TIMUCUAN ECOLOGICAL AND HISTORIC PRESERVE

(JACKSONVILLE, FLORIDA)

KINGSLEY PLANTATION-RIBAULT CLUB INTERPRETIVE TRAM TOUR DRAFT ENVIRONMENTAL ASSESSMENT

Timucuan Ecological and Historic Preserve
Kingsley Plantation-Ribault Club Interpretive Tram Tour
Draft Environmental Assessment

National Park Service
U.S. Department of the Interior

Timucuan Ecological and Historic Preserve
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Acronyms and Abbreviations

ADA	Americans with Disabilities Act
ATS	Alternative Transportation System
CAA	Clean Air Act
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CO2	Carbon Dioxide
DO	National Park Service Director's Order
EA	Environmental Assessment
EO	Executive Order
FONSI	Finding of No Significant Impact
FPS	Florida Park Service
FTA	Federal Transit Administration
FWC	Florida Fish and Wildlife Conservation Commission
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel on Climate Change
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NPS	National Park Service
ROW	Right of Way
TIMU	Timucuan Ecological and Historic Preserve
USC	United States Code
USFWS	United States Fish and Wildlife Service
TIS	Traffic Improvement Study
Volpe	Volpe National Transportation Systems Center

Chapter 1 – Introduction, Background and Purpose and Need

1.1 Introduction

The National Park Service (NPS) is proposing to improve the interpretive connectivity and visitor mobility between two prominent attractions of Fort George Island in the Timucuan Ecological and Historic Preserve (the Preserve): the Kingsley Plantation and the Ribault Club. This Environmental Assessment (EA) evaluates three alternatives – the no-action alternative and two action alternatives. All of the action alternatives include:

- Transporting visitors between the Kingsley Plantation and the Ribault Club in electric vehicles (hereafter referred to as trams) while providing interpretive services;
- A new maintenance and storage facility for the trams at the Johnson Barn site; and
- Transportation stop amenities at Kingsley Plantation and the Ribault Club

The purpose of this EA is to disclose the expected effects of the alternatives on the natural, cultural and human environment, including long-term (permanent) effects, short-term (construction) effects and cumulative effects. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code (USC) 4321 et seq.); regulation of the Council of Environmental Quality Regulations (40 Code of Federal Regulations (CFR) 1500-1508); NPS Director's Order (DO) 12: Conservation Planning, Environmental Impact Analysis, and Decision Making.

The Preserve is a unit of the NPS in northeast Florida, largely within the City of Jacksonville and Duval County. The Preserve covers 46,000 acres, 75 percent (approximately 34,500 acres) of which are waterways and wetlands that form an extensive estuarine system between the Nassau and St. Johns Rivers at the point where both rivers meet the Atlantic Ocean (see Figure 1-1).

The Preserve was established in 1988 to "protect the complex salt marsh/estuarine ecosystem and historic and prehistoric sites…and to provide opportunities for the public to understand, enjoy, and appreciate these resources." The estuarine system contains salt marsh that is among the least disturbed on the southern Atlantic Coast and many resident, migratory, and rare species rely on the important habitats in the Preserve.[1] With designation of the Preserve, Congress sought to protect the complex salt marsh/estuarine ecosystem and historic and prehistoric sites in the valley between the lower St. Johns and Nassau Rivers, Florida, and to provide opportunities for the public to understand, enjoy and appreciate these resources. The Preserve was designated a national preserve rather than a national park because Congress envisioned it to be a place that could accommodate public and private uses not traditionally found in national parks.

[1] Timucuan Ecological and Historic Preserve, General Management Plan, National Park Service, 1996, page 4.

Figure 1-1. Location Map: Timucuan Ecological and Historic Preserve
Source: http://www.nps.gov/timu/planyourvisit/maps.htm, accessed April 2010, and U.S. DOT Volpe Center

The Preserve's major points of interest include the Fort Caroline National Memorial (Fort Caroline) and the Theodore Roosevelt Area along the southern shore of the St. Johns River and the Kingsley Plantation on Fort George Island. The Florida Park Service (FPS) owns and operates several state parks in and around the Preserve, including the Fort George Island Cultural State Park (which contains the Ribault Club), Little Talbot Island State Park and Big Talbot Island State Park. The City of Jacksonville also has a few public recreation sites in the area, such as the Sisters Creek Marina. NPS, FPS and the City of Jacksonville operate under a partnership known as The Timucuan Trail State and National Parks, formed in 1999 to cooperatively market, manage and support the park area, including the Preserve. The agreement allows the partners to participate in the development of access and management plans, regardless of ownership.

Within Fort George Island, ownership of property is divided among NPS, FPS and a few private landowners. FPS owns and maintains most of the property on Fort George Island as part of the state park, including the Ribault Club, which houses the state park's visitor center. NPS owns and maintains the property at the Kingsley Plantation. The City of Jacksonville owns and maintains the primary roads on the island, including Fort George Road and Palmetto Avenue. (see Figure 1-2).

1.2 Purpose and Need for the Action

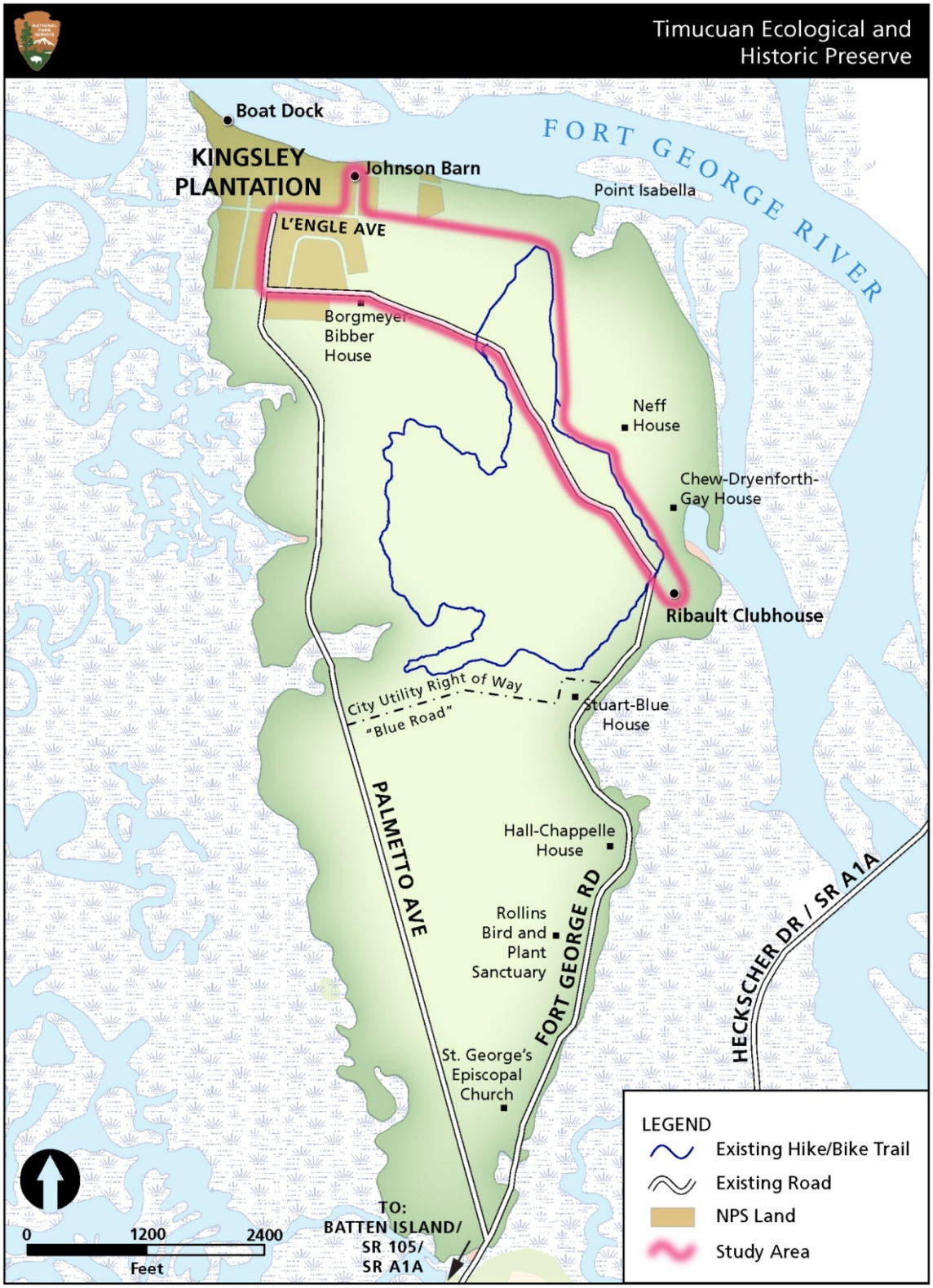
The primary purpose of the proposed action is to enhance the visitor experience by improving interpretive connectivity between Kingsley Plantation and the Ribault Club; another purpose is to enhance the visitor experience by improving visitor mobility between the two sites.

Currently, visitors can access Kingsley Plantation and the Ribault Club by private vehicle, but do not receive the interpretive services that make the connection between the two sites and do not have convenient access to areas of the Preserve that are off limits to motor vehicles. There is also a need to convey visitors who do not arrive by private vehicle in a convenient manner between Kingsley Plantation and Ribault Club, including visitors that arrive via the proposed interpretive boat tour between Fort Caroline, Sisters Creek Marina and Kingsley Plantation.[2] Visitors who reach Kingsley Plantation via the boat tour would have no convenient way of accessing the Ribault Club or other areas between the two sites. Although these visitors could walk 2.4 miles or more round trip from Kingsley Plantation to the Ribault Club along the multiuse trail and/or Fort George Road, this is not convenient and the visitors would not receive interpretive services that make the connection between the two sites. The NPS's proposal to improve the interpretive connectivity and visitor mobility between Kingsley Plantation and the Ribault Club is supported by the FPS, which owns and operates the Ribault Club.[3]

[2] The proposed interpretive boat tour is included in the Timucuan Ecological and Historic Preserve General Management Plan and the NPS is in the preliminary stages of procuring a vendor for it.

[3] The FPS Fort George Island Cultural State Park Unit Management Plan notes that a proposed extension of the multiuse trial could accommodate a proposed tram between the Ribault Club and Kingsley Plantation.

Figure 1-2. Study Area



1.3 Appropriate Use

The proposed project is considered an appropriate use as defined in the NPS *Management Policies 2006* (NPS 2006) because it would be suited to the exceptional natural and cultural resources found in the Preserve and it would foster an understanding of and appreciation for park resources and values. The actions proposed in this plan are also evaluated for consistency with applicable regulatory measures, consistency with the Preserve's 1996 General Management Plan, actual and potential effects to Preserve resources and values, total project cost and the public interest that would be served. If unanticipated and unacceptable impacts are identified, the superintendent would reevaluate the purpose and need to further manage, limit, or discontinue the use.

1.4 Study Area Description

The Kingsley Plantation, the Ribault Club, the Johnson Barn, a segment of the Multi-use Trail, L'Engle Avenue[4] and a segment of Fort George Road[5] are included in the study area, as shown in Figure 1-2.

1.5 Project Background and Relationship to Other Planning Efforts

Within Fort George Island, ownership of roads and property are divided among NPS, FPS, the city of Jacksonville and a few private landowners. As a consequence of the complex ownership of the study area, several plans and studies by the NPS, FPS and City have informed and contributed to the development of alternatives for the proposed action. These plans and studies, and their relevance to this EA, are described below.

The *General Management Plan and Development Concepts – Timicuan Ecological and Historic Preserve* (NPS 1996) includes development plan concepts for Fort Caroline, the Theodore Roosevelt Area and the Kingsley Plantation that focus on visitor experience, public use and physical development needs. The GMP states the purpose of the Preserve, which includes the protection and interpretation of wetlands; protection, preservation and management of the Nassau River/lower St. Johns River drainage; commemoration of the historic la Caroline settlement at Fort Caroline; and protection and interpretation of the significant historic and prehistoric sites in the Preserve. In addition, the vision for the Preserve includes:

> *The natural and cultural aspects of the Preserve are presented and understood to form a fabric that is richer and more diverse than any of its separate threads. The careful interweaving of these components in the stories and experiences offered the Preserve visitor emphasizes the interrelationship of the cultural history with the estuarine environment of the Nassau River/lower St. Johns River.*

[4] Reference to L'Engle Avenue in the EA includes a right of way (ROW) on FPS property between L'Engle Avenue and the Multi-use Trail.
[5] Reference to Fort George Road in the EA includes a segment of Palmetto Avenue between Fort George Road and the main Kingsley Plantation parking lot.

The information and recommendations in the *GMP* are considered in elements of the proposed action that are located within the Preserve.

The *Timucuan Ecological and Historic Preserve Alternative Transportation Study for Kingsley Plantation* (Volpe 2012a, hereafter referred to as the ATS study) assesses various options for an alternative transportation system (ATS) to improve access and interpretive services between the Kingsley Plantation and the Ribault Club. The study assesses existing transportation conditions on Fort George Island; evaluates route, operational and vehicle options; and assesses the financial feasibility of providing the service. This EA relies on data in the study for the alternatives analysis contained in Chapter 2.

The Timucuan Ecological and Historic Preserve Kingsley Plantation Cultural Landscape Report (NPS 2005) assesses the character-defining features of the Kingsley Plantation cultural landscape and outlines recommendations to ensure the preservation of these resources.[6] The information and recommendations in the *Cultural Landscape Report* are considered in elements of the proposed action at and in the vicinity of Kingsley Plantation.

The Fort George Island Cultural State Park Unit Management Plan (FPS 2008) provides descriptions of natural and cultural resources within the Park Unit, as well as descriptions of management needs, concerns and objectives that would be used to guide aspects of the proposed action within the Fort George Island Cultural State Park. The plan contains several transportation recommendations, including extension of the Multi-use Trail to form a loop between Kingsley Plantation and the Ribault Club, and notes that the trail could also accommodate the route of a proposed tram to move visitors between the Ribault Club and Kingsley Plantation.[7] The information and recommendations in the *Management Plan* are considered in elements of the proposed action that are located within the State Park.

The City of Jacksonville's *Fort George Island Traffic Improvements Study* (TIS 2009) considers access and traffic circulation on Fort George Island. The major recommendations resulting from the study include road widening, road and Multi-use Trail additions and changes in access.[8] The TIS contains a preliminary engineering analysis of traffic and stormwater improvements, refined alignment layouts for roadway and Multi-use Trail routes, typical sections, pavement materials and projected costs. An implementation schedule is not available for these improvements and consequently, this EA assumes that the existing roadway and traffic patterns would remain in place.

In 2003, Dornbusch Associates prepared a report for the Preserve, *Financial Feasibility Proposed Boat Tour Timucuan Ecological and Historic Preserve,* to analyze an interpretive boat tour between Kingsley Plantation, Sisters Creek Marina and Fort Caroline National Memorial. An updated report, the *Alternative Transportation Study - Boat Tour Feasibility Study Update,* has been completed by the Volpe Center and informs portions of this study (Volpe 2012b).

[6] Timucuan Ecological and Historic Preserve – Kingsley Plantation, Cultural Landscape Report, 2005, page 1.
[7] Fort George Island Cultural State Park Unit Management Plan, State of Florida Department of Environmental Protection, December 12, 2008, pages 66-7.
[8] Fort George Island Traffic Study Phase Two Summary Report, City of Jacksonville, The R-A-M Professional Group, December 22, 2009.

1.6 Scoping Process and Public Participation

Scoping is an early and open process to determine the breadth of environmental issues and alternatives to be addressed in a NEPA document. Scoping is used to identify which issues need to be analyzed in detail and which can be eliminated from in-depth analysis. It also identifies related projects and associated documents, and identifies permits, surveys, consultation and other requirements

Scoping was accomplished by distributing a newsletter in November 2011, during the preparation of the ATS study. Individuals, agencies and organizations receiving the newsletter are listed in Appendix B, along with a copy of the newsletter. Only one comment from an individual was received on the newsletter. The comment addressed an alternative in the ATS that is not considered in this EA.[9]

A Notice of Availability of this Draft EA would be sent to interested and affected agencies and the public. Recipients of the notice include Federal, state and local elected officials and agencies and Preserve neighbors in the vicinity of the proposed action. These parties are listed in Appendix C. In addition, this Draft EA would be made available for comment on the internet at the NPS Planning, Environment and Public Comment site (PEPC) site: http://parkplanning.nps.gov/.

1.7 Issues and Impact Topics

Impact topics are resources of concern within the project area that could be affected, either beneficially or adversely, by the range of alternatives presented in this EA. They are identified based on the issues raised during scoping; site conditions; Federal laws, regulations, Executive Orders, NPS *Management Policies 2006* (NPS 2006) and Director's Orders; and staff knowledge of the Preserve's resources. Along with the purpose and need for the proposed action, these topics guided the development of alternatives and contributed to the selection of impact topics, as identified in this section.

A discussion of the impact topics considered and rationale for consideration or dismissal from further consideration in this EA is provided below. Table 1-1 shows a summary of the impact topics and whether they are retained for additional evaluation in this EA or dismissed from further consideration.

[9] April 5, 2011 email from Shauna Allen of NPS to Superintendent Barbara Goodman of NPS.

Table 1-1. Impact Topics

Impact Topic	Retained or Dismissed from Further Evaluation	Relevant Regulations or Policies
Vegetation	Retained	NPS Management Policies
Wildlife	Retained	NPS Management Policies; The Migratory Bird Treaty Act of 1918; Executive Order (EO) 13186
Species of Special Concern	Retained	Endangered Species Act; NPS Management Policies
Air Quality	Retained	Federal Clean Air Act (CAA); CAA Amendments of 1990; NPS Management Policies
Visitor Use and Experience/Recreation	Retained	NPS Management Policies
Cultural Resources	Retained	Section 106; National Historic Preservation Act; 36 CFR 800; NEPA; Executive Order 13007; Director's Order #28; NPS Management Policies
Soundscape	Retained	NPS Management Policies
Park Operations	Retained	NPS Management Policies
Resource Conservation, Including Energy & Pollution Prevention	Retained	NEPA; NPS Guiding Principles of Sustainable Design; NPS Management Policies
Climate Change	Retained	NPS Management Policies
Transportation	Retained	NPS Management Policies
Socioeconomics	Retained	40 CFR Regulations for Implementing NEPA; NPS Management Policies
Utilities	Retained	NPS Management Policies
Waste Management	Retained	NPS Management Policies
Land Use	Retained	NPS Management Policies
Floodplains and Wetlands	Dismissed	Executive Order 11988; Executive Order 11990; Rivers and Harbors Act; Clean Water Act; Director's Order 77-1; NPS Management Policies
Water Quality	Dismissed	Clean Water Act; Executive Order 12088; NPS Management Policies
Geology, Topography and Soils	Dismissed	NPS Management Policies
Coastal Zone Management	Dismissed	U.S. Code 16 Ch. 33; NPS Management Policies
Ecological Critical Areas	Dismissed	Endangered Species Act (ESA); NPS Management Policies
Prime and Unique Farmland	Dismissed	Council on Environmental Quality 1980 Memorandum on Prime and Unique Farmlands
Wilderness	Dismissed	The Wilderness Act; Director's Order #41; NPS Management Policies
Environmental Justice, Protection of Children, Human Health & Safety	Dismissed	Executive Orders 12898 and 13045; NPS Management Policies
Indian Trust Resources	Dismissed	Department of the Interior Secretarial Orders No. 3206 and No. 3175
Museum Collections	Dismissed	NPS Management Policies
Visual/Scenic Resources	Dismissed	NPS Management Policies

1.7.1 Impact Topics Considered in this EA

Impact topics identified and analyzed in this EA are listed below along with a brief rationale for the selection of each impact topic.

