

*EL  
CAMINO  
REAL*

**NATIONAL SCENIC TRAIL STUDY**

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NATIONAL SCENIC TRAIL STUDY

U. S. DEPARTMENT OF THE INTERIOR  
Bureau of Outdoor Recreation

July 1977

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public land and natural resources.

This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation.

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U.S. Department of the  
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## INTRODUCTION

### AUTHORITY

The Bureau of Outdoor Recreation, Southeast Regional Office, in compliance with Public Law 90-543, Section 5(c)(14), has prepared this study to "determine the feasibility and desirability" of the "El Camino Real from St. Augustine to San Mateo, Florida, approximately 20 miles\* along the southern boundary of the St. Johns River from Fort Caroline National Memorial to the St. Augustine National Park Monument." In 1969 the Bureau of Outdoor Recreation, Southeast Regional Office, prepared a feasibility study on this trail proposal. This indepth study was recommended by the feasibility study.

### PURPOSE

This study has been prepared and trail recommendations made to meet the requirements of Public Law 90-543. The 1969 El Camino Real Feasibility Study concluded that sufficient documentation of historic, scenic, natural, and cultural significance did exist to warrant further study. This study will present recommendations based on an evaluation of the field study findings. All components stipulated in Subsection (b) of Section 5 of the National Trails System Act, Public Law 90-543, are addressed.

### SCOPE

The findings and recommendations of this report are based upon an analysis of pertinent historic maps and documents and coordination with a variety of agencies and individuals knowledgeable of the history of the periods in which the trail route originated and was used. Field investigations of the trail's scenic and natural attributes were evaluated and the pertinence of the cultural qualities was studied. Defined in this report are the "nationally significant scenic, historic, natural, and cultural qualities of the areas through which the trail may pass." Project findings and recommendations are based on an evaluation of land use and ownership, costs, anticipated visitor use, and the trail compliance with the criteria for determining "national significance" established by Public Law 90-543.

\* Public Law 90-543, Section 5(c)(14) erroneously states that the approximate mileage from St. Augustine to San Mateo, Florida, is 20 miles. Actually, the direct air mileage between these two points is in excess of 30 miles. The most direct land mileage approximates 40 miles. San Mateo is the Spanish name for Fort Caroline, the northern terminus of the study area.

## II. SUMMARY OF FINDINGS AND RECOMMENDATIONS

### FINDINGS

The El Camino Real was found not to meet the principal criteria of the National Trails System Act (Public Law 90-543) for National Scenic Trail designation. The Interagency Task Force on the Nationwide System of Trails, set up following passage of the Act, specified that National Scenic Trails should meet the following criteria:

1. Scenic, historical, natural and cultural qualities of the area through which the trail passes must be of superior quality as compared to those of other trails.
2. These trails should be capable of promoting interest and attracting visitors throughout the country.
3. Highways, commercial and industrial development and any other activities that could detract from the trail experience should be avoided.
4. Trails which are historic in nature should be located as closely as possible to the historic event (exploratory trek, military march, migration route, etc.) being commemorated.

The scenic, historic, natural and cultural qualities of the area through which the El Camino Real would pass were not found to be of superior quality to warrant inclusion in the National Scenic Trails System. Although the Fort Caroline National Memorial and the Castillo de San Marcos do draw visitors from throughout the country, a trail connecting these two points would not possess the same appeal. Highways, commercial and residential development within the area to be traversed by the El Camino Real would be major detriments to an enjoyable trail experience.

Finally, because the actual route of the 16th-century trail is undetermined, the proposed trail route would at best only approximate the historic route, and would lack the integrity that is essential to national designations of historical significance. Congress has designated the historic sites at each end of the trail corridor, St. Augustine and Fort Caroline, as a national monument, 1924, and a national memorial, 1950, respectively.

Public Law 90-543, Section 5(c)(14) calls the trail under study from St. Augustine to San Mateo, Florida, the El Camino Real. The name, El Camino Real, has been determined to be historically unfounded and a point of local confusion. Confusion arises from the literal translation, "the kings road." U.S. Highway 1, to the west of the route covered in this report, is called "Kings Road" and an effort is underway to restore other portions of the English "Kings Road" which was used by the British some 200 years after the St. Augustine-San Mateo route was used by the Spanish.



Historical documentation establishes that a route was used by the Spanish commander Pedro Menendez de Aviles to march his soldiers from an Indian village, now the site of Nombre de Dios Mission in north St. Augustine, to Fort Caroline on the south bank of the St. Johns River. The historical significance of this march is discussed at length in the "historical significance" section of the report.

