologies, which could remain or be relocated to permanent display areas after the exploratory work is complete.

Under this alternative, NPS could cooperate with academic institutions and established volunteer organizations that sponsor archeological field schools. Participants would be required to complete several days of classroom training before they would be allowed to participate in a dig, which would be carefully supervised by professional archeologists.

In the immediate vicinity of the manor site, the site of the forecourt and garden area south of the manor would be selectively cleared and delineated visually to reflect the original grandeur and scale of the formal entryway. The historic entry road trace, from present-day Route 5 to the manor site, would be carefully cleared, based upon the recommendations of a Cultural Landscape Report and study of wetlands, to indicate the 17th century design and to emphasize the linkage and orientation of Green Spring to Jamestown. The trace would not, however, provide access to the site from Route 5. The area around the manor and "jail" sites would remain open, as would the



Conjectural reconstruction of pottery kiln at Green Spring, from Louis Caywood's 1955 archeological excavation.

fields to the east of 614. In addition, woods would be selectively removed at the center of the site and along some of the inner woodland edges (in non-wetland areas) to create a large open field setting that recalls the spatial relationship between Berkeley's house and its cultivated surrounding. These fields would be mown frequently in some areas and managed as grassland or interpretive plantings in other areas. The edges where the open space meets the forest would be irregular to provide more edge wildlife habitat. Remaining wooded areas would be managed to retain their natural cover and associated flora and fauna and maintain a dense site perimeter to screen off-site development.

Grassland areas would be maintained to maximize wildlife habitat. These areas would only be mowed or bush-hogged once every two to three years in mid to late summer, to allow the successful rearing of young birds and provide fall/winter cover for animals.

Consistent with this approach, archeological sites within wooded and grassland areas, identified in the Phase I archeological survey, might be further explored during Stage One site development. If it was determined that such sites were significant, relevant to primary themes, safely accessible, and able to be protected, they might be modified during Stage Two. Modification of these sites would be conservative to minimize impacts to the natural environment and might include marking, clearing of vegetation, provision of visitor access, and other interpretive treatments consistent with the overall site treatment. In these areas, protection and preservation would be the

highest priority. Pedestrian trails might be located in areas with interpretive value if they would not jeopardize cultural or natural resources. These trails could include a boardwalk path through wetlands adjacent to the route of the historical entry road and links to other sites within the woodlands. Primary trails to main resources would meet ADA standards. Trees would be planted as needed to achieve a continuous wooded edge along the eastern border of the property, screening future adjacent development. Adjacent property owners would be encouraged to provide additional wooded buffers along these areas.

During Stage One, all trails on site would be designed to be temporary and reversible and would avoid environmentally sensitive areas. A main trail would lead visitors from the parking area to the manor site. Additional temporary trails to other parts of the site would be developed to areas of archeological activity and other points of interest on the west side of Centerville Road as soon as permitted by adequate research, planning, environmental considerations, and funding. Appropriate long-term trail location would be determined during Stage Two.

Development and Site Services Zones would be designated for site access, parking, and visitor support uses. They would be located so as not to intrude on primary archeological or natural resource areas. This zone would contain the archeological support facility/visitor contact station.

At the outset of Stage One, NPS would work with James City County and VDOT to achieve safer conditions on Centerville Road through the site and in the vicinity of the entrances including, but not limited to, reducing traffic volume and speeds. Prior to implementing Stage Two, Centerville Road would be closed to general through traffic. The section of the road in the northern part of the site, not needed for the entry drive, would be modified to provide a more visual continuous landscape and safe pedestrian circulation, and designed to accommodate emergency vehicles and public emergency evacuation. Treatment of the roadway would also consider whether it is determined to be a significant historical feature after further research.

A site would be reserved in the northeast corner of the site for future development in support of partnership efforts, particularly those associated with the Jamestown 2007 celebration and/or involving educational and research efforts and activities. This area would remain wooded pending future demand and would be managed as part of the Conservation Management Zone until it is developed.

2.8.2 *Interpretation and Visitor Experience*

Introductory orientation to Green Spring would occur at Jamestown to help place the site within a regional context, establishing thematic links to Jamestown and other area historic sites. An overview of Berkeley's life and times would be provided at Jamestown, along with his connections to Jamestown stories and the geographic relationship of the two sites historically and today. During Stage One, visitors would receive their primary orientation to Green Spring at Jamestown. During Stage Two, a more complete orientation would be available on site. The orientation might include exhibits and written materials, an interactive website (updated regularly by archeologists and researchers) and/or a short audiovisual program in the archeological support facility/visitor contact station.

Interpretation at Green Spring would link Berkeley and his multiple 17th century roles with his creation of an innovative plantation on this site. This approach would concentrate on the aggregation of physical resources of the site and how they were shaped by the site's 17th century residents, be they government officials or laborers; the landscape itself would be the primary interpretive vehicle. The remnants of the 17th century plantation, archeological sites, architectural ruins, and landscape features would be presented as a cohesive setting to help visitors understand the unusual and experimental features of Green Spring under Berkeley's management, contrasting them with later, more typical, Virginia plantation features. Resources of the 18th and 19th centuries would be identified without detracting from an understanding of the site's primary significance as the former plantation and home of Governor Sir William Berkeley.

In the core archeological area associated with the manor site, interpretation would emphasize the scale, formality, power and prestige of the imposing hilltop residence of the royal governor. Site improvements would communicate aspects of the site's historic character and use without reintroducing actual agricultural activities or reconstructing the site's key buildings. Field patterns and relationships between structures and surrounding gardens, forests, and agricultural fields would be conveyed in a general sense. Selective reintroduction of plantings and landscape features appropriate to the 17th century, informed by archeological and historical documentation, as well as the surrounding open field patterns and re-opening of the

Governor Berkeley addressing the General Assembly prior to the outbreak of Bacon's Rebellion.



line of sight along the historical entry drive would visually reinforce this message. The scale and mass of the manor might be represented by outline frames or similar simple structures to convey its general scale, amplifying the sense of dominance over terrain and populace which Berkeley intended.

Within the central interpretive field and manor setting, visitors would be encouraged to circulate among interpretive venues, where they would learn about the history of the success or failure of Berkeley's experiments at Green Spring and their contribution to patterns of agricultural development in Virginia and the South. During Stage One these venues would explain what is known to date and describe ongoing archeological and other research and findings and would supplement orientation and direct interaction with archeologists and technicians and interpretive staff. They could be creatively designed as interactive and event-oriented archeological discovery stations. During Stage Two, the exhibits would describe Stage One findings and could be designed as low-key, unobtrusive exhibits that blend with the managed landscape setting. Interpretive paths might follow the edges of field boundaries and/or interpretive planting areas, depending on the actual layout of planting patterns.

Visitors would be encouraged to explore the site-the manor site, field settings, and other features-directly, as well as through exhibits and programs provided in the Visitor Contact Station. Visitors would learn why the site was settled and how it was used through understanding natural landforms and their subsequent alteration, appreciating the interactions between man and nature that took place during Berkeley's era. Visitors would be prompted to interpret cues from the landscape, distinguishing man-made from natural features, distinguishing 17th from 18th and 19th century features, and understanding the role of water in the site's development. For example, visitors would learn to recognize the regular patterns of irrigation ditches and tree rows that reveal man's historic presence on the site. Visitors would also understand the fragility of the site's cultural and natural resources and the importance of protecting and managing them. Interpretive walking trails linked to additional sites on the peripheries of the core archeological area would facilitate visitors' appreciation of both the natural resource values and archeological sites around the periphery.

Interpretation would also trace the mixing of different cultures-English, West Indian, and African-with historical presence on the site and how their values were expressed in the shape, design, and use of the land and structures.

2.8.3 *Visitor Use and Park Facilities*

Alternative C would ultimately require substantial improvements to provide services for visitors and ensure a safe and meaningful visitor experience. During Stage One, temporary or moveable facilities would be located on the west side of Centerville Road where visitor safety and resource protection are the primary considerations in their siting. During Stage Two, facilities would be relocated, either by moving facilities or by demolishing and rebuilding facilities in a permanent location on the east side of Centerville Road where they would have less visual impact on the landscape setting.

Parking

During Stage One, some temporary parking would be built to accommodate staff and visitors and would be designed to minimize grading, disturbance, and cost. In Stage Two, the temporary parking would be removed and permanent parking would be added on the east side of Centerville Road when visitor programs and use would be better defined.

Archeological Support Facility/Visitor Contact Station

During Stage One, a combined archeological support facility and visitor contact station would be sited on the west side of Centerville Road in a location that would least impact cultural and natural resources and allow for safe visitor access. It would be designed and constructed to be flexible in its function and use, temporary or moveable for Stage Two, and lay lightly on the land. The facility would provide preliminary artifact treatment (e.g., washing or stabilization) space necessary to support site excavation. In Stage Two the facilities would be relocated to an unobtrusive area where they would not detract from the historic setting. The facility would primarily function as a visitor contact/interpretive space with some administrative and archeological workspace as warranted by ongoing work, or space to complement research activities at Jamestown. In this stage, space would be allotted for interpretive exhibits, ranger support, and such visitor facilities as rest rooms, drinking fountains, and telephones. The center could significantly supplement the interpretation provided at Jamestown Island and could be



Special tour of Green Spring, part of early public involvement

a point of departure for both self-guided and escorted tours of the site. Within such a facility, selected artifacts discovered through site archeology could be displayed as a part of the overview presentation, while the majority of artifacts would be preserved and exhibited off-site, at Jamestown. The facility would provide a controlled and secure environment. Walking paths would connect parking and visitor facilities with the interpretive areas of the site. Prior to construction of the visitor contact facility, very basic visitor comfort facilities would be provided in temporary structures.

Staffing

Alternative C also calls for more substantial staffing compared to Alternative B, including, initially, staff to support the extensive public archeology programming and to provide adequate security while archeological investigations are active. The Friends of NPS for Green Spring would supply volunteer staffing for the Visitor Contact Station. From spring through fall, the site would be staffed on a daily basis, but during winter would likely be staffed only on weekends. The archeological support facility/visitor contact station would be staffed by archeologists/technicians or park/volunteer staff during the weekdays and park/volunteer staff on weekends from the spring to fall. In winter, only rangers would staff the facility. During Stage Two, substantial staff commitments for landscape maintenance and for conducting a variety of interpretive programming and media would be necessary.

Access and Security

Access to the site would be managed with signage and NPS and volunteer staffing presence and patrols during Stage One. While the site is open, visitor access would take place through self-guided walking tours or guided ranger tours, or for special events and programs focusing specifically on archeology. Visitors would be permitted to walk unescorted only where temporary paths are located. Upon closure of Route 614 during Stage Two, access to parking would be provided from the south via Route 5 for automobiles and bicycles along the closed Route 614 right-of-way. Emergency access through Green Spring would be available to authorized emergency service vehicles and in the event of a public evacuation. The site entry at the southern end of Route 614 would be gated and closed to visitors at the end of each day. Ranger patrols and park watch programs would continue, further securing archeological sites. Locked enclosures might be used where warranted, and the archeological support facility and visitor contact station would have an intrusion alarm.

2.8.4 *Partnerships and Cooperative Actions*

Partnerships are fundamental to the successful implementation of Alternative C. On-going outreach and fundraising efforts of the Friends of the National Park Service for Green Spring, Inc. would be supported and guided by NPS and federal policy. Cooperative actions of James City County toward slowing and reducing traffic on Centerville Road, improving safety of key area intersections, and ultimately closing Centerville Road to through traffic would be encouraged and supported. New partnerships would be encouraged for archeological and historical research, agricultural interpretation and activities, interpretive and educational programs, security, local land use and transportation planning, and gardening. Types of facilities and programs which might be particularly appropriate to this option, subject to partner interests and support, might encourage agricultural experimentation and education, potentially involving field studies in association with local and regional school programs. Partnerships would also be useful to support the intensive, public-oriented archeology program, potentially including field study support programs, seasonal residences, and related temporary facilities development. Other site development and operational needs, such as security, tours and docent programs, would benefit from partner involvement as well.

Table 5: Conditions to be Attained as a Result of Alternative C, Stage One

(In addition to what follows, see Table 3: *Management Prescriptions Common to Each Action Alternative*)

Mission Goal Category /Management Zone	**Management Prescriptions, Alternative C, Stage One**	**Examples of Appropriate Actions That May Result From Management Prescriptions**
Resource Management *Site Wide*	Through historical research, archeological and cultural landscape, and natural resource studies and fieldwork efforts, NPS understands the resources in the vicinity of the manor core and its associated cultural landscape. Investigation seeks additional knowledge and understanding of the spatial organization, the pre-industrial/agricultural activities of the 17th century plantation including the new science of the time in the service of commerce, and the early crafts industries and evidence of those who applied their labors.	• Study and research former cultivation patterns at Green Spring to reveal the types and patterns of agriculture used on the site. • Determine specific 17th century plants and field shapes at Green Spring through research methods that may include phytolith analysis and soils testing. • Study site uses related to pre-industrial production and agriculture so that the understanding of Green Spring's social and economic systems is expanded. • Investigate sites inside and outside the core that may reveal evidence of Green Spring's workforce and their influence on the design and use of the land and structures. • Display and interpret selected artifacts discovered during Phase I archeological investigation temporarily within controlled on-site security facilities. Later, remove and permanently store some artifacts under secured conditions on Jamestown Island.
	A baseline of type, location and condition of site natural resources and systems information is available and management guidelines are in effect.	• Conduct wetlands survey, water resources studies, and follow - up studies on flora and fauna including management guidelines in coordination with Cultural Landscape Report.
*Conservation Management Zone**	Ecological values are primary and visitor use and park improvements have negligible impact or are excluded altogether in this area.	• Provide an irregular pattern of wooded cover to increase potential edge habitat. • Protect and monitor sensitive ecological areas to assess impacts of visitor use and traffic.
	Archeological resources are stabilization and remaining above-ground ruins and contributing landscape features are preserved.	• Develop preservation strategies for archeological resources and landscape features based on research, archeological study and cultural landscape report.
	Area is managed to protect and maintain flora, fauna, and water resources in good condition.	• Develop natural resource management plan and evaluate and regularly monitor resources conditions.
*Interpretive Focus Zone**	The landscape is managed to facilitate and concentrate visitor use in a centralized area where interpretive efforts focus on core archeological site features. Limited guided public access is available to outlying resource areas during research phase.	• Maintain the major features that organize the landscape-patterns of wooded land vs. open field-in their current configuration. • Mow cleared areas surrounding and defining "core" features to improve visitor accessibility. • Create a temporary trail system with access to interpreted site features associated with the manor, connecting key features such as archeological sites, the 'jail," orangerie wall, and the spring. • Provide guided public access (NPS personnel or trained volunteers) to outlying resource areas and archeological sites of interest during preliminary investigations. When research is concluded, sites may be stabilized and kept visible for public view.

Mission Goal Category/ *Management Zone*	Management Prescriptions, Alternative C, Stage One	Examples of Appropriate Actions That May Result From Management Prescriptions
	Archeological efforts focused on the manor "core" and seeking additional understanding of former buildings, site use, and occupancy are interpreted and made visible and accessible for public viewing.	• Conduct Phase II archeology where warranted. • Create opportunities for the public to participate in the discovery process.
Interpretation and Visitor Experience		
Colonial NHP-wide	Visitors are informed of and perceive a clear visual and physical connection between Green Spring and Jamestown Island via the road that historically and currently connects the two sites.	• Work with James City County and VDOT on means to improve visitor wayfinding through visual queues and road improvements that reinforce the route between Jamestown and Green Spring. • Install wayfinding signage along connecting roads. • Provide visitors with written and graphic materials illustrating the route of the historic and contemporary roads connecting Jamestown and Green Spring. • Interpretive signage in the core archeological area indicates the historical entry road trace on-site.
Site-wide	Visitors experience a unique, safe and pleasing environment.	• Encourage James City County and VDOT to implement traffic calming measures on Centerville Road that improve safety and reduce traffic noise. • Encourages James City County and VDOT to assess and improve safety of area intersections. • Maintain dense wooded screen around the site perimeter to screen off-site development. Seek cooperation of adjacent landowners to do the same.
*Interpretive Focus Zone**	Visitors appreciate the symbolic and historic importance of Berkeley and his manor, including various types of 17th century operations on site, by interacting with the building remains and sites related to Berkeley.	• Mark and interpret key building sites and archeological features to give visitors basic information about their significance, function and interrelationship. • Defer rehabilitation or physical representation of historic site features until substantiated by research.
	A variety of highly structured programs and events are available, and visitors are encouraged to observe and interact with temporary exhibits and researchers or other medium. These activities offer unique and changing visitor experiences, distinct from other area attractions.	• Explain and display archeological research in process, thus enabling visitors to understand the scope and type of work undertaken, while protecting artifacts and resources from damage. • Consider and develop a range of creative programs and events that would offer a unique experience, change periodically and could be as diverse as interactive computer exhibits to night tours to performance art. • Offer regular personal interpretive services to visitors by NPS staff or trained volunteers. • Develop visitor and special interest educational programs to engage interested parties in site archeology and research. Programs may include special field studies, tours, seminars, or partner arrangements.
	Secondary themes are interpreted as warranted by research.	• Interpret expanded site history but with a primary focus on Berkeley's tenure and role at Green Spring and the colony.

Mission Goal Category/ *Management Zone*	Management Prescriptions, Alternative C, Stage One	Examples of Appropriate Actions That May Result From Management Prescriptions
*Conservation Management Zone**	Visitors are prohibited from entering or using natural areas of the site without an NPS or trained volunteer guide. The Conservation Management Zone primarily functions as a resource preservation area and a visual buffer to adjacent lands.	• Resources in Conservation Management Zone are accessible and interpreted through guided programs only. • Plant trees as needed to achieve a continuous wooded edge along the eastern border of the property, screening future development. (Note that most noise is generated from Route 614 through the site.)
Visitor Use and Park Facilities *Site-wide*	Visitor access to Green Spring is primarily from the south, with entrance from the north discouraged.	• Direct visitors to enter the site from Route 614 (Centerville Road) and Route 5. • Design southern entrance as main gateway to site. • Improve the intersection of Route 5 and Route 614 and the entrance to Green Spring to provide safe, efficient access for bikes and autos and to minimize traffic congestion through collaboration between NPS, James City County and VDOT officials. • Limit identifying signage at intersection of Route 614 and Alternate Route 5 to the north.
	General access to the site is physically unrestricted and site security, therefore, is provided by alternative means.	• Take additional measures to protect sensitive archeological sites under investigation. • Increase NPS Patrols and Park Watch volunteers monitoring the park. • Use signs to inform people of NPS patrols park and watch program and consequences of trespassing. • Post park hours in parking area. • Maintain dense wooded buffer around the site perimeter to discourage uninvited use.
	Access and circulation and site improvements are designed and managed to mitigate visitor/vehicular conflicts and minimize impacts on site resources and appropriate responsible agencies take measures to provide safe ingress and egress.	• Locate all site and visitor facilities on the west side of Route 614 until Centerville Road is closed. • Encourage JCC and VDOT to institute traffic calming measures on Centerville Road to slow and reduce traffic and improve safe site ingress/egress. • NPS stays informed and involved in traffic and transportation planning in the county and region.
*Conservation Management Zone**	Visitors are discouraged from using wooded and grassland parts of the site to avoid impact on natural resources or systems.	• Provide no improved paths within this zone. Access is primarily for research or as part of a guided tour or event.
*Interpretive Focus Zone**	Stage One visitor improvements are moderate and temporary in nature and can be moved or altered when final shape of Stage Two is determined. Facilities are primarily limited to fieldwork support facilities, low-impact interpretive exhibits and walking paths prior to Stage Two.	• Design moveable, temporary, archeological shelters to aid in fieldwork and provide visitors a place of contact to interact with research in progress. • Design interpretive media for mobility, re-assembly and re-use to the extent possible for subsequent stages of site development. • Provide low impact pedestrian access to major historic features that is compatible with preservation and interpretive concepts. • Design and locate low impact paths to direct visitors to and between key interpretive features. Primary paths will meet A.D.A. standards.

Mission Goal Category/ *Management Zone*	Management Prescriptions, Alternative C, Stage One	Examples of Appropriate Actions That May Result From Management Prescriptions
*Development and Site Services Zone**	Stage One facilities are moderate, low impact and temporary in nature and can be moved or altered when final shape of Stage Two is determined.	• Cluster visitor and staff service facilities for efficiency and to reduce impacts on cultural and natural resources, and locate these sites near, but screened from, the core archeological area and open field west of Centerville Road. • Design visitor and staff service facilities and exhibit space for mobility, re-assembly and re-use to the extent possible for subsequent stages of site development. • Design and locate a moderate temporary the parking lot to minimize impervious surface and runoff impacts.
	Researchers, visitors, volunteers and staff share a general-purpose building which can accommodate multiple uses and functions as site activities and uses change over time.	• Provide a multi-function building that can support archeological activities, provide researchers with laboratory space for documentation of artifacts while research is ongoing, support general staff activities, and provide a limited amount of visitor services and programs. • Design the facility to be adaptable for multi-use. The building may range in design from one with undefined flex-space to a fully functioning research lab with exhibit and program space. • Provide staff services to support the visitor contact station, research and security. • Develop detailed program requirements to determine scope of facilities and programs.
	Site orientation and visitor comfort facilities may be independent of general purpose building or integrated depending on site conditions and detailed programmatic requirements to be developed.	
Partnerships and Cooperative Actions	See Table 3: *Management Prescriptions Common to Each Action Alternative*	
	NPS initiates and encourages special partnership efforts with entities that can bring supportive resources to archeological outreach efforts, research on site history, and related public education activities at Green Spring and can advise on related non-NPS initiatives.	• Identify academic institutions or professionals to conduct research and archeological field study efforts at Green Spring. • Locate academic institutions with programs in agricultural history or management, 17th century science, and colonial manufacturing to conduct research and/or provide guidance in implementation, management, and interpretation. • Friends of NPS for Green Spring, Inc. and other non-profits will supply staffing for daily operations and funding for development.

*Boundary of zones varies with each action alternative; however, management prescriptions apply to the entirety of the zone for each alternative.

Table 6: Conditions to be Attained as a Result of Alternative C, Stage Two

(In addition to what follows, see Table 3: *Management Prescriptions Common to Each Action Alternative*)

Mission Goal Category/ *Management Zone*	**Management Prescriptions, Alternative C, Stage Two**	**Examples of Appropriate Actions That May Result From Management Prescriptions**
Resource Management *Conservation Management Zone**	Ecological values and functions are maintained and emphasized in this area, although low impact improvements may be made to sites of potential visitor interest.	• Maintain a diverse edge habitat with a variety of heights and widths of herbs, shrubs, trees, and snags. • Install unobtrusive learning stations to mark significant cultural or natural landscape features. • Use low-impact construction techniques and designs (such as raised boardwalks) to access features of interest in this sensitive zone. • Leave wooded areas, where not cleared for interpretive sites and paths, in their natural state. • Maintain open fields as native grassland and shrub habitat to support a unique breeding community for birds and other species. These grassland fields are mowed or bush-hogged every two to three years, but may have temporary mowed paths changed at regular intervals.
*Interpretive Focus Zone**	Landscape Treatment is implemented based on results of historical research, archeological, cultural landscape, and natural resource studies and fieldwork.	• Complete extensive historical research, archeological, cultural landscape, and natural resource research to inform landscape treatment and interpretive augmentations.
	Significant interventions in the natural landscape meet the site's interpretive mission, developing a visually cohesive landscape evocative of the 17th century plantation. The cultural landscape is rehabilitated and individual features restored to the extent possible within a large open interpretive area. Archeological resources and landscape features, both cultural and natural, which are related to Berkeley's era are managed and augmented to evoke visitor curiosity about the site's history.	• Expand Interpretive Focus Management Zone. • Alter the existing configuration of wooded land vs. open field-so that an open field setting is created and landscape patterns that characterized 17th century Green Spring are evoked. • Delineate visually the site of the forecourt and garden area south of the Berkeley Manor site to reflect the original grandeur and scale of the formal entryway. • Avoid clearing of vegetation around fragile cultural landscape features unless integrity can be maintained. • Research and identify former cultivation and manufacturing sites. Re-introduce, demonstrate, or represent plantings determined to have been cultivated at Green Spring during the 17th century as appropriate. • Locate walking paths within the open areas of the site to enhance interpretation of the landscape and to allow safe visitor access to key archeological or landscape features. • Secure and train adequate maintenance staff to maintain the representative landscape.
	Treatment of archeological resources includes stabilization and intensive preservation of belowground resources and remaining aboveground ruins as well as selective rehabilitation or restoration of cultural landscape features and patterns. Where archeological and historical records are	• Identify archeological sites that can be visible and available to the public during preliminary investigations. When research is concluded, sites may be stabilized and kept visible for public view. • Represent the scale and mass of the manor with an outline ghost structure or with other creative interpretive devices. • Plant native grasses, wildflowers or small agricultural fields, using non-tilling methods, to demonstrate field patterns and convey spatial organization.

Mission Goal Category/ *Management Zone*	Management Prescriptions, Alternative C, Stage Two	Examples of Appropriate Actions That May Result From Management Prescriptions
	blank, landscape would be managed as art form, with gestures that suggest the grandeur of the 17th century.	
*Development and Site Services Zone**	See Table 3: ***Management Prescriptions Common to Each Action Alternative***	
Interpretation and Visitor Experience *Colonial NHP-wide*	Visitors perceive a clear visual and physical connection between Green Spring and Jamestown Island as they travel between the two sites on the historical route; when looking toward Jamestown from the manor site; and while walking along the entry road trace on-site.	• Clear a narrow swath of woods to create a visual axis between the manor site and Route 5 along the historical entry road trace. • Provide a boardwalk path that crosses the trace and can incorporate wayside exhibits that explain its former scale, function, and purpose.
Site-wide	Modern intrusions on the park setting are minimized to the extent possible.	• Work with County to close Route 614 to general through traffic across the site, while allowing for emergency vehicle access and public access during emergency evacuations. • Maintain dense wooded screen around the site perimeter.
*Interpretive Focus Zone**	By experiencing an evocative 17th century agricultural and manor landscape, visitors understand Berkeley's contributions to agricultural and economic development in Virginia, the dynamic relationships of human and natural systems during Berkeley's era, and the agricultural and manufacturing innovation that served as a model for the colonies.	• Indicate unique site features, archeological findings, and areas of land cultivation and experimentation. • Indicate and interpret the three-dimensional scale of the Berkeley manor. • Convey former patterns of development through interpretive techniques such as: ghost structures, footprint markings, or other location and scale design features. • Reintroduce/restore selective 17th century plantings if types and locations are identified or otherwise display in demonstration gardens, while native grasses, wildflowers, or small agricultural fields might be planted to interpret the scale and configuration of the plantation's former landscape. • Document and interpret visible remains of drainage and irrigation.
	A variety of highly structured programming, events, and interpretive media are available, and visitors are encouraged to observe and interact with exhibits and researchers or other medium. These activities would be designed to offer unique and changing visitor experiences, distinct from other area attractions.	• Create an orientation point for visitors at a central on-site interpretive facility to facilitate guided group tours. • Explain and display archeological research in process, thus enabling visitors to understand the scope and type of work undertaken, while protecting artifacts and resources from damage. • Consider and develop a range of creative programs and events that would offer a unique experience, change periodically and could be as diverse as interactive computer exhibits to night tours to performance art. • Offer regular personal interpretive services to visitors by NPS staff or trained volunteers. • Develop visitor and special interest educational programs to engage interested parties in site archeology and research. Programs may include special field studies, tours, seminars, or partner arrangements.

Mission Goal Category/ *Management Zone*	Management Prescriptions, Alternative C, Stage Two	Examples of Appropriate Actions That May Result From Management Prescriptions
	Interpretation of significant events in Green Spring's 17th century history supplements the visitors' understanding of colonial Virginia's political climate. Resources of the 18th and 19th centuries are minimally interpreted.	• Create wayside exhibits that refer to significant historic events, thus emphasizing their relationship to Governor Berkeley and 17th century Green Spring. • Interpret significant historic events of Berkeley's time, such as Bacon's Rebellion.
*Conservation Management Zone**	Visitor use and interpretation is limited to selected sites which can effectively supplement the visitors' understanding of 17th century life at Green Spring and sensitivity of Green Spring's natural resources and environment.	• Identify significant natural and cultural resources and devise an interpretive strategy that impacts minimally on natural resources. • Provide wayside exhibits along defined walking trails to highlight such themes as: the role of water in Berkeley's development of the site, 17th century cultivation of rice in the wetlands, the benefits of tall grass wildlife habitat, and the fragility of cultural and natural resources. • Identify and selectively clear the historic entry road trace from present-day Route 5 to the Manor site so that the 17th century design is suggested. • Plant trees as needed to achieve a continuous wooded edge along the eastern border of the property, screening future off-site development.
	Visitors experience a moderate degree of tranquility and quiet with a limited degree of social interaction and low to moderate probability of encountering visitors.	• Locate trails at significant distances from each other. • Exclude program events from these areas.
Visitor Use and Park Facilities *Site-wide*	Visitor access to Green Spring is exclusively from the south, in keeping with the historical gateway from Jamestown.	• Direct visitors to enter the site from Route 614 (Centerville Road) and Route 5. • Design clear site gateway at entrance. • Improve the intersection of Route 5 and Route 614 and the entrance to Green Spring to provide safe, efficient access for bikes and autos and to minimize traffic congestion through collaboration among NPS, James City County and VDOT officials.
	Access to the site is controlled to discourage uninvited inappropriate use.	• Install site security and safety controls such as physical barriers and signage. • Continue NPS Patrols and Park Watch Volunteer monitoring of the park.
	Access and circulation are designed and managed to increase site security, reduce impacts on site resources and provide for safe visitor use, while mitigating intrusion of auto traffic on visitor experience.	• Work cooperatively with JCC and VDOT to eliminate automobile through traffic on Centerville Road, while allowing for emergency vehicle access and public evacuation during public emergencies, and to make the right-of-way available for park use. • Work with James City County to implement recommendations of traffic studies. • Work with James City County, VDOT, and the VA SHPO to select surface treatment for Route 614 that is appropriate to the park's historic setting, while allowing for the road's safe and efficient use for emergency vehicles and safe pedestrian circulation.

Mission Goal Category/ *Management Zone*	Management Prescriptions, Alternative C, Stage Two	Examples of Appropriate Actions That May Result From Management Prescriptions
		• Create a single southern entry to the site that serves as a starting point for safe visitor circulation, provides a high degree of security for the resources, and eliminates traffic noise and other modern intrusions. • Design pedestrian circulation patterns through the site that are compatible with preservation and interpretive concepts and that allow access to major historic features by foot. • Use a moderate degree of physical control on visitor movement and rely on education to promote the value of resource protection. Physical controls used may include: natural or man-made barriers, posts, walls, or fences.
	Decisions on the types and locations of permanent Stage Two site and interpretive facilities would be deferred to confirm that they would not conflict with or jeopardize site resources. Management zones are adjusted upon closure of Centerville road.	• Adjust site management practices for Stage Two management zones. • Develop a plan for siting Stage Two facilities in the latter stages of the park's development. • Limit full site access to guided tours and special activities prior to site investigation and the securing of resources.
*Conservation Management Zone**	Limited visitor improvements are designed and located to ensure the preservation of natural resources, systems, and habitat.	• Minimize site disturbance to natural systems by careful siting of trails, limiting extent of trail system and using minimum width construction, pervious materials, or raised boardwalks. • Avoid locating visitor trails near sensitive habitat areas.
	A wooded area at the north end of the site is reserved for potential future uses and facilities related to park operations or site partner activities.	• Restrict development in reserved area until need is identified. • Investigate potential programmatic uses for this site to complement the Jamestown 2007 celebration.
*Interpretive Focus Zone**	Visitor improvements may include but are not limited to a diversity of interpretive features, numerous wayside exhibits, interpretive structures, and walking paths delineating primary functional spaces and key sites.	• Design paths that easily direct visitors to and between key interpretive features and build primary trails to meet ADA requirements.
*Development and Site Services Zone**	Facilities and spaces are flexible and designed to accommodate professionals, staff, volunteers, and visitors as site activities and uses change over time.	• Move or remove and reconstruct a permanent multipurpose building. • Adapt the building to serve primarily as a visitor contact and education facility enabling visitors to learn about Green Spring's interpretive approach and features as research phase is completed. • Locate the facility east of Route 614 and visually screen it from nearby key archeological and cultural landscape features. • Provide scheduled staff services to support the visitor contact station.

Mission Goal Category/ *Management Zone*	Management Prescriptions, Alternative C, Stage Two	Examples of Appropriate Actions That May Result From Management Prescriptions
Partnerships and Cooperative Actions	NPS continues to initiate and encourages special partnership efforts with entities that can bring supportive resources to archeological outreach efforts, research on site history, and related public education activities at Green Spring and can advise on related non-NPS initiatives.	• Identify academic institutions or professionals to conduct archeological field study efforts at Green Spring. • Locate academic institutions with programs in agricultural history or management, 17th century science, and colonial manufacturing to conduct research and/or provide guidance in implementation, management, and interpretation. • Friends of NPS for Green Spring, Inc. and other non-profits will supply staffing for daily operations and funding for development.

*Boundary of zones varies with each action alternative; however, management prescriptions apply to the entirety of the zone for each alternative.

Figures 11, 12, 13, and 14 represent a conceptual approach to the treatment of this site under Alternative C, Stages One and Two. These drawings are diagrams and do not necessarily indicate actual size or location of site features and proposed facilities.



General view from the west during 1955 Caywood excavation.

Alternative C

Figure 11 *The Interpretive Landscape of Green Spring: STAGE ONE*



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features and proposed facilities.

0' 800'
approximate scale

- Woods
- Regenerating Woodland
- Open Field Setting
- Grassland Field Habitat
- Core Archeological Area (foundations, ruins, terraces, and other landscape features)
- Temporary Archeological Support Facility/Visitor Contact Station
- Temporary Interpretive Path (Locations to be determined)
- Vehicular Access and Parking
- Existing Route 614
- Potential Outlying Archeological Sites (Locations to be determined)

Alternative C

Figure 12 *The Interpretive Landscape of Green Spring: STAGE TWO*



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features and proposed facilities.

0' 800'
approximate scale

Woods

Regenerating Woodland

Open Field Setting

Grassland Field Habitat

Potential Outlying 17th Century Site Features
(Locations to be determined)

Evocative Field and Planting Patterns
Note: Actual extent and method of field and planting patterns to be based on further research

Garden Representation

Secondary Interpretive Path

Interpretive Structure

Archeological Support Facility/ Visitor Contact Station

Primary Interpretive Path
(Locations to be determined)

Vehicular Access and Parking
(Parking location to be determined)

Site for Possible Future Support Uses

Emergency Services Access/ Public Evacuation Route

page 74

Management Zones - Alternative C - STAGE ONE
The Interpretive Landscape of Green Spring

Figure 13



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features and proposed facilities.

0' 800'

approximate scale

Conservation Management Zone

Interpretive Focus Zone

Development and Site Services Zone

Interpretive node within Conservation Management Zones
(Locations to be determined)

Figure 14

Management Zones - Alternative C - STAGE TWO
The Interpretive Landscape of Green Spring



Green Spring

Colonial National Historical Park
National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features and proposed facilities.

0' 800'
approximate scale

Conservation Management Zone

Interpretive Focus Zone

Development and Site Services Zone

Interpretive node within Conservation Management Zones
(Locations to be determined)

2.9 Summary of Alternatives and their Environmental Consequences

2.9.1 Characteristics of Alternatives

Table 7 compares the management prescriptions of the three Alternatives.

Table 7: Comparison of Management Prescriptions Across Alternatives

Mission Goal Category/ Management Zone	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C:The Interpretive Landscape of Green Spring
Concept	Current management practices are continued, with the site closed to the public and unimproved.	Core archeological features, including the remains of the manor, spring, "jail," and terraces are the focus for the interpretation of Governor Berkeley and his life and interests at Green Spring.	Core archeological features are preserved and portions of the Green Spring landscape are rehabilitated and supplemented, based on research, to provide a window onto Governor Berkeley's 17thcentury plantation and its essential components. Visitors are engaged in research and special programs that support interpretation and preservation of Green Spring's cultural and natural resources.
Resource Management	Existing archeological collections continue to be housed in secure facilities at Jamestown Island and preserved in good condition.	New archeological artifacts are stored or displayed in secured facilities and preserved in good condition.	
Site-wide	Site resource maintenance is minimal. Natural processes continue to act upon plant and animal life and to degrade aboveground cultural resources.	Site resources are managed and maintained to support the NPS mission. Resources are modified only for essential visitor and park operations needs, in a way that is sensitive to the natural and cultural environment. Management decisions are based on adequate scholarly and scientific information and are consistent with applicable policies and regulations.	
	Archeological sites are protected only by the site's overgrowth and by a volunteer park watch program.	Additional archeological investigation, cultural landscape research, and other studies of site resources, including the site of the manor and areas of cultivation during the period of significance, inform all preservation efforts. Special attention is given to evidence of American Indian or African-American historical presence on the site.	
	Archeological resources remain off-limits to the public and are minimally studied and monitored by professional historians, archeologists and other researchers. The historical record for the site remains largely hidden.	Archeological efforts are focused on the manor core; investigation seeks additional understanding of former buildings, site use, and occupancy.	Research and archeological efforts are focused on the manor core and its associated cultural landscape; investigation seeks additional knowledge and understanding of the spatial organization, the pre-industrial/agricultural activities of the 17th century plantation including the new science of the time in the service of commerce, and evidence of those who applied their labors.

Mission Goal Category/ Management Zone	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C:The Interpretive Landscape of Green Spring
		Treatment of archeological resources includes stabilization and intensive preservation of remaining aboveground ruins and contributing landscape features.	Treatment of archeological resources includes stabilization and intensive preservation of belowground resources and remaining aboveground ruins as well as selective rehabilitation or restoration of cultural landscape features and patterns. Where archeological and historical records are blank, landscape would be managed as art form, with gestures that suggest the grandeur of the 17th century.
		Sensitive habitats associated with federally or state listed rare, threatened and/or endangered species are managed to preserve the viability of the species population.	
*Conservation Management Zone**	Natural resources are not managed to maintain biological diversity or monitored to assess impacts of surrounding land use change and traffic on Route 614. The wooded landscape is allowed to naturally evolve. The field-mowing regime is inconsistent with protecting important grassland habitat.**	Natural resources are managed and monitored to maintain biological diversity and to avoid adverse environmental impacts, while protecting the quality and character of the park's cultural resources in compliance with NPS standards and regional compacts on the Chesapeake Bay ecosystem.	
		Ecological values are primary and visitor use and park improvements are excluded from this area.	Ecological values are emphasized in this area, although low impact improvements may be made to sites of potential visitor interest.
*Interpretive Focus Zone**		Cultural resources, including landscapes, archeological sites, and collections, are stabilized, preserved and maintained. Preservation treatments are consistent with the approach to site management and interpretation.	
	There are no interventions in the natural landscape or natural processes to increase visitor understanding and appreciation of the site.**	The landscape is managed to facilitate and concentrate visitor use in a centralized area where interpretive efforts focus on core archeological site features.	More significant interventions in the natural landscape meet the site's interpretive mission, developing a visually cohesive landscape evocative of the 17th century plantation. The cultural landscape is rehabilitated and individual features restored to the extent possible within a large open interpretive area. Archeological resources and landscape features, both cultural and natural, which are related to Berkeley's era are managed and augmented to evoke visitor curiosity about the site's history.

Mission Goal Category/ Management Zone	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C:The Interpretive Landscape of Green Spring
*Development and Site Services Zone**	NA	Sustainable design and construction methods, techniques and materials are used. Parking and site vehicular access are limited to these areas and buffers are developed to primary archeological or natural resource areas to protect resources from possible damage or deterioration and to maintain the tranquility of the remainder of the site's landscape.	
Interpretation and Visitor Experience			
Colonial NHP-wide		Visitors traveling between Jamestown and Green Spring travel an easily found and clearly marked scenic route.	
	Visitors to Colonial NHP are offered little or no information about Green Spring and its importance.**	Visitors to Colonial NHP's Jamestown Island unit understand Berkeley and Green Spring's role in and relationship to the larger story of Jamestown and early Colonial settlement. Jamestown visitors are able to make informed decisions about how they should experience and learn about the Green Spring site.	
	The site's historic linkage to Jamestown Island, via the historic connector road, is not readily visible. **	Visitors are informed of the connection between Green Spring and Jamestown Island via the road that historically and currently connects the two sites.	Visitors perceive a clear visual and physical connection between Green Spring and Jamestown Island as they travel between the two sites on the historical route; when looking toward Jamestown from the Manor site; and while walking along the entry road trace on-site.
Site-wide		Green Spring's interpretive approach offers visitors an experience that is distinct from that offered by other regional historic attractions.	
	No on-site interpretation is provided (limited information is available at Jamestown Island).**	Visitors to the site directly experience sites and settings that increase their appreciation and understanding of Governor Berkeley, his role in the evolution of the landscape of the Virginia Colony, and key features of the Green Spring site.	
			Modern intrusions on park setting are minimized to the extent possible.
*Interpretive Focus Zone**	NA	Visitors appreciate the symbolic and historic importance of Berkeley and his manor, including various types of 17th century operations on site, by interacting with the building remains and sites related to Berkeley.	By experiencing an evocative 17th century agricultural and manor landscape, visitors understand Berkeley's contributions to agricultural and economic development in Virginia, the dynamic relationships of human and natural systems during Berkeley's era, and the agricultural and manufacturing innovation that served as a model for the colonies.
		Interpretive media and programming is limited and largely self-guided.	A variety of highly structured programming, events, and interpretive media are available, and visitors are encouraged to observe and interact with exhibits and researchers or other media. These activities would be designed to offer unique and changing visitor experiences, distinct from other area attractions.

Mission Goal Category/ Management Zone	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C:The Interpretive Landscape of Green Spring
		Secondary themes and events are minimally or not interpreted.	Interpretation of significant events in Green Spring's 17th century history supplements the visitors' understanding of colonial Virginia's political climate. Resources of the 18th and 19th centuries are minimally interpreted.
		Visitors experience a limited degree of tranquility and quiet with a high degree of social interaction and high probability of encountering other visitors.	
*Conservation Management Zone**	NA	Visitors are discouraged from entering or using natural areas of the site. The Conservation Management Zone provides a visual buffer to adjacent lands.	Visitor use and interpretation is limited to selected sites which can effectively supplement the visitors' understanding of 17th century life at Green Spring and sensitivity of Green Spring's natural resources and environment.
			Visitors experience a moderate degree of tranquility and quiet with a limited degree of social interaction and low to moderate probability of encountering visitors.
Visitor Use and Park Facilities *Colonial NHP-wide*		Visitors are encouraged to travel to Green Spring on bicycles, and the site is connected to Jamestown Island and planned regional bikeways.	
Site-wide		Visitor access to Green Spring is primarily from the south, with entrance from the north discouraged.	Visitor access to Green Spring is exclusively from the south, in keeping with the historical gateway from Jamestown.
	Uninvited and inappropriate use is monitored by park watch volunteers and reported to park security but may go unnoticed.	Access to the site remains physically uncontrolled. Park watch volunteers continue to monitor the park.	Access to the site is physically-controlled to discourage uninvited inappropriate use. Park watch volunteers continue to monitor park.
	Speeding traffic is a hazard to pedestrians and is audible throughout the site.	Access and circulation are designed and managed to mitigate visitor/vehicular conflicts and minimize impacts on site resources.	Access and circulation are designed and managed to increase site security, reduce impacts on site resources and provide for safe visitor use, while mitigating intrusion of auto traffic on visitor experience.
			Decisions on the types and locations of permanent Stage Two site and interpretive facilities would be deferred to confirm that they would not conflict with or jeopardize site resources.

Mission Goal Category/ Management Zone	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C:The Interpretive Landscape of Green Spring
*Conservation Management Zone**	NA	Visitors are discouraged from using wooded and grassland parts of the site, to avoid impact on natural resources or systems.	Limited visitor improvements are designed and located to ensure the preservation of natural resources, systems, and habitat.
			A wooded area at the north end of the site is reserved for potential future uses and facilities related to park operations or site partner activities.
*Interpretive Focus Zone**	NA	Paths, waysides, and other pedestrian and interpretive improvements are designed and located to be compatible with the overall preservation and interpretive concept of the site and may be expanded over time as warranted.	
		Visitor improvements include minimal, non-intrusive wayside exhibits and walking paths.	Visitor improvements include but are not limited to a variety of interpretive features, numerous wayside exhibits, interpretive structures, and walking paths delineating primary functional spaces and key sites.
*Development and Site Services Zone**	NA	Visitor comfort facilities, vehicular access, parking, and key services are limited to areas where they pose minimal conflict with natural and cultural resources.	
	No visitor facilities are provided on the site and use by the public is prohibited except with special permission.**	Minimal visitor facilities are provided for site orientation and visitor comfort.	A general-purpose facility accommodates both professionals and visitors as site activities and uses change over time.
Partnerships and Cooperative Actions	Green Spring is not linked to other Colonial NHP units.**	Planning and management of Green Spring's resources is integrated with initiatives for other Colonial NHP units, including cooperative efforts with entities already engaged in expanded learning about the park's historical themes and archeology.	
		Existing park partnerships are maintained and strengthened, and new partnerships with public and private entities are sought in order to expand NPS ability to protect park resources and provide high quality visitor interpretation and experiences.	
	NPS engages in ad hoc consultation with adjacent landowners.**	NPS consults with local government and private landowners to address and influence planning and development initiatives that have the potential to affect Green Spring and its resources, including the use of adjacent properties and regional linkages.	
		NPS coordinates archeological and interpretive activities at Green Spring with investments and initiatives planned at Jamestown Island in cooperation with other entities as part of the 400th anniversary celebration in 2007.	
			NPS initiates and encourages special partnership efforts with entities that can bring supportive resources to archeological outreach efforts, research on site history, and related public education activities at Green Spring and can advise on related non-NPS initiatives.

* Boundary of zones varies with each action alternative; however, management prescriptions apply to the entirety of the zone for each alternative.

** No management zones exist for Alternative A; however, the prescriptions for this "No action" approach have been related to the Management Zones for action alternatives.

2.9.2 *Summary Impacts of Each Alternative*

Tables 8 through 13 provide a narrative comparison of each major category of impact.

Tables 8 through 13 provide a narrative comparison of each major category of impact and the impacts that may result from actions under each of the three alternatives. Two revisions have occurred to the action alternatives since the publication of the draft plan, and their impacts are noted below. These revisions include more extensive utilities excavation than was originally anticipated for both action alternatives, and maintaining Centerville Road as a thruway for emergency vehicles only, under Alternative C. Furthermore, because the modified Stage One of alternative C closely resembles Alternative B in facility locations, several Stage One impacts are similar to those described under Alternative B below. Those impacts which, when viewed with distinct impacts of Stage Two, Alternative C, are additive (different from and not mitigated by the implementation of Stage Two), may constitute cumulative impacts. Potential cumulative impacts are discussed separately in the next section, 2.9.3, Cumulative Impacts of the proposal.

Table 8: Summary of Impacts to Cultural Resources

Table 8, page 1

Topic	Alternative A:No Action(Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Site Significance, Archeological Resources, & Historic Ruins	No disturbance to archeological resources would occur through construction or other park activities; however, lack of controlled access to site and regular monitoring may result in site disturbance, loss of site integrity, and removal of artifacts.	The overall effect of park actions would be to improve the protection, preservation, and maintenance of archeological resources. Compliance archeology would be needed for visitor facilities, utilities and trails-for the most part, these could be designed to avoid impacts to significant archeological sites in the core, where Phase II archeology would be conducted. The overall risk of disturbance to unknown archeological resources would be moderate, and offset by gains in better understanding and more accurate interpretation of core resources, development of protection strategies, and greater control of site security. As compared to Alternative C, known and unknown archeological resources could be at greater risk from utilities excavation.	Positive effects on archeological resources include more staff and resources for better protection, preservation, and maintenance, as compared to Alternative B, and better understanding & interpretation of 17th and 18th century colonial resources. However, developing visitor facilities, trails and interpretive stations would potentially affect more archeological resources than under Alternative B, due to greater areal extent of these activities. Phase II archeology would be conducted selectively but site-wide. The risk of disturbance to known and unknown archeological resources is relatively high and may preclude additional data retrieval at a future date.
	Historic ruins are protected through basic stabilization-some resource degradation may occur over long-term.	Preservation, including necessary repairs of historic ruins would enhance their integrity and maintain them in good condition.	Same as Alternative B
	NPS would encourage conservation of related archeological and historic resources on adjacent lands-- preservation of the historic character of privately owned structures and lands would continue to be at landowner's discretion.	Same as Alternative A-however, strong partnerships in preservation and interpretation and park technical assistance would encourage county and private landowners to support long-term preservation mechanisms and incentives.	Same as Alternative B
	Site significance would remain largely unknown to public.	Focus on core archeological features and programmatic links to Jamestown and other related sites would improve public awareness of site's national significance in relation to Jamestown, as experimental plantation of Royal Governor Sir William Berkeley.	Same as Alternative B In addition, wide-ranging archeological surveys and protection of archeological resources through inventory, education and documentation, would ensure availability of information on site significance in national and local context from 17th through 19th centuries.

Table 8, page 2

Topic	Alternative A:No Action(Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Landscape	Preservation of existing landscape features in their current configuration means that non-historic intrusions continue to dominate the park setting. Features significant to the organization and development of the colonial plantation may be obscured by encroaching vegetation, threatening their physical integrity. Without additional research to document the historic landscape, remaining features would not be properly maintained and preserved, resulting in adverse impacts that range from loss of integrity to resource destruction; however, landscape features currently under forest cover would remain more protected.	Overall effects of park actions on the cultural landscape would be minor but positive. As under Alternative A, modern spatial patterns would dominate. Remnant landscape features from all time periods would be preserved. Unlike Alternative A, visitors would understand the historic resources and need for their protection, and additional cultural landscape studies would aid in the selection of appropriate preservation treatments and inform interpretation. Landscape features currently under forest cover would remain protected, and removal of encroaching vegetation would improve the condition of historic landscape features in the core area. The risk of alterations to landscape features from trench excavation for utilities would likely be greater under Alternative B as compared to C, potentially affecting a wider range of resources.	This alternative proposes a higher degree of site intervention and therefore the greatest potential for impacts to cultural landscape features. Partial re-establishment of the domestic complex, forecourt, garden, and the large-scale landscape patterns of surrounding fields and forests to 17th century conditions over the long-term would enhance the integrity of the historic design and provide an improved interpretive experience, as compared to Alternative B. Visitors would be provided with a sense of the original scale of the complex during Berkeley's tenure and types of agriculture and manufacturing that were part of an early Southern plantation. The effects of non-historic intrusions would be minimized, providing a more readible, cohesive landscape that makes a stronger connection with Jamestown's development than Alternative B. However, removal of forest cover for visitor facilities development and partial landscape rehabilitation/re-establishment could cause deterioration of underlying historic landscape features.There is a greater potential for effects from utilities excavation on the drainage ditches in the southern portion of the site under Alternative C.
	Loss of historic vistas and related cultural resources on adjacent lands would be more likely to continue under this alternative, as opposed to alternatives B or C.	The park would work with adjacent landowners and the county to encourage development actions compatible with preservation of remaining historic landscapes and cultural resources.	Same as Alternative B
Archives and Collections	There would be no effects on park collections from future actions; however, in situ artifacts would remain vulnerable to deterioration and unauthorized removal. Existing artifact collections would continue to be maintained in good condition with adequate security, storage, and climate control; however, collection is located in 100-year floodplain and at risk from flooding.	Phase II archeological investigations and compliance mitigation would yield some data and artifacts, although most would be left in situ. Removal of some archeological data from the site to secure off-site park facilities would protect them from deterioration and unauthorized "pot hunting." Additional positive benefits include greater scholarly access to collections, improving knowledge and understanding of colonial history, and increased opportunities for interpretive programming.	The overall effect on artifact collections is dependent on park actions related to facilities improvements at Jamestown and/or Yorktown, because of the greater potential for discovering archeological materials, as opposed to Alternative B. Development of adequate on-site and/or off-site storage facilities would greatly improve the preservation and protection of Green Spring artifacts, and opportunities for research and interpretation if these facilities are developed prior to implementation of an archeological program at the site.

Table 9, page 1

Table 9: Summary of Impacts to Natural Resources

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Soils and Prime Farmlands	The absence of visitors and limited maintenance activities would ensure negligible impacts to soils from park actions. Contaminants and emissions from vehicles using Centerville Road would continue to pollute adjacent soils.	Short-term impacts to soils are minor, as compared to Alternative C, and affect less than 10% of the site. Impacts include disturbance and loss from construction of visitor facilities, from excavation of utilities, and from trail development and archeological excavation the core area. A sediment and erosion control plan appropriate to site conditions would reduce these impacts. Visitor use measures would reduce long-term adverse impacts to soils from soil compaction and erosion along trails and high-traffic areas. Impacts to soils from Centerville Road are as described for Alternative A.	Impacts to soils would be greatest under Alternative C because of the relative steepness of the slope and wet soils in areas proposed for construction and visitor use. Short-term impacts to soils include those types of impacts described under Alternative B but affecting an area at least three times greater. In addition, up to 25 acres of woods could be cleared for park facilities and partial re-establishment of the landscape to 17th century conditions. Anticipated higher levels of visitor use would result in greater long-term soil erosion and compaction as compared to Alternative B. Long-term impacts from road contaminants would be reduced with the closing of the through road to local traffic.
	No conversion of prime farmlands to other uses is envisioned. The opportunity to bring the fields into production would remain. At the minimum, at least half of the 49.3 acres of prime farmlands would be maintained by periodic mowing as tallgrass fields retaining productive soil characteristics.	Less than 5% of prime farmlands would be permanently converted through visitor facilities development and archeological excavation. A contiguous area of about 17 acres of prime farmlands would remain for possible productive use in the long-term. However, this area would be managed as grassland wildlife habitat in the foreseeable future.	Up to 28% of prime farmlands could be permanently converted through visitor facilities and archeological excavation; however, remaining prime farmlands would be cultivated, possibly for commercial crop production.
Wetlands and Water Resources	Current park management practices are not known to affect water resources, including wetlands, forest buffers along streams, and the Powhatan Creek Natural Area. The magnitude and type of impacts from activities on adjacent lands would remain unknown due to lack of consistent monitoring of water resources. Impacts to streams and wetlands from runoff from Centerville Road, which lacks detention facilities, would continue.	The majority of actions under this alternative are relatively minor and would not impact the long-term sustainability of ecosystems or quality of water resources within the Chesapeake Bay watershed and Powhatan Creek Natural Area. Existing forest buffers along streams would be maintained to protect water quality. A 1-acre ephemeral pond would potentially be affected in the short-term by sedimentation from construction of a visitor contact station, parking lot, and utilities and in the long-term by contamination of groundwater from parking lot runoff. Maintaining the through road would continue to provide contaminated runoff to nearby streams and wetlands.	This alternative has greater potential to impact Chesapeake Bay biotic and hydrological systems than the other alternatives. Direct impacts of up to 8 acres of forested wetlands could occur through tree removal and sedimentation for rehabilitation of an historic entry road, and partial re-establishment of the landscape to 17th century conditions. Additional direct and indirect impacts to wetlands could occur on up to 20 acres recommended for archeological survey. Groundwater contamination, sedimentation, and changes to surface flow affecting the spring, adjacent wetland, and Powhatan Creek and Natural Area could result from an increase in impervious cover, runoff from the parking lot, tree removal, potential fertilizer, herbicide and pesticide use in the adjacent

Table 9, page 2

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
		Although impacts to water resources from utility impacts would be comparable in type and largely in scope to those of Alternative C, utilities excavation has a greater potential to impact wetlands in the southern portion of the site under Alternative C. Mitigation: 1) For ephemeral pond: study of soil and hydrogeological conditions would be pursued to gather data for monitoring and maintaining hydrological functions; visitor contact center and parking lot would be located as far from the pond as possible without impacting archeological resources; a minimum buffer would be established between the visitor facilities and pond; best management practices would control stormwater runoff; structural and non-structural measures to prevent groundwater contamination would be explored. 2) Trails would be designed to avoid sedimentation, erosion, and runoff into wetland areas, and high levels of foot traffic and impervious cover would be avoided at the spring and other ecologically sensitive areas. 3) Visitors would be educated about the importance of Green Spring's natural resources and their fragility. 4) Best management practices to control erosion and sedimentation in waterways, such as minimizing tree removal, would be followed during construction. Stormwater management options to control pollutants from the Centerville Road and parking area would be explored with the VA DOT and James City County.	garden, and concentrated visitor use. A 1-acre ephemeral pond could potentially be indirectly affected by construction of a park facility. Closure and alteration of the through road could enhance natural drainage and reduce contamination of stream waters and wetlands, including the ephemeral pond. Some open field areas would be allowed to revert to native grasslands to provide a buffer for wetlands. Mitigation: 1) Impervious cover would be minimized and confined to Development & Site Services and Interpretive Focus management zones. 2) As in Alternative B, trails would be designed to avoid high levels of foot traffic and impervious cover at the spring and other ecologically sensitive areas. 3) Best management practices to control erosion, sedimentation and runoff would be followed during all construction, as in Alternative B. 4) Structural and non-structural measures to prevent groundwater contamination would protect the spring, ephemeral pond, and adjacent wetlands. 5) Mitigation for rehabilitation of the historic entry road could include careful tree removal; leaving tree stumps in place to avoid loosening soil; maintaining low-growing brushy vegetation on stream banks to shade the stream and trap sediment; and elevated boardwalk design. 6) Mitigation for archeological investigation in any wetland acres would include limiting vegetation removal to only that necessary to retrieve archeological data and protect the site, phasing vegetation clearing; using non-invasive survey techniques; using best management practices to minimize soil movement and replacement of missing soil with stockpiled soils to re-establish slope and grade; and revegetating cleared areas.

Table 9, page 2

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
			7) Tree removal for partial rehabilitation and/or re-establishment of the 17th century landscape and/or interpretive treatments would involve establishing crops, horticultural areas and other vegetative cover as quickly as possible to avoid excessive soil movement-the use of herbicides, pesticides and fertilizers would be limited and carefully controlled to avoid groundwater and surface water contamination. 8) Open field areas beyond the archeological core not subject to interpretive treatment or archeological investigation would be converted to native grasslands and scrub-shrub acting as a filter for water quality in wetlands. 9) In-kind replacement for forested wetlands at a 2:1 compensation ratio would be required in the unlikely event that construction and partial rehabilitation and/or re-establishment of the 17th century landscape cannot avoid direct impacts to wetlands.
Rare, Threatened and Endangered Species	Current forest management practices may allow a beetle infestation to adversely affect 1 federally listed threatened species-bald eagles nesting on adjacent lands-by reducing the pine buffer that protects the eagles from human disturbance.	Short-term noise disturbance from construction activities, changing traffic patterns and increased human activity of new visitors and park staff may adversely impact bald eagles nesting on adjacent lands by reducing the viability of Green Spring as roosting and foraging habitat, particularly in and around the core area. However, potential adverse impacts would be limited by maintaining existing forest buffers, controlling pest infestations in the buffer, and managing visitation levels in a 1,320-foot buffer around the nest.	Potential adverse impacts on bald eagle habitat would likely be greatest under this alternative. Noise disturbance and tree removal during construction of visitor facilities and trails would be wider-ranging than in Alternative B. There could be a loss of potential foraging, roosting, and nesting sites at Green Spring due to general increase in human activity. There is a slight risk that the bald eagles could be driven from their nest; however, potential adverse impacts would be reduced by managing visitation levels in a 1,320-foot buffer around the nest, avoiding construction during the nesting season, and restricting research in the USFWS recommended 750-foot buffer around the nest.

Table 9, page 3

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
	Current forest management practices may in the long-term adversely affect the suitability of potential habitat for I state species of concern, the Mabee's salamander, if confirmed on site. The decreasing density of the hardwood stands surrounding the Mabee's habitat could result in decreased pond water retention and desiccation of salamander larvae.	Construction of a parking lot and visitor contact station, utilities excavation, and concentrated visitor activity and traffic in the area could result in the direct loss of at least ¼ acre of potential Mabee's foraging areas, mortality of individuals, and long-term adverse effects on forested pond habitat from contaminated runoff.	Potential adverse effects on Mabee's salamander would be comparable to Alternative B in magnitude, but different in type. Future park development of reserved area could disturb the Mabee's salamander and degrade potential breeding habitat. Mowing and/or cropping of the adjacent field could increase mortality and reduce food availability. Impacts of archeological investigations and trails could be greater under Alternative C because of potential proximity to salamander habitat. However, closure of Route 614 would have a positive impact on habitat quality and mortality.
		Mitigation: Forest cover would be managed to protect the Mabee's potential breeding site. Construction would minimize removal of the forest buffer and avoid the amphibian breeding season, and visitor use would be restricted from the buffer.	Mitigation: Same as Alternative B In addition, pesticide, herbicide and fertilizer use would be restricted from the open field adjacent to potential Mabee's habitat.
Other Vegetation	The park would continue the practice of no active management in the woodlands. Open areas would continue to be maintained as grass or tall grassland fields through infrequent mowing. Younger pine stands would be allowed to evolve into mature hardwood forests, changing the forest composition in the long-term. Continued browsing by deer and expansion of exotics may cause a long-term decline in the health of the native woodlands and grasslands.	Open areas would be increased slightly as compared to Alternative A, with fewer than 4 acres of woodlands likely removed. Exotic herbaceous species would be reduced through visitor facilities development, trails, and archeology in the core domestic complex. Native grasslands and scrub/shrub species would be encouraged on up to 24 acres east of Centerville Road. Daffodil gardens and other potential historic landscape features would be actively managed to enhance health and vigor. Forest cover would be managed to support and enhance existing wildlife populations.	This alternative results in the most changes to vegetation overall, as compared to alternatives A and B. The total loss in forested land could approach 20 acres through tree removal for partial re-establishment and/or rehabilitation of the landscape to 17th century conditions, archeology, visitor facilities and trail development, and potential future development of park facilities. A more open and intensively managed landscape with cultivated and garden areas results from the partial re-establishment of the historic plantation landscape. Remaining forest cover would be managed to support existing wildlife populations to the extent possible while meeting cultural resource protection and interpretive needs.

Table 9, page 4

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Other Wildlife	Current vegetation management policies would generally maintain the existing high degree of habitat and species diversity in the short-term, including some species that are uncommon in the region. In the long-term, expansion of forest and its conversion to mature, mixed hardwoods would encourage greater diversity and numbers of forest-dwelling wildlife species.	Limited, select removal of woodlands and conversion of areas around visitor facilities, trails, and archeological sites to grass and herbaceous vegetation would favor species tolerant to human activity that rely on open, upland sites and negatively affect woodland-dependent species. There may be a long-term decline in overall diversity and numbers of forest species due to disturbance from human activities, particularly amphibians, reptiles and mammals associated with the ephemeral pond.	More wildlife habitat would be permanently lost as compared to Alternative B because of the greater areal extent of visitor facilities. In addition, removal and fragmentation of woodlands could negatively affect the long-term viability of habitat for sensitive forest-dependent species, including five state avian species of concern and several species that are uncommon locally or regionally. Decreases in the overall abundance and diversity of forest species, and increases in species that favor edge and open, upland habitats, could occur.
	Sustained, haphazard mowing of the fields east of Centerville Road would continue to negatively impact uncommon grassland bird species that utilize the fields for nesting.	Management of about 24 acres of contiguous open field east of Centerville Road as native tall grass and scrub/shrub would positively affect grassland birds, rodents, snakes and mammals in general, providing high-quality cover and foraging areas.	At least 8 acres of native grassland habitat would be lost in areas east of Centerville Road due to partial re-establishment of the cultural landscape, trail development, and construction of interpretive stations, resulting in potential adverse impacts to grassland birds and other wildlife. The loss would be substantially offset by the opportunity to restore up to 6 acres of native grasslands west of Centerville Road.
	Centerville Road would continue to serve as a barrier and cause of mortality to migrating terrestrial fauna.	Same as Alternative A	The closing of Centerville Road to local through traffic would have a positive effect on terrestrial wildlife's ability to migrate to other breeding and foraging areas on site.
Air Quality	The park would undertake no actions that would affect local or regional air quality.	Expected low levels of new visitation would result in a minor increase in auto emissions that would have negligible impacts overall on regional air quality. Exhaust emissions would contribute to the formation of ground-level ozone and acid deposition that may have minor adverse effects on the site's natural and cultural resources.	Although greater numbers of visitors are expected, as compared to Alternative B, the related increase in auto emissions would nonetheless be relatively minor in the region, resulting in negligible impacts overall to regional air quality. There is a slight increase over Alternative B, in the risk of adverse impacts to natural and cultural resources from ground-level ozone and acid deposition.
		Short-term impacts to air quality from construction activities-hauling materials, operating equipment and construction-related traffic delays-would be negligible.	Same as Alternative B

Table 10, page 1

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Levels and Patterns of Visitation and Visitor Characteristics	Green Spring would remain closed to the public. Special permission for site visits would be required by researchers-infrequent tours or other public events may occur if tied to special Jamestown programs.	Modest numbers of new visitors would be attracted to Green Spring, mainly from the existing visitor pool at Jamestown Island and Jamestown Settlement. Visitation would be seasonal, probably 8 months excluding the winter and early spring, likely limited because of park and volunteer staffing constraints. Limited opportunities to target newer, less traditional park audiences would have a minor but positive impact on the diversity of the regional visitor base.	Greater numbers of new visitors are expected, as compared to Alternative B, due to the cumulative effects of partnerships that promote Green Spring, Jamestown and nearby attractions, and opportunities for a broader array of interpretive programs and visitor facilities, more flexible and events-oriented programming, and an emphasis on public archeology. The expanded visitor pool would come from Jamestown Island, Jamestown Settlement, Colonial Williamsburg, and other area attractions. Increased park and volunteer staffing would increase the likelihood of year-round visitation. There would be more opportunity than Alternative B to attract different age groups and special interests and cross multi-cultural lines, having a moderate positive affect on the diversity of the regional visitor base.
		Lack of indoor activities, geographic isolation from other park units, the minimal levels of facilities development and programming, noise levels and safety hazards along Centerville Road, and absence of extensive park and regional visitor information would likely limit visitation and overall length of stay to under one hour.	A range of outdoor and indoor activities, the availability of a park shuttle among Colonial NHP units, the increased availability of visitor information, and the closing of Centerville Road to eliminate this safety hazard and noisy intrusion would likely enhance visitation and overall length of stay to about two hours.
		Visitation levels may temporarily increase in 2007 and the following few years because of the public attention related to the 400th anniversary of Jamestown's founding.	Visitation levels may permanently increase in 2007 and subsequent years with the expansion of facilities and interpretive programming at Jamestown Island.
Regional Visitor Experience	The unit's interpretive potential for describing the mid- to late 17th century Tidewater experience would remain largely untapped. As few area historic sites address this period, there would be a negative impact on the regional visitor experience. Cultural resources that could contribute to a better understanding of colonial society and the economy would	Visitor services and interpretive activities made available on site, at Jamestown Island, and through partnerships would improve the scope and availability of information and programs for regional visitors. The quality as well as quantity of information on 17th century colonial history would improve, largely through the incorporation	Interpretation and visitor services for the park and region would be greatly enhanced by this alternative, as compared to Alternative B. Improvements would be the result of increased interpretive activities at Green Spring, Jamestown, and through expanded partnerships with area historic sites and academic institutions. The interpretive context would be greatly expanded, so that visitors experience aspects of early colonial history that are not

Table 10, page 2

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
	remain hidden from researchers and the public. Limited opportunities for interpreting the major themes, events and people associated with Green Spring would exist through ad hoc partnerships with historic sites related in theme or historic ownership.	of archeological and documentary research into interpretation at area historic sites.	interpreted at other NPS and non-NPS sites. Visitors would have greater access to regional and park information through cooperative promotional efforts among the Williamsburg Area Convention & Visitors Bureau, and Chamber of Commerce, and Colonial Williamsburg Foundation.
	No trespassing signs and lack of public use would diminish site visibility and negatively affect regional visitor experience. There would be less interest on the part of local government and citizens to protect the scenic resources and attractions of historic Route 5 and Greensprings Road. Continued safety hazards and increasing traffic on these roads would not be addressed.	Signage and public use would create a greater presence for the park within the community. The scenic resources and attractions of historic Route 5 and Greensprings Road would be enhanced, drawing more regional visitors to northern and western parts of James City County and providing a safer and more pleasant driving and bicycling experience.	Same as Alternative B, with the addition of traffic management enhancements at the Centerville-Route 5 intersections that would promote the regional trail system. A minor alteration to local traffic patterns would result from the closing of the through road; however, the detour would result in a safer driving experience.
Colonial NHP Visitor Experience	Visitors would continue to benefit from existing information and interpretive programming on Green Spring available at the Jamestown Visitor Center and through the internet. However, Green Spring-related programming and exhibits would be limited and infrequent, and beneficial impacts are limited to a small percentage of the visitor population.	Park visitor information and orientation would be greatly improved and expanded as compared to Alternative A. Existing interpretation at Jamestown would incorporate up-to-date, accurate interpretation of Berkeley's life and times within the context of Jamestown's development, allowing visitors to understand how developments at Green Spring influenced many aspects of American law, society, and economy. A relatively complete orientation at Jamestown means visitors would better understand and appreciate the relationships among park units and resources, without having to travel through modern development between isolated historic experiences.	The quality and quantity of park visitor information and orientation would be greatly enhanced as compared to Alternative B. Visitors would not only understand Berkeley's life and legacy from the orientation at Jamestown but would gain a greater appreciation and awareness of the inter-relationship of park resources and understanding of Green Spring's primary and secondary themes. The orientation at Jamestown would not be complete without touring the site and directly experiencing the resources-the emphasis on individual revelation and interaction with resources, archeology-based programs, and special events would positively impact visitor experience by promoting individual interests and inquiries.
	No personal services programming or facilities development occurs at Green Spring, resulting in severe constraints on interpretation of resources and negative impacts to park mission and goals.	Personal services programs for the first time would present major themes to better meet park goals and engage more audiences.Visitor needs would be adequately met through the availability of personal services and facilities at Green Spring and Jamestown, and occasionally special tours.	Expanded personal services, facilities and organized tours at Green Spring would have positive impacts on visitor experience, engaging a greater diversity and number of audiences, particularly non-traditional and special interests, as compared to Alternative B.

Table 10, page 3

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
	Visitors would not directly experience Green Spring's landscape and would have little understanding of its historic significance, function, and evolution.	Visitors to Green Spring would continue to be confronted with a primarily modern landscape with agricultural remnants. Restriction of venues to the immediate domestic complex would result in a visitor experience that is less complete than Alternative C but superior to Alternative A. Visitors would have difficulty understanding the scale and organization of the historic plantation landscape.	Partial re-establishment of the landscape and its small-scale features to conditions evoking the 17th century would contribute to visitors' understanding of the shaping and use of the landscape for manufacturing, agriculture and horticulture, and the lifestyles of its owners and workers. Visitors would have unimpeded physical and visual access to key landscape and archeological features on both sides of Centerville Road.
	The noise from Centerville Road would negatively affect visitor experience, and the road traffic would function as a modern visual intrusion affecting scenic quality. Bicycle and pedestrian safety would be compromised by poor lines of sight on Centerville Road, and lack of a shoulder or separate path.	The noise from Centerville Road would negatively affect visitor experience, and the road traffic would function as a modern visual intrusion affecting scenic quality. Bicycle and pedestrian safety could be compromised by poor lines of sight on Centerville Road, and lack of a shoulder or separate path.	The closing of Centerville Road to all local through traffic except emergency vehicles would greatly benefit visitor experience by eliminating traffic noise; creating a quieter, more contemplative setting; and allowing safer pedestrian and bicycle access and circulation through the site.
	Colonial NHP visitor experience would be negatively affected by the lack of commemorative markers or directional signage at Green Spring, and many passersby would *remain unaware that it is a unit of Colonial* NHP.	Uniform, consistent directional signage between Jamestown and Green Spring, along Route 5 and along Route 614 north of the site, would make it relatively easy to access the site. However, some visitors may approach Green Spring from the north, which would negatively impact visitors' understanding of the historic connection with Jamestown. Traffic congestion at the southern entrance may contribute to this problem.	Alternative C would create a much stronger visual and physical connection between Jamestown and Green Spring than in Alternative B. Development of a gateway at Green Spring's southern entrance, closing of the northern entrance, initiation of a shuttle service, and uniform directional signage would benefit the interpretive experience by ensuring that visitors are oriented at Jamestown and approach Green Spring from the south.
Visitor Use Projections and Carrying Capacity	Carrying capacity is not an issue under this alternative, as no public facilities or visitation are envisioned that would impact resources.	New visitor use is projected to be modest, not more than 15-20% of the annual number of Jamestown visitors under either action alternative. At its highest level, visitation under Alternative B is expected to be no more than 35,000 to 55,000 annually, and perhaps up to 70,000 during the year 2007 due to Jamestown's 400th anniversary celebrations. This would amount to 170-180 visitors per day under average conditions.	New visitor use is projected to be moderate. Visitation levels are expected to average between 85,000 to 130,000 annually and peak at 160,000 in the year 2007 due to the Jamestown 400th anniversary celebrations. This would amount to an average 600-700 persons daily, four times the visitation in Alternative B.

Table 10, page 4

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
		Carrying capacity issues related to visitor experience are not anticipated due to relatively low visitation levels. Visitor experience of the core area could be a concern during periods of peak visitation; however, facilities would be designed and visitors managed to avoid overcrowding that might occur in this area.	Carrying capacity issues relating to visitor experience are unlikely. Overcrowding in the core area would not be likely because increased access to trails and interpretive spaces, and special events and programming appealing to different audiences, would distribute visitors more widely throughout the site than under Alternative B.
		Visitor facilities and use would be more concentrated in the core archeological area, as opposed to Alternative C, and thus there is some likelihood that pressure would be placed on resources in this area. The primary resources of concern include the above-ground historic ruins and key archeological features in the core, the spring, and the ephemeral pond. Current baseline conditions for these resources would be assessed, and a regular monitoring program implemented, to ensure that Green Spring's carrying capacity is not exceeded. Special design considerations for trails would direct visitors away from sensitive resources-temporary, low-impact routes would be established. Visitors would be adequately informed about the fragility of park resources, and appropriate behavior and use of the park, as part of orientation, which would have a beneficial effect on resource protection.	Visitor facilities and use would be more dispersed than under Alternative B, and thus there is less likelihood that undue pressure would be placed on a particular site resource. However, due to the small size and sensitivity of the natural and cultural resources to human disturbance, adverse impacts on resource protection related to carrying capacity may be expected. In addition to the resources that may be affected under Alternative B, other resources of concern would include the forested wetlands, bald eagle habitat, streams, and archeological and cultural landscape features currently under forest cover. The approach to carrying capacity issues would be as described under Alternative B.