Vegetation: Much of the island contains hardwood hammocks and forest. While no rare plant species would be involved, minor clearing of vegetation may be needed for some of the action alternatives. Impacts to vegetation are analyzed in this EA.

Wildlife: There are resident populations of reptiles, amphibians, birds, mammals and invertebrates in the study area. Because some of the action alternatives may require minor clearing of vegetation, wildlife habitat may also be affected and associated wildlife may also be affected by the operation of a tram and by use of the maintenance and storage facility. The *Migratory Bird Treaty Act* of 1918, as amended [16 USC 703 et. seq.], provides for the protection of migratory birds and prohibits their unlawful take or possession. The development of a Memorandum of Understanding (MOU) between the U.S. Fish and Wildlife Service (USFWS) and NPS to implement Presidential Executive Order (EO) 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (2000), calls for integration of programs and recommendations of existing bird conservation efforts into park planning and operations. Therefore, impacts to wildlife are evaluated in this EA.

Species of Special Concern: The Federal Endangered Species Act (ESA) prohibits harm to any species of fauna or flora listed by the USFWS as being either threatened or endangered. Such harm includes not only direct injury or mortality, but also disruption of the habitat on which these species depend. Federally-listed threatened or endangered species, along with many state-listed species of concern, occur within the boundaries of Fort George Island. Therefore, impacts to these protected species are analyzed in this EA.

Air Quality: The Federal 1970 Clean Air Act stipulates that Federal agencies have an affirmative responsibility to protect a park's air quality from adverse air pollution impacts. The construction activities for the maintenance and storage facility may temporarily generate dust and fumes which can impact air quality in the immediate area. Use of trams on Fort George Island may reduce privately owned vehicle trips and provide a long term benefit to air quality. In light of these considerations, air quality impacts are analyzed in this EA.

Visitor Use and Experience and Recreation Resources: The 1916 Organic Act and the NPS *Management Policies 2006* direct NPS to provide for public enjoyment of the scenery, wildlife and natural and historic resources of national parks "in such a manner and by such means as would leave them unimpaired for the enjoyment of future generations." The proposed action could provide benefits to park users and other park users may be adversely affected by the motorized vehicles on the trail. Therefore, potential impacts and benefits of the proposed action on visitor use and experience and recreation resources are addressed in this EA.

Cultural Resources: Section 106 of the National Historic Preservation Act of 1966, as amended, provides the framework for Federal review and protection of cultural resources and ensures that they are considered during Federal project planning and execution. The 1916 NPS

Organic Act and the NPS *Management Policies 2006* require the consideration of impacts on cultural resources, which include archeological sites, ethnographic resources, historic structures and historic districts/cultural landscapes. The Kingsley Plantation is a National Historic Site, and the Ribault Club is listed on the National Register of Historic Places.

There are many prehistoric and historic cultural resources within the Preserve that contribute to the understanding of human use and life in the region. The Preserve contains sites representing almost every cultural period: Archaic, Orange, Woodland, Mississippian, Protohistoric, Mission Period, First Spanish Period, British Period, Second Spanish Period and 19th century American to the present. These sites represent several thousand years of human occupation of the area, including perhaps the oldest documented ceramic culture habitation site in the state of Florida, dating back 6,000 years (NPS 1983). At present, there are 192 prehistoric and historic sites at the Preserve listed in the Archeological Sites Management Information System. Potential impacts to cultural resources are addressed in this EA.

Soundscape: The NPS *Management Policies 2006* require, to the fullest extent practicable, the protection, maintenance, or restoration of the natural soundscape resource in a condition unimpaired by inappropriate or excessive noise sources. Proposed project actions would generate temporary, construction-related noise above existing ambient conditions in the vicinity of the proposed tram maintenance and storage facility. Offering a tram tour on Fort George Island may reduce privately owned vehicle trips and provide a long term soundscape benefit, particularly if quieter vehicles are used. In light of these considerations, soundscape impacts are analyzed in this EA.

Park Operations: Park operations and management, including operational efficiency, staffing needs, inter-agency relations with FPS, maintenance and fee collections could be affected by the action alternatives. Thus, the potential effects on park operations are considered in this EA.

Resource Conservation, Including Energy and Pollution Prevention: The NPS's *Guiding Principles of Sustainable Design* provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity and encourages responsible decisions. The guidebook articulates principles to be used, such as resource conservation and recycling. Proposed project actions could be beneficial; therefore, this impact topic is evaluated further in this EA.

Climate Change/Greenhouse Gases: Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality, storm frequency, etc.) lasting for an extended period of decades or longer. There is strong evidence that global climate change is being driven by human activities worldwide, primarily the burning of fossil fuels and tropical deforestation, which release carbon dioxide and other heat-trapping gases, commonly called "greenhouse gases," into the atmosphere (IPCC 2007). There are two aspects of climate change that must be considered in an environmental impact analysis: 1) the impact of the proposed actions on climate change or the potential to increase or decrease emissions of greenhouse gases that contribute to climate change and 2) the impact of climate change on the proposed action, such as a roadway that may be inundated by rising ocean levels.

During the construction process of the maintenance and storage facility, the proposed action could result in a temporary increase in emissions of greenhouse gases from the operation of construction vehicles. In addition, use of a tram on Fort George Island may reduce privately owned vehicle trips and provide a long term, beneficial reduction in greenhouse gases, particularly if cleaner vehicles are used for the tour. On the other hand, the proposed action may draw more visitors to drive to the Preserve. In light of these considerations, climate change impacts are analyzed in this EA.

Transportation: The action alternatives could affect visitor transportation to and within the Preserve. Impacts could include changes in vehicular use and parking for visitors in private vehicles and tour buses, changes in the modes of transportation visitors use to enter and travel within the Preserve and changes in traffic volumes and resulting traffic flow on roads. Therefore, this impact topic is included for further analysis in this EA.

Socioeconomics: The construction of the maintenance and storage facility and the operation of a tram could generate socioeconomic benefits. Therefore, socioeconomic impacts are included for further analysis in this EA.

Utilities: The maintenance and storage facility at the Johnson Barn site would require restoration of electrical and communications service and the installation of a septic system and provision of water. Construction of the storage facility may also temporarily impact above and below-ground telephone, electrical, natural gas, water and sewer lines and cables, potentially disrupting service to customers. Therefore, utilities are included for further analysis in this EA.

Waste Management: It is anticipated that there is potential additional waste generated from the trams, primarily in the form of spent rechargeable batteries similar to the current situation where electric golf carts are used. Therefore, this impact topic is further evaluated in this EA.

Land Use: Visitor parking and pathways would be included for further analysis in this EA. Parking is limited at Kingsley Plantation (17 spaces with 40 spaces overflow capacity) and Ribault Club (18 parking spaces with 115 space overflow capacity). Access between Kingsley Plantation and Ribault Club is achieved via an existing network of roads and trails (Fort George Road and the Multi-use Trail)

1.7.2 Impact Topics Considered but Eliminated from Further Analysis

The following impact topics were initially considered but dismissed from further analysis because the resource is not present in the project area or because any potential impacts would be no more than negligible to minor.

Floodplains and Wetlands: There are no known wetlands or floodplains in the study area.

Water Quality: NPS *Management Policies 2006* states that the NPS would "take all necessary actions to maintain or restore the quality of surface waters and ground waters within the parks consistent with the Clean Water Act and all other applicable Federal, state and local laws and regulations." Excavation associated with the construction of a maintenance and storage facility

would not be deep enough to affect groundwater and none of the proposed alternatives would involve or affect any waterways; therefore, this impact topic was dismissed from further consideration due to the unlikelihood of water quality impacts generated by either the action or the no-action alternatives.

Geology, Topography and Soils: According to *NPS Management Policies 2006*, geologic resources and features would be preserved and protected from adverse impacts of human activity, while allowing natural processes to continue. These policies also state that the NPS would strive to understand and preserve the soil resources of park units and to prevent, to the extent possible, the unnatural erosion, physical removal, or contamination of the soil, or its contamination of other resources. Under the no-action alternative there would be no modification or alteration of the natural geology or topography within the project area. Under the action alternatives minor site grading would be associated with construction of the maintenance and storage facility and for the associated utilities, primarily where a new septic system would be excavated and installed. However, these modifications would have negligible to minor impacts on topography within the project area since the area is mostly flat. Soil impacts would occur on previously disturbed soils in the vicinity of Johnson Barn, would be localized near already developed areas and would be limited to a small area when compared to the overall size and remaining undisturbed acreage of the Preserve. Best management practices such as silt fences, sand bags and other control methods would also be implemented to offset any adverse impacts during construction of the proposed facilities. After construction, natural revegetation would minimize potential soil erosion. Thus, short-term construction activities would result in minor adverse impacts to soils from new disturbance. Therefore, this impact topic would not be further evaluated in this EA.

Coastal Zone Management: This project meets the consistency requirements and goals of the coastal zone management policies. Therefore, the proposed project would not impact coastal zones in the coastal zone management area.

Ecological Critical Areas: The term "critical habitat" for a threatened or endangered species means: the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the ESA, on which are found those physical or biological features. No critical habitat has been identified in the area of construction; therefore ecological critical areas would not be discussed in this EA.

Prime and Unique Farmland: In 1980 the Council of Environmental Quality (CEQ) directed Federal agencies to assess the effects of their action on farmland soils classified as prime or unique by the United States Department of Agriculture, Natural Resources Conservation Service. Prime farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber and oil seed; and unique farmland produces specialty crops such as fruits, vegetables and nuts. There are no prime or unique farmlands associated with the project area; therefore, prime or unique farmland was dismissed as an impact topic in this EA.

Wilderness: According to NPS *Management Policies 2006*, proposals having the potential to impact wilderness resources must be evaluated in accordance with NPS procedures for implementing the NEPA. Since there are no proposed or designated wilderness areas within or adjacent to the Preserve, wilderness impacts are not further evaluated in this EA.

Environmental Justice, Protection of Children and Human Health and Safety: Executive Order 12898 requires Federal agencies to identify and address disproportionate impacts of their programs, policies and activities on minority and low-income populations. Executive Order 13045 requires Federal actions and policies to identify and address disproportionately adverse risks to the health and safety of children, and the NPS *Management Policies 2006* require an assessment of effects on human health and safety. None of the alternatives would have disproportionate health or environmental effects on children or on minorities or low-income populations as defined in the Environmental Protection Agency's Environmental Justice Guidance. Therefore, these topics are not further addressed in this EA.

Indian Trust Resources: Indian trust assets are owned by Native Americans but held in trust by the United States. Indian trust assets do not occur within the Preserve and, therefore, are not evaluated further in this EA.

Museum Collections: As described in *Director's Order #24: NPS Museum Collections Management*, the NPS is custodian in perpetuity of irreplaceable and priceless museum collections that include objects, specimens and archival and manuscript materials representing cultural and natural resources in the United States. The Preserve houses and maintains museum collections for four parks TIMU/FOCA and CASA/FOMA in a curatorial storage facility in the Theodore Roosevelt Area. The proposed project would not affect the museum collections that are housed at the Preserve, therefore this topic was dismissed from further analysis.

Visual/Scenic Resources: The NPS *Management Policies 2006* identify the conservation of scenic resources and the provision of opportunities for their enjoyment as fundamental principles for national park management. Under the no-action alternative, there would be no modification to park resources or operations. Under the action alternatives, the Johnson Barn, which was constructed in the 1970s and is dilapidated, would be replaced by a tram storage and maintenance facility and a tram would operate in areas of the Kingsley Plantation and the Ribault Club where transportation activity currently occurs. The maintenance and storage facility would not be significantly different from the existing barn and it is shielded from public areas of the Preserve by vegetation. Therefore this topic was dismissed from further analysis.

1.8 Decision to be Made

The decision document will identify as the selected alternative either the no-action alternative or one of the action alternatives to implement an interpretive tram tour. In making this decision, NPS would consider the environmental impacts disclosed in this document and measures to avoid, minimize, or mitigate adverse effects, as well as the 1916 Organic Act, the Parks and Recreation Act of 1978, and other laws, such as the Clean Air Act, Clean Water Act and Endangered Species Act.

Chapter 2 - Alternatives Development and Analysis

Three alternatives, including the no-action alternative, are analyzed in this EA. The no-action alternative (Alternative A), as required under the NEPA, assumes that no substantial physical or operational changes would occur within the project area except for those already underway or planned for the near future; current conditions would continue. The action alternatives were formulated to meet the project purpose of and need for action as discussed in Chapter 1. The two action alternatives (Alternatives B and C) present options to achieve the project objectives through combinations of physical improvements and operational strategies.

Section 2.1 of this chapter describes the process for developing the route alternatives and includes a discussion of the alternatives that were eliminated from further consideration and those retained for further evaluation in the EA. Section 2.2 describes in detail the alternatives that are retained further analysis in this EA and Section 2.3 compares the impacts of the retained alternatives. Section 2.4 identifies the NPS and Environmentally Preferred Alternative.

2.1 Development of Action Alternatives

Both action alternatives include an interpretive tram tour between the Kingsley Plantation and the Ribault Club using an electric tram and a maintenance and storage facility. The primary difference between the two alternatives is the route traveled between the two sites; however, both alternatives occur on existing trails and/or roads. The location of stops for passengers to board and alight from the tour at Kingsley Plantation and the Ribault Club is largely a function of the route locations and avoiding and minimizing impacts to these two important cultural and historical resources. Alternative routes and stops where passengers would board and alight from the tour were developed in the *Timucuan Ecological and Historic Preserve Alternative Transportation Study (ATS) for Kingsley Plantation* (Volpe 2012a), hereafter referred to as the "ATS Study." A summary and the results of the analysis of route alternatives are summarized in Section 2.1.1. Passenger boarding and alighting areas (stops) are discussed in Section 2.1.2. The type of vehicle used on the tour is largely a function of the constraints on the route, the desired visitor experience and the required passenger capacity. A variety of tour vehicles were considered in the ATS Study. The results of the vehicle evaluation are summarized in Section 2.1.3. Section 2.1.4 discusses the storage and maintenance facility.

2.1.1 Route Alternatives

The proposed tour is intended to provide interpretive service and transportation between two sites on Fort George Island: the Kingsley Plantation and the Ribault Club. The presence of extensive natural and cultural resources on Fort George Island dictates that, in order to avoid and minimize impacts, to the greatest extent possible, the tour should use the existing transportation infrastructure. Currently there are two primary routes between Kingsley Plantation and the Ribault Club: one is comprised of L'Engle Avenue and the Multi-use Trail and the other is Fort George Road (Figure 1-2).

The primary purpose of the interpretive tram tour is to enhance the visitor experience by improving interpretive connectivity and visitor mobility between the Kingsley Plantation and the Ribault Club. The Multi-use Trail provides the best opportunity for historic and ecological interpretation. Thus, all action alternatives incorporate the Multi-use Trail to maximize visitor opportunity to learn about the history and ecology of the island.

Based on the criteria discussed above, two route alternatives for the interpretive tram tour between Kingsley Plantation and the Ribault Club are retained for further evaluation in this EA, each of which is described below and shown in Figure 2-1.

Alternative B would operate along L'Engle Avenue and the Multi-use Trail, with the interpretive tram tour traveling in both directions along this route and requiring the vehicle to turn around at Kingsley Plantation and at the Ribault Club. The route would begin at a passenger boarding/alighting area in the main Kingsley Plantation parking area (Figure 2-2). It would turn left out of the parking area onto Palmetto Avenue and then left (east) onto L'Engle Avenue (Figure 2-2). It would continue east from L'Engle Avenue off NPS property and onto a path through a grassy field on FPS property that is currently used by bicyclists, pedestrians, golf carts and Segway tours that are a concession of the FPS. The route would turn right (south) onto the Multi-use Trail and continue to Fort George Road, where it would turn left to continue south for a short distance to the Ribault Club driveway (Figure 2-3). The vehicle would stop in the Ribault Club driveway to allow passengers to board and alight and would use the driveway loop to turn around and return via the same route to Kingsley Plantation parking area. This alternative would require a new access at Kingsley Plantation from L'Engle Avenue to the parking lot to return to the passenger boarding/alighting area. This route is 3.4 miles round trip.

Alternative C would operate in a one way loop along L'Engle Avenue, the Multi-use Trail, the Ribault Club driveway, Fort George Road and a short stretch of Palmetto Avenue (Palmetto Avenue is hereafter included in the description of Fort George Road). This route would begin at Kingsley Plantation, at a passenger boarding/alighting stop on L'Engle Avenue just east of Palmetto Avenue (Figure 2-2). The route would continue along L'Engle Avenue to the Multi-use Trail and on to the Ribault Club driveway on the same route as described for Alternative B. To return to Kingsley Plantation, Alternative C would turn right (north) out of the Ribault Club driveway onto Fort George Road (Figure 2-3). This route would continue northwest to Palmetto Avenue, where it would turn right onto Palmetto Avenue and continue a short distance through the entrance to Kingsley Plantation and right (east) onto 'LEngle Avenue, to Kingsley Plantation passenger stop.

Section 2.2 of this EA provides a detailed description of each action alternative.

Route Alternatives Considered and Dismissed from Further Evaluation: A route was considered in the ATS Study that includes the "Blue Road" proposed by the City of Jacksonville in the *Fort George Island Traffic Improvements Study* and Palmetto Avenue. However, because this route is only in the planning stages and is not programmed for construction, it is not considered further in this EA.