The study team did recognize a need for trail resources within the area studied. A trail plan has been developed for possible future application in meeting the apparent trail needs of northeast Florida although Federal national scenic trail designation or Federal management is not recommended. "Outdoor Recreation in Florida"<sup>1/</sup> indicates a future need for trail resources within the area studied. Both recreation potential and opportunity for historical interpretation along a trail route in the study area are good. Proper design and trail surface treatment would allow both hiking and bicycling in a region highly conducive to bicycling and on a route of an acceptable length to both hikers and bicyclists.

Access to a trail route from principal roads in the area is excellent. In addition, roads crossing the route at several strategic locations would permit use of certain segments of a trail for hikes of relatively short duration.

A trail in the study area could form a nucleus for a number of connecting and side trails, tying together urban trails and Federal and State recreation areas of the region. A trail from Fort Caroline National Memorial, tying in with the proposed urban trails in the Jacksonville area to the west, has merit.

Development and encroachment into the corridor studied are probable as urbanization of Jacksonville and St. Augustine progresses.

Existing and proposed limited access highways in Duval County which cross the studied trail corridor make development of a continuous trail from the Fort Caroline National Memorial to St. Augustine difficult.

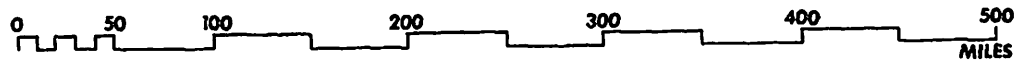
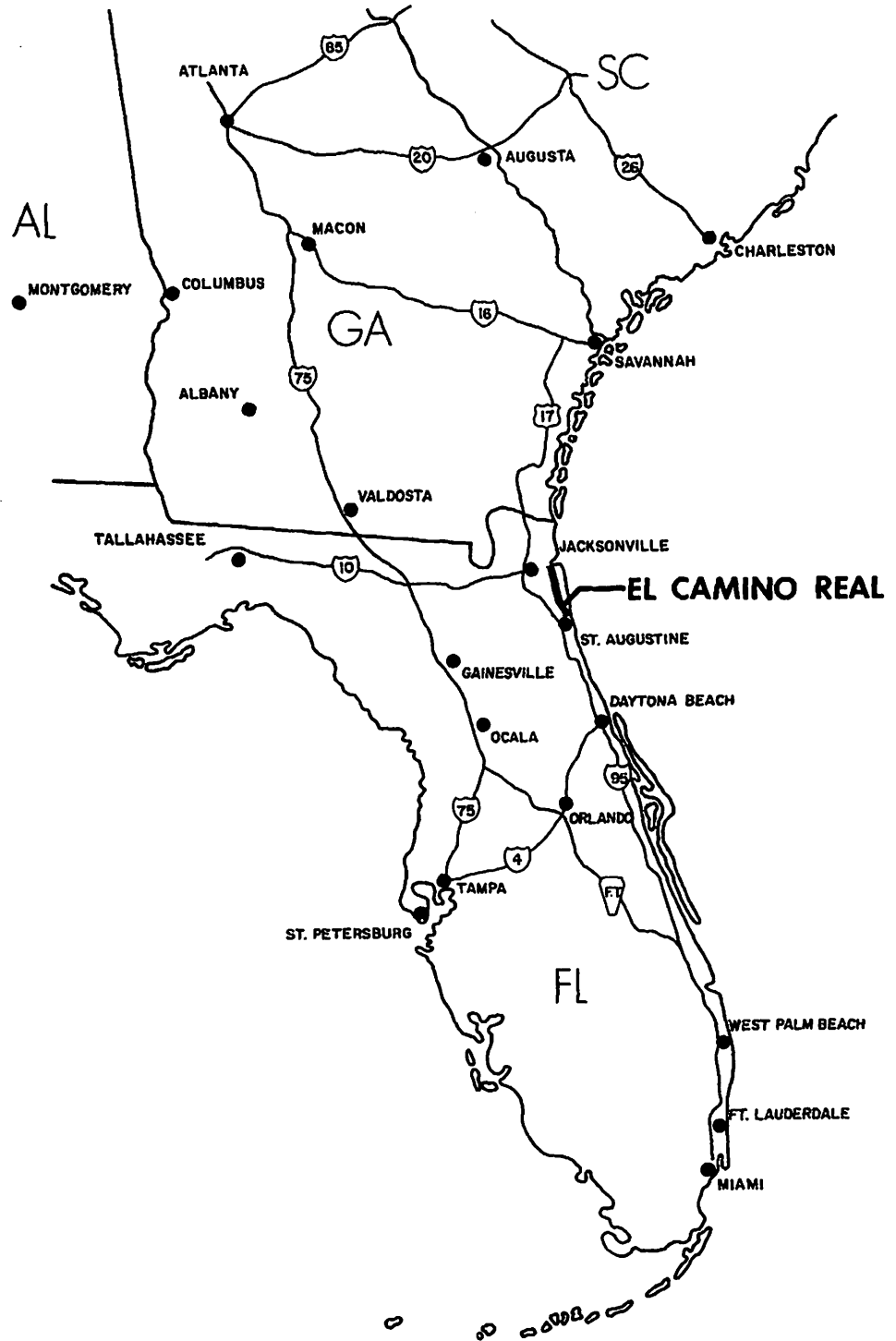
The trail route studied does have sufficient recreation potential and historic significance to merit consideration in any future State and/or local trail planning within this area.