Table 11, page 1

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Park Setting and Adjacent Land Use	The park would undertake no action that would affect Green Spring's setting.	Park actions would create a managed, park-like setting that would enhance visitor's understanding of Green Spring as an historic plantation and distinguish it as a unit of Colonial NHP. Visitor support facilities and interpretive stations would be small-scale and designed to blend in with the surroundings. The existing configuration of open fields to woods would not be altered, although a 1-2 acre wooded buffer would be established on the eastern boundary to screen off-site development.	The effect of park and partnership actions on the park's historic setting would be generally positive, resulting in a more complete, cohesive landscape partially rehabilitated to 17th century conditions. Modern visual intrusions would be minimized, enhancing and expanding interpretive vistas within and beyond park boundaries. The park setting would be altered to a much greater extent than in Alternative B, to provide a wider variety of interpretive experiences; however, the level and type of facilities development would be compatible with the 17th century plantation setting.
	The park would continue to work with James City County, citizens, and private landowners on an ad hoc basis to protect the scenic and environmental values of Route 5 and Greensprings Road, and plantation-related resources on private lands. However, collaboration would primarily be a response to resource threats. Development pressures to expand residential and commercial growth and widen roads around Green Spring would continue, and critical associated scenic and cultural resources would likely be lost.	Partnerships with the county and adjacent landowners would be strengthened and formalized to protect and enhance existing interpretive vistas within park boundaries and buffer the unit from adjacent land uses. Planning for the Jamestown 2007 commemoration and opening Green Spring to the public would benefit regional land use planning, encouraging future commercial and residential development to be managed compatibly with historic sites and scenic resources in the county. Plantation-related resources on adjacent lands would be more likely to be protected and preserved.	Similar to Alternative B. However, there would be greater opportunity under this alternative to conserve open space and cultural resources and explore compatible design and development on adjacent lands.
	Public roads that access the park and intersections at park entrances would remain available to the traffic generated by intensive modern development and perceived as unsafe. The 100-foot vegetative buffer would continue to suffer encroachments.	The park would work with VA DOT and the county to upgrade tourism-related corridors. Centerville Road would have significant negative effects on the integrity of the historic setting. Impacts to safety would continue to be adverse.	Partnerships with VA DOT and the county to upgrade tourism-related corridors and close Centerville Road through NPS property, create a gateway at the site's southern entrance, close off the northern entrance, and enhance the Centerville-Route 5 intersection would have a major positive effect on the park setting, visually re-establishing the historical connection to Jamestown. However, rehabilitation of the entry trace, and leaving Centerville Road in some form as a utility corridor and emergency route, may diminish this connection.

Table 11, page 2

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
	The park would undertake no actions that would affect land use in the vicinity of Green Spring.	The demand for visitor support services adjacent to the park would be low due to projected low visitation-effects on local land use patterns would be negligible.	The demand for visitor support services near the park would likely not be sufficient to change land use in the vicinity of the park. There may be a greater demand for visitor support services as compared to Alternative B. Limited commercial development may occur along Route 5, with minor potential to affect the park setting.
Regional and Local Economy	There would be no improvements to the park unit or any actions taken that would include visitor or government expenditures affecting the local or regional economy.	Overall effects to the local or regional economy would be minimal because the level of facilities and program development would not generate significant additional expenditures in the community or the need for commercial services. Green Spring's small visitor pool would likely not consist of new visitors to the region, but rather pre-existing visitor pools from area attractions.	There would be minor, positive effects on the local economy. One-time construction costs; long-term maintenance, research, and staffing expenditures; and visitor expenditures in the local community would contribute more sales and income tax revenues and tourism-related jobs to the local and regional economy than the other alternatives. Expanded program and facilities, as compared to B, would increase visitation at the park and attract new visitors to the region.
Community Facilities and Energy Use	No community services, such as utilities or waste disposal, are currently required at the site. The park would take no future actions to affect these services.	Overall effects on community services such as utilities would be negligible. Energy consumption would be significantly less as compared to Alternative C, due to expected low levels of visitation, minimal park staff presence, and facilities development. Adequate water, sewer and electric capacity exist to serve this alternative; however, decreasing regional groundwater supplies would require institution of water conservation measures.	Potential effects on public utilities could be greater than under Alternative B. Higher visitation levels, expanded facilities development, artifact processing, and landscape maintenance needs would consume greater quantities of energy and water. Adequate sewer and electric capacity exist to serve this alternative. However, park actions would place demands on water authorities. Water conservation measures would be implemented in recognition of declining regional groundwater supplies.
Emergency Services	Since Green Spring would remain closed to the public, community emergency services for the most part would not be required at the site, with the exception of police assistance in the event of unauthorized access to the site.	Overall, impacts on county emergency services would be negligible, and would consist of occasional police, fire or medical backup for park rangers during emergencies.	Overall impacts on county emergency services would likely be negligible to minor. The county would contribute occasional police, fire or medical backup for park rangers during emergencies.

Table 11, page 3

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*: The Interpretive Landscape of Green Spring
	County emergency response times are not affected by any park action.	Centerville Road remains open and there are negligible to minor effects on county emergency response times from park actions. A new fire station adjacent to the site would use Centerville Road as an emergency route, and there is the potential for collisions between emergency vehicle traffic and visitor vehicles, pedestrians and bicyclists.	Effects on county emergency response times from the closing of Centerville Road would remain negligible for police and medical services, since this route is not an efficient means to access western and southern parts of James City County. Effects on fire emergency response times from road closure would also likely be negligible, as the NPS would allow access to the road for emergency vehicles and for the general public in the event of an emergency requiring an evacuation.
Park visitation, total/year	0	35,000 - 55,000 on average projected annually for 2008 to 2012	85,000 - 130,000 on average projected annually for 2008 to 2012
Per Capita Spending	0	$8.60 (no park expenditures; includes gasoline)	$17.20 (no park expenditures; includes gasoline and one meal)

Table 12: Summary of Impacts to Transportation and Site Access

Table 12, page 1

Topic	Alternative A: No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*: The Interpretive Landscape of Green Spring
Bus/Shuttle Transit	Park actions would not affect the county's public transit system, and the park would provide no transportation to Green Spring.	Overall effects of park actions on the public transit system would be minor but positive. The opening of Green Spring to the public, the development of new and expanded facilities at Jamestown, and continuing residential and commercial growth in the area could result in the long-term expansion of the public transit system to an under-served area of the county. Greater numbers of visitors would be able to access Jamestown and Green Spring while minimizing traffic congestion, parking problems, and pollution impacts to park resources.	Overall effects of park actions on the public transit system could be moderate. Greater expected numbers of visitors to the region and continuing residential and commercial growth would increase the demand for public transit to western areas of the county. Regional transportation needs would be better served by the expansion of public transit infrastructure and addition of a park-operated shuttle system between Jamestown and Green Spring. However, the ridership base may not be sufficient to support the operation of public and park-operated transit systems year-round.
Motor Vehicle Access & Local Roads	The park would take no action that would affect motor vehicle access to the site or impact local roads. Centerville Road would stay open to through traffic, and current unsafe conditions related to road design would remain.	Impacts from visitor vehicles on the future capacity of the local road network and levels of service would be negligible. Safety issues and traffic flow efficiency would be of concern on Centerville Road, particularly at the intersections of Centerville Road and parking lot access, Rte. 5/Centerville and Rte. 5/Greensprings roads. NPS would encourage VDOT and James City County to implement appropriate traffic calming measures and design modifications to the intersections to address these issues.	Minor additional traffic from visitor vehicles would result in negligible impacts to road capacity and level of service. The closing of Centerville Road to through traffic, and diversion of traffic onto alternate routes, is unlikely to result in the diverted traffic exceeding the planned capacity of local roads because of the opening of Alternate Route 5 and availability of Route 199. There would be minor delays for traffic using alternate routes around the NPS property. Improvements to the intersections and detours onto Alternate Route 5 would benefit the local road network by promoting safe, efficient traffic flow and use of safer alternate routes.

Table 12, page 2

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Bike/Pedestrian Access	Centerville Road remains as a potential link with the regional trail system; however, lack of a shoulder, lack of expansion potential and unsafe intersection crossings would discourage cyclists and pedestrians from using the road. Because the NPS would discourage the use of Centerville Road as a bicycle/ pedestrian throughway, the county would need to locate an alternative trail connection to the regional trail system.	Safe access to Green Spring would be provided only through the southern entrance; however, safety improvements to the Centerville Road/Route 5 intersection would be needed to avoid collisions among motorists, pedestrians and bicyclists. Because NPS would actively discourage bicyclists and pedestrians from using Centerville Road as a throughway, the county would need to locate an alternative trail connection to the regional trail system.	Overall effects of park actions would be to provide improved, safer bicycle and pedestrian access to the park through the southern entrance; however, thru traffic would be prohibited, and the county would need to locate an alternative alignment to connect to the regional trail system.
	Bicycle and pedestrian access to Green Spring would be restricted; however, there *may be unauthorized access from Centerville* Road and through surrounding residential areas. Ongoing park watch volunteers would report unauthorized access to park staff.	Bicycle and pedestrian access to Green Spring would be encouraged. Some unauthorized *incursions may continue to occur from* Centerville Road and through adjacent residential areas; however, ongoing park watch volunteers and greater park ranger presence under this alternative would minimize this problem.	Access to the park would be controlled to a greater degree than any other alternative; however, the historic Green Spring entry trace and the Centerville Road corridor may become access points for unauthorized users. Overall, the number of unauthorized users would be reduced as compared to Alternative B.

Table 13: Summary of Impacts to Park Operations and Administration

Table 13, page 1

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Staffing	Current staffing levels of .7 full time equivalents, drawn from existing Colonial NHP staff, would be maintained.	4.6 full time equivalents, an additional 3.9 over existing staffing level would be needed to meet the goals of this alternative.	10.5 full time equivalents, an additional 9.8 over current staffing level would be needed to meet the goals of this alternative.
Maintenance	Current maintenance activities at Green Spring, including minor repairs to structural remains and mowing the fields once or twice a year, have negligible impacts to park operations and would continue. Isolation of the park from other units and use of the Jamestown Maintenance Facility for equipment storage would continue to cause operational inefficiencies as staff haul maintenance equipment from remote locations.	Current maintenance activities would expand to include maintenance of trails, waysides, the utility corridor, landscaping around visitor facilities, and the visitor contact and parking area on a long-term, daily basis. Operational inefficiencies described under Alternative B would be aggravated by the frequency of park staff travelling several miles out of their way to service the new facilities.	The largest increase in full time equivalents would be for maintenance, to manage the landscape features, trails, interpretive structures, and visitor facilities, and keep the utility corridor cleared and Centerville Road maintained for emergency use. Landscape and visitor facilities maintenance would represent a significant long-term operational cost, as compared to Alternative B. Possible addition of new maintenance facilities at Green Spring would have positive effects on operational efficiency.
Facilities and Equipment	Staff would continue to use outdated, inconvenient space off site for administrative purposes, and maintenance equipment would continue to be stored at the Jamestown Maintenance Facility, 3 miles from Green Spring.	Same as Alternative A. The existing maintenance facility could accommodate new equipment required under this alternative. Interpreters and other staff would be based at the Jamestown Visitor Center, and therefore no new office facilities are required at Green Spring.	New centralized administrative and storage facilities on site would provide staff efficiencies and increased productivity; however, significant long-term financial commitments would be required to maintain these facilities.
Resource and Visitor Protection	The park would not conduct additional activities beyond basic repair and maintenance of standing structures. Resource protection would continue to be negatively affected by lack of regular park ranger presence, although the volunteer park watch would monitor resources and report unauthorized park use. Visitor protection would consist solely of mowing vegetation in areas to be toured to reduce any safety hazards.	Demand would increase for law enforcement, maintenance, and interpretive staff to ensure protection of resources and safety of visitors. More frequent staff patrols and continuing volunteer park watch activities would reduce unauthorized site access and better protect resources, as compared to Alternative A. Visitor facilities would be maintained to protect visitor safety, and interpretive literature would warn visitors about safety hazards.	The larger expected numbers of visitors under this alternative, as compared to Alternative B, would require 1-2 patrols per day, daily maintenance of trails and other visitor facilities, and include interpretive literature warning visitors about safety hazards. Resource and visitor protection would be better served by the continuous regular monitoring and presence of a park office on site.

Table 13, page 2

Topic	Alternative A:No Action (Current Management)	Alternative B: "Core" Site Improvements and Interpretation	Alternative C, Stage Two *(NPS Preferred Alternative)*:The Interpretive Landscape of Green Spring
Operational Expenditures	Expenditures in the areas of site preservation and resource protection, interpretation, and site maintenance and service would continue on a very limited basis, using existing park operation funds.	Operational expenditures would increase with the maintenance of new visitor facilities. Site preservation would represent the bulk of annual expenditures, with the addition of interpretation, site maintenance and service staffing. Minor utility expenses would also be incurred.	Interpretation, primarily staffing and programs, and also including maintenance of exhibitry, would require higher operational costs as compared to Alternative B. Maintenance of the interpretive landscape would be a significant annual operating cost, as would maintenance of the Centerville Road corridor. Visitor facilities, utilities, and other staff support would represent ongoing operational expenditures, and site preservation would represent a major annual operating cost.
$/year	$25,000	$283,200	$608,125
Capital Expenditure	$0	$1,092,228	$3,118,650

Note: The capital expenditures for Alternative C would require some revisions due to the NPS agreement to maintain Centerville Road once it is closed to local through traffic. Also, utilities excavation costs will be higher because of the increase in linear feet from 2-3,000 to 3,500 to 5,000.

2.9.3 Cumulative Impacts of Proposal -- Alternative C, Stage One as Transition to Alternative C, Stage Two.

The proposed revisions to Stage One of Alternative C corresponding to James City County's decision to leave Centerville Road open for the foreseeable future, are of a nature which requires an assessment of potential cumulative impacts. Tables 14 through 19 provides a narrative comparison of each major category of cumulative impact that may result from the initial implementation of Stage One of Alternative C and the subsequent implementation of Stage Two of Alternative C, including the subsequent removal and/or relocation of some Stage One facilities once Centerville Road is closed. Also noted in the following section are any unavoidable adverse impacts, and irreversible and irretrievable commitments of resources, and the relationship between short-term uses and maintenance and enhancement of long-term productivity that pertain specifically to these cumulative impacts.



1955 Caywood Excavations

Table 14, page 1

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
Site Significance, Archeological Resources, & Historic Ruins	Additional compliance archeology may need to be conducted to address cumulative impacts from the relocation of visitor facilities and parking in Stage One, and possible extension of utilities, to new locations under Stage Two. There is a slightly greater cumulative risk of potential adverse effects to archeological resources from ground disturbance than under Stage One or Stage Two individually, particularly from grading and excavation associated with new parking areas, buildings and utilities that will relocate when Stage Two is implemented. Utilities relocations could be minimized by the use of "porta-potties" or other sanitary facilities that do not require the installation of water and sanitary sewer lines. Utilities would parallel Centerville Road, or boring would occur from the roadside to bury the utilities under the road, in order to minimize ground disturbance. Utilities connections for water and electric are available north of the park unit along the shoulder of Alternate Route 5 as well as on adjacent lands south of the site along the shoulder of Route 5. The only available sanitary sewer line is located in the southern portion of the site. Electric power lines are mainly above ground and would likely not require additional excavation, with the exception of some 150-275 feet to bury the power line that connects visitor facilities to the main line on Centerville Road. The extent of additional excavation for water, sewer and electric to transition from Stage One to Stage Two would depend on the separation of these lines from one another, and the location of the utilities selected to make the connection with visitor facilities. It would also depend on the type of sanitary facilities envisioned at the park, which could be as minimal as "porta-potties" that do not require the installation of water and sanitary sewer lines, or more extensive restroom facilities that require water and sewer lines. A 10-foot separation is required between water and sanitary sewer lines, and a one-foot separation between buried electric and other utility lines. An additional water line paralleling the domestic water line may be necessary to serve a fire hydrant. The county generally requires new developments to install one hydrant every 100 feet for fire safety reasons. Extending the water lines (one for visitor facility use and one for fire safety) from developed areas to the north to serve visitor facilities under Stage One and later extending the utilities south to the new visitor facilities under Stage Two would not involve excavation in addition to that required ultimately for Stage Two, unless it were determined prior to implementation of Stage Two that connection to the water line in the southern part of the site would be preferable due to environmental or other constraints. Under these conditions, the 1,400 to 1,800 feet of excavation between Stage One facilities and Stage Two facilities would be rendered useless and therefor constitute an irreversible and irretrievable commitment of resources; however, this scenario is unlikely, as the more environmentally sensitive areas of the site are largely located at its southern end. Under any scenario except the most minimal visitor support facilities (e.g., porta-potties), the sanitary sewer line would likely need to be extended from the southern portion of the site, as this is the only available sewer line. Stage One may require trench excavation to connect to the sanitary sewer line in the southern portion of the site in addition to the trench excavation required for connecting to the water line(s) at either the southern or northern end of the site. Approximately 800 to 1,200 feet of additional excavation on one side of Centerville Road could be required to transition from Stage One to Stage Two in terms of making the connection with the sanitary sewer line. This figure represents the extension in linear feet of the sewer line from the archeological support facility/visitor contact station in Stage One to the visitor facilities location in Stage Two. Connecting utilities to visitor facilities sequentially and incrementally under Stage One and Stage Two could require a total minimum 3,600 to 3,800 linear feet of excavation on one side of Centerville Road to connect to the water line along Alternate Route 5 and the sanitary sewer line in the southern part of Green Spring. Should connections to water and sewer lines both occur from the south, a total 4,500 to 5,000 linear feet of excavation may need to occur on both sides of Centerville Road, since there is a 10-foot separation requirement for water and sanitary sewer lines. Cumulative impacts to archeological resources from ground disturbance associated with trench excavation could be minor to

Table 14, page 2

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	moderate if the connection to the water line occurred from the north end of the site. This could involve the extension of a minimum 1,200 feet of excavation on one side of Centerville Road required to connect Stage One visitor facilities to the water line on Alternate Route 5, and an additional minimum 1,200 feet to extend this connection to visitor facilities implemented under Stage Two. This represents an irreversible and irretrievable commitment of resources that would not otherwise occur if Stage Two alone were to be implemented, because the water line following Route 5 would likely be used, rather than extending the water line south from Stage One visitor facilities to the relocated Stage Two visitor facilities. Excavation related impacts to cultural resources would not occur if minimal sanitary facilities (e.g., porta-potties), not requiring installation of water and sanitary sewer lines, were to be installed. Excavation could potentially affect archeological resources in Area E, or Areas B and D of state-registered site 44JC9, depending on whether or not the right-of-way on the west or east side of Centerville Road were utilized and depending on how close the resources are to previously disturbed areas within the right-of-way. Archeological resources potentially affected include the 18th century slave quarter in the northeast portion of the site, and kitchen site, kiln site, and berm adjacent to the core manor site. Some of the highest concentrations of artifacts from the 17th and 18th centuries can be found in Area E of state-registered site 44JC9 adjacent to Centerville Road. These archeological sites would be avoided to the extent possible when locating utilities. Two previously disturbed locations within this area may serve as candidates for the excavation of utility connections from the Stage One visitor facilities to the water line(s) and overhead electric power line adjacent to Centerville Road, in order to avoid any effects to archeological resources in this area. Cumulative impacts from connecting visitor facilities to utilities at the southern end of the site could be moderate to major, involving a 1,000 to 1,200 foot extension of utilities on both sides of Centerville Road (total 2,000 to 2,400 linear feet) that would not otherwise occur if Stage Two alone were implemented. Archeological resources that could be potentially affected include the kitchen, kiln site, and berm adjacent to the core manor site (part of Area E of state-registered site 44JC9), and part of a drainage ditch (part of Area D of state-registered site 44JC9). Some of the highest concentrations of artifacts from the 17th and 18th centuries can be found in Area E of state-registered site 44JC9 adjacent to Centerville Road. Impacts to these sites would likely be minimized or avoided if utilities excavation could occur entirely within the previously disturbed road right-of-way, depending on the depth of excavation and the separation between the water lines serving the fire hydrant and visitor facilities. Additional cumulative effects on archeological resources could occur through ground disturbance associated with excavation for electric power lines. Although the primary power line is located above ground on Centerville Road, a connection must be made to visitor facilities under both Stage One and Stage Two. Each stage would require less than a 275-foot connection that would likely be buried under Centerville Road. The total excavation of 550 feet or less for the electric power connection could represent approximately 275 feet more excavation that would not be required if Stage Two alone were implemented, since the visitor facilities under Stage One and Stage Two are in different locations. The archeological resources potentially affected could include those in Area E, or Areas B and D of state-registered site 44JC9, depending on how close the resources are to previously disturbed areas within the right-of-way. Archeological resources potentially affected include the 18th century slave quarter, and kitchen, kiln site and berm (part of Area E of state registered site 44JC9), and part of a drainage ditch (part of Area D of state-registered site 44JC9). Some of the highest concentrations of artifacts from the 17th and 18th centuries can be found in Area E of state-registered site 44JC9 adjacent to Centerville Road. Impacts to these sites would likely be minimized or avoided if utilities excavation could occur entirely within the previously disturbed road right-of-way, depending on the depth of excavation and distance from visitor facilities to the power source. Mitigation for effects to archeological resources would involve the selection of the excavation route that represents the shortest distance in linear feet, the least ground disturbance, and the least impact to significant archeological resources. Less invasive options for sanitary facilities could be considered, including porta-potties, composting toilets, and other types of facilities not requiring the installation of water and sanitary sewer lines.

Table 14, page 3

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	Additional cumulative ground disturbance and potential effects to archeological resources could result from the installation of the archeological support facility/visitor contact station and parking lot in Stage One and the subsequent transitioning from Stage One to Stage Two, requiring the installation of new visitor facilities and parking in another location. Cumulative impacts from ground disturbance in transitioning from Stage One to Stage Two could be mitigated by designing the visitor facilities and parking lot under Stage One to be temporary and low-impact. For instance, the archeological support facility/visitor contact station could be moveable and perhaps modular for easy disassembly. The parking lot in Stage One would consist of gravel and/or other materials over a base that could be more easily removed than asphalt, requiring less grading and disturbance of the soils.
Landscape	Should the archeological support facility/visitor contact station, parking lot and utilities identified in Stage One be removed and re-located once Stage Two is implemented, there could be minor to moderate cumulative impacts to the cultural landscape. Excavation to extend utilities from Stage One visitor facilities to the relocated facilities under Stage Two could have additional cumulative impacts to the landscape. The type and level of impacts would be dependent on the location and extent of the excavation for extension of utilities, as described below, and options not involving the installation of water and sanitary sewer lines would be explored to minimize impacts. Topography of the rise north of the core manor site could be adversely affected by grading and re-grading for parking and utilities. Partial re-establishment of the plantation landscape under Stage Two may become more difficult on up to 1/5 of an acre because of potential soil contamination in the parking lot. Soil remediation may need to occur prior to re-planting the parking area with any vegetation, and even with remediation it is possible that more pollution-sensitive species may not survive if planted in this location. Utilities would parallel or be buried beneath Centerville Road by boring adjacent to the roadside rather than removing the road surface itself, in order to minimize ground disturbance. Existing utilities locations and separation requirements are described in the previous section on "Site Significance, Archeological Resources, & Historic Ruins" (2.9.2 Summary Impacts of Each Alternative). Also described are the various options for locating water, sewer, and electric power lines and their cumulative impacts in transitioning from Stage One to Stage Two. Cumulative impacts to landscape resources from ground disturbance associated with trench excavation could be moderate if the connection to the water line occurred from the north end of the site. This could involve the extension of a minimum 1,200 feet of excavation on one side of Centerville Road required to connect Stage One visitor facilities to the water line(s) on Alternate Route 5, and a subsequent extension of an additional minimum 1,200 feet of excavation south to the new visitor facilities that would be implemented under Stage Two. This represents an irreversible and irretrievable commitment of resources that would not otherwise occur if Stage Two alone were to be implemented, because the water line following Route 5 would likely be used, rather than extending the water line south from Stage One visitor facilities to the relocated Stage Two visitor facilities. This excavation could potentially affect landscape features in Area E, or Areas B and D of state-registered site 44JC9, depending on whether or not the right-of-way on the west or east side of Centerville Road were utilized, depending on how close the resources are to previously disturbed areas within the right-of-way, and depending on the separation width between potentially two water lines, to serve visitor facilities and for fire safety. Landscape features that could be adversely affected because they are immediate to the road include an early 20th century farm road, a berm adjacent to the core manor site, and a drainage ditch on the eastern side of the road. Generally, utilities could be routed away from these resources. Options for visitor sanitary facilities that do not involve utilities installation would also be explored. The northern part of the site adjacent to Centerville Road has fewer significant landscape features than most other areas of the site, with the exception of the vernal pond. Trench excavation along Centerville Road, or boring underneath the road, may directly impact the pond by potentially altering the hydrological regime in the long-term and causing short-term construction related impacts such as erosion and sedimentation.

Table 14, page 3

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	Two previously disturbed locations within this area may serve as candidates for the excavation of utility connections from the Stage One visitor facilities to the water line(s) and power line adjacent to Centerville Road, in order to avoid any effects to landscape resources in this area. Cumulative impacts from connecting visitor facilities to utilities at the southern end of the site -could be minor to moderate, involving a 1,000 to 1,200 foot extension of utilities on both sides of Centerville Road (total 2,000 to 2,400 linear feet) that would not otherwise occur if Stage Two alone were implemented. Landscape features that could be adversely affected because they are immediate to the road include an early 20th century farm road and a berm adjacent to the core manor site, and a drainage ditch on the eastern side of the road. Impacts to these sites would likely be minimized or avoided if utilities excavation could occur entirely within the previously disturbed road right-of-way, depending on the depth of excavation and separation between utility lines. Additional minor cumulative effects on landscape resources could occur through ground disturbance associated with excavation for electric power lines. Although the primary power line is located above ground on Centerville Road, a connection must be made to visitor facilities under both Stage One and Stage Two. Each stage would likely require less than a 275-foot connection which would probably be buried under Centerville Road. The total excavation of 550 feet or less for the electric power connection would represent approximately 275 feet more excavation that would not be required if Stage Two alone were implemented, since the visitor facilities under Stage One and Stage Two are in different locations. Landscape elements that could be affected by excavation for power lines may include a section of drainage ditch on the eastern side of Centerville Road, and a berm on the western side of the road near the core manor site. Utilities would parallel or be buried beneath Centerville Road and remain in the right-of-way to the extent possible to minimize ground disturbance and potential effects to landscape features. Potential effects depend in part on the width of previously disturbed right-of-way that would be available for utilities and how much new area would be disturbed. The shortest distance for connecting visitor facilities to the utilities would be utilized, with priority given to the selection of excavation routes with the fewest impacts to cultural resources. Options for visitor sanitary facilities not involving the installation of water and sanitary sewer lines could be explored. Cumulative adverse impacts from ground disturbance and soil contamination in transitioning from Stage One to Stage Two would be mitigated by designing the visitor facilities and parking lot under Stage One to be temporary and low-impact. For instance, the archeological support facility/visitor contact station could be moveable and possibly modular. The parking lot in Stage One could consist of gravel and/or other materials that could be more easily removed than asphalt and a concrete base, requiring minimal re-grading and less disturbance of the soil. Breakdown of pollutants from contaminated runoff at the parking lot would be aided by a pervious surface such as gravel for high-impact areas or grass for low-impact areas. Testing for types and levels of contaminants may be needed prior to re-planting this area to determine if remediation should occur, and the appropriate type of remediation necessary for revegetating the area.
Archives and Collections	No cumulative impacts.

2

Table 15, page 1

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
Soils and Prime Farmlands	Should the archeological support facility/visitor contact station and parking lot under Stage One be removed and re-located once Stage Two is implemented, there could be minor to moderate cumulative impacts to soils from short-term construction and potential long-term soil contamination from parking lot runoff. Re-grading the former parking lot on the rise north of the core manor site, and the potential need to extend utilities to the new visitor facilities location could cause short-term erosion that could be controlled through construction best management practices. The various options for extending utilities in transitioning from Stage One to Stage Two are described under the previous "Archeological Resources" section in this summary. Cumulative impacts to soils from ground disturbance associated with trench excavation would likely be minor to moderate if the connection to the water line occurred from the north end of the site. This could involve the extension of a minimum 1,200 feet of excavation on one side of Centerville Road required to connect Stage One visitor facilities to the water line on Alternate Route 5, and a subsequent additional 1,200 feet of excavation to extend the water line to new visitor facilities implemented under Stage Two. This represents an irreversible and irretrievable commitment of resources that would not otherwise occur if Stage Two alone were to be implemented, because the water line following Route 5 would likely be used, rather than extending the water line south from Stage One visitor facilities to the relocated Stage Two visitor facilities. Trench excavation could cause short-term construction related impacts such as erosion and sedimentation and destabilization of localized soils. Cumulative impacts to soils from connecting visitor facilities to utilities at the southern end of the site would likely be minor, involving a 1,000 to 1,200-foot extension of utilities on both sides of Centerville Road (total 2,000 to 2,400 linear feet) that would not otherwise occur if Stage Two alone were implemented. Additional minor cumulative effects on soils could occur through ground disturbance associated with excavation for electric power lines. Although the primary power line is located above ground on Centerville Road, a connection must be made to visitor facilities under both Stage One and the Preferred Stage Two. Each stage would require less than a 275-foot connection that would likely be buried under Centerville Road. The total excavation of 550 feet or less for the electric power connection would represent approximately 275 feet more excavation that would not be required if Stage Two alone were implemented, since the visitor facilities under Stage One and Stage Two are in different locations. Utilities would parallel Centerville Road and remain in the right-of-way to the extent possible to minimize ground disturbance and potential effects to soils. Potential effects depend in part on the width of previously disturbed right-of-way that would need to be utilized and how much new area would be disturbed. The shortest distance for connecting visitor facilities to the utilities would be utilized, with priority given to the selection of excavation routes with the fewest overall impacts to natural and cultural resources. Options for sanitary facilities that would not involve installation of water and sanitary sewer lines would be explored. Cumulative impacts from soil contamination in the approximately 1/5 acre of parking lot are likely to be greater than impacts associated with any individual stage. Soil remediation may need to occur prior to re-planting the parking area with any vegetation. Cumulative adverse impacts from ground disturbance and soil contamination in transitioning from Stage One to Stage Two would be mitigated by designing the visitor facilities and parking lot under Stage One to be temporary and low-impact. For instance, the archeological support facility/visitor contact station could be moveable and possibly modular. The parking lot in Stage One could consist of gravel and/or other materials that could be more easily removed than asphalt, requiring minimal re-grading and disturbance of the soil. Breakdown of pollutants from contaminated runoff at the parking lot would be aided by a pervious surface such as gravel for high-impact areas or grass for low-impact areas. Testing for types and levels of contaminants would be conducted prior to re-planting this area to determine if remediation should occur, and the appropriate type of remediation necessary for

Table 15, page 2

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	revegetating and stabilizing the area.
	The combined impacts to soils of implementing Stage One and Stage Two in succession may result in an additional minor conversion of less than 2% of prime farmland to non-agricultural use over and above conversions under Stage Two, for a combined total (under Stages One and Two) of up to 30% of prime farmland permanently converted, under a worse case scenario. The additional 2% conversion would mainly result from grading for the parking lot under Stage One and then re-grading the area subsequent to its removal. This would likely constitute a permanent conversion of prime farmland that would not otherwise occur with the implementation of Stage Two alone. Additional excavations for utilities, if necessary, would result in negligible effects on prime farmland because previously disturbed areas adjacent to Centerville Road would be utilized.
Wetlands and Water Resources	Generally, cumulative impacts from the removal and relocation of visitor facilities in Stage One, including the parking lot, would likely have minor to moderate consequences depending on the level and type of facilities development and the need for additional excavation to extend utilities to the relocated visitor facilities once Stage Two is implemented. Options for visitor sanitary facilities that do not involve the installation of water and sanitary sewer lines would be explored. The various options for extending utilities in transitioning from Stage One to Stage Two are described under the previous "Archeological Resources" section in this summary. Cumulative impacts-that is, those additional impacts from Stage One as a transition to Stage Two-to water resources from ground disturbance associated with trench excavation could be minor to moderate if the connection to the water line occurred from the north end of the site. This could involve not only the minor additional 1,200 feet of excavation required to connect Stage One visitor facilities to the water line along Centerville Road, but also the extension of a minimum additional 1,200 feet of excavation on one side of Centerville Road required to extend the water line(s) from Stage One visitor facilities south to new visitor facilities implemented under Stage Two. This represents an irreversible and irretrievable commitment of resources that would not otherwise occur if Stage Two alone were to be implemented, because the water line following Route 5 would likely be used, rather than extending the water line(s) south from Stage One visitor facilities to the relocated Stage Two visitor facilities. Trench excavation could cause short-term construction related impacts such as erosion and sedimentation and pose a greater risk of altering the hydrologic regime of the vernal pond in the long-term. Cumulative impacts to water resources from connecting visitor facilities to utilities at the southern end of the site could be minor to moderate, involving a 1,000 to 1,200 foot extension of utilities on both sides of Centerville Road (total 2,000 to 2,400 linear feet) that would not otherwise occur if Stage Two alone were implemented. Short-term construction impacts such as erosion and sedimentation are unlikely to affect the water resources; however, long-term impacts may result from trench excavation and the replacement of the original soils with those of a different porosity and texture. Groundwater flow could be reduced or dislocated. In concert with other utilities excavation described for Stage One or Stage Two alone, this action may help alter the hydrological regime in Powhatan Creek and the spring. Additional minor cumulative effects on water resources could occur through ground disturbance associated with excavation for electric power lines. A total excavation of 550 feet or less for the electric power connection to visitor facilities would represent approximately 275 feet more excavation that would not be required if Stage Two alone were implemented, since the visitor facilities under Stages One and Two are in different locations. Utilities would parallel Centerville Road or be buried beneath it to minimize ground disturbance and consequent hydrological impacts. Cumulative impacts to water resources could still be significant under any of the scenarios for utilities connections. Replacement of existing soils after excavation with soils that vary in texture and porosity typically affects groundwater flow. Effects to the hydrologic regime at Green Spring are largely unknown.

Table 15, page 3

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	Should the archeological support facility/visitor contact station and parking lot under Stage One be removed and re-located once Stage Two is implemented, there could be moderate cumulative impacts to water quality from short-term construction, and long-term utilities location and potential soil contamination from parking lot runoff; however, visitor facilities and the parking lot would be designed to be temporary and low-impact. Cumulative adverse impacts from soil contamination in the parking lot and from utilities excavation are likely to be greater than impacts associated with any individual stage. Both the vernal pond, and Powhatan Creek and the nearby spring could be adversely affected as described under both Stages One and Two, with the impact of additional utilities excavation and removal and relocation of visitor facilities and parking. Cumulative adverse impacts to surface and ground water quality in transitioning from Stage One to Two would be minimized through designing the parking lot in Stage One to consist of gravel and/or other materials that could be more easily removed than asphalt, requiring minimal disturbance of the soil. Breakdown of pollutants from contaminated runoff at the parking lot would be aided by a pervious surface such as gravel for high-impact areas or grass for low-impact areas. Monitoring water quality and flow in the vernal pond and Powhatan Creek for any changes in condition would be necessary, and testing for types and levels of contaminants in the groundwater may be necessary should conditions change.
Rare, Threatened and Endangered Species	Cumulative impacts to bald eagle habitat in addition to those described under Stages One and Two individually would consist of additional short-term construction impacts from the removal and relocation of Stage One visitor facilities subsequent to the implementation of Stage Two. Additional cumulative impacts may result from utilities excavation. Additional utilities excavation over and above that required to implement Stage Two alone could range from 1,400 to possibly 3,000 feet, depending on the specific option selected for connecting visitor facilities to utilities (described under the "Archeological Resources" section in this summary). The number of utility lines required-potentially two water lines, underground power connection, and sewer line-the location of the specific lines used, the width of the trench, and the ability/inability to bundle the utilities are some of the factors affecting the extent of impacts to wildlife habitat. Short-term noise disturbance from construction activities would be associated with the transitioning of Stage One to implementation of Stage Two. These activities and the related increased human activity of workers, may adversely impact bald eagles nesting on adjacent lands by reducing the viability of Green Spring as roosting and foraging habitat, particularly in and around the core area. However, potential adverse impacts would be temporary and limited by their distance from the 1,320-foot recommended buffer around the bald eagle nest. None of the additional construction activities in transitioning from Stage One to Two is anticipated to permanently remove bald eagle roosting and foraging habitat.
	Cumulative impacts to potential habitat for rare, threatened and endangered species would largely be dependent on the possibility of additional utilities excavation and the ease in which visitor facilities under Stage One could be removed and relocated under Stage Two, allowing for rehabilitation of the visitor facilities area. The archeological support facility/visitor contact station would be temporary and moveable. Rehabilitation of the parking lot area in Stage One as potential Mabee's salamander habitat onceTwo is implemented would likely be difficult due to potential contamination of the soils. Some minor portion of Mabee's habitat could be permanently lost, and individuals' mortality could increase due to the vehicles entering and exiting the parking lot. In addition, there would be an increased potential for cumulative adverse impacts to Mabee's foraging and breeding areas due to increased risk of long-term contamination to soil, ground water, and surface water in two areas-the vernal pond and Powhatan Creek. These cumulative effects to potential Mabee's habitat would be avoided if Stage Two alone were implemented. The various options for extending utilities in transitioning from Stage One to Two are described under the previous "Archeological Resources" section in this summary.

Table 15, page 4

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	Cumulative impacts-that is, those additional impacts from Stage One as a transitional stage to Stage Two-to potential Mabee's salamander habitat from ground disturbance associated with trench excavation could be moderate to major if the connection to the water line occurred from the north end of the site, and the two separate water lines anticipated could be bundled within the same previously disturbed road right-of-way. This would involve not only the minor additional 1,200 feet of excavation required to connect Stage One visitor facilities to the water line along Centerville Road, but also the extension of a possible additional 1,200 feet of excavation on one side of Centerville Road required to extend the water line(s) from Stage One visitor facilities to the new visitor facilities implemented under Stage Two. This represents an irreversible and irretrievable commitment of resources that would not otherwise occur if Stage Two alone were to be implemented, because the water line following Route 5 would likely be used, rather than extending the water line (or lines) south from Stage One visitor facilities to the relocated Stage Two visitor facilities. Trench excavation could cause short-term construction related impacts to vernal pond habitat for the Mabee's such as sedimentation. Although specific long-term effects at this site are largely unknown, there is the possibility of altering the hydrologic regime of the pond in the long-term. Cumulative impacts to Mabee's habitat from connecting visitor facilities to utilities at the southern end of the site could be minor to moderate, involving a 1,000 to 1,200 foot extension of utilities on both sides of Centerville Road (total 2,000 to 2,400 linear feet) that would not otherwise occur if Stage Two alone were implemented. Short-term construction impacts such as erosion and sedimentation would likely not affect the vernal pond habitat; however, long-term impacts may result from trench excavation and the replacement of the original soils with those of a different porosity and texture. Groundwater flow may be reduced or dislocated, although long-term effects at this site would be largely unknown. In concert with other utilities excavation described for Stage One or Stage Two alone, there is a possibility that this action may help alter the hydrological regime in the vernal pond. The additional 275 feet or less of linear feet excavated for the electric power connection to visitor facilities is anticipated to result in negligible additional impacts on salamander habitat. Utilities would parallel or be buried beneath Centerville Road to minimize ground disturbance and short-term construction related impacts to Mabee's habitat. Cumulative impacts to water resources on which the Mabee's depends would be possible even though utilities excavation would use the existing, previously disturbed road right-of-way. Replacement of existing soils after excavation with soils that vary in texture and porosity could affect groundwater flow and alter the hydrologic regime. The magnitude of these effects would depend on the depth of excavation required and extent of soil dislocation. Short-term impacts of additional construction activities during the transition from Stage One to Two could result in potential sedimentation in the vernal pond, and could temporarily prevent the Mabee's from utilizing foraging and breeding habitat. Mitigation: Forest cover would be managed to protect the Mabee's potential breeding site. Construction would minimize removal of the forest buffer and avoid the amphibian breeding season, and visitor use would be restricted from the buffer. Site soils could be stockpiled and replaced in the excavated trenches to reduce changes to soil texture and porosity that could affect groundwater flow. *Cumulative impacts mitigation*: Additional mitigation of actions in the transition from Stage One to Two would involve designing visitor facilities in Stage One that are "light on the land," e.g. easy to break down and move, low-impact, and temporary; ensuring that utilities are extended the minimum distance necessary to connect visitor facilities with existing lines, while protecting natural resources, to minimize ground disturbance and loss of habitat; and constructing low-impact parking such as gravel and/or grass to reduce potential contamination of the groundwater feeding the vernal pond. Options for visitor sanitary facilities that do not involve installation of water and sanitary sewer lines would be explored. Monitoring water quality and flow in the vernal pond and Powhatan Creek for any changes in condition would be important, and testing for types and levels of contaminants in the groundwater may be necessary should conditions change.

Table 15, page 5

Topic	
Other Vegetation	In addition to the impacts to vegetation described for Stage Two alone, there would likely be the temporary loss of less than ¼ acre of herbaceous grass area for the initial location of visitor facilities and a parking lot as described under Stage One. A smaller percentage of the area may suffer the permanent loss of herbaceous vegetation due to soil contaminated with oil, metals, and grease from parking lot runoff. Anywhere from a 1,400 to a 3,000-foot strip of mainly herbaceous vegetation could be temporarily lost due to excavation for the extension of utilities in transitioning from Stage One to Stage Two. The extent of this temporary loss would be dependent on the option selected for connecting utilities to the visitor center, as described under "Archeological Resources" in this summary. Success in rehabilitating the visitor facilities area following the removal of the parking lot and archeological support facility/visitor contact station to create grassland bird habitat or elements of an agricultural landscape would depend mainly on the extent of ground disturbance and introduction of exotics during facilities removal, and contamination of the soil from parking lot runoff. The extension of utilities needed to relocate visitor facilities under Stage One to a new location under Stage Two may include additional excavation and ground disturbance that could introduce exotic vegetation. The utilities corridor could be revegetated with native herbaceous species. It is possible that revegetation of the parking area would be difficult unless soil remediation were performed-more pollution sensitive plant species may not be able to survive in this area, at least in the near-term. *Additional mitigation of actions in the transition from Stage One to Stage Two:* Design of visitor facilities in Stage One would be "light on the land," e.g. easy to break down and move, low-impact, and temporary; utilities excavation would consider the shortest distance necessary to extend utilities to visitor facilities, with the ultimate goal of serving visitor facilities in the southern portion of the site; and low-impact parking such as gravel and/or grass would be constructed. Excavated soils could be stored and re-used. These mitigation actions would minimize ground disturbance and the introduction of exotics and encourage the re-introduction of native herbaceous species where appropriate.
Other Wildlife	Should visitor facilities constructed under Stage One be removed and relocated once Stage Two is implemented, there could be cumulative adverse impacts to wildlife habitat. These could be negligible to minor, depending mainly on the likelihood of success in rehabilitating the visitor facilities area as wildlife habitat once the facilities are removed. Less than ¼ acre of additional habitat would likely be affected as compared to Stage Two alone, and currently the area has little value as wildlife habitat. There is the slight possibility that a smaller percentage of the area may suffer the permanent loss of herbaceous vegetation due to soil contaminated with oil, metals and grease from parking lot runoff. It is possible that native grassland species would not be re-established in this area, even with soil remediation, once Stage Two is implemented. Success in rehabilitating the visitor facilities area as wildlife habitat following the removal of the parking lot and archeological support facility/visitor contact station would also depend on the extent of ground disturbance and introduction of exotics during facilities removal. The extension of utilities needed to relocate visitor facilities under Stage One to a new location under Stage Two may include additional excavation and ground disturbance that could introduce exotic vegetation. Additional excavation to extend utilities to serve relocated visitor facilities under Stage Two could have temporary impacts on wildlife. Impacts would include the noise from construction related activity and increased human presence on the site. Most species would avoid the construction areas temporarily. The extent of these impacts would depend on the option selected for extending utilities in transitioning from Stage One to implementation of Stage Two. The various options are described under the previous "Archeological Resources" section in this summary. Cumulative impacts to wildlife habitat from ground disturbance associated with trench excavation could be moderate if the connection to the water line occurred from the north end of the site. This would involve the extension of a minimum 2,400 feet of excavation on one side of Centerville Road required to connect Stage One visitor facilities to the water line on Alternate Route 5, and the subsequent extension of the water line (or lines) to new visitor facilities under Stage Two. Trench excavation could cause short-term construction related impacts from increased human activity that could affect forest species in the pine habitat and also species of the open fields. The foraging and breeding areas of these

Table 15, page 6

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	species may be temporarily disrupted. There is also a greater risk of short-term impacts to water habitat such as the vernal pond through sedimentation, and possibly a long-term risk of altering the hydrologic regime, although long-term effects at the site are largely unknown. The breeding habitat of amphibian species could be affected. Cumulative impacts to wildlife and related habitat from connecting visitor facilities to utilities at the southern end of the site would be minor to moderate, involving a 1,000 to 1,200 foot extension of utilities along both sides of Centerville Road (total 2,000 to 2,400 linear feet) that would not otherwise occur if Stage Two alone were implemented. Short-term construction activities would temporarily prevent some species such as hawks, rodents and reptiles from utilizing the open fields. There is a possibility that long-term impacts to more water-dependent species such as salamanders may result from trench excavation and the replacement of the original soils with those of a different porosity and texture. Groundwater flow may be reduced or dislocated, affecting wildlife habitat for these species. Additional cumulative impacts to wildlife from underground burial of power line connections are expected to be negligible. The additional 275 linear feet or less of excavation required to bury the power line connection would likely be in addition to the less than 275 linear feet required if Stage Two alone were implemented. *Additional mitigation of actions in the transition from Stage One to Stage Two:* A temporary, moveable and low-impact archeological support facility/visitor contact station would help mitigate the short-term adverse cumulative impacts to wildlife and associated open field habitat from construction activities. Best management practices for construction would be used to minimize erosion and sedimentation and hydrological changes to vernal pond habitat that could result from utilities excavation. The parking area may be more difficult to mitigate, potentially requiring soil remediation in order to make the soil suitable for grasses that support bird species. There is an increased minor risk of a long-term decline in the numbers and types of species that depend on open field habitat, such as hawks, rodents, and reptiles than would be likely under Stage One or Two individually. There is also a slightly greater risk that the numbers and types of water dependent species such as salamanders would decline in the long-term.
	Stage Two calls for the rehabilitation of the area reserved for visitor facilities and parking (under Stage One) for grassland bird habitat in the short-term. The archeological support facility/visitor contact station under Stage One would be designed to be low-impact and moveable to enable the successful restoration of this area as grassland bird habitat under Stage Two. However, removal and relocation of the parking area from the west side of Centerville Road south to the east side, and subsequent rehabilitation of the former parking area as wildlife habitat, could be problematic. Soil remediation to address potential contamination from runoff would be addressed, if necessary, prior to revegetation and could involve taking up the top layer of soil and gravel and/or grass, soil below the sub-base, or some type of bio-remediation. There is a slight risk that a portion of this 1/5 to ¼-acre area may not be suitable for grassland bird habitat in the long-term, even with soil remediation.
Air Quality	Additional cumulative impacts to air quality from construction activities related to relocating the parking lot or excavating for utilities would be negligible. Cumulative impacts from additional construction activities needed to transition from Stage One to Stage Two, although greater than in Stage Two alone, are expected to be minor.

Table 16, page 1

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
Levels and Patterns of Visitation and Visitor Characteristics	Visitor numbers may be slightly more dependent on the type of archeological support facility/visitor contact station erected than under Stage One alone. Should the station be temporary, mobile, and open to the outdoors, visitor numbers may be slightly reduced due to dependence on weather conditions. On the other hand, the reduction in visitor numbers under transitional Stage One would likely be offset by the creativity of on site programming and tie-ins with programs and events at other NPS units and non-NPS historical sites. Opportunities to target newer, less traditional park audiences could result.
	Under Stage One, lack of indoor activities, geographic isolation from other park units, the minimal levels of facilities development and programming, noise levels and safety hazards along Centerville Road, and absence of extensive park and regional visitor information would likely limit visitation and overall length of stay to under one hour. Because of the modest comfort facilities and interpretive features, there is a possibility that the revised scenario for Stage One would shorten the length of stay for self-guided tours. This negative impact may be offset by positive impacts from a flexible and creative approach to programming utilizing a variety of media and techniques.
Regional Visitor Experience	No cumulative impacts
Colonial NHP Visitor Experience	In preparation for the implementation of Stage Two, Stage One would rely more on a flexible and creative approach to programming utilizing a variety of media and techniques. A non-traditional approach to site events and personal programming would be more likely under this scenario as compared to Stage One or Two alone. This approach would likely have positive impacts on visitor experience, engaging a greater diversity and number of audiences, particularly non-traditional and special interests, as compared to Stage One alone.
Visitor Use Projections and Carrying Capacity	No cumulative impacts

Table 17: Summary of Cumulative Impacts to Socioeconomic Environment

Table 17, page 1

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
Park Setting and Adjacent Land Use	Visitor support facilities, traffic calming devices, and interpretive features would be modest in scale, moveable, and temporary to the extent possible for Stage One as a transition to Stage Two. This approach would minimize the possibility of relatively permanent modern visual intrusions to the park setting that can only be altered with great difficulty under Stage Two.
Regional and Local Economy	No cumulative impacts
Community Facilities and Energy Use	No cumulative impacts
Emergency Services	No cumulative impacts
Park visitation, total/year	No cumulative impacts
Per Capita Spending	No cumulative impacts

Table 18, page 1

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
Bus/Shuttle Transit	No cumulative impacts
Motor Vehicle Access & Local Roads	No cumulative impacts
Bike/Pedestrian Access	No cumulative impacts

Table 19: Summary of Cumulative Impacts to Park Operations and Administration

Table 19, page 1

Topic	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
Staffing	No cumulative impacts
Maintenance	No cumulative impacts
Facilities and Equipment	No cumulative impacts
Operational Expenditures	No cumulative impacts
Resource and Visitor Protection	No cumulative impacts
$/year	Although operational expenditures would probably not increase, there would be a shift from facilities development toward interpretive programming. Modest, more temporary facilities and a greater emphasis on programs would be a means to reduce irretrievable investments in permanent facilities that may need to be removed or eliminated once Stage Two is implemented.
Capital Expenditure	The implementation of Stage One, transition to Stage Two, and implementation of Stage Two does not represent the combined costs of the individual stages, but rather a cost that would be closer to, and potentially greater than, that of Stage Two, once Stage Two is implemented. There is some overlap of capital expenditures and cumulative expenses. Site preservation expenses would generally be the same under both stages, with a more extensive archeological shelter under Stage Two; the Stage One archeological shelter would likely be adaptively re-used for Stage Two for some other function such as exhibit space. The same landscape improvements in the core interpretive area would be made under either Stage One or Two; therefor this does not represent an additional cost in transitioning from Stage One to Two. Site maintenance and service costs would likely be the same regardless of whether or not Stage One or Two were implemented individually, or Stage One and Two were implemented in sequence. There would be no additional costs over and above those associated with Stage Two in developing trails if Stage One and Two were implemented sequentially. Capital costs associated with interpretation in Stage One are not likely to be additive to those of Stage Two. Although wayside exhibits and central exhibit panels in Stage One could be different from and additive to waysides in Stage Two, it is likely that interpretive features developed under Stage One would be re-used under Stage Two. Likewise, site furniture and site entry and other guide signage would likely not represent cumulative costs in the transition from Stage One to Two because these materials could be re-used when Stage Two is implemented.

Table 19, page 2

	Transitioning from Alternative C, Stage One to Alternative C, Stage Two
	The primary additive costs, should Stage One and Two be implemented in sequence, would likely be related to site access and infrastructure, and visitor facilities. Parking and related landscaping under Stage One would represent irretrievable additional costs because this facility could not be used under Stage Two. Likewise, traffic-calming features under Stage One represent irretrievable costs, because these features would need to be removed under Stage Two. Additional utilities excavation and compliance archeology necessary for the relocation of visitor facilities from Stage One to Stage Two may represent additional costs. The elimination of the archeological support facility/visitor contact station described under Stage One, and the relocation of visitor facilities under Stage Two, may not represent irretrievable costs because the Stage One archeological support facility/visitor contact station and related interpretive features could potentially be re-used in the implementation of Stage Two. The total capital cost of implementing Stage One and Stage Two in sequence would likely be slightly higher than implementing Two alone because there are some minor and potentially irretrievable costs that could result from the transition of Stage One to Two. Facilities and materials generated under Stage One would be re-used under Stage Two to the extent possible in order to reduce additional capital costs.

2.9.4 Sustainability and Long-term Management

Unavoidable Adverse Impacts

Short-term soil disturbance, long-term soil and vegetation loss, and long-term changes in vegetation type would likely result from excavation of utilities and removal and relocation of visitor facilities, including parking, in the transition from Stage One to Stage Two. Implementation of erosion and sedimentation control measures and re-vegetation would reduce soil movement. Some non-native herbaceous vegetation may be permanently lost, since soils in the parking area in Stage One may be contaminated. There is a slight risk that the area may not be completely restored to grass or other vegetation once parking is removed and relocated to the location in Stage Two.

Exposed soil resulting from removal and relocation of visitor facilities and utilities excavation could provide opportunities for the establishment of non-native vegetation. These effects could be minimized by re-using site soils, soil sterilization, re-vegetation with native species, and regular mowing following re-vegetation.

An additional 2% conversion of prime farmland would mainly result from grading for the parking lot under Stage One and then re-grading the area subsequent to its removal. This is a permanent conversion of prime farmland that would not otherwise occur with the implementation of Stage Two alone. These effects could not be mitigated and are likely irreversible for the foreseeable future; however, effects would be minor in magnitude and are expected to result in only localized impacts to prime farmlands.

Removal and relocation of visitor facilities in the transition of Stage One to Stage Two could adversely impact wildlife species dependent on open field habitat; however, impacts on populations are expected to be negligible, since most of these species are common throughout their range. Adverse effects to potential habitat for the Mabee's salamander, a state listed species, may occur through contamination of a small portion of their food source.

Archeological resources and historic landscape features alongside and below Centerville Road could be adversely affected by the additional utilities excavation required in the transition from Stage One to Two as well as the removal and relocation of visitor facilities. The specific resources affected would largely depend on the route selected for utilities connections, and the depth and width of excavations. This excavation could potentially affect archeological resources in Area E, or Areas B and D of state-registered site 44JC9, depending on whether or not the right-of-way on the west or east side of Centerville Road were utilized and depending on how close the resources are to previously disturbed areas within the right-of-way. Archeological resources potentially affected include the 18th century slave quarter in the northeast portion of the site, an early 20th century farm road trace south of the Stage One parking area, and kitchen site, kiln site, and berm adjacent to the core manor site. The kitchen and kiln sites are listed on the existing National Register nomination, while the other archeological and landscape features, except the farm road trace, have been recommended for a determination of eligibility for the national register.

Additional archeological sites and historic landscape features may be adversely affected by utilities excavation and the removal and relocation of visitor facilities. To the extent possible, facilities would be sited away from significant landscape features and archeological resources identified during phase two archeological surveys. In the event that additional significant archeological resources or landscape features are found during construction activities, the facilities would be relocated, and/or the archeological resources would be excavated to salvage artifacts and other archeological data. Mitigation for unavoidable effects would be developed in consultation with the VA SHPO and Advisory Council on Historic Preservation. Landscape treatment and preservation plans would be implemented to manage, protect, and rehabilitate historic landscape features, where necessary.

Trench excavation in addition to that specific to Stage Two alone, and removal and relocation of visitor facilities in transitioning from Stage One to Stage Two, could add to short-term construction related impacts such as erosion and sedimentation. Such activities could degrade water quality in either the vernal pond in the northern portion of the site or wetlands and spring in the southern portion of the site, depending on the specific routing of the utilities and depth and width of excavation. Although site-specific effects are largely unknown, there is the possibility that utilities excavation could pose a long-term risk of altering the hydrologic regime of the vernal pond, palustrine forested wetlands, and spring, due to the replacement of the original soils with those of a different porosity and texture. Groundwater flow may be reduced or dislocated. In concert with other utilities excavation described for Stage One or Stage Two alone, this action could potentially help alter the hydrological regime of these water resources. In addition, the water quality in the vernal pond could be adversely impacted by contaminants from the parking area (Stage One location) that seep into the groundwater. Implementation of appropriate erosion and sediment control measures, and stormwater management controls, would minimize the magnitude of these impacts where they occur. In addition, the replacement of stockpiled soils in the utilities trenches could moderately reduce the effects of trench excavation on groundwater flow. Breakdown of pollutants from contaminated runoff at the parking lot could be aided by a pervious surface such as gravel for high-impact areas or grass for low-impact areas. Where wetlands impacts are unavoidable, NPS policy requires in-kind restoration of forested wetlands at a minimum 2:1 ratio.

Trench excavation could cause short-term construction related impacts from increased human activity that could affect forest wildlife species in the pine habitat and also species of the open fields. The foraging and breeding areas of these species may be temporarily disrupted. Short-term noise disturbance from construction activities could adversely impact bald eagles, a federally listed species, nesting on adjacent lands by reducing the viability of Green Spring as roosting and foraging habitat, particularly in and around the core area. However, potential adverse impacts would be temporary and limited by their distance from the 1,320-foot recommended buffer around the bald eagle nest. None of the additional construction activities in transitioning from Stage One to Two are anticipated to permanently remove bald eagle roosting and foraging habitat. Potential habitat for the Mabee's salamander, a state listed species, could be adversely affected by utilities excavation and contaminated runoff from the Stage One parking lot area. Short-term impacts from utilities excavation could include sedimentation of the vernal pond habitat, and short-term impacts from the removal and relocation of the parking area and visitor facilities could include increasing the risk of mortality of

individuals from vehicles entering the parking area adjacent to salamander breeding and foraging areas. Long-term impacts could include degradation of water quality and changes in flow affecting the vernal pond. Short-term construction related impacts could be mitigated through the use of appropriate erosion and sediment control measures, stormwater management controls, and maintaining the forest buffer adjacent to the vernal pond. Some minor loss of salamander breeding and foraging habitat in the visitor facilities area (Stage One) is likely and may not be mitigated. Long-term changes are possible to groundwater flow and water quality that could adversely affect salamander habitat. Mitigation could include construction that would minimize removal of the forest buffer and avoid the amphibian breeding season, and stockpiling site soils and replacing them in the excavated trenches to reduce changes to soil texture and porosity that could affect groundwater flow.

A temporary, moveable and low-impact archeological support facility/visitor contact station would help mitigate the short-term adverse cumulative impacts to wildlife and associated open field habitat from construction activities. Best management practices for construction would be used to minimize erosion and sedimentation and hydrological changes to vernal pond habitat that could result from utilities excavation. There is an increased minor risk of a long-term decline in the numbers and types of species that depend on open field habitat, such as hawks, rodents, and reptiles than would be likely under Stage One or Two individually. There is also a slightly greater risk that the numbers and types of water dependent species such as salamanders would decline in the long-term.

Less than ¼ acre of additional wildlife habitat would likely be affected as compared to Stage Two alone, and currently the area has little value as wildlife habitat. There is the slight risk that a smaller percentage of the area may suffer the permanent loss of herbaceous vegetation due to soil contaminated with oil, metals and grease from parking lot runoff. Although Stage Two calls for rehabilitation of this area as native grasslands for bird species, the parking area would be more difficult to mitigate, potentially requiring soil remediation in order to make the soil suitable for grasses that support bird species.

Relationship Between Short-term Uses and Maintenance and Enhancement of Long-term Productivity

NPS is required to describe actions in terms of objectives of the National Environmental Policy Act to maintain and enhance the long-term productivity of the environment. The GMP alternatives include elements that would either diminish or enhance the long-term productivity of the environment. These elements, as related to the transition of Stage One to Stage Two, are described below.

Natural productivity at the Stage One new visitor facilities site would be lost for as long as the site is in use. Natural productivity of the site could be partially restored once the facilities are removed and the site reclaimed. Visitor use could also preclude some sensitive species from using the area, causing loss of natural productivity in addition to that which would occur under Stage Two alone.

Grading for the parking lot under Stage One, and then re-grading the area subsequent to its removal under Stage Two, could disturb up to 2% of prime farmlands and eliminate their productive use in this area. The productivity of these potential agricultural lands would likely be permanently lost.

Changes in hydroperiod, flow and circulation of water due to additional utilities excavation, and potential contamination of ground water from parking lot runoff in two areas (Stage One parking location and then subsequent shift of this location under Stage Two) could diminish the long-term sustainability of the site's palustrine forested wetlands and vernal pond, and their associated populations of plants and animals.

The shift in land use from forest to managed open lands in the utility corridors could affect the natural productivity of the park unit. Acreage for forest species would likely be reduced. This may cause a slight reduction in local populations of those forest-dependent species that are rare or uncommon in the region, such as potentially the Mabee's salamander. Other species dependent on open areas, such as certain types of grassland species, could lose the use of a small portion of the field habitat, due to possible contamination of their food source from parking lot runoff.

There is an increased risk of opening the forest canopy for utility corridors, which could affect the natural productivity of the park. Pioneer exotic species that thrive in disturbed areas could more easily colonize the open woodlands and potentially threaten the long-term reproductive success and colonization of native plants. The fragmented forests, scrub-shrub, and other native habitats would be less capable of long-term resistance to pests, disease, and climatic changes.

Irreversible and Irretrievable Commitments of Resources

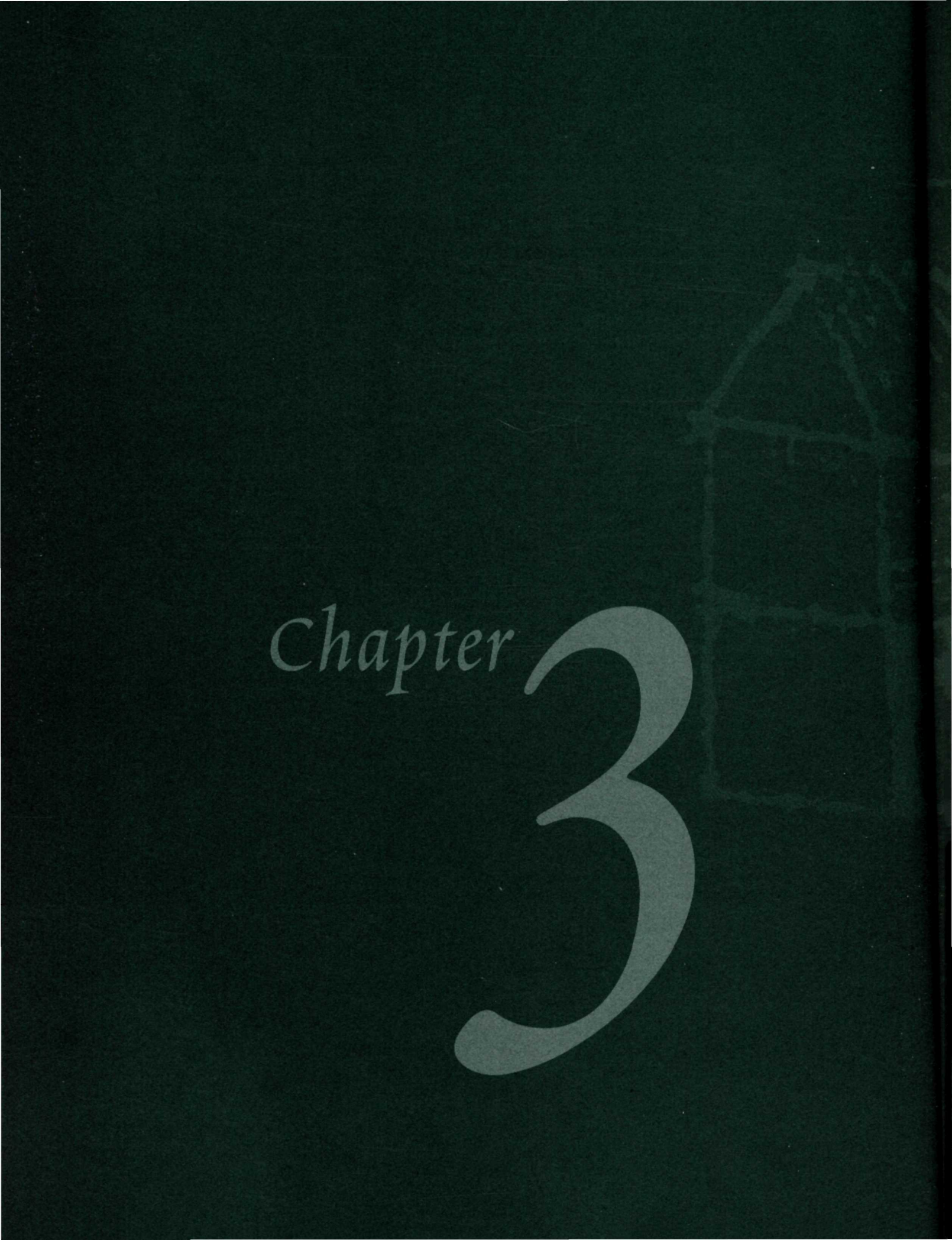
An irreversible commitment of resources is one that cannot be changed once it occurs, except perhaps in the extreme long-term. The use of non-renewable energy resources, such as fuel to power construction equipment to build new facilities, would be an irreversible commitment of resources in the transition of Stage One to Stage Two. Although energy supplies are expected to be sufficient, once committed these resources are irretrievable. Under this scenario, limited amounts of additional non-renewable resources would be used for Stage One visitor facilities and utilities excavation in addition to the non-renewable resources used to implement Stage Two. These non-renewable resources include fossil fuel energy and materials.

Disturbance and/or destruction of non-renewable resources such as archeological resources is also an additional risk in transitioning from Stage One to Stage Two. Even with mitigating measures, it is possible that some loss of archeological information could occur within the core 17th/18th century domestic complex and adjacent areas along Centerville Road, primarily due to utilities excavation.

Irretrievable commitments of resources means the resources cannot be recovered or reused, and can include those that are renewable but are used for a particular purpose and thus lost to other activities. Biotic communities at the Stage One visitor facilities would be lost for as long as the site is in use. Overall production capacity for biological resources would be reduced in this localized area, and to a limited extent, along utility corridors. Vegetation and habitat values could be partially restored when Stage One visitor facilities are removed and the site reclaimed; however, some long-term loss of habitat could occur as a result of these actions. Changes in vegetation associated with installing and maintaining sections of utility corridors would also involve irretrievable commitments of resources, because it is likely that some forested and scrub habitat would be permanently converted to managed open field.

The conversion of up to 2 percent of prime farmlands to non-agricultural and non-forestry use, in addition to conversion of prime farmland under Stage Two, would constitute an irreversible and irretrievable commitment of resources. Potentially productive agricultural lands would likely not be restored once the Stage One visitor facilities are removed. Although visitor facilities would be designed to be temporary and mobile, grading for the parking lot and potential contamination of the soils from runoff would probably preclude the use of this area for agriculture or forestry.

The funding, renewable resources, and park staff time used to construct, operate and maintain Stage One visitor facilities, and to extend utilities from Stage One to Stage Two visitor facilities, would be lost for other activities. This would constitute an irretrievable commitment of resources. Although the proposed archeological support facility/visitor contact station and parking would be removed, these areas could not be restored to pre-development conditions. The utility lines installed for Stage One and Two visitor facilities would not be removed. The utility corridors could not be restored to pre-development conditions, although native grasses could be re-established.


Chapter
3

Corrections and Revisions to the Affected Environment

3.1 Introduction

NEPA Regulations at 40 CFR 1503.4(c) allow the preparation of an Abbreviated Final EIS if relatively minor changes are made to the Draft EIS in response to commentary. An Abbreviated Final EIS contains copies of substantive comments received on the Draft, responses to those comments

and an errata section with specific modifications and corrections to the Draft EIS. No rewriting or reprinting of the Draft EIS is necessary. It is expected that original recipients who reviewed and commented on the Draft EIS have retained their copies. Additional copies of the Draft and Final EIS are also available upon request through Colonial National Historic Park.

This section of the Final EIS represents the errata sheet for Chapter 3 (The Affected Environment) of the Draft EIS. The errata sheet incorporates:

- factual corrections and other revisions to the draft plan based on substantive comments provided by agencies and individuals;
- new data obtained from agencies subsequent to the publication of the draft plan that helps to clarify impacts of existing alternatives;
- updates to existing conditions that have occurred subsequent to the publication of the draft plan and prior to publication of the final plan;
- cross-references to other sections where additional information can be located regarding changes to the existing alternatives and their potential impacts; and
- minor typographic corrections to the original plan, such as spelling errors

Particularly note new information on standards for placement of utilities, obtained from county agencies and park staff since the publication of the draft plan. This information has been included where it supplements or clarifies impacts of action alternatives B and C. New 2001-2002 traffic count data obtained from Kimley-Horn and its implications for local traffic conditions is noted in the appropriate errata sheets, the Corrections and Revisions sections, for Chapters 3 and 4. Also noted is a revision to Alternative C related to road closure. The previous concept for this alternative called for the complete closure of Centerville Road to through traffic and its eventual removal; however, in discussions with the county subsequent to the draft's release, the NPS decided to allow for the possibility that the road could be retained in some form and provide a route for emergency vehicles.

In order to provide continuity, corrections and revisions to text of the draft EIS in response to substantive public and agency comments have been organized to relate to the body of the draft document circulated for public review in May of 2001. Changes from the draft plan to the final plan are discussed below. The page numbers refer to text in the draft plan dated February 2001. Text that is to be removed from the draft plan appears as a strikeout, while text that is to be added appears as underlined. To minimize the complexity of the revisions, for instance where strikeouts and underlined text would be interwoven, entire paragraphs containing corrections appear below and are noted as substituting for the original text in the draft plan. Additional non-revised text from the draft plan is provided for context, making the changes more understandable to the reader while reducing the need to refer directly to the draft plan. Where text is reproduced only as a reference to illustrate or clarify new information, it is italicized.

3.2 Statutory Requirements

Federal Mandates

p. 97: Add the following federal law after the Clean Air Act at the top of first column:

Coastal Zone Management Act of 1972, as amended (as amended by PL 92-583; 16 U.S.C 1451 et seq), and related Federal Consistency Regulations (15 CFR 930.30; Federal Register, December 8, 2000, pp. 77124-77175)

This act preserves, protects, develops, and—where possible—restores or enhances the resources of the nation's coastal zone for this and future generations. The provisions of 15 CFR 930.30 assure that all federally conducted or supported activities, including development projects directly affecting the coastal zone, are consistent with approved state coastal management programs to the extent possible.

Commonwealth of Virginia Statutes

p. 98: Delete the extra hyphen in "federally-assisted" in the first statute listed under *Commonwealth of Virginia Statutes* as follows:

Agricultural and Forestal District Act (Code of Virginia: Title 15.2-4400)

Defines prime and unique farmland and establishes districts throughout the state, and requires analysis of impacts from federally-assisted actions on prime and unique farmlands.

p. 98: Add the following information to the second statute listed under *Commonwealth of Virginia Statutes*:

Chesapeake Bay Preservation Act (VR 173-02-01, and "Chesapeake Bay Preservation Area Designation and Management Regulations," 9VAC10-20-10 et seq)

Mandates Tidewater area governments to amend their land use plans and ordinances to meet state standards for water quality protection through provisions for sedimentation and erosion control, protection of open space and storm water runoff controls; designates Chesapeake Bay Preservation and Management Areas, including lands at Green Spring, for this purpose.

p. 98: Add the following state statute to the list, prior to the listing for the *Virginia Endangered Species Act*:

Virginia Coastal Resources Management Program (1986 Governor's Executive Order #23; Code of Virginia: Sections 2.1-39.1 and 2.1-41.1; section 307(c)(1) of the Coastal Zone Management Act of 1972, as amended: 16 USC sections 1451 et seq.; Federal Consistency Regulations, 15 CFR Part 930)

Authorizes the Virginia Department of Environmental Quality to coordinate a network of coastal zone programs administered by several agencies and to review federal actions for consistency with the federal Coastal Zone Management Act. The Office of Environmental Impact Review at the Virginia Department of Environmental Quality coordinates the Commonwealth's response to environmental impact review documents submitted to the agency regarding proposed federal projects that are subject to a determination of

federal consistency. Consistency reviews are triggered for any federal action inside the coastal zone (Virginia Tidewater region) and for actions outside the coastal zone that have the potential to affect Virginia s coastal uses and resources. The federal agency is required to analyze a project in terms of the Enforceable Programs of the Virginia Coastal Resources Management Program (VCP) and make a Consistency Determination pursuant to Subpart C (Consistency for Federal Agency Activities) of 15 CFR Part 930, with the concurrence of the appropriate state agencies.

p. 98: Add the following state statute to the list, before the last listing at the bottom of the second column:

Virginia Erosion and Sediment Control Law, Regulations, and Certification Regulations (VESCL&R; Code of Virginia: Title 10.1-560 and 10.1-564, Sec. 4VAC30-50; certification regulations are found at Section 4VAC50-50)

Authorizes the Virginia Department of Conservation and Recreation to regulate land disturbing activities on private and public lands in the state conducted by federal and state agencies and their authorized agents. The law gives the Virginia Soil and Conservation Board and local Erosion and Sediment Control (ESC) programs authority to cooperate and enter into agreements with federal agencies to facilitate ESC compliance.

p. 98: Add the following state statutes to the list after the current last listing at the bottom of the second column:

Virginia Regulations for the Control and Abatement of Air Pollution (Virginia Administrative Code: 9VAC5-50-90)

On behalf of the State Air Pollution Control Board, the Virginia Department of Environmental Quality s (VA DEQ) Office of Air Program Coordination is authorized to carry out the mandates of the Virginia Air Pollution Control Law, as well as meeting Virginia s federal obligations under the Clean Air Act. VA DEQ administers the requirements of the federal , and enforces state to improve Virginia s air quality. Air pollution sources in Virginia are regulated in cooperation with the Environmental Protection Agency, and regulations apply to the projects of federal agencies and their authorized agents that may affect air quality.

Virginia Stormwater Management Law and Virginia Stormwater Management Regulations (VSWML&R; Code of Virginia: Title 10.1, Chapter 6, Art 1.1; regulations are found at Virginia Administrative Code: Section 4VAC3-20-210 et seq)

Authorizes the Virginia Department of Conservation and Recreation to regulate land development activities of federal and state agencies and their authorized agents to prevent water pollution, stream channel erosion, depletion of groundwater resources, and more frequent localized flooding to protect property value and natural resources. Residential, commercial, industrial or institutional land development and conversion activities that involve land-clearing or soil movement are regulated.

Virginia Water Protection Permit Program (Federal Clean Water Act, Section 401; Virginia Code Section 62.1-44.2 et. seq.; Virginia Code Section 62.1-44.15:5; Virginia Administrative Code: 9VAC25-210-10 et seq., 9VAC25-660-10 et seq., 9 VAC 25-670-10 et seq., 9 VAC 25-680-10 et seq., 9 VAC 25-269-10 et seq.)

The Virginia Department of Environmental Quality administers the program, which applies to any project that requires a Clean Water Act Section 404 permit, a Rivers and Harbors Act Section 10 permit, or a water withdrawal that also requires a Section 404 permit or a Federal Energy Regulatory Commission license or relicense. Activities requiring a permit include, but are not limited to, dredging, filling or discharging any pollutant into or adjacent to surface waters, excavating in wetlands, or otherwise altering the physical, chemical or biological properties of surface waters. The Virginia Water Protection Permit Program authorizes the Virginia Marine Resources Commission to file a Joint Federal-State Permit Application (JPA) with federal

agencies when delineated wetlands on federal property are likely to be affected by projects. Wetland impact avoidance and minimization efforts are documented in the JPA, which is submitted to the U.S. Army Corps of Engineers and the Virginia Department of Environmental Quality for permit processing.