Figure 2-1 Route Alternatives
Source: U.S. DOT Volpe Center

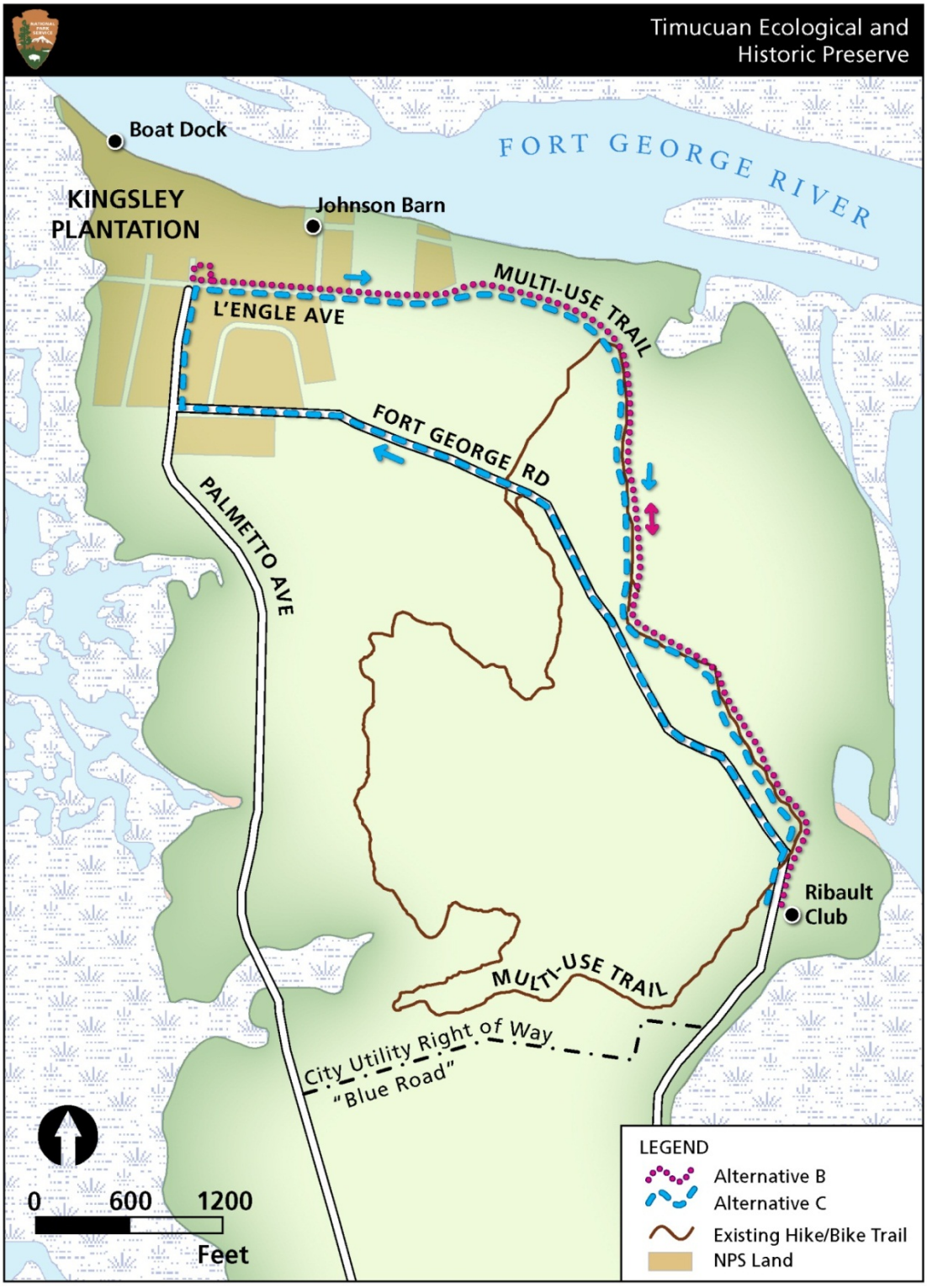


Figure 2-2. Kingsley Plantation Proposed Tram Circulation
Source: U.S. DOT Volpe Center

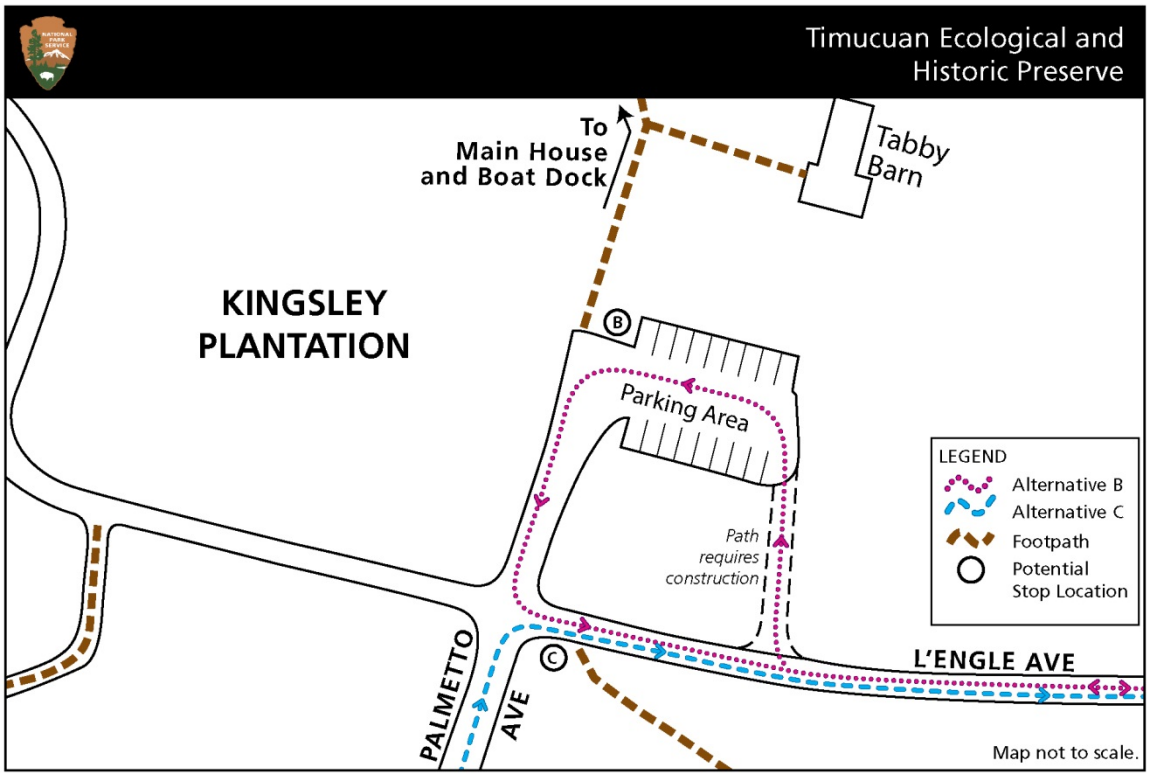
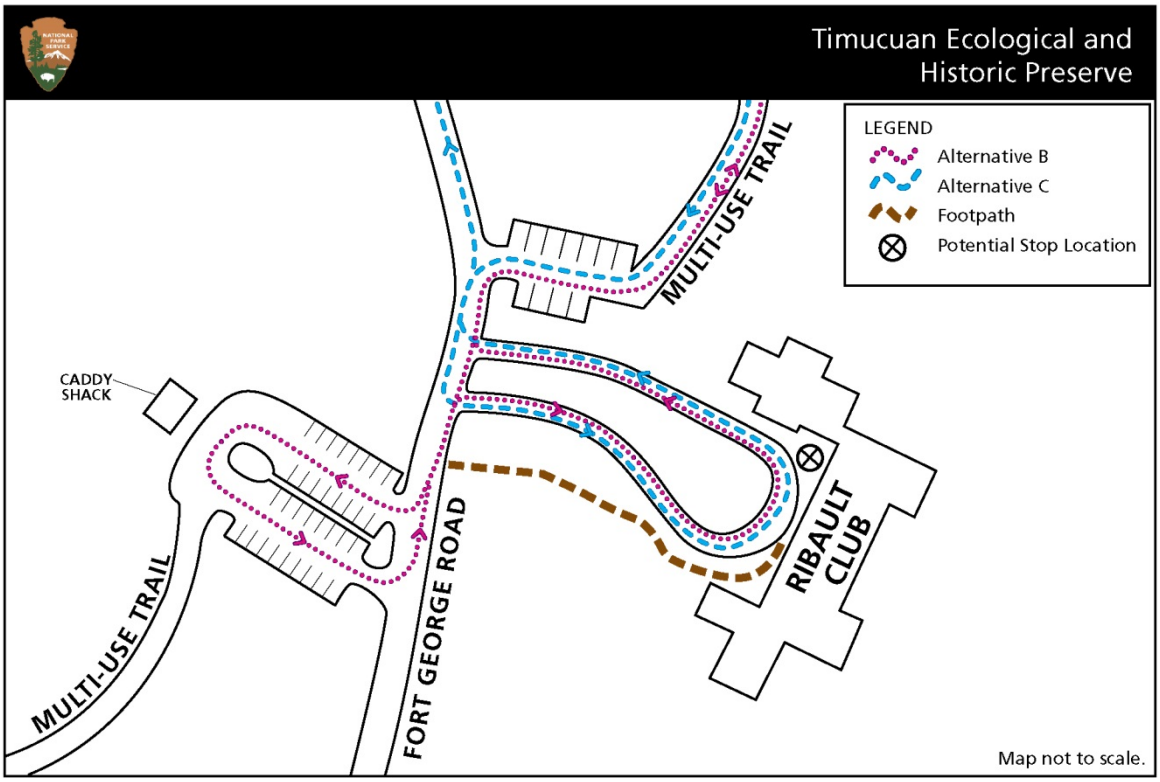


Figure 2-3. Ribault Club Proposed Tram Circulation
Source: U.S. DOT Volpe Center



2.1.2 Transportation Stop Locations

For each route alternative, one transit stop would be provided each at Kingsley Plantation and the Ribault Club. The following factors were considered in locating transportation stops for the interpretive tour:

- Minimize intrusions on the historic Kingsley Plantation and Ribault Club
- Accessibility to the proposed interpretive tour routes
- Accessibility to the attractions and potential ticket selling locations
- Passenger and vehicular safety
- Impacts to vehicular traffic flow

The proposed stop alternatives are described below.

Alternative B Stop Locations: The proposed Alternative B passenger stop locations at Kingsley Plantation and the Ribault Club are shown in Figures 2-2 and 2-3, respectively.

The stop location at Kingsley Plantation would be located in the northeast corner of the main parking lot (see Figure 2-2) because this location:

- Would minimize intrusions on the historic Kingsley Plantation as transportation activity already occurs in this area
- Is accessible to the Alternative B route, as the tram would have to turn around in the parking lot
- Is proximate to the attractions at Kingsley Plantation (approximately 420 feet from the main house and visitor center, a potential location for ticket sales) and the boat dock (approximately 1,200 feet)
- Is safe, as passengers would not have to cross the parking lot to reach this location from the main attractions and boat dock, and would be out of the flow of most parking lot traffic

The stop location at the Ribault Club would be located in the Ribault Club driveway (see Figure 2-3) because:

- Would minimize intrusions on the historic Ribault Club as transportation activity already occurs in this area
- Is on the Alternative B route, as the tram would have to turn around in the driveway
- Stops directly in front of the main attraction (the Ribault Club), which is also a potential location for ticket sales in the FPS visitor center
- Is safe, as passengers would alight directly in front of and on the same side of the driveway as the Club
- Has minimal impacts to vehicular traffic flow because the driveway is primarily used for special events, which occur only occasionally during proposed tour operating hours

Alternative C Stop Locations: The Alternative C route would access Kingsley Plantation from Palmetto Avenue and turn right on L'Engle Avenue. The proposed stop would be located on L'Engle Avenue just east of Palmetto Avenue (see Figure 2-2) because this location:

- Would minimize intrusions on the historic Kingsley Plantation, as transportation activity already occurs in this area
- Is located on the proposed Alternative C route
- Is proximate to the attractions at Kingsley Plantation (approximately 450 feet from the main house and visitor center, a potential location for ticket sales) and the boat dock (approximately 1,500 feet)
- Is safe, because although passengers would have to cross L'Engle Avenue to reach this location from the main attractions and boat dock, L'Engle Avenue is not used by general traffic; for the same reason, this location has no impact to vehicular traffic flow

The stop location at the Ribault Club would be in the Ribault Club driveway (see Figure 2-3) for the same reasons as described for Alternative B. Although this location is not on the Alternative C Route, it is not too far off the route and meets all of the other stop location criteria.

Stop Locations Considered and Dismissed from Further Evaluation: Two alternatives each at Kingsley Plantation and the Ribault Club were eliminated from further consideration. These alternatives and the reasons for their elimination are discussed below.

The ATS Study noted that at Kingsley Plantation, the tour could continue on L'Engle Avenue to behind the Army/Navy Lodge; however, this location would require the development of proper turnaround in the service driveway area behind the Lodge, which is not feasible due to space constraints. The ATS Study also noted that a potential stop near the slave cabins would be another option for Route C at the Plantation, since this route passes by the cabins. The long walking distance to the boat dock, main house and likely ticket sale location at the visitor center make this location less desirable than those near the core parking area. In addition, this location would be more disruptive to the cultural landscape at the Plantation.

Two Ribault Club stop locations considered in the ATS study were dismissed from consideration in this EA: the auxiliary parking lot near the caddy shack (Alternatives B and C) and a Fort George Road stop just north of the Multi-use Trail (Alternative C). These locations are substantially further from the main attractions and ticketing location than the driveway stop location and therefore are less convenient for visitors.

2.1.3 Interpretive Vehicle Evaluation

Several factors were considered in selecting vehicles for the interpretive service between Kingsley Plantation and the Ribault Club. The route alternatives pose physical and operational constraints, energy use and emissions should be considered, the vehicles need to be accessible to people with disabilities and the vehicles need to be capable of accommodating rider demand. In addition, the vehicle should be capable of operating legally on public roads and should maximize rider experience and minimize impacts to other visitors.

The terrain of the Alternative B and C routes creates a number of implications for the selection of appropriate vehicles. The packed gravel, dirt and generally rugged terrain of the routes necessitate a vehicle with a durable chassis, high undercarriage and thick tires to ensure a more comfortable ride for passengers. The routes also feature a number of constraints that restrict the vehicle dimensions. The width of the roadways and trail, estimated as 10 feet wide at some points, limits the vehicle width to approximately eight feet in order to allow for passing pedestrians and bicyclists. The height of the tree canopy also requires a vehicle that can meet the service requirements of the rugged roadway without raising the vehicle so much as to adversely impact the tree canopy. The route alternatives also feature a number of sharp turns, necessitating a vehicle that is nimble enough to navigate the route.

Given the natural beauty of the Preserve, the design of the vehicle should maximize connecting visitors with the natural environment. To maximize this potential, an open-air vehicle (with the flexibility for rain protection such as roll-down plastic curtains) is preferable over an enclosed vehicle as it better meets the Preserve's goal of providing the best user experience. Criteria used to evaluate vehicles alternatives and the results of the evaluation of vehicles in the ATS Study are summarized in Appendix D.

At five feet wide and with a capacity of 12 to 15 passengers, the low speed RoadRat Motors citEcar Transport Buddy 15P Electric Shuttle (the RoadRat shown in Figure 2-4) is the proposed vehicle because the RoadRat:

- Is more than a foot narrower than any other vehicle

- Carries 2-5 more passengers than the next narrowest vehicle
- Is one of two lowest height and one of three tightest turning radius vehicles
- Is electric, which means it is among the quietest and cleanest vehicles, resulting in low impacts to visitors – riders and non-riders.

Figure 2-4. Electric Low Speed Vehicle Retained for Additional Evaluation
RoadRat Motors citEcar Transport Buddy 15P Electric Shuttle
Source: RoadRat Motors

Vehicles Considered and Dismissed from Further Evaluation: Based on the constraints illustrated in Appendix D, coaches, large transit buses, vans and all-terrain vehicles are not appropriate and were not considered in the ATS Study. In addition, several vehicles that were evaluated in the ATS Study were eliminated from consideration in this EA because they do not meet the physical constraints, particularly the height limit, imposed by the routes. These include the Model 9000/2105, Metro Tram, Model 6000, Tramstar LFT, Classic American Tram. In addition, while the Specialty Vehicles Electric Star II has most of the necessary characteristics, it is a foot wider and carries two to five fewer passengers than the RoadRat and so was eliminated from further consideration.

2.1.4 Maintenance and Storage Facility Site

An on-site maintenance and storage facility is required for the interpretive tour vehicles. The facility should meet the following criteria:

- An enclosed facility is preferable to protect the vehicles from the elements, such as wind and rain.
- Facility should be large enough to store and maintain at least three RoadRat interpretive tour vehicles
- Site should be convenient to the interpretive route
- Facility should be sited and/or screened so that it does not adversely affect the cultural landscape and does not detract from the use and enjoyment of the Preserve
- If possible, the facility should be sited on an existing disturbed site is to avoid and minimize impacts to the extensive natural and cultural resources on Fort George Island.

Based on these criteria, the proposed action is to replace the dilapidated Johnson Barn (see Figure 2-5) on its existing footprint to store and maintain the interpretive tour vehicles (see Figure 2-1). No other similarly suitable sites were available, so no other action alternatives were identified. The barn is located approximately 205 feet north of the L'Engle Avenue on Kingsley Plantation site. It is screened from the public by existing vegetation and the new facility would be designed to be unobtrusive and blend in with the existing landscape. Figure 2-6 illustrates the type of facility that would be constructed. To upgrade the water system to the new facility, a water line would be run from the existing well to the facility.

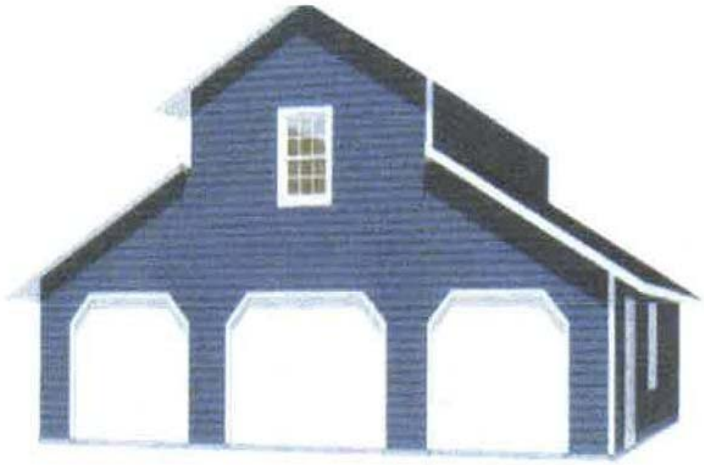
The Johnson Barn is not listed or eligible for listing on the National Register of Historic Places. The building is the standing remains of a dilapidated pole barn built sometime after the 1970s and left standing when the Preserve took ownership of the property. It has no intrinsic historic value and the style of architecture is unrelated to any other found in the historic period of the Kingsley Plantation Historic District.[10]

Alternatives Considered and Dismissed from Further Evaluation: Rehabilitation of the Johnson Barn was considered in a Comprehensive Condition Assessment. The facility was found to be so degraded that demolition and new construction was the only reasonable option.[11]

Figure 2-5. Existing Johnson Barn Facility
Source: Project Development Questionnaire Form for Johnson Barn

[10] August 29, 2011 Letter from Superintendent B. Goodman, NPS to S. Stroth, State Historic Preservation Officer (SHPO) and October 11, 2011 letter from L. Kammerer, Deputy SHPO to B. Goodman. See Appendix E.
[11] Project Development Questionnaire Form for Johnson Barn Rehabilitation.

Figure 2-6. Approximate Proposed Maintenance and Storage Facility
Source: Project Development Questionnaire Form for Johnson Barn



2.2 Description of Retained Alternatives

This section contains a description of the alternatives retained for detailed analysis in this EA. There are three retained alternatives: the No-action Alternative (Alternative A) and two action alternatives that are primarily distinguished by their routes: Alternative B (Roundtrip on L'Engle Avenue/Multi-use Trail) and Alternative C (L'Engle Avenue/Multi-use Trail and Fort George Road Loop). Each of these alternatives is summarized in Table 2-1 and described below.

Table 2-1. Summary Description of the Retained Action Alternatives

Component	Alternative B	Alternative C
Round Trip Route	Bi-Directional on L'Engle Ave and Multi-use Trail	L'Engle Ave, Multi-use Trail and Fort George Road Loop
Round trip travel time[1]	34 minutes	26 minutes
Distance on Trail	2.7 miles	1.35 miles
Distance on Public Road	Negligible	1.2 miles
Safety issues	Passing tour vehicles in opposite direction on narrow trail used by pedestrians, bicyclists, segways	• One way travel on trail used by pedestrians, bicyclists, segways. • Other vehicles traveling at higher speeds on narrow public roads (passing, tailgating, speeding, unsafe driving); passing other vehicles in opposite direction
Kingsley Plantation Stop	Kingsley Plantation core parking lot	Palmetto & L'Engle Avenues
Ribault Club Stop	Ribault Club driveway	Ribault Club driveway
Vehicle Alternatives	RoadRat (electric)	RoadRat (electric)
Maintenance & Storage Facility	Footprint of Johnson Barn site	Footprint of Johnson Barn site
Operational Characteristics	2 Vehicles, 24 daily trips on 20 minute headways	2 Vehicles, 30 daily trips on 15 minute headways
Fee	Yes – undetermined.	Yes – undetermined
Attractions on Route	• Point Isabella • Duval County Crypt • Nettleton-Neff House • Chew-Dyrenforth-Gay House	• Point Isabella • Duval County Crypt • Nettleton-Neff House • Chew-Dyrenforth-Gay House • Mount Cornelia • Canopied roads • 5th and 6th fairways of Point Isabella • Private homes

1 Travel time assumes 6 mph on trails and 12 mph on public roads and dwell time of 3 minutes at each of 2 boarding/alighting locations.