#### RECOMMENDATIONS

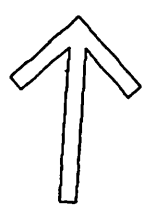
1. That the El Camino Real, a trail from "St. Augustine to San Mateo, Florida," having not met the criteria of Public Law 90-543, for inclusion in the National Trails System, should not be considered for National Scenic Trail status.

<sup>1/</sup> "Outdoor Recreation in Florida," State of Florida, Department of Natural Resources, May 1976.

2. That due to the recreation need and potential for trails in northeast Florida, and the general historical events associated with a potential trail development within the trail corridor studied, State and local governments should be encouraged to consider trail development and preservation of any areas of historical significance within the study area in their future recreation plans.
3. That State or local governments interested in trail development within the trail corridor studied should be afforded Federal assistance through existing programs in planning and funding of such trail projects.
4. That any trail developed in the study area by State or local governments or the private sector, managed for continuing public use, and which meets established criteria for such trails, be considered by the Secretary of the Interior for designation for inclusion in the National Recreation Trails System.
5. That the name "El Camino Real," used in Public Law 90-543, in reference to a trail from "St. Augustine to San Mateo, Florida," not be used in naming future trail developments which attempt to document the same historic events studied in this report, but rather a broader name, such as "The Spanish Heritage Trail," be used to memorialize the historic events associated with this trail corridor.



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**VICINITY MAP**

### III. DESCRIPTION OF PHYSICAL CHARACTERISTICS OF THE AREA

The area surrounding the trail route lies within the Gulf-Atlantic Coastal Flats physical subdivision. Physical characteristics of the area are typical and representative of southern portions of this subdivision.

#### TOPOGRAPHY

The topography of the study area is relatively flat ranging from about 5 to 35 feet above sea level, although at the northern end close to Fort Caroline, there are bluffs and ridges 50 to 60 feet in elevation. For most of its length, the trail route lies in terrain of elevations between 10 and 30 feet above mean sea level.

The area is characteristically a plain of low, sand hills and marshes. Numerous small creeks drain the area, but because of only slight variations in elevation, these are slow moving, meandering in a generally easterly direction to the Tolomato River, draining the southern half of the plain within the study area, and to Pablo Creek, draining the northern half of the plain.

#### CLIMATE

The study area experiences a humid subtropical climate. Summer average maximum temperatures are in the low 90's with average minimums in the 70's. Winter average maximums are in the high 60's with average minimums about 20 degrees cooler.

Annual rainfall varies from about 36 inches in dry years to records in the high 60's in wet years. Usually the greater part of this falls from June through September. Although the study area lies within the latitudes affected by hurricanes, occurrence of the direct effects of such storms is rare, with heavy rainfall resulting in infrequent flooding at low elevations.

#### FLORA AND FAUNA

Vegetation in the study area is typical of portions of the coastal flat with similar soils of sand carbonate composition. Although characterized in the general grouping of southern mixed forest, major species in the area generally are scrub and of negligible value as timber. Scrub palmetto, pine, and oak and a variety of shrubs, cover the low hills, with shrubs and grasses typical of fresh and brackish marshes in the lower areas.

The natural environment is virtually intact. Fauna include a small number of deer and bear, a large variety of birds and numerous small mammals. Although not of major significance as waterfowl habitat, marshes in the area are of importance, particularly for wood ducks. Alligators

and southern bald eagles, both endangered species, have been reported at Guano Wildlife Management Area which is located between St. Augustine and Jacksonville in the strip of land lying between Florida Highway 1A and U.S. Highway 1. This management area also reports nesting areas for ibis, anhinga, and osprey as well as wintering grounds for migratory waterfowl such as ring necks, pintails, canvasback and various teal. It is safe to assume that due to the proximity of the management area to the trail corridor many of the same animals could be found along the trail route.