3.5 Assessment of Existing Conditions

3.5.1 Cultural Resources: Archeological Resources and Historic Ruins

p. 104: Add two hyphens that are missing in last sentence of first paragraph:

Of the three periods, two—Archaic and Woodland—are associated with prehistoric sites in and around the NPS Green Spring property.

p. 105: Revise and delete typos and inaccuracies from paragraph three as follows:

~~Six~~ Five structures within the core domestic complex are possibly linked to Governor Berkeley, including the foundations of a manor and pottery kiln; ~~part of the orangerie, or greenhouse, wall;~~ possibly the foundations of a structure east of the mansion, the "kitchen"; and ~~a~~ remnants of walls associated with a structure traditionally known as the "jail." Further archeological investigation may date the latter to the post-Berkeley era. In addition, archeological remnants of an early fence line, probably dating to Berkeley's time, was uncovered near the later "orangerie." The manor site consists of the foundations of the oldest construction, excavated by Caywood and referred to as the "old Manor House," and a later addition, referred to as ~~the~~ "the Mansion," which may or may not have been constructed during Berkeley's day. Most of these sites and structures are clustered fairly close together in an open field that sits on an elevated natural terrace. The springhouse foundation, replaced in the 20th century with concrete block, is located below the terrace to the south of the mansion. The brick portion of the foundation may date to the 18th century. ~~The remaining greenhouse wall is also located below the mansion~~.

p. 105: Revise the first two sentences of the fifth paragraph as follows:

One of the most intriguing of the ~~Berkeley~~ potentially 17th century structures is the ruin of a brick building known as the "jail." The "jail" was ~~possibly~~ reputed to be a temporary holding cell for the rebel followers of Nathaniel Bacon, Jr.

p. 105: Delete the seventh paragraph:

~~Southwest of the main house is located part of the remaining wall of a significant structure known as the "orangerie," perhaps a greenhouse or nursery. If so, it is one of the earliest in Virginia, dating to the mid-17th century and testimony to Berkeley's far-ranging horticultural experiments. The standing remains include a 3-foot-thick brick wall about 45 feet long. A terrace was built up to its northern wall, typical of colonial greenhouses that took advantage of the insulating properties of the soil.~~

p. 106: Revise the second paragraph under "Ludwell Family Ownership (1678-1770)" as follows:

> Horticultural experiments from Berkeley's day were continued and exotic plant specimens were raised, including oranges~~, perhaps utilizing Berkeley's "orangerie."~~ grown in the "orangerie." Recent archeological investigations have ascertained that this structure dates from the 1720s. Part of the remaining wall is located southwest of the Berkeley manor site. The standing remains include a 3-foot thick brick wall about 45 feet long. A terrace was built up to its northern wall, typical of colonial greenhouses that took advantage of the insulating properties of the soil. Tobacco and indigo became the important cash crops in the early 18th century-an indigo-processing facility was tentatively identified at a site adjacent to NPS property.

p. 107: Eliminate typos from fifth sentence of paragraph seven as follows:

> The road appears to be the same one shown on the Soane survey map of 1683, the Goodall map of circa 1770 and the Desandrouin map of 1781, where it is named "Chemin de Newcastle [Newcastle Road]"(~~M~~main ~~R~~road from Jamestown~~w~~ to Chiswell's Ordinary).

p. 108: Revise the first sentence of the third paragraph as follows:

> The row of three buildings on the west side of the mansion probably includes the possibly Berkeley-era "jail" and possibly a slave quarter from the late 17th or early 18th century, discovered during the Phase I archeology survey.

p. 109: Revise the last sentence in the first paragraph under "The Early 20th Century" as follows and add two new sentences following it:

> From the Berkeley period, the resources are primarily archeological, and only the jail ~~and greenhouse wall~~ remained standing. The date of the "jail" has yet to be determined, but it may date to the 17th century. The greenhouse wall from the early 18th century also survived.

p. 109: Eliminate typo from fourth sentence of third paragraph under "The Early 20th Century" as follows:

> The final alignment of current Route 614 also appears on the Toano Quadrangle, in a position further to the east of its previous location east of the Berkeley manor site. At this time, the road was split into two sections—Greensprings Road below Route 5 and Centerville Road above it. The two road segments no longer intersected at Route 5. The Centerville Road sections now swung to the east of two structures identified on the 1863 Gilmer map.

3.5.2 *Natural Resources: Regional Ecological Resources*

p. 113: Create separate paragraph for last sentence of existing second paragraph, and add the following information to the end of the new paragraph:

> All actions potentially impacting streams and other sensitive water-related resources at the Green Spring park unit are subject to federal regulations, including the Agreement of Federal Agencies on Ecosystem Management of the Chesapeake Bay, and should be sensitive to state and local regulations such as the Chesapeake Bay Preservation Act Ordinances. In addition, NPS policies under the 1999 Chesapeake Bay Riparian Buffer Plan require that impacts of proposed actions on riparian areas are to be evaluated, and alternative landscape treatment options are to be considered that incorporate protection of watersheds and their associated ecological processes.

Under the 1998 Federal Agencies Chesapeake Ecosystem Unified Plan (FACEUP), resource management and interpretation at Green Spring would consider watershed protection, stewardship of natural resources, nutrient and toxics prevention and reduction, and sustainability. Under the FACEUP plan, federal agencies also committed to construction design that (a) minimizes natural area loss on new and rehabilitated federal facilities, (b) adopts low-impact development and best management technologies for stormwater, sediment, and erosion control, and reduces impervious surfaces; and (c) considers the Conservation Landscaping and Bayscapes Guide for Federal Managers.

3.5.2 *Natural Resources: Rare, Threatened and Endangered Species*

p. 120: Note revision to second sentence of last paragraph regarding bald eagle nesting season:

A residential subdivision not far from the nest indicates that the bald eagles have been habituated to some human activity; however, they are vulnerable to disturbance if current patterns of activity should suddenly change. The eagles are particularly vulnerable during breeding season (November 15 to January 15) and nesting season (~~November 15~~ December 15 to July 15), often abandoning the nest when disturbed (Bradshaw, Quarterly Progress Report, Nov. 1997 – Feb. 1998; Shultz, fax/personal communication, 27 Jan 1998).

p. 121: Insert the following new paragraph to replace the existing second paragraph:

The USFWS, in accordance with the Endangered Species Act, has established management guidelines that include a primary management zone buffer of 750 feet around bald eagle nests. The USFWS recommends that no development occur and all human activity should be discouraged within this primary management zone buffer; however, the USFWS reviews each project on a case-by-case basis to evaluate the need for the 750-foot buffer. In addition, any activities within 1,320 feet of the nesting site should be coordinated with USFWS. The primary management buffer and additional 1,320-foot management zone are indicated in Figure 5 on page 43. Consultation with the USFWS will take place prior to any construction, clearing of vegetation or any human activity within the 1,320-foot management zone. The USFWS recommends that no development occur in the 750-foot primary management buffer unless the nest is inactive for three consecutive breeding seasons; however, development may occur immediately following nest abandonment if the nest structure has been destroyed (Cindy Shultz, USFWS, fax/personal communication, 27 Jan 1998). The recommended 750-foot buffer and additional 1,320-foot management zone encompass a significant portion of Green Spring's pine forest as well as adjacent private lands. The NPS will consult with the USFWS and VADGIF in planning for visitor activities and management of natural resources that may occur within 1,320 feet of the bald eagle nest.

3.5.3 *Visitor Experience: Colonial NHP Visitor Experience*

p. 126: Correct typo in fourth sentence of second paragraph under "Pre-Visit Orientation" and revise as follows:

> Visitors seeking information about Colonial NHP to pre-plan their visit have several options. General information about the park and specific to Green Spring is available at the park's internet site. Thousands of visitors also call or write the park before their visits to ask for maps and other orientation materials. Colonial NHP's Internet home page links to the Green Spring web site (http://www.nps.gov/ colo/grnspg/gspg1~~l~~.htm). Note that the web address includes a "one" after "gspg" not an "L."

3.5.3 *Visitor Experience: Potential Visitor Characteristics*

p. 129: Place space in "underway" in last sentence of seventh paragraph as follows:

> In fact, some of these non-traditional visitors are being captured by expanded joint marketing and programming efforts under way currently, with cooperation among NPS, APVA, James City County, and Jamestown-Yorktown Foundation.

3.5.4 *Socioeconomic Environment: Park Setting and Adjacent Land Use*

p. 131: Correct typo in third sentence of first paragraph:

> However, due to surrounding development and few protective mechanisms to maintain the road's rural character, Greensprings Road is no longer considered ~~a potential~~ a potential extension of Colonial Parkway, as proposed during the 1960s.

p. 131: Correct section on "County Scenic Protection Designations" to "County and State Scenic Protection Designations"; also place a new paragraph after the third paragraph of this section:

> The protection of the scenic qualities of Historic Route 5 is of particular concern to the Virginia Department of Transportation and Virginia Department of Conservation and Recreation (VA DCR), which jointly administer the Virginia Scenic Byways Program. Historic Route 5 was designated a Virginia Scenic Byway in 1976 because of its historical and cultural significance and its rural, country character. Qualities that should be preserved include the curvilinear, narrow alignment, which follows an historic Indian trail; the largely intact canopy consisting of large, mature trees along many sections of the road; and the rural aesthetic of the route, which includes vistas of agricultural lands and open space as well as the river bottomlands. The VA DCR has recommended maintaining a minimum 100 feet of vegetated buffer along Route 5 at Green Spring when the NPS implements the plan. The VA DCR further recommends that NPS preserve the large, mature deciduous trees along Green Spring's southern border as one of the most distinctive components of Route 5.

3.5.4 Socioeconomic Environment: Community Facilities and Energy Use

p. 133: Revise second paragraph in second column as follows, and add new paragraph below it:

Green Spring is not currently served by any public utilities. Public access to the site will require a range of utility services necessary for the efficient and safe operation and maintenance of the unit. These services include the provision of water, solid waste disposal, electricity and sewer connections. The James City County development code generally requires a separate water line for fire suppression in addition to the general-purpose domestic water line. For new developments, the Fire Department requires that a fire hydrant must be placed every 100 feet. The need for a gas line connection to provide heat or for other purposes is not anticipated under any alternatives presented in this plan. A mixed fuel pipeline bisects the southern part of the site from west to east; however, this pipeline is not available for residential or institutional use.

For the most part, utilities must be buried underground, and the excavation depth is below the frost line. The minimum excavation depth is two feet, but can be greater for certain utilities such as primary electric lines (30 excavation depth required). Separation between utility lines varies according to the type of line. Electric power lines require a minimum 1-foot separation from other utilities. A minimum 10-foot separation is required between water and sewer lines. Additional requirements for utilities include the maintenance of a cleared right-of-way, free of trees, bushes, and shrubs, and that varies in width according to the type of utility.

p. 133: Add a new paragraph to the bottom of the page:

The Green Spring site can connect to either of two water lines serving the surrounding residential development. These include the water line along the shoulder of Alternate Route 5 on the site s northern boundary, and the water line along the shoulder of Route 5 on the site s southern boundary. The only sewer line currently available bisects the southern portion of Green Spring from east to west. It is anticipated that an additional sewer line will be installed north of Green Spring in the future to serve newer residential development; however, the James City Service Authority is unable to provide a timeframe for the installation of the new sewer line. Overhead power lines exist parallel to Alternate Route 5 north of Green Spring, Route 5 south of Green Spring, and along Centerville Road itself through the site. A section of primary line from the intersection of Centerville with Alternate Route 5 to Monticello Drive is buried underground.

3.5.4 Socioeconomic Environment: Emergency Services

p. 134: Correct second paragraph as follows:

Several secondary public safety and emergency service providers are located within James City County but none are located within three miles of Green Spring. Current facilities are noted in the table ~~below~~ above. An additional fire station, under construction ¼-mile northwest of the Green Spring on Alternate Route 5, will serve the Green Spring area.

3.5.5 Transportation and Site Access: Motor Vehicle Access and Local Roads

p. 137: Add new paragraph after existing second paragraph as follows:

This GMPA includes one alternative that proposes closing the Centerville Road section between Alternate Route 5 and Route 5. The concurrence of the James City County Board of Supervisors is required. NPS retains property rights to the roadbed, pursuant to the Commonwealth of Virginia's 1932 Byrd Act, and could at some future date, and if determined feasible, petition the Board of Supervisors to initiate abandonment procedures with VDOT. The property rights to the land would automatically revert to the adjacent property owner—the U.S. Government—and the road would cease to be a public throughway. Another option short of complete abandonment is discontinuance, which removes the road from the state system, allows it to continue as a public right-of-way, and restricts car traffic while allowing pedestrian and bicycle use.

In May of 2002 the James City County Planning Commission and the Board of Supervisors both passed resolutions supporting traffic calming measures on Centerville Road through the Park, but not recommending road closure at this time. Neither precluded re-consideration of road closure in the future. In negotiating with NPS the terms under which abandonment would be re-considered, the county agreed that road closure would be coupled with continued access for emergency vehicles and for the general public in the event of an emergency which requires quick evacuation from the area. General vehicular through traffic would not be permitted. The NPS would be responsible for maintaining the roadway.

p. 137: Revise fifth paragraph at bottom of first column and sixth and seventh paragraphs in the second column:

Minor intersection and pavement improvements are envisioned for Route 5 that are compatible with the route's Scenic Byway designation. The construction of Alternate Route 5 will divert traffic from Route 5, enabling the latter to remain a two-lane facility at least until the year 2015. The county will discourage additional residential and commercial development along this scenic corridor~~.~~, and will explore options that would avoid the need for additional lanes on this Scenic Byway.

Alternate Route 5

Alternate Route 5~~, when completed, will~~ extends 5.3 miles from Route 199 at Williamsburg to just west of Green Spring, and ~~will~~ supplements existing capacity in the Route 5 corridor. ~~An already completed~~ One section of Alternate Route 5, designated Monticello Avenue, defines Green Spring's northern boundary. ~~Construction is under way to complete~~ A two-lane road has recently been completed ~~a two-lane road~~, with each lane 12 feet

wide and a 5-foot paved shoulder on each side of the road for use as a bicycle lane. The ~~estimated year of completion for the~~ entire 5.3-mile segment was completed in November of 2001. ~~is 2002the spring of 2001~~. Alternate Route 5 ~~will likely~~ may need to be expanded to four lanes by the year 2015 to meet future traffic capacity. The county taxing authority has acquired a four-lane right-of-way and envisions further easements for slopes, utilities relocation and storm water management.

The section of ~~the nearly complete~~ Alternate Route 5 that is located along the northern boundary of Green Spring is known as Monticello Avenue (formerly Legacy Drive; also designated Route 321). This section extends east from Green Spring, connecting with Greensprings Plantation Drive on Monticello Avenue s south side before the latter resumes its eastward course. Greensprings Plantation Drive, which heads south to connect to Route 5, is designated as alternate Route 614.

p. 138: Revise the second and third paragraphs and add a new paragraph between the two:

Many sections of Route 614 expect substantial increases in traffic volume in the future. The section from Jolly Pond Road to Route 5, which includes the Green Spring park unit, experienced an average daily volume of 3,122 vehicles in 1994 and ~~is~~ was projected at 5,400 in 2,015 with the assumption that Alternate Route 5 is part of the road network. ~~will be complete~~. This segment experiences its highest traffic counts during the peak commuting hours between 7:00 and 9:00 a.m., and between 4:00 and 6:00 p.m.; however, traffic counts remain fairly consistent and relatively elevated throughout the afternoon and early evening hours. Traffic volumes drop off considerably north of Route 612 (north of Green Spring), indicating that some drivers are currently using alternates to Route 614 such as Longhill Road, News Road and Route 199 to get to various shopping- and work-related destinations.

Newer 2001-2 traffic volume data provided by Kimley-Horn and Associates, Inc. suggests that the opening of Alternate Route 5 has had a noticeable impact on the local road network, and that increases in the volume of traffic originally projected for Centerville Road may in fact be less than anticipated. A 24-hour automatic average daily traffic (ADT) count was conducted along Centerville Road through the park during the week of January 14, 2002, following the opening of Alternate Route 5 to the public. The ADT was 2,950 vehicles, as compared to an ADT of 3,902 counted prior to the opening of Alternate Route 5 the week of November 12, 2001. The ADT count conducted following the opening of Alternate Route 5 represents almost a 1,000-vehicle (22%) reduction in vehicles travelling along Centerville Road through the park. ADT could continue to decrease in the future as new traffic patterns are established on newer road systems and traffic calming measures are implemented on Centerville Road. The impacts of further commercial and residential development in western and northern areas of James City County are unknown.

Route 5 experiences relatively high traffic volume levels. In 1997, before the construction of part of Alternate Route 5, it had reached its current carrying capacity of 13,000 vehicles per day. Volumes are particularly heavy east of Centerville Road to Route 615, which currently experiences an average daily traffic volume over 13,000. The James City County Thoroughfare Plan projects daily traffic volumes of 11,500 to 12,000 vehicles by 2015, even assuming that Alternate Route 5 ~~will be complete~~ is part of the road network and absorbs an additional 6,000 vehicles projected for the segment of Route 5 east of Centerville Road.

p. 138: Add a new paragraph after the existing last paragraph as follows:

Newer 2001-2 traffic volume data provided by Kimley-Horn and Associates, Inc. suggests that there have been slight increases in traffic volume on all local roads around and through Green Spring, even with the opening of Alternate Route 5. Turning movement counts (TMCs) were conducted at the intersections of Monticello Avenue and Centerville Road, Centerville Road and Route 5, and Greensprings Road and Route 5 during the

week of January 14, 2002, following the opening of Alternate Route 5. Morning peak hour traffic volumes for January, 2002 approached about 370 vehicles along Greensprings Road south of NPS property, about 460 vehicles along Centerville Road through NPS property, and some 1,400 vehicles along Route 5 south of Green Spring. Most of these counts represent a fairly minor increase from 1999 traffic counts, with the exception of Route 5, which appears to have experienced over a 150% increase over the three years. Evening peak hour traffic volumes also indicate minor to moderate increases on these local routes during the past three years.

p. 139-140: Revise fifth and sixth paragraphs on p. 139 (under "Traffic Patterns") and first and second paragraphs on p. 140 as follows:

Traffic Patterns

According to the draft 1999 Green Spring Park Traffic Study (Kimley-Horn 1999), which was conducted prior to the opening of Alternate Route 5, about half the vehicles heading south on Centerville Road toward Green Spring turned onto Monticello Avenue heading east.~~, while h~~ Half continued to the intersection with Route 5 during the survey period. The vast majority of these vehicles headed west rather than east on Route 5, and this pattern held during peak p.m. as well as a.m. hours. Traffic volumes along Greensprings Road during the peak a.m. hour indicated that vehicles ~~are~~ were mainly heading north from residential areas below Green Spring, turning right onto Route 5 to head into Williamsburg or north on Centerville Road through the NPS property. During the peak p.m. hour, the majority of vehicles along Greensprings Road ~~are~~ were heading south to residential areas below Green Spring. The majority of these vehicles appeared to be coming from the Williamsburg area by way of Route 5.

The draft Green Spring Traffic Impacts Study seemed~~s~~ to support~~s~~ anecdotal information from James City County planning staff. According to the county, ~~A~~about 1/3 to 2/3 of existing average traffic volume along Centerville Road through Green Spring represents commuting in and out of area neighborhoods, and includes children coming from neighborhoods north and south of Green Spring who attend Jamestown High School. The remainder of the traffic volume represents through traffic heading toward nearby Charles City, Lightfoot, Williamsburg, and beyond. During the peak summer tourist season, tourists make up a noticeable portion of Route 614 users.

Route 5 seems to be primarily a commuting route, although during the peak tourist season (summer) about 1/3 of the average daily traffic volume is generated by tourists using the route to access Jamestown and James River plantations. Some of the commuters are en route from Richmond and other points west to businesses in Williamsburg. The majority of commuters apparently take Route 5 to access Route 31 and the Jamestown-Scotland Ferry. Most of these Route 5 and 31 commuters do not use Route 614. Surry County workers coming from the northern part of James City County may use 614 to access Route 31 and the ferry. In addition, a significant number of vehicles on Route 5 currently are trucks hauling sand and gravel from Charles City County to serve the commercial construction at Lightfoot. These trucks access Centerville Road (Route 614) through Green Spring, continuing north on Route 614 until they reach Lightfoot. On the other hand, the demand for construction materials at Lightfoot is temporary, and it is probable that there ~~will be~~ has been a significant decrease in this type of traffic during the past few years.~~ before Alternate 5 is complete~~.

These traffic patterns ~~are expected~~ have already begun to change with the completion of Alternate Route 5,~~ and the use of Centerville Road through NPS property is expected to diminish.~~ Overall traffic volumes on Centerville Road through NPS property appear to have increased slightly during the past few years; however, the use of other local roads, particularly Route 5, has increased at a much higher percentage as compared to Centerville Road. Alternate Route 5 has seen substantial use since it opened late in 2001, diverting almost 2/3 of the traffic heading south on Centerville away from the section of road through the park. Centerville Road will

most likely become less important to residents and commuters than it is now. There currently ~~will probably~~ appears to be less demand to travel north along Centerville to current shopping and commercial destinations around Lightfoot and more demand to travel east to Williamsburg. Improvements to Route 199 and construction of an intersection with Monticello Road (part of Alternate 5) ~~has~~ have helped to open up commercial and shopping destinations in Williamsburg, making them more accessible than ever before. Route 199 loops around to the west of Williamsburg, intersects with Monticello Road, and connects back into I-64 near Lightfoot, obviating the need to use Route 614 for many travelers. There will continue to be some tourist travel to the Lightfoot area, north of Green Spring, for shopping, particularly the Williamsburg Pottery Factory; however, local residents will probably shift their destinations toward the expanded retail sector near Williamsburg.

3.5.5 *Transportation and Site Access: Road Safety and Emergency Response*

p. 140: Correct the typo—the extra period—at the end of the first sentence of the second paragraph under "Road Safety and Emergency Response":

The Centerville Road segment through NPS property is not marked with the posted speed, except for 35 mph noted for a curve in the road.~~.~~

p. 141: Revise the second paragraph by creating a new paragraph as follows, and add a sentence to the end of the new paragraph:

The county is working with the NPS to address road-related issues of safety and alterations to Green Spring's scenic and historic qualities. Several engineering and other types of solutions have been explored, such as closing the road between Alternate and historic Route 5 to all vehicular traffic, closing the road while allowing emergency vehicle access, lowering the speed limit, adding a traffic circle at the intersection of Centerville Road with Alternate Route 5, realigning Greensprings Road with Centerville Road to eliminate one intersection south of Green Spring, and changing the pavement type on Centerville to resemble that used along the Colonial Parkway. However, many of these solutions are infeasible for a variety of reasons or are not within the purview or control of the National Park Service.

An additional solution, proposed as part of the Greensprings development master plan, is to abandon existing Centerville Road and construct a new alignment further to the east. This new alignment would parallel the existing one, but it would cross the adjacent Greensprings development rather than the NPS property. This proposal is beyond the legal authority of the National Park Service to implement, and is beyond the scope of consideration for this General Management Plan Amendment. ~~However, many of these solutions are infeasible for a variety of reasons or are not within the purview or control of the National Park Service.~~

p. 141: Revise paragraphs five and six as follows:

The county would like to better serve reside ntial areas around Green Spring and improve the response time of emergency vehicles; therefore, a fire station ~~is under construction~~ was recently constructed just west of the Green Spring site along Alternate 5 to serve residential areas around Green Spring. The new station will allow more efficient, faster access to areas northwest and west in the county, reducing emergency response times for those areas. The fire department identified Route 614 through the NPS property as an emergency response corridor that would allow access to 1st Colony, Fernbrook, and other residential neighborhoods north and south of the NPS site.

Alternate emergency routes to serve residential areas south of Green Spring include ~~the completed section of~~ Alternate Route 5 east of Centerville Road, Greensprings Plantation Drive, and Alternate Route 5 west of Green Spring~~, scheduled for completion within the next year~~. Travel times using ~~both alternate routes~~ Alternate Route 5 east and west of Centerville Road may increase slightly as compared to travel times using Centerville Road; however, additional factors may increase the appeal of these alternate routes, including the safer and more efficient design of the newer roads, along with signalization that enhances traffic flow, which may offset the increase in travel times.

p. 142: Revise first paragraph as follows:

The county fire and police departments have indicated a preference for implementing traffic calming techniques on Route 614 rather than complete abandonment. Alternately, the departments have suggested that the road be closed to through traffic with access allowed for emergency vehicles only. Alternate Route 5 west of Centerville Road ~~will be~~ was completed simultaneously with the construction of the new fire station; therefor, at least two alternate routes ~~will be~~ are available to county emergency service providers to ~~provide emergency service to~~ serve residential areas around Green Spring, even with the closure of Centerville Road through the National Park. Early in 2002, James City County decided not to recommend closing Centerville Road at the current time due in large part to residents concerns regarding travel delays. The NPS has accepted this decision for the time being but retains road closure as part of the Preferred Alternative. The NPS will look to the county for reconsideration of road closure in the future. A re-consideration to close the road to general vehicular traffic would include the stipulation that the road remain accessible to emergency vehicles and to the public as an evacuation route only during emergencies.

3.5.5 *Transportation and Site Access: Bike/Pedestrian Access*

p. 142: Add a new paragraph after the fifth paragraph as follows:

The Virginia Department of Conservation and Recreation has recommended that the NPS accommodate the future development of the Capital-to-Capital (Richmond to Jamestown) Bikeway along the southern boundary of Green Spring, north of Route 5. The NPS would support a bike path along the south side of Route 5 below Green Spring, as a separate facility would lessen the possibility of bike-car accidents and provide more desirable riding conditions; however, bicycle access to Green Spring on the north side of the road is currently problematic. There is no signal at the Centerville Road/Route 5 intersection, and the close proximity of the Greensprings Road/Route 5 intersection can cause queuing and congestion problems, affecting the safety of bicyclists. Furthermore, a forested wetland is immediate to the paved roadway. Mature trees that provide the distinct visual quality to Route 5 would likely need to be removed in order to accommodate the bikeway, and it is possible that historic drainage ditches in the forested wetland would be impacted. The southern part of the Route 5 right-of-way could more easily accommodate a separate bike path because mature trees are located further back from the paved roadway in many areas along the right-of-way.

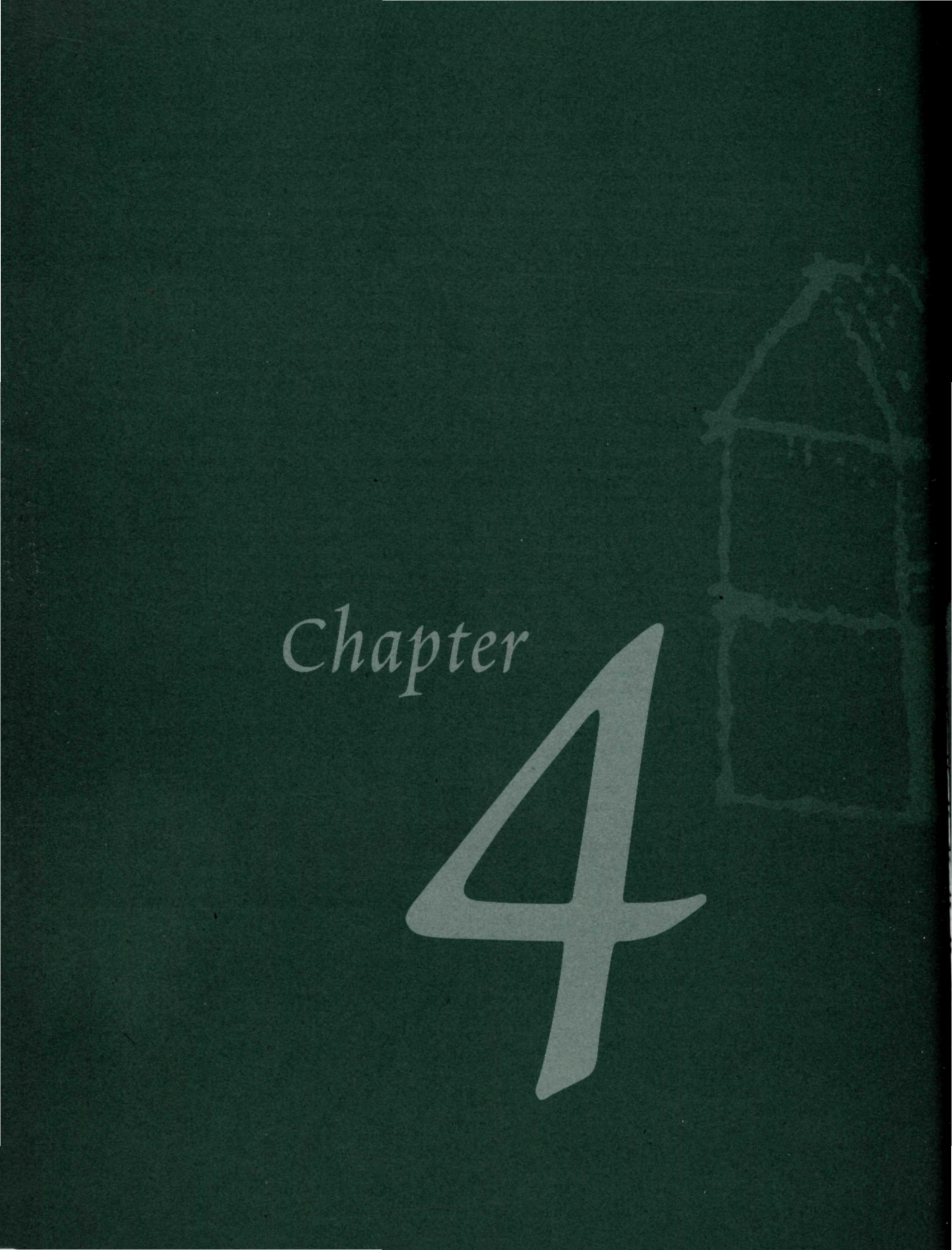
p. 143: Correct the typo in the last sentence of the third paragraph as follows:

NPS would encourage and participate in planning for improvements to allow for safe bicycle and pedestrian access into the site in a manner consistent with the purpose of ~~the~~ Green Spring.

p. 143: Aside from pedestrian and bicycle access to the site, addressed in this section, pedestrian circulation within and around the site is also of concern as long as Centerville Road remains open to through traffic. It is worth noting here that several engineering and other solutions have been explored to enable pedestrians to cross Centerville Road between the parking area and key interpretive areas, a particular concern under Alternative C, where the parking lot would likely be located across the road from the Berkeley manor site. Comments on the draft plan have included suggestions for actions to address safe circulation of visitors. These include a proposal raised during the development of the alternatives but that the NPS rejected—excavating a pedestrian tunnel under Centerville Road—and a proposal suggested during the public comment period for the draft plan—constructing a pedestrian footbridge across the road.

Because they are detailed and specific, both of these suggestions would be more appropriately considered during implementation rather than in the GMPA, which provides a conceptual framework. Early on in the GMPA planning process, the NPS rejected future consideration of a pedestrian tunnel because 1) impacts to cultural and natural resources, particularly wetlands and archeological resources, would likely be major and adverse, and contrary to NPS resource management policies; 2) adding modern visual intrusions such as a tunnel would not be compatible with park mission goals such as the rehabilitation of the 17th century landscape; 3) this option would not resolve issues relating to the noise and visual intrusion of traffic and impacts to on-site interpretation; 4) any structural alterations to Centerville Road would require VDOT's approval to implement; 5) the safety hazard of pedestrians trying to cross Centerville Road would still be present because some people would attempt to cross at other points; and 6) a second tunnel or footbridge would also be needed in the northwest part of the Green Spring park unit where the trail would cross the road (see drawing for Alternative C).

Such an action should be—but was not originally—included in the draft plan under Appendix 2, Scoping Analysis as part of "Actions that can not be taken because they are inconsistent with law or policy or are beyond the scope of this plan." The proposal for a pedestrian footbridge, while not considered during the development of the alternatives, may fall into the scoping category "Potential elements of alternatives and ideas for consideration in future implementation plans" also under Appendix 2, Scoping Analysis, in the draft plan; however, this action would likely be dropped from consideration for the six reasons noted above for the pedestrian tunnel. Traffic calming techniques (e.g., pedestrian crosswalk) that are less intrusive and minimize disturbance to natural and cultural features may be considered during plan implementation. Responses to comments on the draft plan that address these suggestions are included in the Comments and Responses section in this final plan.


Chapter
4

Corrections and Revisions to the Enviromental Consequences

4.1 Introduction

NEPA Regulations at 40 CFR 1503.4(c) allow the preparation of an Abbreviated Final EIS if relatively minor changes are made to the Draft EIS in response to commentary. An Abbreviated Final EIS contains copies of substantive comments received on the Draft, responses to

those comments and an errata section with specific modifications and corrections to the Draft EIS. No rewriting or reprinting of the Draft EIS is necessary. It is expected that original recipients who reviewed and commented on the Draft EIS have retained their copies. Additional copies of the Draft and Final EIS are also available upon request through Colonial National Historic Park.

This section of the Final EIS represents the errata sheet for Chapter 4 (Environmental Consequences) of the Draft EIS. The errata sheet incorporates:

- factual corrections and other revisions to the draft plan based on substantive comments provided by agencies and individuals;
- new data obtained from agencies subsequent to the publication of the draft plan that helps to clarify impacts of existing alternatives;
- updates to existing conditions that have occurred subsequent to the publication of the draft plan and prior to publication of the final plan;
- cross-references to other sections where additional information can be located regarding changes to the existing alternatives and their potential impacts; and
- minor typographic corrections to the original plan, such as spelling errors

Particularly note new information on standards for placement of utilities, obtained from county agencies and park staff since the publication of the draft plan. This information has been included where it supplements or clarifies impacts of action alternatives B and C. New 2001-2002 traffic count data obtained from Kimley-Horn and the implications of this data for local traffic conditions are noted in the appropriate errata sheets, the Corrections and Revisions sections, for Chapters 3 and 4. Also noted is a revision to Alternative C related to road closure. The previous concept for this alternative called for the complete closure of Centerville Road to through traffic and its eventual removal; however, in discussions with the county subsequent to the draft's release, the NPS decided to allow for the possibility that the road could be retained in some form and provide a route for emergency vehicles.

In order to provide continuity, corrections and revisions to text of the draft EIS in response to substantive public and agency comments have been organized to relate to the body of the draft document circulated for public review in May of 2001. Changes from the draft plan to the final plan are discussed below. The page numbers refer to text in the draft plan dated February 2001. Text that is to be removed from the draft plan appears as a strikeout, while text that is to be added appears as underlined. To minimize the complexity of the revisions, for instance where strikeouts and underlined text would be interwoven, entire paragraphs containing corrections appear below and are noted as substituting for the original text in the draft plan. Additional non-revised text from the draft plan is provided for context, making the changes more understandable to the reader while reducing the need to refer directly to the draft plan. Where text is reproduced only as a reference to illustrate or clarify new information, it is italicized.

4.2 Impacts Common to Both Action Alternatives

4.2.1 Cultural Resources: Site Significance, Archeological Resources and Historic Ruins

p. 149: Revise the fourth sentence to read:

> Under each alternative, development of a comprehensive archeological research program in consultation with the Virginia Department of Historic Resources would prioritize areas of further study; develop staffing, materials and management requirements for investigation; develop strategies for protecting archeological sites during and following investigation; and ascertain the necessity for and/or extent and depth of excavation.

p. 150: Add the following new paragraphs under the existing fourth paragraph (second column, top):

> *Impacts from development of new visitor facilities:*
> Of particular concern are the potential effects of utilities excavation on a wide range of archeological resources, due to the extent and depth of excavation that would be required for water, sewer, and electric lines. The particular archeological resources affected would depend on the route(s) selected for the placement of utilities, and the location of the pre-existing utilities selected for the connections with visitor facilities. The extent of utilities excavation would be comparable for both action alternatives, although there is a greater possibility to reduce the number of linear feet excavated under Alternative C. The minimum excavation for utilities under either action alternative would be approximately 3,500 linear feet and the maximum excavation would be approximately 5,000 linear feet. The minimum excavation depth to place any type of utilities is two feet, and the largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility.
>
> Specific options for connecting new visitor facilities to utilities under Alternatives B and C and the potential impacts to archeological resources are outlined in Section 4.3.2, "Site Significance, Archeological Resources and Historic Ruins," appearing later in this section of the document.

p. 151: Revise the first sentence of the third paragraph as follows:

> The preparation of historic structure reports, which document the history and changes through time of buildings and structures, would be conducted in consultation with the VA SHPO and precede any ~~rehabilitation or~~ preservation treatment for Green Spring's historic ruins, including the "jail," "orangery," and springhouse foundations.

4.2.1 Cultural Resources: Landscape

p. 152: Add the following sentence after the first paragraph under "Landscape":

Many of the landscape features such as boundary/drainage ditches are also archeological features and are potentially historically significant. Any evaluation of the landscape at Green Spring would include archeological features.

p. 153: Add a new paragraph after the existing second paragraph as follows:

Impacts from development of new visitor facilities: Development of new visitor facilities and construction of interpretive pathways could involve the removal of some trees that currently cover and protect landscape features associated with the historic drainage ditch system. These actions would result in adverse effects on earthworks from soil erosion due to the loss of vegetative cover. ~~Excavation for placement of sewer and water hookups could potentially result in adverse effects on not only earthworks but also many other landscape features. The landscape features potentially affected would depend on the exact location and areal extent and depth of the excavations that would be considered during the design phase. Care would be taken to minimize impacts to these features.~~

Utilities excavation could potentially result in adverse effects on earthworks and other landscape features, due to the extent and depth of excavation that would be required for water, sewer, and electric lines. The particular landscape features affected would depend on the route(s) selected for the placement of utilities, the location of the pre-existing utilities selected for the connections with visitor facilities, and the areal extent and depth of excavations. These factors would be considered during the design phase. These known landscape features could be avoided to a large extent. The extent of utilities excavation would be comparable for both action alternatives, although there is a greater possibility to reduce the number of linear feet excavated under Alternative C. The minimum excavation for utilities under either action alternative would be approximately 3,500 linear feet and the maximum excavation would be approximately 5,000 linear feet. The minimum excavation depth to place any type of utilities is two feet, and the largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility. Care would be taken to minimize impacts to landscape features.

Specific options for connecting new visitor facilities to utilities under Alternatives B and C and the potential impacts to landscape resources are outlined in Section 4.3.3, "Landscape," later in this section.

4.2.2 Natural Resources: Soils and Prime Farmlands

p. 155: Revise third paragraph as follows and add a new paragraph below it:

It is likely that ~~about 2,000 to 3,000~~ about 3,500 to 5,000 linear feet could be disturbed to provide underground utility lines for water and sewer, and a short connection (some 150 to 275 feet, depending on the alternative) from existing power lines on Centerville Road to visitor facilities. Trench excavation to place utilities could result in more ground disturbance and soil loss than any other activity; however, adverse impacts could be reduced by utilizing previously disturbed areas along the Centerville Road right-of-way and connecting to existing water and sewer lines that are the most proximate to the proposed central visitor comfort area. Installation of electric utilities would also be required for the visitor comfort area; depending on whether or not the connec-

tion is above or below ground there could be moderate to major impacts to soils. Excavated soils would be stockpiled on-site, and excavated areas would be backfilled with the stockpiled soils that are appropriate to site conditions. Re-using site soils would avoid potential contamination of soils. Best management practices during excavation and at stockpile areas would limit the potential for continual soil loss and erosion. Some additional soil stabilization to minimize dislocation of utility lines would be required in areas of unstable soils. Existing residential development adjacent to the southern and northern ends of the NPS property would provide the opportunity to connect to pre-existing utilities, including a gravity sewer parallel to the intermittent stream/drainage ditch on NPS property, thus reducing the severity of impacts to soils.

Specific options for connecting new visitor facilities to utilities under Alternatives B and C and ~~are~~ outlined in Section 4.3.2 on Site Significance, Archeological Resources and Historic Ruins, later in this section. Under both action alternatives, impacts to soils would be comparable in magnitude and type of soils that could be affected.

4.2.2 Natural Resources: Wetlands and Water Resources

p. 156: Add after the third paragraph (end of first column) the following as a separate paragraph:

Under both alternatives, landscaping and general maintenance of landscape features associated with more managed areas of visitor use would be required. Landscape management activities could potentially impact water quality and availability in streams and wetlands. Hardy native plant species would be utilized to the extent possible to reduce the need for watering and application of fertilizers.

p. 156: Revise the fifth paragraph as follows:

Stormwater runoff from the proposed parking lot and other added impervious surfaces has the potential to discharge sediment and pollutants into surface waters and contaminate groundwater. Impacts could be mitigated by designing for the retention of runoff, controlling the volume of flow, and filtering out surface pollutants. Mitigation measures could include implementing best practices in stormwater management, and site design and material selection such as a permeable parking lot surface. The design would minimize impervious cover.

p. 156: Revise the sixth paragraph as follows:

Excavation of trenches for utility lines is ~~most likely~~ needed for water and wastewater conveyance, as well as possibly a connection to the electric power line along Centerville Road. The minimum excavation for utilities under either action alternative would likely be approximately 3,500 linear feet and the maximum excavation would be approximately 5,000 linear feet. The extensive utilities excavation could have considerable impacts to water resources, including wetlands. The natural drainage system would be maintained to the extent possible, in lieu of a conventional storm sewer system. The unstable and wet soils, and relatively high water table level across much of the site, ~~w~~could tend to dislocate underground utility pipes over time. Potential leakage of sewage into wet soils could have significant adverse impacts to Green Spring s water resources over the long-term. Depending on the characteristics of individual soils, and location of utilities in relation to slope, sewage could seep into and pollute nearby streams and the spring. Exfiltration of sewage ~~would~~ may be combined with infiltration of groundwater into the utility pipelines. Adverse impacts to water resources ~~w~~could be minimized by locating utility lines away from sensitive water resources and steep slopes to minimize excessive erosion and potential leakage, designing a non-yielding foundation to anchor the pipes, and special design of pipes and joints to prevent exfiltration and infiltration.

p. 156: Add new paragraph at bottom of page:

Specific options for connecting new visitor facilities to utilities under Alternatives B and C are outlined in Section 4.3.2 on Site Significance, Archeological Resources and Historic Ruins, later in this section. Under both action alternatives, impacts to water resources would likely be comparable in magnitude, and there is the potential for moderate to major adverse impacts to the vernal pond in the northern part of the site and the forested palustrine wetlands in the southern portion of the site.

4.2.2 *Natural Resources: Rare, Threatened and Endangered Species*

p. 159: Note revisions to last three sentences of first paragraph:

If the eagles do not expand their breeding range into the park, visitor use of the park and operations such as trail construction and facility maintenance would likely have minor effects on bald eagles. However, if the eagles established breeding territories within the park, an increase in human use of this area would likely have negative effects on nesting bald eagles. The park would respect the typical 750-foot buffer ~~required~~ recommended by USFWS to protect the bald eagle nesting site, as long as this species is present, and would not permit facilities development, archeological excavation, or other actions that would require the removal of habitat. Some minor levels of visitor activity and research could be permitted outside of breeding (November 15 to January 15) and nesting (December 15 to July 15) seasons ~~(mid-November through mid-July)~~. Bald eagle habitat adjacent to the nest would be monitored.

4.2.2 *Natural Resources: Other Vegetation*

p. 162: Revise the second paragraph as follows:

Creation of visitor facilities, interpretive paths, and a parking area would result in the loss of native herbaceous and woody vegetation at these locations and replacement with non-native mown grass around concentrated areas of visitor activity. Soil disturbances, particularly from approximately 3,500 to 5,000 linear feet of utilities excavation, would provide an opportunity for the spread of invasive exotic plant species, which adapt to rapid dispersal and colonization of disturbed sites. Re-using excavated site soils would minimize potential contamination of soils with exotics species, and adverse impacts to native vegetation.

Specific options for connecting new visitor facilities to utilities under Alternatives B and C and the potential impacts to vegetation are outlined in Section 4.4.5, Other Vegetation, later in this section.

4.2.4 *Socioeconomic Environment: Community Facilities and Energy Use*

p. 169: Add to end of fifth sentence of the fourth paragraph the following:

Environmentally responsible building materials would be used, including recycled materials, and the NPS would promote the recycling of refuse generated by employees and visitors.

p. 169: Last two sentences at end of fourth paragraph (prior to section 4.2.5) should read:

> Energy conservation measures would be incorporated into all aspects of facilities design and activities involving energy and water consumption such as toilets, sinks, archeological processing facilities, and indoor lighting. Such measures could include, but are not limited to, installing low-flow toilets in new buildings to cut water use; conserving energy through appropriate building insulation and energy-efficient cooling and heating systems; using energy-efficient lighting such as compact flourescents; taking advantage of natural ventilation; and using energy-efficient doors and windows with reflective glass.

4.2.5 Transportation and Site Access: Motor Vehicle Access and Local Roads

p. 169: Revise the first paragraph under "Motor Vehicle Access and Local Roads" as follows:

> Existing visitor travel patterns and vehicle traffic on local roads are likely to change slightly because of the development of new visitor facilities at Green Spring. Under both action alternatives, traffic volumes on Route 5 and Greensprings Road are likely to increase slightly during the peak tourist visitation season, from May through August. Local traffic on Route 5 ~~is~~ was projected to decrease in the short-term, with the completion of Alternate Route 5, according to the *Route 5 Traffic Study and Parallel Road Analysis (1992)*; however, continued commercial and residential growth ~~would~~ has generated a steady increase in traffic volumes ~~in the long-term~~ during the past ten years, even with the opening of Alternate Route 5 in 2001. Both action alternatives would direct visitors to enter the site from the south, at the Route 5-Centerville Road intersection.

p. 170: Revise the third paragraph ("Cumulative Effects") as follows:

> No major developments have been planned for Greensprings Road, Centerville Road, or the Route 5 corridor; however, there are several large commercial and industrial centers planned or under construction in the county, ~~along with the~~ and the recently completed construction of Alternate Route 5 and improvements to Route 199. Ongoing residential development adjacent to Green Spring, combined with these other non-federal actions, would likely result in increased population, change traffic patterns, and create other effects on local traffic congestion. Cumulative effects of park actions on site accessibility would be positive. NPS would cooperate with local officials and VDOT to plan for management of traffic in the local area as needed, and to ensure safe and efficient vehicle access to the park.

4.2.5 Transportation and Site Access: Bike/Pedestrian Access

p. 170-171: Correct the last paragraph as follows:

> The park would support James City County, VA DCR and VDOT in their efforts to find an alternate alignment for the section of multi-use trail proposed for the NPS property, and for safe connections with the Capital-to-Capital Bikeway and other regional trails. Opportunities to provide safe access from regional trails into Green Spring would be explored, addressing the feasibility of access from the southern entrance, the northern entrance, and via utility rights-of-way. The park would work with VDOT, VA DCR and the county to design safe bicycle and pedestrian access from the Capital-to-Capital Bikeway proposed for Route 5, and the

Greensprings Greenway hiking trail through Jamestown High School, southeast of Green Spring. The park would continue to assist VDOT, VA DCR and county efforts to develop a multi-use trail along Greensprings Road, in keeping with bikeway planning and design efforts under way at Jamestown, which would result in positive impacts to bike and pedestrian access at both sites. Plans for pedestrian and bicycle access to Green Spring would be coordinated with the development of a regional multi-use path system that meets the needs of residents and visitors to access historic sites, shopping areas, schools, and employment centers.

p. 171: Revise third sentence of fifth paragraph ("Cumulative Effects") as follows:

In cooperation with James City County, VA DCR and VDOT, the park would promote and assist in the development of trail alignments that would create safe, scenic, and cleaner alternatives to motor vehicle travel, decreasing congestion on local roads.

4.3 Impacts to Cultural Resources (All Alternatives)

4.3.2 Site Significance, Archeological Resources and Historic Ruins – Alternative B

p. 178: Add the following six new paragraphs after the existing first paragraph:

Of concern are the potential effects of utilities excavation on a wide range of archeological resources, due to the extent and depth of excavation that would be required for water, sewer, and electric lines. The particular archeological resources affected would depend on the route(s) selected for the placement of utilities, and the location of the pre-existing utilities selected for the connections with visitor facilities. The minimum excavation for utilities under Alternative B would be approximately 3,500 linear feet and the maximum excavation would be approximately 5,000 linear feet under the likely options described below. The minimum excavation depth to place any type of utilities is two feet, and the largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility.

There are currently two likely options for routing utilities through the site and connecting to new visitor facilities. The scenarios would be partially dependent on the location of the visitor facilities, which would be decided during the design phase. The scenarios both assume that the visitor facilities under Alternative B are located approximately 1200 feet south of Alternate Route 5 and approximately 1,000 feet west of the eastern boundary of Green Spring, as indicated on the concept diagram; however, the location of the visitor facilities is merely conceptual at this point. The minimum excavation scenario (about 3,500 linear feet) would connect the visitor facilities with the sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road; utilize the water line along Alternate Route 5, extending the line south along or under Centerville Road to the new visitor facilities; and make a short underground connection with overhead power lines along Centerville Road. The previously disturbed road right-of-way would be utilized to the extent possi-

ble as a utility corridor. Either side of the road could be utilized to make connections with existing water and sewer lines. Connection to the existing power line parallel to Centerville Road would involve one short east-west connection (less than 150 feet) crossing Centerville Road. The latter is likely to be buried underground but could also be an overhead connection.

The maximum excavation scenario (about 5,000 linear feet) would also connect the visitor facilities with the sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road, and make a short underground connection with overhead power lines along Centerville Road. The main difference would be the use of the water line paralleling Route 5 south of the site rather than the use of the water line paralleling Alternate Route 5. The extension of the water line from the south represents nearly 1,000 additional linear feet of excavation. The water and sewer lines could not be located on the same side of Centerville Road, due to the 10-foot minimum separation required between these utilities and the narrow width of the road right-of-way. Water and sewer lines could be placed on opposite sides of Centerville Road, in the adjacent corridor, or buried underneath at least 10 feet apart. Such a maximum excavation scenario would only be undertaken in the event that environmental conditions precluded excavation for the water line extension in the northern portion of the site, or if it were anticipated to result in fewer/lesser impacts to significant cultural resources. Additional utility routing scenarios may be envisioned prior to implementation, once site conditions are fully investigated.

Under either scenario, trench excavation could occur adjacent to Centerville Road or alternately, boring could occur from the side, adjacent to the paved cartway, and extend underneath the road. Removing some four feet of more of the roadbed and surface itself to place the utilities directly underneath the road is unlikely to be approved by VDOT. Both of these approaches to utilities excavation have the potential to disturb known and unknown archeological resources underneath of and to the side of Centerville Road. However, the depth and width of previous disturbances in the development of the area and placement of the road may affect the potential for finding undisturbed archeological sites. Some ground disturbance has clearly already occurred, as evidenced by the deep ditches adjacent to both sides of Centerville Road and the road itself. Another factor potentially affecting archeological sites is the depth of excavation required to avoid the mixed fuel pipeline that crosses the southern portion of Green Spring from east to west. In addition, the James City County fire safety code requires the installation of a separate water line in addition to the domestic line; therefor, the width of trench excavation and/or roadside boring to place two water lines underneath the road could be significantly greater than excavation for one line alone. A greater magnitude of ground disturbance and the potential to affect a wider range of archeological resources may be anticipated.

Of known archeological sites, the maximum excavation scenario would potentially affect archeological resources in the central and southern portions of the site, immediately adjacent to Centerville Road. These could include potential adverse effects to the drainage ditch system in state registered Area D (44JC9D), possibly a brick kiln site in state registered Area A (44JC9A), a pottery kiln site associated with the Berkeley manor and a berm in state registered Area E (44JC9E), and an early 20th century sunken farm road, also located in state registered Area E. The pottery kiln site is listed as part of the current National Register nomination, while the other archeological feature s e xcept the farm road a re noted as potentially significant and may be eligible for the National Register.

The minimum excavation scenario would potentially affect all archeological resources noted above; however, unlike the maximum excavation scenario, affects to the drainage ditch system would likely be minor. In addition, an 18th century slave quarters site and a farm road trace (part of Area B in state registered 44JC9B) in the northeastern corner of the site could be affected. Only one side of Centerville Road would likely be needed as a utility corridor. This approach allows greater flexibility in selecting the utilities route to avoid or minimize effects to archeological resources as compared to the maximum excavation scenario. Any utilities excavation would seek to avoid significant archeological resources to the extent possible.

4.3.2 *Site Significance, Archeological Resources and Historic Ruins – Alternative C*

p. 179: Add the following new paragraphs after the existing fifth paragraph (top right column):

Of concern are the potential effects of utilities excavation on a wide range of archeological resources, due to the extent and depth of excavation that would be required for water, sewer, and electric lines. The particular archeological resources affected would depend on the route(s) selected for the placement of utilities, and the location of the pre-existing utilities selected for the connections with visitor facilities. The minimum excavation for utilities under Alternative C would be approximately 3,600 linear feet and the maximum excavation would be approximately 4,000 linear feet under the likely options described below. The minimum excavation depth to place any type of utilities is two feet, and the largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility.

There are currently two likely options for routing utilities through the site and connecting to new visitor facilities. The scenarios would be partially dependent on the location of the visitor facilities, which would be decided during the design phase. The scenarios both assume that the visitor facilities under Alternative C are located approximately 1900 feet north of Route 5 and approximately 400 feet west of the eastern boundary of Green Spring, as indicated on the concept diagram; however, the location of the visitor facilities is merely conceptual at this point. The minimum excavation scenario (about 3,600 linear feet) would connect the visitor facilities with the sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road; utilize the water line along Route 5, extending the line north along or under Centerville Road to the new visitor facilities; and make a short underground connection with overhead power lines along Centerville Road. The previously disturbed road right-of-way would be utilized to the extent possible as a utility corridor. Because of the requirement for a 10-foot separation between water and sewer lines, opposite sides of the road would need to be utilized to make connections with existing water and sewer lines. Both lines could also be buried under the roadbed. Connection to the existing power line parallel to Centerville Road would involve one short east-west connection (probably less than 275 feet) crossing Centerville Road. The latter is likely to be buried underground but could also be an overhead connection.

The maximum excavation scenario (about 4,000 linear feet) would also connect the visitor facilities with the sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road, and make a short underground connection with overhead power lines along Centerville Road. The main difference would be the use of the water line paralleling Alternate Route 5 north of the site rather than the use of the water line paralleling Alternate Route 5. The extension of the water line from the north represents nearly 500 additional linear feet of excavation. Either side of Centerville Road could be used for both water and sewer lines because these are being routed from different directions. Such a maximum excavation scenario would only be undertaken in the event that environmental conditions precluded excavation for the water line extension in the northern portion of the site, or if it were anticipated to result in fewer/lesser impacts to significant cultural resources. Additional utility routing scenarios may be envisioned prior to implementation, once site conditions are fully investigated.

Under either scenario, trench excavation could occur adjacent to Centerville Road or alternately, boring could occur from the side, adjacent to the paved cartway, and extend underneath the road. Removing some four feet of more of the roadbed and surface itself to place the utilities directly underneath the road is unlikely to be approved by VDOT. Both of these approaches to utilities excavation have the potential to disturb known and unknown archeological resources underneath of and to the side of Centerville Road. However, the depth and width of previous disturbances in the development of the area and placement of the road may affect the poten-

tial for finding undisturbed archeological sites. Some ground disturbance has clearly already occurred, as evidenced by the road itself and deep ditches adjacent to both sides of Centerville Road. Another factor potentially affecting archeological sites is the depth of excavation required to avoid the mixed fuel pipeline that crosses the southern portion of Green Spring from east to west. In addition, the James City County fire safety code requires the installation of a separate water line in addition to the domestic line; therefor, the width of trench excavation and/or roadside boring to place two water lines underneath the road could be significantly greater than excavation for one line alone. A greater magnitude of ground disturbance and the potential to affect a wider range of archeological resources may be anticipated.

Of known archeological sites, the maximum excavation scenario could potentially affect archeological resources in the northern, central and southern portions of the site, immediately adjacent to Centerville Road. These could include potential adverse effects to the drainage ditch system in state registered Area D (44JC9D), possibly a brick kiln site in state registered Area A (44JC9A), a pottery kiln site associated with the Berkeley manor and a berm in state registered Area E (44JC9E), and an early 20th century sunken farm road, also located in state registered Area E. In addition, an 18th century slave quarters site and a farm road trace (part of Area B in state registered 44JC9B) in the northeastern corner of the site could be affected. The pottery kiln site is listed as part of the current National Register nomination, while the other archeological features—except the farm roads—are noted as potentially significant and may be eligible for the National Register.

Unlike the minimum excavation scenario, affects to the drainage ditch system would be minor. Only one side of the road would likely be needed as a utility corridor. Although the linear feet disturbed by excavation would be greater, this approach allows greater flexibility in selecting the utilities route to avoid or minimize effects to archeological resources as compared to the minimum excavation scenario.

The minimum excavation scenario would likely affect a narrower range of the known archeological resources noted above, mostly resources located in the southern half of the site. Potential moderate to major adverse effects could occur to the drainage ditch system in state registered Area D (44JC9D), possibly a brick kiln site in state registered Area A (44JC9A), and a pottery kiln site associated with the Berkeley manor and a berm in state registered Area E (44JC9E). The pottery kiln site is listed as part of the current National Register nomination, while the other archeological features are noted as potentially significant and may be eligible for the National Register. Any utilities excavation would seek to avoid significant archeological resources to the extent possible.

p. 180: Revise the fourth paragraph as follows:

Impacts from the alteration and/or removal of Centerville Road (Route 614) and enhancements to the Route 5 and Route 614 intersection: Alternative C calls for closing Centerville Road to through traffic, and possibly removing and replacing with other materials about 52,800 to 57,600 square feet (about 1 and1/4 acres) of road surface. ~~Roadbed removal~~ Replacement of the modern asphalt surface with an alternate surface would not have ~~potential~~ adverse effects on the road, a potential historic resource, since the surface treatment would be compatible with Green Spring's historic setting.

p. 180: Add a new paragraph after the existing sixth paragraph as follows, and revise the seventh paragraph:

Roadbed removal is a "worst case scenario" that would be considered prior to implementation along with a range of other options, including the retention of the current roadbed, or removal and replacement of the roadbed with gravel or other surface materials. It is unlikely that a re-vegetated roadway would be considered because of the need to maintain a thruway for emergency vehicles and an emergency evacuation route for the public. If the roadbed is retained, then no ground disturbance need occur.

Mitigation of adverse impacts from road alteration or removal would involve a number of actions, including the completion of a cultural landscape study that would determine the road's significance as a cultural resource, its period of significance and evolution, and its historical relationship to the regional transportation network. A determination of eligibility would be made, in consultation with the VA SHPO. If the road were determined eligible for inclusion on the national register, the retention of the roadbed would be explored. ~~r~~Roadbed removal and additional construction could proceed contingent upon following the appropriate consultation and compliance procedures associated with Section 106 of the National Historic Preservation Act. The NPS would consult with James City County regarding roadway surface materials that would enable the corridor to be used as a safe and efficient route for emergency vehicles and as an alternative emergency evacuation route.

4.3.2 *Site Significance, Archeological Resources and Historic Ruins – Conclusion*

p. 181: Revise the paragraph for "Alternative B" as follows:

Alternative B: The overall effect of park actions under this alternative would be to improve the protection, preservation and maintenance of archeological resources. Generally, the risk of disturbance to unknown archeological resources would be minor to moderate, as compared to alternative C, and would be offset by the gains made for artifact preservation; better preservation of remaining ruins; better understanding and more accurate interpretation of resources, particularly in the archeological core; and greater control of site security. Ground disturbance from utilities excavation represents a potentially substantial risk to archeological resources under either Alternative B or C; however, there is a slightly greater risk under Alternative B that a wider range of resources would be affected as compared to Alternative C. ~~No significant~~ Significant archeological features ~~are likely to~~ that could be affected include the drainage ditch system, possibly a brick kiln site, a pottery kiln site associated with the Berkeley manor and a berm adjacent to the manor site. In addition, an 18th century slave quarters site in the northeastern corner of Green Spring could be affected. The pottery kiln site is listed as part of the current National Register nomination, while the other archeological features—except the farm roads—are noted as potentially significant and may be eligible for the National Register. Two early 20th century farm road traces not contributing to the site's period of significance may be affected.

p. 181: Revise the first paragraph for "Alternative C" as follows:

Alternative C: ~~Partial landscape rehabilitation~~ Interpretive landscape management and interpretive demonstrations to evoke the 17th century, and development of visitor facilities and interpretive programs, have the potential to affect many more archeological resources than under alternative B, due to the geographic extent of these activities. In addition, Phase II archeological investigations in the core area and woods would be more in-depth and wide-ranging. The risk of disturbance to unknown archeological resources is relatively high. Excavation for utilities represents a potentially substantial risk to archeological resources, as in Alternative B; however, a narrower range of resources may be affected in Alternative C. Ground disturbance may preclude additional data retrieval at a future date, and affect understanding of the site's resources; however, carefully planned investigations in select areas with high probability of yielding additional archeological data, including artifacts, would result in positive impacts to understanding and interpreting the site's 17th century colonial resources.

p. 181: Revise the second sentence of the second paragraph under Alternative C as follows:

The data collected from compliance and investigative archeology would allow the park to ~~gradually rehabilitate~~ manage the park's landscape to evoke the 17th century, with some possibility of partial rehabilitation or restoration of some features.

4.3.3 *Landscape – Alternative B*

p. 182: Add the following new paragraphs after the existing sixth paragraph on this page:

Utilities excavation could affect a wide range of landscape features, some of which are also archeological or historic resources, due to the extent and depth of excavation that would be required for water, sewer, and electric lines. The particular landscape features affected would depend on the route(s) selected for the placement of utilities, and the location of the pre-existing utilities selected for the connections with visitor facilities. The minimum excavation for utilities under Alternative B would be approximately 3,500 linear feet and the maximum excavation would be approximately 5,000 linear feet under the likely options. The two most likely options are described in the section on Site Significance, Archeological Resources and Historic Ruins for Alternative B above in the errata sheet. The minimum excavation depth to place any type of utilities is two feet, and the largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility.

Under either scenario, trench excavation could occur adjacent to Centerville Road or alternately, boring could occur from the side, adjacent to the paved cartway, and extend underneath the road. Removing some four feet of more of the roadbed and surface itself to place the utilities directly underneath the road is unlikely to be approved by VDOT. In addition, this approach would affect a cultural landscape feature the road itself although this feature likely does not contribute to the site s significance. The general location of this through road may date to the late 19th century. The depth and width of previous disturbances in the development of the area and placement of the road may affect the potential for not only finding undisturbed archeological sites but also unaltered landscape features. In addition, the James City County fire safety code requires the installation of a separate water line in addition to the domestic line; therefor, the width of trench excavation and/or roadside boring to place two water lines underneath the road could be significantly greater than excavation for one line alone. A greater magnitude of ground disturbance and the potential to affect a wider range of landscape features may be anticipated.

The maximum excavation scenario would potentially affect landscape features in the central and southern portions of the site, immediately adjacent to Centerville Road. These could include potential adverse effects to the drainage ditch system, a berm adjacent to the manor site, and an early 20th century sunken farm road. The drainage ditch system and berm are noted as potentially significant and need to be assessed for National Register eligibility. The farm road is not considered contributing to the site s period of significance. In addition, the open fields as agricultural remnants and the forested wetlands below the manor site would be potentially affected.

The minimum excavation scenario would potentially affect all landscape features noted above; however, unlike the maximum excavation scenario, affects to the drainage ditch system would likely be minor. In addition, an 18th century slave quarters site and a farm road trace in the northeastern corner of the site could be affected. The former is potentially eligible for the National Register as contributing to the site s period of significance. Only one side of Centerville Road would likely be needed as a utility corridor. This approach allows greater flexibility in selecting the utilities route to avoid or minimize effects to landscape resources as compared to the maximum excavation scenario. Any utilities excavation would seek to avoid significant landscape features to the extent possible.

4.3.3 *Landscape – Alternative C*

p. 183: Correct the typo in the first paragraph under "Alternative C" as follows:

> This alternative proposes a higher degree ~~offsite~~ of site intervention than Alternative B, and therefore the greatest potential for impacts to known and unknown cultural landscape features.

p. 183: Add the following new paragraphs after the second paragraph under "Alternative C" (Impacts from visitor facilities development):

> Utilities excavation could affect a wide range of landscape features, some of which are also archeological or historic resources, due to the extent and depth of excavation that would be required for water, sewer, and electric lines. The particular landscape features affected would depend on the route(s) selected for the placement of utilities, and the location of the pre-existing utilities selected for the connections with visitor facilities. The minimum excavation for utilities under Alternative C would be approximately 3,600 linear feet and the maximum excavation would be approximately 4,000 linear feet under the likely options. The two most likely options are described in the section on "Site Significance, Archeological Resources and Historic Ruins" for Alternative C above in the errata sheet. The minimum excavation depth to place any type of utilities is two feet, and the largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility.
>
> As in Alternative B, trench excavation could occur adjacent to Centerville Road or alternately, boring could occur from the side, adjacent to the paved cartway, and extend underneath the road. Removing some four feet of more of the roadbed and surface itself to place the utilities directly underneath the road is unlikely to be approved by VDOT. In addition, this approach would affect a cultural landscape feature—the road itself—although this feature likely does not contribute to site significance. The general location of this through road may date to the late 19th century. In addition, the James City County fire safety code requires the installation of a separate water line in addition to the domestic line; therefor, the width of trench excavation and/or roadside boring to place two water lines underneath the road could be significantly greater than excavation for one line alone. A greater magnitude of ground disturbance and the potential to affect a wider range of landscape features may be anticipated.
>
> The maximum excavation scenario could potentially affect landscape features in the northern, central and southern portions of the site, immediately adjacent to Centerville Road. These could include potential minor to moderate adverse effects to the drainage ditch system, an early 20th century sunken farm road, an 18th century slave quarters site, and a farm road trace in the northeastern corner of the site. These landscape features—except the farm roads—are noted as potentially significant and may be eligible for the National Register. The farm roads are not considered as contributing to site significance.
>
> Unlike the minimum excavation scenario, affects to the drainage ditch system would likely be minor. Only one side of the road would likely be needed as a utility corridor. Although the linear feet disturbed by excavation would be greater, this approach allows greater flexibility in selecting the utilities route to avoid or minimize effects to landscape features as compared to the minimum excavation scenario.
>
> The minimum excavation scenario would likely affect a narrower range of the landscape features noted above, mostly resources located in the southern half of the site. Potential moderate to major adverse effects could occur to the drainage ditch system and forested wetlands in the southern portion of the site, and a berm adjacent to the Berkeley manor site. Any utilities excavation would seek to avoid significant landscape resources to the extent possible.

p. 184: Revise the seventh paragraph as follows and add a new paragraph after it:

Impacts from the alteration ~~and/or removal~~ of Centerville Road (Route 614) and enhancements to the Route 5 and Route 614 intersection: The significance of Route 614 as an historical road trace would be determined prior to any action affecting the road, such as ~~road its~~ surface removal or alteration. Appropriate mitigation steps would be taken in consultation with the VA SHPO.

It should be noted that roadbed removal is a "worst case scenario" that would be considered prior to implementation along with a range of options, including the retention of the current roadbed, or removal and replacement of the roadbed with gravel or other surface materials. It is unlikely that a re-vegetated roadway would be considered because of the need to maintain a thruway for emergency vehicles and an emergency evacuation route for the public. If the roadbed is retained, then no disturbance of landscape features would occur. The NPS would consult with James City County on the appropriate surface and design features for the road that would allow safe and efficient emergency vehicle use.

4

p. 185: Revise the first paragraph as follows:

Mitigation of any adverse effects potentially resulting from roadbed removal or other related activities would involve a number of actions, including a cultural landscape study that would determine the road's significance as a cultural resource, its period of significance and evolution, its relationship to the Ludwell Lee mansion, and its historical relationship to the regional transportation network. Before removing or altering a portion of Centerville Road or widening the road adjacent to the intersection with Route 5, the road's eligibility for inclusion on the national register would be evaluated in consultation with the Virginia SHPO. If the road were determined eligible for the national register, the option of retaining the roadbed would be explored. ~~r~~Roadbed removal and additional construction could proceed contingent upon following the appropriate consultation and compliance procedures associated with Section 106 of the National Historic Preservation Act. The NPS would consult with James City County regarding the appropriate roadway surface materials that would enable the corridor to be used efficiently and safely as a thruway for emergency vehicles and as an emergency evacuation route. The benefits of road closure and ~~road~~ potential removal and/or replacement with other surface materials would include the opportunity to de-emphasize the post-18th century road to allow partial rehabilitate~~e~~ion of ~~a~~ the cultural landscape ~~feature~~ to historic conditions, and to allow visitors safe access to interpretive sites throughout the NPS property.

p. 185: Revise the third paragraph as follows:

Road removal and replacement with other surface materials may be selected as an option. ~~Prior to road removal~~ In this case, procedures would be initiated to implement Section 106 of the National Historic Preservation Act. All cultural landscape features in the immediate vicinity of the construction would be identified and documented, and an appropriate mitigation strategy developed, if necessary. Mitigation for facilities construction is as described under "Impacts Common to Both Action Alternatives."

p. 185: Revise the fourth paragraph as follows:

Impacts from interpretive landscape management and treatment ~~rehabilitation~~: An enlarged central open area, which may include~~s removing~~ altering the treatment of Route 614, may enhance the spatial interpretation of the historic 17th century plantation. Adding elements such as crops, gardens, field delineations, and enhancing the historic circulation network may begin to evoke the feeling of an early, working plantation but there is also a danger of creating a misleading or false image of Berkeley's Green Spring. The park would conduct thorough research of the early Green Spring plantation prior to implementing any landscape changes to evoke the

Berkeley era. Educational materials would provide the visitor with an understanding of ~~the rehabilitation~~ this evolutionary process and the potential for error in its interpretation. A clear distinction would be made between ~~rehabilitated~~ preserved 17th century features and interpretive demonstrations that use large swaths of native grasses, wildflowers, and agricultural crops to symbolically convey the open, managed character of a 17th century plantation. ~~Rehabilitation~~ Interpretation of the 17th century landscape would remain incomplete, in part because it would be necessary to maintain a utility corridor and emergency vehicle route through the site, along the Centerville roadway. Re-vegetation of the roadway is unlikely.

4.3.3 *Landscape – Conclusion*

p. 185: Revise the second and third paragraphs under "Conclusion" as follows:—

Alternative B: Overall effects of park actions on the cultural landscape would be minor but positive. Overall, integrity of the cultural landscape would remain low; however, individual features contributing to the site's historic significance would be preserved. Utilities excavation would potentially affect a wider range of landscape features than in Alternative C, including Centerville Road, the drainage ditch system, a berm adjacent to the manor site, two farm road traces, and an 18th century slave quarters site. All of these landscape resources except the two farm road traces have been determined preliminarily as potentially contributing to site significance and possibly eligible for the National Register with additional research. The current forest/field mosaic would be maintained, as would the spatial relationships within the domestic complex, and earth forms currently under forest cover would continue to be preserved. Visitors would understand the historic resources and need for their protection. Additional cultural landscape studies would aid in the selection of appropriate preservation treatments and inform interpretation.

Alternative C: The effect of park actions on the cultural landscape would be to provide visitors for the first time with a sense of the original scale of the domestic complex during Berkeley's tenure and some of the types of manufacturing and agricultural activities that were part of an early southern plantation. Partial ~~rehabilitation~~ re-establishment of the domestic complex, forecourt and garden, and surrounding fields to 17th century conditions over the long-term, would provide visitors with an improved interpretive experience that makes a stronger connection with Jamestown's development than alternative B. Additional cultural landscape studies, archeological investigations, and floral and faunal analyses of historic conditions would be critical to ensuring an accurate representation of 17th century cultural landscape features. Preservation treatments using the Secretary of the Interior's standards would be clearly based on research and analysis, and distinguished from interpretive treatments or contemporary demonstrations such as ghost structures which are meant to symbolically convey ideas and themes appropriate to Green Spring's history but not dating from that time period. Centerville Road, likely a post-18th century transportation element, may need to be retained for emergency vehicle access, and would therefor affect the park's management and partial re-establishment to 17th century conditions. An earthworks management plan would provide a better understanding of potential changes to historic resources currently under forest cover, and ways to limit impacts. Utilities excavation would potentially affect a narrower range of landscape features than in Alternative B, possibly limited to Centerville Road, the drainage ditch system and forested wetlands in the southern portion of the site, and a berm adjacent to the Berkeley manor site; however, effects on the drainage ditch system and wetlands could be much greater than under Alternative B. These landscape features are considered potentially significant and may be eligible for the National Register.

4.4 Impacts to Natural Resources (All Alternatives)

4.4.2 Soils and Prime Farmlands – Alternative C

p. 191: De-italicize the first sentence of the second paragraph as follows:

~~*Impacts to prime farmlands from visitor facilities development are minor and comparable in scope to alternative B.*~~ Impacts to prime farmlands from visitor facilities development are minor and comparable in scope to alternative B.

p. 191: Note the replacement of the second to last sentence in the third paragraph:

It is likely that 1/4 to 3/5 of an acre of soils would be disturbed for construction of a parking lot and the adjacent visitor contact station/exhibit facility. Additional acreage would be disturbed to accommodate stormwater management facilities. Short-term adverse impacts would include soil disturbance and loss. Soil loss would be greater as compared to alternative B if the parking lot were to be located east of the Berkeley manor site and Centerville Road, because the soils are located on relatively steep slopes of from 6 to 15 percent and subject to significant erosion hazards and severe runoff. In addition, these soils are wet and have shrink-swell potential, which makes them unstable. Facilities development may occur with costly design and management considerations. Less impact might be achieved if the parking and visitor support facilities were moved to areas with more stable soils, and measures were taken to reduce runoff that could erode steep areas, such as the installation of detention basins or paving with permeable asphalt or crushed stone. Long-term impacts would include soil compaction underneath the parking lot and attached road length.

p. 192: Revise the first sentence of the third paragraph as follows:

Impacts from interpretive landscape management ~~*rehabilitation*~~: As opposed to Alternative B, this alternative would involve clearing woodlands in an attempt to re-establish crop patterns, formal gardens, and other elements of the 17th century plantation landscape, and to symbolically convey through contemporary interpretive elements the open, agricultural character of the landscape.

p. 193: Revise the third paragraph as follows, splitting it into two paragraphs, and revise the first sentence of the fourth paragraph:

Impacts from the alteration and/or removal of Centerville Road (Route 614): A range of options would be explored for treatment of the road prior to plan implementation. All options must consider the need to maintain a thruway along Centerville Road for emergency vehicles and a public evacuation route during emergencies. The options could include, but are not limited to, retention of the roadbed as is, removal of the asphalt surface, and replacement of the road surface with gravel or other materials. The roadway is unlikely to be revegetated because of the need for emergency access.

Under the "worst case scenario" of road removal and replacement with new materials, ~~U~~up to two acres of soils would likely be disturbed through construction activities and result in impacts on soils. During construction and roadwork, soil disturbance and ground cover loss could occur from the exposure of subsoil. Heavy equipment to remove the asphalt surface would cause compaction of soils near the site. Disturbance of the subsoil during road removal could lead to subsoil loss, having a moderate negative impact; however, the loss would be reduced because of the sunken road profile. Soil losses would be mitigated through the use of best management practices to minimize soil movement. Mitigation ~~w~~could include relatively quick stabilization of existing subsoil, replacement of topsoil, and possibly seeding with native grasses or replacing with other surface materials, along with preserving soil permeability within the active construction zone, restoring permeability to compacted soils, and controlling soil erosion and sedimentation from roadbed removal. Soil loss would be eliminated if the roadbed remains in place.

Consideration would be given to maintaining the current road surface. Should road removal be implemented, then ~~T~~the minimum necessary construction footprint necessary to remove the roadbed would be mapped. The NPS would consult with James City County regarding the appropriate road surface materials to allow for the corridor's safe and efficient use as an emergency vehicle thruway.

p. 193: Revise paragraph five as follows:

Road removal would have long-term positive effects on soils, as compared to other options for treatment such as replacement with gravel and other materials or retention of the roadbed. Although re-vegetation of the roadway is unlikely, due to the need to maintain an emergency thruway, ~~Re-vegetation of the road area~~ this action would stabilize the soils. Successful re-vegetation of the road area would largely be dependent on whether or not soil conditions are physically restored along the road corridor. Successful re-establishment of native ~~trees, shrubs, and~~ grasses could occur within 10-20 years, or sooner if road benches are outsloped using original subsoil and topsoil cast aside during road construction. Road removal and outsloping ~~will~~ would restore the natural runoff patterns and soil depth in the road area. Vegetation with deep root systems, such as trees and shrubs, would not be considered for re-establishment, because of the need to maintain a utility corridor within the road right-of-way.