2.2.1 Alternative A - No-action Alternative

The no-action alternative (Alternative A) is evaluated in this EA, as required under NEPA. Under this alternative, the Preserve would continue to operate without an interpretive tram tour. Visitors would continue to use the self-guided and ranger-led tours at Kingsley Plantation, but no interpretation would be provided to connect the Plantation to the Ribault Club. Guided Segway tours provided by EcoMotion (a FPS concession) from the Ribault Club would continue to operate between the two sites via the Multi-use Trail. The current cost of the EcoMotion Tours is 65 to 95 dollars per person.[12]

The no-action alternative assumes that no substantial physical or operational changes would occur within the project area except for those already underway or planned for the near future;

[12]Source: www.ecomotiontours.com

current conditions would continue. No transportation would be provided between the Kingsley Plantation and the Ribault Club and visitors that arrive without a car, including visitors arriving via the proposed boat tour, would have to walk 2.4 miles or more round-trip from the Kingsley Plantation along the Multi-use Trail or Fort George Road if they want to reach the Ribault Club. The Multi-use Trail would continue to be used by pedestrians, golf carts, Segways, bicycles and park service vehicles.

2.2.2 Components Common to the Action Alternatives (Alternatives B and C)

There are several common components of the action alternatives, a fee-based interpretive tour between the Kingsley Plantation and the Ribault Club using the RoadRat electric vehicle. Both action alternatives would travel on L'Engle Avenue, the Multi-use Trail and a short stretch of Palmetto Avenue, although Alternative C would also travel on Fort George Road. The operational characteristics of the alternatives are similar. While the action alternatives would have different passenger stops at the Kingsley Plantation, both would include the Ribault Club driveway as a passenger stop and a maintenance and storage facility at the Johnson Barn site. Each of the common components of the action alternatives is described below.

Common Route Components: Both Alternatives B and C would travel from the Kingsley Plantation to the Ribault Club via a short stretch of Palmetto Avenue near Kingsley Plantation, L'Engle Avenue and a portion of the Multi-use Trail. Alternative B would return via the same route and Alternative C would return via a different route (see Figure 2-1).

- **L'Engle Avenue:** L'Engle Avenue is an unpaved service road on the Kingsley Plantation site that leads east from Palmetto Avenue to the FPS property (see Figure 2-1). On the FPS property, L'Engle Avenue continues as unpaved path through a grassy field that is currently used by bicyclists, pedestrians and the NPS service vehicles as an access between the Plantation and the Multi-use Trail (see Figure 2-7). The FPS proposes to create a ten-foot wide, paved Multi-use Trail (the proposed Kingsley Connector) on the path, noting that the Connector would be used to accommodate a proposed route to move visitors between the Ribault Club and Kingsley Plantation,[13] which supports the proposed action. For the purposes of this EA, references to L'Engle Avenue include this path.

  L'Engle Avenue is easily maintainable at 14 feet in width and would serve as the access road to the proposed maintenance and storage facility on the Johnson Barn site. L'Engle Avenue is roped off and is not accessible to public vehicles. The *Cultural Landscape Report* recommends rehabilitation of the road material and plantings along L'Engle Avenue on the Plantation site.[14]

[13] Fort George Island Cultural State Park Unit Management Plan, State of Florida Department of Environmental Protection, December 12, 2008, page 67.
[14]Timucuan Ecological and Historic Preserve – Kingsley Plantation, Cultural Landscape Report, 2005, pages 108-9.

Figure 2-7. L'Engle Avenue looking west towards Palmetto Avenue
Source: U.S. DOT Volpe Center

- **Multi-use (Hike/Bike) Trail:** There is a 3.25 mile multi-use loop trail on Fort George Island that is located on FPS land and follows the former golfing fairway.[15] The action alternatives would operate on a segment of the trail between L'Engle Avenue and Fort George Road. This unpaved trail is currently used by bicyclists, pedestrians, Segway and golf cart users and service vehicles. As shown in Figure 2-8, the Multi-use Trail, which is 10-14 feet wide, currently requires active vegetation management to remain clear in many areas and two-way traffic is not possible in most locations. There are a few areas where a vehicle could pull over to allow another vehicle to pass; however, this type of operation requires active management to ensure that two opposing vehicles do not approach each other in an area unsuitable for passing. The following attractions are located on the Multi-use Trail: Point Isabella, thought to be the location of a historic deep water access point;[16] the Duval County Crypt; the Nettleton-Neff House; and the Chew-Dyrenforth-Gay House (private).

[15] Fort George Island Cultural State Park Unit Management Plan, State of Florida Department of Environmental Protection, December 12, 2008, page 59.
[16] Timucuan Ecological and Historic Preserve – Kingsley Plantation, Cultural Landscape Report, 2005, page 23.

Figure 2-8. Typical ROW condition along the existing Multi-use Trail
Source: U.S. DOT Volpe Center

- Palmetto Avenue: Palmetto Avenue, along with Fort George Road, is the primary public road on Fort George Island and it is owned and maintained by the City of Jacksonville (see Figure 1-2). Palmetto Avenue is a narrow (10 to 15 feet), approximately two mile-long, packed-gravel roadway. Traffic on Palmetto Avenue is two-way and the speed limit is 20 miles per hour. While Palmetto Avenue is wide enough to allow two passenger cars to pass carefully at slow speeds in most locations, it is not built to accommodate general two-way traffic. For the purposes of this EA, references to Fort George Road include this short stretch of Palmetto Avenue.

Ribault Club Stop: At the Ribault Club, the tour would stop for passengers to board and alight in the driveway in front of the Club for both route alternatives and would use the driveway to turn around and reverse direction (See Figure 2-3). The FPS indicates that occasional special events occur at the Ribault Club during tour operation hours and may require closing the driveway and detouring to a temporary stop outside the driveway.

Maintenance and Storage Facility: The proposed facility would be located on the same footprint as the Johnson Barn. The barn is located approximately 205 feet north of the L'Engle Avenue on the Kingsley Plantation site. It is screened from the public by existing vegetation and the new facility would be designed to be unobtrusive and blend in with the existing land. (see Figure 2-1).

The existing barn site measures 2,419 square feet. The new 40-foot by 40-foot facility would be sited on a concrete slab foundation, which the old facility lacked. Fill from the foundation would

be reused onsite where needed for grading around the finished foundation. Use of this site would require reestablishment of electrical services for lighting and for charging the interpretive vehicles, connection of a phone line with a pre-existing aboveground system that is currently on the Preserve, construction of a septic system and installation of a water line connection to support bathrooms and running water. All utility upgrades would be done in the most current energy efficient manner with proper energy saving fixtures as planned out in the ASHRAE Level 2 Energy Audit for Timucuan Ecological & HP (Mactec 2010).

Operational Characteristics: Operational characteristics include the number of vehicles needed, the number of daily round trips required and the headways (time between two consecutive vehicles or measure of frequency) needed to serve the anticipated number of riders. Using two vehicles, Alternative B could provide 24 round trips daily with 20 minute headways[17] and Alternative C could provide 30 round trips daily with 15 minute headways (Volpe 2012a), because the travel time for Alternative C is shorter than for Alternative B. Both services would be sufficient to accommodate the potential for an estimated 254 passengers daily (150 passengers transferring from the boat tour and an estimated 104 visitors daily of those who currently arrive at the Kingsley Plantation or the Ribault Club by private vehicle).[18] It is estimated that demand for the interpretive tram tour would grow to nearly 400 daily riders in 2021 (Volpe 2012a). The ATS study recommended the Preserve purchase a third vehicle in the event one of the other vehicles requires maintenance or is otherwise out of service.

2.2.3 Components Exclusive to Alternative B – L'Engle Avenue-Multi-use Trail Roundtrip

Alternative B is distinguished from Alternative C by two factors: the route traveled for the tram tour and as a result, the stop location at the Kingsley Plantation (which is described below). The route for Alternative B is round trip between the Kingsley Plantation and the Ribault Club on L'Engle Ave and the Multi-use Trail (see Figure 2-1), which are described in Section 2.2.2. The vehicle must turn completely around at each stop to travel the same return route. At the Ribault Club, the vehicle can stop for passengers and can turn around in the Club's circular driveway, as described in Section 2.2.2 and shown in Figure 2-3.

For the most part, the tour vehicle would not interact with other motorized vehicles on this route, except in the area of the turn-around at the Kingsley Plantation and the Ribault Club. Therefore, safety considerations focus on the introduction of up to 24 motorized vehicle round trips daily on L'Engle Avenue and the Multi-Use trail, which currently traversed by bicyclists, pedestrians, golf carts and Segways. This route is 1.35 miles long, for a total round trip on this route of 2.7 miles. The tour vehicle should have appropriate alert equipment to warn others on the trail of its presence, such as a bell or horn. The proposed six mph speed, the equivalent of a brisk walk, is consistent with the speed of others traveling on the route. Round trip travel time is estimated at 34 minutes, including dwell time for passenger to board and alight at the Kingsley Plantation and the Ribault Club. Because of the narrow route, drivers of the tour vehicles would have to keep in touch with each other and coordinate pulling over to pass each other when traveling in opposite directions.

[17] Volpe Center. TIMU Landside ATS – Financial Pro Forma. Submitted to the Preserve in August 2012.
[18] This assumes a minimal fee for the interpretive tram tour and that a proportion of visitors who now arrive by car would take the tram between the two sites,

Kingsley Plantation Turnaround and Stop: At the Kingsley Plantation, the tour vehicle would enter the parking lot to turn around and therefore, would require the removal of trees and one or two parking spaces for a new access path from L'Engle Avenue to accommodate the vehicle turn-around (see Figure 2-2). Because the vehicle would traverse the parking lot, the stop would be located in the northeast corner of the lot. In addition, using the parking area for a transportation stop may temporarily block parking spaces and disrupt parking movements.

2.2.4 Components Exclusive to Alternative C - L'Engle Avenue-Multi-use-Fort George Road Loop

Alternative C is distinguished from Alternative B by two factors: the route traveled for the tram tour and as a result, the stop location at the Kingsley Plantation. As shown in Figure 2-1, Alternative C would travel a loop from the Kingsley Plantation to the Ribault Club via L'Engle Ave and the Multi-use Trail (which are described in Section 2.2.2) and from the Ribault Club to Kingsley Plantation via Fort George Road (which is described below) and a short stretch of Palmetto Avenue. As a result, the vehicle does not need to turn around at either the Ribault Club or the Kingsley Plantation. Therefore, at the Kingsley Plantation, the tour vehicle would stop at southeast corner of the intersection of L'Engle Avenue and Palmetto Avenue (as described below) and would not need to enter the parking lot.

Safety considerations along L'Engle Ave and the Multi-use Trail are the same as discussed above for Alternative B and focus on introducing up to 30 one-way motorized vehicle trips daily and the potential for interactions between the tour vehicle and other users. In addition, this route would travel approximately 1.2 miles on public roads, primarily along Fort George Road, generating additional safety concerns that are discussed below. Round trip travel time is estimated at 26 minutes including dwell time and is shorter because travel on Fort George Road would occur at 12 mph.

Fort George Road: As shown in Figure 2-1, Alternative C would travel one mile along Fort George Road and approximately 0.2 miles on Palmetto Avenue to travel from the Ribault Club to Kingsley Plantation. Fort George Road, along with Palmetto Avenue, is one of the primary public roads on Fort George Island. The City of Jacksonville owns and maintains both roads. Traffic is two-way along both roadways and the speed limit is 20 miles per hour. Fort George Road is 2.5-mile long roadway with thick vegetation on both sides of the roadway for most of its length. It is approximately 11 to 15 feet wide, with no shoulder. The roadway pavement is packed gravel and has many potholes and undulations, as well as sharp curves with limited site lines,[19] which, while scenic, also presents potential safety issues.

While Fort George Road is wide enough to allow two passenger cars to pass carefully at slow speeds in most locations, it is not built to accommodate general two-way traffic. In one location, the ROW narrows to 11 feet with no shoulders, due to two large live oak trees. In this spot, between the Crabtree House and the Point Isabella parking area, if two vehicles approach each other, one must wait for the other to pass in order to proceed. While specific traffic counts are unavailable for Fort George Road, traffic generally consists of trips made by visitors, Preserve

[19] Timucuan Ecological and Historic Preserve – Kingsley Plantation, Cultural Landscape Report, 2005, pages 68-69.

staff and residents. In general, the road itself is not considered "congested;" however, one safety concern for tram operation is passing other vehicles on the narrow ROW with limited site lines in several locations. In addition, tours along Fort George Road travel at 12 mph and would be affected by potential safety hazards associated with a slow moving vehicle on a public road, such as passing vehicles, tailgating, speeding and unsafe driving. In addition to these safety hazards, passing vehicles could kick up dust and dirt that could affect tour passengers in the open air vehicle and make the tour less safe and attractive.

The following attractions are located on Fort George Road: Mount Cornelia, a high sand dune used as a lookout/observation point;[20] canopied roads; the 5th and 6th fairways of Point Isabella; and private homes.

Kingsley Plantation Stop: At the Kingsley Plantation, the tour vehicle would stop for passenger boarding and alighting on L'Engle Avenue, just east of Palmetto Avenue.

2.3 Summary Comparison of Impacts of the Alternatives

Table 2-2 briefly summarizes the environmental effects of the alternatives. Chapter 3 discusses the environmental consequences of the alternatives in detail.

2.4 Environmentally Preferred Alternative

The environmentally preferred alternative is the alternative that would promote the national environmental policy expressed in NEPA (Section 101 (b)). This includes alternatives that:

1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

2) ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

3) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety or other undesirable and unintended consequences;

4) preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;

5) achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and

6) enhance the quality of renewable resources and approach the maximum attainable recycling of irreplaceable resources.

[20] Timucuan Ecological and Historic Preserve – Kingsley Plantation, Cultural Landscape Report, 2005, page 64.

It is expected that the proposed tram would serve not only those visitors that would arrive at the Preserve via the proposed boat tour (and thus provide a transportation benefit), but that some visitors that arrive via private vehicle would also use the proposed interpretive tram rather than drive between Kingsley Plantation and the Ribault Club. As a result, Alternatives B and C would have minor, long-term air quality, soundscape, climate change, transportation, socioeconomic, resource conservation, energy, and pollution prevention benefits associated with reduced use of privately owned combustion engine vehicles. Conversely, Alternative A, the no-action alternative, would continue to have negligible and long-term adverse impacts to these resources as a result of continued use of private vehicles. In addition, Alternative A would not result in benefits to any resources. The adverse impacts and benefits of the action alternatives, Alternatives B and C, are almost the same, as shown in Table 2-2, except that Alternative C has some adverse visitor experience impacts that Alternative B does not have.

Alternative B is the environmentally preferred alternative because it would have negligible short and long-term adverse impacts, and would also result in a number of benefits. Alternative C would result in similar benefits with most of the same negligible adverse impacts; however it also has some minor adverse safety and visitor experience impacts. The No-action Alternative would result in a greater number of long-term adverse impacts and no benefits. Alternative B would provide a safer and more attractive visitor experience than Alternative C because it avoids the potential adverse safety effects of travelling in a slow-moving, open air vehicle on a narrow, packed-gravel public road with many potholes, undulations and sharp curves that would be posed by passing vehicles, tailgating, speeding and unsafe driving. In addition to these safety hazards, passing vehicles could kick up dust and dirt that could affect tour passengers in the open air vehicle and make the tour less safe and attractive. For this reason, Alternative B is the environmentally preferred alternative.

2.5 NPS Preferred Alternative

NPS policy encourages identification of a preferred alternative in the EA if one has been identified. The preferred alternative is the alternative that NPS believes would best accomplish the project's goals, objectives, purpose and needs. In selecting a preferred alternative, NPS must consider the associated impacts to natural, cultural and social resources.

The NPS has evaluated the alternatives with respect to how well they meet the project objectives as well as their beneficial and adverse impacts on all resource topics. The no-action alternative, Alternative A, does not meet the project objectives and has greater adverse environmental impacts than the action alternatives and no benefits. The beneficial impacts of the action alternatives, Alternatives B and C are largely the same. Thus, the NPS bases its selection of the preferred alternative on the slight differences between these two alternatives in visitor comfort and safety, as described in the section above.

The NPS identifies Alternative B, operating the interpretive tram tour round trip on L'Engle Avenue and the Multi-use Trail, as its preferred alternative because Alternative B meets the objectives of the project; is consistent with NPS management policies, laws, regulations and plans; and is the environmentally preferred alternative.

Table 2-2. Summary of Environmental Impacts of the Alternatives

Environmental Resource	Alternative A - No Action	Alternative B - Multi-Use Trail	Alternative C – Fort George Road/Multi-Use Trail
Vegetation	No effect	Negligible short term adverse impact from clearing for construction staging at the Johnson Barn site.	
		Negligible long term adverse impact from clearing for parking lot access.	
Wildlife	Negligible impacts due to continued encounters with people and vehicles.	Negligible short and long term effects on wildlife due to small removal of habitat. Adverse effects of the trams would be negligible and offset by a reduction in vehicles.	
Species of Special Concern	Negligible wildlife impacts as encounters with people and vehicles would continue to occur.	With mitigation, negligible short and long term effects on the state listed Gopher Tortoise as a result of construction. No impacts to federally listed species.	
Air Quality	Minor long term adverse air quality impacts from continued privately owned vehicle use.	Long term beneficial impacts from reduction in vehicle travel. Negligible short-term adverse impacts from construction activity.	
Visitor Use and Experience	Moderate adverse impact to visitors arriving by boat due to a lack of convenient access to Ribault Club. Minor adverse impacts to visitors arriving by private vehicle from a lack of interpretive opportunities.	Convenient Ribault Club access and improved interpretive opportunities would have a long term beneficial impact.	
			Minor adverse impact due to safety concerns, dust and dirt kicked up from private vehicles passing trams on public road.
Cultural Resources	No effect	No effect because the use of roads and parking lots at historic sites is similar to existing use.	
Soundscape	Negligible adverse soundscape impacts from continued privately owned vehicle use.	Long term beneficial impacts for residents along the tram route from reduced combustion engine vehicle use. Temporary short term adverse impacts from maintenance facility construction.	

Environmental Resource	Alternative A - No Action	Alternative B - Multi-Use Trail	Alternative C – Fort George Road/Multi-Use Trail
Park Operations	No effect	If the trams are owned and operated by the Preserve (rather than as a concession), minor adverse impacts would result from increased staffing needs to drive trams.	
Climate Change	Negligible long term adverse impact on GHG/climate change from continued use of privately owned vehicles	Long term beneficial impact/reduction in GHG from reduction of private vehicle trips coupled with the no-emission tram.	
Transportation	Minor adverse impact due to continued privately owned vehicle use and no convenient access for boat tour riders.	Reduced traffic and improved connectivity as a result of use of tram rather than private vehicles by some visitors.	
			Minor adverse impact due to slow tram on public roads.
Socioeconomics	No effect	Long term beneficial impact from the hiring of staff to run tram and the potential to bring in more visitors. Short-term beneficial impact due to construction of the maintenance and storage facility.	
Utilities	No effect	Negligible short and long term adverse impacts from the increased electrical and water demands during construction and for operation of the maintenance and storage facility.	
Waste Management	No effect	No effect	No effect
Land Use	No effect	No effect	No effect
Resource/Energy Conservation & Pollution Prevention	Minor adverse impact from continued consumption of fossil fuels and emissions due to continued privately owned vehicle use.	Fewer privately owned vehicle trips on Fort George Island would have long term beneficial impacts on fossil fuel use and pollution prevention	

Chapter 3 – Affected Environment and Environmental Consequences

3.1 Introduction

This chapter identifies resources that could be affected by the alternatives (the affected environment) and provides an analysis of the impacts[21] that would result from implementing the alternatives considered in this EA.