#### EXISTING AND FORESEEABLE ENVIRONMENTAL INTRUSIONS

For most of its length, the trail route traverses land which requires alterations before commercial or residential development can take place. Despite this, the coastal regions of Florida are growing at a rapid rate and, without comprehensive land use controls, this area is particularly susceptible to development and encroachments due to its accessibility and proximity to the ocean. Notable examples of such development are the area between St. Augustine and Matanzas and the suburban growth of Jacksonville.

At the southern end of the trail route, development of the relatively narrow land corridor between U.S. Highway 1 and the Tolomato River may preclude establishment and extension of the route as a hiking trail to the point of origin. The first 6 miles of the route studied, north from St. Augustine, has been developed with structures, roads, and utilities. Similar development is also occurring at the northern end of the route, which is within commuting distance of expanding, urban Jacksonville. Modification of the northern part of the study area for development, even if undertaken so as to minimize intrusion, will nevertheless result in a loss of substantial scenic and natural values.

Three major four-lane routes run east and west from Jacksonville-- J. Turner Butler Expressway, Beach Boulevard and Atlantic Boulevard. These highways have made possible increased residential development between Jacksonville and the beaches. At present, the entire trail corridor is not directly threatened by these developments; however, land costs in the corridor area are rapidly increasing. The trail corridor is relatively free of urban intrusions from approximately 8 miles south of Fort Caroline for some 27 miles before approaching the St. Augustine urbanization.

#### IV. GENERAL LAND USE AND OWNERSHIPS

Excepting the east-west roads that cross the study area and jeep trails which follow higher elevations at some locations, there is little evidence of development of any kind in central portions of the trail route. At both the north and south ends of the study area, however, development of land for commercial, residential, and planned community uses is taking place.

Although landownership at both ends of the study area is in numerous small tracts, almost all of the land between U.S. Highway 90 at the north and the Fairchild - St. Augustine Airfield at the south end, is in six large holdings. At present, these large holdings are used only for hunting or limited pulpwood production. Investigation revealed no significant public ownership in the area except road rights-of-way, as Table 1 illustrates.

Immediately south of Fort Caroline, development has been rapid in recent years with construction of a country club, golf course, tennis club, and numerous single family dwellings. Construction of Monument Road from U.S. Highways 1 and 90 alternate (Arlington Expressway) to Fort Caroline has made possible the development of several large apartment complexes within 3 miles of Fort Caroline to the southwest. Due to the relatively high elevation of the area within 5 to 8 miles south of Fort Caroline residential development can be expected to progress rapidly.

In the St. Augustine area within 5 to 8 miles north of the Castillo de San Marcos, the urbanized land use is more firmly established than in the Fort Caroline area. Therefore, it would be necessary to route a trail either along U.S. Highway 1 or through various residential and commercial streets 2 to 3 blocks east of U.S. Highway 1.

TABLE 1

##### Estimated Land Ownership of Trail Route

	<u>Miles of Trail</u>	<u>Percent of Total</u>
Private	31	77.5
Local Government (Streets)	4	10.0
State Government (Highways)	5	12.5
Federal	0	0
TOTAL	40	100.0

V. DESCRIPTION OF SOCIAL CHARACTERISTICS

Northeastern Florida, and particularly the two counties in which the trail is located, does not differ markedly from other areas in the Nation with respect to either the composition of its society or the state of its economy. Jacksonville, the major city of the region, can be characterized as a typically prosperous, expanding urban area replete with social problems, affluence, congestion, and suburbanization--the same mix that is found in other areas of similar size. It is probably less influenced proportionally by the tourist industry than St. Augustine, although tourism is a significant facet of its economy.

POPULATION

The following tables present historical and estimated total population figures for the eight counties within a zone of 50 miles from the trail route and of the 21 counties in the zone between 50 and 100 miles:

TABLE 2

Total Population<sup>2/</sup>  
(in thousands)

<u>Estimates</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>
50-Mile Zone Population	400.9	578.8	676.9
50 to 100 Mile Zone Population	417.6	568.1	719.3
Total 50 and 100 Mile	818.5	1,146.9	1,396.2

Total population of the two zones is projected to increase as indicated by the following tabulation:

TABLE 3

Population Projections<sup>3/</sup>  
(in thousands)

	<u>1980</u>	<u>2000</u>	<u>2020</u>
Total 50 and 100-Mile Zones	1,640.0	2,252.3	3,034.9

<sup>2/</sup> 1950 population derived from "Population by County," Region V, Environmental Protection Agency, Atlanta, Georgia, July 1972. 1960 and 1970 populations derived from 1970 Census of Population, "Number of Inhabitants," U.S. Summary, U.S. Department of Commerce, Bureau of the Census.