4.4.2 *Soils and Prime Farmlands – Conclusion*

p. 193: Revise third and fourth sentences of first paragraph under "Conclusion" as follows:

In addition, significantly more tree removal would be undertaken under Alternative C to extend the core area, partially ~~rehabilitate~~ re-establish a 17th century ~~the~~ landscape, expose the historic road trace, construct visitor and park facilities, and to uncover archeological sites, resulting in destabilization of the soils in these areas and loss from erosion. Interpretive ~~L~~landscape ~~rehabilitation~~ management and addition of symbolic interpretive treatments, and tree removal to re-establish the original Green Spring road trace, would result in one-time adverse impacts to soils under Alternative C.

p. 193: Revise next to last sentence of first paragraph under "Conclusion" as follows:

Continuous impacts from road surface ~~contaminants~~ pollutants that contribute to soil contamination would largely be eliminated under Alternative C with the ~~removal~~ closure of the through road to all but emergency vehicles~~, which contributes to soil contamination~~.

4.4.3 Wetlands and Other Water Resources – No Action Alternative

p. 194: Take out unnecessary space in last sentence, second column, as follows:

> The Powhatan Creek Natural Area and adjacent upland forest and scrub/shrub area help protect the creek from impacts to ground and surface water quality and quantity.

4.4.3 Wetlands and Other Water Resources – Alternative A

p. 195: Correct last paragraph before "Alternative B" as follows:

> Concentrations of toxics on the road surface could be expected to moderately increase over time, as average daily traffic volumes increase on Centerville Road, ~~existing~~ Route 5, and Alternate Route 5~~, when complete~~.

4.4.3 Wetlands and Other Water Resources – Alternative B

p. 195: Correct space in the word "open" in second sentence of fourth paragraph (second column):

> Pre-existing forest tracts would generally remain intact, and visitor facilities development would be confined to a centralized core within the open field west of Route 614, minimizing impacts to native vegetation.

4.4.3 Wetlands and Other Water Resources – Alternative C

p. 197: Eliminate the extra period between the third and fourth sentences of the second paragraph under "Alternative C" as follows:

> By locating these facilities in drier upland areas, it would be possible to avoid direct impacts to wetlands; however, breeding bird habitat for rare grassland species would be adversely affected.~~.~~ Additional acreage may be disturbed to accommodate stormwater management facilities, which could range from grassy swales and spreaders to a retention basin, depending on site soil and hydrological conditions and extent of impervious surfaces.

p. 197: Note the addition of the sentence within paragraph five:

> Construction of the parking lot and visitor comfort station could subject the adjacent wetlands to adverse impacts from soil erosion and sedimentation temporarily during construction. Sediment-bearing water moving through the landscape could be conveyed into the wetland, potentially suffocating plants and aquatic species. <u>This is more of a problem in Alternative C than Alternative B due to the potential for locating these facilities in a more steeply sloped area. Mitigation measures to reduce runoff and consequent soil erosion and sedimentation in nearby water bodies could include minimizing the building footprint and paving the parking area with permeable asphalt or crushed stone</u>.

p. 199: Revise the first two sentences of the second paragraph as follows:

> The riparian buffer along Powhatan Creek tributary c~~w~~ould be adversely affected in the near-term by vegetation removal of up to a ~~30~~15-foot-wide section of the buffer to rehabilitate the original Green Spring road trace that once connected to Jamestown, a key interpretive feature. This action could cause up to a ~~30~~15-foot gap in vegetative cover along the stream corridor, and the forest buffer would likely be removed from Route 5 to the Colonial gas pipeline corridor, a 1,200-foot length (total road trace area about 1/2 acre).

p. 199: Revise the second and third sentences of the third paragraph as follows:

> Clearing of vegetation could extend the entire length of the historic Green Spring road/causeway, removing streamside vegetation along and up slope of the Powhatan tributary. Clearing the total ~~36,000~~ 18,000 square feet (~~.82~~ .41 acres) of the causeway would expose stream channels that are currently heavily shaded and ~~w~~could potentially raise the water temperature in the stream, adversely impacting aquatic species sensitive to temperature changes.

p. 199: Revise first sentence of the fourth paragraph as follows:

> Mitigation to minimize impacts to the forest buffer and water quality and flow could include select removal of the minimum numbers of trees necessary to provide visitors with a visual sense of the original Green Spring road trace; leaving tree stumps in place on appropriate sections of the trace to avoid dislodging the soils; and maintaining a minimum 100-foot buffer zone of brushy and/or low-growing, native herbaceous or shrubby vegetation within the ~~30~~15-foot cleared segment to shade the channel and trap sediment, while allowing visitors a glimpse of the causeway road entrance.

p. 200-201: Revise the first two sentences of the last paragraph on p. 200 and first on p. 201 as follows:

> *Impacts from interpretive landscape management ~~rehabilitation~~*: Up to 17 additional acres of woodlands could potentially be cleared to re-establish crop patterns and other elements of the 17-century plantation landscape, as well as to develop interpretive demonstrations such as small planting areas. Tree removal would take place mainly on the peripheries of the existing open fields, and therefore would avoid impacts to streams; however, should the entire 17 forested acres be cleared, which is highly unlikely, it is possible that up to ~~15~~ 8 acres within wetlands would be directly impacted.

p. 201: Revise the first sentence of the eighth paragraph as follows:

> In-kind replacement wetlands for partial re-establishment of the 17th century landscape ~~rehabilitation~~ in the core and peripheral tree removal would be necessary and would be provided in the Green Spring unit or other park units, if possible.

p. 201-202: Revise the last paragraph on p. 201 as follows, splitting it into two paragraphs, and revise the second and third paragraphs on p. 202:

> *Impacts from alteration and/or removal of Centerville Road (Route 614)*: A range of options would be explored for treatment of the road prior to plan implementation. All options must consider the need to maintain a thruway along Centerville Road for emergency vehicles and a public evacuation route during emergencies. The options could include, but are not limited to, retention of the roadbed as is, removal of the asphalt surface, and replacement of the road surface with gravel or other materials. The roadway is unlikely to be re-vegetated because of the need for emergency access.

~~This action~~ Alterations to or removal of the roadbed would not take place in any wetlands preliminarily identified as part of the USFWS National Wetlands Inventory; however, the removal of 52,800 to 57,600 square feet (about 1 and 1/4 acres) of roadbed or asphalt and replacement with other materials could be selected as a worst case option, and this action may have temporary negative impacts on a nearby vernal pool/wetland during construction.~~,~~ The impacts ~~which~~ could be minor to moderate depending on the extent of construction and the subsequent treatment of the road (i.e., re-vegetated with native species, replaced with another surface such as gravel, or left as a trace to access future development). In all cases, the road corridor would be maintained as a thruway for emergency vehicles, and the NPS would consult with James City County regarding the appropriate surface materials for this purpose. Soil disturbance and ground cover loss ~~w~~could occur ~~from the exposed~~ if the subsurface were exposed, possibly increasing levels of suspended solids in the wetland. These impacts would be minimized by the use of erosion and sedimentation control measures and the maintenance of the 200-foot forested buffer between the road and the wetland.

4

If the roadbed is to be removed, ~~O~~on-site erosion and sedimentation controls ~~e~~would include siltation fences, and sediment traps and basins; replacement of topsoil and immediate stabilization of graded slopes with vegetation; protecting the soil surface from wind and rain erosion; maintenance of the forest buffer along streams and in wetlands; mapping the minimal construction footprint necessary; and careful timing of construction activity to avoid the rainy season.

Although it is unlikely, complete ~~R~~road removal would have long-term positive effects on wetland water quality and on the natural resources of Powhatan Creek Natural Area. Removal of impervious road surface, stabilization of existing subsoil, and replacement of topsoil would allow enhanced infiltration of precipitation into the ground to recharge tributaries, and improvements to water quality. The ~~total~~ elimination of local through traffic on Centerville Road, except for emergency vehicles, ~~even with visitor vehicles allowed access to the southern portion of the site,~~ would reduce the potential for contaminated stormwater run-off to affect surface water quality within the primary ecological zone of Powhatan Creek Natural Area. Long-term impacts to water quality associated with the road would be minimized, ~~as~~ particularly if 50 to 70 percent of the road area ~~would be~~ were re-graded and re-surfaced in keeping with a more natural drainage system;~~ and may be returned to~~ however, grass, ornamental plantings or cropland~~, and/or forest~~ is unlikely to be re-established because of the need to maintain the roadway for emergency use. Trees and shrubs would be excluded from consideration because of the potential for their roots to damage underground utilities. If vegetation cover ~~is~~ were fully re-established on exposed surfaces, water quality degradation from sediment and vehicle pollutants entering the ground and surface water would be significantly reduced. Prior to selection of a treatment for the road, the NPS would consult with James City County to determine which road surface would be appropriate for the safe and efficient travel of emergency vehicles.

p. 202: Revise the first three sentences of the fourth paragraph as follows:

~~On the other hand, these p~~ Positive effects from potential road alteration and/or removal may be offset by the development of visitor support services within the secondary ecological zone of the Natural Area, possible excavation of a trench for utilities and road widening that would occur within the primary ecological zone. In the short-term, ground disturbance and tree removal during construction could result in considerable soil movement and sediment deposition in the intermittent stream. Water quality could be degraded in the long-term by toxins entering the groundwater via the parking lot, ~~and remaining~~ the portion of Centerville Road at the site s southern entrance, and emergency vehicle thru traffic, and also by erosion and compaction of soils from concentrated visitor use around the visitor support area.

p. 202: Revise fifth paragraph, first sentence, as follows:

If ~~R~~road removal and/or resurfacing were selected as treatment options, it may impact the palustrine forested wetlands in the southern portion of the site and the natural resources of Powhatan Creek Natural Area.

p. 202: Revise sixth paragraph as follows:

Road widening at the intersection of Route 5 and Route 614, and possible removal of approximately 52,800 to 57,600 square feet (1 and 1/4 acres) of roadbed and/or road surface materials, would have temporary negative impacts on water quality in the nearby intermittent stream. Soil disturbance and ground cover loss would occur ~~from the exposed~~ if the subsurface were exposed, and stormwater runoff from the road surface would carry pollutants and sediments into the stream. These problems would be minimized by the use of best management practices as described above, and could be eliminated entirely if the road is retained.

p. 203: Revise second paragraph as follows:

The park would be sensitive to Chesapeake Bay Preservation Area Designation and Management Regulations for controlling erosion and sedimentation and stormwater runoff. NPS would work with James City County to implement stormwater management controls for the parking area and Centerville road corridor/trace, ~~and~~ including any remaining asphalt portions of Centerville Road. Forest buffers, which help maintain water quality, would be maintained to the extent possible along the spring and tributary of Powhatan Creek. Trees within the forest buffer would be removed to allow visitors visual access to the original Green Spring road trace; however, a minimum 100-foot riparian buffer of low-lying native herbaceous and shrubby plants would be maintained in order to minimize impacts to water flow and quality. In addition, the NPS would cooperate with the Virginia Council on the Environment, the Virginia Department of Conservation, and the district soil conservationist in implementing best management practices throughout the site during and after road removal, if this treatment option is selected. The best management practices would control soil loss from sedimentation of Powhatan Creek wetlands and the stream. Activities related to road alterations and/or removal would comply with state sediment control standards.

p. 203: Revise fourth paragraph as follows:

Future reductions in average daily traffic volumes along Centerville Road would have positive effects on the wetlands because of the reduction in levels of polluted runoff; however, this benefit would be partially offset by increasing average daily traffic volumes along existing Route 5. Adverse impacts may continue to occur, as pollutants from the remaining Centerville road corridor/trace, including possibly asphalt portions ~~of Centerville Road~~, and Route 5 discharge into the low-lying drainage ditch/intermittent stream and wetlands in the southern portion of the site. NPS would cooperate with the Virginia Department of Transportation to explore options for implementing stormwater management controls to mitigate polluted runoff.

4.4.3 Wetlands and Other Water Resources – Conclusion

p. 203: Revise the second sentence of the first paragraph under "Conclusion" as follows:

Alternative C has the same indirect impacts plus direct impacts through tree removal in forested wetlands for archeological investigations, trails, clearing of the historic Green Spring road trace and partial re-establishment and/or rehabilitation of the cultural landscape.

p. 203: Revise last two sentences of first paragraph under "Conclusion" as follows:

> Maintaining the through road for local traffic in both the No Action Alternative and Alternative B would continue to add contamination to nearby wetlands from road runoff. Under alternative C, stormwater runoff from Route 5, the remaining Centerville Road or trace, and the remaining asphalt portion of Centerville Road at the southern entrance would continue to contaminate nearby wetlands to a lesser degree. Alternative C would impact wetlands from sedimentation ~~during road removal;~~ if the road were removed as a treatment option; however, in the long term, the roadbed would be re-graded to allow natural drainage.

p. 203: Revise fourth sentence of second paragraph under "Conclusion" as follows:

> The spring could be particularly vulnerable to sedimentation and contamination under Alternative C due to tree removal, re-establishment ~~rehabilitation~~ of a garden, potential fertilizer and pesticide use, addition of an impervious or pervious parking lot nearby, and concentrated visitor use.

4.4.4 *Rare, Threatened and Endangered Species – Methodology and Assumptions*

p. 204: Replace the second paragraph in this section with the following:

> The USFWS has established 750 feet as the distance at which bald eagles, a federally listed species, would most likely be disturbed by human activity and noise greater than natural ambient levels; therefor, the USFWS and the VADGIF have established management guidelines that include a primary management zone buffer of 750 feet around bald eagle nests. USFWS and VADGIF would be particularly concerned if there were an active or recently inactive nesting site within a 750-foot radius of a project or program that might create noise or disturbance; however, the agencies do not require any particular buffer size and review each project individually to evaluate the need for the 750-foot primary management zone. Activity that involves alteration of bald eagle habitat, such as tree clearing, would likely be discouraged within a 750-foot radius of the nest site. No human activity of any kind should be allowed within the primary management zone recommended by the USFWS and VADGIF during the eagle nesting and breeding seasons. In general, any activities within a 1,320-foot radius of the bald eagle nesting site would be of concern to USFWS and VADGIF, and park staff is required to initiate formal consultations with USFWS under Section 7 of the Endangered Species Act, if such activities are anticipated. If the nest has been abandoned for three consecutive breeding seasons, there are no restrictions on human activity in the area.

4.4.4 *Rare, Threatened and Endangered Species – Alternative B*

p. 205: Revise the last paragraph as follows:

> Additional adverse impacts to potential Mabee's habitat ~~w~~could occur with excavation of utilities that serve the visitor support area. Although the exact placement of utilities and the width and extent of the excavation is to be determined during implementation, it is likely that already disturbed right-of-way along Centerville Road would be utilized. Utilities excavation to connect with a water line north of the site on Alternate Route 5 could adversely impact the forest buffer around the amphibian breeding area, unless the opposite (east) side of Centerville Road were utilized for utilities location. Utilities excavation could also adversely impact the sustainability of the vernal pond in the long-term because of the changes to groundwater flow likely to occur when

soils are replaced. The magnitude of the effects would depend on the depth and extent of excavation and compaction and porosity of the soils replaced in the trench. There may be a high degree of mortality of individuals during excavation activities, and in the long-term from through traffic on Centerville Road. Impacts to bald eagle foraging and nesting habitat from utilities excavation is not anticipated to be as substantial under Alternative B as compared to Alternative C. Utilities could probably be routed more efficiently under Alternative C, reducing the need to eliminate a portion of the forested buffer near the bald eagle nest and other sections of forest that could serve as foraging sites.

p. 206: Replace the second paragraph with the following:

Impacts from increased visitor activity and traffic on Centerville Road (Route 614): Changing traffic patterns and increasing levels of human activity would have a moderately adverse impact on the ability of area-sensitive species such as the bald eagle to use foraging and roosting sites at Green Spring. A small portion of the concentrated area of visitor use around the springhouse and orangerie is located within 1,320 feet of the bald eagle nesting site, requiring coordination with USFWS and VADGIF to reduce or avoid impacts in this area. New patterns of human use and increased noise levels may cause the eagles to avoid areas around the central core during their foraging activities. Short-term trail construction and regular maintenance activities may also cause the eagles to avoid the area; however, the eagles ability to nest and raise young would not be affected.

p. 206: Revise the third paragraph as follows:

Impacts from enhancements to Centerville Road and Route 5-Route 614 intersection: The park would undertake actions in the lowland swamp associated with the primary ecological zone within Powhatan Creek Natural Area, adversely impacting potential habitat for rare plant species and a forested plant dispersal corridor that connects to Powhatan Creek. Actions would likely consist of utilities excavation within the Centerville Road right-of-way, and traffic management and intersection enhancements at the southern entrance that could affect water quality and flow, and suitability of the habitat for rare plants. Utilities excavation would disturb the soils and increase the risk of invasive species impacts on rare plant habitat. The adverse impacts of these actions would be partially offset by regeneration of native grassland and scrub-shrub habitat within the adjacent secondary ecological zone, which consists of upland forest and scrub/shrub area that help protect the creek from impacts to ground and surface water quality and quantity. Mown field would be converted to native grassland and scrub/shrub habitat in the long-term, which would help buffer potential rare plant habitat in the adjacent lowlands from significant changes to hydrology, light and moisture conditions.

4.4.4 *Rare, Threatened and Endangered Species – Alternative C*

p. 206: Revise first paragraph under Alternative C as follows:

Impacts from the development of visitor facilities: Development of a new visitor contact center, parking lot, and future park facilities in the northeastern part of the site could impact up to 8 acres. In addition, up to ~~2,500~~ 4,000 linear feet would be potentially excavated to provide underground utility lines that serve the visitor support area. These activities could result in adverse impacts to the bald eagle through the reduction of foraging and roosting habitat and the introduction of human disturbance. Although the exact placement of utilities and the width and extent of the excavation is to be determined during implementation, it is likely that already disturbed right-of-way along Centerville Road would be utilized. This action, relating to utilities excavation for the sanitary sewer line, ~~may~~ would likely result in the loss of ~~at least 600~~ some 700 linear feet of brushy mixed hardwood near the parking area and ~~1,000~~ 450 linear feet of ~~mixed age, mixed pine/~~lowland, mixed hardwood

forest along the southern end of Centerville Road, areas which may buffer foraging habitat for the eagles. An additional 700 linear feet of brushy mixed hardwood, 900 feet of mixed mature pine/hardwood, and 300 feet of lowland mixed hardwood forest could be lost on the east side of Centerville Road due to utilities excavation, if a connection is made to the water line on Route 5. These areas are also buffers to eagle foraging habitat. Construction activities would discourage the use of the forested habitats by the bald eagles in the short-term. These effects would be aggravated in the long-term by increased visitor activity in the visitor support area. Mitigation could include minimization of the construction footprint, and timing of construction to avoid the bald eagle breeding and nesting season (approximately mid-December through mid-July) ~~(November through July)~~.

p. 206: Revise the first sentence of the second paragraph under Alternative C as follows:

Impacts from interpretive landscape ~~rehabilitation~~ management and trail development: The expansion of visitor activity beyond the core domestic complex to open field areas and woodlands would result in the loss of habitat utilized by sensitive forest interior species, including the bald eagle.

p. 206: Revise the last sentence of the third paragraph under Alternative C as follows:

Tree removal and/or "topping" along the entire ~~30~~15-foot width and 1,200-foot length of the historic Green Spring Road causeway ~~w~~could result in the loss of up to one-half acre of mixed age hardwoods and mature pine that could result in a break in the forest canopy and substantial change in the forest habitats. Loss of forest cover, fragmentation of the forest into smaller patch sizes by utility lines and roads, and creation of edge habitat would make sensitive forest interior species vulnerable to introduced predators such as feral cats and result in a loss of food sources. This may result in significant population reductions for species that utilize the southern portion of the site. The disturbed area would lie within ~~the 1320-foot forest buffer recommended by USFWS to protect the bald eagle nest~~1,320 feet of the bald eagle nest and therefor, according to USFWS and VADGIF guidelines, requires coordination with these agencies to find ways to minimize or avoid impacts to the eagle nesting site; however, the human activity along the trail is not expected to disturb the nesting site, provided that activity is minimized during the breeding and nesting seasons.

p. 207: Revise the fourth paragraph as follows:

The NPS would avoid trail or other facilities development, or visitor activity, within the USFWS ~~required 750-foot~~ recommended forest buffer protecting the bald eagle nesting site. The NPS would consult with the USFWS and VADGIF to determine site-specific habitat management, including buffer size requirements, for the bald eagle under the Endangered Species Act and the Bald and Golden Eagle Protection Act.

p. 208: Revise the fourth paragraph as follows:

Archeological investigations within the USFWS ~~required 750-foot~~ recommended forest buffer would be avoided or minimized. Limited archeological testing would be conducted outside of the bald eagle breeding and nesting season ~~(November through July)~~, and the use of non-invasive geophysical survey techniques would be encouraged, so as not to disturb the eagles and possibly drive them from the nest.

p. 208: Revise the fifth paragraph as follows:

Impacts from the alteration and/or removal of Centerville Road (Route 614): A range of options would be explored for treatment of the road prior to plan implementation. All options must consider the need to maintain a thruway along Centerville Road for emergency vehicles and a public evacuation route during emergencies. The options could include, but are not limited to, retention of the roadbed as is, removal of the asphalt

surface, and replacement of the road surface with gravel or other materials. The roadway is unlikely to be re-vegetated because of the need for emergency access.

Proposed activities, except for retention of the existing roadbed, could have an adverse impact, in the short-term, on the ability of the bald eagles and other sensitive forest interior species to roost and forage on the site if carried out during the nesting season. Increased noise from heavy equipment and road removal and/or resurfacing activities may cause these species to avoid undisturbed habitat surrounding the project areas during the construction period. The eagles would continue to use the pine forests in the southwestern portion of the site as an occasional foraging area, but new patterns of human activity and traffic at new facilities may cause them to continue avoiding the surrounding area after construction is completed. The availability of foraging sites would decrease as the core archeological area and interpretive sites in the fields and forests are developed, and the increase in noise levels from interpretive and other activities could further discourage the eagles from foraging on the site. Their reproductive success would be highly dependent on the availability of alternate nesting and foraging sites. No clearing of vegetation or human activity would occur within the USFWS ~~required 750-foot~~ recommended buffer zone, thus helping to protect the nest on adjacent land from direct disturbance from park activities. The eagles ability to nest and raise young would be dependent on the availability of alternate foraging and nesting sites near Green Spring. NPS would consult with the USFWS and VADGIF to determine site-specific habitat management, including buffer size requirements, for the bald eagle.

p. 208: Revise the seventh paragraph as follows:

~~In the northern part of the site, the road may remain as a trace to serve a future park facility.~~ In the long-term, ~~much of the~~ an area east of ~~this trace~~ existing Centerville Road, in the northern part of the site, may be developed for ~~the~~ a future park facility.~~, which~~ There is the additional potential loss of mature pine forest from utilities excavation in the northern part of the site, adjacent to Centerville Road. These actions would result in the loss of habitat for the bald eagle and other sensitive forest interior species. Indirect impacts from changing traffic patterns and increased levels of human activity would likely be minor but adverse. Although visitors would be confined primarily to non-forested areas of the park unit, they would have access to a few interpretive sites within forested areas. Increased visitation in these areas may cause minor decreases in roosting and foraging habitat, and a long-term decline in some populations within the park.

4.4.4 *Rare, Threatened and Endangered Species – Conclusion*

p. 209: Revise the first sentence of the second paragraph as follows:

Under all alternatives, the long-term viability of the ephemeral pond as potential breeding habitat for the Mabee s salamander is largely dependent on non-federal actions such as the construction of Alternate Route 5 and continued residential development; however, Alternative B could potentially involve greater long-term impacts to salamander habitat from utilities excavation, as compared to Alternative C.

4.4.5 *Other Vegetation – Alternative B*

p. 210: Revise second paragraph, and add the following new paragraphs:

Although the exact placement of utilities and the width and extent of the excavation is to be determined prior to implementation, the already disturbed right-of-way along ~~the northern end of~~ Centerville Road ~~may~~ would

likely be utilized for ~~this alternative~~ Alternatives B and C. The magnitude of effects in both action alternatives are comparable, but the type of vegetation affected may vary by alternative. The particular vegetation types affected would depend on the route(s) selected for the placement of utilities, and the location of the pre-existing utilities selected for the connections with visitor facilities. The minimum excavation for utilities under Alternative B would be approximately 3,500 linear feet and the maximum excavation would be approximately 5,000 linear feet under the likely options described below. The largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility.

There are currently two likely options for routing utilities through the site and connecting to new visitor facilities. The scenarios would be partially dependent on the location of the visitor facilities, which would be decided during the design phase. The scenarios both assume that the visitor facilities under Alternative B are located approximately 1,200 feet south of Alternate Route 5 and approximately 1,000 feet west of the eastern boundary of Green Spring, as indicated on the concept diagram; however, the location of the visitor facilities is merely conceptual at this point. The minimum excavation scenario (about 3,500 linear feet) would connect the visitor facilities with the sanitary sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road; utilize the water line along Alternate Route 5, extending the line south along or under Centerville Road to the new visitor facilities; and make a short underground connection with overhead power lines along Centerville Road. The previously disturbed road right-of-way would be utilized to the extent possible as a utility corridor. Either side of the road could be utilized to make connections with existing water and sanitary sewer lines. Connection to the existing power line parallel to Centerville Road would involve one short east-west connection (probably less than 150 feet) crossing Centerville Road. The latter is likely to be buried underground but could also be an overhead connection.

The maximum excavation scenario (about 5,000 linear feet) would also connect the visitor facilities with the sanitary sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road, and make a short underground connection with overhead power lines along Centerville Road. The main difference would be the use of the water line paralleling Route 5 south of the site rather than the use of the water line paralleling Alternate Route 5. The extension of the water line from the south represents nearly 1,000 additional linear feet of excavation. The water and sanitary sewer lines could not be located on the same side of Centerville Road, due to the 10-foot minimum separation required between these utilities and the narrow width of the road right-of-way. Water and sanitary sewer lines could be placed on opposite sides of Centerville Road, in the adjacent corridor, or buried underneath at least 10 feet apart. Such a maximum excavation scenario would only be undertaken in the event that environmental conditions precluded excavation for the water line extension in the northern portion of the site, or if it were anticipated to result in fewer/lesser impacts to significant cultural resources. Additional utility routing scenarios may be envisioned prior to implementation, once site conditions are fully investigated.

Under either scenario, trench excavation could occur adjacent to Centerville Road or alternately, boring could occur from the side, adjacent to the paved cartway, and extend underneath the road. Removing some four feet of more of the roadbed and surface itself to place the utilities directly underneath the road is unlikely to be approved by VDOT. Both of the more feasible approaches to utilities excavation have the potential to disturb and/or eliminate habitat types to the side of Centerville Road. The extent of the disturbance would be unknown, because each utility type has different width requirements for the maintenance of the corridor. An additional complicating factor is that the James City County fire safety code requires the installation of a separate water line in addition to the domestic line; therefor, the width of trench excavation and/or roadside boring to place two water lines underneath the road could be significantly greater than excavation for one line alone. A greater magnitude of ground disturbance and the potential to affect a wider range of habitat types may be anticipated.

The maximum excavation scenario would likely affect a wide range of vegetation types in the central and southern portions of the site, immediately adjacent to Centerville Road. There may be a loss of approximately 900 linear feet of non-native mown grasses and about 500 linear feet of lowland mixed hardwood on the west side of the road; 900 linear feet of transitional field, about 900 linear feet of mixed mature pine and hardwood, and about 300 linear feet of lowland mixed hardwood on the east side of the road; and about 800 linear feet of brushy mixed hardwoods on both sides of the road (1,600 linear feet total).

The minimum excavation scenario would also affect a wide range of vegetation types; however, the specific types of vegetation affected would be different, and northern portions of the site could be affected as well as central and southern portions. However, there would be greater latitude to route utilities on either side of the road, thus reducing potential losses of significant habitat types. There may be losses of approximately 1,000 linear feet of non-native mown grasses; about 800 linear feet of brushy mixed hardwoods; about 400 linear feet of mature, upland pine forest; about 600 feet of successional pine forest adjacent to the vernal pond; and about 500 linear feet of lowland mixed hardwood on the west side of Centerville Road. Should the east side of Centerville Road be utilized for utility connections, then the following vegetation types could be affected: approximately 450 linear feet of mature, upland pine forest; about 1800 feet of transitional field; 800 linear feet of brushy mixed hardwoods; almost 900 feet of mixed pine/hardwood forest; and about 300 feet of lowland, mixed hardwood forest.

There is the possibility of a greater magnitude of impacts to brushy mixed hardwoods under the maximum excavation scenario, and a greater magnitude of impacts to upland pine forest and transitional field under the minimum excavation scenario. The brushy mixed hardwoods below the Berkeley manor site and the transitional field of native grasses on the east side of Centerville Road are significant wildlife habitats and have been identified as priority conservation sites.

Under either action alternative, the loss of mown grass and transitional field would only be temporary, as the utility corridors could be reseeded with native grasses and forbs that would be mowed periodically but infrequently. Trees, shrubs and bushes would not be permitted within the utility corridors, as their roots could grow into and damage the utility lines. Forested areas would be replace with grasses and forbs that could be easily maintained by mowing. There would be an increased potential for the introduction of non-native pioneer species, which thrive in recently disturbed areas. Re-using excavated site soils would minimize potential contamination of soils with exotics species, and adverse impacts to native vegetation. Vegetation types other than those described above could be affected, depending on the location of the utilities.

4.4.5 *Other Vegetation – Alternative C*

p. 211: Revise third paragraph, first sentence:

Rehabilitation of the historic trace/causeway of the original Green Spring road could result in the loss of up to one-half acre of mixed age hardwoods and mature pine to accommodate trail access and interpretation of these resources.

p. 211: Revise fifth paragraph, and add new paragraphs as follows:

Use of the already disturbed right-of-way along Centerville Road for underground utility lines for water and sanitary sewer, and possibly electricity would minimize vegetation loss. The magnitude of effects in both action alternatives are comparable, but the type of vegetation affected may vary by alternative. The particular vegeta-

tion types affected would depend on the route(s) selected for the placement of utilities, and the location of the pre-existing utilities selected for the connections with visitor facilities. The minimum excavation for utilities under Alternative C would be approximately 3,600 linear feet and the maximum excavation would be approximately 4,000 linear feet under the likely options described below. The largely vegetation-free right-of-way required for the maintenance of the utility corridor as well as the width of the excavated trench varies according to the type of utility.

There are currently two likely options for routing utilities through the site and connecting to new visitor facilities. The scenarios would be partially dependent on the location of the visitor facilities, which would be decided during the design phase. The scenarios both assume that the visitor facilities under Alternative C are located approximately 1900 feet north of Route 5 and approximately 400 feet west of the eastern boundary of Green Spring, as indicated on the concept diagram; however, the location of the visitor facilities is merely conceptual at this point. The minimum excavation scenario (about 3,600 linear feet) would connect the visitor facilities with the sanitary sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road; utilize the water line along Route 5, extending the line north along or under Centerville Road to the new visitor facilities; and make a short underground connection with overhead power lines along Centerville Road. The previously disturbed road right-of-way would be utilized to the extent possible as a utility corridor. Because of the requirement for a 10-foot separation between water and sanitary sewer lines, opposite sides of the road would need to be utilized to make connections with existing water and sewer lines. Both lines could also be buried under the roadbed; however, boring would nonetheless need to occur adjacent to the road within the right-of-way. Connection to the existing power line parallel to Centerville Road would involve one short east-west connection (probably less than 275 feet) crossing Centerville Road. The latter is likely to be buried underground but could also be an overhead connection.

The maximum excavation scenario (about 4,000 linear feet) would also connect the visitor facilities with the sewer line in the southern portion of the site, bringing the line north parallel to or beneath Centerville Road, and make a short underground connection with overhead power lines along Centerville Road. The main difference would be the use of the water line paralleling Alternate Route 5 north of the site rather than the use of the water line paralleling Alternate Route 5. The extension of the water line from the north represents nearly 500 additional linear feet of excavation. Either side of Centerville Road could be used for both water and sanitary sewer lines because these are being routed from different directions. Such a maximum excavation scenario would only be undertaken in the event that environmental conditions precluded excavation for the water line extension in the northern portion of the site, or if it were anticipated to result in fewer/lesser impacts to significant cultural resources. Additional utility routing scenarios may be envisioned prior to implementation, once site conditions are fully investigated.

Under either scenario, trench excavation could occur adjacent to Centerville Road or alternately, boring could occur from the side, adjacent to the paved cartway, and extend underneath the road. Removing some four feet of more of the roadbed and surface itself to place the utilities directly underneath the road is unlikely to be approved by VDOT. Both of the more feasible approaches to utilities excavation have the potential to disturb and/or eliminate habitat types to the side of Centerville Road. The extent of the disturbance would be unknown, because each utility type has different width requirements for the maintenance of the corridor. An additional complicating factor is that the James City County fire safety code requires the installation of a separate water line in addition to the domestic line; therefor, the width of trench excavation and/or roadside boring to place two water lines underneath the road could be significantly greater than excavation for one line alone. A greater magnitude of ground disturbance and the potential to affect a wider range of habitat types may be anticipated.

The maximum excavation scenario would likely affect a wide range of vegetation types in the northern, central and southern portions of the site, immediately adjacent to Centerville Road; however, unlike the minimum

excavation scenario, there is more flexibility to route utilities so as to minimize or avoid losses of significant habitat types. Should the west side of Centerville Road be utilized to route water and sanitary sewer lines, then there would be losses within the following vegetation types: approximately 1,000 linear feet of non-native mown grasses; about 800 linear feet of brushy mixed hardwoods; about 400 linear feet of mature, upland pine forest; about 600 feet of successional pine forest adjacent to the vernal pond; and about 500 linear feet of lowland mixed hardwood on the west side of Centerville Road. Should the east side of Centerville Road be utilized for utility connections, then the following vegetation types would be affected: approximately 450 linear feet of mature, upland pine forest; about 1800 feet of transitional field; 800 linear feet of brushy mixed hardwoods; almost 900 feet of mixed pine/hardwood forest; and about 300 feet of lowland, mixed hardwood forest. These losses would reflect a comparable magnitude of effects on the same vegetation types as the minimum excavation scenario for Alternative B.

The minimum excavation scenario would affect a narrower range of vegetation types; however, the magnitude of impacts to specific vegetation types in the southern portions of the site would be greater because utilities would need to be routed on both sides of Centerville Road in this area. There may be losses of approximately 700 linear feet of brushy mixed hardwoods on both sides of Centerville Road (a total 1,400 linear feet); about 450 linear feet of lowland, mixed hardwood forest on the west side of Centerville Road; and about 900 feet of mixed pine/hardwood forest and about 300 feet of lowland, mixed hardwood forest on the east side of Centerville Road.

Overall impacts to vegetation types from utility excavations would be comparable under Alternatives B and C; however, the minimum excavation scenario under Alternative C would affect a narrower range of vegetation types as compared to either of the two excavation scenarios for Alternative B.

Under either action alternative, the loss of mown grass and transitional field would only be temporary, as the utility corridors could be reseeded with native grasses and forbs that would be mowed periodically but infrequently. Trees, shrubs and bushes would not be permitted within the utility corridors, as their roots could grow into and damage the utility lines. Forested areas would be replace with grasses and forbs that could be easily maintained by mowing. There would be an increased potential for the introduction of non-native pioneer species, which thrive in recently disturbed areas. Minimizing the trench width and length and re-using excavated site soils would reduce potential contamination of soils with exotics species, and adverse impacts to native vegetation. Vegetation types other than those described above could be affected, depending on the location of the utilities.

p. 211: Revise the first sentence of the sixth paragraph as follows:

Impacts from interpretive landscape management ~~rehabilitation~~: Of the 17 acres that could be cleared, approximately 50 percent would be young pines and 50 percent mixed age hardwoods and mature pine to the north and west of the core area.

p. 211: Revise the second sentence of the seventh paragraph as follows:

Exotic species would likely be intentionally introduced to re-establish ~~rehabilitate~~ part of the 17th century landscape, and unintentionally introduced in areas disturbed by construction and concentrated visitor use, with the potential to adversely affect the biological integrity of the Powhatan Creek Natural Area and other forested areas in the long-term.

p. 212: Revise fourth and fifth paragraphs as follows:

Impacts from the alteration and/or removal of Centerville Road (Route 614) and intersection enhancements: Reduced traffic volumes would result in a moderate decrease in the likelihood of localized acidic depositions on Green Spring's vegetation, and hydrocarbons and metals from the road surface would be significantly reduced as a source of contaminated stormwater runoff affecting the health of vegetation.

Should road removal and replacement of the road surface be selected as an option, ~~C~~construction activities could result in the loss of herbaceous vegetation adjacent to the road; however, disturbance of the pine forest buffer around the wetland would be avoided. Disturbance of the subsoil during roadbed removal, and subsequent replacement of topsoil, may initially encourage the establishment of non-native invasive species; however, sterilization and timely stabilization of the soil, careful timing of native plantings, and frequent, regular monitoring of the disturbed area to check for pioneering exotics can minimize, if not eliminate, this threat. Retention of the roadbed as is would eliminate any of these impacts.

p. 212: Revise last paragraph before "Conclusion" as follows:

Overall, the total loss in forested land under this alternative ~~could be up to~~ would likely be no more than ~~48~~ 20 acres~~; however,~~ because a substantial portion of the 20 wooded acres that would be affected by archeological investigations would either not involve tree clearing or would likely be restored to forest lands. Up to 2 acres of woodlands would be restored in other areas of the site.

4.4.5 Other Vegetation – Conclusion

p. 212-213: Revise the last sentence on p. 212 (the first on p. 213) as follows:

Alternative C would result in the most vegetative changes overall, creating a more open and intensively managed landscape for partial re-establishment ~~rehabilitation~~ of the cultural landscape, opening up the historic Green Spring road trace, extending trail development into areas beyond the core, and archeological investigations in fields and forests.

p. 213: Revise the last four sentences of the first paragraph at top of page as follows:

Fragmentation of woodlands would be more noticeable under alternative C. Vegetation loss from visitor facilities in alternative C may impact scrubby hardwoods and pine forest. The future construction of park facilities under alternative C would result in additional forest losses. Although overall impacts to vegetation types from utility excavations would be comparable under Alternatives B and C, Alternative C could potentially affect a narrower range of vegetation types as compared to Alternative B. Exotic (non-native) vegetation would continue to be a potential threat to native species in the unit and in the region regardless of the alternative chosen.

4.4.6 Other Wildlife – Alternative B

p. 213: Revise third paragraph under "Alternative B" (right column) as follows, and add four new paragraphs after it:

The current most likely scenarios for placement of utilities are described above in this errata sheet within *4.4.5 Other Vegetation – Alternative B*. Although the exact placement of utilities and the width and extent of the

excavation is to be determined during implementation, it is likely that right-of-way along one side of Centerville Road would be utilized (the "minimum excavation scenario"). Under the minimum excavation scenario, there could be losses of approximately 1,000 linear feet of non-native mown grasses; about 800 linear feet of brushy mixed hardwoods; about 400 linear feet of mature, upland pine forest; about 600 feet of successional pine forest adjacent to the vernal pond; and about 500 linear feet of lowland mixed hardwood on the west side of Centerville Road. The brushy mixed hardwoods, vernal pond area, and lowland mixed hardwood forest have been identified in the faunal survey as three of the five most significant habitats for wildlife and are priority conservation areas. To avoid impacts to the vernal pond and the lowland mixed hardwood forest, the opposite (east) side of the road could be utilized under this alternative to connect to the water line on Alternate Route 5 and sanitary sewer line in the southern portion of Green Spring. Impacts to brushy mixed hardwoods could likely not be avoided because of their presence on both sides of Centerville Road. This action could have moderate effects on up to 2/3 of the bird species that have been identified at Green Spring, particularly the neotropical migratory species that utilize the brushy mixed hardwood as a staging and foraging area.

Should the east side of Centerville Road be utilized for utility connections, then the following habitat types would be affected: approximately 450 linear feet of mature, upland pine forest; about 1,800 feet of transitional grassland field; 800 linear feet of brushy mixed hardwoods; almost 900 feet of mixed pine/hardwood forest; and about 300 feet of lowland, mixed hardwood forest. The transitional grassland field has been identified in the faunal survey as one of the five most significant habitats for wildlife and is a priority conservation area. ~~This action would result in the temporary loss of at least~~ Although nearly 1,800 linear feet of tall grass bird habitat would be temporarily lost during construction~~, which could~~ it could become re-established following construction activity. Impacts to grassland bird habitat could be avoided or minimized by switching utilities to the west side of Centerville Road in this area.

Impacts to mature pine-dominated forest could likely not be avoided because the forest is located on both sides of Centerville Road. From ~~Four~~ 400 ~~hundred~~ to ~~four hundred fifty~~ 450 linear feet of mature pine-dominated forest may be cleared and replaced with herbaceous cover, adversely affecting several mammal, reptile, and bird species; however, this habitat type is already relatively poor in terms of species diversity because of its location near Alternate Route 5 and lack of high-quality food and cover. Loss of mature hardwood and pine trees would decrease the availability of mast and nesting cavities for birds and mammals. The utility corridor would benefit wildlife species that utilize herbaceous vegetation. Other habitats could be affected, depending on the location of the utilities. The park would minimize vegetation removal and avoid affecting high-quality wildlife habitat to the extent possible. Tree removal would occur during the non-breeding season to lessen impacts to many bird and mammal species.

The maximum excavation scenario would likely affect a wide range of vegetation types in the central and southern portions of the site, immediately adjacent to Centerville Road. There may be a loss of approximately 900 linear feet of non-native mown grasses and about 500 linear feet of lowland mixed hardwood on the west side of the road; 900 linear feet of transitional field, about 900 linear feet of mixed mature pine and hardwood, and about 300 linear feet of lowland mixed hardwood on the east side of the road; and about 800 linear feet of brushy mixed hardwoods on both sides of the road (1600 linear feet total). There would be less opportunity to avoid impacts to these habitat types under this scenario because both sides of Centerville Road would need to be utilitized for utilities.

The lowland hardwood forest above Powhatan swamp provides critical habitat for a number of specialized bird species and hunting grounds for reptiles, amphibians and small mammals. At least 35 % (6) of mammal species surveyed at Green Spring utilize these habitats for foraging and breeding, and would be adversely affected by habitat loss. At least 38 % (5) of reptile species identified during the faunal survey would be adversely affected by habitat loss along Centerville Road. Species primarily specialized for woodlands would be most affected, including the common mud turtle. Those species associated with edge areas of weeds and downed woody debris, such as ringneck snake and common garter snake, would be able to migrate more easily to other areas of the site. Only 1 amphibian species—marbled salamander—was identified in the areas that would be potentially affected by utilities excavation. This species is dependent on moist forests, and its populations would most likely be reduced within park boundaries; however, it is relatively common throughout its range. At least 45% (44) bird species that are forest specialists could be adversely affected by the loss of mixed pine/hardwood habitat and its replacement by mown edge habitat. A few species, such as European starling, house finch, and house sparrow, would benefit from the increase in this managed land cover.

There is the possibility of a greater magnitude of impacts to brushy mixed hardwoods under the maximum excavation scenario. This action could have major effects on up to 2/3 of the bird species that have been identified at Green Spring, particularly the neotropical migratory species that utilize the brushy mixed hardwood as a staging and foraging area. There is the possibility of a greater magnitude of impacts to species, particularly grassland birds, associated with the transitional field under the minimum excavation scenario. Other species affected could include rodents, reptiles and small mammals, and birds of prey that depend on them. Impacts to species associated with the upland pine forest would be a factor under the minimum excavation scenario but not under the maximum excavation scenario.

4.4.6 Other Wildlife – Alternative C

p. 215: Replace the third paragraph as follows and add new paragraphs after it:

The current most likely scenarios for placement of utilities are described above in this errata sheet within *4.4.5 Other Vegetation – Alternative C.* Although the exact placement of utilities and the width and extent of the excavation is to be determined during implementation, it is likely that right-of-way along both sides of Centerville Road would be utilized (the "minimum excavation scenario") in the southern portion of the site.

The maximum excavation scenario would likely affect a wide range of habitat types in the northern, central and southern portions of the site, immediately adjacent to Centerville Road; however, unlike the minimum excavation scenario, there is more flexibility to route utilities so as to minimize or avoid losses of significant habitat types. The habitat types and species affected are the same as those described in the minimum excavation scenario for Alternative B above in this errata sheet (*4.4.6 Other Wildlife – Alternative B*).

The minimum excavation scenario would affect a narrower range of habitat types and related wildlife species; however, the magnitude of impacts to specific habitats in the southern portions of the site would be greater because utilities would need to be routed on both sides of Centerville Road in this area. There may be losses of approximately 700 linear feet of brushy mixed hardwoods on both sides of Centerville Road (a total 1400 linear feet), which is less than that of the maximum excavation scenario under Alternative B; about 450 linear feet of lowland, mixed hardwood forest on the west side of Centerville Road; and about 900 feet of mixed pine/hardwood forest and about 300 feet of lowland, mixed hardwood forest on the east side of Centerville Road. These losses are slightly less in linear feet than those associated with the maximum excavation scenario under Alternative B.

Adverse effects on species associated with lowland hardwood forest habitat could be moderate to major. Species affected could include some 35 % (6) of mammal species surveyed at Green Spring that utilize these habitats for foraging and breeding, and at least 38 % (5) of reptile species identified during the faunal survey. Species primarily specialized for woodlands would be most affected, including the common mud turtle. One amphibian species marbled salamander was identified in the areas that would be potentially affected by utilities excavation. This species is dependent on moist forests, and its populations would most likely be reduced within park boundaries; however, it is relatively common throughout its range. At least 45% (44) bird species that are forest specialists could be adversely affected by the loss of mixed pine/hardwood habitat and its replacement by mown edge habitat.

There is the possibility of a greater magnitude of impacts to brushy mixed hardwoods under the maximum excavation scenario. This action could have major effects on up to 2/3 of the bird species that have been identified at Green Spring, particularly the neotropical migratory species that utilize the brushy mixed hardwood as a staging and foraging area.

There is the possibility of a greater magnitude of impacts to species, particularly grassland birds, associated with the transitional field under the minimum excavation scenario. Other species affected could include rodents, reptiles and small mammals, and birds of prey that depend on them. Impacts to species associated with the upland pine forest would be a factor under the minimum excavation scenario but not under the maximum excavation scenario.

Overall impacts to wildlife habitat from utility excavations would be comparable under Alternatives B and C; however, the minimum excavation scenario under Alternative C would affect a narrower range of habitat types as compared to either of the two excavation scenarios for Alternative B. Consequently, impacts to species diversity and populations from utilities excavations may be less under Alternative C than Alternative B.

p. 215: Revise the first sentence of the fourth paragraph as follows:

Impacts from interpretive landscape ~~rehabilitation~~ management and trail development: This alternative can be distinguished from Alternative B in terms of the potentially greater level of impacts to wildlife from development of new trails and partial ~~rehabilitation~~ re-establishment of the 17th century landscape with crops, field and horticultural species.

p. 215: Revise the second sentence of the fifth paragraph as follows:

Succession to grassland could be allowed following the conclusion of archeological investigations in this area, unless research results indicated the field s importance for interpretive purposes, partial re-establishment of the 17th century ~~and~~ landscape rehabilitation, and/or crop management.

p. 216: Revise the first sentence of the third paragraph as follows:

Tree removal and/or topping along the entire ~~30~~15-foot width and 1,200-foot length of the historic Green Spring road/causeway would result in the loss of up to one-half acre of mixed age hardwoods and mature pine that could result in a break in the forest canopy and significant change in the forest habitats.

p. 217: Revise the fourth and fifth paragraphs as follows:

Impacts from the alterations and/or removal of Centerville Road (Route 614) and enhancements to the Route 5-Centerville Road intersection: These proposed activities would have a significant positive impact on wildlife movement and population viability for mammal, reptile and amphibian species. There would be a significant

increase in the ability of existing faunal populations at Green Spring to migrate to different areas within the site, particularly nocturnal species, and roadkill mortality would be ~~eliminated from~~ substantially reduced through much of the site. This is particularly important for amphibian, reptile, and small mammals.

Should Centerville Road be removed through the site, it would most likely be replaced with gravel or other materials that would enable safe and efficient emergency vehicle travel through the site. Removal of Centerville Road ~~at the northern edge of the site~~ would result in minor to moderate short-term adverse impacts to wildlife due to construction disturbance. A portion of the roadway at the northern and southern ends of the site would ~~remain in place to~~ allow access to a potential future park facility and visitor facilities, respectively; thus, in the long-term, there may be an adverse impact on wildlife in these~~is~~ areas from increased human activity.

4

4.4.6 Other Wildlife – Conclusion

p. 217-218: Revise "Conclusion" as follows:

Wildlife habitat loss is primarily a result of commercial and residential development. Current and proposed development activities in the region are anticipated to result in the continued reduction of undisturbed wildlife habitat in the future, regardless of alternative. Some wildlife habitat would be permanently lost under both action alternatives from new facility development, including associated excavation for utilities. Wildlife habitat would diversify under Alternative A, the no action alternative, due to the change in vegetative composition from younger pines to mature mixed hardwood forest. The extent of changes in vegetative composition from forest to open areas vary under each action alternative; however, in every case park actions would result in the removal of mature trees that provide mast, downed logs, and nest sites, negatively impacting forest dwelling species. There would likely be a drop in the populations of many woodland species which would be more pronounced under Alternative C. The conversion of areas around visitor facilities, trails, utility corridors, and archeological sites to grass and herbaceous vegetation, however, would favor species that prefer open sites. Infrequent mowing or bush-hogging of the open field and its succession to grassland/shrub habitat under alternative B would result in positive impacts to grassland species, particularly birds. Vegetative changes would be most pronounced under alternative C, which would introduce crops and ornamental plantings to the landscape and require more regular mowing and intensive management. The through road would continue to cause wildlife mortality and be a barrier to some species under alternative B. Complete ~~R~~road removal under alternative C is unlikely due to the need to maintain a thruway for emergency vehicles; however, this option ~~e~~would allow for some natural re-vegetation of the roadbed in the central portion of the road corridor, and a partial return to grassland ~~and/or~~ but not forest, shrubs or bushes because of the need to maintain a utility corridor. James City County would be consulted prior to treatment selection to determine which materials would provide for the safe and efficient travel of emergency vehicles. Archeological investigations, trail use, and visitor activities as proposed under the action alternatives would disturb wildlife, which would likely habituate. Species sensitive to human disturbance would probably leave the area.

4.4.7 Air Quality – Alternative C

p. 218: Revise the third sentence in the first paragraph under "Alternative C" as follows:

> **Additional short-term impacts include increased dust from tree removal for partial re-establishment of the 17th century landscape ~~rehabilitation~~, removal of Centerville Road, and agricultural activities such as cropping.**

p. 218: Revise the second to last sentence in the second paragraph under "Alternative C" as follows:

> **Additional short-term impacts include increased dust from tree removal for landscape rehabilitation, possible removal of Centerville Road and replacement with alternative surface materials, and agricultural activities such as cropping.**

4.4.7 Air Quality – Conclusion

p. 219: Correct the font style, size and position of the section title "Conclusion" after the first paragraph on the page as follows:

> **The park would encourage bicycle access to the site and develop a shuttle system with Jamestown that would reduce auto traffic and vehicle emissions at Green Spring. ~~Conclusion~~**
>
> **Conclusion**
> **The completion of Alternate Route 5, adjacent to the north end of NPS property, would increase average daily traffic volumes in the area.**

4.5 Impacts to Visitor Experience (All Alternatives)

4.5.2 Levels and Patterns of Visitation and Visitor Characteristics – Alternative C

p. 225: Revise first sentence of last paragraph on this page as follows:

> **There would be long-term reductions in "accidental" visitors from closing Centerville Road to through traffic; however, overall levels of visitation would increase in the long-term because ~~of~~ the ~~removal of this significant~~ safety hazards and visual and aural intrusions associated with this road would be reduced to almost negligible levels.**

4.5.2 Levels and Patterns of Visitation and Visitor Characteristics – Conclusion

p. 226: Revise last sentence of last paragraph of "Conclusion" as follows:

> The opportunities for a broader array of interpretive programs and visitor facilities, particularly the emphasis on public archeology; the more flexible and events-oriented programming; the increased availability of information, and the ~~removal~~ closing of Centerville Road ~~as a~~ to eliminate safety hazards and modern intrusions would enhance visitation and overall length of stay at Green Spring as compared to alternative B.

4.5.4 Colonial NHP Experience – Alternative C

p. 232: Revise the sixth and seventh paragraphs as follows:

> *Impacts from the alteration and/or removal of Centerville Road*: The ~~elimination~~ closing of Centerville Road ~~and~~ to local through traffic would be undertaken for safety purposes and to provide a quieter, more scenic setting to contemplate the site's historic features. In addition, ~~R~~removing and/or replacing this post-18th century feature with other surface materials ~~from the interpretive scene~~ would de-emphasize the road and ~~also~~ enhance rehabilitation of the landscape to conditions evoking the 17th century.
>
> The Centerville roadway would be retained in some form to allow for occasional emergency vehicle travel through the site; however, ~~E~~elimination of noise and modern visual intrusions from local through traffic would remove a significant safety hazard for pedestrians, bicyclists, and motorists. Pedestrian traffic would be separated from vehicular traffic, and pedestrians could circulate safely throughout most of the site. A small section of Centerville Road ~~would remain~~ at the southern end of the site ~~to~~ would allow visitor access to a parking lot. A section of the road at the northern end of the site would allow access to a park administrative facility in the future. The entire road trace/corridor through the site, regardless of the surface material used, would function as a utility corridor as well as an emergency vehicle thruway. As opposed to alternative B, access to the site would be simplified by having only one formal entrance to the site instead of two, and the focus would be the historic southern entrance to the site. Because of the need to maintain a utility corridor along the road, the northern entrance to the site would remain open visually, and no tree or shrub buffer could be located here as a screen to modern visual and intrusions and noise from traffic on Alternate Route 5. Options would be explored to indicate ~~this~~ the southern gateway in a visually distinct way to emphasize the historic connection to Jamestown, and to visually de-emphasize the road in the northern part of the site near the Alternate Route 5 intersection. NPS would work with the Virginia Department of Transportation in the planning and design of the gateway and ~~remaining section~~ southern end of Centerville Road to allow safe and efficient access by motor vehicles and bikes. NPS would work with James City County and VDOT to determine road design and surface materials that would provide a safe and efficient thruway for emergency vehicles.

p. 232: Revise the first sentence of the last paragraph as follows:

> The ~~elimination of most~~ removal of existing Centerville Road and/or replacement of surface materials ~~of Centerville Road~~ would ~~contribute to visitors' understanding of the shaping and use~~ de-emphasize this post-18th century feature of the landscape ~~in the service of agriculture and manufacturing~~, and would allow visitors unimpeded physical and visual access for the first time to key landscape and archeological features in the eastern half of the site.

4.5.4 Colonial NHP Experience – Conclusion

p. 233: Revise last sentence of last paragraph as follows:

> The ~~removal~~ closing of Centerville Road to local through traffic would allow safer visitor circulation and provide a quieter, more scenic setting to contemplate the site's historic features.

4.6 Impacts to Socioeconomic Environment (All Alternatives)

4.6.2 Park Setting and Adjacent Land Use – No Action Alternative

p. 234: Divide last paragraph into two paragraphs:

> The public will to protect the park setting and resources, to upgrade tourism-related corridors such as Route 614, and to provide additional visitor services in the Green Spring area would be present to a lesser extent under this alternative than any other alternative. Local jurisdictions would likely be reluctant to provide the funding and incentives, and apply existing regulatory tools, for these purposes if the park unit were not open to the public. Lands historically associated with Green Spring plantation, their historic structures and archeological sites, and potential for interpretation or conservation could be lost, although the park would work with the county and private landowners to prevent this eventuality. Interest and capacity of individual landowners to conserve historic resources and landscape features on lands adjacent to the park, and an open green setting, would probably decrease if Green Spring did not open to the public.
>
> Currently, the NPS is encouraged by several actions being taken just outside park boundaries. State, county and citizen groups are seeking to protect the scenic and environmental values of historic Route 5 and Greensprings Road, and to develop bicycle and hiking trails. James City County and the Williamsburg Land Conservancy are working together to assure the long-term environmental and economic sustainability of nearby historic Mainland Farm.

4.6.2 Park Setting and Adjacent Land Use – Alternative C

p. 236: Revise second sentence of first paragraph under "Alternative C" as follows:

> Under this alternative, major effects on the park setting would occur through the enlargement of the open field, development of a "gateway" at the southern entrance, the abandonment of and ~~removal of~~ potential alterations to Centerville Road, and partial rehabilitation of the original Green Spring road trace from the Colonial fuel pipeline to the Route 5-Greensprings Road intersection.

p. 236: Revise second and third paragraphs under "Alternative C" as follows:

The closing ~~and removal~~ of Centerville Road through the site would ensure that motorists and bicyclists enter from one access point, further enhancing the historic connection to Jamestown and ~~eliminating~~ reducing noise and modern visual intrusion of traffic. Centerville Road would remain in some form to function as a utility corridor and emergency vehicle route; therefor, because of the need to maintain an open corridor, the northern end of the site would not be completely buffered from modern visual intrusions and the noise from traffic on Alternate Route 5. The extent of the effects on the park setting would be partially dependent on the width of the road trace required for the utilities corridor and emergency vehicle travel, and the type of materials that would be allowed on the corridor surface. Generally, ~~This action~~ closing and visually de-emphasizing Centerville Road would create a significant positive effect on the scenic quality of the site, since the landscape could more easily be partially rehabilitated to 17th century conditions. Park staff would have safer access to key landscape and archeological features throughout the site, enabling them to better manage and maintain existing resources, conduct additional research, or explore the archeological record adjacent to Centerville Road. Safer, more effective site management would result in positive effects on the park's setting.

If selected as an option, ~~R~~ road removal would be carried out so as to minimize physical impacts to cultural and natural resources~~;~~. ~~Re-grading and r~~Re-vegetation, although ideal, would likely not occur to restore a seamless open field setting in the central area~~,~~ because of the need to maintain an emergency thruway and utilities corridor. Appropriate options for road treatment, to allow for these functions while maintaining a historic feeling, would be explored with James City County, Virginia Department of Transportation, and Virginia State Historic Preservation Office. ~~A small section of Centerville Road would remain at the southern end of the site to allow visitor access to a parking lot.~~

Vegetative screening would be employed to buffer nearby interpretive sites from the parking lot at the southern end of Centerville Road. NPS would work with the Virginia Department of Transportation and Virginia State Historic Preservation Office in the planning and design of the gateway at the junction of Route 5 and Centerville Road~~, and remaining sections of Centerville Road~~. Options would be explored to indicate in a visually distinctive way the southern entrance to the site and emphasize the historic connection to Jamestown, while de-emphasizing the open utility corridor/road trace at the northern end of Centerville adjacent to Alternate Route 5. NPS would ensure that introduced features are in keeping with the park setting and existing historic landscape features, and visual intrusions on the landscape would be minimized.

4.6.2 *Park Setting and Adjacent Land Use – Conclusion*

p. 237: Revise the second sentence of the seventh paragraph as follows:

The historic plantation landscape from Governor Berkeley's day would be partially rehabilitated, and modern visual intrusions ~~such as the road~~ would be eliminated, enhancing and expanding interpretive vistas within and beyond park boundaries.

4.6.5 Emergency Services – Alternative C

Page 247 notes that

> *The new fire station is planned for completion at the same time as the completion of Alternate Route 5, both planned for spring, 2001. The completion of Alternate Route 5 will provide two potential alternative emergency routes to access residential areas to the south of Green Spring.*

The draft plan was published in February of 2001, prior to the opening of the new fire station and Alternate Route 5. Information used in the analysis reflects incomplete information regarding the effects of the opening of Alternate Route 5 on emergency vehicle response times. By December of 2001, construction for the new fire station and Alternate Route 5 were complete; however, a reassessment of emergency response times based on this new information was not conducted and was deemed unnecessary because in January of 2002, the James City County Planning Commission voted against recommending the closing of Centerville Road through the park. The county agreed to reconsider the matter in the future, and subsequent negotations with NPS led to a revised Preferred Alternative (Alternative C) that allows for use of Centerville Road as a thruway for emergency vehicles. Therefor, the analysis for Alternative C in section 4.6.5, Emergency Services, is no longer relevant.

The "Conclusion" on p. 249, considering revisions to Alternative C (the Preferred Alternative) subsequent to the publication of the draft plan, should state:

> *Alternative C*: Overall, impacts on county emergency services would be minor, and would consist of infrequent police, fire, or medical backup for park rangers during emergencies. Centerville Road through the park would remain in some form and accessible for use by emergency vehicles; therefor, no effects to emergency response times are anticipated. The NPS would work with James City County and VDOT to ensure that any alterations to road design or materials would not effect the safety and efficiency of emergency vehicles using the route. Options would be explored to allow access to the site by emergency vehicles while preventing use by local through traffic. ~~Effects on emergency response times from the closing of Centerville Road would likely be negligible in the long-term, as new emergency service providers are located within currently under-served areas of the county and new, safer, and more efficient emergency response routes open up with the completion of Alternate Route 5~~.

Further information regarding county comments on the plan related to potential road closure and the NPS response may be found in the Comments and Response section of this final plan. Further information on changes to Alternative C based on NPS discussions with the county may be found in the Coordination and Consultation section of this final plan. Also, see the general discussion of the revised Alternative C in the Summary.

4.7 Impacts to Transportation and Site Access (All Alternatives)

4.7.1 Methodology and Assumptions

Note: The draft plan of February, 2001 outlined assumptions for projected traffic volumes on local roads around and through Green Spring prior to the opening of Alternate Route 5 at the end of 2001. The completion of Alternate Route 5 and Route 199 to the east were anticipated to change traffic patterns and volumes in the area. The NPS had contracted with Kimley-Horn and Associates, Inc. to conduct traffic counts in 1999 as part of the Green Spring Park Traffic Study. Further analysis of the impacts of the opening of Alternate Route 5 on local traffic conditions was needed; therefor, Kimley-Horn and Associates, Inc. conducted additional turning movement counts (TMCs) and average daily traffic counts (ADTs) during the weeks of November 12, 2001—prior to the opening of Alternate Route 5—and January 14, 2002—following the opening of Alternate Route 5. The TMCs were conducted at the intersections of Monticello Avenue (Alternate Route 5) and Centerville Road, Centerville Road and Route 5, and Greensprings Road and Route 5. The ADTs were conducted along Centerville Road south of Monticello Avenue during both weeks, and along Monticello Avenue during the week of January 14, 2002. This updated information was published nearly a year after the release of the draft Green Spring GMPA/EIS, and therefor was unavailable for consideration in the analysis of impacts to transportation and site access.

The results of the recent traffic count analysis are indicated in this errata sheet in section *3.5.5 Transportation and Site Access: Motor Vehicle Access and Local Roads.* The newer data suggests that, in the three years since the 1999 Green Spring Park Traffic Study, there have been slight increases in traffic volume on all local roads around and through Green Spring, even with the opening of Alternate Route 5. The opening of Alternate Route 5 seems to have slowed the rate of increase and has diverted at least 1/3 of the traffic away from the section of Centerville Road through the park. Turning movements were significantly reduced, at least temporarily, at the intersection of Centerville Road and Route 5 following the opening of Alternate Route 5, while turning movements at Greensprings Road and Route 5 have remained relatively constant. It is anticipated that turning movement delays and congestion in this area of Route 5 may be modestly reduced in the short-term; however, as overall traffic volumes on local roads increase, this area of Route 5 may see increasing congestion at these closely-spaced intersections. These changes were anticipated in previous studies. Assumptions regarding projected increases in traffic volumes seem to be holding, and therefor the analysis of impacts on motor vehicle access to Green Spring and on local roads in Section 4.7.3 of the draft (p. 254-257) remains relevant.

4.7.3 Motor Vehicle Access and Local Roads – Alternative B

p. 254: Revise second sentence under first paragraph of "Alternative B" as follows:

> **The planned capacity for Centerville Road is 13,000 vehicles per day, of which local traffic (along the NPS segment) is expected to account for 5,400 vehicles per day in the year 2015.~~, assuming the completion of~~ This projection, formulated prior to the completion of Alternate Route 5, nonetheless assumed that Alternate Route 5 is part of the road network for the purpose of the projection.**

4.7.3 Motor Vehicle Access and Local Roads – Alternative C

p. 256: Revise the first and second paragraphs as follows:

> The traffic pattern that would be most affected is the north-south movement using Greensprings Road and Centerville Road through NPS property. Closure of Centerville Road south of Monticello Avenue would probably cause traffic heading south on Centerville to Greensprings Road to divert to Greensprings Plantation Drive or the western extension of Monticello Avenue~~, when this is complete~~. Traffic heading north from Greensprings Road to Centerville Road would be diverted onto Route 5 and subsequently Alternate Route 5 (via Monticello Avenue or Greensprings Plantation Drive). The diversion route using Greensprings Plantation Drive and Route 5 east of Centerville Road represents a total 2.~~1~~3 miles in length. Assuming operational speeds during peak traffic conditions in the year 2015, and estimated turning times, this route would add little to the travel time for the existing Centerville Road route through NPS property. The additional travel time would likely be anywhere from about 19 seconds to 1 minute 11 seconds. Factors that affect travel times along these routes are described in section 4.6.5 (Emergency Services), under "Methodologies and Assumptions."
>
> The diversion route using Monticello Avenue west of Centerville Road and Route 5 ~~is expected to be complete by 2001~~ was completed by January of 2002. This route represents a total of about 2.~~6~~33 miles in length. Assuming operational speeds during peak p.m. traffic conditions in the year 2015, this route would probably add about 58 seconds to 1 minute 40 seconds travel time as compared to the Centerville Road route through NPS property. Factors that affect travel times along this route are described in section 4.6.5 (Emergency Services), under "Methodologies and Assumptions."

p. 256: Revise the second sentence of the third paragraph as follows:

> Using one of the two alternate routes in place of Centerville Road would represent a relatively minor impact to local traffic patterns. This impact is expected to diminish as travel destinations shift with the ~~opening~~ availability of Alternate Route 5 ~~by 2001~~.

p. 256: Note regarding the fourth paragraph reproduced below—-

> *The most important consideration in the closing of Centerville Road is the impacts to response routes to be used by emergency vehicles traversing the area. These impacts are described under "Emergency Services." The tables in the "Methodologies and Assumptions" section of Emergency Services show estimated driving times for Centerville Road through NPS property to the Greensprings Road/Route 5 intersection, and for the two alternate routes using Alternate Route 5, should Centerville Road be closed, as is proposed under Alternative C. Traffic volume and conditions for the year 2015 are assumed. Intersection conditions and other traffic management conditions affecting travel times for both action alternatives are described in the "Methodologies and Assumptions" portion of the Emergency Services section, and also under each alternative in that section.*

Note: In January of 2002 the James City County Planning Commission voted against recommending the closing of Centerville Road through the park. The Planning Commission and Board of Supervisors did not preclude re-consideration of road closure in the future. In negotiating with NPS the terms under which abandonment would be re-considered, the county agreed that road closure would be coupled with continued access for emergency vehicles and for the general public in the event of an emergency which requires quick evacuation from the area. General vehicular through traffic would not be permitted. The NPS would be responsible for maintaining the roadway. Because of the conditions under which road closure would be permitted, the fourth paragraph on p. 256 of the draft plan is no longer relevant.

4.7.4 *Bike/Pedestrian Access – Alternative B*

p. 258: Revise the second sentence of the first paragraph as follows:

> The park would work with VDOT, VA DCR and James City County to establish an appropriate alignment for bike and pedestrian access as described under "Impacts Common to Both Action Alternatives."

4.7.4 *Bike/Pedestrian Access – Alternative C*

p. 259: Revise the first sentence of the third paragraph as follows:

> The park would work with James City County, VA DCR and VDOT to explore options for re-routing the section of multi-use trail proposed for the NPS property, and for safe connections with the Capital-to-Capital Bikeway and other regional trails.

p. 259: Correct the misspelling in the last sentence of the third paragraph as follows:

> Improvements at Green Spring's southern entrance would positively affect trails such as the Capital-to-Capit~~o~~al Bikeway and East Coast Greenway that propose to use Route 5.

p. 259: Revise the fourth paragraph as follows:

> Restrictions on unauthorized access would be positively affected. Restricting access to one entrance~~, and removing the portion of Centerville Road through NPS property,~~ would remove an easy means for bicyclists and pedestrians to access the site during non-visitation hours. A gate or some other barrier at the southern entrance and the northern end of Centerville Road would further discourage unauthorized bike access. ~~A small segment of the abandoned~~ The road in some form would remain in place ~~in the northern end of the site~~, probably forming a relatively wide utility corridor (at least 11 feet) through the site~~at and below this section~~. ; Retaining this wide road section may lead to unauthorized site access by cars, pedestrians, or bicyclists unless ~~and would need to be~~ it were gated or presented some other type of physical obstacle to entry. Unauthorized pedestrian and bicycle access utilizing surrounding residential areas would continue to occur infrequently through use of informal "trails," such as utility rights-of-way, and trails authorized for volunteer patrols that monitor site security. Clearing vegetation along the historic Green Spring road trace close to Route 5 may make it susceptible to use as an informal trail during non-visitation hours, depending on the amount of vegetation removed and physical obstacles such as seasonal high water table and soil stability. Under this alternative, regular ranger patrols would be increased to restrict unauthorized visitation and enhance site security.

p. 259: Add new sentence after second sentence of second paragraph under "Conclusion":

> VDOT and James City County would be the appropriate agencies responsible for developing safe connections with the regional trail system and a safe access point to the park that would consider enhancements to the Greensprings Road/Route 5 and Centerville Road/Route 5 intersections. In addition, VA DCR would coordinate with these agencies in designing these connections so as to minimize impacts to Routes 5 and 614 as designated Virginia Scenic Byways.

4.8 Impacts to Park Operations and Administration (All Alternatives) – Alternative C

p. 261: Revise the first sentence of the third paragraph under "Alternative C" as follows:

> Most of the new positions would be in interpretation and landscape maintenance (6.5 FTEs, or 4.0 additional FTEs as compared to Alternative B), reflecting the programmatic goals to partially ~~rehabilitate~~ re-establish and interpret the 17th-century plantation landscape.

p. 261-2: Revise the last paragraph on p. 261 as follows:

> *Impacts to maintenance:* The largest increase in FTE in the long-term would be in the maintenance category. Four additional FTEs over those proposed in Alternative B would be needed to manage the landscape components, trails, interpretive structures, the Centerville Road corridor, and visitor facilities (e.g., visitor contact station/archeological laboratory facility). Landscape and visitor facilities maintenance, and upkeep of the road surface for emergency vehicle use, would represent a substantial long-term operational cost under alternative C as opposed to alternative B. Increased visitation and use would require additional vegetation removal, as opposed to alternative B, to accommodate the public and the archeological surveys.

p. 262: Revise the third sentence of the second paragraph as follows:

> The new facilities would include trails, waysides, and various landscape features including fences and agricultural fields, potentially interpretive structures denoting major structures, an orientation center/archeological laboratory, restrooms, the Centerville Road corridor, and a parking area, all of which would require the purchase of additional maintenance equipment.

p. 262: Revise the last sentence of the last paragraph under "Conclusion" as follows:

> Staffing increases would benefit the public's understanding of a past that is represented by few standing remains, allowing intensive archeological surveys and partial re-establishment and/or possibly rehabilitation of landscape features that would enhance an appreciation of site significance and NPS cultural resource management responsibilities.

4.9 Sustainability and Long-Term Management

4.9.1 Unavoidable Adverse Impacts (Action Alternatives) – Alternative C

p. 264: Revise first sentence of first paragraph as follows:

Short- and long-term soil disturbance and soil and vegetation loss could result from partial ~~rehabilitation~~ re-establishment of the cultural landscape; construction of a visitor parking lot, contact station/research facility, and future park facility; trail development; possible road removal and/or replacement with alternate surface materials; excavation for utilities; archeological investigations; and alterations to the Route 5/Centerville Road intersection.

p. 264: Revise the first sentence of the fifth paragraph as follows:

The primary and secondary ecological zones within the Powhatan Creek Natural Area could be adversely impacted by utilities excavation, possible road removal and/or replacement with alternate surface materials, and construction related to intersection enhancements.

p. 264: Revise the first sentence of the sixth paragraph as follows:

Palustrine forested wetlands in the southern and western portions of the site could be adversely affected by overuse of trails, tree clearing along the historic Green Spring road trace, selective tree removal for archeological investigations, ~~landscape rehabilitation~~ partial re-establishment of the 17th century landscape, and road widening.

p. 264: Revise the first sentence of the seventh paragraph as follows:

Removal of woodlands for ~~landscape rehabilitation~~ partial re-establishment of the 17th century landscape, visitor facilities and trail development, intersection widening, archeological investigations, and new visitor use in forested areas, could adversely impact some animal and plant species dependent on forest habitat.

p. 265: Revise the second paragraph as follows:

Archeological resources and cultural landscape features alongside and below Centerville Road may be adversely impacted by the road's alteration, redesign and/or removal and replacement of surface materials. A berm associated with 17th-century brickmaking activities, part of an historic drainage ditch system within Powhatan swamp, and an area associated with slave/servant quarters (17/18th century)—all recommended for a determination of eligibility for the national register—may be directly affected by road removal and/or resurfacing activities. Significant archeological sites or cultural landscape features might be located before or during ~~road removal~~ these activities. If effects cannot be avoided during the specific design of the ~~road removal~~ road alteration project, mitigation would be developed in consultation with the VA SHPO and Advisory Council on Historic Preservation.

p. 265: Correct a mistake in the fourth sentence of the third paragraph:

> If effects can not be avoided during the specific design of the ~~road removal~~ project, mitigation would be developed in consultation with the VA SHPO and Advisory Council on Historic Preservation.

p. 265: Revise the first sentence of the fourth paragraph as follows:

> Cultural landscape earthforms could be exposed to erosion through removal of forest cover for partial re-establishment of the 17th century landscape ~~landscape rehabilitation~~, new visitor facility development, trail development, and archeological investigations.

p. 265: Revise the seventh paragraph as follows:

> Visitor and park staff use of the restrooms, artifact cleaning and preservation, and partial landscape rehabilitation and/or re-establishment and maintenance would result in increased levels of demand for ground water, thus nominally reducing the capacity of the county's public water supply system. Mitigation could include confining ~~landscape rehabilitation with~~ plantings and crops to a few acres, so as to minimize the need for watering, and implementing additional water conservation measures at the visitor contact facility/archeology lab.

4.9.2 *Relationship Between Short-Term Uses and Maintenance and Enhancement of Long-term Productivity (Action Alternatives) – Alternative C*

p. 266: Revise first and third sentences of the first paragraph under "Alternative C" as follows:

> The long-term sustainability and natural productivity of the site would be enhanced by the ~~removal~~ closing of Centerville Road, and its possible alteration, regrading and resurfacing, which ~~w~~could restore a more natural drainage pattern ~~and native vegetation as well as introduced plantings~~. Roadkill mortality among faunal populations would be significantly reduced. Agricultural productivity associated with up to 40 acres of prime farmlands could be enhanced because of the partial ~~rehabilitation~~ re-establishment of the 17th century landscape using crops, horticultural varieties, and other plantings.