This chapter evaluates Alternative A, the No-action Alternative, and two action alternatives that are described in detail in Section 2.2 of this EA. The two action alternatives are primarily distinguished by their routes and therefore, for the purpose of brevity are referred to in this section as:

- Alternative B - Roundtrip on the Multi-use Trail
- Alternative C - Multi-use Trail-Fort George Road Loop

Table 2-2 provides a summary and comparison of the impacts of each alternative.

Resources examined include the following:

- Vegetation
- Wildlife
- Species of special concern
- Air quality
- Visitor use and experience/recreation
- Cultural resources
- Soundscape
- Park operations
- Resource conservation, including energy and pollution prevention
- Climate change
- Transportation
- Socioeconomics
- Utilities
- Waste management
- Land use

Resources that were dismissed from further consideration in this EA are identified Chapter 1 and Table 1-1.

The remainder of this section includes a summary of environmental laws, regulation and guidance relevant to evaluating environmental impacts and a discussion of the general methodology used to analyze environmental impacts. Starting in Section 3.2, there is a section in this chapter for each resource examined. Within each section, the affected environment is described, followed by a description of the impacts of each alternative. First the impacts of the No-action Alternative are described. Alternatives B and C have many common components and in order to be concise, impacts from these common elements are discussed once, followed by a discussion of impacts that are unique to Alternative B and then impacts that are unique to Alternative C.

[21] The terms impacts, effects and consequences are used interchangeably throughout this document.

Common elements of the action alternatives that would result in the same impacts are:

- Tram operation (while the number of daily operations are different, impacts are essentially the same for both action alternatives, unless otherwise noted); and
- Construction of the maintenance and storage facility.

The passenger stops at Kingsley Plantation and the Ribault Club are not discussed in this chapter because they are located in previously disturbed areas and would therefore have no additional impact.

3.1.1 Summary of Relevant Environmental Laws, Regulations and Guidance

Primary laws, regulations and guidance documents used in the development of this EA are:

National Environmental Policy Act (NEPA), 1969: 42 U.S.C. Section 432f et seq. Recognizing the profound impact of man's activity on the social, economic and natural environment, Congress directs all agencies of the Federal government to report on actions affecting the environment, including:

- The environmental impact of the proposed action.
- Any adverse environmental effects which cannot be avoided should the proposal be implemented.
- Alternatives to the proposed action.

The Council on Environmental Quality (CEQ) Regulations: 40 CFR 1500–1508, which provide guidance to implement the provisions of NEPA.

NPS Organic Act, August 25, 1916: Public Law 64-235. Congress created the NPS within the Department of Interior to: "... conserve the scenery and the natural and historic objects and the wild life therein, and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

NPS Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* (2001), and its accompanying handbook, includes procedures to comply with NEPA and CEQ regulations.

NPS Management Policies, 2006: Park managers must preserve park resources "unimpaired;" qualifying impairment to mean reaching a level that violates the Organic Act. "That level is reached when an action that is taken would permanently impair essential park resources that are fundamental to the values and purposes for which a park was established."

National Historic Preservation Act (NHPA) of 1966: (16 U.S. C. 470). The nation's primary historic preservation law, the Act was designed to bolster the preservation and wise use of our historic resources, and set forth the policy of the Federal government regarding historic preservation, encouraging conditions in which historic properties can be preserved in harmony with modern society while fulfilling modern society's needs.

Endangered Species Act (ESA) of 1973: The ESA provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, both through Federal action and by encouraging the establishment of state programs. Section 7 of the ESA requires Federal agencies to ensure that any action authorized, funded or carried out by a Federal agency is not likely to jeopardize the continued existence of listed species or modify their critical habitat.[22]

3.1.2 General Methodology for Documenting Affected Environment

Descriptions of the existing resources (affected environment) were taken from the Preserve's *General Management Plan* and *Kingsley Plantation Cultural Landscape Report*, the *Fort George Island Cultural State Park Unit Management Plan*, and the City of Jacksonville's *Fort George Island Traffic Study*, all of which are summarized in Section 1.5 of this EA, and from other sources as noted in this Chapter.

3.1.3 General Methodology for Assessing Impacts

The CEQ regulations that implement NEPA require assessment of impacts to the human environment, which includes natural and cultural resources. As required by NEPA and the NPS Director's Order 12, potential impacts are described in terms of:

- Type – beneficial or adverse
- Context – site-specific, local, or regional
- Duration – short term (lasting during construction or less than one year or long term (lasting longer than one year)
- Level of intensity – negligible, minor, moderate, or major
- Impairment – would the effects permanently impair park resources or values

The impact analyses and conclusions are based on the review of existing literature and studies, information provided by on-site experts, professional judgments, and park staff insight. In the absence of quantitative data, a qualitative analysis informed by best professional judgment was used to determine impacts.

Cumulative Impacts: Cumulative impacts are defined as impacts which result when the impact of the proposed action is added to the impacts of past, other present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7). Spatial and temporal boundaries for cumulative impacts are defined to identify past, present and reasonably foreseeable projects.

For the purposes of cumulative impact analysis, the spatial boundary is Fort George Island and specifically the Federal and Florida-owned preserve and park lands, as well as the roads owned by the City of Jacksonville that fall within the study area. The temporal boundary extends from

[22] United States Fish and Wildlife Service. Section 7 of the Endangered Species Act of 1973.

the time of the last General Management Plan for the Preserve (1996) to any future projects that are reasonably foreseeable.[23]

To determine the potential cumulative impacts, existing and anticipated future projects in the vicinity of the study area are identified using the existing documents listed in Section 1.5 of this EA. These include projects on lands, trails and roads owned and administered by the NPS, the FPS, and the City of Jacksonville. Projects completed since 1996 include the construction of the boat dock at Kingsley Plantation and rehabilitation of the Ribault Club. There are no projects in the study area that are known to be programmed and funded by the NPS, the FPS or the City of Jacksonville.

In defining the contribution of each alternative to cumulative impacts, the following terminology is used:

- Imperceptible: The incremental effect contributed by the alternative to the overall cumulative impact is such a small increment that it is impossible or extremely difficult to discern.
- Noticeable: The incremental effect contributed by the alternative, while evident and observable, is still relatively small in proportion to the overall cumulative impact.
- Appreciable: The incremental effect contributed by the alternative constitutes a large portion of the overall cumulative impact.

Non-Impairment Determination - The NPS *Management Policies 2006* requires an analysis of potential effects to determine whether or not actions would impair park resources. The primary purpose of NPS, as established by the Organic Act and reaffirmed by the General Authorities Act, as amended, is to conserve park resources and values. Impacts to park resources and values are allowed when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Impairment is an impact that would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. NPS *Management Policies* (NPS 2006) requires us to conduct an analysis to determine whether the magnitude of impacts identified for specific impact topics reached the level of "impairment," as defined. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; or

- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or

- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

[23] Reasonably foreseeable projects, as defined for NEPA, means projects that are proposed, programmed and funded, rather than just speculative.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. An impact that may, but would not necessarily, lead to impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessionaires, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park (NPS 2006). The Non-impairment determination will be prepared for the alternative selected and included as an Appendix in the decision document.

3.2 Vegetation

3.2.1 Affected Environment

Most existing information on vegetation on Fort George Island focuses on the vast natural areas present on the island, particularly wetlands, rather than on the developed part of the island that make-up the study area. Vegetation disturbance from the alternatives is concentrated in the vicinity of the Johnson Barn and the existing gravel parking lot at Kingsley Plantation.

Vegetation in the "core area"[24] of Kingsley Plantation is documented in the *Timucuan Ecological and Historic Preserve Kingsley Plantation Cultural Landscape Report* (see Figure 3-1) and relevant sections of that report, along with relevant, more general information from the FPS's *Fort George Island Cultural State Park Unit Management Plan,* are summarized below.

Delineation of vegetative communities on Fort George Island is complicated by the long history of human use of the island and its surroundings. Dating back to the aboriginal presence, humans have routinely altered natural communities on Fort George Island, profoundly influencing the development of the vegetation present today. For example, some present day communities thrive on shell deposits created ages ago by Native Americans. Other communities have developed because of reforestation of old fields, some of which were once cultivated by Native Americans, others of which date back to the plantation period. Possibly two thirds or more of the island was once under cultivation, and some areas have been cultivated since the 17th Century. Succession to secondary forest continues to occur on abandoned golf fairways. The long period since large agricultural activities prevailed has allowed the growth of a verdant canopy of oaks, hickories, cedars and other hammock trees and understory species over most of the island. The aesthetic qualities and the microclimate comfort of these dense, shaded areas are greatly appreciated by the modern island visitor.[25]

Vegetation in the core area of Kingsley Plantation (see Figure 3-1) ranges from largely open areas dotted with palmetto or cedar trees to dense thickets of live oaks with an understory of saw palmetto. Most of this area was farmed during the Plantation Era. Extensive timbering on the island during its earliest occupancy indicates that the majority of the island was most likely denuded of its native timber. All forested areas within the core area are secondary growth since

[24] As defined in the *Cultural Landscape Report* (NPS 2005), the core area of Kingsley Plantation includes the area defined by the entry gate on the south nearly to the Fort George River to the north and is defined on the east and west generally by the arc of the slave cabins, as shown in Figure 3-1. The Johnson Barn is not in this core area.
[25] FPS 2008, p. 22 and p 54.

the Plantation Era. Most native vegetation in the core area is comprised of species consistent with maritime forest (both the maritime strand and upper maritime forest subsets) communities.[26] "This forest is found on coastal islands (usually on the marsh or inland side) …Cabbage palms and red cedars are distinctive…The oaks are gnarled and twisted with small dark leaves. They are often draped with spanish 'moss' (*Tillandsia usneoides*), a non-parasitic bromeliad."[27]

Several historic tree-lined "avenues" exist adjacent to Kingsley Plantation along the proposed tram route. The most prominent is Palmetto Avenue, the nearly half-mile entry road south of the Slave Cabin arc (see in Figure 3-2).[28] Palms continue to line this stretch of road. The palms were planted in the early and mid-19th century, and many are still alive. The general condition of the palms is deteriorating due to their advanced age, competition for light from adjacent forest trees, grading of Palmetto Avenue, and trimming associated with maintenance of overhead power lines, which obscure much of the original design.[29]

[26] NPS 2005, p. 65.
[27] Charles H. Wharton, *The Natural Environments of Georgia*, Georgia Department of Natural Resources, 1998, p. 186-187; quoted in NPS 2005.
[28] NPS 2005, p. 81.
[29] FPS 2008, p. 34.

Figure 3-1. Vegetation on Kingsley Plantation and "Core Area"
Source: NPS 2005

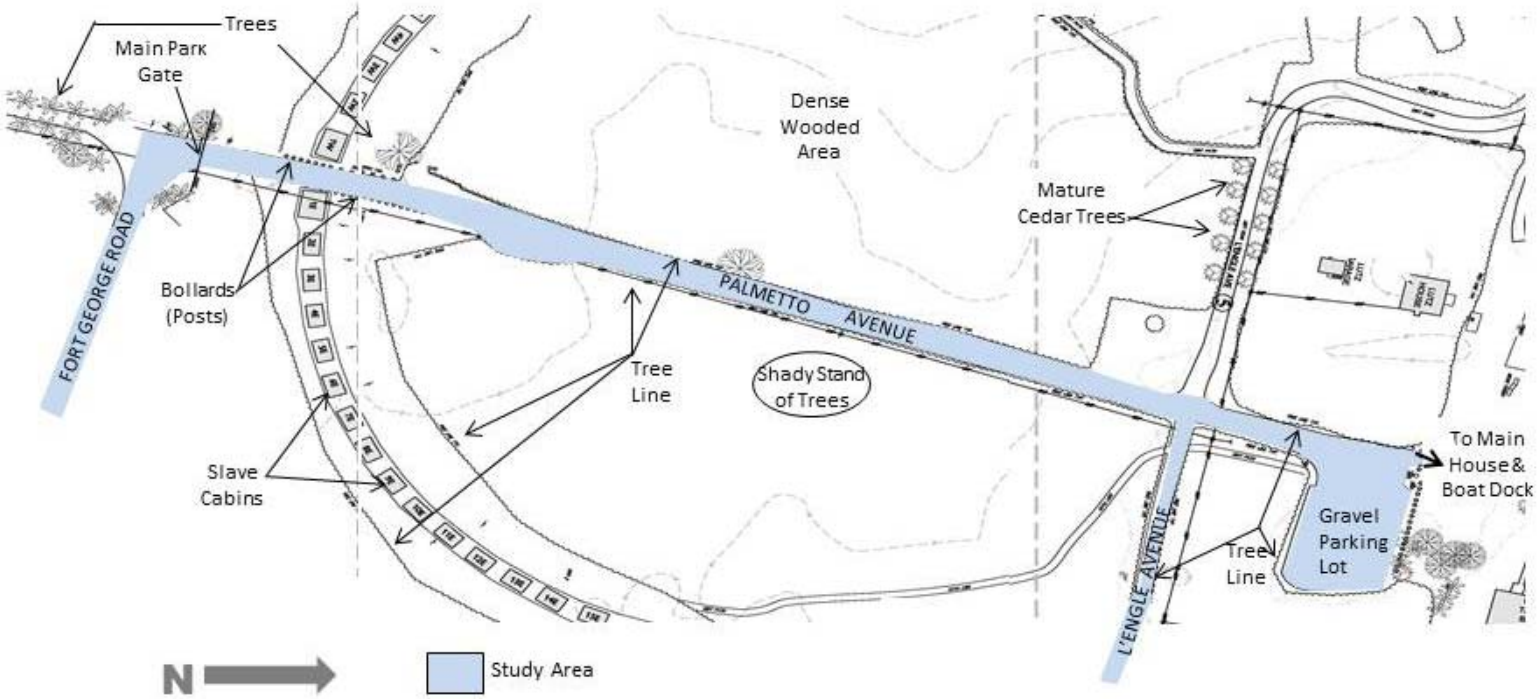


Figure 3-2. Palmetto Avenue south of Kingsley Plantation Gate
Source: NPS, 2005.

The *Cultural Landscape Report* recommends that on Palmetto Avenue, the understory vegetation should be cleared approximately thirty feet from the edge of pavement to allow the historic palm trees to be more clearly defined. The Report notes that previous archeological research shows the alignment of Palmetto Avenue between the entry gate posts and the river to be twelve to fifteen feet wide and recommends a road width of twelve feet as appropriate for the site.

The portion of L'Engle Avenue that is located in the study area is shown in Figure 3-3 and the approximate location of Johnson Barn, where the new maintenance and storage facility would be located, is shown in Figure 3-4. Vegetation along the sides of L'Engle Avenue is mixed, as described above for the core area of Kingsley Plantation. The area where the proposed tram access from L'Engle Avenue to the parking lot would occur is vegetated with non-native lawn-like grass and a few small trees that are mostly water oak. The area around Johnson Barn that would be used for construction staging is primarily vegetated with non-native lawn-like grass, as shown in Figure 3-5.

Figure 3-3. L'Engle Avenue looking west from Palmetto Avenue
Source: www.bing.com/maps/

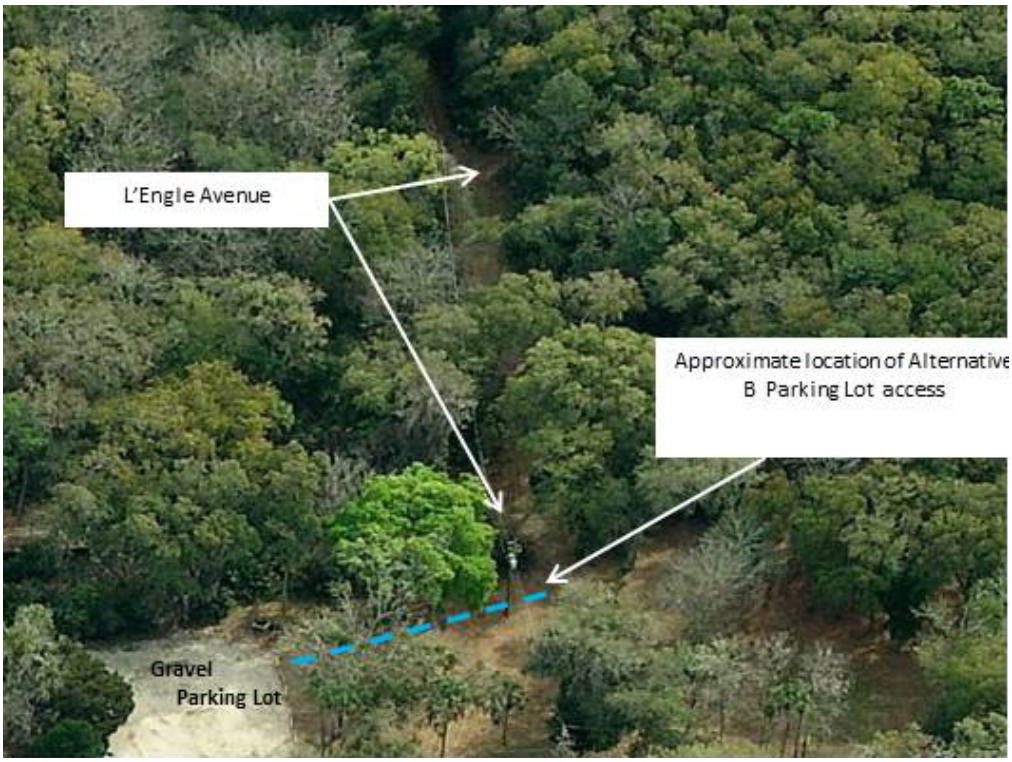


Figure 3-4. Approximate location of Johnson Barn
Source: www.bing.com/maps/

Figure 3-5. Johnson Barn and Vicinity
Source: Project Development Questionnaire Form for Johnson Barn

3.2.2 Environmental Impacts

The following thresholds of change were used to evaluate the intensity of impacts to vegetation:

- **Negligible**: No vegetation would be affected, or some individual plants could be affected as a result of the alternative, but there would be no impact to native species populations. The impacts would be on a small scale.
- **Minor**: The alternative would affect some individual plants and would also affect a relatively small portion of that species' population. Mitigation to offset adverse impacts could be required and would likely be successful.
- **Moderate**: The alternative would affect some individual plants and would also affect a sizeable segment of the species' population over a relatively large area. Mitigation to offset adverse impacts could be extensive but would likely be successful.
- **Major**: The alternative would have a considerable impact on plant populations and affect a relatively large area in and out of the park. Mitigation measures to offset the adverse impacts would be required and extensive, and success of the mitigation measures would not be guaranteed.

Alternative A – No-action

No impacts to vegetation are expected to occur as a result of this alternative. Vegetation would continue to succeed and be managed according to the *Cultural Landscape Plan* and hazard tree removal plan on the NPS property and according to the *Unit Management Plan* on FPS property. Vegetation along Fort George Road would continue to be managed by the City of Jacksonville.

Impacts Common to the Action Alternatives

Tram Operation: There are no impacts to vegetation because no clearing is needed on the Multi-Use Trail, L'Engle Avenue or Fort George Road to accommodate the proposed vehicle, even with two way traffic.