<sup>3/</sup> Projections derived from "Population by County," Region IV, Environmental Protection Agency, Atlanta, Georgia, July 1972.

There is considered to be a definite relationship between the number of inhabitants of metropolitan areas and the potential use of recreation features of national significance based upon the distance between potential users and the feature (region of influence). Table 4 and the map which follows provide an indication of what the population/use relationships might be in terms of distance from the proposed route.

TABLE 4

Population of Related Standard Metropolitan Statistical Areas<sup>4/</sup>  
(in thousands)

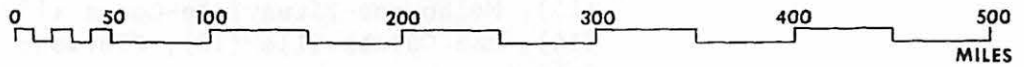
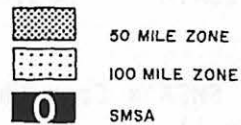
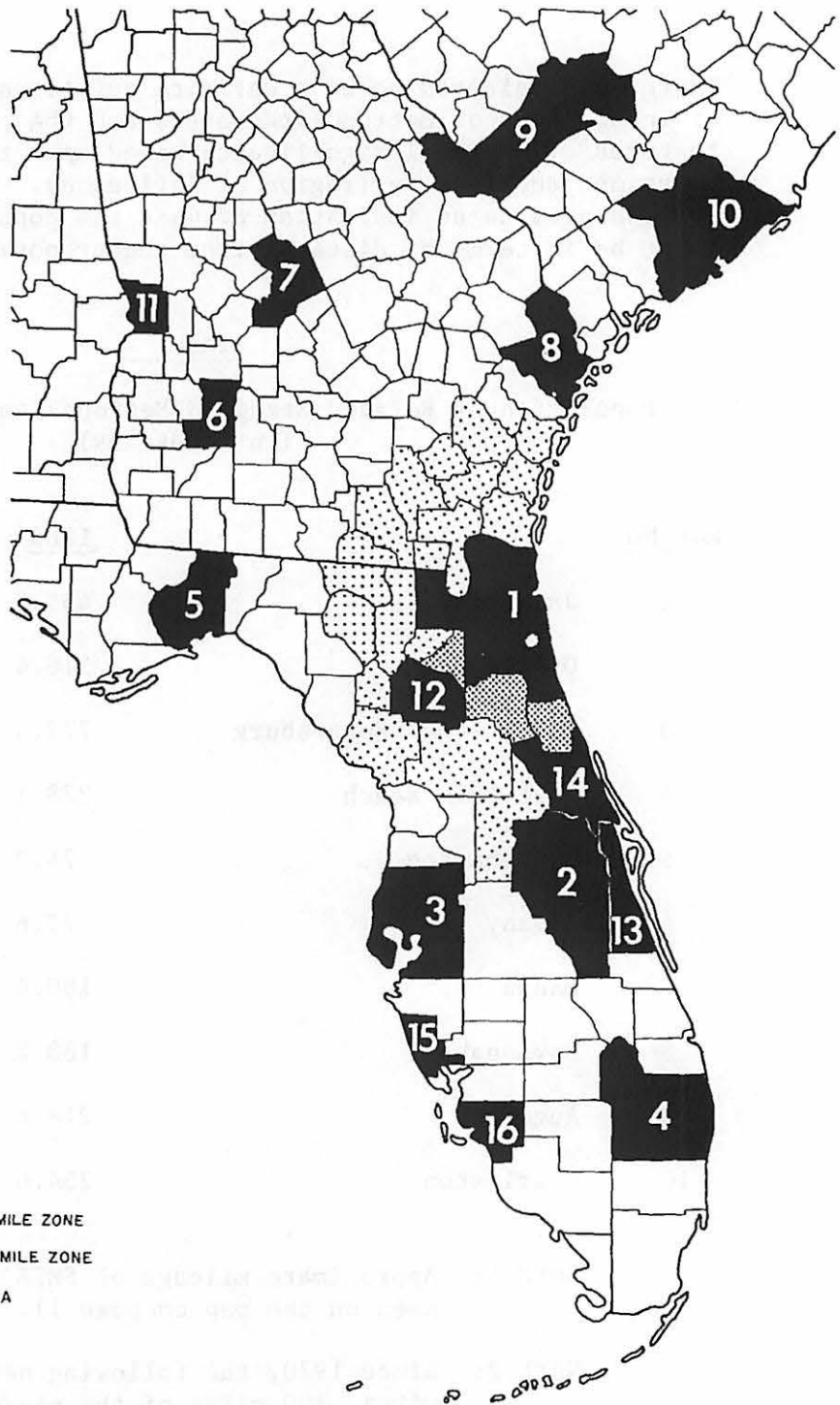
<u>Map No.</u>		<u>1960</u>	<u>1970</u>	<u>Percent Increase</u>
1	Jacksonville	455.5	528.9	16.1
2	Orlando	318.4	428.0	34.4
3	Tampa - St. Petersburg	772.4	1,012.6	31.1
4	West Palm Beach	228.1	348.8	52.9
5	Tallahassee	74.2	103.0	38.8
6	Albany	75.6	89.6	18.5
7	Macon	180.4	206.3	14.4
8	Savannah	188.2	187.8	-0.2
9	Augusta	216.6	253.5	17.0
10	Charleston	254.6	303.8	19.3