4.9.3 *Irreversible and Irretrievable Commitments of Resources (Action Alternatives) – Alternative C*

p. 267: Revise the first paragraph under "Alternative C" as follows:

> The initiation of the abandonment and ~~removal~~ possible redesign, alteration, and/or resurfacing of Centerville Road would constitute an irreversible commitment of financial and political resources. Road closure through NPS property would make this commuting route unavailable for local residents and visitors on a more or less permanent basis. The NPS would be obligated to maintain the road corridor indefinitely as an emergency vehicle thruway.

p. 267: Revise the first sentence of the third paragraph under "Alternative C" as follows:

> **Some loss due to erosion of cultural landscape features under forest cover could occur through archeological investigations, new visitor facilities and trail development, and partial re-establishment and/or rehabilitation of the 17th century landscape ~~rehabilitation~~.**

p. 267: Revise the first and third sentences of the fourth paragraph under "Alternative C" as follows:

> **Limited amounts of non-renewable resources would be used for ~~landscape rehabilitation~~ partial re-establishment and/or rehabilitation of the 17th century landscape, preservation projects, and park operations, including energy and materials. These resources are irretrievable once they are committed. In addition, partial rehabilitation/re-establishment of landscape features and introduction of interpretive features would require the use of funding, renewable resources, and park staff for ongoing landscape maintenance and management that would not be available for other activities.**

p. 267: Revise the first sentence of the sixth paragraph under "Alternative C" as follows:

> **The ~~landscape rehabilitation~~ partial rehabilitation/re-establishment of landscape features that would occur under this alternative could result in some minor alteration or loss of wetlands and constitute an irretrievable and irreversible commitment of resources.**

p. 267: Revise the first sentence of the last paragraph on this page as follows:

> **Use of water for ~~landscape rehabilitation~~ partial rehabilitation/re-establishment of landscape features and their maintenance, ~~and~~ artifact treatment and processing, and visitor and park staff use of restrooms, would create a demand that would use regional groundwater supplies.**

Chapter 5

Consultation and Coordination

5.1 Public Involvement and Agency Consultation

5.1.1 Introduction

This document includes the Abbreviated Final Environmental Impact Statement, prepared in response to public comments on the Draft Green Spring General Management Plan Amendment/Environmental Impact Statement (DGMPA/EIS). An Abbreviated rather

than full Final Environmental Impact Statement has been prepared because the public comments received are generally not substantive and require minor responses, mainly in the form of factual corrections or explanations as to why comments do not warrant further agency response. The substantive comments have been fully addressed in the Comments and Response section of this document, and in the Errata section prepared to correct the Draft Environmental Impact Statement. After a 30-day no-action period, a Record of Decision (ROD) will be prepared to document the selected alternative and set forth any stipulations for implementation of the general management plan, thus completing the requirements for the National Environmental Policy Act (NEPA) of 1969, as amended.

NEPA is the national charter for environmental protection. Title I of the law requires that federal agencies plan and carry out their activities "so as to protect and enhance the quality of the environment. Such activities shall include those directed to controlling pollution and enhancing the environment."

The requirements of the act are fulfilled when there is extensive public involvement in the planning and development of any proposed federal actions and consideration of potential impacts to the cultural, natural and socioeconomic environment. The impacts analysis is accomplished through the environmental impact statement (EIS) described in the draft document, supplemented by the revisions described in this final document. This EIS is essentially a programmatic statement, presenting an overview of potential impacts relating to the proposed program for each alternative. More detailed plans will be developed for individual actions prior to implementation. Any document associated with these plans will be guided by the framework set by this programmatic statement—this relationship is known as "tiering." In addition, the requirements for this general management plan will be completed when the ROD is signed by the NPS Regional Director, Northeast Region.

In implementing the Final General Management Plan Amendment/Abbreviated Final Environmental Impact Statement (Final GMPA/AEIS) for Colonial NHP, the NPS will comply with all applicable federal, state, and local legislation and orders. Relevant laws and policies that apply to planning and implementation of this general management plan have already been described in detail in the Affected Environment section of the Draft Green Spring General Management Plan/Environmental Impact Statement (Green Spring DGMPA/EIS) dated February, 2001 (distributed May, 2001), and supplemented by information contained in the Errata section included with the Green Spring Final GMPA/AEIS. Formal consultation with the appropriate federal, state and local agencies has been conducted throughout the preparation of the Draft and Final EIS and is described below.

5.1.2 *Project Scoping*

Since the beginning of the planning process in January 1997, this project has engaged interested individuals and organizations outside as well as inside the National Park Service. The major decisions addressed in general management level planning—decision points—are those reflecting substantially different viewpoints or visions for the future management of park resources and visitors' experiences. While the park's mission, management goals, and other mandates set the parameters for the plan, various approaches to resource protection, use, and development are possible.

The decision points, described on pages 14-21 of the Green Spring DGMPA/EIS, are a distillation of the most relevant issues (concerns, opportunities, interests, expectations and suggestions) that emerged as a result of concurrent studies, and that were identified through consultations with park staff and during public workshops and meetings with stakeholders (inputs collectively referred to as project scoping).

The GMP team conducted seven workshops with project partners and stakeholders and hosted a roundtable of interdisciplinary experts in an effort to better understand what is historically significant about the site, why it is of public value to finally open the site, and how to best interpret and preserve it. The primary partners in this effort include the Friends of the National Park Service for Green Spring, Inc. and James City County. Other stakeholders providing input in one or more of the workshops included the Association for the Preservation of Virginia Antiquities (APVA); Colonial Williamsburg Foundation; the College of William and Mary; Historic Route 5 Association; the Jamestown-Yorktown Foundation; the National Society, Daughters of the American Colonists; Virginia Department of Historic Resources; Williamsburg Chamber of Commerce; the Williamsburg Land Conservancy; and the Historic Triangle Regional Bicycle Committee.

Site tours, two newsletters, and two sets of formal public meetings were conducted to communicate with and solicit

input from a broad public audience. In addition, the NPS coordinated with James City County throughout the planning process and following the release of the Green Spring DGMPA/DEIS, participating in several deliberations, consultations, and public hearings related mainly to the potential closure of Centerville Road. Further information on the NPS responses to county comments on the draft plan can be found in the Comments and Responses section of this final plan.

Public Involvement, Stakeholder Workshops and Team Meetings:

- *Workshop#1* (1/15/97) — Purpose, Significance and Planning Issues
- *Workshop #2* (4/22/97) — What do we know? Site Resources, History and Data Needs
- *Workshop #3* (6/26/97) — Interpretive Framework
- *Workshop #4* (10/8/97) — Developing Concepts
- *NEWSLETTER #1* — January, 1998
- *VIP and PUBLIC SITE TOURS* — February 21 and 22, 1998
- *PUBLIC MEETINGS* (February 27 and 28, 1998) — To introduce the process and solicit public input on issues the plan should consider
- *Workshop #5* (5/28/98) — Presentations of ongoing research and field survey findings (Phase One Archeology, Floral and Faunal Surveys, Regional Trail Development, Jamestown 2007 Observance, insights from public meetings) — *Planning consultants, ICON Architecture Inc., join team.*
- Scholars Roundtable (6/24/98)
- *Workshop #6* (7/7/98) — Alternatives Charrette #11
- *Workshop #7* (8/19/98) — Alternatives Charrette #22
- *Team Meeting* (10/20/98) — Refining Alternatives and Management Prescriptions
- *NEWSLETTER #2* — January, 1999
- *PUBLIC MEETINGS* — (2/18/99) — To solicit input on Alternatives
- *Team Meeting* (2/19/99) — Review results of public meeting
- *Team Meeting* (6/24/99) — EIS assumptions, cost and staffing estimates
- *Meeting with Traffic Consultant and County* (9/2/99) — Kick-off Traffic Study
- *Briefing for NPS Regional Director, NER* (10/22/99) — Selecting a Preferred Alternative
- *Internal Review of Draft Plan* — March, 2000

PUBLIC, STAKEHOLDER and AGENCY REVIEW OF DRAFT PLAN (May 2 – July 11, 2002)

- *James City County Board of Supervisors Meeting* (9/26/01) — Colonial NHP Superintendent formally presents NPS preferred alternative and requests county's support for closure of Centerville Road through Green Spring. James City County Supervisors request additional traffic study.
- *Meeting with Regional (two counties and City of Williamsburg) Bicycle Committee* (10/15/01) — The committee votes to agree with the NPS position, that a bike trail through Green Spring per Alternative C is not necessary.
- *James City County Public Meeting* (11/14/01) — The county solicits public input on the closure of Centerville Road.
- *James City County Planning Commission Meeting* (3/4/02) — Colonial NHP Superintendent presents NPS proposal outlining NPS willingness to take ownership and maintenance responsibilities for Centerville Road through Green Spring and addressing concerns and conditions NPS would satisfy prior to closure. The Planning Commission nonetheless unanimously decided to table the question of closing Centerville Road because local opposition had concerns that were not satisfied by the NPS proposal.
- *Meeting among James City County representatives and staff, Friends of NPS for Green Spring, Inc. and NPS* (3/18/02) — Discuss incremental approach to implementing NPS Preferred Alternative.
- *James City County Planning Commission Meeting* (4/1/02) — Resolution passed to keep Centerville Road open for the foreseeable future, to encourage the National Park Service to develop Green Spring "in an incremental fashion," and to recommend implementation of traffic calming measures on Centerville Road through the park.

- *James City County Board of Supervisors* (5/28/02) — Resolution passed to support the National Park Servicee's opening of Green Spring for public visitation, and to ask for the cooperation of the Virginia Department of Transportation to transform Centerville Road between Route 5 and Monticello Avenue into a road more conducive to park development and activities. The resolution also congratulated the National Park Service and the Friends of the NPS for Green Spring, Inc. for their future cooperation in the initial development of Green Spring on the west side of Centerville Road.
- *PUBLISH AND DISTRIBUTE FINAL PLAN* — Notice of Availability and commencement of 30-day wait periodd (upon release of final document).
- *PUBLISH RECORD OF DECISION* — After conclusion of 30-day wait period and approval of Northeast Regional Director, NPS

Intergovernmental/Interagency Consultation
All relevant tribal organizations; local, state and federal agencies; and regional institutions have been notified for public meetings; invited to comment on material presented in newsletters; and provided input and information to inform the Draft General Management Plan Amendment and Environmental Impact Statement. The specific tribal organizations; local, state and federal agencies; and regional institutions consulted are included in the List of Recipients in this document.

5.1.3 *Consultation with the Advisory Council on Historic Preservation and the Virginia Department of Historic Resources*

Section 106 of the National Historic Preservation Act of 1966, as amended (16 USC 470, et seq.) requires that federal agencies which have direct or indirect jurisdiction take into account the effect of undertakings on National Register properties and allow the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO) the opportunity to comment. Toward that end, the NPS worked with the Virginia Department of Historic Resources and the Advisory Council to meet the requirements of 36 CFR 800 and the 1995 Programmatic Agreement among the National Conference of State Historic Preservation Officers, the Advisory Council on Historic Preservation, and the NPS. This agreement requires the NPS superintendents to work closely with the SHPOs and the ACHP when planning actions within their jurisdictions. The SHPO and the ACHP will be invited to consult on the specifics of any future developments.

To ensure that GMP proposals with the potential to affect properties listed on or eligible for the National Register comply with provisions of Section 106, the ACHP and the SHPO (Virginia Department of Historic Resources) were invited to participate early in the planning process. Representatives of the SHPO have participated in core planning efforts and, along with the ACHP, were invited to review and comment on the DGMPA/EIS. SHPO comments on the DGMPA/EIS are included in the Comments and Responses section of this document.

The 1995 Programmatic Agreement also provides for a number of programmatic exclusions for specific actions that will not have an adverse effect on cultural resources. These actions may be implemented without further review by the SHPO or the ACHP provided that NPS internal review by subject specialists finds the actions will not be adverse. Undertakings not considered as exclusions in the Programmatic Agreement must be reviewed by the SHPO during the planning and design stages and before implementation. Throughout the planning process there was consultation on all potential alternatives and related actions, and in the future there will be consultation on site specific implementation plans and actions.

The NPS has developed a list of actions (see tables 20 and 21 below) associated with the proposed general management plan alternatives that could have an effect on cultural resources. None of the actions listed are covered by programmatic exclusions, and therefore all actions would require further SHPO/ACHP consultation. This information is presented below, and indicates a range of potential actions for each action alternative, including potential actions associated with the staged implementation, of Alternative C. The Final GMPA/AEIS notes those actions with which the SHPO concurs, and any additional requests or comments that office may have. Further information regarding SHPO comments on the DGMPA/EIS can be found in the Comments and Response section of the Final GMPA/AEIS.

A separate letter outlining changes made to the

DGMPA/EIS and requesting concurrence on findings of effect to cultural resources, was sent to the SHPO's office for signature. This letter followed phone consultations among the SHPO representative, park staff and NPS Philadelphia Support Office staff, respectively on June 6 and June 12, 2002. The letter is reproduced in the Comments and Responses section of this Final GMPA/AEIS (see Appendix A). In phone consultations with the SHPO, NPS staff described potential actions for Alternative B and Preferred Alternative C, and potential effects to cultural resources, including cumulative effects from Stage One of Alternative C as a transitional phase to Stage Two of Alternative C, the preferred alternative fully implemented. In addition, NPS sent relevant sections of the Final GMPA/AEIS for preliminary review and comment. These sections included the Consultation and Coordination and the Comments and Responses sections. These describe the scope of NPS consultations with the SHPO throughout the GMP planning process, SHPO comments on the Green Spring DGMPA/EIS and the ways in which the National Park Service has responded to those comments and incorporated them into the final plan, the minor changes that have been made to Alternative B and the Preferred Alternative C subsequent to the publishing of the draft plan, and the potential actions associated with revised Alternatives B and C, along with additional consultation requirements related to those actions.

The potential effects of actions associated with the preferred Stage Two of Alternative C and actions associated with interim implementation of Stage One of Alternative C are indicated in the Final GMPA/AEIS, along with possible mitigation measures for those actions with potential adverse effects. Mitigation measures will also be outlined in the Record of Decision, a separate document approved by the Northeast Regional Director of the NPS that describes the rationale for the selection of the Preferred Alternative.

Prior to any ground-disturbing action by the NPS, a professional archeologist will determine the need for further archeological testing or evaluation. Any such studies will be carried out prior to construction in consultation with the SHPO. Any large-scale archeological investigations will be discussed with the SHPO. The NPS's responsibility for protecting archeological resources is included under several laws mentioned earlier as well as the Archeological Resources Protection Act of 1979.

The SHPO has agreed that the 1995 NPS Programmatic Agreement is sufficient guidance to address the program of actions NPS would undertake and the related type of Section 106 consultation that would be required, without the need for a specific Programmatic Agreement between the park and the Virginia Department of Historic Resources. Due to the long-term, incremental approach to plan implementation, individual projects would be more efficiently reviewed on a case-by-case basis, once the design and location of facilities are specified. Prior to implementation, consultation with the SHPO would outline specific actions the NPS would undertake, identify the cultural resource(s) subject to effect, determine what specific effects the undertaking would have on them, and steps the NPS would take to avoid or minimize effects.

Cultural Resources Compliance Chart

The Draft Green Spring General Management Plan Amendment/Environmental Impact Statement originally consolidated all actions for each of the action alternatives into one chart indicating the requirements for Sections 106 and 110 compliance (see Table 23 on p. 272 of the draft plan). In the final plan, the actions for each action alternative and their Section 106 and 110 requirements are noted separately. The actions noted in the final plan include those associated with the implementation of Alternative B and Stage One of Alternative C (listed together due to the similarity in location and scope of facilities and visitor use areas), as the near-term implementation alternative, and actions associated with long-term implementation of Preferred Alternative C, Stage Two. The charts below replace that of Table 23 on p. 272 of the draft plan.

Subsequent to publication of the draft plan, it was determined that a revised version of Stage One of Alternative C (with facility and visitor use locations similar to those of Alternative B), would be implemented in the near-term, although Alternative C, Stage Two, remains the Preferred Alternative for long-term implementation when Centerville Road is closed to through-traffic. The most significant revision to Alternative C, Stage One include temporarily developing and locating all facilities, including archeological support facility/visitor contact station, and restricting all visitor use to the west side of Centerville Road, a different location than they are planned for in Stage Two when Centerville Road is closed to through-traffic. These facilities will be developed to lay "lighter on the land," such as a temporary, more mobile archeological support facility/visitor contact station, and a parking lot that is designed to minimize the use of impervious materials, unlike Alternative B, and would be easier to move or remove once Alternative C, Stage Two is imple-

mented. Program development rather than facility development would be emphasized as part of the visitor experience. In many other respects, actions associated with the revised Stage One of Alternative C are the same as the original but are not subject to further compliance requirements and therefore are not noted in the chart below. The only revision to Alternative C, Stage 2 involves the disposition and treatment of Centerville Road. The draft plan proposed the abandonment and complete removal of Centerville Road, whereas the final plan proposes that the road be retained, but closed to local through-traffic. The road would be accessible to emergency vehicles and as a public evacuation route. These revisions are reflected below.

Table 20: Proposed Actions and Compliance Requirements

Alternative B and Stage One of Alternative C

Potential Actions	Compliance Requirements
Phase II archeological research plans and archeological site investigation	SHPO and park 106 advisors consultation initiated as part of 1998 Archeological Overview and Assessment, and 1999 Archeological Phase I Survey; consultation with park 106 advisors and SHPO to continue during site work regarding scope and effects; consultation with ACHP if adverse effects determined; also requires Section 110 identification and inventory of archeological resources for National Register eligibility and revision to current National Register documentation.
Standing structure assessments and evaluation of landscape features, as part of cultural landscape management and rehabilitation plan	Compliance initiated as part of 1999 Level II Cultural Landscape Inventory. Continued consultation with park 106 advisors and SHPO. Requires Section 110 identification and inventory of historic landscape features for National Register eligibility and revision to current National Register nomination.
Improve Route 5/Centerville intersection and develop park entrance/gateway	Section 106 consultation with park 106 advisors, SHPO, county, VDOT regarding scope of work—construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Implementation of physical traffic calming measures on Centerville Road within the park unit, taking 1999 traffic study and any new studies required into account	Park 106 advisors and SHPO review alternatives and potential effects. Consultation with ACHP if adverse effects.
First-time excavation for utilities placement	Section 106 consultation with park 106 advisors, SHPO, county regarding construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Development of new visitor contact station complex with parking lot	Section 106 consultation with park 106 advisors and SHPO regarding scope of work—construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Stabilization and/or preservation of existing standing ruins ("orangerie", "jail", springhouse)	NOTE: These structures are already listed in the NRHP Documentation. Park 106 advisors and SHPO review to assess the effect on structures; ACHP consultation if adverse effect.
Installation of new wayside exhibits and signage	Section 106 consultation with park 106 advisors, SHPO, county regarding construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Development of design and location options for new low-impact trail system in/near core manor area	Park 106 advisors and SHPO review alternatives and potential effects. Consultation with ACHP if adverse effects.

Table 21: Proposed Actions and Compliance Requirements
Stage Two of Alternative C (Preferred Alternative)

Potential Actions	Compliance Requirements
Re-evaluation of park entrance/gateway and potential road widening for safer turning movements	Section 106 consultation with park 106 advisors, SHPO, county, VDOT regarding changes to park entrance—construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Re-evaluation of internal circulation, including alterations/resurfacing of existing Centerville Road, addition of emergency pre-emption devices, and restoration of adjacent areas	Requires Section 110 determination of National Register eligibility; Section 106 consultation with SHPO, park 106 advisors, VDOT and county regarding alternatives for construction location, scope, design, materials, and potential effects on the road and adjacent historic landscape features. Consultation with ACHP if adverse effects.
Removal and/or relocation of Stage One visitor contact station complex, including parking lot	Section 106 consultation with park 106 advisors and SHPO regarding scope of work—extent of removal, design, possible relocation alternatives, and potential effects. Consultation with ACHP if adverse effects.
Additional first-time excavation for utilities placement beyond that required under Stage One	Section 106 consultation with park 106 advisors, SHPO, county regarding construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Development of new administrative/educational facility	Section 106 consultation with park 106 advisors and SHPO regarding scope of work—construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Development of new visitor reception center/archeological laboratory	Section 106 consultation with park 106 advisors and SHPO regarding scope of work—construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Installation of interpretive stations and "ghost" or other markings at archeological sites to augment waysides in Stage One	Section 106 consultation with park 106 advisors/SHPO regarding construction location, extent, design, and potential effects. Consultation with ACHP if adverse effects.
Development of new trails in addition to those proposed under Stage One to access interpretive sites beyond core manor area	Park 106 advisors and SHPO review alternatives and potential effects. Consultation with ACHP if adverse effects.
Stabilization and rehabilitation of key 17th century landscape features in fields and former forecourt/garden area, according to Cultural Landscape Reports and assessments	Requires Section 110 consultation regarding National Register eligibility. Park 106 advisors and SHPO review alternative treatment plans and potential effects. Consultation with ACHP if adverse effects.
Clearing of vegetation along historic road trace and rehabilitation/restoration of area	Requires Section 110 determination of National Register eligibility. Consultation with Section 106 SHPO/park 106 advisors regarding scope, design, vegetative materials, and potential effects on the trace and adjacent drainage ditches. Consultation with ACHP if adverse effects.

5.1.4 Consultation with American Indian Tribes

Several laws and regulations require federal agencies to notify or consult with Native American groups or otherwise consider their interests when planning and implementing federal undertakings. In particular, the *Memorandum on Government-to-Government Relations with Native American Tribal Governments* and *Executive Order 13084* of May 14, 1998 (Consultation and Coordination with Indian Tribal Governments) specify the commitment to develop more effective day-to-day working relationships with sovereign tribal governments. In addition are the various laws and regulations that deal with American Indian relationships and discovery of human remains, potentially relevant to the management of Green Spring.

Although no significant Native American archeological resources have been located, several Virginia tribes—including the Mattaponi, Pamunkey and Chickahominy—have historical connections to the Green Spring area. Currently, there are no tribes using the site or surrounding areas for traditional purposes. The Virginia Indian Council, representing eight tribes and appointed by the Governor of Virginia, was contacted by letter dated March 5, 1999, to involve them in the general management planning process, to gain an understanding of tribal concerns, and to determine whether or not there might be ethnographically sensitive areas within Green Spring. The Council was contacted again by phone May 6, 1999, and by letter dated May 6, 1999. In addition, a consortium of seven Virginia tribes, known as the United Indians of Virginia, was contacted by letter dated May 7, 1999, to gather additional information and tribal perspectives on Green Spring. Neither of these two tribal organizations expressed interest in the GMP planning process, nor did they indicate that tribal ties or ethnographically sensitive areas of concern existed within Green Spring. The NPS Native American Liaison was contacted by phone June 12, 1999, and the Virginia SHPO was contacted by phone June 7, 1999 to gather additional background on social, cultural and economic issues currently affecting the Virginia tribes, previous contacts they may have had with NPS, and appropriate ways to contact tribal leaders for future involvement in park projects. Both the Virginia Indian Council and the United Indians of Virginia were invited to comment on the DGMPA/EIS, but declined to comment. These tribal organizations will each receive a copy of this final document (Final GMPA/AEIS), along with a letter summarizing proposed NPS actions and potential effects on historic and prehistoric resources at Green Spring.

The 1992 amendments to the National Historic Preservation Act and the Archeological Protection Act provide means whereby information about the character, location, or ownership of archeological sites, historic properties, and ethnographic sites, including traditional and cultural sites, might be withheld from public disclosure. This provision is especially important for archeological sites such as Green Spring, where disclosure could risk harm to potential and actual resources. Throughout the general management planning process, and as additional archeological discoveries are made, measures will be taken to protect Green Spring's resources.

The NPS will continue to consult with American Indian tribes on a government-to-government basis. This special legal relationship is outlined in the secretary's April 29, 1994, memorandum for the heads of executive departments and agencies. In keeping with this mandate and provisions of NEPA, the NPS will consult with Indian groups on planning and management activities that affect their historical connection with Green Spring. The NPS will develop and accomplish their programs in a way that reflects respect for the beliefs, traditions and other cultural values of the Indian tribes with ancestral ties to Green Spring. Consultation with American Indian groups will continue in the future, helping to improve understanding and achieve common goals during implementation of the general management plan.

Because of Green Spring's long human history and known association with nearby tribal communities, there is some minimal potential for discovery of human remains and associated items of cultural patrimony. The Native American Graves Protection and Repatriation Act (NAGPRA) addresses the rights of tribes and consultation procedures regarding certain human remains and cultural items which with they are affiliated. To comply with provisions of the act and its implementing regulations (43 CFR 10), park managers will establish a prompt and effective notification system as outlined in the law to contact and consult with concerned groups regarding discovery of human remains and associated objects. Managers will deal with burials on a case-by-case basis with informed awareness of tribal concerns. Burials and associated objects will be afforded the greatest respect, and the NPS will consult with the tribes regarding remains associated with these groups. A NAGPRA implementation plan will be developed which would contain strategies to include discussions with the Virginia Indian Council and United Indians of Virginia regarding archeological investigations and inadvertent discoveries.

5.1.5 Consultation with U.S. Fish and Wildlife Service

Section 7 of the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat.

Informal consultation with the U.S. Fish and Wildlife Service was conducted by phone in January, 1998 and by letter dated February 3, 1999, to determine if any rare, threatened or endangered species exist in or near Green Spring. Three responses (a memo dated January 27, 1998, a letter dated March 1, 1999, and a memo dated March 30, 1999) indicated that a federally listed threatened species—the bald eagle (*Haliaeetus leucocephalus*)—exists on private property adjacent to Green Spring and another federally listed threatened species—the small-whorled pogonia (*Isotria Medeoloides*)—potentially exists at the site. In addition, several species of concern have been documented for the Green Spring area, including seven plant and one insect species. The letter of March 1, 1999 is reprinted in the appendices.

The U.S. Fish and Wildlife Service (USFWS) was invited to comment on the DGMPA/EIS. Their comments and the NPS response can be found in the Comments and Responses section of this final plan. In addition, new diagrams for Alternatives B and C showing an overlay of the National Wetlands Inventory information are also included in the Comments and Response section. These diagrams are also also included to address USFWS concerns regarding the adequacy of wetlands information.

The NPS will continue to consult with the USFWS regarding habitat requirements and management strategies for rare, threatened and endangered species before the design and construction phase of any proposed actions. The NPS will develop and implement measures in consultation with the USFWS to ensure that protected federal listed species and their habitats will not be affected.

5.1.6 Consultation with Virginia Department of Game and Inland Fisheries, Virginia Department of Agriculture and Consumer Services, and Virginia Department of Conservation and Recreation

NPS Management Policies require cooperation with appropriate state conservation agencies to protect state-listed and candidate species of concern in the parks. The Virginia Department of Game and Inland Fisheries is a consulting agency under the U.S. Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 *et seq.*), providing environmental analysis of projects or permit applications coordinated with the Virginia Department of Environmental Quality, the Virginia Marine Resources Commission, the Virginia Department of Transportation, the U.S Army Corps of Engineers, the Federal Energy Regulatory Commission, and other state and federal agencies.

The NPS consulted with the Virginia Department of Game and Inland Fisheries by letter dated October 15, 1998, to ascertain the presence of any state-listed or candidate rare, threatened or endangered species that could be affected by this project. The reply of February 10, 1998, including information from the agency's computerized Wildlife Information Online Service, stated that three federally listed threatened species had been confirmed near the park unit, including the bald eagle, small-whorled pogonia, and sensitive joint-vetch (*Aeschynomene virginica*). In addition, several federally listed endangered and threatened species, and species of concern, although unconfirmed, are known to inhabit this region. Numerous state endangered and threatened species, and species of concern, also inhabit the region, although no collection data exists for them in the Green Spring area. These species are listed in a letter reprinted in Appendix 8 of the draft plan.

The Virginia Department of Agriculture and Consumer Services was consulted by phone February 24, 1998 and March 1, 1999 for additional information on the potential or confirmed presence of federally or state-listed rare, threatened and endangered species or candidate species of concern in or near Green Spring. The agency confirmed

the presence of the Virginia least trillium (*Trillium pusillum* var *virginianum*), a state species of concern, near the site. The agency confirmed by letter dated March 9, 1999 that no plants listed in the 1998/99 floral survey for Green Spring were state listed as threatened or endangered. The NPS also reviewed a copy of a letter dated June 17, 1992 from the curator of the herbarium at The College of William and Mary to the Williamsburg Environmental Group. The letter stated that the dwarf trillium (*Trillium pusillum*), a state species of concern, had existed on property adjacent to the Green Spring site.

The Center for Conservation Biology at the College of William and Mary completed a faunal inventory at Green Spring (March, 1999) and a floral inventory (May, 1998). The faunal inventory tentatively identified the presence of a state-listed threatened species, the Mabee's salamander (*Ambystoma mabeei*). In addition, five state species of concern were identified: the golden-crowned kinglet, hermit thrush, brown creeper, winter wren, and magnolia warbler.

The Virginia Department of Game and Inland Fisheries (VDGIF) was contacted by phone March 29, 1999 and April 16, 1999 in order to set up a site visit that would verify the presence or absence of the Mabee's salamander. The VDGIF surveyed Green Spring's vernal pool May 6, 1999 and indicated by phone May 10, 1999 that no Mabee's salamander larvae were identified during the survey. The results of the survey were discussed by phone May 18, 1999 and included in a letter dated June 10, 1999, which is reprinted in Appendix 8 of the DGMPA/EIS. Although the survey did not locate larvae or adult Mabee's salamanders, the VDGIF was unable to conclude that the species did not exist at the site. Environmental conditions may have caused the species to forego breeding in 1999, or Mabee's populations may have been predated by other salamander species. General recommendations for maintaining potential habitat for salamander species are included in the letter dated June 10, 1999.

The Natural Heritage Division of the Virginia Department of Conservation and Recreation (VDCR) was contacted by phone June 19, 1999 to request information on the management of potential habitat for rare species in the Powhatan Creek conservation zone. Although the 1998/99 floral inventory did not detect the presence of small-whorled pogonia or trilliums, the VDCR recommended a re-survey of potential habitat prior to implementation of GMP-related actions.

The Virginia Department of Game and Inland Fisheries (VDGIF), Virginia Department of Agriculture and Consumer Services (VDACS), and Virginia Department of Conservation and Recreation (VDCR) were invited to comment on the DGMPA/EIS. The VDGIF did not join in the state agency review coordinated through the Virginia Department of Environmental Quality. The VDACS comments on the DGMPA/EIS were not substantive and did not require a response. The VDCR submitted written comments on the DGMPA/EIS to which the NPS responded in the Comments and Response section of this final plan. In addition, the NPS contacted VDCR by phone April 18, 2002, to clarify VDCR's comments and concerns regarding impacts to the forest buffer along Route 5, a state designated Scenic Byway, and recommendations for locating the Capital-to-Capital Bikeway along Route 5.

The NPS will continue to consult with the VDGIF, the VDACS, and the VDCR, Natural Heritage Division, regarding habitat requirements and management strategies for state-listed rare, threatened or endangered species or state species of concern before the design and construction phase of any proposed actions. The NPS will develop and implement measures in consultation with appropriate state agencies to ensure that protected state-listed species and their habitats will not be affected. The NPS will also consult with the VDCR prior to plan implementation in developing a strategy for protection of the forest buffer along Route 5 and routing of the Capital-to-Capital Bikeway.

5.1.7 *Coordination and Deliberations with James City County Development Staff, Board of Supervisors, and Planning Commission*

Note: A listing of specific meetings, discussions, and decisions appears above, along with dates and a brief description.

2001 NPS Management Policies (2.1.3, 2.3.1.4, 2.3.1.6) and the National Environmental Policy Act of 1969, as amended, direct the National Park Service to consult with members of the public—existing and potential visitors, neighbors, people with traditional cultural ties to park lands, scientists and scholars, concessioners, cooperating associa-

tions, gateway communities, and government agencies, among other partners—throughout the park planning process. The NPS is directed to work cooperatively with others to improve the condition of parks; to enhance public service; and to integrate parks into sustainable ecological, cultural, and socioeconomic systems on a local and regional level. The public is encouraged to participate during the preparation of a GMP and the associated environmental analysis. Cooperative planning beyond park boundaries, at the regional level, is encouraged.

James City County has provided expertise and support to help the NPS identify the range of issues, develop the range of alternatives considered in planning, review the analysis of potential impacts, and consider the rationale for decisions about the park's future. The county has been involved in the GMP planning process from the earliest stages, providing a substantial amount of base information included in the Environmental Impact Statement and contributing ideas and feedback on alternatives development. This cooperative process has helped the NPS learn about the values placed by other people and groups on park resources and visitor experiences, and how proposed park actions may affect the local community. NPS is an important part of this community and therefore has an interdependent and mutually supportive relationship with James City County, and both parties recognize the need to build support for implementing the plan among local interests, visitors, Congress, and others at the regional and national level.

James City County serves the local and regional population, and the county must respond to concerns regarding the health, safety and welfare of its inhabitants. Although generally supportive of the Preferred Alternative, the county has expressed concerns regarding the phasing of facilities and program development at Green Spring and about the potential closing of Centerville Road and the possible impacts to emergency services, as well as traffic patterns and volumes on the local road network. These concerns have been expressed through letters of comment on the draft plan and, most recently, thoughtful deliberations and public meetings.

Several months following the comment period for the Green Spring DGMPA/EIS, James City County planning staff solicited input on the closing of Centerville Road through the park at a public meeting (November 14, 2001). NPS participated in this meeting, presenting the case for implementing Alternative C, including the road closure. Several citizens spoke in favor of road closure, and several spoke against it. Those who favored the NPS proposal cited the benefits to public safety from eliminating an accident-prone throughway, protection of a large tract of open space with national historical significance, elimination of noise from through traffic, and education and enjoyment of the park in a safe environment. Those who wished Centerville Road to remain open cited the road closure's potential negative effects on emergency response times in southern parts of the county, and on the inconvenience of detouring up to 2.0 minutes around Green Spring. Some 60 to 70% of those attending the meeting appeared to be in favor of closing the road.

In an email message of October 23, 2001, the James City County Planning Director suggested that a discontinuance of the road rather than abandonment may be supportable to remove the road from the state system, and offered the following criteria for emergency use:

- The new or existing emergency access roadway must support fully loaded emergency vehicles and allow operating speeds of at least 35 mph.
- The existing alignment or a relocated emergency access roadway can be rebuilt to the specifications of the state, if necessary, in the future.
- The emergency access route should serve as a primary means of access for Patriot's Colony and communities and businesses south of Route 5, rather than as a back-up emergency route.

The NPS responded to the county's suggestions in a letter dated November 8, 2001, urging a decision regarding road closure as a prerequisite for developing a Preferred Alternative and as a necessity for the Friends' fundraising campaign. The NPS noted that the Green Spring DGMPA/EIS had been revised to allow for the use of Centerville Road as a throughway for emergency vehicles, and agreed that the design should support the weight of fire trucks and respond to other safety objectives. Future implementation plans would include a more detailed, specific site design, including road surface treatment. The NPS further emphasized the use of the existing roadway rather than constructing a new roadway in the future, as implied by the second bullet point in the county's memo of October 23, 2001. The NPS cited the likely major adverse environmental impacts that would result from the construction of a new road, including the visual and aural intrusion on the historic scene, the destruction of woodlands and wetlands, and the disruption to cultural resources, including landscape features. In addition, this action would require the preparation of a new environmental impact statement, which would substantially delay federal approval and implementation of any actions at Green Spring.

Other NPS concerns included the definition of "primary access" for emergency use, and the implications for NPS management and control of park operations, should Centerville Road be discontinued rather than abandoned.

By the end of 2001, Alternate Route 5 construction was completed. This new road development, providing two alternate routes around Green Spring, suggested that this was an opportune point in time to reconsider closing the section of Centerville Road that bisects Green Spring. Around March 1, 2002, the General Assembly of Virginia passed a Joint Resolution "supporting the opening of the Green Spring plantation site as a unit of Colonial National Historic Park by the year 2007." Although largely symbolic, and not attached to funding, it was hoped that this expression of support would help encourage James City County and the Virginia Department of Transportation to close Centerville Road through the park.

The James City County Planning Commission scheduled a meeting with the Colonial NHP park superintendent March 4, 2002 to address issues regarding the potential road closure. The meeting was attended by about 100 members of the public. The superintendent asked the Planning Commission to consider initiating the road abandonment process and conveying its interest in the road to NPS. The superintendent proposed that NPS operate and maintain the road through the park in its present condition as a public throughway until such time as it would be closed, also offering to remove snow and enforce traffic laws. The superintendent also proposed allowing emergency vehicles to access the road following its closure to the general public. NPS would commit to working with the county to identify and install an emergency pre-emptive device and consider appropriate design standards that would allow the safe and efficient access and use of the road by public safety vehicles. The superintendent also agreed that NPS would open the road for public use during emergency evacuations. The superintendent emphasized that the agency would not close the road until Alternative C (Preferred Alternative) had been substantially implemented, including construction of a visitor contact station/archeological support facility, parking lot, trails, and exhibits.

The members of the public who attended the March 4 meeting were divided on the issue of road closure. Many local residents supported road closure; however, ultimately concerns of local residents over the inconvenience of driving alternate routes around Green Spring prevailed. The James City County Planning Commission tabled the decision regarding road closure, instead suggesting that NPS and the Friends of the NPS for Green Spring develop a more incremental approach to developing the site. Commissioners indicated a willingness to revisit road closure in the future if the initial development is successful. NPS revised the original proposal for the Preferred Alternative to reflect this incremental approach, retaining Alternative C as the ultimate vision for Green Spring, while incorporating a modified Stage One as the transitional phase to full implementation of Alternative C.

The Colonial NHP superintendent presented this new approach to the Deputy Planning Commissioner, James City County staff, and representatives from the Friends of the NPS for Green Spring at a meeting on March 18, 2002. The superintendent also presented the revised proposal to the James City County Planning Commission on April 1. It was at these meetings that a proposed resolution expressing support for the revised NPS proposal was discussed. On May 6, 2002 the James City County Planning Commission endorsed the "Resolution on Green Spring Colonial National Historical Park." The resolution (reproduced in Appendix A, Section A.6) expressed support for opening up Green Spring to the public using an incremental approach, with the understanding that Centerville Road would remain open for the foreseeable future. Recognizing that road related safety issues would continue to affect park visitors and local residents, the Commissioners recommended to the James City County Board of Supervisors that they work with state and county agencies to implement traffic calming measures on Centerville Road and undertake a traffic safety study for the area. The study would include options for enhancing the safety of intersections at the park's southern entrance, consideration of a possible reduction in the current speed limit on Route 5, and possible installation of left-turn lanes on Route 5 at intersections near the park. These proposals were further endorsed by a resolution entitled "Support for Modifications to Portion of Centerville Road through Green Spring Colonial National Historical Park," passed by the James City County Board of Supervisors May 28, 2002 (reproduced in Appendix A, Section A.6).

The NPS hopes that over time local opposition to road closure will decrease and the county and the NPS will reconsider closing Centerville Road through Green Spring. The NPS believes future conditions will support this objective, once traffic calming measures are implemented on Centerville Road, slowing traffic and creating safer conditions, and once Green Spring is open and enjoyed by local residents as well as visitors.

5.2 List of Recipients

Federal and State Elected Officials
Senator John W. Warner (VA)
Senator George Allen (VA)
Congresswoman Joanne Davis (VA)
Governor Mark Warner

Tribal Organizations
United Indians of Virginia
Virginia Indian Council

Non-Governmental Organizations
Association for the Preservation of Virginia Antiquities (APVA)
Caw Caw Interpretive Center
College of William and Mary
Colonial Williamsburg Foundation
Cultural Resources, Inc.
National Society, Daughters of the American Colonists
Friends of the National Park Service for Green Spring, Inc.
Jamestown-Yorktown Foundation
University of New Orleans
University of Richmond
Virginia Tourism Corporation
Williamsburg Area Convention and Visitors Bureau
Williamsburg Chamber of Commerce
Williamsburg Land Conservancy

Local Elected Officials
City of Williamsburg City Council
City of Williamsburg Mayor
James City County Board of Supervisors
Surry County Board of Supervisors

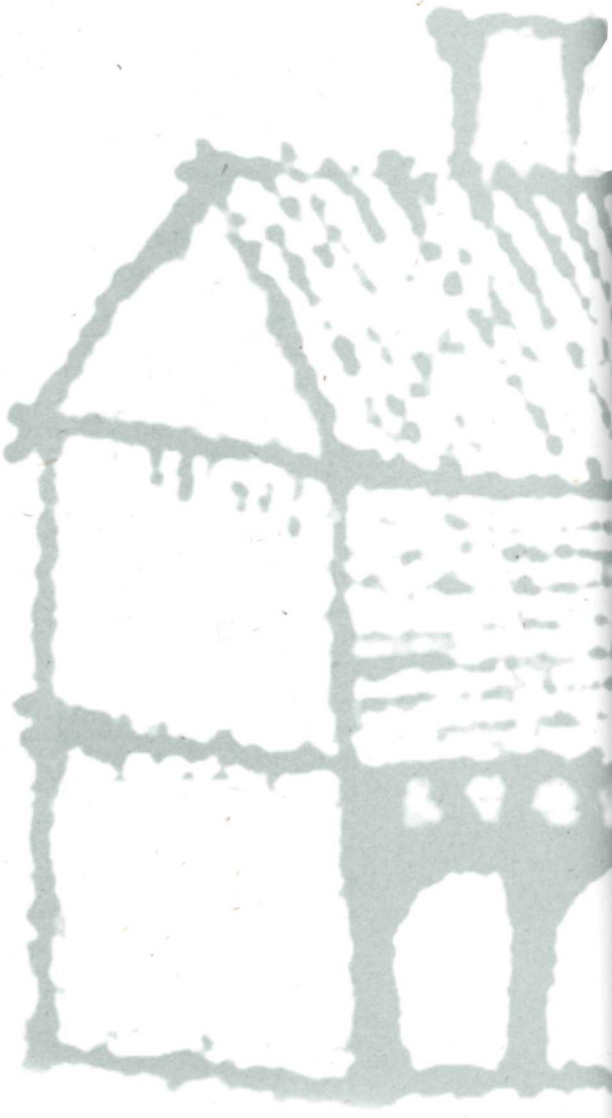
Local Governments
Hampton Roads Planning District Commission
James City County Development Management
James City County Planning Division
James City County Fire Department
James City County Police Department
James City Service Authority

State Agencies
Commonwealth of Virginia
- Colonial Soil and Water Conservation District
- Department of Agriculture and Consumer Services
- Department of Conservation and Recreation
- Department of Environmental Quality
- Department of Game and Inland Fisheries
- Department of Historic Resources
- Department of Transportation
- Library of Virginia
- Marine Resources Commission

Federal Agencies
Advisory Council on Historic Preservation
Natural Resources Conservation Service,
- U.S. Department of Agriculture

U.S. Army Corps of Engineers,
- U.S. Department of the Army

U.S. Fish and Wildlife Service



Appendices

The following Appendices include:

A. Comments and Responses on the Draft General Management Plan Amendment/ Environmental Impact Statement

B. List of Preparers and Planning Team

Additional Appendices contained in the Draft General Management Plan Amendment/ Environmental Impact Statement are not reproduced here and include:

1. Legislative Documents
2. Scoping Analysis
3. Other Alternatives Considered
4. Comparative Cost Estimates
5. Carrying Capacity
6. Compliance Correspondance
7. Selected Bibliography
8. Glossary
9. List of Preparers and Planning Team

Appendix A: Comments and Responses on the Draft General Management Plan Amendment/Environmental Impact Statement

A.1 NPS Obligation to Consider Public Comments

This section summarizes the agency, organization and individual public comments received on the *Draft General Management Plan Amendment / Environmental Impact Statement.* These comments enable interested parties, including National Park Service decision-makers, to review and assess how other agencies, organizations and individuals have responded to the proposed actions and alternatives and their potential impacts.

As a federal agency, NPS is directed to respond to substantive public comments received during the public comment period on draft environmental impact statements. They also respond for clarification or other purposes. Comments are considered substantive when they:

a) question, with reasonable basis, the accuracy of information in the draft environmental impact statement,

b) question, with reasonable basis, the adequacy of the environmental analysis,

c) present reasonable alternatives other than those presented in the draft environmental impact statement, or

d) cause changes or revisions in the proposal.

In other words, substantive comments raise, debate, or question a point of fact or policy. Comments that state a preference for one alternative (or component of an alternative), state opinions, or are outside the scope of the plan, are not considered substantive; however, all letters, emails and other written correspondence are read and considered. Substantive comments were addressed by means of written responses, and where appropriate, by revisions to the text of the draft plan noted in an Errata section in the final plan. Substantive comments from agencies are reproduced and addressed on the following pages, along with the NPS responses. Substantive comments from individuals and organizations are summarized by topic/issue, and followed by the NPS response. Individual and organization comments are reproduced in their entirety, following the Synopsis of Comments on Key Topics Received from Individuals and Organizations.

It is important to understand that, while public input is fundamental to responsible planning and greatly influences decision making in general management plans, the laws, regulations and policies that govern the National Park Service and Colonial National Historical Park must be taken into account. The number of comments for or against certain proposals may not be meaningful because public response is not structured to represent a statistically valid sample of interested people, and people may comment more than once. Public input on a general management plan is not a poll or a vote. Rather, the National Park Service must respond to the entirety of the public response and must consider the merits of comments received from diverse sources and other agencies in the context of resource information, laws and mandates, and sound management practices.

A.2 The Review Process for the Draft GMPA/EIS

In May, 2001 Colonial National Historical Park released its *Draft General Management Plan Amendment / Environmental Impact Statement.* A notice of availability was published in the Federal Register by the U.S. Environmental Protection Agency on May 17, 2001 (FR Doc. 01-12434), and the draft document was mailed out to the public during the first week of May. Approximately 500 copies of the *Draft General Management Plan Amendment / Environmental Impact Statement (DGMPA/EIS)* were printed and distributed for review through the initial mailing, at public meetings, and upon request. The document's availability and the schedule of public meetings were announced through local media and by letter to the park's mailing list. Public reading copies were made available at the local library.

Public review occurred from May 2 to July 11, 2001. Two public meetings were held on the evening of May 30 and on the morning of May 31, 2001 at the Jamestown Visitor Center, near the Green Spring unit of Colonial National Historical Park, a central location within James City County. The planning team participated in these meetings and obtained public input, concerns, and direction regarding the development of the general management plan. At these meetings a form was provided for the public to write specific comments that they desired to be addressed by the planning team. An electronic mailbox was set up specifically for public comments on the *DGMPA/EIS.* In addition, NPS participated in ongoing discussions, public meetings and presentations, and conversations with James City County regarding deliberations on the potential closing of Centerville Road.

A total of 76 members of the public attended one or the other of the two meetings, and an additional four individuals attended both meetings. A total of 48 written responses were received during the comment period from government agencies, organizations, and individuals. Questions and comments voiced by people who attended the public meetings were recorded. All written comments are included in this section and on file at Colonial National Historical Park.

The public's comments have been reviewed and considered by the National Park Service in preparing this *Final General Management Plan Amendment / Abbreviated Final Environmental Impact Statement,* consistent with the requirements of 40 CFR 1503. All individual letters of comment have also been published in this document. Responses have focused on understanding the common trends and patterns among the various ideas, concerns, interests and points of view.

A.3 General Summary of Comments

A.3.1 Summary of Meeting Comments

Comments at the two public meetings were primarily supportive of the planning effort, and the vast majority attending the meetings supported the preferred alternative. A few people involved early in the planning process were supportive of Alternative D, an alternative that had been dropped from consideration as a distinct alternative but substantially incorporated into Alternative C. Public input included questions about procedure – how the preferred alternative was selected, the process for completing the final general management plan, when the plan can be funded and implemented, and how flexible the plan is if conditions should change. There were additional ques-

tions and comments relating to the substance and components of the alternatives themselves.

While many people found the proposed plan to be reasonable, and could live with the proposal as drafted, there were a few areas of contention related to the potential closure of the section of Centerville Road through Green Spring. Several meeting participants expressed disapproval of the inconvenience and delay involved in detouring around the site. One woman felt that the road should be closed because of safety concerns stemming from two recent fatal motor vehicle collisions.

A.3.2 *Summary of Written Comments*

Comments were received from 48 individuals, organizations and agencies. The comments from the Virginia Department of Environmental Quality included the combined comments of seven state agencies along with the Hampton Roads Planning District Commission. The majority of these individuals were generally supportive of the draft plan and the Preferred Alternative. A few individuals felt that Green Spring should remain closed to the public, expressing various reasons for their concern. The primary issue is a belief that the NPS is underfunded and would not have the necessary support to adequately implement the plan and manage the site in the future. Most individuals supported the opening of Green Spring to the public. Many did not express a preference for a particular alternative, but rather emphasized the importance of communicating Green Spring's rich history.

There was substantial support expressed specifically for Alternative C (the Preferred Alternative) as the most effective means of protecting the site's cultural resources; contributing to visitors' understanding of the site's importance, and potentially illuminating three centuries of American history; increasing the visibility of the site in the context of the Jamestown 2007 commemoration, and connecting Green Spring to Jamestown's history; decreasing congestion at the intersections of Greensprings and Centerville Roads; and enhancing the safety of park visitors on Centerville Road and motorists on Route 5. Support for Alternative C was noteworthy on the part of two organizations—Friends of the National Park Service for Green Spring, Inc., and the Historic Route 5 Association, which passed a resolution endorsing Alternative C (reprinted in this plan later in this section).

Two letters supported Alternative D, an alternative dropped from consideration but included in the appendices of the draft plan, citing this alternative as the most comprehensive plan for the site that would allow an adequate period of time for research and fundraising in support of interpretation, and would complement rather than detract from the region's existing tourist destinations.

Even with this support, various comments were made voicing specific preferences or concerns, primarily for seeing aspects of other alternatives added to or replacing actions in the Preferred Alternative. For example, several individuals felt that elements of Alternative D should be added to Alternative C, the Preferred Alternative. Specifically, research and interpretation of the post-Berkeley era of Green Spring would allow greater recognition of the African American experience at Green Spring and a stronger connection with District Park, site of a free black community in the early 19th century. Comments also noted the benefits of incorporating an innovative archeological component from Alternative D into Alternative C. Although they generally supported most components of the Preferred Alternative, many individuals felt that Alternative C should leave Centerville Road open to local through traffic, as in Alternative B.

The primary concerns related to the Preferred Alternative included:

- issues related to the potential closing of Centerville Road, including impacts on emergency response times, the inconvenience and potential increase in travel costs for local vehicles detouring around the park, and impacts to the development of the regional greenway and trail system;
- the greater potential for impacts to wetlands and other water resources compared to the other alternatives, a concern expressed by federal and state agencies as well as a couple of individuals; and
- issues related to the research and interpretation emphasis. Although the Preferred Alternative emphasizes the 17th century Berkeley era, the park includes fewer archeological and documentary resources from this time period as compared to the abundance of information on the 18th and 19th centuries.

The closure of Centerville Road through Green Spring was the most controversial local issue. Local residents were strongly divided on whether or not the potential closure should happen at all, with a slight majority favoring road closure. For those who favored road closure, issues included the appropriate stage of plan implementation for

the closure, and how to address the potential use of the road in an emergency. Those who wished the road to remain open were also concerned about curtailing its emergency use as well as the inconvenience, potential increase in travel costs, and potential impacts to air quality from additional vehicle emissions in taking a longer route around Green Spring. Some individuals who preferred that the road remain open suggested several options that they believe would meet plan goals without necessitating road closure.

There were other points of factual clarification or recommendations for revisions to the alternatives in various public comments that we have tried to address through corrected text in an Errata section or references to the original draft plan in the next section. Other comments addressed topics that dealt specifically with planning for Jamestown 2007. Many of these concerns will be addressed separately through that effort.

Since many comments were received from individuals, we attempted to capture the essence of the substantive comments and provide a summary of similar comments (shown in italics) to which we then provided a response. Individuals' and organizations' substantive comments on the draft and the NPS replies to those comments are presented below. Most of the comments are related to the closure of Centerville Road. The NPS response to these comments are provided below in a separate section devoted to the road closure issue. Letters of comment from individuals and organizations are reprinted at the end of this section.

County, state, and federal agency comments are included in a separate section. Individual agency letters containing substantive comments are reproduced in that section. NPS replies to those comments are included along side of each letter. Two tribal organizations—United Indians of Virginia and Virginia Indian Council—received a copy of the draft plan for review; however, neither organization commented on the plan.

A.4 Synopsis of Comments on Key Topics Received from Individuals and Organizations

A.4.1 Substantive Comments Related to Closing of Centerville Road

NPS and James City County recognize safety and emergency response concerns voiced by the public and county agencies in considering the potential closing of Centerville Road. At the same time, the county has acknowledged through its resolution the need for traffic calming measures on Centerville Road. NPS and James City County are committed to working together to find the appropriate solution to address safety concerns. For the time being, the NPS will proceed with plan implementation in an incremental fashion, allowing for Centerville Road to remain open. Ultimately, the NPS hopes to revisit the potential for Centerville Road's closure. The NPS and James City County will consider future opportunities relating to adjustments to the new road system conditions stemming from the opening of Alternate Route 5, and as traffic speeds are reduced to safer levels through traffic calming measures. As the Jamestown 2007 commemoration approaches, awareness of and interest in Green Spring will undoubtedly increase. If NPS is successful in engaging both local and national audiences for the site, road closure may very well become a priority for the local community.

James City County's comments specific to the draft plan have been reprinted in a separate section below, along with the NPS response. Further information on the discussions, deliberations, and decisions relating to the potential closing of Centerville Road can be found in the Consultation and Coordination section of this final plan.

NPS responses to individuals' and organizations' comments, concerns and questions

Note: *Many comments expressed support for closing Centerville Road through the park as the most effective means of preserving and interpreting Green Spring, despite concerns regarding emergency access and local through traffic access from surrounding areas. The hazardous intersections at Greensprings Road and Route 5, and Centerville Road and Route 5, were noted as concerns for the safety of park visitors and local through traffic alike.*

Comment: *In the event that the James City County Board of Supervisors and Virginia Department of Transportation decide that Centerville Road remain open to emergency vehicles, the NPS should install a "scissor" or electronic gate at Monticello extension and Centerville Road. The gate would be under the control of the driver of an emergency vehicle, allowing the driver through access to Centerville Road.*

Response: The NPS and James City County are in agreement that, should Centerville Road be closed in the future, emergency vehicle access would be evaluated and adequately planned for, including maintaining emergency access through Green Spring. Therefore, at this point in time, there is no need to consider any emergency preemption devices at Monticello Drive and Centerville Road or other locations as part of this plan. However, should traffic and road system conditions change in the future, and should road closure become a community priority, the NPS would work with James City County and Virginia Department of Transportation to identify options that would allow emergency vehicles easy and safe access through Green Spring.

Comment: *The proposal to close Centerville Road through the park will increase the distance and travel time from the new fire station to residential communities south of Green Spring. Delayed emergency response times will affect the community, raising the prospect that the property and lives of residents would be at risk. The NPS refers to these delays as "minor" or "negligible"; however, to someone having a heart attack or whose house is burning down, delays of even 45 to 82 seconds are not "minor" or "negligible." For those living south of the park on Greensprings Road, the delays could be a few minutes. The American Heart Association has noted that defibrillation of a heart attack victim should begin within 4 minutes of collapse to be effective. Several hundreds of residents in developments south of Green Spring may not get the live-saving procedure they need in time, in the event of such an emergency. The NPS claims that the longer alternative routes using Alternate Route 5 are safer, but this is not true. The longer routes would, in fact, include more curves and more traffic and congestion.*

Response: The NPS agrees that delays affecting emergency situations are not "minor" or "negligible" to the individuals involved—the terms "minor" and "negligible" in the draft plan are used only in the sense of a comparison with existing baseline conditions that affect emergency response times, which are noted below.

The National Park Service is sensitive to public safety concerns and has worked with James City County, including the fire department, to incorporate these concerns into this plan. The county has decided that Centerville Road will remain open for the near future, and the NPS accepted this decision. NPS and the county agreed that a re-consideration to close the road to general vehicular traffic would include the stipulation that the road remains accessible to emergency vehicles and to the public as an evacuation route only during emergencies. Therefore, neutral to positive impacts to emergency response times are anticipated under the revised preferred alternative, which keeps Centerville Road only open to emergency vehicles when fully implemented.

The NPS would work with the county and Virginia Department of Transportation to identify traffic calming options that would ensure efficient emergency vehicles access through Green Spring, while providing a safer environment for visitors, including pedestrians and bicyclists, as well as local motorists during Stage One. It is important to note that other emergency service providers (police and hospitals) can use more efficient routes to access southern areas of James City County.

It is true that the Centerville Road route between the fire station and the intersection of Route 5 and Greensprings Road is shorter in distance (1.2 miles) as compared to either Monticello Avenue west (2.2 miles) or Monticello Avenue east (2.5 miles). The 1999 Green Spring Park Traffic Study and this plan note that, while Centerville Road is a more direct route between the fire station and

areas south of Green Spring, it is not necessarily the fastest or safest. Centerville Road is a much narrower roadway as compared to Alternate Route 5, it has no shoulders, and the sight distance is limited due to the vertical as well as horizontal alignment. If a driver hears a fire engine siren, he/she may not be able to see the emergency vehicle right away, nor pull to the side of the road. To pass stopped motorists, emergency vehicles may have to use the other side of the road and head into on-coming traffic. In addition, the Route 5-Centerville Road intersection is stop sign controlled and does not give the right-of-way to emergency vehicles, whereas intersections of Monticello Avenue/Alternate 5 at Route 5 include pre-emptive traffic lights. Because of these factors, the use of Centerville Road, although it may provide a slightly shorter response time to areas south of Green Spring, can be very unpredictable and dangerous. The traffic study indicates that Alternate Route 5 would likely be safer and more predictable for emergency vehicle use. It is important to note that any of the three alternative routes should allow fire and EMS service to meet their goal of a six-minute response time 90% of the time in the Primary Service Area, even for areas at the southern end of Greensprings Road.

Regarding congestion on Alternate Route 5, a traffic data analysis conducted November, 2001 to January, 2002 found that traffic from Centerville Road is beginning to divert to Alternate Route 5, now that it is open to local traffic; however, there is no evidence of current congestion along this road or at its intersection with Route 5. As the National Park Service noted in the plan, it is difficult to predict how the opening of Alternate Route 5 will affect traffic patterns in the future.

Comment: *Several comments related to the inconvenience, cost, and environmental effects under the Preferred Alternative relating to permanent detours of some 1.3 to 1.5 miles (up to 3.0 miles round trip, if including daily commuters) for the average 4,000 vehicles per day that use Centerville Road, which is the only north/south thoroughfare in this part of James City County. This detour equates to over 1.6 million needless extra vehicle miles per year. Over 84,000 gallons of fuel would be unnecessarily burned and 950 tons or more of Green House Gas (GHG) emissions added to the atmosphere each year. Increased driving time could total tens of thousands of hours annually and vehicle operating expenses (gasoline, vehicle repairs) could increase by over 0.5 million dollars per year. In addition, the closure would cause additional traffic flow on Route 5 and Monticello Avenue. These consequences have been omitted or downplayed in the General Management Plan.*

Response: The county decided in 2002 that Centerville Road would remain open for the near future, and the NPS accepted this decision. The plan has been revised to reflect this understanding; therefore, since vehicles will not be required to detour around Green Spring, negligible impacts to air quality, the local road system and the local economy from the preferred alternative are anticipated at this time. A re-consideration to close the road to general vehicular traffic in the future would require the concurrence of James City County and the Virginia Department of Transportation. At that time, a re-examination of environmental and socioeconomic impacts related to road closure may be warranted, once more specific and detailed implementation plans are formulated.

It is important to note that vehicles have already begun to detour around Green Spring with the opening of Alternate Route 5 at the end of 2001. Results of the Kimley-Horn traffic data analysis from November, 2001 to January, 2002 indicate that traffic volumes on Centerville Road through the park were reduced from 3,817 in November, 2001, prior to the opening of Alternate Route 5, to 2,950 in January of 2002, once the new route became available. Over 2,700 vehicles are currently traveling on Monticello Avenue, even with the availability of Centerville Road. Centerville Road carries approximately 22% less traffic today, compared to before Monticello Avenue was extended. Traffic volumes along Route 5 have also decreased. This apparent change in traffic patterns and volumes indicates that local residents have self-selected alternative routes to Centerville Road because they believe they are more efficient in reaching their destination; therefore, regardless of whether or not Centerville Road is closed, local traffic will continue to use these alternate routes. Use of these alternate routes may even increase. The National Park Service has little control over these shifting traffic patterns.

The National Park Service places environmental and socioeconomic impacts in a much broader context beyond the locality. Although the cumulative impacts of choices for developing and managing Green Spring are not insignificant, the National Environmental Policy Act of 1969, as amended, directs federal agencies to balance impacts to a particular locale and group of individuals with the more widespread benefits that would be derived from a particular action, in this case opening up an historically significant unit of the national park system. Given the projected traffic volumes on Route 5 alone (16,500 vehicles per day projected for 2015 just west of Green Spring), the detour of 3,000 vehicles per day onto Alternate 5 would be comparatively insignificant in terms

of environmental and socioeconomic impacts. Increasing traffic volumes and congestion on local roads is a more widespread problem that must be addressed within a broader political framework, looking at such options as reducing the need for vehicle trips, creating more fuel-efficient vehicles, and encouraging smart growth to combat the sprawl that leads to longer vehicle trips. Addressing these larger issues is outside of the purview of the Final General Management Plan Amendment/Abbreviated Environmental Impact Statement.

Comment: *Why can t the National Park Service consider the relocation of Route 614 to the eastern edge of the Green Spring property? The relocation would unify the park, resolve the road closure issue, create a safer intersection at Route 5 and Centerville/Greensprings roads, and allow Alternative B to evolve into Alternative C as resources are made available. Besides, Route 614 is the only direct link to Route 60 for the neighborhoods along Greensprings Road.*

Response: Several commenters on the draft plan proposed the abandonment of existing Centerville Road in favor of constructing a new alignment further to the east along the park s boundary. This proposed alignment would parallel the existing one, but it would either cross the park s eastern edge or cross adjacent Greensprings development rather than the NPS property. This proposal is beyond the legal authority of the National Park Service to implement, and is beyond the scope of consideration for this General Management Plan Amendment. Only the Virginia Department of Transportation, with the concurrence of local government, would have the authority to construct a new road. Additionally, the NPS would reject consideration of a new road along its eastern boundary because impacts to cultural and natural resources, particularly wetlands and archeological resources, would likely be major and adverse, contrary to NPS resource management policies. NPS 2001 Management Policies direct the NPS to utilize existing roads and other infrastructure to the extent feasible, rather than constructing or installing new infrastructure in new locations.

Route 614 is not the only direct connection to US 60 either Route 5 or Route 31, the newly opened Route 199 off of Monticello Avenue, and Route 615 via Five Forks, link the Greensprings Road subdivisions to US 60. These routes are actually more efficient and faster, in many instances, than Route 614, which is a narrow and curvilinear secondary road.

Comment: *Regarding the proposed plan, the National Park Service should consider the option of linking the east side of Centerville Road to the western side through a pedestrian bridge or an underpass/tunnel, similar to the ones at the golf course north of Green Spring. These options would provide safe access for visitors, while preserving the use of Centerville Road as a public throughway.*

Response: The county decided in 2002 that Centerville Road would remain open for the near future; therefore, the NPS would explore specific traffic calming techniques and options for visitor circulation that enhance visitor safety. However, these specific and detailed options would be more appropriate to plan implementation and would not be considered as part of the Final General Management Plan Amendment/Abbreviated Environmental Impact Statement. The proposal for a pedestrian footbridge, while not considered during the development of the alternatives, may fall into the scoping category Potential elements of alternatives and ideas for consideration in future implementation plans also under Appendix 2, Scoping Analysis, in the draft plan; however, the NPS has several concerns regarding this action:

1) adding modern visual intrusions such as a footbridge may not be compatible with park mission goals such as the rehabilitation of the 17th century landscape;
2) this option would not resolve issues relating to the noise and visual intrusion of traffic and impacts to on-site interpretation;
3) any structural alterations to Centerville Road would require VDOT s approval to implement;
4) impacts to cultural and natural resources, particularly wetlands and archeological resources, would likely be adverse, and contrary to NPS resource management policies;
5) the safety hazard of pedestrians trying to cross Centerville Road would still be present because some people would attempt to cross at other points; and
6) a second tunnel or footbridge would also be needed in the northwest part of the Green Spring park unit where the trail would cross the road (see drawing for Alternative C).

The same concerns apply to the construction of a tunnel under Centerville Road, an idea rejected early on during the planning process because of safety and the potential for major and adverse impacts to below-ground cultural (e.g., archeological data) and natural resources (e.g., changes to wetlands hydrology). Traffic calming techniques (e.g., pedestrian crosswalk) that are less intrusive and minimize disturbance to natural and cultural features may also be considered during plan implementation.

A.4.2 Substantive Comments Related to Powhatan Creek Watershed

Comment: *The National Park Service should address the impacts of the development of Green Spring on Powhatan Creek and its tributaries.*

Response: The National Park Service is aware of larger watershed protection and management efforts and has reviewed the draft Baseline Watershed Assessment for Powhatan Creek, prepared by the Center for Watershed Protection and released in January of 2001. This document describes concerns regarding the impacts of more recent development on the health of this ecologically sensitive water resource. As both the Watershed Assessment and the Green Spring Draft General Management Plan Amendment/Environment Impact Statement both correctly noted, Powhatan Creek is designated as a State Natural Area for its exceptional biodiversity, including the presence of rare and endangered species. However, about 40% of the land within the watershed is developed and more land is slated for development in the future, potentially jeopardizing water quality and biological diversity. The NPS is sensitive to the fragility of this important ecosystem. An historic tributary of Powhatan Creek flows through the southeastern portion of Green Spring; therefore, the NPS has addressed potential impacts to Powhatan Creek from development and management of Green Spring. The NPS has indicated ways to minimize or avoid impacts from the proposed plan to the extent possible.

A description of regional ecological resources, including Powhatan Creek Natural Area, is included in the draft plan (pp. 112-114). Impacts to Powhatan Creek and other water resources, and ways to minimize these impacts, are described on pp. 156-160, and pp. 194-209 of the Draft Plan.

A.4.3 Substantive Comments Related to Cultural Resource Management

Comment: *Alternative C should guarantee the construction of a three-dimensional ghost or shell structure to represent the three-story manor house that Governor Sir William Berkeley lived in. The house was the grandest one in America for many years during the 17th century, and only by erecting a substantial structure can we evoke its previous grandeur.*

Response: Specific design of interpretive features and decisions on the treatment of cultural resources is of a detail and magnitude that is not feasible or appropriate to include within this plan, which is purposely a very general and overarching document. Implementation plans such as the Resource Management Plan and Cultural Landscape Report would address future decisions regarding the treatment of cultural resources, including the Berkeley manor site. The National Park Service follows The Secretary of the Interior s Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. These standards generally preclude reconstruction that is, depicting by means of new construction, the form, features, and details of a non-surviving site, landscape, building, structure or object for the purpose of replicating its appearance at a specific time period and in its historic location. The National Park Service believes that reconstruction is only appropriate when documentary and physical evidence is available to permit accurate reconstruction with minimal or no conjecture. The General Management Plan emphasizes that alternative interpretive treatments may provide a supplement to existing site resources where not enough is known or there are insufficient remains to preserve, rehabilitate, restore, or reconstruct a feature. Alternative treatments would not necessarily preclude the erection of a shell structure at or near the Berkeley manor site; however, impacts to the archeological resources and the cultural landscape, as well as interpretive effectiveness, would need to be considered. The intention is that any treatments selected as part of future implementation planning would evoke rather than recreate the 17th century manor site and landscape.

A.4.4 Substantive Comments Related to Planning for Jamestown 2007

Comment: *Green Spring, with its important historical connection to Jamestown, should be included in the loop of sites to be served by some type of shuttle bus or tram among Jamestown Island, Jamestown Settlement, and Green Spring. It is important that during and beyond the 2007 activities, visitors have easy access to these sites, and only have to park their cars once to visit all three sites.*

Response: Visitor circulation between Jamestown Island and Green Spring is broadly addressed in this plan, particularly pp. 253-254 of the draft plan under Environmental Consequences (4.7.2 Bus/Shuttle Transit). The Preferred Alternative is correlated to increased visitation to Jamestown, and consequently Green Spring, largely because of activities and events related to the 2007 commemoration. Under the Preferred Alternative, the park has proposed the development of a shuttle system based at Jamestown Island to carry visitors between Jamestown Island and Green Spring during and beyond the 2007 celebrations. The plan also mentions the possibility of the park working with James City County to expand public transit service along the Route 5 corridor. Specific concerns and detailed actions regarding transportation among related historic sites will be addressed separately through the Jamestown 2007 planning effort.

A.4.5 Substantive Comments Related to Alternative D

Comment: *Alternative D, relegated to the appendix in the draft plan, should be reconsidered in addition to Alternatives B and C because it is more effective in allowing ample time for the necessary research and fundraising; providing for the most comprehensive archeological research plan; complementing interpretation and encouraging visitation at other 17th and 18th century sites in the region; and recognizing the span of site history (3 centuries) beyond the Berkeley era. While there is an abundance of documentary and archeological evidence for the 18th and 19th centuries, there is little physical evidence from the 17th century, complicating Alternative C s emphasis on rehabilitating and interpreting the Berkeley-era plantation landscape.*

Response: As noted in the draft plan (pp. 40-41), including Appendix 3 (pp. 293-299), Alternative D was one of two alternatives, in addition to Alternatives B and C and the No Action Alternative A, considered and reviewed with public input during the planning process. The NPS decided that Alternative D should be dropped from consideration because it was not viable in its entirety; however, some components of this alternative were incorporated into the Preferred Alternative C. These components include enhanced emphasis on the interpretation of ongoing archeological work, and a stronger effort to conserve and interpret the natural values of the site. In addition, the final plan revises the Preferred Alternative to recognize the incremental approach necessary for site development. This incremental approach allows a greater timeframe for completing the research necessary for protection and interpretation of cultural resources, and also for fundraising for implementation projects.

The draft plan notes that, while the interpretive emphasis under Preferred Alternative C would be the 17th century, it is not intended to obscure or cause any adverse effects to earlier or later period archeological resources. During on-going archeological investigations at the site, researchers are finding further evidence of non-17th century as well as 17th-century resources. The later resources would be preserved and investigated over time as part of Phase II archeological studies, but accorded lower priority in terms of interpretation. This approach is appropriate to the site s primary significance as the former plantation of Governor Sir William Berkeley.

A.4.6 Substantive Comments Related to Implementation Funding

Comment: *Alternative C is too ambitious, considering the funding problems the NPS already has in maintaining its existing facilities. Although the plan proposes a public-private venture, raising money will be difficult, and the NPS will have to commit short dollars for the foreseeable future. There will be over $3 million in start-up costs and millions in continuing operating costs. Additionally, it is unlikely that any large-scale interest would be generated in the site. Therefore, NPS should keep Green Spring closed to the public to save taxpayer dollars.*

Response: Leaving Green Spring as is and closed to the public is not an option that meets the mission of the National Park Service. Archeological sites may be vandalized and damaged by the ravages of time and climate, and information important to understanding the site would be lost. The public would not have an opportunity to understand an important period in the nation s development.

Comment: *The National Park Service has been vague in responding to questions regarding the projected costs for building, maintenance and staffing for each alternative described in the plan. The public has been asked to vote on alternatives without knowing any of the financial details that will directly affect them.*

Response: This statement is incorrect in two ways. First of all, the development of the plan proposal is not a vote. It is worth repeating the statement from the beginning of the Comments and Response section:

It is important to understand that, while public input is fundamental to responsible planning and greatly influences decision making in general management plans, the laws, regulations and policies that govern the National Park Service and Colonial National Historical Park must be taken into account. The number of comments for or against certain proposals may not be meaningful because public response is not structured to represent a statistically valid sample of interested people, and people may comment more than once. Public input on a general management plan is not a poll or a vote. Rather, the National Park Service must respond to the entirety of the public response and must consider the merits of comments received from diverse sources and other agencies in the context of resource information, laws and mandates, and sound management practices.

Second, the National Environmental Policy Act of 1969, as amended, and NPS management policies, including Director s Order 2, require the National Park Service to consider capital and recurrent costs of implementing each of the alternatives as part of the environmental impact analysis. Comparative cost estimates, including construction, maintenance and staffing, are described in the draft plan, pp. 301-305 (Appendix 4).

A.5 Letters and E-mails Received from Individuals and Organizations

Letters and e-mails received from individuals and organizations commenting on the Draft General Management Plan Amendment/ Environmental Impact Statement are printed in their entirety below in chronological order.

Warren M. Billings, Ph.d.

Department of History
University of New Orleans
186 Education Bldg. • New Orleans, LA 70148-2550 • (504) 280-6611 • FAX (504) 280-6883

MAY 14 2001

8 May 2001

Alec Gould
Superintendent
Colonial National Historical Park
Post Office Box 210
Yorktown, Virginia 23690

Dear Alec:

I just got a copy of the GMP for the Green Spring House site, and though I have not been able to do more than skim it, I find it a most impressive document. Extend my congratulations to your staff on a job well done. I am pleased that I was able to make some small contribution to the plan. When I have read the plan more carefully, I will send you my comments in writing. I look forward to seeing you in October at the Jamestown Rediscovery Advisory Board's annual dinner. With every good wish, I am,

Sincerely,

Warren M. Billings, Ph.D.
Distinguished Professor

A Member of the Louisiana State University System Committed to Equal Opportunity

Alexander C. Kuras *(page 1 of 2)*

MAY 14 2001

Alexander C Kuras
112 Pasbehegh Drive
Williamsburg, VA 23185-1417
757-220-3083

May 10, 2001

Superintendent
Colonial National Historical Park
P.O. Box 210
Yorktown, Virginia 23690

Sir:

Thank you for the draft of the General Management Plan for the Berkeley property. As a close by resident in First Colony, I find there is considerable interest in this development. It would be an enhancement to the area and a worthwhile adjutant to Jamestown Island.

Alternate C is the most significant. However, I have discussed this with a number of residents and there is a significant concern whether it is too ambitious considering the funding problems the NPS already has in maintaining its existing facilities. Also, there is considerable concern about closing Rt. 614 through the park.

Therefore, I recommend Alternate B with perhaps a modification as stated below.

Route 614 is the major and shortest route from the upper county to the Greensprings Road and ferry areas. With the buildup in the upper county and Greensprings Road area the traffic is more likely to increase than to be reduced by completion of Monticello Avenue.

Although the report indicates an ecological plus in its closure, it neglects to include off-site ecological disadvantages, namely increased pollution due to added miles. Routing this traffic through the Greensprings subdivision to Route 5 increases mileage by 1.4 miles. (.7 miles through the park versus 2.1 miles through Greensprings subdivision).

Assuming 3000 cars per day, which will likely increase to 4-5,000 cars per day in 10 years, results in the following: (a call to VDOT stated existing daily count is 3100).

3000 X 1.4 X 365 = 1,533,000 added miles driven per year.

1,533,000 ÷ 20 = 76,650 added gallons of fuel per year at 20 miles per gallon.

1,533,000 X .2 - $306,600 extra dollars paid by motorists annually at a modest $.20 per mile.

Is it wise to move an additional 3-5000 cars per day through the Greensprings residential subdivision, which requires turns at the Route 5 intersection used by school traffic?

Emergency response time: Add about 3 minutes to the Greensprings Road area, a major increase for a vital service.

Increased driving time: 3 to 4 minutes each way, for 3000 trips = 150 hours per day.

Finances: Although this is to be a private public venture, raising money will be a problem if the White Farm easement is an example. Also, the NPS will have to commit short dollars for the unforeseeable future.

Alexander C. Kuras *(page 2 of 2)*

Education and interpretive programs: Much of this could be done at Jamestown Island followed by a guided or self guided tour of Greensprings.

Suggested approach: Start with Alternate B, but master plan a relocation of Route 614 to the easterly edge of the property. This would be an approximate 700-800 foot offset to the east and thereby it would not split the park. This has the following advantages:

1. The park is no longer split.
2. The county and VDOT should encourage the move since it would provide more room for right and left turn lanes on Route 5 creating a safer intersection. It would also keep the road open for public use.
3. The advantage to the county and the public should garner transportation dollars for some of the move.
4. The move would allow Alternate B to easily move to Alternate C as resources are made available.

There would be some ecological damage due to the initial relocation as there is in any new road. However, an entrance into the park from the relocated route could reduce the amount of internal road area.

Sincerely,

Alex Kuras

Jack Edwards

Date: 01/05/17 11:31 AM
Sender: Jack Edwards <jedwards@widomaker.com>
To: Greenspring
Priority: Normal
Subject: Greenspring National Park

National Park Service:

Thanks for sending me a copy of the draft General Management Plan for a Green Spring Colonial National Historical Park. I strongly support the development of this park. Green Spring has a great many historical assets, and an important story to tell. It will further enrich the historical message presented by the Park Service at Jamestown and Yorktown, and by Colonial Williamsburg. It is a treasure that has remained silent for too long, and deserves to be shown to the world.