Maintenance and Storage Facility: Alternatives B and C require the construction of a 40-foot by 40-foot maintenance and storage facility at the Johnson Barn site, which would be located on the footprint of the existing barn and would not disturb any vegetation. Two live oak trees adjacent to the proposed facility should be removed because they could adversely impact the integrity of the new structure. One tree is located to the immediate north and one is located to the south of the existing structure. Both trees have lost half of their bark with fungal growth and there is evidence of decay on limbs that could fall and impact the building. A 400 square-foot (less than 0.1 acres) construction staging area would be located approximately 65 feet from the Johnson Barn footprint,[30] which would temporarily disturb non-native, lawn-type grass in the area around the barn. It is expected that the construction could be staged without disturbing any trees.

[30] Project Development Questionnaire for the Johnson Barn.

Alternative B - Multi-Use Trail Roundtrip (Preferred Alternative)

In addition to the impacts described above, Alternative B would require the removal of a few small water oaks and non-native grass to create the access to the gravel parking lot from L'Engle Avenue necessary to turn the vehicle around (see Figure 3-1 and Figure 3-3). The area to be cleared is approximately 1200 to 1500 square feet (about 0.03 acres).

Alternative C –Multi-Use Trail-Fort George Road Loop

There are no impacts to vegetation from Alternative C other than as described above for the maintenance and storage facility.

Conclusion

There are no impacts to vegetation of Alternative A, the No-action Alternative.

Alternatives B and C would result in a short-term, negligible, adverse impact to 0.01 acres from construction staging near Johnson Barn and the removal of the decayed trees. Alternative B would also result in long-term negligible impact to approximately 0.03 acres for the access from L'Engle Avenue to the gravel parking lot, for a total of 0.04 acres of impact resulting from Alternative B.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts of the proposed action to vegetation are negligible, there are no cumulative impacts to vegetation.

3.3 Wildlife and Wildlife Habitat

3.3.1 Affected Environment

The study area is located in the upland areas of the Preserve. Based on review of the Preserve's *General Management Plan* (NPS, 1996) the *Draft Preserve Bird Study* (NPS 2007a), and the State Park's *Unit Management Plan* (FDEP, 2008), wildlife that inhabits upland areas of the Preserve were identified and are listed in Appendix F. These include:

- 20 mammal species, including deer, bobcat, fox, mink, otter, raccoon, opossum, mole, bats, rodents and river otter;
- 26 reptile species, including 8 turtles, 7 lizards, and 11 snakes;
- 9 species of amphibians (1 salamander, 6 frogs, and 2 toads); and
- More than 300 species of birds.

Wildlife species of special concern, including Federal- and State-listed species, are discussed in Section 3.4.

3.3.2 Environmental Impacts

Available information on known wildlife and wildlife habitat was compiled and analyzed in relation to the proposed action. The thresholds for the intensity of an impact are defined as follows:

- **Negligible:** There would be no observable or measurable impacts on the abundance and diversity of native species and/or the quality of their habitat. Impacts would be of short duration and well within natural fluctuations.
- **Minor:** Impacts would be detectable, but would not be outside the natural range of variability. Small changes to population numbers, number of species present, habitat quality and other factors might occur. Occasional responses to disturbance by some individuals could be expected, but without interference to factors affecting population levels. Sufficient habitat would remain functional to maintain viability of all species. Impacts would be outside critical reproduction periods for sensitive native species. Mitigation measures, if needed to offset adverse impacts, would be simple and very likely successful.
- **Moderate:** Impacts on the abundance and diversity of native species and/or the quality of their habitat would be detectable and could be outside the natural range of variability. Changes to population numbers, number of species present, habitat quality and other factors would occur, but species would remain stable and viable. Frequent responses to disturbance by some individuals could be expected, with some negative impacts to factors affecting population levels. Sufficient habitat would remain functional to maintain the viability of all native species. Some impacts might occur during critical periods of reproduction or in key habitat. Mitigation measures, if needed to offset adverse impacts, would be extensive and likely successful.
- **Major:** Impacts on the abundance and diversity of native species and/or the quality of their habitat would be detectable, expected to be outside the natural range of variability, and extensive. Population numbers, number of species present, habitat quality and other factors might experience large declines. Frequent responses to disturbance by some individuals would be expected, with negative impacts to factors resulting in a decrease in population levels. Loss of habitat might affect the viability of at least some native species. Extensive mitigation measures would be needed to offset any adverse impacts, and may not be successful.

Alternative A – No-action

Encounters between wildlife and current users of the Multi-use Trail (including hikers, bikers, golf carts, Segway tours and park service vehicles) and between wildlife and private vehicles on Fort George Road pose negligible adverse impacts to wildlife because wildlife are habituated to the presence of humans on the trail and public roads. As the number of visitors to the Preserve grows, the potential for impacts would also increase, however, this impact is expected to continue to be negligible. The greatest potential impact is the potential for wildlife-vehicle encounters of private vehicles traveling on roads between Kingsley Plantation and the Ribault Club, which are more likely to result in damage to wildlife due to higher speeds.

Impacts Common to the Action Alternatives

Tram Operation: The action alternatives introduce more motorized activity on the Multi-use Trail (24 daily round trips for Alternative B and 30 one way trips for Alternative C) and as a result, could result in an increase in vehicular-wildlife encounters, resulting in a potential adverse impact to wildlife. In addition, the interpretive trams may draw additional visitors to the Preserve. Conversely, by drawing drivers out of the cars in favor of the trams, the action alternatives would likely reduce faster-moving private vehicle traffic on Fort George Road, reducing the potential for vehicular-wildlife encounters, resulting in a net neutral or negligible impact to wildlife.

Maintenance and Storage Facility: Temporary adverse impacts to vegetation associated with staging construction of the Johnson Barn, as described in Section 3.1.2, may impact habitat (less than 0.01 acres) and could adversely affect wildlife that use this habitat. However, given the relatively small impact and abundance of similar habitat in the surrounding areas, this impact would be negligible.

Alternative B - Multi-Use Trail Roundtrip (Preferred Alternative)

In addition to the wildlife impacts described above for the Multi-use Trail, Alternative B would require the removal of a few trees in an area of approximately 0.03 acres to create an access to the gravel parking lot that is necessary to turn the vehicle around. This area may be habitat for wildlife that is habituated to human presence, such as raccoons, squirrels and rodents. Given the relatively small area and the abundance of similar habitat in the surrounding areas, this impact would be negligible.

Alternative C –Multi-Use Trail-Fort George Road Loop

There are no impacts to wildlife from Alternative C other than as described above that are common to both action alternatives.

Conclusion

Negligible wildlife impacts that result from encounters with people and vehicles would continue to occur as a result of the No-action Alternative.

Short- and long-term effects to wildlife from the action alternatives would be negligible based on the small size of the physical impacts to habitat and the abundance of similar surrounding habitat. Also, it is expected that wildlife are habituated to vehicular activity on the Multi-use Trail and that any adverse effects associated with the trams on the Trail would be offset by the reduction in vehicular traffic on the public roads as a result of visitors using the trams.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts to wildlife and habitat are negligible, cumulative impacts to wildlife are not anticipated.

3.4 Special Status Species

3.4.1 Affected Environment

There are a number of special status animal and plant species in the Preserve. Some of the animal species are transient while others inhabit the park year round. Because the Preserve is 75 percent water and wetlands, many of these species do not occur in the uplands where the study area is located. A query of the Florida Natural Areas Inventory and a review of the 2009 park list and State Unit Management Plan (FDEP 2008) resulted in a total of seven animal and eight plant species that may be present in upland areas of the Preserve, based on known occurrences or habitat preferences.[31] Table 3-1 identifies the Federal and state listed species that occur in uplands in the Preserve and may occur in the study area.

Animals

Of the upland species listed in Table 3-1, based on the habitat present in the study area, only the Eastern diamondback rattlesnake, Gopher tortoise and Florida pine snake are likely to be present. While Florida gopher frogs and indigo snakes are expected to be present on the island, they have not been observed in the last two surveys conducted in 1985 (Fairfield Communities) and in 1992 (Jacksonville Zoo partnership).[32] There is no record of active or inactive red-cockaded woodpecker colonies within Preserve boundaries. They are likely to occur in mature pine stands, which are not present in the proposed areas of disturbance. The Florida burrowing owl is generally found in sparsely vegetated sandy ground, including dry prairie and sandhill.[33] This species makes extensive use of rural areas such as pastures rather than in the vegetated areas around the Johnson Barn or the Multi-use Trail.

Gopher tortoises of many sizes (ages) are common in open areas of the island, including abandoned fairways and the dune system around Mount Cornelia, as well as in the vicinity of the Multi-use Trail and around the grounds of Kingsley Plantation. Gopher tortoises live in extensive subterranean burrows in dry upland habitats. The habitats where gopher tortoises are found include longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies and coastal dunes. Tortoises can also live in man-made environments, such as pastures, old fields, and grassy roadsides.[34] To be suitable for gopher tortoises, the habitat must have well-drained sandy soils for digging burrows, herbaceous food plants and open sunny areas for nesting and basking. The Eastern diamondback rattlesnake and Florida pine snake are found in similar habitats as the Gopher tortoise and may share the tortoises' burrows.[35]

[31] It was assumed that only plant and animal species known to be found in uplands (including those that are also found in other areas, as well) may be present in the study area. Upland species were identified using Attachment 4 of the FDEP, which identifies habitat types for hundreds of plant and animal species and internet research on USFWS and FDEP sites.
[32] FDEP 2008, p 28.
[33] http://www.fnai.org/FieldGuide/pdf/Athene_cunicularia_floridana.PDF
[34] http://www.fnai.org/FieldGuide/pdf/Gopherus_polyphemus.pdf
[35] http://www.fws.gov/daphne/es/gopher/GopherTortoise_Index.html

While no Gopher tortoise burrows exist in the vicinity of the proposed access to the parking lot or Johnson Barn as of this writing,[36] they occur in nearby areas of the Preserve and thus, precautions would be taken to avoid disturbing them.

Table 3-1. Federally- or State-Listed Species that May Occur in the Study Area

Common Name	Scientific Name	Federal Status[1]	State Status[1]
WILDLIFE			
Eastern Indigo snake[2]	*Drymarchon couperi*	LT	LT
Eastern diamondback rattlesnake	Crotalus adamanteus	LS	SAT
Gopher tortoise[3]	*Gopherus polyphemus*	C	LT
Florida gopher frog[2]	Rana capito aesopus	N	LS
Red-cockaded woodpecker[4]	*Picoides borealis*	LE	LS
Florida burrowing owl	*Athene cunicularia floridana*	N	LS
Florida pine snake	*Pituophis melanoleucus mugitus*	N	LS
PLANTS			
Florida spiny-pod	*Matelea floridana*	N	LE
Giant orchid	*Pteroglossaspis ecristata*	N	LT
Florida mountain-mint	*Pycnanthemum floridanum*	N	LT
Florida butterfly orchid	*Calydorea coelestina*	N	LE
Green-fly orchid	*Epidendrum conopseum*	N	C
Spiked crested coralroot	*Hexalectris spicata*	N	LE
Cinnamon fern	*Osmunda cinnamomea*	N	CE

Source: 2009 park list, occurrence records obtained from Florida Natural Areas Inventory (http://www.fnai.org/), and FDEP 2008.
Notes:
1) Key to table:
C = candidate for listing
LE = listed as endangered
LT = threatened
LS = species of special concern
N = not currently listed, nor currently being considered for listing
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
2) The Eastern indigo snake and the Florida gopher frog have not been observed within the Preserve, although it is within their known range.
3) Gopher Tortoises are known to inhabit the project site, mainly along the multi-use Trail and Fort George Road near the golf course fairways. As a listed threatened species in the state of Florida, special precautions shall be undertaken to prevent the disturbance or harassment of this species.
4) According to Preserve staff, there is no record of active or inactive red-cockaded woodpecker colonies within Preserve boundaries; however, if mature pine stands occur, there is the potential for this species.

Fort George Island also provides important habitat for a breeding population of painted buntings (*Passerina ciris*). This neotropical migrant, while not yet considered a listed species, has experienced a significant, four to six percent annual decrease in numbers recently in the

[36] S.R. Allen, NPS, October 1, 2012.

southeastern United States. Habitat loss is a major cause of the decline. At Fort George Island, however, summer resident painted buntings continue to find refuge in the Preserve's well preserved maritime hammock and along forest edges,[37] and they may be present in the vicinity of the study area.

Plants

Seven state-listed plant species may occur in the study area. However, these species do not appear to inhabit the areas of potential disturbance around the Johnson Barn and the Kingsley parking lot, which are vegetated with non-native grasses.

3.4.2 Environmental Impacts

The following impact thresholds were defined for evaluation the intensity of impacts to species of special concern:

- **Negligible:** Special status species would not be affected, or the effects would be at or below the level of detection. A negligible effect would equate with a "no effect" determination under section 7 of the Endangered Species Act regulations for threatened or endangered species.
- **Minor:** Impacts to special status species would be perceptible or measurable, but the severity and timing of changes to parameter measurements are not expected to be outside natural variability and are not expected to have effects on populations of special status species. Impacts would be outside critical periods. A minor effect would equate with a determination of "likely to adversely affect" or "not likely to adversely affect" under section 7 of the Endangered Species Act regulations for threatened or endangered species.
- **Moderate:** Impacts to special status species would be perceptible and measurable, and the severity and timing of changes to parameter measurements are expected to be sometimes outside natural variability. Populations of special status species might have small to moderate declines, but they are expected to rebound to pre-impact numbers. No species would be at risk of being extirpated from the park. Some impacts might occur during key time periods. A moderate effect would in most cases equate with a determination of "likely to adversely affect" under section 7 of the Endangered Species Act regulations for threatened or endangered species.
- **Major:** Impacts to special status species would be measurable, and the severity and timing of changes to parameter measurements are expected to be outside natural variability. Populations of special status species might have large declines, with population numbers significantly depressed. In extreme cases, a species might be at risk of being extirpated from the park, key ecosystem processes like nutrient cycling might be disrupted, or habitat for any species might be rendered not functional. Substantive impacts would occur during key time periods. A major effect would equate with an "adverse effect with/without a jeopardy opinion" under section 7 of the Endangered Species Act regulations.

[37] FDEP, 2008, p. 28.

Alternative A – No-action

The No-action Alternative would continue to have a negligible effect on special status animal species that encounter Preserve visitors and vehicles on the Multi-use Trail and private vehicles on Fort George Road. No impacts to special status plant species are expected because there is no disturbance associated with this alternative.

Impacts Common to the Action Alternatives

No impacts to special status plant species are expected from the action alternatives because they are not present in the areas of proposed disturbance.

Tram Operations: The action alternatives would introduce more motorized activity on the Multi-use Trail (24 daily round trips for Alternative B and 30 one way trips for Alternative C) and as a result, could result in an increase in vehicular encounters with special status animal species, resulting in a potential adverse impact. In addition, the interpretive trams may draw additional visitors to the Preserve, causing some additional traffic on public roads. Conversely, by drawing drivers out of the cars in favor of the trams, the action alternatives would likely reduce faster-moving private vehicle traffic on Fort George Road, reducing the potential for vehicular encounters with special status species, resulting in a net neutral or negligible impact to wildlife.

Maintenance and Storage Facility: While no Gopher tortoise burrows exist in the vicinity of Johnson Barn as of this writing, they occur in nearby areas of the Preserve; thus, precautions will be taken to avoid disturbing them. Once the exact location of the proposed disturbance in these areas is identified (for the staging area and construction area), a survey will be conducted by the preserve biologist to determine if tortoise burrows occur. If burrows do occur, the preserve biologist will consult with the state FWC biologist regarding relocation to suitable habitat prior to disturbance. It is expected that the special status snakes that may be in the study area are sufficiently mobile that any disturbance would have a negligible impacts.

Alternative B - Multi-Use Trail Roundtrip (Preferred Alternative)

In addition to the impacts described above for the Multi-use Trail, Alternative B would require the removal of a few trees in an area of approximately 0.03 acres to create an access to the gravel parking lot that is necessary to turn the vehicle around. Due to the heavy presence of humans in this area, it is not expected that the special status species are present. However, once the exact location of the proposed disturbance is identified, a survey will be conducted by the preserve biologist to confirm if tortoise burrows occur. If burrows do occur, the preserve biologist will consult with the state FWC biologist regarding relocation to suitable habitat prior to disturbance.

Alternative C –Multi-Use Trail-Fort George Road Loop

There are no impacts to special status animal species from Alternative C other than as described above that are common to both action alternatives.

Conclusion

The No-action Alternative would continue to have a negligible effect on special status animal species and no impacts to special status species plants from the action alternatives. The impacts of the action alternatives to special status snake species would be negligible. While no Gopher tortoise burrows are currently present in the proposed areas of disturbance, if surveys conducted just before construction indicate tortoises are present, measures described above to avoid the burrows or relocate the tortoises would ensure that the impacts to the tortoises are avoided or mitigated.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts to special status species and habitat are negligible if mitigated, cumulative impacts are not anticipated.

3.5 Air Quality

3.5.1 Affected Environment

The Preserve is designated a class II air shed under the 1977 amendments to the Clean Air Act. Under class II, modest increases in air pollution are allowed beyond baseline levels for particulate matter, sulfur dioxide, nitrogen and nitrogen dioxide, provided that the national ambient air quality standards, established by the Environmental Protection Agency (EPA), are not exceeded.

Air quality is a concern at the Preserve, because of its location in a large and growing metropolitan area. Although limited industrial development is located within Preserve boundaries, there is heavy industry around the southern portion of the Preserve. All shipping traffic bound to and from the Port of Jacksonville passes through the Preserve on the St. Johns River, and commercial barge traffic passes through on the Intracoastal Waterway. Mobile and stationary sources contribute to air quality degradation. There are 34 major permitted stationary sources of air pollution in Duval County, most of which are located in the vicinity of the Preserve, including the largest coal-fired power plant in Florida (JCCI, 2007). There are several other sources in northeastern Florida as well as along the nearby Georgia coast.

As the EPA has modified and tightened standards, the City of Jacksonville has continued to meet them. Duval County was designated in attainment for the new ozone standards in 2004 and for new particulate matter standards, PM2.5, in 2005 (JCCI, 2007). In 2006, the Air Quality Index measured 305 days in the "Good" range, up from 275 days in 2005. The number of days that were reported as "Unhealthy for Sensitive Groups" decreased from five in 2005 to one in 2006.

3.5.2 Environmental Impacts

The Clean Air Act, as amended (42 U.S.C. 7401 et seq.), requires the Federal land manager (park superintendent) to protect the park's air quality-related values including visibility, plants,

animals, soils, water quality, cultural and historic resources and objects, and visitors from adverse air pollution impacts. Section 118 of the 1963 Clean Air Act requires the park to meet all Federal, state, and local air pollution standards. Meeting these standards is the threshold for air quality impacts.

Alternative A – No-action

The No-action Alternative would have no effect on existing air quality. Private vehicles traveling to both sites would continue to travel between Kingsley Plantation and the Ribault Club, resulting in more emissions than the action alternatives, creating a minor long term adverse impact. However, visitation at Kingsley Plantation is likely to continue to increase as it has increased 48% from 2003 to 2010 as shown by NPS records (NPS 2011), likely resulting in more private vehicles and greater emissions.

Impacts Common to the Action Alternatives

Tram Operation: Because visitors would have the option of taking a tram with interpretive services between Kingsley Plantation and the Ribault Club, it is likely that some visitors would choose this option rather than traveling by private vehicle between the two sites. The reduction in the number of visitors driving between sites and the mode shift from private vehicles to a no-emission tram would result in lower combustion engine emissions, and thus a beneficial impact.