NOTE 1: Approximate mileage of SMSA's from the study area can be seen on the map on page 11.

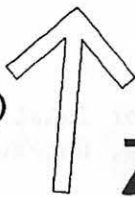
NOTE 2: Since 1970, the following new SMSA's have developed within 300 miles of the study area: Lee (16), Sarasota (15), Melbourne-Titusville-Cocoa (13), Daytona Beach (14), and Gainesville (12), Florida; and Columbus (11), Georgia.

<sup>4/</sup> "1970 Census of Population, "Number of Inhabitants, United States Summary," U.S. Department of Commerce, Bureau of the Census, PC(1)-A1, Issued December 1971.





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# POPULATION SMSA'S & ZONES OF INFLUENCE

## EMPLOYMENT

The following table relates employment characteristics of a major part of the population within a 100-mile radius of the trail, generalized along county lines.

TABLE 5

1970 Employment Characteristics Within  
Generalized 100-Mile Radius<sup>5/</sup>  
(in thousands)

	<u>100-mile radii</u>	<u>State of Georgia</u>	<u>State of Florida</u>
Total population	1,396.0	4,589.6	6,789.4
Total employment	969.3	1,881.7	3,802.1
Employment, percent population	69.4	41.0	56.0
Employed, manufacturing	139.0	511.9	536.1
Percent employed, manufacturing	14.3	27.2	14.1
Employed, white collar	465.7	822.3	1,893.4
Percent employed, white collar	48.0	43.7	49.8
Employed, government	184.6	304.8	680.3
Percent employed, government	19.0	16.2	16.0
Median family income	\$6,863	\$8,167	\$8,267

Expendable income and the availability of leisure time are considered to be major factors which contribute to recreation demand and use. Employment characteristics in proximity to an outstanding recreation feature can assist in predicting the potential recreation use.

Within the generalized 100-mile radius, it is apparent from the above table that the employment characteristics are in line with the respective overall State figures with the exception of the total number of people

<sup>5/</sup> "1970 Census of Population," "General Social and Economic Characteristics - Georgia" and "General Social and Economic Characteristics - Florida," U.S. Department of Commerce, Bureau of Census, Issued March 1972.

employed (16 years old and older) and the median family income. The total employment of the generalized 100-mile radius is 28.4 and 13.4, respectively. However, the median family income of the generalized 100-mile radius is \$1,304 and \$1,404 less than the corresponding State figures for Georgia and Florida, respectively.

## VI. NEEDS AND USE ANALYSIS

### EXISTING RECREATION OPPORTUNITY

There are several existing recreational areas in the vicinity of the trail corridor studied for this report. Three of these, Fort Caroline National Memorial, Castillo de San Marcos National Monument, and Fort Matanzas National Monument, are related to the trail in historic significance. In addition, there are facilities in the region including the historic restoration of old St. Augustine and historic sites in Fort George, north of the St. Johns River, which provide additional recreational opportunity.

Two State parks, Little Talbot Island to the north of the mouth of the St. Johns River, and Anastasia at the St. Augustine Inlet as well as the extensive beaches of the Atlantic Ocean, must be mentioned because of their influence in attracting the public to the region from both within the State and from greater distances. Anastasia provides the user with short nature trails and bicycling along existing beach streets is popular at the many beach resorts.