Jack Edwards
114 Stanley Drive
Williamsburg, VA

A

Friedle

Date: 01/05/25 7:17 AM
Sender: friedie <friedle@home.com>
To: Greenspring
Priority: Normal
Subject: opinion on Greenspring

I vote that the NPS should do nothing about Greenspring. That any large interest would be generated by any effort would be incredibly surprising.

Doug Moore

Date: 01/05/25 7:27 AM
Sender: "Moore; Doug" <moore_ed@nns.com>
To: Greenspring
Priority: Normal
Receipt requested
Subject: Green Spring Plantation - Comments

Dear Sir,

Re: Request for Comments - Editorial, Daily Press 5/25/01

I believe the National Park Service has a unique opportunity to provide the public additional insight in to the development of agriculture, horticulture and manufacturing in the Colonial era. With the 40Oth anniversary of the first permanent English settlement on the horizon, closing Centerville Road and redeveloping the grounds at Green Spring will provide visitors a window in to that time that no other attraction in the area can provide.

Such an opportunity would, of course, have to be supported by research and on-site archaeological work.

The other options presented do not seem as attractive. To do nothing, would put off on—site archaeological research at least another fifty years. Crucial artifacts may be damaged beyond recognition by the further effects of time. And visibility in to that time in the country's a development would be forever obscured.

Modest visitor accommodations would leave the public with little more than artists' renderings of the era. And it would be more than generation before the Park Service had another opportunity to provide as many visitors with another chance to learn as much about this time.

Doug Moore
169 Coventry Lane
Newport News, Va. 23602

Westa Talton Morris

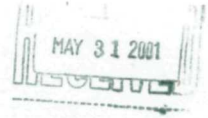
Date: 01/05/26 5:27 PM
Sender: Mawpar@aol.com
To: Greenspring
Priority: Normal
Subject: Ref: 2007-SirWilliam Berekley Site Plans

Please do as much as is possible to open the property at Greensprings and show and tell of the many good things that Governor Berkeley brought to the Virginia Colony and started, that we enjoy today.

I sometimes think he was passed by in the history and education of the famous men of Virginia and it is time to really establish his good deeds for the people of the Commonwealth of Virginia and the Nation.

I am, Sincerely, Westa Talton Morris

Ron Squire Steffey



May 29, 2001
P.O. Box 919
Lightfoot, Va.
23090

Park Superintendent
P.O. Box 210
Yorktown, Va. 23690

Hello:

This educator and native Virginian visited this area as a student years ago and became fascinated with the story of the Governor and his Green Springs. And have kept that zeal ever since that initial visit.

I have strongly urge No. 3 option: close that portion of Centerville Road that runs through the property and redevelop the grounds property to show innovations Berkeley brought....!!

Deferentially,

Ron Squire Steffey

A

Terrence and Laurie Wehle

Date: 01/05/30 7:10 PM
Sender: "CR5" <support@crswebsite.comm>
To: Greenspring; <letters@vagazette.com>
Priority: Normal
Subject: Green Spring future. Comments by News Road resident.

Ladies and Gentlemen:

We are opposed to the closing of Centerville Road and in favor of public access to the Historic Green Spring Plantation site. Improving the Green Spring Plantation site in order to give the public
access to this national treasure is an idea whose time is past due, but to close off Centerville road to accomplish this is to ignore the many who now and in the future have benefited from the use of this important and historic road.

For those of us who use the Route 5 - Centerville road entrance to move between the western end of the county and Green Spring road this closure would mean an additional 3+ miles of driving (round trip) , as well as having to wait at numerous traffic lights. This closure would also cause additional traffic flow on both Route 5 and legacy drive as travelers would be required to make this loop to move between Centerville and Green springs roads.

The cost of physically removing the road must also be considered. The Virginia Gazette mentioned a price tag of 3.1 million dollars for the plan that includes the roads removal. The only justification for this roads removal would be that the number of visitors able to park and visit the Green springs site as a result of this closure would exceed the number of people who currently use this road. This, of course, would never be the case.

The eastern side of Centerville road, which we understand the park service may want to use for parking, could be linked to the western side with a pedestrian walk over bridge. This would give the park service the safe and full access it desires, and it would preserve the use of this historic road to its intended purpose - as a public byway and the shortest distance between two points.

Terence and Laurie Wehle
3300 News Road

Lawrence Maddox

Date: 01/05/31 12:58PM
Sender: Lawrence Maddox <lmaddox@widowmaker.com>
To: Greenspring
Priority: Normal
Subject: Greenspring Options

My choice for development of Greenspring is: DO NOTHING

We have historical areas in abundance for the tourists to view. There is no need to develop additional properties for a number of reasons. One is to save the taxpayers over three million dollars in startup costs and millions in continuing operating costs. Another is the disruption which would be caused by closing Centerville Road to local traffic. And, still more, would be the traffic generated by tourists along Greensprings Road, which is one of the pleasantest roads in the area.

Lawrence Maddox
3700 Governor Yeardley Lane
Williamsburg, Va. 23185

Sandra Breuer

Date: 01/05/31 2:48 PM
Sender: SandyBre@aol.com
To: Greenspring
Priority: Normal
Subject: Greenspring/Centerville Road

Gentlemen:
There are two seasons why Centerville Road should not be closed off as proposed in option 3 for development of Greensprings Plantation by the National Park Service.

(1) According to the American Heart Association, for resuscitation of a person in cardiac arrest to be most effective, defibrillation must be initiated within 4 minutes of collapse (earlier if possible) Responders from the new fire station located on Monticello west of Centerville to residents in developments along Greensprings Road would have to go several miles out of their way along a roundabout route, increasing response times to emergency patients. (The article about life—saving defibrillation of a cardiac arrest patient on the front page of this Wednesday's Gazette illustrates the importance of this point.)

This would afffect hundreds of residents in developments such as Patriot's Colony, Berkeley's Green, First Colony, Fieldcrest, Deer Run,Fernbrook, Drummond's Field, and the Pointe and Jamestown.

(2) Route 614 (Greensprings Road-Centerville Road) is the only direct north—south connection between Jamestown and Richmond Road. Tourists heading from Richmond Road to Jamestown, or commuters driving from the Surry-Jamestown Ferry to Toano, for example, will be severely impeded.

Sandra Breuer
Fernbrook (off Greensprings Road)

Friends of the National Park Service for Green Spring, Inc.

Friends of the National Park Service for Green Spring, Inc.



JUN 05 2001

June 1, 2001

Officers

Clifford R. Williams
President

Donald S. Buckless
Treasurer

Robert W. Hershberger
Secretary

Board of Directors

Warren M. Billings
Richard Brown
Archie S. Cannon, Jr.
Jack D. Edwards
Emily Evanow
Loretta J. Hannum
James N. Haskett
Daniel Lovelace
Nicholas M. Luccketti
Martha W. McCartney
Trist B. McConnell
Gayle K. Randol
Marc B. Sharp
Randy Smith
Richard G. Smith
Carol D. Tyrer
Jane Yerkes

Mr. Alec Gould, Superintendent
Colonial National Historical Park
P.O. Box 210
Yorktown, VA 23690

Dear Alec:

My views must be regarded as obvious, but I still want to be on record as saying how important it is to adopt C as the appropriate alternative for Green Spring. By a strange turn of events, Green Spring has not been allowed to share its story with the public. Its values for education, research, discovery, recreational beauty and economic benefits have been lost until now.

As you said at one of the plan presentations May 30 and 31 at Jamestown Island, "Green Spring's time has come." It has, and let not that time be lost again by something less than the people of this nation and Green Spring itself deserve. Alternative C has the scope to present Governor Sir William Berkeley as one of the founders of our country and prime contributor to the concept of diversified agriculture and trade. Alternative C also reverses the deterioration of the ruins and open areas from the weather and natural encroachment.

Green Spring offers dazzling opportunities for so many reasons. One of them is that it shares the history of the 17th, 18th and 19th centuries before the Lee mansion was destroyed in the Civil War. So, while the focus always will be on Governor Berkeley and the 17th century, Green Spring has stories to tell to those individuals and organizations that have intense interest in the Revolutionary and Civil War periods. I recently met a young man from Kentucky whose ancestor fought and was severely wounded in the Battle of Green Spring. He made a special effort while visiting Williamsburg to find Green Spring and feel a sense of where one of his great grandfathers was almost killed by an English cavalryman.

We have a national treasure here in James City County. It was nearly forgotten. Alternative C will bring Green Spring back to life for all of its many benefits to local residents and those who visit our other historic places.

Sincerely,

Clifford R. Williams

3301 Ash View • Williamsburg, VA 23185 • (757) 253-7867

A

Ron and Pat C.

Date: 01/06/02 12:30 PM
Sender: Roncpatc@aol.com
To: Greenspring
Priority: Normal
Subject: Tour today at Greenspring

My wife and I enjoyed the tour and explanation very much today. Both individuals who spoke were very good. Thanks for an enjoyable morning.

As far as my comments concerning the project, I believe that either option one or option three should be followed. If there is not enough funding to do the project well, then maintaining status quo is the best approach in my opinion. If funding becomes available, then option three is the best approach.

As far as the closing of Centerville Road, if that needs to be done, then Centerville Road should be closed. Historical significant projects should be completed. Alternate processes for traffic can be established.

Again, thanks for a program well presented.

Yvonne Wohlers

111 Devon Road
Williamsburg, VA 23188
June 2, 2001



Mr. Alec Gould, Park Superintendent
Colonial National Historical Park
P.O. Box 210
Yorktown, VA 23690

Dear Alec,

As you may recall, I was and still am unalterably opposed to the development of Green Spring Plantation as a visitation site and continue to feel it is in the best interest of the general public to maintain the site strictly for ongoing historical research.

I continue to believe that any interpretation of the Green Spring site can easily be accomplished at Jamestown, just a short distance away. The savings for taxpayers would be substantial just in maintenance and staffing alone.

In the past, the nearby residents of Green Spring Plantation called the "Friends of Green Spring" have never been forthright with their plans to raise funds, failing to set a goal or even report on how much money they had raised to date. It was not until they tried to raid the coffers of the County for a handout that they were told to first report on how much they had raised themselves. This group has since returned to the County with a second request for tax money to fund their cause.

The Park Service has been equally vague in questions regarding amount of money spent thus far in promoting the Green Spring project or even what the projected costs are for building, maintenance and staffing for each alternative plan. In effect, the public has been asked to vote on the alternatives without knowing any of the financial details that will directly affect them.

Under these circumstances, my vote is to maintain the status quo and keep the site closed to the public.

With best regards,

Sincerely,

Yvonne Wohlers

Yvonne Wohlers

cc: U.S. Senator George Allen; Rep.Jo Ann Davis

Robert P. Hunt

June 4, 2001

JUN 06 2001

To: Alex Gould

As a history major in College and former seasonal Ranger with the Colonial National Historical Park, I am a supporter of increased emphasis on Green Spring Plantation. However as a resident of First Colony in James City County I am very concerned about the potential for the closing of Centerville Road. In addition to the concerns about increased response time for safety vehicles, the closing would be a considerable inconvenience for those of us who use Centerville Road to get to the Jamestown area.

From reading the Plan, I believe that the second alternative is the best plan. Also keeping Centerville open to through traffic provides the opportunity for increased public exposure to the plantation site.

Sincerely yours,
Robert P. Hunt
126 Shellbank Drive
Williamsburg, VA
23185

Bill and Toni Chronis

Date: 01/06/05 7:09 AM
Sender: William Chronis <chronis@jlab.org>
To: Greenspring
Priority: Normal
Subject: Greenspring

We went to the site this passed Sunday at about 1100 and could not get on to look at the ruins. Is it possible to go and look when the site is not advertised as being open? When did the structure burn? We are very interested in saving the sight, and do you have additional information on this subject?

Regards

Bill and Toni Chronis

Carol King

Date: 01/06/06 09:50 AM
Sender: "Carol E. King"<ceking@widomaker.com>
To: Greenspring
Priority: Normal
Subject: Green Spring Plantation Plans

To Whom It May Concern,

I would like to voice my opinion that nothing be done at the Green Spring Plantation site at this time. I know that the upcoming 400th anniversary of Jamestown is spurring the discussion for opening the plantation to the public. I would rather see the park service focus on what needs to be done with at Jamestown island to prepare for the increase in attendance during the anniversary events without negative impact on the surrounding community. I do not want to see Green Spring Plantation open to the public.

Sincerely,

Carol King
Williamsburg, VA

Kimley-Horn and Associates

JUN. -07' 01(THU) 15:17 KIMLEY-HORN INC. TEL:757 548 7301 P. 002

Kimley-Horn
and Associates, Inc.

Suite 300
501 Independence Parkway
Chesapeake, Virginia
23320

Dear Editor,

Last week there was an article in the Williamsburg Gazette concerning the possible closing of Centerville Road as part of the development of Green Spring Unit of Colonial National Historical Park. As consultants to the National Park Service, we are neither in favor nor against the closure of Centerville Road. Our role is to provide technical information so that others can make informed decisions. After reading the article, we believe there are several additional pieces of information that need to be communicated.

Today, there are two T-intersections along John Tyler Highway (Route 5), one at Centerville Road and a second at Greensprings Road. During periods of heavy traffic, gridlock frequently occurs between these two intersections because of their close spacing. The park will create much less traffic than currently uses Centerville Road today. Furthermore, the peak operating hours of the park are different than peak commuter times. If Centerville Road were closed, the current congestion problem would be greatly reduced.

The possible increase in emergency vehicle response times applies to the area south of John Tyler Highway along Greensprings Road. Centerville Road is a more direct route between the new fire station and this area, but may not necessarily be the fastest nor safest. Centerville Road is a narrow roadway with no shoulders and has limited sight distances. If a driver hears a siren, he might not be able to see the emergency vehicle right away. And, the driver may not be able to pull to the side of the road. To pass stopped motorists, emergency vehicles might have to use the other side of the road and contend with on-coming traffic. We don't know if this is consistent with the emergency vehicle operation procedures, but it surely could produce a dangerous situation. At its intersection with John Tyler, Centerville Road is stop sign controlled and does not give the right of way to emergency vehicles. With all these features, Centerville Road can be very unpredictable.

As with most issues, there are no easy or obvious answers. Closure of Centerville Road may produce slightly longer response times to areas south of John Tyler Highway. But that minor increase is on a route that is much safer and very predictable.

Respectfully,

Kimley-Horn and Associates

TEL 757 548 7300
FAX 757 548 7301

Judith S. Dresser

Date: 01/06/08 9:44 AM
Sender: Judy Dresser <pa-jsdresser@erols.com>
To: Greenspring
Priority: Normal
Subject: Greensprings Plantation

I was unable to attend either public meeting held recently, but I do want to express my opinion on the proposed alternatives for opening the Greensprings Plantation site.

I favor Alternative 3. The intersection of Centerville and Route 5 is treacherous, as attested to by the number of accidents which have occurred there. Closing Centerville would certainly solve that matter! If it is determined that "a Centerville" must remain open, how about shifting the road to the far eastern perimeter of the NPS/Greenspring site land? That would at least further separate the Centerville Road/Route 5 intersection from the Greensprings Road/Route 5 intersection.

Judith S. Dresser
22600 Cypress Point Road
Williamsburg, VA 23185

Archie S. Cannon, Jr.



June 14, 2001

Alex Gould
Superintendent
Colonial National Historical Park
P.O. Box 210
Yorktown, VA 23690

Dear Mr. Gould:

A number of officers, directors and residents of Patriots Colony participated in the May 30-31 hearings concerning the NPS proposals for Green Spring. We were impressed by the presentations which were highly professional and well presented.

We enthusiastically endorse Alternative C. This Alternative best serves the NPS's objectives and is the one that should be pursued. The rationale used to tether Green Spring to Jamestown is proper and will greatly assist in filling a historic void in our Colonial Era history.

Like many others, we are concerned about the hazardous intersection at Green Spring Road, Route 5 and Centerville Road. This is a solvable problem and one which should be resolved as soon as possible in order to move this project forward quickly. We strongly support the closure of Centerville Road as being the best solution to this issue.

In summary, we support your objectives and look forward to Green Spring as a tourist attraction that will be good for the community, the state, the nation and the history of this great land.

Best regards,

Archie S. Cannon, Jr.

MG Archie S. Cannon, Jr. (USA-Ret)
1405 Patriots Colony Drive
Williamsburg, VA 23188

A

Daniel D. Lovelace *(page 1 of 2)*

Daniel D. Lovelace
1601 Founders Hill, North
Williamsburg, VA 23185

RECEIVED
JUN 15 2001

June 15, 2001

Mr. Alec Gould, Superintendent,
Colonial National Historical Park
Post Office Box 210
Yorktown, Virginia 23690

Dear Sir:

I am writing to support the choice of "Alternative C" as the best means of implementing the February, 2001 draft General Management Plan (GMP) for Green Spring National Historical Park (GSNHP). I believe that this alternative will best meet the needs and expectations of the 281 million US citizens who own the Park, the citizens of Virginia, and the James City County residents who live nearby.

It is important to remember that Green Spring National Historical Park is one of American history's few remaining "hidden treasures." Historians will tell you that only a handful of major 17th Century historical sites in the United States--such as Jamestown and Bacon's Castle--have survived to the present day. However, like Jamestown Island's fort prior to 1994, Green Spring has remained relatively undisturbed over the centuries, just waiting to be fully explored and interpreted to the public. An opportunity like this is just too good to pass up.

If developed according to "Alternative C," GSNHP can become an educational and recreational "gold mine" for both scholars and ordinary citizens. Green Spring has a unique potential to illuminate three centuries of American history (1645-1865), including such pivotal events as:

1). The adaptation of English legal and political institutions that strengthened the Rule of Law and the traditions of representative government in North America.

2). The sowing of the social and economic "seeds" of discontent with British colonial rule which culminated in America's War of Independence.

3). The evolution of Virginia's agricultural economy away from the production of a variety of crops by a work force of European "indentured servants" to the production of tobacco dependent upon the labor of African slaves.

4). The accelerated marginalization of Virginia's Native American population in the wake of expanded European immigration.

There are lessons in these "stories" for all Americans today, regardless of the diversity of their regional, racial, or cultural identities.

Daniel D. Lovelace *(page 2 of 2)*

Daniel D. Lovelace
1601 Founders Hill, North
Williamsburg, VA 23185

Americans are a practical people who hate to see their nation's resources going to waste. Because it will combine extensive archaeological excavation with new historical research, "Alternative C" offers the maximum potential for benefiting both scholarly and public understanding of America's history. If either "Alternative A" or "Alternative B" of the GMP are adopted, however, the bulk of Green Spring's learning and teaching potential will be wasted. In addition, private donors are unlikely to respond generously to a public fund-raising effort that has set its sights so low.

Like a classic car hidden under the floor of an old barn, Green Spring has been buried and abandoned for more than a century. As its secrets are slowly revealed by the trowels of archaeologists, and the details of its story interpreted by historians, the Green Spring site will come alive again, forming a link connecting America's past with its future.
This mission is especially pressing as the US Government and the State of Virginia prepare to celebrate the 400th anniversary of the founding of the English settlement at Jamestown in 2007.

A recent television advertising campaign includes the slogan "In order to keep moving forward, America has to know where it has been." Now "The Quest for Green Spring" is about to begin. It is impossible to predict precisely how long this "quest" will take or exactly what it will reveal. However, I believe that the kinds of historical "lessons" that Green Spring can teach the American people about their past will do much to ensure our country's future stability and prosperity.

Yours truly,

Daniel Lovelace

Daniel Lovelace

Annette Parsons

Date: 01/06/18 1:18 PM
Sender: "Annette Parsons" <azparsons@walsingham.org>
To: Greenspring
Priority: Normal
Subject: Closing Centerville Road

Dear Park Superintendent,

Thank you for making this e-mail address available. I am writing this during my lunch hour as a private citizen, and not in my role at Walsingham Academy.

I should tell you that I am delighted that people have taken an interest Green Spring. I live in Fieldcrest, one of the sub—divisions that was once part of the governor's land at Green Spring. My family and I are proud to he living in an area with such a rich history.

Yet, I am very concerned about the possibility of closing Centerville Road at Route 5. There are precious few ways to get from my house off Greensprings Road to the businesses on Route 60 and to the intersection of 64 W. Trying to give directions to my house to someone on 164 heading east from Richmond is a nightmare if I try to direct them through Monticello Avenue to Route 5.With Centerville unavailable to me, the traffic will increase on Monticello, and I will he forced to take a circuitous route to yet another place in town.

When the new 199 was put into place, what harm would have come to leave the old Ironbound Road intact, thereby giving drivers a choice of two ways of getting to thc same spot? This same kind of lack of foresight seems destined for Centerville Road as well.

If you must close Centerville Road, please build another road that will serve people like me who live off Greensprings Road. Besides, the well publicized safety concerns that go with closing Centerville, please consider the sheer inconvenience of closing the only direct link to Route 60 for hundreds of residents.

Thank you for allowing me a way to have my opinion noted.

Sincerely,
Annette Parsons
3504 Robin's Way

Gayle K. Randol *(page 1 of 3)*

GAYLE K. RANDOL

3012 Whittaker Island Road
Williamsburg, VA 23185
757-564-0891

June 18, 2001

Mr. Alec Gould
Superintendent
Colonial National Historical Park
P. O. Box 210
Yorktown, VA 23690

Dear Alec:

Thank you for conducting the public hearings on the Green Spring General Management Plan Amendment on May 30 and 31, 2001. I would like to submit the following remarks for the official record and comments regarding the development of Green Spring. Green Spring is unquestionably one of Virginia's, and the country's, most important historic sites, and we must seize the opportunities we now have to make it "come alive" once again!

I strongly favor the "preferred alternative," Alternative C, for developing Green Spring into a public park. I believe it is the only alternative which will provide enough substantive and visual information for a visitor to understand what Green Spring was all about and why it is such an important historic site.

1) Guarantee a structure to represent the 17th century manor house.

Of particular importance, I believe, is to construct some kind of a three-dimensional "ghost" or "shell" structure to represent the three-story manor house lived in by Gov. Sir William Berkeley. Although at this time we may not know the exact dimensions of his first manor house, we do know that the western wing had three stories, a gallery, and flanking, curved brick walls in front. Because this house was the grandest one in America for many years in the 17th c., I believe it is imperative that we erect a substantial structure to evoke its previous grandeur.

2) Cut a path through the woods along the historic route to Jamestown.

I support the plan in Alternative C to clear a swath through the.woods to create a visual axis between the manor site and Route 5, reinforcing the

Page 1 of 3

A

physical connection between Green Spring and Jamestown. In fact, Green Spring should be interpreted at Jamestown, as well as at the site itself, as an important part of the social, cultural, and governmental life of mid- to late-17th century Jamestown.

3) Include Green Spring site in plans for the Jamestown 2007 activities.

Although I do not think transportation issues were addressed in the GMPA, it will be very important to ensure that visitors to Jamestown/Green Spring during the 2007 activities have easy access to all three sites. Those three sites include Jamestown Island, Jamestown Settlement, and Green Spring. Once again, the importance of considering Green Spring as a "subset" of Jamestown cannot be overemphasized. Small "shuttle buses" or "trams" should be used to transport visitors to all three sites. Each car should only have to be parked once in order to visit all three sites.

It may be too early to know whether the transportation systems put in place for the year 2007 will be sustainable in later years, but if so, Green Spring should always be included in the "loop" of sites to be served. Vehicle parking on the Green Spring site will necessarily be very limited.

4) Centerville Road between Route 5 and Monticello should be closed.

Closing of this road will be necessary to provide for the safety of visitors as well as for an environment conducive to evoking a 17th c. atmosphere on the site.

Any opponents to closing the road should be reminded that its intersection with Route 5, right at the site, is a very dangerous one and has already proven to be a hazard in the community. Allowing that intersection to be used only as a park entrance should be considered an improvement over the current situation.

In the event that the James City County Board of Supervisors, and ultimately, the Commonwealth Transportation Board, should decide that Centerville cannot be permanently closed to emergency vehicles, then I propose a "scissor" gate at Monticello extension and Centerville which would allow emergency vehicles access to the road. (Regular traffic on Centerville would not be allowed.) The opening of this gate would be controlled by the driver of the emergency vehicle, just as he will be able to switch the planned signal lights on Monticello to green as he approaches those intersections.

The need to use this lower part of Centerville would be extremely limited, and the decision may well be made by the Fire Chief and other emergency service personnel that Monticello will be safer and possibly even faster due to its safety and predictability. But providing the county with emergency access to Centerville may diffuse the current controversy and make a total closing of the road unnecessary.

The General Management Plan Amendment for Green Spring has been long-awaited and is an impressive document. Clearly, the only real alternative for the meaningful development of the Green Spring site into a public park is the "preferred alternative," Alternative C. I wholeheartedly endorse it and look forward to seeing it become reality.

Sincerely,

Gayle K. Randol

Gayle K. Randol

Sarah T. Kadek

Date: 01/06/20 2:48 PM
Sender: "SKADEC" <SKADEC@prodigy.net>
To: Greenspring
Priority: Normal
Subject: Public Comment on Green Spring

Dear Mr. Gould - I have quickly reviewed the Draft Management Plan and Environmental Impact Statement for Green Spring and find it extremely interesting. I certainly am in favor of developing Green Spring as a site to be enjoyed by all those who visit this area. I am concerned about the closure of Centerville Road, but feel sure that everyone involved will make the right decision on that.

I did not see any discussion of the impact of the development of the park on Powhatan Creek and its feeder streams. That is a major concern which needs to be addressed - particularly if the impact could be significant. Currently there is a watershed management report underway and this may very well take care of any concerns, but I do hope that you and the staff will take it into account in looking at possible impacts. Since I really don't know enough about the site to say if this is even a problem, I am only asking that it be given some consideration in the final decisions.

Thank you for an interesting briefing and this opportunity to review and comment on your plan.

Sarah T. Kadec

Jerry and Barbara Moum

Date: 01/06/21 8:25 PM
Sender: "Jerry and Barbara Mourn" <jdbkmoum@tni.net>
To: Greenspring
Priority: Normal
Subject: Centerville road

We want to go on record as opposing the closing of Centerville Road.

Centerville Road represents one of the few North-South avenues in the area. Ironbound Road has already been cut by VDOT and adding Centerville Road to the list is senseless. The inconvenience foisted upon the local population in the name of restored history is all out of proportion to the promised gain.

A simple footbridge over Centerville Road would accomplish the same thing. That solution would be cheaper and would be a recognition that the folks living in this area are worth something. The convenience given to a few can't equal the inconvenience foisted upon the many.

We've recently noticed the traffic counters on Centerville Road recently. That's good, because the commuters who live South of the James River will probably not be given a chance to comment on this specious idea.

We are opposed to the closing of Centerville Road.

Jerry & Barbara Moum
1757 Founders Hill South
JCC

Robert L. Kelley

314 Parkway Drive
Newport News, Va 23606
July 2, 2001

Ms. Karen G. Rehm
Chief Historian
National Park Service
P. O. Box 210
Yorktown, Va 23690

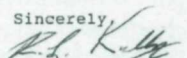
Dear Ms. Rehm;

Thank you for the copy of DRAFT GENERAL MANAGEMENT PLAN AMENDMENT AND ENVIRONMENTAL IMPACT STATEMENT: GREEN SPRING, COLONIAL NATIONAL PARK.

I read it with a great deal of interest and was pleased to know that so much has already been done and that three plans have been worked out for the future use of Green Spring.

All things considered, I too prefer Alternate C and feel that if the funding does not come for the 400th anniversary of settlement at Jamestown it will be a long wait for later funding. So I too, feel that Alternate C should be pursued.

Sincerely,



Robert L. Kelly

C. Norman Foster

Date: 01/07/03 2:21 PM
Sender: "Charles Foster" <cnfoster33@hotmail.com>
To: Greenspring
Priority: Normal
Subject: don't do it

The unnecessary closing of Centerville Rd. would adversely impact safety and the thousands of people who use it

DON'T CLOSE CENTERVILLE ROAD!!!!!!!!!!!!!!!!!!!!!!!!

C. Norman Foster
Mathews VA 23109

HR5A
THE HISTORIC ROUTE FIVE ASSOCIATION
WILLIAMSBURG, VA 23185

3313 Running Cedar Way
Williamsburg, VA 23188
757-229-7317
leverenz@widomaker.com

RECEIVED
JUL 09 2001

July 5, 2001

Mr. Alec Gould
Superintendent
Colonial National Historical Park
P.O. Box 210
Yorktown, VA 23690

Dear Mr. Gould,
At a special meeting on June 28, 2001, the council of the Historic Route Five Association unanimously passed the enclosed resolution in support of opening Green Spring under Alternative C of the General Management Plan. HR5A represents the neighborhoods and businesses along John Tyler Highway, and we believe Alternative C is clearly the best choice.

Thank you for all of the time and effort you and your staff have devoted to this worthy project. We are also indebted to the Friends of Green Spring for their tireless dedication and commitment to bringing this dream to reality.

Sincerely,

Julia B. Leverenz

Julia B. Leverenz
President

cc: James City County Board of Supervisors
Sanford B. Wanner
John T. P. Horne
Marvin Sowers
Clifford R. Williams

In Support of the Character of America's First Highway

The Historic Route 5 Association

RESOLUTION
Historic Route Five Association
June 28, 2001

WHEREAS, the Historic Route Five Association originated the effort five years ago to open Green Spring to the public and enlisted the support of the Superintendent of the Colonial National Historical Park to commit major resources to developing the site it owned since 1966 and

WHEREAS, the Council of Historic Route Five Association voted to fund the project in its early stages and caused the Friends of the National Park Service for Green Spring, Inc. to be founded in February, 1997 as a tax-exempt, non-profit Virginia corporation dedicated to work as a partner with the National Park Service in this historic effort and

WHEREAS, Green Spring was designated by Congress in 1936 as part of the Colonial National Monument that includes Jamestown, Yorktown and the Colonial Parkway and is recognized by scholars as a national treasure long overdue for public interpretation and

WHEREAS, opening Green Spring will enrich the educational curriculum for local and visiting children studying the history of Jamestown, Williamsburg and Yorktown and

WHEREAS, Alternative C of the Colonial National Historical Park plan to open Green Spring will increase opportunities for research, recreation, nature study, volunteer service and add to the historic attractions of James City County and

WHEREAS, James City County has shown its support for opening Green Spring by offering a $25,000 challenge grant to the Friends organization to assist with its fund-raising and

WHEREAS, the mission of the Historic Route Five Association is to preserve the character of the Historic Route Five corridor and adjacent historic roads and sites; to defend the historical, ecological and esthetic interests of our member communities and neighbors; and to educate and inform the community at large about major environmental issues, now

THEREFORE, the Council of the Historic Route Five Association urges the Colonial National Historical Park to adopt Alternative C of its General Management Plan for Green Spring and expresses its support for having the park in operation in time for the 400th anniversary of the founding of Jamestown to be commemorated in 2007.

Julia B. Leverenz

Julia B. Leverenz, President

A

Edward D. Valentine *(page 1 of 2)*

Edward D. Valentine
PO Box 757
Norge, VA 23217

July 5, 2001



Re: Green Spring and
proposed closing of
Centerville Road

Alec Gould, Superintendent
Colonial National Historical Park
PO Box 210
Yorktown, VA 23690

Dear Mr. Gould:

Please do not close Centerville Road. Closing a portion of this important thoroughfare would have **a detrimental impact on our safety, the environment, travel time, distance and expense**. Please consider the following consequences of closing Centerville Road:

1. Your own estimates indicate that critical ambulance and fire vehicle response time would increase by 45 to 82 seconds and distance to the subject intersection of Greensprings Road /Route 5 would double. Yet the National Park Service repeatedly refers to such life and property threatening delays as "minor" or "negligible". Mr. Gould, to someone having a heart attack or stroke such delays are not "minor" or "negligible". To someone with a severed artery or a blocked airway such delays are not "minor" or "negligible". To a family trapped in a burning house such delays are not "minor" or "negligible". Every last second is crucial.

2. Permanent detours of up to 1.3 miles would be created for the 4,000 vehicles a day that use this important road which is the only north/south thoroughfare in this part of the county. This equates to over 1.6 million needless extra vehicle miles a year. Over 84,000 gallons of fuel will be unnecessarily burned and 950 tons or more of GHG emissions added to the atmosphere each year. Wasted travel time will total tens of thousands of hours annually and vehicle operating expense will increase by over .5 million dollars a year.

Edward D. Valentine *(page 2 of 2)*

NPS stated they have an "open mind" in this matter yet important facts concerning safety and adverse human consequence were either left out, distorted or downplayed in your management plan and impact statements. While implying neutrality there is a mountain of evidence in the written record that suggests a blatant bias towards closing Centerville Road. Indeed, closing this road is part of your publicly stated "preferred" option.

Mr. Gould, as you no doubt know Centerville Road also bisects the golf course immediately north of Green Spring and by the use of pedestrian underpasses the safety, convenience and well being of all have been accommodated with out closing this vital road. Therefore, please reconsider your management plan and do not sacrifice the safety and well being of the people for the special interest of a few. Green Spring can be opened for all to enjoy with out the disastrous effects of closing Centerville Road.

Sincerely,

Edward D. Valentine

cc: The Honorable Gale Norton,
Secretary of the Interior

Mary F. Brown

RECEIVED
JUL 09 2001

July 7, 2001

Alec Gould, Park Superintendent
Colonial National Historical Park
P. O. Box 210
Yorktown, VA 23690

Dear Mr. Gould:

I am writing to ask you to please not close Centerville Rd. for your new park. In our family a father, mother and brother have died of heart attacks and ambulance help did not arrive in time. If Centerville is closed, the increased distance and travel time from our new fire station will eventually cause innocent people to suffer or die. Delayed responses will not only affect our community but visitors to the park as well. Sir, claims that the roundabout, longer routes are safer are just not true. In fact, the longer routes would be over roads with not only many more curves but with considerably more traffic and congestion as well.

Mr. Gould, please, please do not close Centerville Rd.

Sincerely,

Mary F. Brown

Mary F. Brown
P. O. Box 610
Norge, VA 23127

Barbara J. Wallace

Date: 01/07/09 11:41 AM
Sender: bbwallac@impop.bellatlantic.net
To: Greenspring
Priority: Normal
Subject: attn:Green Spring Comments

From: Barbara J. Wallace
3512 Fieldcrest Court
Williamsburg, VA 23185

I have a comment and suggestion for the improvements being considered for Green Spring. As a neighbor of the area involved and a husband who has had a heart attack, I have serious problems with the closing of Centerville Road. I have two alternatives to suggest.

1. Build underpasses to travel across Centerville Road (there are three underpasses within two miles of Green Spring, one on the new Alt. 5 and two at the National Golf Course going under Centerville.)
2. Put up an electronic gate accessible to emergency services with a switch.

On a personal level I would miss driving by the area and viewing all the wildlife that utilizes the fields of Green Spring. I am also aware of the safety problems at Route 5 and Centerville Road, but those problems will be greatly reduced once the new Alt. 5 is completed and open to traffic.

A

Virginia Barrett Price *(page 1 of 2)*

Date: 01/07/10 6:09 PM
Sender: Gigi_Prlce@nps.gov *(Gigi Price)*
To: Greenspring
Priority: Normal
Subject: Attn:Green Spring Comments

To Whom it May Concern:

In response to the draft "General Management Plan Amendment and Environmental Impact Statement for Green Spring, I wanted to say first that it is obvious a great deal of time, thought, and energy went into producing this document. As an unofficial friend of Green Spring, I am grateful Thank you for your efforts.

My enthusiastic endorsement goes to "Alternative D" which was outlined in an appendix to the draft management plan. Alternative D appeared to be the most comprehensive plan for the site and allowed ample time for the necessary research and interpretation as well as for fund-raising to implement the ideas outlined. It also suggested a link between Green Spring and the county's new (or to-be—established?) District Park; such a connection would recognize the African American experience at Green Spring — initially as slaves and later as freedmen living on the Hotwater Tract. Similarly the scope of Alternative D would put Green Spring into the welll—known, local tourism industry which emphasizes the seventeenth—century Virginia experience (Jamestown, the Settlement, Wolsenholme Town/Martin's Hundred at Carter s Grove, and Bacon's Castle, for example) and that of eighteenth—century Virginia (Williamshurg and Yorktown primarily).

Alternative D would allow Green Spring's interpretation to supplement — not detract from —the many places already established as tourist destinations in the area, an area so rich in history. For example, Green Springng's archaeological component would complement (not imitate) the innovative and highly successful public archaeological program of the APVA's Jamestown Rediscovery; moreover, interpretative efforts of the post-Berkeley era of Green Spring would strengthen the Park's connection to the nearby eighteenth-century architectural/archaeological artifacts, such as the compelling ruins of Rosewell and the site of Corotoman... In the end, visitation at one site should encourage visits to others. The sites as a whole, each building on one another, will better educate the Public about life in early Virginia.

Virginia Barrett Price *(page 2 of 2)*

Alternative D would allow for a presence on-site at Green Spring by 2007, albeit not with the more tangible results highlighted in Alternative C. With this in mind, I recognize that the 2007 deadline is rapidly approaching and so some action must be taken to ready Green Spring for the nation's attention…

Alternative A (no action) and Alternative B are not in the best interest of Green Spring. A site of Green Spring's significance to the study and understanding of the colonial period should not he overlooked, particularly not in 2007 when we will celebrate the 400th anniversary of the founding of Jamestown, the first permanent settlement in British Colonial America.

To this end, I agree whole-heartedly with the proposals to close the road that runs through the Green Spring parcel. It appears— from the draft management plan — that issues of traffic congestion and safety and of emergency vehicle response time have been evaluated; similarly, the draft suggests that plans have been considered to continue, and improve, the current levels of service if the road is closed to thru-traffic. Another public benefit from the road closure would be the possibility for more bike trails in county, this time running through the Green Spring acreage. I also appreciate the thoughtful consideration of Green Springng's natural resources, such as the bald eagle nesting site, and appreciate your efforts to further the safety of those resources in all of the alternatives proposed for Green Spring's development as a publicly—accessible part of Colonial National Historical Park.

And finally, as Alternative D was tucked away at the end of the draft and so not really an option likely to make it into the final proposal, I will support the Park's intention to follow through on Alternative C; Alternative C's time-table better suits the 2007-goal. I hope, though, that in a rush to 2007 we do not forgo too many of the benefits offered by the slower, more inclusive approach of Alternative D. Please let me know how I may help.

Sincerely,

Virginia Barrett Price
2162 N. Brandywine Street
Arlington, VA.

Mary Anne Herrmann

CORRECTED COPY

MARY ANNE HERRMANN
105 Elizabeth Page
Williamsburg, VA 23185

Telephone: (757) 253-0741
Cell Phone (757) 570-6497

Fax: (757) 253-1133
e-mail:benher@widomaker.com

July 11, 2001

Mr. Alec Gould
Park Superintendent
Colonial National Historical Park
P. O. Box 210
Yorktown, VA 23690

Re: Green Spring (Draft GMPA/EIS)

Dear Mr. Gould:

Having attended the public meetings, reviewed the Draft GMPA/EIS, and attended the guided tour of the site. I enthusiastically endorse Alternative C (The Preferred Alternative) –"The Interpretive Landscape of Green Spring" and the ensuing closure of State Route 614 through the Green Spring site.

Although I am a resident of Kingsmill, I own two condominiums in Fairways Villas at the corner of Greensprings Plantation Drive and Route 5. I consider Alternative C to be the best method of preserving and interpreting this historic site, despite any other concerns regarding traffic or emergency access within the surrounding areas.

Sincerely yours,

Mary Anne Herrmann

Martha W. McCartney

Date: 01/07/11 8:10PM
Sender: Sitesleuth@aol.com
To: Greenspring
Priority: Normal
Subject: Att: Green Spring Comments

I would appreciate your withholding my home address from the record.

I would like to go on record as being in favor of Alternative C as described in the Draft General Management Plan for Green Spring. I feel that the NPS is presented with a wonderful opportunity to provide new and important information to the American public.

Green Spring, as the manor house of a Virginia Governor and titled nobleman, Sir William Berkeley, is unique to Tidewater Virginia. Berkeley, who served a lengthy term in office, left a distinctive upon the development of government. Likewise, his implementation of public policy affected generations to come. Nowhere else in Virginia was the drama of Bacon's Rebellion played out so graphically. The evolution of Green Spring's cultural landscape is another important facet of the site's history. That, too, warrants exploration archaeologically and through documentary research.

Having said all of this, I must add that I feel that if we focus too exclusively upon the 17th century development of Green Spring, without giving generous coverage to the rest of the historical continuum, we will be selling the site short. As someone who works with historical records almost daily, I can say with assurance that there are very few documentary sources available about Sir William Berkeley's home environment or personal life —— certainly very little that would provide multidisciplinary support for extensive archaeological excavations. In stark contrast, there is an abundance of information about the eighteenth and nineteenth century development of the Green Spring site. As that most certainly impacted the archaeological record of earlier activity on the site, I feel that the plantationon's development and evolution should be studied and interpreted more completely. In fact, I would favor an approach similar to that which was used for the Jamestown Archaeological Assessment –a multidisciplinary approach that commences with a throughout review of the archaeological and historical data that was collected by previous scholars.

Martha W. McCartney

A

Alain C. Outlaw

ACS
Archaeological & Cultural Solutions, Inc.
109 Crown Point Road
Williamsburg, Virginia 23185

July 11, 2001

Mr. Alec Gould
Superintendent
Colonial National Historical Park
Post Office Box 210
Yorktown, Virginia 23690

Dear Alec,

Thank you for asking for my comments, as an "interested party," on the April 2001 Draft General Management Plan Amendment/Environmental Impact Statement (GMPA/EIS) for the Green Spring unit of Colonial National Historical Park. Having since 1975 researched and rescued from development a number of related sites in the 2,068 acre Governor's Land Archaeological District - of which Green Spring is a part - it is gratifying to see the recent progress made by the National Park Service (NPS) and the Friends of the National Park Service at Green Spring, Inc. in planning for the effective management of this untapped, nationally significant landmark. My 1992-1993 survey of 1,402 acres surrounding the core of the site, and my 1998 investigation of 196 acres at Green Spring, have revealed a rich buried heritage of interconnected archaeological sites on the mainland from Jamestown to Green Spring. It is essential that their story be told and Green Spring is the key component in telling this story in the rich detail it deserves. Unfortunately, the NPS has not had sufficient resources to adequately develop the potential of the property.

Now, however, prospects at the site are encouraging, as the GMPA/EIS carefully considers various options for managing the site. Of the three options, Alternative A is not acceptable, as it fails to meet park goals since there is no access, no interpretation, and minimal maintenance. While Alternative B minimally meets the mission of the NPS, the modern intrusion of .7 mile of Centerville Road makes this alternative unattractive because it artificially bisects the property, limits access and interpretation, and is unsafe for the visitor.

The recent collapse of the colonial brick wall of the Orangerie exposed many new research questions, as well as site preservation issues, at Green Spring. The wall serves as a compelling physical reminder of the site's ongoing degradation and the immediacy of the need to move forward as swiftly as possible with improving the stewardship of this irreplaceable property. We must do more than just "pick up the pieces!" To this end, I support Alternative C as the most effective approach for insuring the protection of this property.

Sincerely yours,

Alain C. Outlaw
Principal Archaeologist

A.6 Agency Comment Letters and NPS Responses

The following pages present written comments received from public agencies. Specific responses to those comments are presented adjacent to each letter received. Comments are shown in green; responses in brown.

A.6.1 James City County Comments - NPS Response

Note: Please see the Consultation and Coordination section in this final plan for additional discussions, deliberations, and decisions relating to the potential closing of Centerville Road.

Comment: James City County Letter • May 7, 2001 *(page 1 of 7)*

DEVELOPMENT MANAGEMENT

101-E Mounts Bay Road, P.O. Box 8784, Williamsburg, Virginia 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-mail: devtman@james-city.va.us

Code Compliance (757) 253-6626 codecomp@james-city.va.us
Environmental Division (757) 253-6670 environ@james-city.va.us
Planning (757) 253-6685 planning@james-city.va.us
County Engineer (757) 253-6678
Integrated Pest Management (757) 259-4116

MAY 11 2001

May 7, 2001

Mr. Alec Gould, Superintendent
Colonial National Historical Park
P.O. Box 210
Yorktown, VA 23690

Dear Alec:

James City County staff reviewed the "Emergency Services" section of the Green Spring General Management Plan and Environmental Impact Statement (GSGMPEIS), dated December, 2000, and has several comments to offer. The GSGMPEIS identifies three alternatives for the future use and development of Green Spring, one of which proposes closing Centerville Road between Monticello Avenue and Rt. 5 (Alternative C). That alternative is also designated as the "Preferred Alternative." The James City County Fire Department has issued the attached report opposing the closing of this portion of the road for public safety reasons primarily due to the impacts on response times. Their report provides further details on this issue.

The GSGMPEIS projects the possible deterioration of traffic conditions at the intersections of Rt. 5/Centerville Road and Rt. 5/Greensprings Road. As a result of this deterioration, the study anticipates significant negative impacts on response times for emergency vehicles using Centerville Road to access Rt. 5. However, the study does not provide sufficient documentation to support these predictions. In order to support these predictions, traffic modeling would need to be performed of all of the intersections that would be used by emergency vehicles under each of the three alternatives. This analysis would need to show both present and future traffic conditions, and provide specifics on level of service, delay, and lane blockage due to traffic queuing, and the resulting impacts on response times.

Finally, the GSGMPEIS should identify and evaluate alternatives for relocating Centerville Road that maintain an emergency response time similar to that provided by retaining the existing road network. These alternatives should be evaluated in the traffic modeling as well.

Thank you for the opportunity to provide comments on the "Emergency Services" section of the GSGMPEIS. We are currently reviewing the full report, and may have other comments to offer once that review is completed.

Sincerely,

John T.P. Horne
Development Manager

Attachment

cc: Richard Miller, Fire Chief

Response from Alec Gould • September 10. 2001 *(page 1 of 5)*

United States Department of the Interior

NATIONAL PARK SERVICE
Colonial National Historical Park
Post Office Box 210
Yorktown, Virginia 23690

IN REPLY REFER TO:

L3215

September 10, 2001

Mr. John T.P. Horne, Development Manager
Department of Development Management
James City County
101-E Mounts Bay Road
P.O. Box 8784
Williamsburg, VA 23187-8784

Dear John:

The National Park Service, the Green Spring planning team and I would like to express our appreciation for your thoughtful and concerned comments of May 7 and July 9, 2001 on the Draft General Management Plan/Environmental Impact Statement (DGMP/EIS) for the Green Spring unit of Colonial National Historical Park. Furthermore, the prompt attention, information and ideas that you and county staff have provided throughout our planning process have helped shape our plan and inform our analysis. We have considered your comments and the report prepared by the James City County Fire Department dated 4/27/2001 and would like to respond point by point.

May 7, 2001 James City County (JCC) Comments (in *Italics*) & NPS Responses:

1) JCC requested traffic modeling at all intersections that would be used by emergency vehicles under each of the three alternatives (present and future conditions).

We have attached a copy of the traffic report prepared by our consultants Kimley-Horne and Associates that we hope will satisfy your requests for supporting traffic data on existing and future conditions at relevant intersections.

2) JCC suggested that we evaluate alternatives for relocating Centerville Road that maintain an emergency response time similar to that provided by retaining the existing road network.

Although relocating Centerville Rd. eastward on NPS property would address some of the safety concerns on-site and at Centerville Rd/ Route 5 and Route 5/Greensprings Road intersections, it is not a feasible or desirable solution for four reasons:

1

James City County Fire Department
Response to the National Park Study and Recommendation for
Greensprings Plantation Site Development.

4/27/2001

BACKGROUND
The Fire Department was asked to complete an analysis of the titled study with respect to the closure of the portion of Centerville Road that is located within the Greensprings Plantation National Historic Site.

The study presented a series of development plans for the site. The recommended plan included the closure of Centerville Road. Additional or alternative plans included recommendations for Centerville Road that ranged from keeping the road open to public traffic with no improvements to a plan that called for emergency access through the site via a parking lot.

The Fire Department is concerned about the effects a closure of Centerville Road will have on response times to the subdivisions along the Greensprings Road corridor. The first attached map shows the level of residential development along that roadway. There is some additional development expected. In 1995 the Fire Department initiated a study of underserved response areas within the county. The Greensprings area as well of the entire western John Tyler Highway corridor were identified as high response time areas. Planning began at that time for a new fire station to serve those areas. Fire Station 5 was opened in January 2001 as a result of that study. The actual location of the station was selected based on the ability to reduce response times along Greensprings Road, which included the response along Centerville Road.

The NPS study makes a point that the condition of Centerville Road will degrade over time, and that by 2015 the condition of the road may preclude the Fire Department from using it. The study further states that due to future traffic concerns at the intersection of John Tyler and Centerville (Not Signaled) will also work towards negating any potential time saved using that route to reach Greensprings Road due to much higher traffic counts in the area. The Fire Department will agree to those points in theory. Without improvements, that area of Centerville Road will degrade over the fifteen year time period.

Response times are still important to the public safety of our community. Response times will be affected negatively by the proposed development plan for the site. The attached Mileage Map 1 shows that the current distance from station 5 to the entrance off of John Tyler for Greensprings Road is 1.16 miles. Fire Department units will need to respond either east or west on Monticello Ave from Station 5 to reach this same point. The west route will add 1.25 miles to the original distance; the east route will add 1.45 miles. The average speed for fire apparatus while responding to emergency calls in the county is 35 miles per hour based on time. (1995 Station Study). The addition of the 1.25 miles on the western route will add more than two minutes to the response times along that area. This

- There is a high probability of destroying significant archeological and cultural landscape features. Because there are relatively few remaining site features from the 17th and 18th century, individual historic features take on great importance for research and interpretation.
- The lower one-third of the site is comprised of forested wetlands. Clearing, construction and associated grading of a new road would not likely meet strict standards for construction in wetlands on federal lands.
- Relocating the road on-site would not mitigate the aural and visual impacts of through traffic on the historic setting and visitor experience.
- Cost.

However, in response to concerns for emergency access through Green Spring, we agree that an emergency vehicle route could be maintained through the site over the existing Centerville Road location. NPS will work with James City County to design and maintain this access in a way that will minimize visual intrusion on the site.

James City County July 9, 2001 Comments (in *Italics*) and NPS Responses:

Centerville Road Closure

1) In addition to the JCC proposal for relocation of Centerville Road (addressed in #2 above) JCC proposes alternatives to re-routing traffic using other techniques such as traffic calming, reduced speed limits, truck prohibition, enhanced buffers, and pedestrian tunnels under Centerville Road.

It is possible that these techniques could improve safety conditions for visitors and motorists, however, the aural and visual impacts of through traffic on the historic setting and visitor experience would remain substantial. In order for the National Park Service to implement the level of research, site management, visitor facilities and services, staffing and maintenance called for in Alternative C, on-site through traffic would need to be eliminated. If the through traffic were not eliminated, NPS would implement Alternative B. We also believe that private fundraising efforts will be significantly hampered by the modest proposals of Alternative B. The Friends of the NPS for Green Spring, Inc. share this belief.

The following responses correspond to bullets on page 2 of July 9 comment letter, which enumerate the advantages offered by relocating Centerville Road or implementing traffic calming techniques.

- *Maintaining emergency vehicle access through the site*

  This is addressed in our response to #2 above.

- *Preventing the acceleration of the need to four-lane Monticello Avenue (Alternate Route 5) and reduce traffic on a section of Route 5 that will be approaching its capacity by 2021 (section between Centerville Road and Greensprings Plantation Drive). Closing Centerville road would place a*

additional distance will mean that the average response time to the intersection from Station 5 will be increased to 4.1 minutes from the current 2 minutes.

FIRE DEPARTMENT POSITION

Any closure of Centerville Road would have an adverse impact on response times to the Greensprings Road corridor in current time and for the immediate future. The Fire Department also realizes that the impact of response time is only one part of the overall decision issues surrounding this project.

The Fire Department recognizes the importance of the proper historical interpretation of Greensprings Plantation. The recommended development plan will indeed meet the County's goal to enhance the character of the community. The Fire Department is opposed to the long-range plan to close Centerville Road. However if closure were necessary, we would recommend the following conditions become part of the closure agreement.

1. Any closure of Centerville Road will not occur until actual construction of major improvements begins. The Federal Government is currently seeking to reduce spending in many areas. There is no need to close the road if funding is not present from the Federal level to initiate and maintain development.

2. If at all possible, an emergency route should be maintained within the site as a route between Monticello Ave and John Tyler Hwy.

3. The Fire Department would ask that Development Management seek and encourage alternate routes between Monticello and John Tyler. One suggestion would be a possible road between the station 5-entrance driveway and Patriots Colony thru to John Tyler Highway.

significant portion of the projected 3300 "detoured" vehicles on these critical sections of Monticello Road. Also of concern is routing additional traffic through the intersection of Route 5 and Greensprings Plantation Drive.

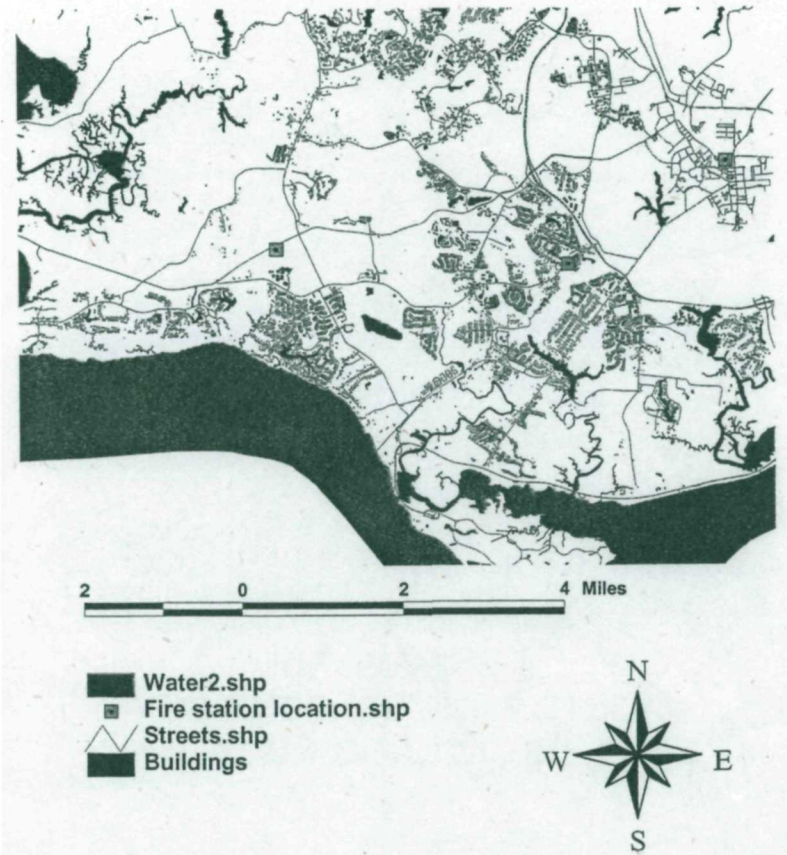
Per Kimley-Horn and Associates - Given the 3,300 vehicles per day that are predicted to be rerouted as a result of the Centerville Road closure, the associated impacts will not be absorbed by only one alternate route but rather four, due to multiple diversion options. Removing Centerville Road from the existing roadway network will divert traffic to both the east and west on both Route 5 and Monticello Avenue. Further reducing the ultimate impacts of Centerville Road closure is the Route 199 extension which, when completed, will divert traffic from the area of the proposed park. The cumulative effect of this will be a small incremental increase in traffic to the east and west on Route 5 and Monticello Avenue.

Furthermore, the distribution of the traffic throughout the day plays an important role when determining the adequacy of a two-lane road. When the volumes are distributed more evenly throughout the day, higher traffic volumes can be more effectively handled. The small incremental increase in traffic to the east and west on Route 5 and Monticello Avenue is not anticipated to exceed two-lane thresholds.

Additional traffic can be accommodated at the intersection of Route 5 and Greensprings Plantation Drive without excessive delays. With appropriate signal timing and phasing, all movements at this intersection operate satisfactorily, including the two most effected by the rerouting (southbound right and eastbound left.)

- *Continued existence of local access through the area should NPS discontinue allowing regular site visitation in the future due to funding or other complications. The James City County Planning Division is concerned about closing Centerville Road given the closure of other NPS facilities in the area and given the uncertainty of funding that would allow the park to open with the components proposed in Alternative C.*

NPS proposes that the closure of Centerville Road coincide with the completion of the first stage of the Archeological Support Facility/Visitor Contact Station, parking, trails, outdoor exhibits, the presence of staffing on-site, and the opening of the site to public visitation. This should demonstrate the commitment of the NPS and the Friends of NPS for Green Spring as well as the certainty of funding available to implement the first stage of Alternative C. We believe that NPS had already demonstrated serious commitment by the funding of the General Management Plan/EIS for Green Spring, the increase, though still limited, of protection, research, and interpretive activity, and the organization and written agreement with the Friends of NPS for Green Spring, Inc. The Friends group has demonstrated their commitment in spades through



the raising of initial funding from inside and outside their organization; through research, outreach, and educational programs; through the organization of a 60-plus person Park Watch group; through various projects such as the clean-up of the Centerville Road and vicinity; and through the recent hiring of a part-time executive director. In my view they are a model citizens support group for Green Spring. We could not ask for better.

There is no precedence for closing primary NPS interpretive sites in Colonial National Historical Park. The Park has closed or changed the use of minor recreation sites along the Colonial Parkway such as picnic areas. Management adjustments in secondary sites should not be seen as a precedent for the closing of a primary interpretive site such as Green Spring once it is opened.

- *Keeping Centerville Road open would avoid inconveniencing the larger traveling public. Approximately 3300 vehicles would be negatively impacted by the closing in 2015, while only 160 park visitor's vehicles would benefit from the closing. Unknown is the number of pedestrian and bicyclists that would be impacted.*

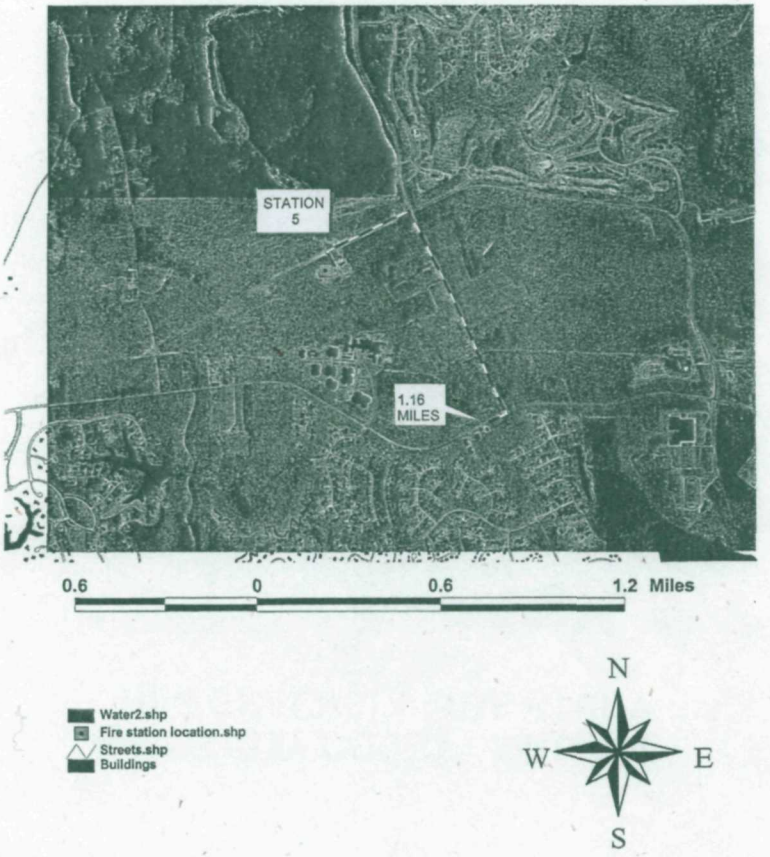
Respectfully, we do not believe a comparison of the quantity of local vehicles potentially inconvenienced to visitor vehicles entering the park is relevant. The significant benefits of a large tract of open space, free from noise and safety hazards, will be available to both residents and visitors.

2) ***Bikeways and Pedestrian Facilities***
JCC is concerned with implications of road closure on the section of the regional multi-use path planned along Centerville Road particularly because the County-owned property at the intersection of Route 5 and Greensprings Rd. is planned as an important hub.

NPS supports and recognizes the importance of these regional facilities to the public but would like to defer a decision on bikeway facilities through Green Spring until we have a chance to discuss our operational considerations and concerns with James City County and others. Our concerns about having the emergency access road used as a multi-use path and bicycle trail are: (1) Is a bike trail really needed? The capital to capital bike trail will run along Route 5 and the roads around Green Spring already have or will have bike lanes? (2) The surface of the emergency road may not be to the liking of some bikers. (3) Would the bicycle use of the emergency road be worth the cost of having someone open and close a gate on the north end when Green Spring opens in the morning and closes in the late afternoon? (4) Would the use of the emergency road by bicycles compromise the security of Green Spring during hours when Green Spring and the road would be closed? We would like to discuss with you and the bicycle community the advantages and disadvantages of having bicycle use of the emergency access road.

4

JAMES CITY COUNTY FIRE DEPT
NPS GREENSPRINGS STUDY
MILAGE MAP 1



In summary, we are at a critical junction in the history of Green Spring. The National Park Service, the Friends, and the overwhelming majority of people who attended the public meetings or commented in other ways believe that Alternative C is the highest and best use for Green Spring. NPS is prepared to choose Alternative C if the James City County Board of Supervisors will pass a resolution recommending to VDOT that the Centerville Road through Green Spring be closed once NPS, the Friends and other supporters have the initial facilities and staffing in place to open this historic site for public use.

Planning meetings and conversations with the James City County staff and Board members have been useful in the development of our plans for Green Spring. We looked forward to more fruitful discussion during the Board's work session on September 26. Please give me a call at any time if I can be helpful.

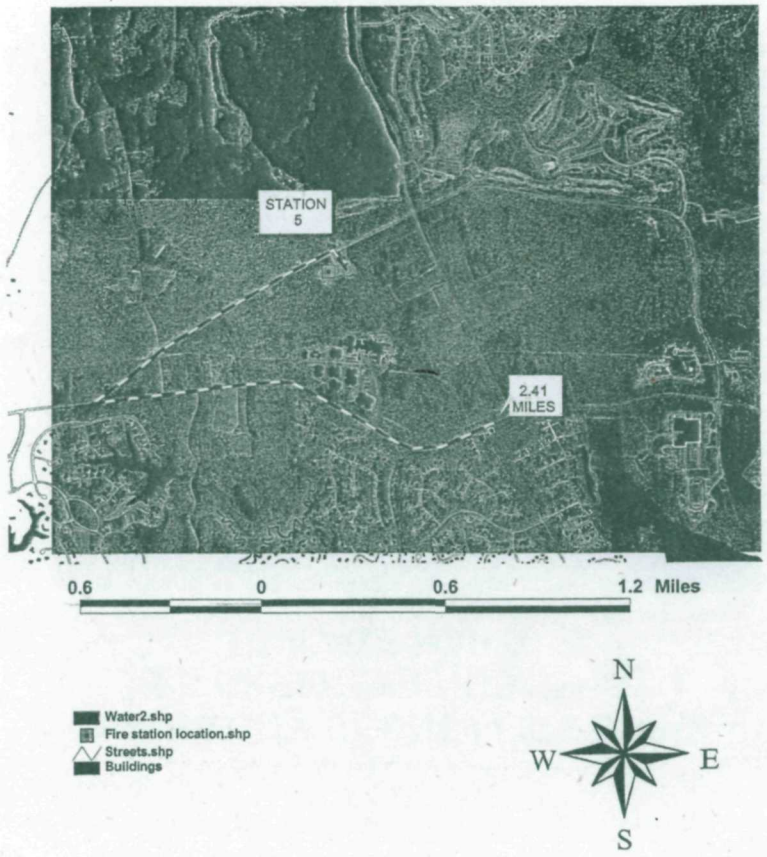
Sincerely,

Alec Gould
Superintendent

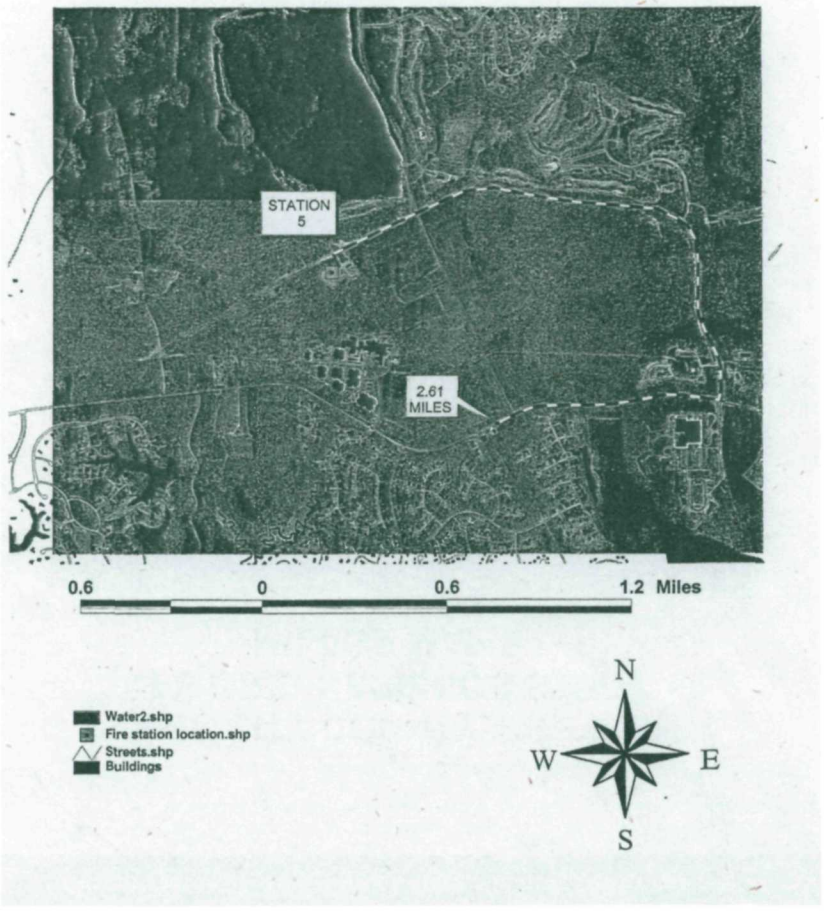
Enclosure

Cc: Sanford Wanner, JCC Administrator
Marvin Sowers, JCC Planning
Richard Miller, JCC Fire Chief
Cliff Williams, President, Friends of NPS for Green Spring, Inc.
Marie Rust, NPS Regional Director
Kathy Schlegel, NPS Planning

JAMES CITY COUNTY FIRE DEPT
NPS GREENSPRINGS STUDY
MILAGE MAP 2



JAMES CITY COUNTY FIRE DEPT
NPS GREENSPRINGS STUDY
MILAGE MAP 3



Comment: James City County Letter • July 9, 2001 *(page 1 of 3)*

DEVELOPMENT MANAGEMENT

101-E Mounts Bay Road, P.O. Box 8784, Williamsburg, Virginia 23187-8784
(757) 253-6671 Fax: (757) 253-6850 E-mail: devtman@james-city.va.us

Code Compliance	Environmental Division	Planning	County Engineer / Integrated Pest Management
(757) 253-6626	(757) 253-6670	(757) 253-6685	(757) 253-6678 / (757) 253-2620
codecomp@james-city.va.us	environ@james-city.va.us	planning@james-city.va.us	

JUL 11 2001

July 9, 2001

Mr. Alec Gould, Superintendent
Colonial National Historical Park
P. O. Box 210
Yorktown, VA 23690

Dear Alec:

The James City County Department of Development Management has reviewed the Draft General Management Plan Amendment and Environmental Impact Statement for the Green Spring area of the Colonial National Historical Park. We are excited about the opportunity to make the Green Spring site an important component of the Park. While we support this endeavor, there are several elements of the Plan which concern us. Some of these concerns were expressed in our previous letter of May 7, 2001. This letter summarizes our additional concerns. Our most significant concern is the proposed closing of Centerville Road through the park. Although we agree there are significant benefits from the closing of Centerville Road, there are several issues which prevent this department from supporting the closure of the road. This and other issues are discussed further below.

Centerville Road Closure. One of the important benefits to the community that would result from the closing of Centerville Road would be the change to the close spacing of the intersections of Greensprings Road and Centerville Road with Route 5 which infrequently result in congestion. Another important benefit, if the park were open to visitors, would be an increase in safety on Centerville Road for both visitors and motorists. We support these objectives, but believe other alternatives may have similar benefits.

Understandably, the National Park Service sees Centerville Road as intrusive to Green Spring's historic setting and inconsistent with the character of the site and the ability to provide an optimal visitor experience. However, given the negative impacts associated with closing Centerville Road, other techniques such as traffic calming, reduced speed limit, truck prohibition, enhanced buffers, and pedestrian tunnels under Centerville Road would be more appropriate than re-routing traffic. Relocating Centerville Road to the eastern edge of the NPS property is another alternative that seems to have considerable merit. Like Alternative C, it would significantly help the current and projected queuing and congestion problems by increasing the distance between the Route 5 and Centerville Road and Greensprings Road intersections. Either keeping Centerville Road open with the modifications previously mentioned or relocating it would have the following benefits:

Response

See Response above from Alec Gould dated September 10, 2001.

- Both alternatives would continue to allow emergency service vehicles to use the road to access communities to the south of Green Spring with similar response times to those that are existing. This issue was previously addressed in a report provided to you from the County's Fire Department.

- Both of these alternatives would prevent the acceleration of the need to four-lane Monticello Avenue (Alternate Route 5) and reduce traffic on a section of Route 5 that will be approaching its capacity by 2021 (section between Centerville Road and Greensprings Plantation Drive). Deleting roads from the network place strains on other roads and intersections. Monticello Avenue and Route 5 are projected to have volumes near the four-lane threshold by 2021. Closing Centerville Road would place a significant portion of the projected 3300 "detoured" vehicles on these critical sections of Monticello Avenue and Route 5. Although the General Management Plan states that Route 5 "could potentially be expanded to four lanes in the long term to accommodate additional traffic," such an action is specifically not recommended in the County's Comprehensive Plan. Also of concern is routing additional traffic through the intersection of Route 5 and Greensprings Plantation Drive.

- Another benefit of these alternatives would be the continued existence of local access through the area should the NPS discontinue allowing regular site visitation in the future due to funding or other complications. The James City County Planning Division is concerned about closing Centerville Road given the closure of other NPS facilities in the area and given the uncertainty of any funding that would allow the park to open with the components proposed in Alternate C. While we appreciate the significant benefits that Alternative C has over the other alternatives, it is not clear to us why most of the components of Alternative C cannot be achieved without closing or relocating Centerville Road.

- Keeping Centerville Road open would avoid inconveniencing the larger traveling public. Approximately 3300 vehicles would be negatively impacted by the closing in 2015, while only 160 park visitor vehicles would benefit from the closing. Unknown is the number of pedestrians and bicyclists that would be impacted.

Bikeways and Pedestrian Facilities. The Management Plan Amendment correctly points out that the James City County, York County, and Williamsburg Regional Bikeways Plan calls for a multi-use path along Centerville Road as well as shoulder bikelanes. We are concerned about the NPS Plan's proposal to relocate these facilities. The County-owned property at the intersection of Route 5 and Greensprings Road is planned as an important "hub" where several State and County facilities will converge. These include not only the Centerville Road facilities but also VDOT's Capital to Capital Multi-Use Path and a connector multi-use path to the County's Green Spring Greenway and parking area behind Jamestown High School. The County is currently working with VDOT to establish informational kiosks for pedestrians and bicyclists on this property. The proposed relocation could have a significant detrimental impact on this Regional plan given the sensitivity of bicyclists and pedestrians to increases in route distance.

Coordination. We strongly support the Management Plan Amendment's recommendations for enhanced coordination with the County on land use, transportation and other issues, and would welcome the opportunity to identify ways to achieve this objective.

We appreciate having the opportunity to comment on the Draft General Management Plan and look forward to working with you over the coming months to ensure that, cooperatively, we accomplish the best project possible for our citizens and visitors.

Sincerely,

John T.P. Horne
Development Manager

cc: Sanford B. Wanner, County Administrator
Planning Commissioners
Board of Supervisors
O. Marvin Sowers, Jr., Planning Director
Steve Wigley, Chairman, HTBAC

Additional NPS Response

The additional NPS responses to James City County's comments on the draft plan appear below to supplement the existing NPS response in the letters reprinted above.

Comment • May 7, 2001 letter, page 1 *(see page 234 for entire letter)*	**Response**
The Green Spring Draft General Management Plan Amendment/Environmental Impact Statement anticipates significant negative impacts on response times for emergency vehicles using Centerville Road to access Route 5; however, the study does not provide sufficient documentation to support these predictions. In order to support these predictions, traffic modeling would need to be performed for all of the intersections that would be used by emergency vehicles under each of the three alternatives. This analysis would need to show both present and future traffic conditions, and provide specifics on level of service, delay and lane blockage due to traffic queuing, and the resulting impacts on response times.	Information from the Route 5 Traffic Study and Parallel Road Analysis (January, 1992), the James City County Level of Service Study (1994), and the 1999 Green Spring Park Traffic Study was used to support the NPS predictions regarding the potential impacts of the alternatives on emergency services in the original draft plan. The Route 5 Traffic Study described projected traffic volumes for 2010 under current (as of 1992) road conditions and also if the road network were to be expanded to include Alternate Route 5. However, this study did not appear to consider future improvements to Route 199 and how those improvements might affect traffic patterns in the Green Spring area. The James City County Level of Service Study evaluated current (as of 1994) and future levels of service for all major roadways in the county; however, levels of service could not be measured for Alternate Route 5, as the road was not completed until the end of 2001. Existing and future levels of service for road intersections at and near Green Spring were evaluated in the 1999 Green Spring Park Traffic Study; however, the level of service for the intersection of Alternate Route 5 and Route 5 could not be evaluated at that time. Existing and future traffic patterns and traffic volumes for Centerville and Greensprings roads, Route 5, and Alternate Route 5 were analyzed in this study. The 1999 Green Spring Park Traffic Study noted that the Centerville Road route between the fire station and the intersection of Route 5 and Greensprings Road is shorter in distance (1.2 miles) as compared to either Monticello Avenue west (2.2 miles) or Monticello Avenue east (2.5 miles); however, the study also noted that, while Centerville Road is a more direct route between the fire station and areas south of Green Spring, it is not necessarily the fastest or safest. It is true that, generally, overall distance and driving times are less using Centerville Road. The problem is that road conditions on Centerville Road create safety hazards and make this route unpredictable. The actual driving time using Centerville Road through Green Spring as opposed to one of the two potential detours may be considerably longer than anticipated, and for these reasons the NPS concluded in the draft plan that use of Centerville Road may affect emergency response times. The traffic study indicated that Alternate Route 5 would likely be safer and more predictable for emergency vehicle use. It is important to note that any of the three alternative routes should allow fire and EMS service to meet their goal of a six-minute response time 90% of the time in the Primary Service Area, even for areas at the southern end of Greensprings Road. The county's concerns regarding adequate documentation of current road conditions and levels of service for all potential emergency routes led the NPS to update the 1999 traffic study and supplement it with further traffic data analysis conducted November, 2001 to January, 2002. The traffic data analysis found that traffic from Centerville Road is beginning to divert to Alternate Route 5, now that it is open to

Response

local traffic, and that there is no evidence of current congestion along this road or at its intersection with Route 5 (west of Green Spring). Current levels of service appear to be adequate for this intersection and the Monticello Avenue/Route 5 intersection (east of Green Spring). Although the level of service for the Centerville Road/Route 5 and Greensprings Road/Route 5 intersections may be anticipated to improve due to the diversion of some traffic away from Centerville Road, the dangerous conditions along Centerville Road still hold true. Emergency vehicles would still encounter a much narrower roadway as compared to Alternate Route 5, with no shoulders, and the sight distance is limited due to the vertical as well as horizontal alignment. If a driver hears a fire engine siren, he/she may not be able to see the emergency vehicle right away, nor pull to the side of the road. To pass stopped motorists, emergency vehicles may have to use the other side of the road and head into traffic. In addition, the Route 5/Centerville Road intersection is stop sign controlled and does not give the right of way to emergency vehicles, whereas intersections of Monticello Avenue/Alternate 5 at Route 5 include pre-emptive traffic lights. Queuing and blockage delays affecting emergency vehicles on Centerville Road would likely continue to be significant, even with current traffic diversion using Alternate 5, since overall traffic volumes from surrounding development is expected to increase over time. As the National Park Service noted in the draft plan, it is difficult to predict how the opening of Alternate Route 5 will affect traffic patterns in the future, and consequently the effectiveness of using Centerville Road as an emergency response route. Further discussion of the potential impacts to emergency response times can be found, as noted in the NPS letter of September 10, 2001, in the traffic report prepared by Kimley-Horn and Associates.