As noted in Section 2.2.2, ridership estimates for the tram based on studies done by a contractor (Volpe 2012a) concluded that a reasonable estimate for annual ridership for the tram tour would be approximately 46,500 to 116,250 per year.[38] Of these, it is estimated that a proportion of these equal to approximately 17,000 to 42,000 annually would drive to Kingsley Plantation and by taking the tram would eliminate the need to drive between Kingsley Plantation and Ribault Club, a distance of 1.6 miles round-trip. Assuming an average of 2.3 passengers per vehicle,[39] the tram could reduce vehicle miles traveled by as much as 11,800 to 29,600 per year. In addition, some portion of the visitors that arrive at Fort George Island by boat from Sisters Creek or Fort Caroline and take the tram would do so rather than driving the 11 or 42 miles, respectively, to Fort George from those sites, further reducing the number of vehicle miles traveled. Although ridership is estimated to grow to nearly 400 daily riders by 2021 (Volpe 2012a), this increase in regional travel would still not be enough to increase the air emissions to a standard in violation with the Clean Air Act.

Maintenance and Storage Facility: Construction of the proposed facility would have short-term, minor, adverse impacts on air quality. Sources of air pollution would be from diesel engines exhaust and dust particulates from construction activities. During the construction phase of the project, the operation of equipment would generate pollutant emissions, including carbon monoxide, nitrogen oxides and particulate matter. However, these emissions would be minimal since the proposed construction activities are temporary. Dust may be generated by the construction or by construction trucks on the dirt roads of the Preserve, but these impacts can be

[38] Estimated 2011 and projected 2021, respectively.
[39] National Public Use Statistics Office.

mitigated by wetting soils. Overall, these negligible impacts would be short-term in nature, lasting only the duration of the construction activities.

Alternative B - Multi-use Trail Roundtrip

There are no impacts to air quality from Alternative B other than as described above.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to air quality from Alternative C other than as described above.

Conclusion

Alternative A would not result in any change to the current air quality status. The action alternatives would have negligible and temporary adverse impacts resulting from machinery and dust associated with construction activities and would not be expected to exceed EPA thresholds. Dust impacts can be mitigated. Alternatives B and C would result in beneficial air quality impacts associated with an estimated reduction of approximately 11,800 to 29,600 annual vehicle miles traveled and the associated reduction in vehicle emissions.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts to special status species and habitat are negligible if mitigated, cumulative impacts are not anticipated.

Because no long term adverse impacts would occur to air quality as a result of any of the alternatives, cumulative impacts to air quality are not anticipated.

3.6 Visitor Use and Experience

3.6.1 Affected Environment

The Preserve offers visitors to Kingsley Plantation self-guided tours, as well as daily ranger-led tours. The tours cover the primary sites at Kingsley Plantation including slave quarters, the barn, garden, kitchen, the waterfront, and owner's home. The park also offers ranger guided tours of the plantation house itself and surrounding facilities on weekends. These tours allow the visitors to get a natural glimpse of the island and its surrounding unique upland areas, while at the same time providing them with historical information and allowing them to experience what life was like through the various time periods of Kingsley Plantation.

FPS maintains the Saturiwa Trail, a 4.4-mile driving loop on Palmetto Avenue and Fort George Road that begins and ends at the Ribault Club. Visitors may drive, walk, and bike the loop. Visitors may check out an audio CD, which contains a park ranger's narration of the Fort George Island's history, from the Ribault Club, Kingsley Plantation, or Talbot Island State Park, to listen during the drive. Along the route, there are 23 numbered markers along the road that correspond

to interpretive stops, documented in the trail guide, including major facilities, natural features, vegetation and historic sites.

EcoMotion Tours offers visitors Segway tours of Fort George Island from the Ribault Club as a concession to the FPS. The tours operate mostly along unpaved trails including the Multi-Use Trail, using specially-equipped Segways that have off-road tires. EcoMotion offers daily one or two hour tours year-round, in groups up to ten. EcoMotion Tours also offers a walking tour of Kingsley Plantation in groups up to 50.

3.6.2 Environmental Impacts

NPS *Management Policies 2006* (NPS 2006b) states that enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the NPS is committed to providing appropriate, high-quality opportunities for the public to enjoy parks. Past planning documents, park statistics and input from park staff provided background on changes to visitor use and experience over time. Anticipated impacts on visitor use and experience were analyzed using the following intensity levels:

- **Negligible:** Changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the impacts associated with the alternative.
- **Minor:** Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be slightly aware of the impacts associated with the alternative.
- **Moderate:** Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the impacts associated with the alternative and would likely be able to express an opinion about the changes.
- **Major:** Changes in visitor use and/or experience would be readily apparent and would be severely adverse or exceptionally beneficial. The visitor would be aware of the impacts associated with the alternative and would likely express a strong opinion about the changes.

Alternative A – No-action

Visitors that arrive at Kingsley Plantation via the proposed boat tour would have no convenient way of accessing Ribault Club other than walking 2.4 miles or more round-trip from the Kingsley Planation along the Multi-use Trail or Fort George Road and no interpretation would be provided to connect the Plantation to the Ribault Club. In addition, visitors arriving at the Kingsley Plantation via car would not have the opportunity for an interpretive tour between the two sites; however, visitors that arrive first at the Ribault Club would still be able to use the self-guided interpretive tour provided by FPS or the guided Segway tour provided by EcoMotion.

Impacts Common to the Action Alternatives

Tram Operation: All of the action alternatives would have a long-term beneficial impact to visitor use and experience, particularly visitors that arrive at Kingsley Plantation via the proposed boat tour. The tram would provide a convenient way for visitors arriving via boat to

explore many of the attractions of Fort George Island, which currently is only possible to them on foot; to reach the Ribault Club is a 2.4 mile walk roundtrip. In addition to visitors that arrive via the proposed boat tour, the tram would provide the opportunity for visitors that arrive at either Kingsley Plantation or the Ribault Club via private vehicle a convenient opportunity to access the Multi-use Trail, which is off-limits to private vehicles. Furthermore, all tram riders would receive additional interpretive experiences, increasing their connection to the history and natural landscape and cultural attractions of the Preserve.

Maintenance and Storage Facility: The proposed facility would be located at the Johnson Barn site, which is a significant distance from visitor areas and is well-screened by vegetation, as shown in Figure 3-4. Thus there would be no long term impact to visitors once the facility is completed. Visitors could experience a short-term minor impact from construction trucks accessing the construction site via the main gate and L'Engle Avenue. The trucks could generate dust and noise and L'Engle Avenue east of the parking lot could be closed incidentally for transport of construction material. However these impacts could be minimized by conducting the construction in low-visitation periods and, if necessary, by requiring the contractor to wet down the construction route to minimize dust.

Alternative B - Multi-use Trail Roundtrip

This alternative is beneficial to visitors as it would allow for the visitors to be continuously encompassed in the surrounding natural environment for their entire trip, providing them a more natural experience. Visitors would have the opportunity to see and learn about the several cultural attractions (Point Isabella, Duval County Crypt, Nettleton-Neff House, and the Chew-Dyrenforth-Gay House) as well as many natural features of Fort George Island.

Alternative C - Multi-use Trail-Fort George Road Loop

While Alternative C provides access to the Multi-use Trail and thus the benefits described for Alternative B, it also results in some additional benefits and some adverse impacts. Because this route also travels on Fort George Road, it provides the benefit of being able to see and learn about several additional cultural attractions (Mount Cornelia, 5th and 6th fairways of Point Isabella and other private, historic homes).

However, traveling on public roads exposes visitors to hazards associated with traveling in a slow-moving, open air vehicle on a narrow, packed-gravel public road with many potholes, undulations and sharp curves. Hazards would be posed by passing vehicles, tailgating, speeding and unsafe driving by the public. In addition to these safety hazards, passing vehicles could kick up dust and dirt that could adversely affect the visitor experience.

Conclusion

The No-action Alternative would leave visitors that arrive at Kingsley Plantation via the proposed boat tour with no convenient way to access the Ribault Club or to receive the interpretive services that would be provided by the action alternatives. This is a moderate

adverse impact that is predicated on the initiation of the boat tour. Visitors arriving by car would not be provided with interpretive services between the two sites which is a minor adverse impact.

Alternatives B and C would provide the benefits of convenient access to the Ribault Club for boat tour visitors, as well as the benefits of interpretive services that are otherwise not available for all visitors. While Alternative C would provide a slightly wider range of interpretive services than Alternative B because it is a loop route, Alternative C also has potential minor adverse impacts to the visitor experience associated with the tram traveling on a narrow, packed gravel, public road.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts of the action alternatives are minor or beneficial, cumulative impacts are not anticipated.

3.7 Cultural Resources

3.7.1 Affected Environment

Kingsley Plantation is listed in the National Register of Historic Places (NRHP) as a historic district and a National Historic Site and the Ribault Club is also is listed on NRHP.

As noted in Section 2.1.4, the Johnson Barn is not listed or eligible for listing on the National Register of Historic Places. It has no intrinsic historic value and the style of architecture is unrelated to any other found in the historic period of the Kingsley Plantation Historic District.[40] The area around the barn is well-screened from the main complex of the Kingsley Plantation Historic District by at least an acre of foliage consisting of oak hammock and understory.

Between December 2010 and March 2011, John Whitehurst, TIMU Cultural Resource Specialist, and Barbara Prettyman, TIMU Archaeological Technician, conducted a Phase I archeological survey of the area around Johnson Barn, including twenty-two 50 x50 cm shovel test units. This area covered the area approximately 75 feet east of the barn, in the vicinity of the proposed construction staging area. While a wide dispersed artifact scatter was found beginning approximately 32 feet east of the Johnson Barn, the site was found not be eligible for listing on the NRHP.[41]

3.7.2 Environmental Impacts

Cultural resources are the result of the long interaction between people and the land, and the influence of human beliefs and actions over time upon the natural landscape.

Impact to cultural resources are evaluated in accordance with the regulations of the Advisory Council on Historic Preservation for implementing Section 106 of the National Historic

[40] August 29, 2011 Letter from Superintendent B. Goodman, NPS to S. Stroth, State Historic Preservation Officer (SHPO) and October 11, 2011 letter from L. Kammerer, Deputy SHPO to B. Goodman. See Appendix E.
[41] Ibid.

Preservation Act (NHPA) (36 CFR Part 800). Concurrent with the Section 106 process, the CEQ regulations that implement NEPA also require assessment of impacts on cultural resources including cultural landscapes, historic structures and archeological resources.

For purposes of analyzing potential impacts to these resources, the threshold of change for the intensity of an impact is defined as follows:

- **Negligible:** Impact is at the lowest levels of detection with neither adverse nor beneficial consequences. An assessment of effect according to Section 106 of the NHPA would result in a determination of *no adverse effect*.
- **Minor:** Alteration of a character-defining feature(s) would not diminish the overall integrity of the resource. An assessment of effect according to Section 106 of the NHPA would result in a determination of *no adverse effect*.
- **Moderate:** Alteration of a character-defining feature(s) would diminish the overall integrity of the resource. An assessment of effect according to Section 106 of the NHPA would result in a determination of *adverse effect*.
- **Major:** Loss of a character-defining feature(s) would diminish the overall integrity of the resource. An assessment of effect according to Section 106 of the NHPA would result in a determination of *adverse effect*.

Alternative A – No-action

No construction activities are included in this alternative, therefore there is no effect on any historic properties.

Impacts Common to the Action Alternatives

Tram Operation: There are no impacts to cultural resources because no construction or disturbance would occur on the Multi-Use Trail, L'Engle Avenue, or Fort George Road to accommodate the proposed vehicle, even with two way traffic. In addition, the tram would travel in areas of the Kingsley Historic District and the Ribault Club in which transportation activity already occurs, so there would be no change in use to these areas as a result of the action alternatives.

Maintenance and Storage Facility: The action alternatives would include the demolition and replacement of the Johnson Barn with a maintenance and storage facility, including a minor excavation for the building's foundation. However, because the area around the barn is well-screened from the main complex of the Kingsley Plantation Historic District by at least an acre of dense foliage and the barn itself has no intrinsic historic value, no impact is anticipated on the Historic District. Likewise the area immediately around the barn that could be disturbed by the proposed construction was not found to contain any archaeological resources of historic significance.

Alternative B - Multi-use Trail Roundtrip

In addition to the impacts described above, Alternative B would require the construction of an access route to the gravel parking lot from L'Engle Avenue necessary to turn the vehicle around (see Figure 3-1 and Figure 3-3). The area to be cleared is approximately 1200 to 1500 square feet (about 0.03 acres). According to the *Cultural Landscape Report*, while L'Engle Avenue west of Palmetto Avenue retains historic vegetation, the parking lot area does not. The Report states that the parking area does not contribute to the significance of the landscape and was likely a general dump or work yard.[42] This vegetation clearance for the parking lot access would require little, if any, soil disturbance.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to cultural resources from Alternative C other than as described above for the maintenance and storage facility.

Conclusion

There are no impacts to cultural resources from Alternative A, the No-action Alternative or from the action alternatives.

There are no impacts to cultural resources from the action alternations because although Kingsley Plantation and the Ribault Club are listed on the NRHP, transportation activity already occurs in the areas that would be traversed by the tram and the area where the tram would access the Kingsley parking lot does not contain historic vegetation. No cultural resources would be disturbed for construction of the storage and maintenance facility and the facility would be screened from the main part of the Kingsley Historic District by an acre of dense vegetation.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and there are no adverse impacts to cultural resources, cumulative impacts to cultural resources are not anticipated.

3.8 Soundscape

3.8.1 Affected Environment

The areas that would be traversed by the proposed tram on Kingsley Plantation, at the Ribault Club and on Fort George Road and Palmetto Avenue are currently affected by transportation noise from private vehicles. On L'Engle Avenue and the Multi-use Trail, segways, golf carts, and park service vehicles, as well as cyclists, hikers and Segway tours cause some noise on the Trail. At peak times, human generated noise, such as that from school outings, may be considerable.

[42] NPS 2005, p. 37 and p. 62.

The area around the Johnson Barn may be considerably quieter, since it is further away from public use areas.

3.8.2 Environmental Impacts

Impacts to noise were qualitatively assessed using professional judgment based on consideration of the proposed tram equipment and the types of construction equipment and the time needed to complete construction of the maintenance and storage facility. Since all of the proposed activity occurs in developed areas of the parks, the following thresholds of change were used to evaluate the intensity of impacts to soundscape:

- **Negligible**: The natural soundscape would not be affected, or brief individual noise events could occur due to the alternatives, but would not be lasting. The impacts would be on a small scale. The existing sound environment would not be affected, or the effects would be at or below the level of detection due to the existing human-related activity in the area
- **Minor**: The alternative would result in relatively small temporary changes to the natural soundscape, due to construction or other short term occurrence. The effects to the existing sound environment would be detectable, but due to the existing human-related activity in the area, the changes would be of little consequence to visitor experience or to biological resources. Mitigation measures, if needed to offset adverse effects, could be easily and successfully implemented.
- **Moderate**: Effects would be readily detectable, and despite existing human-related activity in the area, the changes would be apparent to visitors or to biological resources. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
- **Major**: Effects would be obvious, and despite existing human-related activity in the area, the changes would result in substantial consequences to visitor experience or to a broader range of biological resources. Mitigation measures to offset the adverse impacts would be required and extensive, and success of the mitigation measures would not be guaranteed.

Alternative A – No-action

No construction activities are included in this alternative; therefore no construction noise would result. Private vehicles would continue to travel between Kingsley Plantation and the Ribault Club and the resulting noise of combustion engines would continue to occur on Fort George Road and Palmetto Avenue, including on Kingsley Plantation. On L'Engle Avenue and the Multi-use Trail, segways, golf carts, and park service vehicles, as well as cyclists, hikers and the Segway tours would continue to cause some noise.

Impacts Common to the Action Alternatives

Tram Operation: While the introduction of tram operations on the Multi-use Trail would cause some minor noise from the interpretive tour and the introduction of additional visitors that might not otherwise access the trail, the electric tram vehicle is quiet and would not cause noticeable

additional noise. On the other hand there would be a minor beneficial impact to the natural soundscape of the park by reducing the amount of road traffic noise if the quiet tram reduces the number of vehicle miles traveled between Kingsley Plantation and the Ribault Club by as much as 11,800 to 29,600 miles annually, as noted in Section 3.5.2 and further reduces vehicles miles traveled associated with some portion of the visitors that arrive at Fort George Island by boat from Sisters Creek or Fort Caroline, rather than driving the 11 or 42 miles, respectively, to Fort George from those sites. Therefore, residents on Fort George Road would also experience a reduction in noise as a result of the action alternatives.

Maintenance and Storage Facility: The construction of the maintenance and storage facility would cause minor, short-term, adverse impacts on soundscape in the park. This noise would result from both construction equipment at the site of the proposed facility and from construction equipment and trucks traveling to the site. These impacts would last only for the duration of construction activities and would be temporary, minor and localized in the vicinity of the construction site, which is situated away from the main visitor areas.

Alternative B - Multi-use Trail Roundtrip

There would be no other impacts to the soundscape resulting from Alternative B besides those described above.

Alternative C - Multi-use Trail-Fort George Road Loop

There would be no other impacts to the soundscape resulting from Alternative C besides those described above.

Conclusion

Continued use of private vehicles to travel between Kingsley Plantation and the Ribault Club would have a negligible adverse impact on the soundscape as a result of Alternative A.

The action alternatives would have short-term minor impacts to the Kingsley Plantation soundscape resulting from construction activity and from construction equipment traveling to the site of the proposed maintenance and storage facility. These impacts would be temporary in nature and noise would return to background levels once construction was complete.

The introduction of more visitors on the Multi-use Trail as a result of the action alternatives may have a negligible adverse impact on the soundscape. On the other hand, residents of private homes along Fort George Road would experience a slight reduction in noise as a result of fewer vehicle miles traveled between Kingsley Plantation and the Ribault Club, resulting in a beneficial impact.

Cumulative Impacts

Because cumulative impacts are predicated on long term direct or indirect adverse impacts and the long term impacts are negligible or beneficial, cumulative impacts are not anticipated.

3.9 Park Operations

3.9.1 Affected Environment

Kingsley Plantation is open from 9:00am to 5:00pm daily, except Thanksgiving, Christmas and New Year's Day. Currently, there are two permanently staffed park rangers, supplemented by four student shift workers, at Kingsley Plantation, which allows the park to offer ranger-led interpretative tours for the public on a daily basis. These rangers are also in charge of any special events that occur throughout the year, such as the several events during Black History Month in February that bring an above-average amount of visitors to the Preserve. These events can attract anywhere from 300 to 500 people. As a result, visitors must park in overflow parking adjacent to Kingsley Plantation or along the public roads and then walk in. Also on site are five full-time employees who provide maintenance of the facilities for which the Preserve is responsible as well as maintain the current electrical golf carts used by the Preserve for administrative and special use needs.

The Ribault Club is staffed by the Florida Park Service, with hours of operation Wednesday through Sunday from 9:00am to 5:00pm. There are currently no transportation programs or partnerships between Kingsley Plantation and the Ribault Club that would allow visitors to experience both sites unless they transported themselves from one site to another.

3.9.2 Environmental Impacts

Impacts to park operations and management were assessed in the following areas: facilities and operational efficiency, staffing, capital and annual operating costs, and interagency relations.