### RECREATION NEEDS

Bicycling is a recreational activity of great importance to both Florida residents and visitors, as well as to citizens elsewhere in the Nation.

"Outdoor Recreation in Florida," the State Comprehensive Outdoor Recreation Plan, reports that in 1975, 21 percent of Florida residents and 6 percent of Florida tourists participated in about 280 million recreational bicycling outings in the State. Among Florida residents, bicycling for recreation is the most popular activity on the basis of the total number of user occasions, and is the third most popular outdoor recreation activity on the basis of percent of residents that participate in bicycling. Among Florida tourists, bicycling is somewhat less popular, but is still considered an important recreational activity. The 1975 per capita participation rate for resident and tourist bicycling in State Planning Region IV, which includes the study area, was 3.44 user occasions.

"Outdoor Recreation in Florida" also states, "Even though bicycling generates the greatest number of user occasions in Florida, relatively little has been done, to date, to provide bicycle trails designed and constructed for a safe and enjoyable bicycling experience."<sup>6/</sup>

Hiking is defined here as backpacking or day hiking along a foot trail to a specific destination. In Florida, about 7 percent of the residents and 3 percent of the tourists participated in hiking in 1975. The 1975 per capita participation rate for resident and tourist hiking was 0.14

<sup>6/</sup> "Outdoor Recreation in Florida," May 1976, page 1.

in State Planning Region IV. "Outdoor Recreation in Florida" states, "Because of the unlimited range of potential participants, the relative ease with which facilities can be provided, the minimum land requirements involved, the wholesome exercise it provides, and its basic simplicity, hiking is almost the ideal outdoor recreation activity from the administrator's viewpoint. Unfortunately, it is not one of the most popular activities among the general public, probably because of the physical exercise involved. With the provision of additional facilities and adequate promotion, this popularity might well be increased several-fold. In any event, for those who do enjoy a hike, this is a need which can and should be met as a part of a total outdoor recreation program."<sup>7/</sup> To date, virtually all of the hiking-trail work in Florida has been accomplished by the Florida Trail Association, a private group of individuals dedicated to the establishment of a hiking trail running from Okaloosa County to the Everglades. Their intent is to utilize publicly owned lands as much as possible and to secure easements from private landowners wherever necessary."<sup>8/</sup>

"Outdoor Recreation in Florida" includes Duval and St. Johns Counties with five other counties in State Planning Region IV, one of 10 such regions comprised of groupings of counties in the State. Eighty-five percent of the Region IV population is in Duval and St. Johns Counties--the two which also contain the entire 40-mile El Camino Real Study Area.

The percent of Florida user-occasions (both resident and tourist) for bicycling and hiking which occur in Region IV are summarized in Table 6.

TABLE 6

Summary of 1975 Bicycling and Hiking User Occasions  
Occurring in Region IV<sup>9/</sup>  
(in thousands)

	<u>Florida</u>	<u>Region IV</u>	<u>Percent of State Total Occurring in Region IV</u>
Bicycling	281,281	29,340	10.4
Hiking	23,332	1,312	5.6
TOTAL	304,613	30,652	10.2

In order to indicate the expected demand for hiking and bicycling in the study area by the year 1990, Table 7 represents a computation of demand in terms of peak-day user occasions where peak-day is indicative of the pressure likely to occur on the single day of maximum participation in

<sup>7/</sup> "Outdoor Recreation in Florida," May 1976, page 1.

<sup>8/</sup> "Outdoor Recreation in Florida," May 1976, page 17.

<sup>9/</sup> "Outdoor Recreation in Florida," May 1976, Tables 8.4 and 8.13.

State Planning Region IV. Typically, the peak-day is a weekend day or a holiday.

TABLE 7

Projected Resident and Tourist Maximum Peak-Day  
Participation for Hiking and Bicycling in Terms  
of User-Occasions for Region IV<sup>10/</sup>  
(in thousands)

	<u>1975</u>	<u>1980</u>	<u>1990</u>
Bicycling	145.0	166.0	208.0
Hiking	6.0	7.0	9.0
Total	151.0	173.0	217.0

Table 7 indicates that the peak-day demand for both bicycling and hiking will increase by approximately 50 percent from 1975 to the year 1990.

While recognizing a substantial demand for hiking and bicycling in Region IV, "Outdoor Recreation in Florida" estimates that at the present rate of demand there is a sufficient existing supply of trail resources in State Planning Region IV to support all hiking and bicycling needs in that planning region until 1990.