The National Park Service is sensitive to public safety concerns and has worked with James City County, including the fire department, to incorporate these concerns into this plan. The county has decided that Centerville Road will remain open for the near future, and the NPS accepted this decision. NPS and the county agreed that a re-consideration to close the road to general vehicular traffic would include the stipulation that the road remains accessible to emergency vehicles and to the public as an evacuation route only during emergencies. Therefore, no impacts to emergency response times are anticipated under the revised Preferred Alternative, which keeps Centerville Road open to all through traffic. The NPS would work with the county and the Virginia Department of Transportation to identify traffic calming options that would ensure efficient emergency vehicle access through Green Spring, while providing a safer environment for visitors, including pedestrians and bicyclists, as well as local motorists.

Comment • May 7, 2001 letter, page 1, *(see page 234 for entire letter)*

The Green Spring Draft General Management Plan Amendment/Environmental Impact Statement should identify and evaluate alternatives for relocating Centerville Road that maintain an emergency response time similar to that provided by retaining the existing road network. These alternatives should be evaluated in the traffic modeling as well.

Response

In addition to the reasons given in the NPS letter of September 10, 2001, it should be noted that a proposal to relocate the road would be beyond the legal authority of the National Park Service to implement, and is beyond the scope of consideration for this General Management Plan Amendment. Only the Virginia Department of Transportation, with the concurrence of local government, would have the authority to construct a new road. Additionally, the NPS would reject consideration of a new road along its eastern boundary or elsewhere in the park because impacts to cultural and natural resources, particularly wetlands and archeological resources, would likely be major and adverse, contrary to NPS resource management policies. NPS 2001 Management Policies direct the NPS to utilize existing roads and other infrastructure to the extent feasible, rather than constructing or installing new infrastructure in new locations.

Comment • May 7, 2001 letter, page 3, *(see page 235 for entire letter)*

The Fire Department recognizes the importance of the proper historical interpretation of Greensprings Plantation. The recommended development plan will indeed meet the county's goal to enhance the character of the community. The Fire Department is opposed to the long-range plan to close Centerville Road. However, if closure were necessary, we would recommend the following conditions become part of the closure agreement:

- Any closure of Centerville Road will not occur until actual construction of major improvements begins. The Federal Government is currently seeking to reduce spending in many areas. There is no need to close the road if funding is not present from the Federal level to initiate and maintain development.
- If at all possible, an emergency route should be maintained within the site as a route between Monticello Avenue and John Tyler Highway.
- The Fire Department would ask that Development Management seek and encourage alternate routes between Monticello and John Tyler. One suggestion would be a possible road between the station 5-entrance driveway and Patriots Colony thru to John Tyler Highway.

Response

The legal authority to make a decision regarding the road closure rests with the county Board of Supervisors, based on the recommendation of the county Planning Commission and with the concurrence of the Virginia Department of Transportation, using the formal process for abandonment or discontinuance of the road. As noted in the previous NPS response to the county's letter of May 7, 2001, the county has decided to allow for Centerville Road to remain open for the foreseeable future. The James City County Planning Commission suggested that the NPS identify a more incremental approach to developing Green Spring that would recognize the county's concerns regarding the availability of funding to implement the plan and maintain the park. The NPS has incorporated these concerns into the final plan, accepting the county's decision that road closure would be revisited in the future, and would probably be contingent on the implementation of a comprehensive archeological research program, the opening of the park to significant numbers of visitors, the presence of on-site staffing, and substantially completed development of an archeological support facility, parking lot, trails, and other visitor support facilities. The NPS believes there will be substantial interest in and activity at the site as part of the Jamestown 2007 commemoration, and that this interest will significantly aid the Friends of NPS for Green Spring in their fundraising efforts, as well as potentially translate to higher levels of federal funding for plan implementation.

As noted in the previous NPS response (to p. 1 county comments from the May 7, 2001 letter), a re-consideration to close the road to general vehicular traffic would include the stipulation that the road remain accessible to emergency vehicles and to the public as an evacuation route only during emergencies. The possibility of constructing and maintaining an alternate emergency route through the site, potentially on Green Spring's eastern boundary or outside of the park through Patriot's Colony, has also been addressed in the NPS response above.

Comment • July 9, 2001 letter • page 1, *(see page 241 for entire letter)*

Understandably, the National Park Service sees Centerville Road as intrusive to Green Spring's historic setting and inconsistent with the character of the site and the ability to provide an optimal visitor experience. However, given the negative impacts associated with closing Centerville Road, other techniques such as traffic calming, reduced speed limit, truck prohibition, enhanced buffers, and pedestrian tunnels under Centerville Road would be more appropriate than re-routing traffic. Relocating Centerville Road to the eastern edge of the NPS property is another alternative that seems to have considerable merit. Like Alternative C, it would significantly help the current and project queuing and congestion problems by increasing the distance between the Route 5 and Centerville Road and Greensprings Road intersections.

Response

In addition to the NPS response in the letter dated September 10, 2001, the NPS offers the following comments on the county's suggestions:

In early 2002, the county decided to allow for Centerville Road to remain open. In its Resolution on Green Spring Colonial National Historical Park, dated May 6, 2002, the James City County Planning Commission endorsed traffic calming measures for Centerville Road as long as it should remain open. The resolution urged NPS coordination with applicable state and county agencies to take such measures as significantly reducing the speed limit on the park roadway, making the park roadway a no passing zone, resurfacing the road through the park with pea gravel, increasing the fine for speeding through the park, and increasing police presence to enforce the speed limit. Prohibiting trucks on Centerville Road through the park, a suggestion mentioned in the county's July 9, 2001 letter of comment on the draft plan, would also fall into the category of traffic calming. These measures are too specific and detailed for consideration as part of the General Management Plan Amendment and are more appropriately considered as part of an implementation plan. These specific measures, while not considered during the development of the alternatives, may fall into the scoping category "Potential elements of alternatives and ideas for consideration in future implementation plans" (see Appendix 2, Scoping Analysis, in the draft plan). In the future, the NPS intends to work with the county and Virginia Department of Transportation to identify traffic calming options that would ensure efficient emergency vehicle access through Green Spring, while providing a safer environment for visitors, including pedestrians and bicyclists, as well as local motorists.

Constructing a pedestrian tunnel to cross the site under Centerville Road, or relocating the road to the eastern border of Green Spring or areas outside the park, were options suggested by several individuals commenting on the draft plan. The proposal to relocate the road is beyond the legal authority of the National Park Service to implement, and is beyond the scope of consideration for this General Management Plan Amendment. Only the Virginia Department of Transportation, with the concurrence of local government, would have the authority to construct a new road. Additionally, the NPS would reject consideration of a new road along its eastern boundary because impacts to cultural and natural resources, particularly wetlands and archeological resources, would likely be major and adverse, contrary to NPS resource management policies. NPS 2001 Management Policies direct the NPS to utilize existing roads and other infrastructure to the extent feasible, rather than constructing or installing new infrastructure in new locations.

Response

The proposal for a pedestrian tunnel is an idea that was rejected early on during the planning process for the following reasons:

1) adding modern visual intrusions such as a tunnel may not be compatible with park mission goals such as the rehabilitation of the 17th century landscape;

2) this option would not resolve issues relating to the noise and visual intrusion of traffic and impacts to on-site interpretation;

3) any structural alterations to Centerville Road would require VDOT's approval to implement;

4) impacts to below-ground cultural and natural resources, particularly wetlands and archeological resources, would likely be adverse, and contrary to NPS resource management policies;

5) the safety hazard of pedestrians trying to cross Centerville Road would still be present because some people would attempt to cross at other points; and

6) a second tunnel or footbridge would also be needed in the northwest part of the Green Spring park unit where the trail would cross the road (see drawing for Alternative C).

Traffic calming techniques (e.g., pedestrian crosswalk) that are less intrusive and minimize disturbance to natural and cultural features may be considered during plan implementation.

Comment • July 9, 2001 letter • page 2 *(see page 241 for entire letter)*

Keeping Centerville Road open with the previously mentioned modifications [traffic calming measures] or relocating it would continue to allow emergency vehicles to use the road to access communities to the south of Green Spring with similar response times to those that are existing.

Response

The NPS agrees that emergency access to and emergency vehicle travel through the site should not be impeded and will work with the county and Virginia Department of Transportation to identify options that will support the county's emergency response goals. There is a wide range of traffic calming options that will allow the safe and effective use of Centerville Road for emergency vehicles. The issue of road relocation has been addressed in the previous NPS response to the county's letters of comment dated May 7 and July 9, 2001.

Comment • July 9, 2001 letter • page 2 *(see page 241 for entire letter)*

Keeping Centerville Road open with the previously mentioned modifications [traffic calming measures] or relocating it would prevent the acceleration of the need to expand Monticello Avenue to four lanes and reduce traffic on a section of Route 5 that will be approaching its capacity by 2021. Although the draft GMPA states that Route 5 "could be potentially expanded to four lanes in the long term to accommodate additional traffic," such an action is specifically not recommended in the county's Comprehensive Plan. Also of concern is routing additional traffic through the intersection of Route 5 and Greensprings Plantation Drive.

Response

The county's comments were generally addressed in the NPS letter of response dated September 10, 2001 (see above). The NPS offers the following additional comments regarding capacity of Centerville and connecting roads and the possibility of future expansion of Route 5 and/or Monticello Avenue:

The future need to expand Monticello Avenue and/or Route 5 will be largely dependent on the pace of development in the western part of the county and the attendant increase in traffic volumes, rather than the closing of Centerville Road. It is important to note that vehicles have already begun to detour around Green Spring with the opening of Alternate Route 5 at the end of 2001. Results of the Kimley-Horn traffic data analysis from November, 2001 to January, 2002 indicate that traffic volumes on Centerville Road through the park were reduced from 3,817 in November, 2001, prior to the opening of Alternate Route 5, to 2,950 in January of 2002, once the new route became available. Over 2,700 vehicles are currently traveling on Monticello Avenue, even with the availability of Centerville Road. Centerville Road carries approximately 22% less traffic today, compared to before Monticello Avenue was extended. Traffic volumes along Route 5 have also decreased, at least in the short-term. This apparent change in traffic patterns and volumes indicates that local residents have selected alternative routes to Centerville Road because they believe they are more efficient in reaching their destination; therefore, regardless of whether or not Centerville Road is closed, local traffic will continue to use these alternate routes. Use of these alternate routes may even increase. The National Park Service has little control over these shifting traffic patterns.

Given the projected traffic volumes on Route 5 alone (16,500 vehicles per day projected for 2015 just west of Green Spring), to which park visitors' contributions would be negligible, the detour of 3,000 vehicles per day onto Alternate 5 would be comparatively insignificant as compared to the potential overall increase in local travel on Route 5 and Alternate Route 5. Route 5, although recently experiencing a reduction in traffic volumes, is expected to reach its planned capacity of 13,000 vehicles per day in 2015, even without the closing of Centerville Road. By 2015, Alternative Route 5 may also reach its planned capacity of about 22,000 vehicles for two lanes. The Virginia Department of Transportation has suggested that Route 5 and/or Alternate Route 5 may need to be expanded in 2015, although the county would be understandably concerned with the expansion of either of these roads from two to four lanes, in part due to the potential impacts to the scenic setting and sensitive natural resources. Increasing traffic volumes and congestion on local roads is a more widespread problem that must be addressed within a broader political framework, looking at such options as reducing the need for vehicle trips, creating more fuel-efficient vehicles, and encouraging "smart growth" to combat the sprawl that leads to longer vehicle trips. Addressing these larger issues is outside of the purview of this General Management Plan.

Comment • July 9, 2001 letter • page 2 *(see page 241 for entire letter)*

Keeping Centerville Road open would avoid inconveniencing the larger traveling public. Approximately 3,300 vehicles would be negatively impacted by the closing in 2015, while only 160 park visitor vehicles would benefit from the closing. Unknown is the number of pedestrians and bicyclists that would be impacted.

Response

In addition to the NPS response to this comment in the letters dated September 10, 2001 and February 14, 2002 (see letters reprinted above), the NPS offers the following observations:

The county decided in 2002 that Centerville Road would remain open for the near future, and the NPS accepted this decision. The plan has been revised to reflect this understanding; therefore, since vehicles will not be required to detour around Green Spring, negligible impacts to the local road system and the local economy from the preferred alternative are anticipated at this time. A re-consideration to close the road to general vehicular traffic in the future would require the concurrence of James City County and the Virginia Department of Transportation. At that time, a re-examination of environmental and socioeconomic impacts related to road closure may be warranted, once more specific and detailed implementation plans are formulated.

The NPS recognizes that the closing of Centerville Road could inconvenience some 3,300 vehicles by 2015-or less, depending on the long-term effects to traffic patterns from the recent opening of Alternate Route 5. The detour of up to 2.5 minutes represents additional travel time and potential additional costs for local travelers; however, given the high incidence of accidents at the Centerville Road-Route 5 and Monticello Avenue-Centerville Road intersections, the closing of Centerville Road through the park would actually be of great benefit to the 3,000+ vehicles that would use the detour in addition to the park visitors. Data from the Virginia State Police and the Virginia Department of Transportation for a three-year period (1999-2001) indicate 15 accidents at the Route 5-Centerville and 9 at the Monticello-Centerville intersection, as compared to 4 for the Route 5-Greensprings Road intersection, 2 for the Route 5-Greensprings Plantation Drive intersection, and 0 for the Route 5-Monticello and Greensprings Plantation Drive-Monticello intersections. Note that Monticello Avenue's western extension to Route 5 was only opened in December, 2001, so accident data for the Route 5-Monticello intersection represents less than a one- month period. The Centerville Road-Monticello Avenue intersection involved 9 injuries and 3 fatalities, while the Route 5-Centerville intersection involved 11 injuries. Together, accidents at these two intersections represent a total $223,500 of property damage. The detour of up to 2.5 minutes around Green Spring would be more than offset by the lives and property that would likely be saved by using safer routes. In addition, many of the 3,300 vehicles projected for 2015 would contain occupants who are local residents and would benefit from the presence of a large tract of parkland adjacent to or relatively close to their homes, open space which is

Response

not only of aesthetic and historical value but also helps to maintain relatively high property values in the area. The National Environmental Policy Act (NEPA) of 1969, as amended, directs the NPS and other federal agencies to not only consider the adverse impacts but also the benefits of a proposed action from an environmental and socioeconomic standpoint, and to look at these impacts in a much broader context beyond the locality. The cumulative impacts of choices for developing and managing Green Spring are not insignificant; however, NEPA directs federal agencies to balance impacts to a particular locale and group of individuals with the more widespread benefits that would be derived from a particular action, in this case opening up an historically significant unit of the national park system. Additional benefits from road closure would include visually and physically rehabilitating the landscape to evoke the 17th century plantation for enhanced visitor understanding of the site's development, and the enjoyment of local passersby (including bicyclists); and eliminating traffic noise and visual intrusions that detract from the historic setting and distract visitors from interpretive programming.

Comment • July 9, 2001 letter • page 2 *(see page 241 for entire letter)*

The Management Plan Amendment correctly points out that the James City County, York County, and Williamsburg Regional Bikeways Plan calls for a multi-use path along Centerville Road as well as shoulder bikelanes. We are concerned about the NPS plan's proposal to relocate these facilities. The county-owned property at the intersection of Route 5 and Greensprings Road is planned as an important "hub" where several state and county facilities will converge.The proposed relocation could have a significant detrimental impact on this regional plan given the sensitivity of bicyclists and pedestrians to increases in route distance.

Response

The NPS made it clear in the draft plan that, while the agency supports bicycle and pedestrian access to Green Spring, use of Centerville Road as a bicycle or pedestrian throughway would be discouraged, at least as long as Centerville Road remains open. Current conditions along Centerville Road, and at the Monticello Avenue- and Route 5- Centerville Road intersections, are unsafe for pedestrian or bicycle use, due to the poor line of sight, lack of a shoulder, and lack of intersection enhancements at Route 5-Centerville Road such as signaling. Installation of a separate bike path along Centerville Road, or widening of the road itself to accommodate a bike route, and safety enhancements at the park's northern and southern entrances would likely result in adverse impacts to cultural and natural resources and could affect the park's historic setting. Additional concerns are expressed above in the NPS letter dated September 10, 2001.

Comment by Marvin Sowers • October 23, 2001

OCT-26-2001 09:10 COLONIAL NHP 757 898 3400 P.03/03

RECEIVED
OCT 24 2001

omsowers@james-city.va.us
10/23/2001 01:55 PM MDT

To: Rosemarie Stoddard/COLO/NPS
cc: billport@james-city.va.us, jtphorne@james-city.va.us, dadano@james-city.va.us, rmiller@james-city.va.us, leahn@james-city.va.us, dedavis@james-city.va.us
Subject: Memo to Alec Gould Re: Proposed Closure of Centerville Road

> Alec,
>
> Please be advised that several County staff members met to discuss the
> proposed Centreville Road closing. We generally concurred that
> discontinuance of Centreville Road may be supported by staff if the
> National Park Service can meet certain standards. Those standards include
> the following:
> 1. That a new or existing emergency access roadway must support
> the loaded weight of a JCC fire truck and allow operating
> speeds of at least 35 miles per hour.
> 2. That the present alignment or a relocated alignment for
> emergency access be of a width, and in a location, that allows a
> replacement road to be rebuilt to the specifications of the State, if
> necessary in the future.
> 3. That the emergency access route be available to serve as a
> primary means of access to Patriot's Colony and neighborhoods and
> businesses south of Route 5 rather than a back up for other routes.
> County staff continues to have concerns about other impacts of closing the
> road, and is still evaluating those concerns. In the meantime, it would
> be helpful if the National Park Service can give staff an indication of
> its willingness to meet the above standards.
>
> Also, please note that should the road closing be supported by staff, a
> discontinuance rather than an abandonment would be the staff's preferred
> alternative. Staff is available to discuss this issue further.
>
> Finally, Board of Supervisors consideration of the road closure will not
> be scheduled until early 2002 in order for the new Board to be seated.
>
> We look forward to your reply.
>
> Sincerely,
>
> Marvin Sowers
> Planning Director
James City County

Received: from jccmail.james-city.va.us ([216.54.20.67]) by ccmail.itd.nps.gov with SMTP
(IMA Internet Exchange 3.13) id 0011DB5F; Tue, 23 Oct 2001 15:15:31 -0400
Received: by jccmail.james-city.va.us with Internet Mail Service (5.5.2653.19) id <VM9M802V>; Tue, 23 Oct 2001 15:10:07 -0400
Message-ID: <BEBE7016AECDF84A93295ABBCD81B3A51E1E48@jccmail.james-city.va.us>
From: omsowers@james-city.va.us
To: colo_superintendent@nps.gov
Cc: billport@james-city.va.us, jtphorne@james-city.va.us,

Response by Alec Gould • November 8, 2001 *(page 1 of 2)*

NOV-08-2001 16:10 COLONIAL NHP 757 898 3400 P.02/03

United States Department of the Interior

NATIONAL PARK SERVICE
Colonial National Historical Park
Post Office Box 210
Yorktown, Virginia 23690

IN REPLY REFER TO:

L3215

November 8, 2001

Marvin Sowers
JCC Planning
101-C Mounts Bay Road
P. O. Box 8784
Williamsburg, VA 23187-8784

Dear Marvin:

We would welcome the recommendations of the James City County staff to the Board of Supervisors that the Centerville Road be closed when the National Park Service (NPS) and the Friends of NPS for Green Spring are ready to open Green Spring for visitors. As you know, having a decision by the Board and then FDOT to close the road is needed before NPS can make a decision on the alternative for Green Spring. NPS and the Friends can not seriously start a campaign to raise the needed funds until a decision is made about the vision for Green Spring's development. We all have a sense of urgency about moving this process along so Green Spring can be open before 2007.

Thank you for the additional time your staff has spent reviewing the proposed closure of Centerville Road. Below is our point by point response to your memo of October 23.

1. As noted in my September 11, 2001 letter to John Horne, we have agreed to revise the draft General Management Plan proposal to allow for the use of the Centerville Road location for James City County emergency vehicles. Following additional research and field study at Green Spring aimed at better understanding fragile resources and historic spatial patterns and use, we will develop implementation plans including refined site design. At that time, it would be appropriate to discuss a surface treatment for the emergency access road that will minimize its visual intrusion on the historic site. Stabilized turf is one possibility that would meet this objective. We agree that the design must support the weight of a JCC fire truck and will work closely with James City County to respond to other safety concerns.

2. We need clarification on the second item in your memo. If the intent is directing NPS to reserve land at Green Spring or otherwise provide for the State to build a new road in the future, we could not agree to that. A new road would have many of the same and additional adverse impacts as the present Centerville Road. The noise of the traffic, the visual intrusion on the historic scene and the destruction of woodlands and wetlands would all be

A

Response by Alec Gould • November 8, 2001 *(page 2 of 2)*

unacceptable impacts. In addition, a new environmental impact statement would be required to even consider such a proposal which would involve securing funds to prepare the EIS as well as the time to complete it and go through a rigorous review process. That would take at least several years, which would substantially delay federal approval and implementation of any actions at Green Spring. The 2007 Jamestown Anniversary is an important impetus and target for opening Green Spring. Further delays in decisions and approvals will seriously jeopardize the efforts of both NPS and the Friends of the NPS for Green Spring requesting and raising funds to implement Alternative C and to open Green Spring. More to the point, no responsible Park Service official would ever recommend the building of a new road through Green Spring.

3. Please clarify how you define "primary access". In general, we have no problem with the fire trucks using the Centerville Road emergency access route in responding to emergency calls. We would prefer that the fire trucks and police vehicles use Monticello and other routes when there is not an emergency or when other routes provide acceptable access. If, however, this "primary access" requires more different or additional design standards, we would need to review these to insure they are consistent with NPS policies and goals (for instance, we could not agree to adding lighting to the emergency access route).

Please clarify and elaborate on the issue of discontinuance. If discontinuance means that the State or County could decide to reestablish the Centerville roadbed as a public road, that would not be acceptable. Protection of national parks should be in perpetuity, not short-term. We hope that our support for maintaining the emergency vehicle route and the benefits of opening Green Spring for public use and enjoyment would merit the support and a timely decision by James City County and VDOT to close Centerville Road without further conditions or delays.
We request again that the present Board take their vote on closing the Centerville Road during their first meeting in December. NPS and the Friends need to know that we have a plan, a vision for the development of Green Spring, that is supported by all parties, NPS, Friends, and James City County.

From the start, the Green Spring project was conceived and developed as a partnership among NPS, the Friends, and James City County. For Green Spring to open for public use and for NPS to meet our resource management mandate for this nationally significant site, we must have the support of James City County.

Sincerely,

Alec Gould
Superintendent

CC: Cliff Williams, President, Friends of NPS for Green Spring
John McGlennon, Chair, JCC Board of Supervisors
Sanford Wanner, Administrator, JCC

Request for Information • James City County • February 8, 2002

FEB-11-2002 09:01 COLONIAL NHP 757 898 3400 P.02/02

Marvin Sowers

From: Marvin Sowers
Sent: Friday, February 08, 2002 8:50 AM
To: 'Alec_Gould@nps.gov'
Cc: John Horne; William Porter; Richard Miller
Subject: Centerville Road: PC Meeting

The following was sent to Alec Gould via FAX on February 8, 2002

Alec: Hope you had a pleasant return to the U.S. The County is gearing up for consideration of NPS's request to close a portion of Centerville Road at the March 4 Planning Commission. The meeting will begin at 7 PM, and you should see newspaper notices appearing soon.

There are several documents that we would like to receive from you prior to the Planning Commission meeting so that we can include them in the staff report that goes to the Commission. They will also help us formulate the staff recommendation.

We have mentioned one of these documents before. It is a draft letter setting out the basic provisions of what would be contained in a memorandum of understanding (MOU) between NPS and the County regarding use of the road by County emergency vehicles. This should cover the points we previously discussed, including design and performance standards that will be adhered to (design speed, actual speed limit, weight bearing capabilities, surface treatment, pavement width, barricades, etc.); provisions pertaining to when County emergency vehicles may use the access road and under what restrictions, if any; the circumstances under which the County could require NPS to open the road for use by the general public such as during evacuations; the parties responsible for maintenance (both daily maintenance and more long term needs such as repaving); the timeliness of this maintenance (especially for snowfall, windfalls, deadfalls, pothole repair and repaving); and measures to ensure both parties that the provisions of the MOU will be executed

The second document is another letter setting out the basic provisions of what would be in an MOU that assumes the road is taken out of VDOT's Secondary Road System immediately and NPS takes over maintenance responsibilities until the road is physically closed by NPS. This letter should address how the road will be maintained for things like snow, windfall and deadfall removal; general repairs such as repaving and patching, etc; assurances that the foregoing maintenance will be performed in a timely fashion so as to keep the road open for public use until it is closed by NPS; what will actually trigger the physical closing; who will be responsible for traffic safety issues and incidents while under NPS jurisdiction; and measures to ensure both parties that the provisions of the MOU will be executed.

The final document is any further evidence supporting the Friends of Green Spring's statements that closing the road will enhance their fund raising efforts. This should include letters from donors or potential donors and recognized experts in nonprofit fund raising.

So that we can include this information in the staff report that is sent to the Planning Commission, we need to receive this information no later than February 22. We look forward too receiving this information.

Marvin Sowers
JCC Planning Director

TOTAL P.02
TOTAL P.02

A

A REGULAR MEETING OF THE PLANNING COMMISSION OF THE COUNTY OF JAMES CITY, VIRGINIA, WAS HELD ON THE FIRST DAY OF APRIL, TWO-THOUSAND AND TWO, AT 7:00 P.M. IN THE COUNTY GOVERNMENT CENTER BOARD ROOM, 101-C MOUNTS BAY ROAD, JAMES CITY COUNTY, VIRGINIA.

1. ROLL CALL

A. Joe Poole
George Billups
Don Hunt
Wilford Kale
Joe McCleary
Peggy Wildman

ALSO PRESENT

Greg Dohrman, Assistant County Attorney
Marvin Sowers, Planning Director
David Anderson, Planner

2. MINUTES

Joe McCleary made a motion to approve the minutes of the March 4, 2002, meeting and commented that Ms. Giuliano deserved special recognition for having produced not only an accurate set of minutes but very well organized ones that would be useful to anyone who read them. In a unanimous voice vote, motion passed.

3. COMMITTEE AND COMMISSION REPORTS

A. DEVELOPMENT REVIEW COMMITTEE (DRC)

Peggy Wildman presented the DRC report stating they reviewed five cases that were not controversial. She stated the Williamsburg Landing and Williamsburg Plantation (units 184-251 and units 134-183) projects were before the DRC because each one exceeded 50 lots. She said the applicant for Ironbound Village requested a modification to the required 50' structure setback and requested to amend the master plan. She stated the DRC recommended approval of all cases.

Joe Poole stated he would abstain from the Williamsburg Landing vote since he was a member of its board.

Wilford Kale asked if the County was watching the rear property of Williamsburg Plantation as its developed toward the wetlands adjacent to Route 199.

Joe Poole said absolutely and added that has been a concern of the DRC. He said there was a BMP partially on VDOT property and partially on Williamsburg Plantation property that has met the environmental regulations.

By a unanimous voice vote, motion passed.

B. DEVELOPMENT POTENTIAL ANALYSIS

Joe McCleary stated several years ago the Board directed staff to do a study of the development potential in the County and that engendered further discussion as to the accuracy of those figures. He said as a preparation for the review of the Comprehensive Plan, the development potential analysis study would be redone in a more in-depth method which involves the employment of a consultant. He stated the DPA Committee would be working with staff and the consultants from Kimly-Horn and added that the potential development analysis was being done strictly within the PSA. He said there were four scheduled meetings, one of which was held on March 29, and the next one would be on April 22, 2002 at 3 p.m. in Conference Room E.

258

Don Hunt asked if the study would be defining the number of lots by economic classification. He stated that there has been talk about the need for affordable housing and asked if there would be a distinction made as to how many potential sites/or lots would fit lower income.

Joe McCleary said not per say, but it could be inferred.

C. PROPOSED CLOSURE OF CENTERVILLE ROAD

Joe Poole stated he wanted to follow up on the March 4th meeting on the proposed closing of a section of Centerville Road. He stated that Joe McCleary, members of staff, and members of the National Park Service met shortly after that March meeting to come to terms with how best to accommodate a range of interests in this matter. He stated that before the Commission tonight was a proposed resolution he hoped could be acted on at the May meeting and then sent to the Board. He asked if the Commission had any substative items regarding the resolution and to either offer those comments tonight or as soon as possible so the final resolution could be prepared for the next meeting.

Peggy Wildman stated there were two issues of concern which she felt weren't specifically addressed. She proposed that the Commission put forth a speed limit on the road, suggesting 25 mph for safety reasons and to avoid traffic issues within the Park. She felt the use of pea-gravel on top of the road surface was a wonderful idea but asked if there was any assurance that the road would hold up with use by Fire, Police, and EMT emergency vehicles.

Joe Poole asked if anyone else had any comments.

Joe McCleary stated the County Attorney recommended several changes in the resolution and he agreed to strike the word *iterative* and inserting *incremental* in the first paragraph and to delete the word *fulsome* in the last paragraph.

George Billups asked if this would be discussed at the May meeting.

Joe McCleary stated that this resolution was not being officially considered at this time because there was not enough time to have tonight's consideration publicly announced.

Alec Gould of the National Park Service stated he had spoken with Joe McCleary and then put in writing comments regarding the resolution that was before the Commission.

Joe McCleary informed Alec Gould that the other Commission members had received a copy of the resolution and the letter from the National Park Service.

Alec Gould stated there were two main concerns regarding the resolution. He asked that there be an acknowledgement that many citizens of the County did, in fact, support Alternative C and that it be noted that the long range goal of the National Park Service was to do Alternative C. He said he preferred the word incremental to iterative because it better expressed what the Commission was saying and felt that was positive position.

Don Hunt made a motion, seconded by Wilford Kale, to bring this issue before the May 6, 2002 meeting. In a unanimous voice vote, motion passed.

Marvin Sowers stated the Commission closed the public hearing at its March 4, 2002, meeting and that would affect the way staff would advertise the May meeting. He asked if the Commission wanted the matter to be a public hearing or a consideration.

A

Joe Poole said his first thought would be to have another public hearing.

Wilford Kale stated there had been a public hearing and felt this now should be the Commission's handling of what was heard during the public hearing in March. He was reluctant to reopen the public hearing because it could be a redundancy of the March meeting.

Don Hunt said he believed there was a fair and open airing from both sides on this issue and felt the resolution was beneficial.

There was support from other Commission members not to open the public hearing and it was agreed this would be a consideration.

4. PUBLIC HEARINGS

A. CASE NO. SUP-4-02. J. W. CROSSING EXPANSION

David Anderson presented the staff report stating the applicant had applied to amend a previously approved special use permit in order to increase the size of the permitted retail shopping center to 17,149 sq. ft. and to eliminate the previoulsy approved automobile service station center and fast food restaurant. He stated the proposed conditions would mitigate traffic and visual impacts of this development. Staff found the proposal to be consistent with the surrounding commercial zoning and development and the Community Commercial designation of the Comprehensive Plan. Staff recommended that the Planning Commission recommend approval with the conditions as outlined in the staff report.

Joe Poole opened the public hearing.

Sheldon Franck of Geddy, Geddy, Franck and Hickman spoke on behalf of the applicant. He stated the earlier special use permit was approved in March of 1999 and said it was necessary to file suit in order to get some of issues resolved between the owner of the out parcel and the owner of the shopping center. He said one result, determined by the courts, was that the configuration of the automobile service facility did not comply with the covenant restrictions. He said the other two issues were agreed upon by a settlement that was incorporated into a court order in that suit. He said the process took almost 18 months and by that time, the prospective user for the fast food restaurant was no longer interested in locating at the site. He stated that before the Commission tonight was a modified proposal for that site. He noted that the proposed buildings would have the same exterior appearance and retail use as the existing building. He said the applicant agreed with the staff report with the exception of Condition #8. He said what this condition was doing was putting the owner of the out parcel in a "catch 22" situation stating the County won't approve this application until the owner of the shopping center approves it and the owner of the shopping center won't approve it until the County approves it. He believed the length of the litigation was considerably greater by virtue of this condition and respectfully asked that this special use permit be approved without Condition #8. He said he would answer any questions of the Commission.

Peter Kaluzsay spoke on behalf of Ewell Station, Inc. stating that the special use permit that was being applied for tonight did affect them. He said there were restrictive covenants on the property and noted that the County and applicant were fully aware of what they have to do with these covenants in order to develop the property. He stated the applicant to this date had not given Ewell Station, Inc. any information as to the changes in the special use permit. He said the applicant was applying for a modification of a special use permit which, in fact, has expired. He asked the Commission to take a hard look at this case and said that Ewell Station, Inc. had not yet approved this application as required in the covenants and objected to it at this time.

Comment

May 6, 2002

RESOLUTION

A RESOLUTION ON GREEN SPRING COLONIAL NATIONAL HISTORICAL PARK

WHEREAS, the National Park Service has graciously agreed to develop the Green Spring Colonial National Historical Park in an incremental fashion under an alternative that does not propose closing Centerville Road (Route 614) between John Tyler Highway (Route 5) and Monticello Avenue (Route 5000) (hereinafter the "park roadway") at this time; and

WHEREAS, the National Park Service may now proceed to develop and open the Green Spring Colonial National Historical Park "by right," an undertaking that the Planning Commission supports, as this initiative will significantly add to the scenic, cultural, and historical value of the County; and

WHEREAS, the Planning Commission was created nearly fifty years ago to insure the prosperity, health, safety, and general welfare of the citizens of James City County.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, takes this opportunity to respectfully make the following recommendation to the Board of Supervisors for the advancement of this park while at the same time furthering the safety and welfare of our citizens:

That the Board of Supervisors urge action by, or coordination with, applicable State and County agencies to:

- Significantly reduce the speed limit on the entire park roadway and make the entire park roadway a no passing zone. It is hoped that this action, and other possible traffic calming initiatives, will improve safety and reduce noise and therefore enhance the ambiance of the park.
- Resurface the park roadway with pea gravel pressed into the macadam surface so as to make the roadway have a more "country" appearance as has been done in the restored area of Colonial Williamsburg.
- Increase the fine for speeding on the park roadway, and encourage an increased police presence to enforce the new regulations.
- Undertake a traffic safety study of the entire area. This study might look into a better alignment of the junction of Centerville Road and Greensprings Road, installation of left-turn lanes on John Tyler Highway at the aforementioned junction(s), and a reduction of the speed limit on John Tyler Highway as far west as Patriot's Colony.

BE IT FURTHER RESOLVED that the Planning Commission takes this opportunity to congratulate the National Park Service and the Friends of Green Spring for being good citizens of this County through their cooperation in open negotiations to resolve this situation amicably through compromise.

Comment

A. Joe Poole, III
Chair of the Planning Commission

ATTEST:

O. Marvin Sowers
Secretary

Adopted by the Planning Commission this 6th day of May 2002.

A.6.3 James City County Board of Supervisors Resolution - May 28, 2002

Comment

RESOLUTION

SUPPORT FOR MODIFICATIONS TO PORTION OF CENTERVILLE ROAD THROUGH

GREEN SPRING COLONIAL NATIONAL HISTORICAL PARK

WHEREAS, the National Park Service intends to develop the Green Spring Colonial National Historical Park ("The "Park") in order to open it for public visitation; and

WHEREAS, the design and operating characteristics of the portion of Centerville Road which bisects the Green Spring Colonial National Historical Park will detract from the historic character and ambiance of the Park; and

WHEREAS, the James City County Board of Supervisors supports the opening of the Green Spring Colonial National Historical Park for public visitation; and

WHEREAS, the cooperation of the Virginia Department of Transportation is essential to transform Centerville Road between Route 5 and Monticello Avenue into a road more conducive to park development and activities.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby directs staff to investigate the following with applicable State and County agencies and report back to the Board of Supervisors:

- Significantly reducing the speed limit and designating a "no passing zone"on the entire Park roadway, and implementing other traffic calming techniques as appropriate; and
- Increasing the fine for speeding on the Park roadway, and increasing a Virginia State Police presence to enforce the new regulations; and
- Resurfacing the Park roadway so as to have a more "parkway" appearance; and
- Undertaking a traffic safety study that addresses the alignment of the intersection of Centerville Road and Greensprings Road, installation of left-turn lanes on Route 5 at said intersection, and a reduction of the speed limit on Route 5 as far west as Patriot's Colony.

James G. Kennedy
Chairman, Board of Supervisors

SUPERVISOR	VOTE
MCGLENNON	AYE
BROWN	ABSENT
GOODSON	AYE
HARRISON	AYE
KENNEDY	AYE

ATTEST:

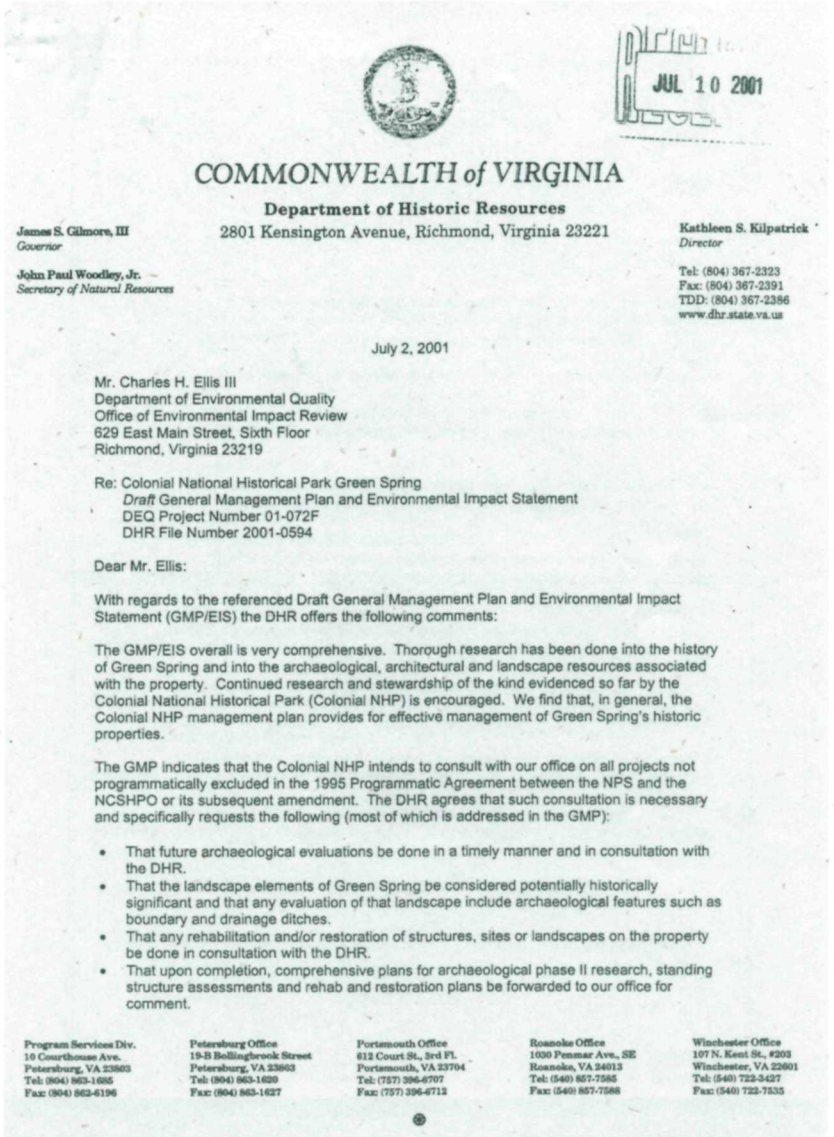
Sanford B. Wanner
Clerk to the Board

Adopted by the Board of Supervisors of James City County, Virginia, this 28th day of May, 2002.

TOTAL P.02

A.6.4 VA Dept. of Historic Resources Comments - NPS Response

Comment • VA Dept. of Historic Resources • July 2, 2001 *(page 1 of 2)*



JUL 10 2001

COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Kathleen S. Kilpatrick
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.state.va.us

July 2, 2001

Mr. Charles H. Ellis III
Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street, Sixth Floor
Richmond, Virginia 23219

Re: Colonial National Historical Park Green Spring
Draft General Management Plan and Environmental Impact Statement
DEQ Project Number 01-072F
DHR File Number 2001-0594

Dear Mr. Ellis:

With regards to the referenced Draft General Management Plan and Environmental Impact Statement (GMP/EIS) the DHR offers the following comments:

The GMP/EIS overall is very comprehensive. Thorough research has been done into the history of Green Spring and into the archaeological, architectural and landscape resources associated with the property. Continued research and stewardship of the kind evidenced so far by the Colonial National Historical Park (Colonial NHP) is encouraged. We find that, in general, the Colonial NHP management plan provides for effective management of Green Spring's historic properties.

The GMP indicates that the Colonial NHP intends to consult with our office on all projects not programmatically excluded in the 1995 Programmatic Agreement between the NPS and the NCSHPO or its subsequent amendment. The DHR agrees that such consultation is necessary and specifically requests the following (most of which is addressed in the GMP):

- That future archaeological evaluations be done in a timely manner and in consultation with the DHR.
- That the landscape elements of Green Spring be considered potentially historically significant and that any evaluation of that landscape include archaeological features such as boundary and drainage ditches.
- That any rehabilitation and/or restoration of structures, sites or landscapes on the property be done in consultation with the DHR.
- That upon completion, comprehensive plans for archaeological phase II research, standing structure assessments and rehab and restoration plans be forwarded to our office for comment.

Program Services Div.
10 Courthouse Ave.
Petersburg, VA 23803
Tel: (804) 863-1685
Fax: (804) 862-6196

Petersburg Office
19-B Bollingbrook Street
Petersburg, VA 23803
Tel: (804) 863-1620
Fax: (804) 863-1627

Portsmouth Office
612 Court St., 3rd Fl.
Portsmouth, VA 23704
Tel: (757) 396-6707
Fax: (757) 396-6712

Roanoke Office
1030 Penmar Ave., SE
Roanoke, VA 24013
Tel: (540) 857-7585
Fax: (540) 857-7588

Winchester Office
107 N. Kent St., #203
Winchester, VA 22601
Tel: (540) 722-3427
Fax: (540) 722-7535

Response *(page 1 of 2)*

The NPS has revised the Cultural Resources Compliance Chart (Tables 20 and 21 of this document) on p. 272 of the draft general management plan to reflect the VA DHR's request for additions to the list of potential actions and/or modifications to existing actions that could potentially affect cultural resources. We have added the development and completion of comprehensive plans for Phase II archeological research, standing structure assessments, and rehabilitation plans to the list of potential actions requiring Section 106 SHPO/ACHP consultation and/or review to determine any potential effects. We have included new information in the final plan on potential effects stemming from additional utilities excavation under Alternatives B and C, and the implementation of Alternative C, Stage One and subsequent removal and/or relocation of Stage One visitor facilities during the later implementation of Alternative C, Stage Two, in the event that Centerville Road is closed in the future. We have also noted that the revised Alternative C now eliminates the complete removal of Centerville Road. The final plan notes that Alternative C retains the road in some form as a throughway for emergency vehicles only and as a public evacuation route in the event of an emergency. The road would be closed to general through traffic. We have added descriptions of potential actions related to these revisions in the Consultation and Coordination section of this final plan, specifically the subsection on "Consultation with the Advisory Council on Historic Preservation and the Virginia Department of Historic Resources." Many actions associated with this plan are conceptual and speculative, and therefore where potential effects are little known, we have continued to note that "Park 106 advisors and SHPO review implementation plans and potential effects." We have reproduced the revised Section 106 compliance charts and this Comments and Responses section as attachments to a letter requesting your agency's concurrence on the compliance requirements for the proposed actions. We have noted in the final plan the circumstances which have some potential for adverse effects to historic structures, and landscape and archeological features (see particularly pp. 149-154, 173-188, and 263-267 of draft plan, and Errata section in the final plan referring to the same sections); however, the NPS would not be able to make a final finding of effect until implementation plans are developed with specific details regarding design and location of facilities and infrastructure. We would make the findings and determine if mitigation is needed for any adverse effects with the concurrence of your agency.

We concur that the landscape elements of Green Spring should be considered potentially historically significant and that any evaluation, including Section 110 evaluation for National Register eligibility, include features such as boundary/drainage ditches. In addition, in accordance with the 1995 Programmatic Agreement between the NPS and the NCSHPO and subsequent amendments, the NPS will consult with the VA DHR on future archeological evaluations and any rehabilitation of structures, sites or

Comment • VA Dept. of Historic Resources • July 2, 2001 *(page 2 of 2)*

I would like to reiterate that the DHR found the GMP/EIS to be comprehensive and enlightening. It was a pleasure to read such a thorough document. We look forward to working with the Colonial NHP on future projects. If there are any questions regarding these comments, please contact me at (804) 367-2323 ext. 140 or lrichards@dhr.state.va.us.

Sincerely,

Lily A. Richards
Archaeologist and Historian
Division of Resource Services and Review

Cc. Alec Gould, Superintendent, Colonial NHP

Response *(page 2 of 2)*

landscapes on the property. Reconstruction of historic structures and/or landscape features is not anticipated under any action alternative. Centerville Road may be altered or partially rehabilitated under Alternative C, in terms of design and/or materials, in order to provide for emergency access in a way that is compatible with Green Spring's historic setting; however, this landscape feature, while historic, probably does not date from the period of significance. We have made changes to Chapter 4 (Environmental Consequences) of the Draft GMPA/EIS that relate to your agency's comments. These changes can be found in the Errata section of this document, Chapter 4: Corrections and Revisions to Environmental Consequences, references to pp. 149-154, 173-188, and 263-267 of the draft plan. These changes reinforce the need for consultation with your agency prior to the further development of any plans for archeological Phase II research, standing structure and cultural landscape assessments, and rehabilitation plans; and prior to rehabilitation of any structures, sites or landscape features at Green Spring.

A.6.5 VA Dept. of Historic Resources Letter of Concurrance- NPS Response

Letter of Concurrance • VA Department of Historic Resources • Signed August 20, 2002 *(pages 1 and 2 of 4)*

AUG-20-2002 17:24 DEPT.HISTORIC RESOURCES 804 3672323 P.02/05

United States Department of the Interior

NATIONAL PARK SERVICE
Colonial National Historical Park
Post Office Box 210
Yorktown, Virginia 23690

H30

August 12, 2002

Dr. Ethel Eaton, Manager
Office of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, Virginia 23221

RE: Section 106 Compliance; Green Spring Unit of Colonial National Historical Park; Final General Management Plan Amendment/Abbreviated Environmental Impact Statement and Preliminary Assessment of Affect

Dear Dr. Eaton:

Thank you for your department's July 2, 2001 written comments on the Green Spring Draft General Management Plan Amendment/ Environmental Impact Statement (Green Spring DGMPA/DEIS) and your verbal comments on sections of the above referenced final plan in advance of its publication for the 30-day waiting period, which is required in accordance with 36 CFR 800.0, *Coordination with the National Environmental Policy Act (NEPA)*. Because Green Spring is listed on the National Register of Historic Places, we are submitting this letter for the concurrence and signature of the State Historic Preservation Officer of the Virginia Department of Historic Resources (VA DHR), per Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the regulations of the Advisory Council on Historic Preservation.

The State Historic Preservation Officer's signature on this letter will indicate the VA DHR's concurrence that the National Park Service has satisfactorily responded to your agency's comments on the Green Spring DGMPA/DEIS and fulfilled its consultation responsibilities for the planning phase of the proposed undertaking under 36 CFR 800.0., Section 106 of the NHPA and the 1995 Programmatic Agreement among the National Park

Service and the State Historic Preservation Officers. Your agency's comments on the draft plan have been substantively incorporated into the Green Spring Final General Management Plan/Abbreviated Environmental Impact Statement, in the Consultation and Coordination section, the Errata Sheet noting revisions to Chapters 3 and 4 of the Green Spring DGMPA/DEIS, and in the Comments and Responses section.

In addition to your agency's review of the Green Spring DGMPA/DEIS, the Section 106 Coordinator for Colonial National Historical Park and the project planner at the NPS Philadelphia Support Office respectively consulted with your office by phone on June 6, 2002 and June 12, 2002, regarding the revisions to the proposed undertaking made subsequent to publication of the draft plan. National Park Service staff described potential actions for Alternative B and Preferred Alternative C, and potential effects to cultural resources, including cumulative effects from Alternative B as a transitional phase to Preferred Alternative C. In addition, we have forwarded relevant sections of the Green Spring Final General Management Plan Amendment/ Abbreviated Environmental Impact Statement (Green Spring FGMPA/AFEIS) for your review. These sections include the following: the Consultation and Coordination and the Comments and Responses sections, in addition to sections of the Errata that are referenced in the Comments and Responses section. These sections specifically describe the scope of NPS consultations with your agency throughout the GMP planning process, your agency's comments on the Green Spring DGMPA/DEIS and the ways in which the National Park Service has responded to those comments and incorporated them into the final plan, the minor changes that have been made to Alternative B and the Preferred Alternative C subsequent to the publishing of the draft plan, and the potential actions associated with revised Alternatives B and C, along with additional consultation requirements related to those actions.

The Historic Preservation Officer's signature at the bottom of this letter will indicate VA DHR concurrence with the following:

1. The VA DHR concurs that the changes made to Alternative B, as a short-term transitional phase to Alternative C, and changes made to the Preferred Alternative C itself, are minor and would likely not involve effects to additional cultural resources and/or additional types of effects other

AUG-22-2002 11:13 COLONIAL NHP 757 898 3489 P.03/05

than those already described for the individual alternatives in the original DGMPA/DEIS.

2. The VA DHR agrees that every attempt has been made during the planning process to clearly explain historic properties and cultural resources that could be affected, the potential for adverse effects, and ways effects to cultural resources could be minimized and avoided.

3. The VA DHR agrees with the incremental approach to site development and management represented by Alternatives B and C, and with the preliminary Assessment of Potential Effect described in the draft and final plans.

4. The VA DHR agrees that the Green Spring DGMPA/DEIS and the Errata section in the FGMPA/AFEIS together contain a preliminary Assessment of Effect that the National Park Service is using as consultation under Section 106 of the National Historic Preservation Act, with the understanding that the National Park Service would consult with the Virginia Department of Historic Resources on a final Assessment of Effect once the proposed undertaking has been developed in a more specific and detailed design stage; cultural resources to be affected, if any, are known; and specific effects, if any, can be clearly determined.

5. The VA DHR considers the 1995 NPS Programmatic Agreement as sufficient guidance to address the program of actions NPS would undertake and the related type of Section 106 consultation that would be required, without the need for a specific Programmatic Agreement between the park and the Virginia Department of Historic Resources. Due to the long-term, incremental approach to plan implementation, individual projects would be more efficiently reviewed on a case-by-case basis.

We request your department's concurrence with this project at your earliest possible convenience. If you have any objections, please notify Ms. Jane M. Sundberg, Cultural Resource Management Specialist, as soon as possible. Ms. Sundberg can be reached at (757) 898-2415. If the VA DHR is in concurrence with all of the above, please address your response to Alec Gould, Superintendent, Colonial National Historical Park, P.O. Box 210, Yorktown, Virginia 23690.

You can expect to receive a copy of the Green Spring FGMPA/AFEIS in the coming months. We look forward to continued consultation with your agency during the design and implementation of the proposed undertaking.

Sincerely,

Alec Gould
Superintendent

Enclosures

STATE HISTORIC PRESERVATION OFFICER

Concur X
Do Not Concur

Signature

Ethel B Eaton
Ms. Kathleen Kilpatrick, State Historic Preservation Officer
Virginia Department of Historic Resources

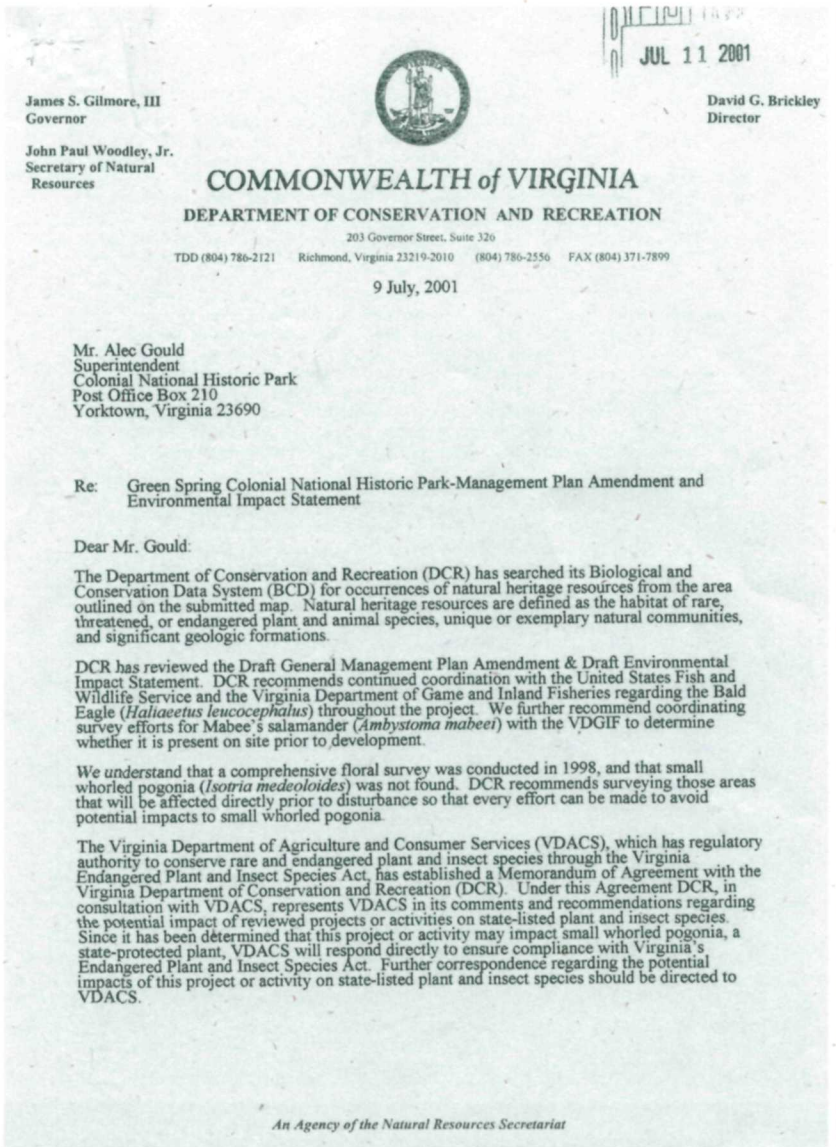
8-20-02
Date
2001-0594

cc: Ms. Lily Richards, Archeologist and Historian, Division of Resource Services and Review, Virginia Department of Historic Resources
Ms. Tina LeCoff, Section 106 Coordinator, National Park Service, Philadelphia Support Office
Ms. Kathy Schlegel, Project Manager, National Park Service, Philadelphia Support Office
Ms. Julia Bell, Project Planner, National Park Service, Philadelphia Support Office
Ms. Jane Sundberg, Cultural Resource Management Specialist, Colonial National Historical Park
Ms. Karen Rahm, Chief, Historical Interpretation and Preservation Division, Colonial National Historical Park
Dr. Andrew Veech, Archeologist, Colonial National Historical Park

TOTAL P.05

A.6.6 VA Dept. of Conservation and Recreation- NPS Response

Comment • VA Dept. of Conservation & Recreation • July 9 ,2001 *(page 1 of 2)*



JUL 11 2001

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

David G. Brickley
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

203 Governor Street, Suite 326

TDD (804) 786-2121 Richmond, Virginia 23219-2010 (804) 786-2556 FAX (804) 371-7899

9 July, 2001

Mr. Alec Gould
Superintendent
Colonial National Historic Park
Post Office Box 210
Yorktown, Virginia 23690

Re: Green Spring Colonial National Historic Park-Management Plan Amendment and Environmental Impact Statement

Dear Mr. Gould:

The Department of Conservation and Recreation (DCR) has searched its Biological and Conservation Data System (BCD) for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

DCR has reviewed the Draft General Management Plan Amendment & Draft Environmental Impact Statement. DCR recommends continued coordination with the United States Fish and Wildlife Service and the Virginia Department of Game and Inland Fisheries regarding the Bald Eagle (*Haliaeetus leucocephalus*) throughout the project. We further recommend coordinating survey efforts for Mabee's salamander (*Ambystoma mabeei*) with the VDGIF to determine whether it is present on site prior to development.

We understand that a comprehensive floral survey was conducted in 1998, and that small whorled pogonia (*Isotria medeoloides*) was not found. DCR recommends surveying those areas that will be affected directly prior to disturbance so that every effort can be made to avoid potential impacts to small whorled pogonia.

The Virginia Department of Agriculture and Consumer Services (VDACS), which has regulatory authority to conserve rare and endangered plant and insect species through the Virginia Endangered Plant and Insect Species Act, has established a Memorandum of Agreement with the Virginia Department of Conservation and Recreation (DCR). Under this Agreement DCR, in consultation with VDACS, represents VDACS in its comments and recommendations regarding the potential impact of reviewed projects or activities on state-listed plant and insect species. Since it has been determined that this project or activity may impact small whorled pogonia, a state-protected plant, VDACS will respond directly to ensure compliance with Virginia's Endangered Plant and Insect Species Act. Further correspondence regarding the potential impacts of this project or activity on state-listed plant and insect species should be directed to VDACS.

An Agency of the Natural Resources Secretariat

Response *(page 1 of 2)*

Consultations with the USFWS, VDGIF, and VDACS have indicated the presence of a federally listed threatened species-the bald eagle (Haliaeetus leucocephalus)-adjacent to the NPS Green Spring unit, and the potential presence on site of additional rare, threatened and endangered species, as outlined in several letters in Appendix 6 of the draft general management plan. A federally listed threatened plant species, the small whorled pogonia (Isotria Medeoloides), is known to have occurred on property adjacent to the NPS unit, and a state threatened faunal species, the Mabee's salamander (Ambystoma Mabeei) is known to occur on similar sites throughout the region. As stated in the draft general management plan (p. 273), the NPS "will continue to consult with the U.S. Fish and Wildlife Service regarding habitat requirements and management strategies for rare, threatened and endangered species" prior to the design and construction phase of any proposed actions. The NPS will develop and implement measures in consultation with the USFWS, VDGIF, and VDACS to ensure that protected federal and state listed species and their habitat will continue to be protected and enhanced, if possible, to the extent compatible with the park's mission. Although no substantive evidence has been found to indicate the presence of the Mabee's salamander at Green Spring, the NPS is aware that habitat for this species currently exists. As stated on p. 121 of the draft general management plan, "The NPS will cooperate with the VADGIF to conduct additional surveys to determine whether or not the species exists at Green Spring, prior to implementation of any action associated with this plan."

The NPS is also aware that small-whorled pogonia can remain dormant underground for several years before blooming and that it may have been overlooked during the 1998 floral inventory. On p. 158 of the draft general management plan, the NPS states that the park "would confirm the presence or absence of ..rare plant and animal populations known to have historically existed in the area..." We concur with VADCR that potential habitat for the small whorled pogonia should be re-surveyed in the area of potential impacts for the proposed project, prior to implementation. The NPS has emphasized throughout the plan that every effort would be undertaken to protect the habitat of rare, threatened and endangered species, should these be located at Green Spring, in accordance with Section 7 of the Endangered Species Act of 1973, as amended, and NPS Natural Resource Management Guidelines. This goal is broadly stated on p. 45 of the draft plan, under "Resource Management," which includes the following management prescription: "Sensitive habitats associated with federally or state listed rare, threatened, or endangered species are managed to preserve the viability of the species population." A related action is to "monitor, document, and protect critical habitat areas on a regular basis."

In the preparation of this draft plan, the NPS has consulted with the VDACS in identification of possible state-listed plant and insect species and their habitat at Green

Any absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks other natural heritage resources. DCR's Biological and Conservation Data System is constantly growing and revised. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

For appropriate application of erosion and sediment control and stormwater management measures on this project, be aware that federal agencies and their authorized agents conducting regulated land disturbing activities on private and public lands in the state must comply with the Virginia Erosion and Sediment Control Law and Regulations (VESCL&R), Virginia Stormwater Management Law and Regulations (VSWML&R), and applicable federal nonpoint source pollution mandates. Construction of buildings, roads, and on and off site spoil/borrow areas that disturb 2,500 square feet or more would be regulated. DCR is authorized by state statute to enter into cooperative agreements with federal agencies that delineate responsibilities for the development and implementation of erosion and sediment control (ESC) and stormwater management (SWM) plans to prevent degradation of property, water quality, and other natural resources. The federal agency is responsible for achieving project compliance through separate agreements/contracts with on site agents, regular field inspection, prompt enforcement action against non-compliant projects, and/or other mechanisms consistent with agency policy. Agencies are encouraged to contact the appropriate DCR Watershed Office to obtain an agreement, plan development or implementation assistance, or further technical or regulatory assistance. *[Reference: VESCL §10.1-567; VSWML §10.1-603.15]*

For your use in directing requests for assistance to the appropriate DCR office for consideration, a copy of the document titled, *DCR Urban Programs Contact Information,* is available at http://www.dcr.state.va.us/sw/e&s.htm.

DCR appreciates being given the opportunity to offer comments on project.

Sincerely,

Derral Jones/saw

Derral Jones
Planning Bureau Manager
/saw

cc: Eric Davis, USFWS
Ray Fernald, VDGIF
Keith Tignor, USFWS
Charles Ellis, III, DEQ-OEIR

Spring. Through the joint state review process, as evidenced in the July 9, 2001 letter from the VA DEQ, the VDACS indicated that the facilities contemplated under either of the action alternatives would not have adverse impacts on endangered plant or insect species. As indicated above, the VDACS would be included in future consultations prior to project implementation, including re-survey of potential small whorled pogonia habitat and potential impacts of this project on state-listed plant and insect species.

The NPS would develop a more detailed natural resource management plan that would tier off of the concepts embodied in the general management plan. The natural resource management plan would address the habitat management requirements of federal and state listed species, should these be found on site. NPS agrees that VA DCR's Biological and Conservation Data System should be consulted prior to project implementation for updated natural heritage information that will contribute to the development of the natural resources management plan.

The NPS has emphasized throughout the plan the need for coordination with the state and county government to implement stormwater management measures on site and to minimize adverse impacts to water quality from polluted run-off. Appropriate erosion and sedimentation controls would be implemented during construction and as part of park operations and management. Specific, detailed measures for achieving reductions in stormwater run-off and erosion are dependent on siting and design of park facilities and are beyond the scope of the general management plan; however, we appreciate your agency's offer of guidance in helping the NPS meet the requirements of the Virginia Erosion and Sediment Control Law and Regulations, Virginia Stormwater Management Law and Regulations, and all other applicable federal and state regulations that are meant to protect surface water quality. In the Errata section for the final plan (see references under Section 3.2 Statutory Requirements of Chapter 3 Affected Environment), we have noted the addition of the Virginia Erosion and Sediment Control Law and Regulations, and Virginia Stormwater Management Law in the list of state statutes that are applicable to the development of Green Spring unit.

A.6.7 VA Dept. of Transportation- NPS Response

Comment • VA Dept. of Transportation • July 13 ,2001

No Response Required

Date: 01/07/13 2:28 PM
Sender: "Deem; Angel N." <deem_an@vdot.state.va.us>
To: Greenspring
Priority: Normal
Receipt requested
Subject: Green Spring Comments

We have reviewed the Draft General Management Plan for the Green Spring unit of Colonial National Historical Park and provide the following comment:

> The subject project will have no impacts to existing or proposed transportation facilities.

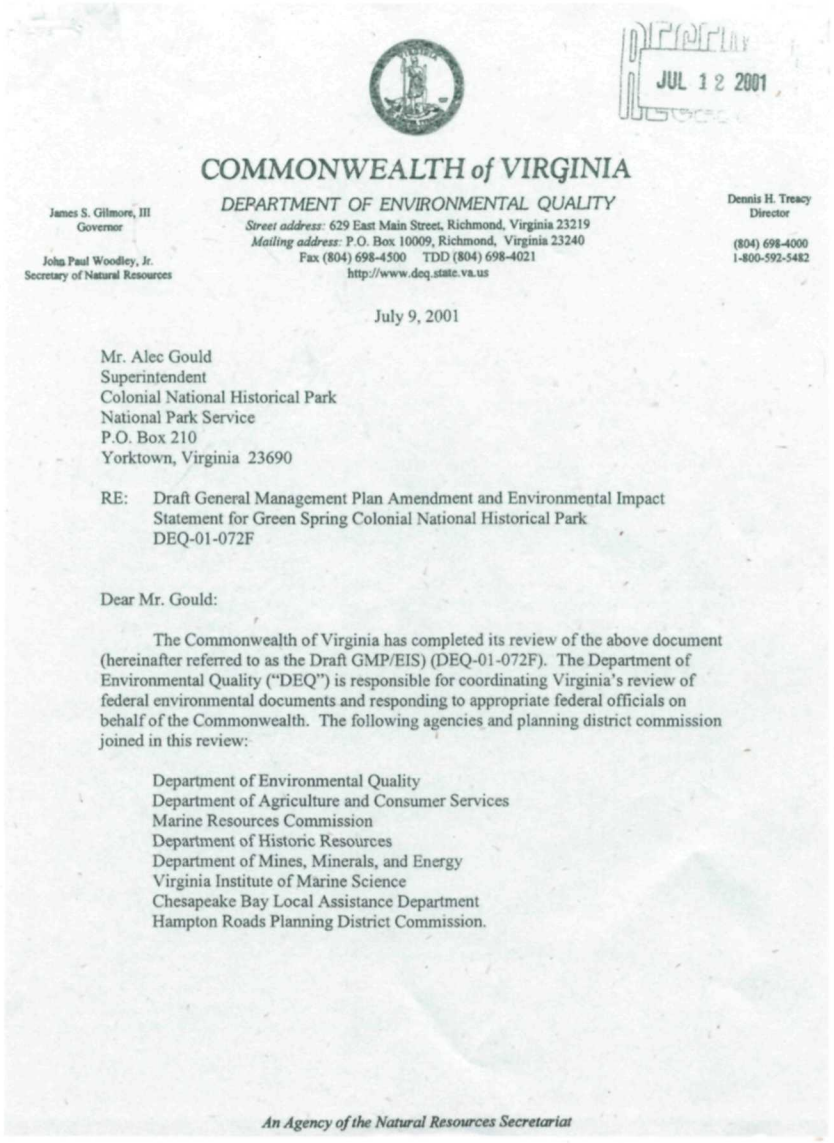
Thank you for the opportunity to comment.

Angel Deem
Virginia Department of Transportation
Environmental Division
1401 East Broad Street
Richmond, VA 23219

804.371.6756, phone
804.786.7401, fax
deem_an@vdot.state.va.us, email

A.6.8 VA Dept. of Environmental Quality- (Joint State Agency Comments) - NPS Response

Comment • VA Dept. of Environmental Quality • July 9 ,2001 *(page 1 of 11)*



JUL 12 2001

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

Dennis H. Treacy
Director

(804) 698-4000
1-800-592-5482

July 9, 2001

Mr. Alec Gould
Superintendent
Colonial National Historical Park
National Park Service
P.O. Box 210
Yorktown, Virginia 23690

RE: Draft General Management Plan Amendment and Environmental Impact Statement for Green Spring Colonial National Historical Park
DEQ-01-072F

Dear Mr. Gould:

The Commonwealth of Virginia has completed its review of the above document (hereinafter referred to as the Draft GMP/EIS) (DEQ-01-072F). The Department of Environmental Quality ("DEQ") is responsible for coordinating Virginia's review of federal environmental documents and responding to appropriate federal officials on behalf of the Commonwealth. The following agencies and planning district commission joined in this review:

Department of Environmental Quality
Department of Agriculture and Consumer Services
Marine Resources Commission
Department of Historic Resources
Department of Mines, Minerals, and Energy
Virginia Institute of Marine Science
Chesapeake Bay Local Assistance Department
Hampton Roads Planning District Commission.

An Agency of the Natural Resources Secretariat

Response *(page 1 of 11)*

p. 2-3

Wetlands and Water Quality

NPS would comply with all applicable federal and state laws and regulations, including Section 404 of the Clean Water Act and the VA Water Protection Permit system, in implementing this plan. Protection of wetlands and water resources at Green Spring is a high priority, as indicated throughout the draft general management plan. NPS agrees that wetlands should be avoided if at all possible, or minimized to the extent practicable, in the construction of facilities contemplated in the preferred alternative. While the specifics of siting and design of facilities is beyond the scope of the general management plan, the NPS recognizes the need to ascertain the extent and condition of jurisdictional and non-jurisdictional wetlands at Green Spring as a first step for development of a water resources management plan. In addition, USGS has proposed a water resources study for Green Spring that will provide the baseline inventorying and assessment of the condition of the wetlands, streams, and spring, including a characterization of water quality and age dating to determine flow source. Jurisdictional wetlands delineation, required by federal regulation, will be needed prior to the implementation phase so that impacts to wetlands and other water resources can be avoided to the extent feasible.

We concur with the VA DEQ that unavoidable wetland impacts would be mitigated in accordance with the conditions set by an applicable Section 404 permit and Virginia Water Protection Permit. It is the recommendation of the U.S. Army Corps of Engineers that, prior to wetlands delineation and implementation of the preferred alternative, the NPS should contact the Corps to perform a site visit, coordinate regarding the actual delineation and participate in pre-application consultation, and provide additional, project specific permitting information as needed. In addition, if future proposed facilities can not be sited to avoid wetlands, a Wetlands Statement of Findings would be prepared, as required by the NPS Director's Order 77.1, and required mitigation would be completed. P. 156 of the draft general management plan describes mitigation for impacts to water resources.

A

Comment • VA Dept. of Environmental Quality • July 9 ,2001 *(page 2 of 11)*

In addition, the following agencies and locality were invited to comment:

Department of Game and Inland Fisheries
Department of Conservation and Recreation
Department of Health
Department of Transportation
Department of Forestry
James City County.

Project Description

The National Park Service ("Park Service"), which administers the Green Spring Colonial National Historical Park in Jamestown ("Green Spring" or "the Park"), proposes to alter its management scheme for this 17th century plantation. The site, which encompasses 195.74 acres (Draft GMP/EIS, page 101), is presently managed at a minimal level, closed to visitors. Some 52 acres, or approximately 27% of this area, is palustrine forested wetlands. The croplands on the plantation are not managed as such by the Park Service (page 117). The plantation grounds are situated along State Route 5, west of Jamestown; Route 614 bisects the property (page 7).

One of the three alternatives discussed in the Draft GMP/EIS, Alternative A, would maintain the current management of this plantation. Alternative B would allow a low intensity of visitor use and provide for limited site improvements around a core archaeological area of interest in the western portion of the site. Alternative C, the preferred alternative, would continue archaeological research and make phased site developments based thereon, selectively re-introducing elements representative of a 17th century Tidewater plantation (Draft GMP/EIS, page v), and ultimately seeking to close State Route 614, which splits the eastern and western portions of the Park (page 40).

Environmental Impacts and Mitigation

1. Wetlands and Water Quality. Alternative C would give rise to greater effects upon the Park's wetlands than Alternative B. Either of these "action alternatives" may require a Virginia Water Protection Permit for construction activities. Additional details appear in "Regulatory and Coordination Needs," item 1, below.

Response *(page 2 of 11)*

p. 3-4

Air Quality Impacts

Thank you for bringing to our attention the VA Regulations for the Control and Abatement of Air Pollution as they apply to ozone maintenance areas. We have noted this information in the Errata section within this final plan (see references under Section 3.2 Statutory Requirements of Chapter 3 Affected Environment). As we have stated in the draft general management plan, the NPS anticipates that any effects on air quality would be localized and temporary, and would not exceed state or federal air quality standards (p. 162 of draft plan). We do not anticipate the construction of paved roads and paths that would require an asphalt surface. We have also noted that, in the unlikely event that asphalt should be used on the visitor parking lot, or potential administrative parking lot in the northeast of the site, VOCs would enter the air during the paving period; however, the NPS would explore the use of other surfaces that would not generate such emissions prior to plan implementation.

In general, the specific suggestions your agency has offered on controlling VOC emissions from asphalt surfaces and controlling fugitive dust emissions for construction are beyond the scope of the general management plan, which is overarching and conceptual in nature. Nonetheless, we appreciate your agency's suggestions on minimizing impacts to air quality. These detailed suggestions will be considered by the park staff as they undertake implementation of this plan and in subsequent implementation plans. The NPS would comply with the requirements of the VA Regulations for the Control and Abatement of Air Pollution, and other federal and state laws and policies encouraging the reduction of NOx and VOC emissions to improve air quality.

VA DEQ comments noted regarding permitting from the DEQ Tidewater Regional Office for open burning of land-clearing debris or construction debris.

The Park Service, in developing the facilities contemplated in the action alternatives, should plan to avoid wetland areas if at all possible. If avoidance of wetlands is not possible, the Park Service should minimize wetland impacts to the maximum extent practicable. Unavoidable wetland impacts should be mitigated in accordance with the conditions set by an applicable Section 404 permit and Virginia Water Protection Permit dictate otherwise.

In general, we encourage the use of erosion and sediment controls, adherence to stormwater management requirements, and careful construction practices to minimize temporary impacts to state waters during construction.

2. Air Quality Impacts. The Park is located in an ozone maintenance area. Accordingly, in any project or alternative, all reasonable precautions should be taken to limit emissions of volatile organic compounds (VOCs) or of oxides of nitrogen (NO_x). A second precaution, stemming from 9 VAC 5-40-5490 in the Regulations, is that there are some limitations on the use of "cut-back" asphalt (liquefied asphalt cement, blended with petroleum solvents) that may apply in the construction of the roads or paths associated with the project. The asphalt must be "emulsified" (predominantly cement and water with a small amount of emulsifying agent) except when specified circumstances apply. Moreover, there are time-of-year restrictions on its use during the months of April through October in VOC emission control areas.

We have several suggestions, stemming from the Regulations for the Control and Abatement of Air Pollution, for controlling fugitive dust resulting from construction activities which may be undertaken under the action alternatives. These include:

- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
- Covering of open equipment for conveying materials;
- Washing down construction vehicles; and
- Providing construction entrances.

(See the Regulations for the Control and Abatement of Air Pollution, 9 VAC 5-50-90.)

For additional air quality protection, we recommend that the Park Service use construction equipment in well-ventilated areas and maintain the construction equipment

p. 4

Historic and Archeological Resources

VA DEQ comments on VA DHR recommendations noted. The VA DHR has reviewed and commented on the draft general management plan in a separate letter dated July 2, 2001. The NPS has addressed the VA DHR recommendations contained in this letter, and concurs with the recommendations. The NPS response to VA DHR comments is located previously within this section. In addition, the NPS has revised the Consultation and Coordination section of the draft plan in this final plan to include VA DHR concerns.