The following impact thresholds were defined:

- **Negligible:** A change in operations would be localized and barely perceptible or measurable.
- **Minor:** A change in operations would be slight and localized, with few measurable consequences within existing park facilities. Additions or reductions in operating costs would be noticeable but manageable. Slight changes in current staffing arrangements or operations would be required, but there would be no financial imbalance between available funding streams and annual operating costs
- **Moderate:** A change would be readily apparent, with measurable consequences and would occur inside and outside park boundaries. Additions or reductions in operating costs would be very noticeable and may be somewhat difficult to manage. Changes would be required in park operations or would result in a financial imbalance between available funding streams and annual operating costs.
- **Major:** A change would be readily apparent, with measurable consequences over a regional area. Additions or reductions in operating costs would be difficult or very difficult to manage. Changes would require new administrative structures and/or would result in a significant financial imbalance between available funding streams and annual operating costs.

Alternative A – No-action

Because there are no changes to park operations as a result of the No-action alternative, there are no impacts of this alternative.

Impacts Common to the Action Alternatives

Tram Operation: If the trams were owned and operated by the park staff, the action alternatives would result in permanent changes to the current park operations. Implementation of the tram would require the hiring of two additional full-time staff equivalents to assist existing staff in operating the trams on a daily basis (the trams would require two staff to cover a total of fourteen eight-hour shifts a week during peak visitation periods).[43] In addition, there would be the capital cost of obtaining the trams and the operating cost of maintaining them. Unless these were totally covered by the tram fares, this would be a minor adverse impact. However, it is possible that the tram could operate as a concession in the Preserve, eliminating the need for additional staff and for capital and operating costs, but likely increasing the cost of the fare for the tram. Special events, normal day to day maintenance, and increased visitors to the park would be handled by current staffing numbers.

Operation of the tram on the FPS land including the Multi-use Trail, Ribault Club driveway and Palmetto Avenue is allowed under an existing general agreement between the NPS, FPS and City of Jacksonville. This is neither an adverse or beneficial impact.

Maintenance and Storage Facility: The Johnson Barn is currently vacant and not used by the park. Development as a maintenance facility for the trams would increase operating costs and require periodic housekeeping and routine maintenance. This is a minor long-term adverse impact.

Alternative B - Multi-use Trail Roundtrip

There are no impacts to park operations from Alternative B other than as described above.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to park operations from Alternative C other than as described above.

Conclusion

Alternative A would have no effect on park operations since it does not change the current operation of the Preserve. The action alternatives could result in minor adverse impacts from additional staffing needed to drive the trams and additional capital and operating expenses, if the Preserve owns and operates the trams. If the trams are operated as a concession, these impacts would not occur.

[43] Volpe 2011.

Cumulative Impacts

Cumulative impacts to Park Operations are not anticipated because there have been no changes to park operations since the 1996 General Management Plan.

3.10 Climate Change

3.10.1 Affected Environment

Several key studies, including the U.S. Global Change Research Program's report Global Climate Change Impacts to the United States and the Intergovernmental Panel on Climate Change (IPCC) 4th Assessment Report, conclude that the observed changes in climate are due primarily to human-caused emission of heat-trapping gases such as carbon dioxide (CO_2). These "greenhouse gases" (GHG) have been on the rise since the 19th century, and their effect on climate will persist for many more decades. Levels of carbon dioxide and methane (another GHG) in the atmosphere are higher now than in the last 650,000 years. As humans continue burning more and more fossil fuels, scientists believe the impacts of global warming will accelerate in the future.[44]

Currently, privately owned vehicle trips to and between Kingsley Plantation and Ribault Club contribute GHG to the environment.

3.10.2 Environmental Impacts

Currently there are no emission limits for suspected Greenhouse Gas (GHG) emissions, and no technically defensible methodology for predicting potential climate changes from GHG emissions.

Alternative A – No-action

This alternative would continue use of privately owned vehicles to access points of interest on Fort George Island, and as a result, would continue to contribute to climate change. Visitation at Kingsley Plantation is likely to continue to increase as it has increased 48% from 2003 to 2010 as shown by NPS data (NPS 2011), likely resulting in more private vehicles and greater GHG emissions.

Impacts Common to the Action Alternatives

Tram Operation: The action alternatives would reduce the number of privately owned vehicle trips to and on Fort George Island resulting in a reduction of emissions that contribute to climate change. As described in Section 2.2.2, the tram could reduce vehicle miles traveled by up to 11,800 to 29,600 per year for those visitors who drive to Kingsley Plantation and result in an additional reduction of vehicle miles traveled for those visitors who take the boat tour and the tram. These visitors would instead take an electric tram. This reduction would result in a

[44] NPS http://www.nature.nps.gov/climatechange/overview.cfm

reduction in fossil fuels that power the private vehicles and the GHG emissions that contribute to climate change.

Maintenance and Storage Facility: A small amount of GHG would be produced during construction of the storage and maintenance facility at the Johnson Barn site resulting in negligible short term impacts.

Alternative B - Multi-use Trail Roundtrip

There are no impacts to park operations from Alternative B other than as described above.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to park operations from Alternative C other than as described above.

Conclusion

Alternative A would result in the continued use of private vehicles to and between the attractions on Fort George Road, and would continue to contribute to climate change, although this contribution is negligible. If the number of visitors increases, it would likely increase the number of private vehicles and vehicle emissions that contribute to climate change. All of the action alternatives have a net benefit in reducing climate change, as there would likely be fewer privately owned vehicle trips on Fort George Island.

Cumulative Impacts

Cumulative impacts to climate change are not anticipated because the impacts of the alternatives are beneficial or negligible.

3.11 Transportation

3.11.1 Affected Environment

Visitors arrive at Kingsley Plantation or Ribault Club primarily by private automobile. Heckscher Drive (State Route 105) and State Route A1A are the main roadways providing access to Fort George Island. Heckscher Drive runs west to State Route 9A/I-295 beltway and downtown Jacksonville. A1A runs north-south along the coast, crossing the St. Johns River by way of the St. Johns River Ferry, west of Fort George Island on Heckscher Drive.

The primary public roads on Fort George Island are Fort George Road and Palmetto Avenue (see Figure 1-2). Fort George Road runs along the eastern shore from the southern tip of the island to the Ribault Club and north and east to its intersection with Palmetto Avenue just south of Kingsley Plantation. Palmetto Avenue runs along the western edge of the island between Kingsley Plantation and Fort George Road at the southern tip of the island. Traffic is two-way along both roadways and the speed limit is 20 miles per hour on all roadways. Section 2.2.4 describes in detail the portions of these roads that are included in the study area.

Public parking on Fort George Island is mainly available at Kingsley Plantation and the Ribault Club. Kingsley Plantation has a gravel parking area (measuring 68 feet by 138 feet – 17 spaces) in which concrete curbs delineate parking spaces as well as two grass designated overflow parking areas (40 spaces). The Ribault Club has a gravel parking area (18 spaces), with a vehicle turnaround that could accommodate a transit vehicle, and grass overflow parking (115 spaces).

3.11.2 Environmental Impacts

Alternative A – No-action

Under the No-action Alternative visitors would continue to access Fort George Island using privately owned vehicles and visitors that arrive by boat would have no convenient way to travel on Fort George Island. Visitors would continue to travel between Kingsley Plantation and the Ribault Club by private vehicle.

Impacts Common to the Action Alternatives

Tram Operation: As described in Section 2.2.2, the tram could reduce vehicle miles traveled on Fort George Road and Palmetto Avenue by up to 11,800 to 29,600, by reducing the number of vehicles traveling between Kingsley Plantation and the Ribault Club. An additional reduction of vehicle miles traveled could result if visitors take the proposed boat tour and the tram rather than traveling from Sisters Creek or Fort Caroline to Fort George Island. This would reduce traffic on the narrow, undulating, packed-gravel, public roads that have many potholes and sharp curves.

Maintenance and Storage Facility: No impacts to transportation would result from construction of the proposed maintenance and storage facility.

Alternative B - Multi-use Trail Roundtrip

There are no impacts to transportation from Alternative B other than as described above.

Alternative C - Multi-use Trail-Fort George Road Loop

Alternative C could result in minor adverse impacts to public roadways as a result of interaction between the tram and faster-moving private vehicles on approximately 1.2 miles of Fort George Road, which is approximately 11 to 15 feet wide, with no shoulder and a speed limit of 20 miles per hour. There may be considerable safety concerns for the slow moving (12 mph) tram, driving amongst faster moving vehicles. Congestion could result from vehicles having to drive slowly behind the tram, while safety risks could occur from other vehicles passing the tram.

Conclusion

In Alternative A visitors would continue to access Fort George Island only using their private vehicles and visitors arriving by the proposed boat tour would have no transportation to the Ribault Club resulting in a minor adverse impact. Alternative B and C would have beneficial

impact to transportation from improved connectivity between Kingsley Plantation and the Ribault Club, and as a result, reduced roadway congestion on Fort George Road. However, there could be minor adverse traffic and safety impacts from Alternative C as a result of the slow moving tram interacting with private vehicles on Fort George Road.

Cumulative Impacts

Cumulative impacts to transportation are not anticipated because adverse impacts of the action alternatives would be beneficial or minor.

3.12 Socioeconomics

A fee of approximately two dollars would likely be charged for one round-trip from the Kingsley Plantation to the Ribault Club. This fee would have to be approved by the NPS Director.

3.12.1 Affected Environment

There are several businesses that offer services on and around Fort George Island. These include Segway, bicycle and kayak tours which are based out of or include the Ribault Club. There is no other transportation on the island with which this tram would be in competition.

3.12.2 Environmental Impacts

The following impact thresholds were defined for evaluating the intensity of socioeconomic impacts:

- **Negligible:** Effects would be below detectable levels or detectable only through indirect means and with no discernible effect on the character of the social and economic environment.
- **Minor:** Effects would be detectable, but localized in geographic extent or size of population affected and not expected to alter the character of the established social and economic environment.
- **Moderate:** Effects would be readily detectable across a broad geographic area or segment of the community and could have an appreciable effect on the social and economic environment.
- **Major:** Effects would be readily apparent, affect a large segment of the population, extend across the entire community or region, and would likely have a substantial effect on the social and economic environment.

Alternative A – No-action

The No-action Alternative would not change the local socioeconomic environment because activity at the Preserve would not change.

Impacts Common to the Action Alternatives

Tram Operation: All of the action alternatives could have a permanent, increase in economic benefits if the tram resulted in additional visitors to the Preserve. With the increased visitation to the Ribault Club, it is possible that the other businesses such as the kayak tours, Segway, or bicycle rentals, as well as the park concessions, could experience increased revenue. It is unlikely that the proposed tram tour would have a significant impact on tour businesses, such as the Segway tour, since the Segway tour provides a much different experience of a two hour tour; however it is possible that some visitors may choose the tram tour instead.

Purchase of the trams would have a one-time economic benefit, although it is not likely to be local. A negligible, long term indirect economic benefit would occur to employment as a result of the need for up to two full time equivalent staff to operate the trams on a daily basis.

Maintenance and Storage Facility: There would be a short term benefit to a local construction company and workers that would construct the maintenance and storage facility and as a result of purchasing materials for the construction.

Alternative B - Multi-use Trail Roundtrip

There are no impacts to socioeconomics from Alternative B other than as described above.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to socioeconomics from Alternative C other than as described above.

Conclusion

There are no socioeconomic effects of the No-action alternative.

The action alternatives would have long and short term economic benefits. A short- term benefit would occur due to the outlay of money to acquire the trams and construct the maintenance and storage facility. Businesses that are run out of the Ribault Club, including park concessions, could see a long term increase in revenue as the result of additional visitors from the boat tour. Another long term indirect benefit of these alternatives would result from the hiring of additional staff to run the trams.

Cumulative Impacts

Cumulative impacts to socioeconomics are not anticipated, since all of the impacts are beneficial.

3.13 Utilities

3.13.1 Affected Environment

Currently there are no communications facilities, running water or sewage facilities and electrical at the Johnson barn site and the electrical facilities are no longer functional.

3.13.2 Environmental Impacts

Alternative A – No-action

No changes to utilities would occur as a result of this alternative.

Impacts Common to the Action Alternatives

Tram Operation: All action alternatives would result in negligible additional use of electricity to the park utilities resulting from the charging of the two trams.

Maintenance and Storage Facility: All of the action alternatives require the establishment of electric, communications, water and septic services to the maintenance and storage facility. Electricity would be re-established at the site. Communications would include the connection of a phone line to a pre-existing above ground system that is currently on the Preserve. A new water line would be run from the existing well to the facility. A septic system would be installed to support bathrooms and running water. All utility upgrades would be done in the most current energy efficient manner with proper energy saving fixtures as planned out in the *ASHRAE Level 2 Energy Audit for Timucuan Ecological & HP* (Mactec 2010).

To choose an appropriate site for the septic system, which would have the minimum adverse impact on the surrounding environment, the Florida Department of Health would be consulted, the "Kingsley Plantation Tram Project Archaeological Description, Project Result Site Evaluation, and Effect Evaluation" (Appendix E) would be reviewed and consultation with the SHPO would occur as required under Section 106 of the National Historic Preservation Act of 1966. In addition, a survey for gopher tortoise burrows would occur, as described in Section 3.4.2.

All of the action alternatives would result in a negligible increase to the normal yearly electrical and water usage, based on the 2008-2009 Timucuan Energy Report (Mactec 2010).

Negligible short-term construction impacts would include the use of water and electricity for construction of the maintenance and storage facility.

Alternative B - Multi-use Trail Roundtrip

There are no impacts to utilities from Alternative B other than as described above.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to utilities from Alternative C other than as described above.

Conclusion

There are no impacts to utilities of the No-action Alternative. The action alternatives result in negligible short and long-term impacts to utilities. There would be a negligible short-term

increase in the use of water and electricity during construction of the maintenance and storage facility and a negligible long-term increase as a result of the use of the facility, including for sanitary facilities, lighting and charging of the tram units. Minimal ground disturbance would occur temporarily due to the construction of a septic system. All of these actions would result in negligible impacts to local utilities.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts of the proposed action to utilities are short-term and or/negligible, there are no cumulative impacts to utilities.

3.14 Waste Management

3.14.1 Affected Environment

Current waste management protocol consists of recycling of used electrical batteries from the golf carts used at the Preserve. The batteries are taken to an offsite facility, where they are properly recycled.

3.14.2 Environmental Impacts

Alternative A – No-action

The No-action Alternative would have no effect on the current waste management protocols.

Impacts Common to the Action Alternatives

Tram Operation: The Alternatives would increase the amount of used electrical batteries on the Preserve, but would not change the protocol for their disposal. Current Waste Management protocols would stay the same, and the additional labor associated with disposal of additional batteries would be negligible. Therefore, no adverse impact would be created for waste management.

Maintenance and Storage Facility: There would be no impacts to waste management resulting from the construction of the new maintenance and storage facility.

Alternative B - Multi-use Trail Roundtrip

There are no impacts to waste management from Alternative B other than as described above.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to waste management from Alternative C other than as described above.

Conclusion

The action alternatives would increase the number of electrical batteries used on the Preserve, but the labor impacts of disposing of additional batteries would be negligible.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts of the proposed action to waste management are negligible, there are no cumulative impacts to waste management.

3.15 Land Use

3.15.1 Affected Environment

The parking areas are limited at Kingsley Plantation (17 spaces with 40 space overflow capacity) and Ribault Club (18 parking spaces with 115 space overflow capacity). During special events, visitors have to park outside of the immediate parking areas within the Kingsley Plantation area, and walk in to their destination.

Access between Kingsley Plantation and Ribault Club is achieved via an existing network of roads and trails, in particular Fort George Road and the Multi-Use Trail (see Figure 2-1). These roads and trails are currently used by the public to drive into the Preserve, as well as for walkers and hikers.

3.15.2 Environmental Impacts

Alternative A – No-action

The No-action Alternative would not change the current land use situation. Parking would continue to be limited at Kingsley Plantation and the Ribault Club, causing the need for visitors to park outside the Kingsley Plantation area during special events. The roads and multi-use trails would continue to be used by the public for transportation purposes, whether by driving their private vehicle or walking/hiking around the Preserve.

Impacts Common to the Action Alternatives

Tram Operation: The parking lot at the Ribault Club would be used as a turnaround area for the tram for both action alternatives. This use is supported by the FPS as long as flexibility can be built into the plan that allows for the driveway to be clear for special events at the Ribault Club, such as weddings. There could be some reduction in the demand for parking and overflow parking at Kingsley Plantation and the Ribault Club as a result of visitors using the proposed boat and tram, rather than private vehicles.

Maintenance and Storage Facility: Both action alternatives would build a new maintenance and storage facility at the current Johnson Barn site. The new facility would be 40 by 40 feet,

and would be built on the current Johnson Barn footprint. A new concrete foundation would have to be built to support the new facility, with the fill used on site for grading.

Alternative B - Multi-use Trail Roundtrip

The use of the Kingsley Plantation parking lot for the tram turnaround may temporarily block some vehicles while it moves to the pick-up stop, but this would be transient and negligible.

Alternative C - Multi-use Trail-Fort George Road Loop

There are no impacts to land use from Alternative C other than as described above.

Conclusion

There are no land use impacts of the No-action Alternative.

If some visitors use the proposed boat and tram, there could be reduction in the demand for parking and overflow parking at Kingsley Plantation and the Ribault Club.

Cumulative Impacts

Because cumulative impacts are predicated on direct or indirect adverse impacts and the impacts of the proposed action to land use are beneficial, there are no cumulative impacts to land use.

3.16 Resource Conservation, Including Energy and Pollution Prevention

As noted in Section 2.2.2, ridership estimates concluded that a reasonable estimate for annual ridership would be approximately 46,500 to 116,250 per year for the tram tour under the action alternatives, resulting in a reduction of vehicles miles traveled between Kingsley Plantation and Ribault Club of as much as 11,800 to 29,600 per year. In addition, some portion of the visitors that arrive at Fort George Island by boat from Sisters Creek or Fort Caroline and take the tram would do so rather than driving the 11 or 42 miles, respectively to Fort George from those sites, further reducing the number of vehicle miles traveled. This reduction would result in a reduction in energy use (fossil fuels that power the private vehicles) and a reduction in pollution from combustion engines.

Under the No-action alternative, there would be no change in the use of private vehicles.

3.17 Sustainability and Long Term Management

The NPS has adopted the concept of sustainable design as a guiding principle for facility planning and development. Director's Order 12 defines sustainable development as "that which meets the needs of the present without compromising the ability of future generations to meet their needs" (*World Commission on Environment and Development*).

The objectives of sustainability are to design park facilities to minimize adverse effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage

biodiversity; to construct and retrofit facilities using energy-efficient materials and building techniques; to operate and maintain facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through the sustainable design and ecologically sensitive use.

The action alternatives are consistent with NPS concepts on sustainability as the project would be implemented in a manner so as to minimize impacts to the natural and built environments. The materials and design of the storage and maintenance facility would reflect the environmental setting and would use compatible construction materials. Upgrades to the water, sewer, phone, and electrical systems would be accomplished using energy-efficient equipment, materials, and procedures.

Chapter 4 – Mitigation Measures

Best management practices and sediment and erosion control measures would be used during the implementation of the proposed project. Sediment and control measures would include silt fences and/or sand bags and storm water management techniques.

The NPS and its contractors commit to avoid, minimize or mitigate for adverse effects during construction activities by including the following commitments in the contract specifications:

The NPS would implement the FFWCC Gopher Tortoise protocols for surveying, marking and possible relocation of tortoises.

Chapter 5 – Consultation and Preparers

5.1 Agency Consultation

United States Fish and Wildlife Service will be consulted upon the publication of this Draft EA.

5.2 List of Preparers and Contributors

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