Solid and Hazardous Wastes

The design of facilities, installation of utilities and use of water, sewer and electric supplies would be guided by the principles of sustainable design, in compliance with NPS policies and Executive Order 12759 on energy conservation, and Executive Order 12873, "Federal Acquisition, Recycling and Waste Prevention." Green Spring's facilities would be designed to reduce dependence on non-renewable resources, minimize waste materials, and use alternative energy sources to the extent possible. Environmentally responsible building materials would be used, including recyclables. The NPS is committed to reducing solid wastes at the source if at all possible, reusing solids, and recycling them. It is not anticipated that visitor activities, archeological research, or most park operations at Green Spring would generate hazardous wastes. Use of materials generating VOCs-such as oil-based paints and varnishes-would be minimized. The soils at Green Spring are not known to be contaminated.

Wildlife Resources

VA DEQ comments regarding the VADGIF's responsibilities are noted.

While the VADGIF did not respond specifically to the VA DEQ request for comments, the NPS has continued to coordinate with VADGIF throughout the planning process to assess the potential presence of rare, threatened and endangered species and their habitat at Green Spring and to take steps to ensure that, should they be found on site in the future, potential adverse impacts to those species and their habitats are avoided, reduced or compensated. The NPS utilized the VADGIF's Wildlife Information Online Service to conduct a search for rare, threatened and endangered species within a 3-mile radius of Green Spring. The results of that search are con-

Comment • VA Dept. of Environmental Quality • July 9 ,2001 *(page 4 of 11)*

properly, along with turning it off when it is not in use.

Open burning of land-clearing debris, or construction debris, associated with either of the action alternatives, may require a permit from the DEQ Tidewater Regional Office. See "Regulatory and Coordination Needs," item 2, below.

3. Historic and Archaeological Resources. According to the Department of Historic Resources (DHR), the Draft GMP/EIS provides for effective management of Green Spring's historic properties. The DHR recommends that the landscape elements of Green Spring be considered potentially historically significant, and that any evaluation of the landscape include archaeological features such as boundary and drainage ditches. Future archaeological investigations should be accomplished in a timely manner, and in consultation with the DHR (see "Regulatory and Consultation Needs," item 4, below).

4. Solid and Hazardous Wastes. All solid wastes generated by this project should be reduced at the source, re-used, or recycled. Any hazardous wastes should be minimized. Both kinds of waste must be handled in accordance with all applicable federal, state, and local regulations. In the event contaminated soil is found or suspected, the Park Service should contact the DEQ Tidewater Regional Office (telephone (757) 518-2000).

5. Wildlife Resources. The Department of Game and Inland Fisheries (DGIF) did not respond to our request for comments. Under title 29.1 of the Code of Virginia, DGIF is the primary wildlife and freshwater fish management agency in the Commonwealth. The DGIF has full law enforcement and regulatory jurisdiction over all wildlife resources, inclusive of state and federally endangered or threatened species, but excluding listed insects. The agency maintains a comprehensive system of databases of wildlife resources that is available through the Agency's site at www.dgif.state.va.us, in the "Wildlife" section from the link to "Wildlife Information Online". The DGIF determines likely impacts on fish and wildlife resources and habitats, and recommends appropriate measures to avoid, reduce or compensate for those impacts. For more information on the Wildlife Information Online Service, contact Kathy Quindlen at (804) 367-9717.

6. Natural Heritage Resources. Natural heritage resources are defined as the habitat of rare, threatened, or endangered animal and plant species, unique or exemplary natural communities, and significant geologic communities. The Department of Conservation and Recreation's Division of Natural Heritage, which maintains a data base

Response *(page 4 of 11)*

tained in a letter from VADGIF dated February 10, 1998 (see p. 312-313 of draft general management plan). No RTE species have been located at Green Spring, although several have been documented historically on nearby properties. The NPS has coordinated with the VADGIF and the USFWS in the inventorying and monitoring of an active bald eagle nest (Haliaeetus leucocephalus) adjacent to Green Spring, and will continue to work with these agencies in developing appropriate management strategies to protect this federally listed threatened species. In addition, we have cooperated with the VADGIF in inventorying potential habitat for the Mabee's salamander (Ambystoma mabeii). While the Mabee's salamander has not been confirmed on site, conditions for this species exist on site and it has been located at other similar sites throughout the region. The NPS has committed to re-inventorying potential Mabee's habitat prior to plan implementation to confirm the species' presence or absence on site. In addition, the NPS has reviewed general recommendations for managing Abystoma species and their habitat, and will consult with the VADGIF on more site-specific recommendations should salamander populations be discovered in the future. Consultations with the VADGIF are indicated on p. 274 of the draft general management plan.

p. 4-5

Natural Heritage Resources

The NPS has continued to coordinate with the VA DCR Division of Natural Heritage throughout the planning process to assess the potential presence of rare, threatened and endangered species and their habitat at Green Spring and to take steps to ensure that, should they be found on site in the future, potential adverse impacts to those species and their habitats are avoided, reduced or compensated. Green Spring is located within the Powhatan Creek Natural Area, a regionally important natural heritage resource, and the NPS is committed to protecting the habitat at Green Spring associated with this resource.

The VA DCR was contacted by phone June 19, 1999 to request information on the management of potential habitat for rare species in the Powhatan Creek conservation zone. Although the 1998/9 Green Spring floral inventory did not detect the presence of the small-whorled pogonia (Isotria medeoloides), a federally threatened species, or two state species of concern-trilliums, the VA DCR recommended a re-survey of potential habitat prior to implementation of this plan. The NPS concurs with this recommendation.

The NPS will continue to consult with the VA DCR regarding habitat requirements and management strategies for federal or state listed rare, threatened and endangered species or state species of concern prior to the design and construction phase of any proposed actions. The NPS will develop and implement measures in consultation with all appropriate state agencies to ensure that protected federal and state listed species and their habitats will not be affected.

Mr. Alec Gould
National Park Service
July 9, 2001
Page 5

of natural heritage resources in the Commonwealth, did not provide comments for this review.

The Department of Agriculture and Consumer Services, which has responsibility for endangered plant and insect species, indicates that the facilities contemplated under either of the action alternatives will not give rise to adverse impacts upon endangered plant or insect species.

7. Chesapeake Bay Preservation Areas. The Draft GMP/EIS states correctly that all lands within James City County are designated as Chesapeake Bay Preservation Areas (pages 112-113). Accordingly, the lands of the Park, which is within the County, are subject to the General Performance Criteria of the Chesapeake Bay Preservation Area Designation and Management Regulations (9 VAC 10-20-10 et seq.). The Criteria include those for minimizing impervious cover and land disturbance, preserving indigenous vegetation, and providing stormwater management.

The Draft GMP/EIS indicates that the Park Service will, pursuant to the 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan, consider watershed protection, stewardship of natural resources, nutrient and toxics prevention and reduction, and sustainability in its resources management and interpretation activities (page 113). The Chesapeake Bay Local Assistance Department adds the reminder that under the Unified Plan, federal agencies also committed to construction design that (a) minimizes natural area loss on new and rehabilitated federal facilities, (b) adopts low-impact development and best management technologies for stormwater, sediment, and erosion control, and reduces impervious surfaces; and (c) considers the Conservation Landscaping and Bay-Scapes Guide for Federal Managers.

8. Scenic Rivers. This project will not affect existing or potential State Scenic Rivers or rivers on the National Park Service's Nationwide Inventory of rivers potentially eligible for National Wild and Scenic River designation.

9. Virginia Byways. According to the Draft GMP/EIS, the southern boundary of the Green Spring property borders State Route 5 (John Tyler Memorial Highway) (page 7 and Figure 1, page 23, inter alia). Route 5 is a Virginia Byway as it passes the Park. The Department of Conservation and Recreation is likely to recommend that the Park Service maintain at least 100 feet of vegetated buffers along Route 5 when it develops facilities pursuant to either of the action alternatives. In addition, these developments should accommodate possible future development of a "capital to capital" (Jamestown to Richmond) bicycle trail. For information on these matters, the Park Service may contact the Department of Conservation and Recreation (Richard Gibbons, telephone (804) 786-4132).

5

p. 5

The comments of the VA Dept. of Agriculture and Consumer Services (VDACS) are noted.

Consultation with the VADCS and other state natural resource protection agencies has occurred throughout the planning process and is noted on p. 274 of the draft general management plan. The agency confirmed by letter dated March 9, 1999 that no plants listed in the 1998/99 floral survey for Green Spring were state listed as threatened or endangered, although the agency did confirm the presence of the Virginia least trillium (Trillium pusillum var virginianum), a state species of concern, near the site.

Chesapeake Bay Preservation Areas

As stated in the draft general management plan, the NPS will comply with all applicable federal and state laws and regulations, including the Chesapeake Bay Preservation Act (VR 173-02-01). The Green Spring unit is of concern because it is located within a Resource Management Area (RMA), which includes environmentally sensitive lands such as floodplains, intermittent streams, steep slopes, highly erodible and permeable soils, and wet soils/wetlands. These lands play a significant role in protecting water quality within the Chesapeake Bay watershed. Inappropriate development in these areas can potentially cause adverse impacts to water quality, and therefor James City County has established performance criteria to guide development, providing for the protection of water quality through land management techniques. The NPS is aware that Green Spring, which is located within the county, would be subject to the General Performance Criteria of the Chesapeake Bay Preservation Act/Chesapeake Bay Preservation Area Designation and Management Regulations (9VAC 10-20-10 et seq.). Each of the action alternatives emphasizes minimizing impervious cover and land disturbance, preserving native vegetation, and providing stormwater runoff controls.

Likewise, the NPS is bound by the 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan and policies of the 1999 Chesapeake Bay Riparian Buffer Plan to evaluate impacts of proposed actions on riparian areas and consider alternative landscape treatments that incorporate protection of watersheds and their associated ecological processes. Watershed protection, stewardship of natural resources, nutrient and toxics prevention and reduction, and sustainability of development and operations are components addressed in each action alternative.

Comment • VA Dept. of Environmental Quality • July 9 ,2001 *(page 6 of 11)*

10. Pesticides and Herbicides. The use of herbicides or pesticides during construction or for landscape maintenance, if these are used at all, should be in accordance with the principles of Integrated Pest Management. The least toxic pesticides available to control the target species should be used. For more information on this subject, please contact the Department of Agriculture and Consumer Services (telephone (804) 786-3501).

11. Pollution Prevention. We have several pollution prevention recommendations which may be helpful in constructing or operating the facilities contemplated under Alternative B or Alternative C:

- Consider environmental attributes when purchasing materials. For example, the extent of recycled material content, toxicity level, and amount of packaging should be considered.
- Consider contractors' commitments to the environment in choosing contractors. Also, specifications regarding raw materials selection and construction practices can be included in contract documents and requests for proposals.
- Choose sustainable practices and materials for construction and design. These could include integrated pest management in landscaping (see item 7 above), among other things.

For more information or technical assistance, the Park Service may contact DEQ's Office of Pollution Prevention (Tom Griffin, telephone (804) 698-4545).

12. Energy Conservation. We recommend that the facilities to be provided under Alternative B or Alternative C be planned and designed to comply with state and federal guidelines and industry standards for energy conservation and efficiency. For example, maximizing the use of the following can enhance energy efficiency of this project:

- thermally efficient building shell components (roof, wall, floor, insulation);

- high-efficiency ventilation as well as heating and air-conditioning systems;

- energy-efficient office and data processing equipment; and

- energy-efficient lighting.

Response *(page 6 of 11)*

While construction design is beyond the scope of the general management plan, which is by nature overarching and conceptual, we appreciate the recommendations of the VA Chesapeake Bay Local Assistance Dept. to minimize impacts to sensitive water resources. The guidelines embodied in the Unified Plan will be addressed by the park staff as they undertake implementation of this plan and in subsequent implementation plans.

Scenic Rivers

VA DEQ comments noted.

Virginia Byways

Historic Route 5 was designated a Virginia Scenic Byway in 1976 because of its historical and cultural significance and its rural, country character. Qualities that should be preserved include the curvilinear, narrow alignment, which follows an historic Indian trail; the largely intact canopy consisting of large, mature trees along many sections of the road; and the rural aesthetic of the route, which includes vistas of agricultural lands and open space as well as the river bottomlands.

Currently, there is a forested buffer of approximately 1,200 feet along the southern boundary of Green Spring adjacent to Route 5, between Route 5 and the Colonial fuel pipeline right-of-way. The "No Action" Alternative does not propose any reduction in the existing forest buffer along Route 5. Alternative B does not propose specific modifications to the existing forest buffer, although at some future date it may become necessary to remove some trees at the Centerville Road-Route 5 intersection. Modifications to this intersection may be deemed necessary to promote safe and efficient traffic flow into Green Spring, and to allow safe bicycle access to the site. Alternative C, the preferred alternative, would also advocate safety enhancements to the Centerville Road-Route 5 intersection. In addition, Alternative C proposes selective tree removal along the historic entry trace that stretches from north to south in between the Berkeley manor site and Route 5. Because of the narrow width, less than 15 feet; length of 1,200 feet; and grade change into the site, this selective clearing would not visually expose proposed development at Green Spring. The NPS would also make every effort to maintain the tree canopy over the historic entry trace and preserve large, mature deciduous trees that are one of the most distinctive components of Route 5. It is likely that low-growing native species would be utilized to protect the historic road trace and afford visitors a view of the manor site from the trace. Prior to implementation of the preferred alternative, the NPS would work with the VA DCR to establish appropriate design of the buffer for the entry road trace in order to preserve the qualities for which Route 5 was designated a Scenic Byway.

For more information on this topic, please contact the Department of Mines, Minerals, and Energy (Gene Rader, telephone (804) 951-6358).

Regulatory and Coordination Needs

1. Water Resources Permitting. Once an alternative is chosen and work is planned, the wetlands in or bordering the Park should be delineated, and the delineation should be confirmed by the Army Corps of Engineers, Norfolk District (Bob Hume, Permits Manager, Regulatory Branch, telephone (757) 441-7657). Assuming that wetlands are likely to be affected by the project or projects, the Park Service should then file a Joint Federal-State Permit Application (JPA) with the Marine Resources Commission (P.O. Box 756, Newport News, 23607). Wetland impact avoidance and minimization efforts need to be documented in the JPA. The Marine Resources Commission distributes completed JPAs to the Corps of Engineers and the DEQ Tidewater Regional Office for permit processing. Questions on issues relating to the Virginia Water Protection Permit may be addressed to the DEQ Tidewater Regional Office (Sheri Kattan, telephone (757) 518-2156).

2. Air Quality Regulation. If open burning is contemplated for any reason, we recommend that the Park Service contact the DEQ Tidewater Regional Office (Jane Workman, Air Permits Manager, telephone (757) 518-2112) to determine whether an open burning permit must be applied for, and to obtain necessary permit application forms.

The same Office may be contacted in case the Park Service constructs a visitor center or other building, and plans to install fuel-burning equipment. In this case, a new source review permit will be required.

3. Erosion and Sediment Control; Stormwater Management. Land development projects, such as the parking areas and visitor contact station contemplated in Alternative C (Draft GMP/EIS, page 60), are likely to require Erosion and Sediment Control Plans for land disturbance of 2,500 square feet or more in a Chesapeake Bay Resource Management Area. If land disturbance equals or exceeds one acre for a given project, or series of projects, then a Stormwater Management Plan would be required, as well. Technical assistance regarding both these requirements is available from the Department of Conservation's York Watershed Office (Darryl Glover, telephone (804) 443-6752).

For reference, the Erosion and Sediment Control Plan requirement stems from the Virginia Erosion and Sediment Control Law (specifically *Virginia Code* sections

Each action alternative promotes cooperation with VDOT and James City County in the development of the regional trails system, including the Capital to Capital Bikeway. The NPS is supportive of such alternative means of transportation. Bikeways can help alleviate vehicular congestion on local roads and provide opportunities for slower-paced travel along scenic roads that connect cultural attractions.

It is the NPS understanding that the preferred alternative for the Capital to Capital bike trail endorsed by VDOT's Community Advisory Committee includes a separate multi-use path along the south side of Route 5 from the Chickahominy River to the Greensprings Road area in James City County, with a path connection to Jamestown. Furthermore, it is the NPS understanding that a preferred path location for the connection between Route 5 and Jamestown has not been selected. The NPS would support a bike path along the south side of Route 5 below Green Spring, as a separate facility would lessen the possibility of bike-car accidents and provide more desirable riding conditions; however, bicycle access to Green Spring on the north side of the road is currently problematic. There is no signal at the Centerville Road/Route 5 intersection, and the close proximity of the Greensprings Road/Route 5 intersection can cause queuing and congestion problems. In addition, mature trees are located close to the edge of the paved roadway on the north side of Route 5 and may need to be removed in order to accommodate the bikeway, an action which would be incompatible with preservation goals associated with the Scenic Byway designation. While NPS supports a bike trail to access Green Spring, the agency does not support a bike trail through Green Spring, as closure of Centerville Road is a future goal of the Preferred Alternative. Even while Centerville Road remains open, there is no shoulder along Centerville Road, and the narrow roadway can not accommodate bikes or pedestrians with automobiles safely. Widening Centerville Road through the park would be inconsistent with preservation goals for the site.

While current roadway conditions along Route 5 and Centerville Road make bicycling in this area somewhat unsafe, the NPS recognizes the importance of the regional trails system to local residents and visitors and the opportunities for making the area safer for bicyclists. The NPS will work with the county and VDOT to resolve several issues related to bike access for Green Spring, including managing site access to provide for the security and conservation of cultural resources and safety of the cycling public. Potential impacts to bike/pedestrian access, and possible mitigation, under each of the NPS alternatives is described on pages 257-259 in the draft general management plan.

10.1-560 and 10.1-564), and the Erosion and Sediment Control Regulations (4 VAC 50-30-30 et seq.). Similarly, the Stormwater Management Plan mentioned above may be required by the Virginia Stormwater Management Law (*Virginia Code* section 10.1-603.5) and the Stormwater Management Regulations (4 VAC 3-20-210 et seq.).

4. Historic and Archaeological Resources Coordination. The Draft GMP/EIS satisfactorily indicates the intention of the Park Service to coordinate effectively with the Department of Historic Resources (DHR) (pages 175-188, 271). However, the DHR stresses the following areas requiring close coordination:

- Rehabilitation and/or restoration of structures, sites, or landscapes on the Park property should be accomplished in consultation with DHR;
- Upon completion, comprehensive plans for archaeological Phase II research, standing structure assessments, and rehabilitation and restoration plans should be forwarded to DHR for review and comment;
- As mentioned above, future archaeological investigations should be accomplished in a timely manner and in consultation with DHR.

Questions on these matters may be addressed to DHR (Lily Richards, telephone (804) 367-2323, extension 140).

5. Federal Consistency under the Coastal Zone Management Act. The Virginia Coastal Resources Management Program (VCP) is comprised of a network of programs administered by several agencies. In order to be consistent with the VCP, the Park Service must obtain all the applicable permits and approvals listed under, and conduct its activities in accordance with, the Enforceable Programs of the VCP (enclosed) prior to commencing the projects contemplated in either of the action alternatives. This mandate applies to activities affecting Virginia's coastal uses or coastal resources, pursuant to section 307(c)(1) of the Coastal Zone Management Act of 1972, as amended (16 USC sections 1451 et seq., and the Federal Consistency Regulations, 15 CFR Part 930 (Federal Register, December 8, 2000, pages 77124-77175).

It will be necessary, when an individual project is planned under Alternative B or Alternative C, for the Park Service to analyze the project in terms of the Enforceable Programs of the VCP and make a Consistency Determination pursuant to Subpart C ("Consistency for Federal Agency Activities") of 15 CFR Part 930. For questions relating to this requirement, the Park Service may contact the Department of Environmental Quality's Office of Environmental Impact Review (Charles Ellis, telephone (804) 698-4488).

p. 6

Pesticides and Herbicides

The NPS does not anticipate the use of herbicides and pesticides under the "No Action" Alternative. Minimal use of herbicides is envisioned under Alternative B, primarily for the control of aggressive, invasive plants. Herbicides would be entirely prohibited in areas adjacent to sensitive natural resources such as the vernal pond. The potential for contamination of sensitive natural ecosystems would be potentially greater under Alternative C, due to the potential need to apply pesticides and fertilizers on a heavily managed landscape, including croplands. For the selected alternative, the NPS would identify those areas where use of pesticides and herbicides should be avoided entirely, and those areas where their limited use may be allowed, in accordance with NPS policies on Integrated Pest Management. Park staff would be happy to share information on this subject with the VA Dept. of Agriculture and Consumer Services, as the NPS proceeds into the design and construction phase of the project.

Pollution Prevention

The VA DEQ has presented several useful suggestions for reducing pollution during the design and construction phase of the project. Although such specific, detailed suggestions are beyond the scope of this general management plan, which is by nature conceptual and overarching, the NPS is committed to the prevention of pollution at its source, if possible, and minimizing the production of wastes through reuse and recycling of materials, as well as the use of sustainable landscape practices. We appreciate your offer of technical assistance and will consider your suggestions as part of the implementation of this plan and future plans.

Energy Conservation

While energy conservation measures for specific facilities is a site-specific issue and of more detail than can be included in a general management plan, the NPS agrees this is an important issue. The design of facilities, installation of utilities and use of water, sewer and electric supplies would be guided by the principles of sustainable design, in compliance with NPS policies and Executive Order 12759 on energy conservation, and Executive Order 12873, "Federal Acquisition, Recycling and Waste Prevention." Green Spring's facilities would be designed to reduce dependence on non-renewable resources, minimize waste materials, and use alternative energy

Comment • VA Dept. of Environmental Quality • July 9 ,2001 *(page 9 of 11)*

6. Local Coordination. We recommend that the Park Service work with James City County to address the County's concern that Route 614 would be closed to through traffic under the Preferred Alternative (see GMP/EIS, page 55). The contact person is Marvin Sowers, Planning Director, telephone (757) 253-6685.

Thank you for the opportunity to review this document. We look forward to reviewing the final GMP/EIS.

Sincerely,

Michael P. Murphy
Director
Division of Environmental Enhancement

Enclosures

cc: Douglas G. Wetmore, CBLAD
Lily A. Richards, DHR
Derral Jones, DCR
Wendy Kedzierski, DEQ-VWPP
Sheryl A. Kattan, DEQ-TRO
James P. Ponticello, DEQ-DAPC
Arthur Kapell, DEQ-DWPC
Ben Stagg, MRC
Keith R. Tignor, DACS
Eugene K. Rader, DMME
Thomas A. Barnard, Jr., VIMS
Raymond T. Fernald, DGIF
Alan D. Weber, VDH
J. Michael Foreman, DOF
Arthur L. Collins, Hampton Roads PDC
Sanford B. Wanner, James City County
Christopher Collins, VDOT
Jane A. Workman, DEQ-TRO
J. Robert Hume, Corps of Engineers

Response *(page 9 of 11)*

sources to the extent possible. As described on pp. 174-175 and pp. 263-267 of the draft general management plan, the NPS is required to describe proposed actions in terms of the objectives of the National Environmental Policy Act to maintain and enhance the long-term productivity of the environment. The NPS is committed to energy conservation and would comply with all applicable federal and state regulations. The NPS appreciates the suggestions offered by the VA Dept. of Mines, Minerals, and Energy. Park staff will consider these suggestions as part of project implementation.

p. 7

"Regulatory and Coordination Needs" relates mainly to permitting requirements for land development and construction of facilities. Design, siting and construction of specific facilities and land development activities are not addressed within the general management plan, which is conceptual in nature, but in subsequent implementation plans. Once an alternative is selected and work is planned, the NPS would consult with the appropriate state agencies to ensure compliance with all applicable laws relating to water resources protection, air quality regulation, erosion and sediment control, and stormwater management. We have noted in the Errata section (see Section 3.2 Statutory Requirements for Chapter 3 Affected Environment) additional statutes of the Commonwealth of Virginia that would be considered in the implementation of the Preferred Alternative at Green Spring.

p. 8

VA DEQ comments on VA DHR recommendations noted. The VA DHR has reviewed and commented on the draft general management plan in a separate letter dated July 2, 2001. The NPS has addressed the VA DHR recommendations contained in this letter, and concurs with the recommendations. The NPS will continue to coordinate closely with the VA DHR as plan implementation proceeds, particularly in the areas noted.

Federal Consistency under the Coastal Zone Management Act

Green Spring lies within Virginia's designated "coastal zone," which includes 29 counties, 15 cities, and 43 towns in Tidewater Virginia as well all of the waters therein, and out to, the three mile Territorial Sea boundary, including all of Virginia's Atlantic coast watershed as well as parts of the Chesapeake Bay and Albemarle-Pamlico Sound watersheds. Thus any activities at Green Spring affecting Virginia's

A

Comment • VA Dept. of Environmental Quality • July 9 ,2001 *(page 10 of 11)*

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

Dennis H. Treacy
Director

(804) 698-4000
1-800-592-5482

Attachment 1

Enforceable Regulatory Programs comprising Virginia's Coastal Resources Management Program (VCP)

a. Fisheries Management - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC); Virginia Code §28.2-200 to §28.2-713 and the Department of Game and Inland Fisheries (DGIF); Virginia Code §29.1-100 to §29.1-570.

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, DGIF, and Virginia Department of Agriculture Consumer Services (VDACS) share enforcement responsibilities; Virginia Code §3.1-249.59 to §3.1-249.62.

b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Marine Resources Commission; Virginia Code §28.2-1200 to §28.2-1213.

c. Wetlands Management - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.

(1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code §28.2 -1301 through §28.2 -1320.

(2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands --both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

An Agency of the Natural Resources Secretariat

Response *(page 10 of 11)*

coastal uses or coastal resources would be subject to the review and approval of state environmental agencies as part of the Virginia Coastal Resources Management Program, established in 1986 to protect and manage the Virginia coastal zone. The Coastal Zone Management Act and Program, and Virginia Coastal Resources Management Program (VCP) were unintentionally excluded from the listing of statutory requirements on pp. 96-98 of the draft plan. We have noted these regulations within the Errata section of this final plan, within Section 3.2 Statutory Requirements, Chapter 3 Affected Environment.

Once the proposed plan is approved, and the requirements for design and siting of facilities is more clearly understood, the NPS would coordinate with the VA DEQ to analyze the project in terms of the requirements of the Virginia Coastal Resources Management Program (VCP) and make a Consistency Determination (Subpart C, 15 CFR Part 930, "Consistency for Federal Agency Activities"). The NPS would obtain all applicable permits and approvals listed under the enclosed Enforceable Programs of the VCP prior to plan implementation and conduct activities at Green Spring accordingly, pursuant to the Coastal Zone Management Act of 1972, as amended (16 USC sections 1451 et seq., and the Federal Consistency Regulations, 15 CFR Part 930, Federal Register, Dec. 8, 2000, pp. 77124-77175).

While the majority of the VCP Enforceable Programs listed under Attachment 1 would be applicable to development and activities at Green Spring, the following programs would not apply:

1) Fisheries Management-Green Spring contains no shellfish or finfish resources, nor commercial and/or recreational fisheries, nor other marine resources and would therefor not be subject to the requirements of fisheries management programs administered by the Virginia Marine Resources Commission.

2) Dunes Management-Green Spring contains no dunes subject to protection under the Coastal Primary Sand Dune Protection Act.

3) Shoreline Sanitation-The NPS does not intend to install septic tanks at Green Spring, as the soils are unsuitable for such use. Facilities at Green Spring will utilize the public sewer system for James City County managed by the James City Service Authority.

Attachment 1 continued

Page 2

d. Dunes Management - Dune protection is carried out pursuant to The Coastal Primary Sand Dune Protection Act and is intended to prevent destruction or alteration of primary dunes. This program is administered by the Marine Resources Commission; Virginia Code §28.2-1400 through §28.2-1420.

e. Non-point Source Pollution Control – (1) Virginia's Erosion and Sediment Control Law requires soil-disturbing projects to be designed to reduce soil erosion and to decrease inputs of chemical nutrients and sediments to the Chesapeake Bay, its tributaries, and other rivers and waters of the Commonwealth. This program is administered by the Department of Conservation and Recreation; Virginia Code §10.1-560 et.seq.).

(2) Coastal Lands Management is a state-local cooperative program administered by the Chesapeake Bay Local Assistance Department and 84 localities in Tidewater (see i) Virginia; Virginia Code §10.1-2100 –10.1-2114 and 9 VAC10-20 et seq.

f. Point Source Pollution Control - The point source program is administered by the State Water Control Board (DEQ) pursuant to Virginia Code §62.1-44.15. Point source pollution control is accomplished through the implementation of:

(1) the National Pollutant Discharge Elimination System (NPDES) permit program established pursuant to Section 402 of the federal Clean Water Act and administered in Virginia as the Virginia Pollutant Discharge Elimination System (VPDES) permit program.

(2) The Virginia Water Protection Permit (VWPP) program administered by DEQ; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

g. Shoreline Sanitation - The purpose of this program is to regulate the installation of septic tanks, set standards concerning soil types suitable for septic tanks, and specify minimum distances that tanks must be placed away from streams, rivers, and other waters of the Commonwealth. This program is administered by the Department of Health (Virginia Code §32.1-164 through §32.1-165).

h. Air Pollution Control - The program implements the federal Clean Air Act to provide a legally enforceable State Implementation Plan for the attainment and maintenance of the National Ambient Air Quality Standards. This program is administered by the State Air Pollution Control Board (Virginia Code §10.1-1300 through §10.1- 1320).

(i) Coastal Lands Management is a state-local cooperative program administered by the Chesapeake Bay Local Assistance Department and 84 localities in Tidewater, Virginia established pursuant to the Chesapeake Bay Preservation Act; Virginia Code §10.1-2100 –10.1-2114 and Chesapeake Bay Preservation Area Designation and Management Regulations; Virginia Administrative Code 9 VAC10-20 et seq.

p. 9

Local Coordination

James City County has expressed its concerns regarding the draft general management plan, particularly the possible closure of Route 614 under the preferred alternative, in separate letters dated May 7 and July 9, 2001 and in other consultations with NPS. Consultations with James City County and NPS responses to county comments, questions and concerns are noted earlier in this Comments and Responses section and also in the Consultation and Coordination section for this final plan.

Comment • VADEQ, Office of Water Permit Programs • June 27, 2001

RECEIVED

JUN 2 8 2001

DEQ-Office of Environmental Impact Review

COMMONWEALTH of VIRGINIA

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

Dennis H. Treacy
Director

(804) 698-4000
1-800-592-5482

MEMORANDUM

TO: Charles H. Ellis III, Environmental Program Planner, Office of Environmental Impact Review

FROM: Wendy Kedzierski, Environmental Specialist, Office of Water Permit Programs

SUBJECT: Draft General Management Plan Amendment and Environmental Impact Statement
Green Spring Colonial National Historical Park, James City County, Virginia
Project No. 01-072F

DATE: June 27, 2001

I have reviewed the information provided concerning the above-referenced project. Site activities include projects associated with alternatives proposed in the general management plan.

The report states that wetlands have been previously delineated on the site. Approximately 52 acres or 27 percent of the site is wetland. Alternatives B and C would likely involve impacts to wetlands. The extent of these impacts would likely be greater with Alternative C. We prefer the least environmentally damaging and practicable alternative or modification of proposed alternatives. The early planning stages of a project such as this is the ideal time to plan avoidance and minimization of impacts to wetlands and streams. If either of the two proposed action alternatives is chosen, a Virginia Water Protection Permit from DEQ may be required for construction of the project. Once an alternative is chosen and work is planned, the wetlands should be delineated, and the delineation should be confirmed by the U.S. Army Corps of Engineers (USACE). A Joint Permit Application (JPA) should then be submitted to Virginia Marine Resources Commission, who will distribute the application to DEQ and USACE. Wetland impact avoidance and minimization efforts need to be documented in the JPA. Please coordinate with DEQ's Tidewater Regional office for specific permitting issues.

We encourage the use of erosion and sediment control measures, adherence to storm water management regulations, and careful construction practices to minimize temporary impacts to state waters during site construction activities.

An Agency of the Natural Resources Secretariat

Response

See NPS response to comments on pages 2, 3 and 7 of VA DEQ letter dated July 9, 2001.

VA DEQ comments noted regarding preference for least environmentally damaging and practicable alternative, most likely Alternative B, and/or modification of the Preferred Alternative (Alternative C).

VADEQ, Div. of Air Program Coordination Document Review Checklist (p.1)

RECEIVED

JUN 25 2001

DEQ-Office of Environmental Impact Review

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR PROGRAM COORDINATION

DOCUMENT REVIEW CHECKLIST

TO: Charles H. Ellis

DATE: 6/25/01 **DEQ-OEIA PROJECT NUMBER:** 01-072F

___ STATE EIR ___ FEDERAL EA/FONSI _X_ FEDERAL EIS ___ SCC
___ CONSISTENCY DETERMINATION/CERTIFICATION

PROJECT TITLE: Green Spring Colonial National Historical Park
Draft General Management Plan Amendment

PROJECT SPONSOR: Department of Interior/National Park Service

AIR PROGRAM COORDINATION DIVISION FINDINGS:

___ CONCURS WITH THE FONSI ___ CONCURS WITH THE CONSISTENCY DETERMINATION

_X_ SEE APPLICABLE REGULATORY REQUIREMENTS ___ NO COMMENTS

THE PROJECT SITE IS LOCATED IN A:

___ OZONE NONATTAINMENT AREA

_X_ OZONE MAINTENANCE AREA

_X_ STATE VOLATILE ORGANIC COMPOUND & NITROGEN OXIDES EMISSION CONTROL (VOC/NO_xEC) AREA

REGULATORY REQUIREMENTS MAY APPLY TO:

_X_ CONSTRUCTION ___ OPERATION

STATE AIR POLLUTION CONTROL BOARD REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION THAT MAY APPLY:

1. ___ 9 VAC 5-40-5200 C and 9 VAC 5-40-5220 E - Stage I.
2. ___ 9 VAC 5-40-5200 C and 9 VAC 5-40-5220 F - Stage II Vapor Recovery.
3. _X_ 9 VAC 5-40-5490 et seq. - Cut-back Asphalt Usage Restriction.

PAGE 1

Response

See NPS response to comments on pages 3-4 and 7 of VA DEQ letter dated July 9, 2001.

VA DEQ comments noted regarding the regulatory requirements for ozone maintenance areas during construction activities, and also restrictions on cut-back asphalt usage, open burning, and fugitive dust emissions

VADEQ, Div. of Air Program Coordination Document Review Checklist (p.2)

4. _X_ 9 VAC 5-40-5600 et seq. - Open Burning.

5. _X_ 9 VAC 5-50-60 et seq. - Fugitive Dust Emissions.

6. ___ 9 VAC 5-50-130 et seq. - Odorous Emissions; applicable to the _____.

7. ___ 9 VAC 5-50-160 et seq. - Standards of Performance for Toxic Pollutants.

8. ___ 9 VAC 5-50-400 Subpart ___, Standards of Performance for New Stationary Sources, designates standards of performance for the _____.

9. ___ 9 VAC 5-80-10 et seq. of the regulations - Permits for Stationary Sources.

10. ___ 9 VAC 5-80-1700 et seq. of the regulations - Major or Modified Sources located in PSD areas. This rule may be applicable to the _____ _____.

11. ___ 9 VAC 5-80-2000 et seq. of the regulations - New and Modified Sources located in nonattainment areas.

12. ___ 9 VAC 5-80-800 et seq. of the regulations - Operating Permits and Exemptions. This rule may be applicable to _____:

OTHER REQUIREMENTS (R) AND/OR CONSIDERATIONS (C):

(C) Since the project is located in an ozone maintenance area, all reasonable precautions to limit emissions of volatile organic compounds (VOCs) and oxides of nitrogen (NOx) should be taken.

PLEASE CONTACT THE _____ OFFICE FOR ANY TECHNICAL AND/OR PERMIT ASSISTANCE.

James P. Ponticello
Office of Air Data Analysis

6/25/01
Date

284

Comment • VA Chesapeake Bay Local Assitance Dept. letter • July 6, 2001

COMMONWEALTH of VIRGINIA

CHESAPEAKE BAY LOCAL ASSISTANCE DEPARTMENT

James S. Gilmore, III
Governor
John Paul Woodley, Jr.
Secretary of Natural Resources

James Monroe Building
101 North 14th Street, 17th Floor
Richmond, Virginia 23219
FAX: (804) 225-3447

Michael D. Glower
Executive Director

(804) 225-3440
1-800-243-7229 Voice/TDD

July 6, 2001

Mr. Charles H. Ellis, III
Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street, Sixth Floor
Richmond, VA 23219

RE: Green Spring Colonial National Historical Park
CBLAD Project Review No. FSPR-NPS-03-01

Dear Mr. Ellis:

As you requested, we have reviewed the consistency determination for the proposed management plan for the Green Spring unit of the Colonial National Historic Park in James City County. The following are our comments and recommendations.

As one of the enforceable programs of Virginia's Coastal Resources Management Program, the Chesapeake Bay Preservation Act and the requirements of the Chesapeake Bay Preservation Area Designation and Management Regulations (Regulations) are applicable. The 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan requires the signatories, including the National Park Service, to fully cooperate with local and state governments in carrying out voluntary and mandatory actions to comply with the management of storm water. The agencies also committed to encouraging construction design that a) minimizes natural area loss on new and rehabilitated federal facilities; b) adopts low impact development and best management technologies for storm water, sediment and erosion control, and reduces impervious surfaces; and c) considers the Conservation Landscaping and Bay-Scapes Guide for Federal Land Managers.

As noted on page 112 of the Draft General Management Plan Amendment and Environmental Impact Statement, all lands within James City County are designated as

An Agency of the Natural Resources Secretariat

Response

See NPS response to comments on pages 5 and 7-8 of VA DEQ letter dated July 9, 2001.

VA Chesapeake Bay Local Assistance Department comments noted regarding the applicability of Virginia's Coastal Resources Management Program, the Chesapeake Bay Preservation Act, the Chesapeake Bay Preservation Area Designation and Management Regulations, and the 1998 Federal Agencies' Chesapeake Ecosystem Unified Plan to development and management of Green Spring.

Chesapeake Bay Preservation Areas. As such, the General Performance Criteria of the Regulations, including those for minimizing impervious cover, preserving indigenous vegetation, minimizing land disturbance, and providing stormwater management, are applicable.

We appreciate the opportunity to provide our comments on this project. Please do not hesitate to contact us at 1-800-CHESBAY should you have any questions.

Sincerely,

Douglas G. Wetmore
Principal Environmental Planner

Cc: Catherine Harold, CBLAD
Scott Crafton, CBLAD
Shawn E. Smith, CBLAD

H:\dwetmore\LOCALITIES\James City\Green Spring NHP-EIS.doc

VA Dept. of Agriculture & Consumer Svs. Comments Form • May 25, 2001

If you cannot meet the deadline, please notify CHARLIE ELLIS at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.

Please return your comments to:

MR.CHARLES H. ELLIS III
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

RECEIVED

MAY 30 2001

DEQ-Office of Environmental Impact Review

Charles H. Ellis III
Environmental Program Planner

COMMENTS

Statements in the project document concerning endangered species were reviewed and compared to previous VDACS findings. No additional comments are necessary in reference to endangered plant and insect species regarding this project.

(signed) (Keith R. Tignor) (date) May 25, 2001

(title) Endangered Species Coordinator

(agency) VDACS, Office of Plant and Pest Service

PROJECT # 01-072F 8/98

Response

VDACS comments noted regarding endangered species

Comment • VA Inst. of Marine Sciences comments form • June 27, 2001

06/27/01 WED 14:02 FAX 8046847179 VA INST OF MARINE SCIENC +++ IMPACT REVIEW 001

If you cannot meet the deadline, please notify CHARLIE ELLIS at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.

Please return your comments to:

MR.CHARLES H. ELLIS III
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

Charles H. Ellis III
Environmental Program Planner

COMMENTS

We have reviewed, from a marine environmental perspective, the proposals and alternatives for the Green Springs Colonial National Historical Park and have no comments to make at this time.

(signed) M Bowman (date) 6/27/01
(title) Assistant Professor
(agency) VIMS/CCRM

PROJECT # 01-072F 8/98

288

Response

VIMS comments noted.

Comment • VA Marine Resources Commission memo • June 29, 2001

COMMONWEALTH of VIRGINIA

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Marine Resources Commission
2600 Washington Avenue
P.O. Box 756
Newport News, Virginia 23607-0756

William A. Pruitt
Commissioner

June 29, 2001

MEMORANDUM

TO: Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street, 6th Floor
Richmond, Va. 23219

FROM: Ben Stagg
Environmental Engineer, VMRC

SUBJECT: Green Springs Colonial National Historic Park Draft General Management Plan

Having reviewed the above referenced document, please be advised that the proposals as presented appear to be in areas over which VMRC is not currently exerting jurisdiction. However, the applicant may wish to submit a Joint Permit Application upon final alternative selection. If you need any additional information, please feel free to call me at 757-247-2009.

An Agency of the Natural Resources Secretariat
Telephone (757) 247-2200 (757) 247-2292 V/TDD Information and Emergency Hotline 1-800-541-4646 V/TDD

Response

VMRC comments noted.

Comment • VA Dept. of Mines, Minerals & Energy comments form • May 10, 2001

If you cannot meet the deadline, please notify CHARLIE ELLIS at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MR. CHARLES H. ELLIS III
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

RECEIVED
MAY 14 2001
DEQ-Office of Environmental Impact Review

Charles H. Ellis III
Environmental Program Planner

COMMENTS

No COMMENTS
Department of Mines, Minerals & Energy

(signed) Eugene K. Baker (date) 05/10/01
(title) Geologist Manager
(agency) DMME/DMR

PROJECT # 01-072F 8/98

Response

The Department had no comments on the draft general management plan; no NPS response required.

Comment • Hampton Roads Planning District Comm. letter • July 6, 2001

HAMPTON ROADS
PLANNING DISTRICT COMMISSION

SHEILA S. NOLL, CHAIRMAN · LOUIS R. JONES, VICE-CHAIRMAN · MYLES E. STANDISH, TREASURER
ARTHUR L. COLLINS, EXECUTIVE DIRECTOR/SECRETARY

CHESAPEAKE
John L. Person, City Manager
Debbie Ritter, Council Member
William E. Ward, Mayor

FRANKLIN
Mark S. Pettercff, Council Member
Rowland L. Taylor, City Manager

GLOUCESTER COUNTY
John J. Adams, Sr., Board Member
William H. Whitley, County Administrator

HAMPTON
Mamie E. Locke, Mayor
George E. Wallace, City Manager
Paige V. Washington, Jr., Council Member

ISLE OF WIGHT COUNTY
W. Douglas Caskey, County Administrator
Robert C. Claud, Sr., Board Member

JAMES CITY COUNTY
John J. McGlennon, Chairman
Sanford B. Wanner, County Administrator

NEWPORT NEWS
Charles C. Allen, Vice-Mayor
Joe S. Frank, Mayor
Edgar E. Maraney, City Manager

NORFOLK
Herbert M. Collins, Sr., Vice-Mayor
Paul D. Fraim, Mayor
Daun S. Hasche, Council Member
Regina V.K. Williams, City Manager
Barclay C. Winn, Council Member

POQUOSON
Charles W. Burgess, Jr., City Manager
Gordon C. Helsel, Jr., Mayor

PORTSMOUTH
J. Thomas Benn, III, Council Member
Daniel M. Esuik, City Manager
P. Ward Robinett, Jr., Council Member

SOUTHAMPTON COUNTY
Michael W. Johnson, County Administrator
Charleton W. Sykes, Board Member

SUFFOLK
Dana S. Dickens, III, Council Member
Myles E. Standish, City Manager

SURRY COUNTY
Ernest L. Blount, Chairman
Terry D. Lewis, County Administrator

VIRGINIA BEACH
Margaret L. Eure, Council Member
W. W. Harrison, Jr., Council Member
Louis R. Jones, Council Member
Robert C. Mandigo, Jr., Council Member
Meyera E. Oberndorf, Mayor
Nancy K. Parker, Council Member
James K. Spore, City Manager

WILLIAMSBURG
Jackson C. Tuttle, II, City Manager
Jeanne Zeidler, Mayor

YORK COUNTY
Sheila S. Noll, Board Member
James O. McReynolds, Acting County Administrator

July 6, 2001

Mr. Charles H. Ellis III
EIR Coordinator
Department of Environmental Quality
Post Office Box 10009
Richmond, Virginia 23219

Re: Green Spring Colonial National Historical Park Draft General Management Plan Amendment
DEQ #01-072F (ENV:GEN)

Dear Mr. Ellis:

Pursuant to your request of May 4, 2001, the staff of the Hampton Roads Planning District Commission has reviewed the Draft General Management Plan Amendment and Environmental Impact Statement for Green Spring Colonial National Historical Park. We have contacted James City County concerning the project.

James City County is concerned over the proposal to close Centerville Road (State Route 614) that is contained in the preferred alternative. We recommend that the National Park Service work with the County to resolve this issue.

We appreciate the opportunity to review this project. If you have any questions, please do not hesitate to call.

Sincerely,

Arthur L. Collins
Executive Director/Secretary

HRV:fh

cc: Mr. Marvin Sowers, JCC

HEADQUARTERS · THE REGIONAL BUILDING · 723 WOODLAKE DRIVE · CHESAPEAKE, VIRGINIA 23320 · (757) 420-8300

Response

The Planning District Commission had no specific comments on the draft general management plan.

Comments on coordination with local government to resolve the Centerville Road closure issue are noted. James City County has expressed its concerns regarding the draft general management plan, particularly the possible closure of Route 614 under the Preferred Alternative, in separate letters dated May 7 and July 9, 2001 and in other consultations with NPS. Consultations with James City County and NPS responses to county comments, questions and concerns are noted earlier in this Comments and Responses section and also in the Consultation and Coordination section for this final plan.

A

A.6.9 U.S. Environmental Protection Agency- NPS Response

Comment • U.S. Environmental Protection Agency • July 11, 2001 *(page 1)*

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

JUL 13 2001

JUL 11 2001

Mr. Alec Gould
Superintendent
Colonial National Historical Park
National Park Service
Post Office Box 210
Yorktown, Virginia 23690

Re: Green Spring Colonial National Historical Park

In accordance with the National Environmental Policy Act (NEPA) of 1969 and Section 309 of the Clean Air Act, EPA has reviewed the Draft General Management Plan Amendment and Environmental Impact Statement for the above referenced project. EPA has assigned this DEIS a rating of EC-2 (Environmental Concerns/Insufficient Information) based on the following comments. A copy of EPA's ranking system is enclosed for your information.

EPA commends the National Park Service (NPS) for its efforts and supports the purpose and need for the proposed action which is to provide access to the historically rich archeological site of the Green Spring unit of the Colonial National Historic Park and to monitor the site's resources. However, EPA is concerned with the environmental impacts associated with the proposed action. Specific concerns are addressed below.

As stated in the DEIS, there is an expected loss of approximately 20 acres of forested resources (of which 8 acres are forested wetlands) through tree removal for landscape rehabilitation, archeology, visitor facilities and trail development, parking and potential future development of park facilities. EPA recommends reducing the area of deforestation by placement of proposed facilities into the existing mowed non-native grasses and/or the existing grassland field. Since it appears that the proposed facilities are projected to be within close proximity to the grass areas, this would be a slight modification to the original plan. However, it is difficult to make an accurate assessment with the maps provided. A map of the existing site with possibly an overlay of the proposed alternative would provide a clearer picture of development impacts.

Printed on 100% recycled/recyclable paper with 100% post-consumer fiber and process chlorine free.
Customer Service Hotline: 1-800-438-2474

Response *(page 1)*

p. 1

Comments on USEPA rating system noted.

Specific siting and design of facilities lacks the level of detail required to include that information within this plan, which is purposely a very general, overarching document. This type of information would be included in a later implementation plan that would be guided by the planning principles embodied in the general management plan. Diagrams show approximate locations and types of facilities on a gross scale only. That said, we agree that it would be useful to provide extant USFWS National Wetlands Inventory information in the form of overlays to the alternatives diagram and we have done so below, at the end of this section (figures 15 and 16).

We concur with the agency on the need to reduce deforestation, particularly in wetlands, to the extent possible. The draft plan indicates that the "worst case" scenario would be clearing of up to 20 acres of woods, and up to 8 acres of forested wetlands, predicated mainly on extensive landscape rehabilitation and archeological investigation. Page 212 of the draft plan erroneously indicates this "worst case " scenario could result in the loss of up to 48 acres of woods; however, this mistake has been corrected in the final plan. The NPS believes that considerably less forested acreage is expected to be lost than 20 acres, probably 1/3 of this total, since archeological research would use largely non-invasive procedures and any excavation would likely involve less than 10% of any specific archeological site. Likewise, selective removal of trees during landscape rehabilitation would be reduced to protect cultural and natural resources. Visitor facilities including parking would, in fact, likely be concentrated in the existing grassland field. As stated on p. 212 of the draft plan, "..a substantial portion of the 20 wooded acres that would be affected by archeological investigation would either not involve tree clearing or would likely be restored to forested lands. Up to 2 acres of woodlands would be restored in other areas of the site." In addition, the NPS would avoid tree removal in up to 8 acres of forested wetlands that could be affected by plan implementation, following the policies of Executive Order 11990 and NPS Director's Orders 77-1 to avoid to the extent feasible impacts to wetlands. Although the diagrams on pages 68 and 69 of the draft plan did not clearly indicate the location of the visitor facilities in the grassland field, this is the likely approximate location as indicated by the written description of the alternative. Page 197 of the draft plan states "By locating these facilities in drier upland areas, it would be possible to avoid direct impacts to wetlands; however, breeding bird habitat for rare grassland species would be adversely affected."

We appreciate the agency's statement proposing the reduction of deforestation by placement of proposed facilities into the existing grassland field and/or non-native mown areas. Although we agree with the agency on reducing the need for tree

2

The DEIS states that "Development of the visitor support facilities east of Centerville Road could impact groundwater quality and flow that may affect the spring as well as the adjacent wetland in the long-term." EPA stresses the importance of eliminating/minimizing impacts to the groundwater, spring and wetlands and encourages the NPS to give high priority to these resources when determining the exact location for the visitor support facilities. Also, because the location of wetlands are not identified within the DEIS, the impacts to wetlands are not clearly defined. A map depicting the location of wetlands should be provided in the FEIS as well as a delineation of the wetlands impacted.

In addition to altering the location of the proposed sites, EPA suggests reevaluating the footprint of the proposed facilities. Although design of the proposed facilities is not discussed, EPA suggests that the NPS consolidate functions into a multi-story building as opposed to a one-story building to reduce footprint size of the building.

Because the 500-year floodplain is of concern to the NPS as a result of its need to protect collections of objects and artifacts, EPA recommends project coordination with the Federal Emergency Management Agency.

In October, 1990, Congress passed the Pollution Prevention Act which calls for a stepwise approach to addressing pollution: 1. Prevention or source reduction; 2. Recycling of material in an environmentally safe manner; 3. Treatment in an environmentally safe manner; and as a last resort; 4. Disposal or other release of pollution into the environment. The following principles are applicable to the proposed construction of facilities.

- Paved Surfaces/Parking Areas. To prevent runoff from newly developed areas from eroding steep areas, good environmental design should be employed to minimize and control runoff. Detention basins or paving with permeable asphalt or crushed stone may be appropriate where applicable.

- Landscaping. EPA suggests that the grounds be landscaped with hardy native plant species to cut down on watering and lessen the need of pesticides and fertilizers. Liberal and judicious use of trees can help to reduce heating and cooling costs and act as air purifiers.

- Recycling. To promote the recycling of refuse generated by employees/visitors, recycling receptacles should be provided throughout the park and within buildings. Procurement of recycled goods is also necessary and helps to stimulate markets. As a consumer and purchaser of goods and services, the NPS is encouraged to make purchasing decisions with this in mind.

- Painting/Carpeting. All painting projects should make use of non-toxic paints, stains, exterior preservatives, and chemical-free carpeting. This can reduce long-term costs for removal of potentially hazardous materials and provide better air quality.

removal, as called for in the Federal Agencies Chesapeake Bay Ecosystem Unified Plan of 1998 and NPS natural resource management policies, we must point out that the native grassland field is in itself identified in the plan as a rare regional resource worthy of protection. The eventual design and siting of visitor facilities will need to balance impacts to this and other sensitive natural resources with the need to meet the park's mission.

p. 2

Again, specific location and design of visitor facilities is not within the scope of a general management plan. One important purpose of the Draft Environmental Impact Statement is to point out areas of potential concern for the future siting and design of facilities such that possible impacts to sensitive natural resources can be avoided during implementation.

However, we concur with the need to minimize impacts to groundwater, the spring, and wetlands. The USGS has proposed a water resources study for Green Spring that will provide the baseline inventorying and assessment of the condition of these water resources, including a characterization of water quality and age dating to determine flow source. In addition, delineation of jurisdictional wetlands, required by federal regulations, will be conducted prior to the implementation phase so that impacts to wetlands and other water resources can be avoided to the extent feasible. Our agency's current understanding of the location and type of wetlands at Green Spring is derived from the USFWS National Wetlands Inventory. This information is depicted on p. 29 of the draft plan. The NPS would avoid locating visitor facilities in the palustrine forested wetlands indicated on this map, or in any wetlands subsequently identified during the delineation process. Again, it would be helpful for your agency to review the alternatives diagrams previous to this Comments and Responses section to get a better sense for the location of the NWI wetlands for which the location is currently known.

While the NPS does not anticipate siting facilities containing collections of objects or artifacts within the 500-year floodplain, there is the potential for below-ground archeological data to be affected by naturally occurring erosion associated with the drainage ditch/stream in this area. The planning of archeological data recovery within the 500-year floodplain may benefit from consultation with the Federal Emergency Management Agency.

p. 2-3

These comments (paved surfaces, landscaping, recycling, painting, etc.) relate primarily to long-term protection of resources and make specific references to ways the



Comment • U.S. Environmental Protection Agency • July 11, 2001 *(page 3)*

- Water Conservation. In an effort to conserve water consumption, low-flow toilets should be installed in new buildings. To ensure adequate supply and quality of water, monitoring of the water table and chemical testing of the water can be conducted.

- Energy Conservation. Energy-efficient heating and cooling systems, proper building insulation, and the use of energy-efficient lighting can be incorporated in the design of the buildings to reduce cumulative impacts of energy consumption and encourage energy conservation. For example, take advantage of natural ventilation as well as using compact fluorescent lamps which consume considerably less electricity than do incandescent ones and last much longer. Install energy-efficient windows and doors (for example, reflective glass).

Implementation of these suggestions would illustrate the NPS's interest in not only minimizing impacts to the environment but enhancing it as well. Modification of plans to fit the landscape and the surrounding environment instead of vice-versa is environmentally more sound by definition and will help minimize the cumulative impacts of the project.

Thank you for the opportunity to review and comment on this project. The staff contact for this review is Karen DelGrosso. She can be reached at 215-814-2765.

Sincerely,

Richard Y. Pepino
FOR
Thomas A. Slenkamp, Deputy Director
Office of Environmental Programs

Enclosure

294

Response *(page 3)*

NPS could improve the long-term sustainability of park operations. Sustainability is an important long-term goal to NPS, and statements within the Draft General Management Plan/Environmental Impact Statement emphasize this goal (see pp. 45-48 of draft plan, Management Prescriptions Common to Each Action Alternative). Specific actions to improve sustainability and reduce environmental impacts are too detailed, however, to include in a general management plan. Nonetheless, we appreciate your agency's suggestions on minimizing impacts to the environment and even showcasing enhancements to it. These detailed suggestions will be considered by the park staff as they undertake implementation of this plan and in subsequent implementation plans. The NPS would comply with the requirements of the Pollution Prevention Act, and other federal and state laws and policies encouraging the conservation of water and energy resources.

Diagrams superimposing wetlands on Alternatives are shown below, as requested on page one of US Environmental Protection Agency letter, which starts on page 294.

Comment • U.S. Environmental Protection Agency • July 11, 2001 *(page 4)*

SUMMARY OF RATING DEFINITIONS AND FOLLOW UP ACTION*

Environmental Impact of the Action

LO--Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC--Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO--Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1--Adequate
The EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information
The draft EIS does not contain sufficient information for the EPA to fully assess the environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640 Policy and Procedures for the Review of the Federal Actions Impacting the Environment

Figure 15: Wetlands Overlay, Alternative B

Response *(page 4)*

Alternative B: Core Site Improvements and Interpretation*



* this is approximately the same as Alternative C, STAGE ONE

A

Figure 16: Wetlands Overlay, Alternative C, Stage Two

Response • *(page 5)*

Alternative C: The Interpretive Landscape of Green Spring: STAGE TWO



Green Spring
Colonial National Historical Park
National Park Service
United States Department of the Interior

This drawing is diagrammatic and does not necessarily indicate actual size or location of site features.

0' 800'
approximate scale

- Woods
- Regenerating Woodland
- Open Field Setting
- Potential Outlying 17th Century Site Features (Locations to be determined)
- Evocative Field and Planting Patterns Note: Actual extent and method of field and planting patterns to be based on further research
- Garden Representation
- Wetlands
- Secondary Interpretive Path
- Interpretive Structure
- Archeological Support Facility/ Visitor Contact Station
- Primary Interpretive Path (Locations to be determined)
- Vehicular Access and Parking (Parking location to be determined)
- Site for Possible Future Support Uses
- Grassland Field Habitat

A.6.10 U.S. Fish and Wildlife- NPS Response

Comment • US Fish and Wildlife Service • May 11, 2001 *(page 1 of 2)*

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
6669 Short Lane
Gloucester, VA 23061

MAY 11 2001

May 10, 2001

Mr. Alec Gould, Superintendent
U.S. National Park Service
Colonial National Historical Park
P.O. Box 210
Yorktown, Virginia 23690

Re: Green Spring, Colonial National Historical Park, James City County, Virginia

Dear Mr. Gould:

This responds to your May 2, 2001 letter requesting comments on your Draft Environmental Impact Statement (DEIS) entitled "Green Spring, Colonial National Historical Park, Virginia" and dated February 2001. The U.S. Fish and Wildlife Service (FWS) submits the following comments in accordance with provisions of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*) and the Fish and Wildlife Coordination Act (FWCA) of 1958 (48 Stat.401, as amended; 16 U.S.C. 661 *et seq.*).

FWS recommends that the National Park Service (NPS) conduct jurisdictional delineations to evaluate potential wetland impacts. The National Wetland Inventory (NWI) is a good general planning guide, but NWI cannot substitute for an on-site jurisdictional delineation.

FWS concurs with the NPS decision to re-survey for the federally listed threatened small whorled pogonia, *Isotria medeoloides*. Surveys should be conducted from May 25 through July 15 in southern Virginia. Outside of these months, a site visit by a qualified individual can determine if appropriate habitat exists at the project site.

Page 159 states that NPS "would respect the 750-foot buffer required by USFWS to proect the bald eagle nesting site . . . ." FWS does not require any particular buffer size. FWS and the Virginia Department of Game and Inland Fisheries (VDGIF) have established management guidelines that include a primary management zone buffer of 750 feet, but each project is reviewed individually. Any impacts within 1,320 feet should be coordinated with FWS. Eagle nesting season in Virginia is defined as December (not November) 15 to July 15. Since the bald eagle is also listed under the Virginia Endangered Species Act, FWS recommends NPS continue to coordinate with VDGIF.

Response *(page 1 of 2)*

p. 1

The NPS concurs with the USFWS recommendation to conduct jurisdictional delineations to evaluate potential wetland impacts. The draft general management plan stated on p. 156 that "Prior to the implementation of any proposed actions, and in consultation with the U.S. Fish and Wildlife Service and U.S. Army Corps of Engineers, the NPS would conduct field identification, delineation, classification and mapping of wetlands to ensure that direct and indirect impacts are avoided to the extent possible. The existing condition and function of the wetlands would be established. Additional wetlands may be discovered beyond those identified through the NWI." In addition, "for any actions that may impact these wetlands, the NPS would develop mitigation plans as required by Section 404 of the Clean Water Act of 1977, administered by the U.S. Army Corps of Engineers. If future proposed facilities and structures can not be sited to avoid wetlands, a Wetlands Statement of Findings would be prepared, as required by NPS Director's Order 77.1, and required mitigation would be completed."

The NPS agrees that potential wetlands impacts are a potentially significant issue within the Green Spring unit. USGS has proposed a water resources study for Green Spring that will provide the baseline inventorying and assessment of the condition of these water resources, including a characterization of water quality and age dating to determine flow source. Jurisdictional wetlands delineation, required by federal regulation, will be needed prior to the implementation phase so that impacts to wetlands and other water resources can be avoided to the extent feasible. Wetlands delineation would be the starting point for development of a water resources management plan that would be integrated with the existing water resources management plan for the Colonial National Historical Park as a whole. As you correctly stated, our current understanding of the location and type of wetlands at Green Spring is derived from the USFWS National Wetlands Inventory. This information is depicted diagrammatically on p. 29 of the draft plan, and described on pp. 117-118. In addition, per our response to the U.S. EPA letter of comment dated July 11, 2001, we have included diagrams of the action alternatives with overlays that clearly indicate the location of the NWI wetlands. These diagrams are located directly above, at the end of section 2.6.9 (figures 15 and 16).

While survey methodology for Isotria medeoloides is outside the scope of the general management plan, the NPS appreciates your agency's suggestions on the survey timing and would consult with USFWS prior to conducting the survey. This federally listed threatened species has been located on nearby sites with similar environmental conditions in the past.

Comment • US Fish and Wildlife Service • May 11, 2001 *(page 2 of 2)*

FWS does not object to any of the alternatives and looks forward to future coordination with NPS in their future actions.

If you have any questions or need further assistance, please contact Mr. Eric Davis at (804) 693-6694, extension 104.

Sincerely,

Karen L. Mayne

Karen L. Mayne
Supervisor
Virginia Field Office

cc: VDGIF, Williamsburg, VA (Don Schwab)
VDACS, Richmond, VA (Keith Tignor)
VDCR, DNH, Richmond, VA (Rene Hypes)

Response *(page 2 of 2)*

Thank you for pointing out the factual error regarding the 750-foot buffer for protecting the bald eagle nesting site. It was our agency's previous understanding that the 750-foot buffer was a minimum USFWS requirement for protection of the bald eagle nest from human activities and development. We understand that the 750-foot buffer is recommended as a primary management zone for bald eagle habitat, but each project that could impact this zone would be reviewed on a case-by-case basis. We also appreciate your pointing out the correct period for the bald eagle nesting season in Virginia-December 15 to July 15. We have made the appropriate corrections in the EIS summary of this final plan and have also pointed out the corrections in the Errata section. NPS concurs that we should continue to coordinate with VDGIF and USFWS regarding the management of areas within 1,320 feet of the bald eagle nesting site, pursuant to the Bald and Golden Eagle Protection Act, federal Endangered Species Act, and the Virginia Endangered Species Act.

A.6.11 U.S. Army Corps of Engineers- NPS Response

Comment • U.S. Army Corps of Engineers • July 10, 2001 *(page 1 of 2)*

Date: 1/07/10 12:59 PM
Sender: "Cotnoir; Audrey L NAO02" <Audrey.L.Cotnoir@NAO02.USACE.ARMY.MIL>
To: Greenspring
Priority: Normal
Subject: Green Spring DEIS comments

These comments are provided in regard to the "Draft General Management Plan Amendment and Environmental Impact Statement" for the Green Spring Colonial National Historical Park, Virginia, dated April 2001.

Since the National Park Service is a federal agency with the same legal requirements under NEPA, the Endangered Species Act, etc. as the Corps, comments will be limited to those concerning waters and/or wetlands.

The sections of the DEIS that discuss impacts to waters and wetlands from the three proposed alternatives have been reviewed. Since no impacts to waters or wetlands are proposed under the "No Action" alternative, no further consultation would be required with the Corps if this alternative were selected.

Alternatives B and C both have the potential to impact jurisdictional waters and/or wetlands. The document outlines several possible impacts to waters/wetlands of each action alternative. Since the boundaries of jurisdictional waters/wetlands have not been determined, the impacts are estimates. The actions affecting wetlands proposed under Alternative B are stated as relatively minor. There are potential impacts as a result of development of visitor facilities, construction of pedestrian trails, impacts from archeological investigations, and enhancements to Route 614. Some of the impacts are indirect, such as contamination from upland parking lot runoff, which would not be activities that require a Corps permit.
However, any work in waters/wetlands that is considered fill under current regulations would require a Corps permit. It is possible that the actions proposed under Alternative B may meet the criteria for general permits.

Alternative C lists potential impacts to waters/wetlands from development of visitor facilities, impacts from trail development and interpretive stations, impacts from archeological investigations, impacts from landscape rehabilitation, and impacts from the rehabilitation of Centerville Road (Route 614). Depending on the actual impacts proposed, Alternative C might require an

Response *(page 1 of 1)*

p. 1

Comments on "No Action" Alternative noted.

As your agency correctly stated, the exact boundaries of jurisdictional wetlands at Green Spring falling potentially within the USACE permitting system have not yet been determined. Jurisdictional wetlands delineation, required by federal regulation, will be needed prior to the implementation phase so that impacts to wetlands and other water resources can be avoided to the extent feasible. Wetlands delineation, in combination with a USGS proposed water resources study for Green Spring, would be the starting point for development of a water resources management plan that would be integrated with the existing water resources management plan for the Colonial National Historical Park as a whole.

The potential impacts to wetlands from Alternative B are described on pp. 195-196 of the draft plan. These potential impacts are generally indirect and highly unlikely to constitute fill requiring a Corps permit under current regulations; however, as you pointed out, until wetlands delineation occurs at the site, the NPS would not know whether or not the actions proposed under Alternative B would meet the criteria for general permits.

p. 2

As you correctly noted, potential wetlands impacts are more of a concern under Alternative C. These are described on pp. 197-203 of the draft general management plan. The proposed potential impact of up to 8 (incorrectly noted in the draft plan as 15) acres of forested palustrine wetlands for landscape rehabilitation is noted as a particular concern; however, this is a "worst case" scenario predicated mainly on extensive tree removal in existing forested areas to re-establish crop patterns, gardens, and other elements of a 17th-century plantation landscape. Considerably less forested acreage is expected to be lost, due to the limited feasibility and practicality of restoring and maintaining such a heavily managed landscape and due to stringent NPS wetlands policies. The NPS would seek to avoid tree removal within the 8 acres of forested palustrine wetlands, pursuant to Executive Order 11990 and NPS Director's Orders 77-1 to avoid to the extent feasible impacts to wetlands. Alternatives that avoid, minimize and mitigate impacts to all wetlands, jurisdictional and non-jurisdictional, would continue to be included in the evaluation of the project as we work towards implementation.

Comment • U.S. Army Corps of Engineers • July 10, 2001 *(page 2 of 2)*

individual permit. In particular, the proposed potential impact of up to 15 acres of forested palustrine wetlands for landscape rehabilitation (clearing to re-establish crop patterns and other elements of 17-century plantation landscape) would require an individual review. Serious consideration should be given to alternatives to the proposed landscape rehabilitation within the forested wetlands. Impacts to waters/wetlands from the other project elements are estimated at less than one acre for each action (visitor facilities, 3/5 acre; trails and original Green Spring trace, 0.82 acres; archeological investigations, less than 1 acre; and road widening at intersection of Route 5/Route 614, up to 2 acres and impacts to a stream bed). The DEIS lists minimization measures for some of the proposed impacts such as selective tree removal, pervious trail materials, construction of boardwalks, and the use of non—invasive research techniques such as magnetometer surveys. In addition, the DEIS proposes various mitigation measures such as best management practices for stormwater runoff, re—grading and revegetating areas temporarily disturbed and a 2:1 compensation ratio for any permanent impacts that cannot be avoided. Alternatives to avoid, minimize and mitigate impacts to jurisdictional wetlands should continue to be included in the evaluation of the project.

On page 156 of the document, it indicates that the NPS intends to delineate the wetlands and coordinate with the Corps under both action alternatives. We would recommend contacting the Corps to perform a site visit and confirm any wetland delineation that is completed by the NPS or a consultant. At that time, the Corps can determine the jurisdictional areas, participate in pre-application consultation, and provide additional, project specific permitting information.

Thank you for providing us an opportunity to comment on the Green Spring DEIS. If you have any questions, please contact Audrey Cotnoir at (757) 549-8819.

Response *(page 2 of 2)*

We concur with the Corps recommendation that, prior to wetlands delineation and implementation of the preferred alternative, the NPS should contact the Corps to perform a site visit, coordinate regarding the actual delineation and participate in pre-application consultation, and provide additional, project specific permitting information as needed.

300

Appendix B

List of Preparers and Planning Team

National Park Service Planning Team

Colonial National Historical Park
Alec Gould, *Superintendent*
Karen Rehm, *Chief, Historical Interpretation and Preservation Division*

Skip Brooks, *Facility Manager*
Curt Gaul, *Supervisory Park Ranger*
Dorothy Geyer, *Landscape Architect*
Jim Haskett, *Former Chief, Historical Interpretation and Preservation Division*
Charles Rafkind, *Natural Resources Manager*
Diane Stallings, *Jamestown Historian/ Site Manager*
Jane Sundberg, *Cultural Resources Management Specialist*
Andrew Veech, *Archeologist*

Philadelphia Support Office
Kathy Schlegel, *Project Manager and Planner*
Julie Bell, *Planner*

Kathy Dilonardo, *Interpretive Specialist*
Richard Dretsch, *Architect*
Shaun Eyring, *Historical Landscape Architect*
Deirdre Gibson, *former Chief, Park Planning*
Patricia Gillespie, *Interpretive Specialist*
Tina LeCoff, *Section 106 Coordinator*

Valley Forge Center For Cultural Resources
David Orr, *Chief, Liaison for Archeological Resources*

Consultants

ICON architecture, Inc.
Elizabeth Foster, *Planner and Landscape Architect*
Jonathan Lane, *Planner and Public Involvement*
Richard Perkins, *Graphic Designer*
John Shields, *Architect*

Additional Consultants

Dana Bradshaw, *Center for Conservation Biology, College of William and Mary*
Lisa Dewey, *Editor, Banquo Communications*
J. Todd Chavers, *Professional Engineer, Kimley-Horn and Associates, Inc.*
Nicholas Luccketti, *Archeologist, APVA and James River Institute for Archaeology*
Karl Tewksbury, *Professional Engineer, Kimley-Horn and Associates, Inc.*
Carol Tyrer, *Archeologist, Cultural Resources, Inc.*
Shomer Zwelling, *Center for History Now*

Contributors

Colonial NHP
Peggie Gaul, *Former Public Affairs Officer*
David Riggs, *Jamestown Curator*

Philadelphia Support Office
Michele Batcheller, *Wildlife Biologist*
Allen Cooper, *Archeologist*
James Farrell, *GIS Specialist and Graphic Designer*
Peter Iris-Williams, *Park Planner*
Terrence Moore, *Acting Chief, Park Planning*
Russ Smith, *Team Leader, Park Operations and Education*

Northeast Region Development Office
Linda Neal, *former Planner and Project Director for Jamestown Master Plan*

Friends of the National Park Service for Green Spring, Inc.
Archie Cannon, *President*
Cliff Williams, *Former President*
Daniel Lovelace, *Vice President*

Additional Acknowledgements

In addition to the contributors and consultants listed above, the following individuals provided guidance and/or information in the preparation of this document:

Carlton Abbott, *Architect*
George Anderson, *Berkeley's Green*
Dr. Richard Berquist, *College of William and Mary*
Dr. Warren Billings, *University of New Orleans*
Michael Brown, *James City County Board of Supervisors*
Richard Brown, *Attorney at Law*
Larry Butler, *Patriot's Colony*
Julie Campbell, *Library of Virginia*
Major General Archie S. Cannon, Jr. (Ret.), *Patriot's Colony*
Dr. Cary Carson, *Chief of Research, Colonial Williamsburg Foundation*

B

Dr. Martha Case, *College of William and Mary*
R.R. Chapman, *Suffolk District, Virginia Department of Transportation*
Juleigh Clark, *Colonial Williamsburg Foundation*
William Collier, *Virginia Department of Transportation*
Sharon Connor, *Colonial Soil and Water Conservation District*
Don Davis, *James City County Planning Division*
Fred Davis, *Suffolk District, Virginia Department of Transportation*
Ethel Eaton, *Virginia Department of Historic Resources*
Jack D. Edwards, *Former Supervisor, James City County and Friends of the NPS for Green Spring, Inc.*
Emily Evanow, *Green Spring Garden Club*
Laurence Foster, *James City Service Authority*
Barry Fox, *Fieldcrest*
Bruce Goodson, *James City County Board of Supervisors Green Spring Park Watch Patrol*
Ted Hale, *George's Hundred*
Loretta J. Hannum, *Williamsburg-James City County Schools*
Jay Harrison, *James City County Board of Supervisors*
Robert W. Hershberger, *Executive Director, Williamsburg Area Chamber of Commerce*
Mary Ellen Hodges, *Richmond District, Virginia Department of Transportation*
William A. Holcombe, *Citizen and Birder*
E.N. Hollowell, Suffolk District, *Virginia Department of Transportation*
John Horne, *James City County Development Management*
Audrey Horning, *Colonial Williamsburg Foundation*
Ivor Noel Hume, *Archeologist*
James Kennedy, *James City County Board of Supervisors*
Glen Koehn, *Governor's Land*
Keith Letchworth, *James City Service Authority*
Daniel Lovelace, *Friends of NPS for Green Spring, Inc.*
Matthew Maxwell, *James City County Planning Division*
Martha McCartney, *Historian*
Joe McCleary, *James City County Planning Commission*
Trist B. McConnell, *Mayor of Williamsburg (Ret.)*
John J. McGlennon, *Board of Supervisors, James City County*
Richard Miller, *James City County Fire Department*
Bernard H. Ngo, *President, Crestar Bank*
Kirsten Niemann, *Virginia Tourism Corporation*
William C. O'Donovan, *Publisher, THE VIRGINIA GAZETTE*
Lucretia Ottaway, *President, National Society, Daughters of the American Colonists*
Jerry Pauley, *Suffolk District, Virginia Department of Transportation*
Sara F. Piccini, *Former Executive Director, Friends of the NPS for Green Spring, Inc.*
Joe Poole, *Chair, James City County Planning Commission*
Kathy Quindlen, *Virginia Department of Game and Inland Fisheries*
Gayle Randol, *Friends of the NPS for Green Spring, Inc.*
Tammy Rosario, *James City County Planning Division*
Lisa Sausville, *Virginia Department of Game and Inland Fisheries*
Jill Schmidle, *James City County Development Management*
Barbara Schroeder, *Indigo Park*
David Schulte, *Williamsburg Area Convention and Visitor Bureau*
Donald Schwab, *Virginia Department of Game and Inland Fisheries*
Marc B. Sharp, *Green Spring Plantation, Inc.*
Jerry Sears, *Richmond District, Virginia Department of Transportation*
Cindy Shulz, *United States Fish and Wildlife Service*
Dick Smith, *First Colony*
Richard G. Smith, *Eggleston Smith P.C.*
Marvin Sowers, *James City County Planning Division*
Vincent Spoletti, *Central Office, Virginia Department of Transportation*
Brent Tarter, *Library of Virginia*
John Tate, *Virginia Department of Agriculture and Consumer Services*
Paul Tubach, *James City County Planning Division*
Carol D. Tyrer, *Archeologist*
Rebecca Wadja, *Virginia Department of Game and Inland Fisheries*
J. Cooper Wamsley, *Central Office, Virginia Department of Transportation*
Sanford Wanner, *Administrator, James City County*
Thomas Wilcox, *Virginia Department of Game and Inland Fisheries*
Clifford Williams, *Former President, Friends of the NPS for Green Spring, Inc.*
George F. Wright, *Former President, Historic Route 5 Association*
Jane Yerkes, *Mid-Atlantic Council*

Special Acknowledgement

The Planning team would like to acknowledge Cliff Williams; George Wright; Archie Cannon, Jr.; Daniel Lovelace; and other members of the Friends of the National Park Service for Green Spring, Inc., for volunteering their support, inspiration, commitment, and especially their sustained enthusiasm for this project.





As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



Printed on recycled paper
with soy-based ink.

National Park Service
U.S. Department of the Interior



Colonial National Historical Park
Post Office Box 210
Yorktown, Virginia 26390
www.nps.gov/colo

Green Spring

EXPERIENCE YOUR AMERICA