"Outdoor Recreation in Florida" indicates for optimum user enjoyment there should be no more than 1800 bicyclists per mile of bicycle trail or 200 hikers per mile of hiking trail per day. To exceed these general guidelines would result in a decrease in user satisfaction and a degradation of the physical resource.

Based on the maximum number of bicyclists and hikers normally supported on 1 mile of trail the following table indicates the maximum annual user occasions possible if the El Camino Real Trail was to be constructed for hiking or biking use.

<sup>10/</sup> "Outdoor Recreation in Florida," May 1976, Tables 8.4 and 8.13.

TABLE 8

Maximum Annual User Occasions Which Could  
Be Supported on the El Camino Real

	<u>Maximum Daily Use Per Mile of Trail</u>	<u>Trail Length</u>	<u>Day of Use Per Year</u>	<u>Total Maximum Annual User Occasions (1000)</u>
Bicycling	1,800 <sup>11/</sup>	40 miles	292 <sup>12/</sup>	21,000 <sup>13/</sup>
Hiking	200 <sup>11/</sup>	40 miles	180	1,440 <sup>14/</sup>
Total	2,000			22,440

For the purpose of this study, a conservative "average daily" number of user occasions has been set at less than 10 percent of the maximum peak-day. Therefore, an estimate of 8,000 average daily user occasions<sup>15/</sup> could be expected on the 40-mile El Camino Real in the year following its establishment.

The trail could receive use throughout the year, just as other recreational areas in Florida have substantial year-round use. Variations in use of an area during the year may be considerable.

As an example, there are peak periods in the number of visits to Castillo de San Marcos National Monument. The summer months, June, July, and August, have more visits than September, October, and November. Visits then generally start to increase in December, January, and February with further increases in March, April, and May.

Park visitation in the spring months is attributed to use of the historic area by school groups; continued above average visitation during the summer months is considered to result from the higher proportion of annual vacations taken during this period. Declines in the autumn probably result from the reopening of school and the termination of summer vacations; in December, the winter tourist season begins and continues through March.

Even though the trail is directly related to the significance of both the national monument in St. Augustine and the Fort Caroline National Memorial by historical ties, it is improbable that annual

<sup>11/</sup> "Outdoor Recreation in Florida," Table 7.1.

<sup>12/</sup> "Although a year-round activity, 80 percent of the annual days (.80 x 365) is used to compensate for rain and climatic extremes.

<sup>13/</sup> 1,800 bicyclists per mile of trail per day x 40 miles x 292 days = 21,000,000.

<sup>14/</sup> 200 hikers per mile of trail per day x 40 miles x 180 days = 1,440,000.

<sup>15/</sup> Computed as follows: 0.10 x 1,800 (max. bike) x 40 (miles) + 0.10 x 200 (max. hike) x 40 (miles) = 8,000 users/day.

visitor use will fluctuate as it does at these facilities. According to present National Park Service policy, recreation is a secondary consideration in historical parks such as Castillo and Fort Caroline. The trail would provide compatible recreational opportunities. Seasonal variations in degree of use of the two existing historical areas are related primarily to external causes while variations in trail use are primarily related to internal or physical aspects of the trail and its environment.

With the exception of unusually hot days in the summer and the occurrence of periods of exceptionally heavy rainfall, there are no climatic deterrents to trail use throughout the year. These conditions could be expected to restrict use of the trail on less than 20 percent of the days of the year.



## VII. DESCRIPTION OF TRAIL

Although it has previously been stated in this report that the El Camino Real was not found to meet the criteria described in Public Law 90-543 for designation as a national scenic trail, the following description presents the conditions present along the proposed trail corridor at the time it was studied.

### ROUTE OF TRAIL

The route of the trail has been delineated from available data including copies of old maps and contemporary descriptions. It is probable, since the Spanish relied on Indian guides on their march to Fort Caroline, that the route they followed conformed to an Indian trail or combination of such trails and that these were along high ground, although no traces of the actual trail remain today.

Three principal documented points define a possible trail route: (1) An Indian village, now the site of Nombre de Dios Mission in north St. Augustine, from which the Spanish marched; (2) Twenty-mile, a point established in the 18th century trail corridor; and (3) Fort Caroline National Memorial, on the south bank of the St. Johns River, which is adjacent to the original military objective of the Spanish march. By connecting these three historic sites and following points of highest topographic relief, a possible route can be delineated. Ribault Monument, a fourth point of historic interest, is located on the grounds of the Fort Caroline National Memorial. The monument commemorates Jean Ribault, the French explorer, who proclaimed the area for France in 1562.

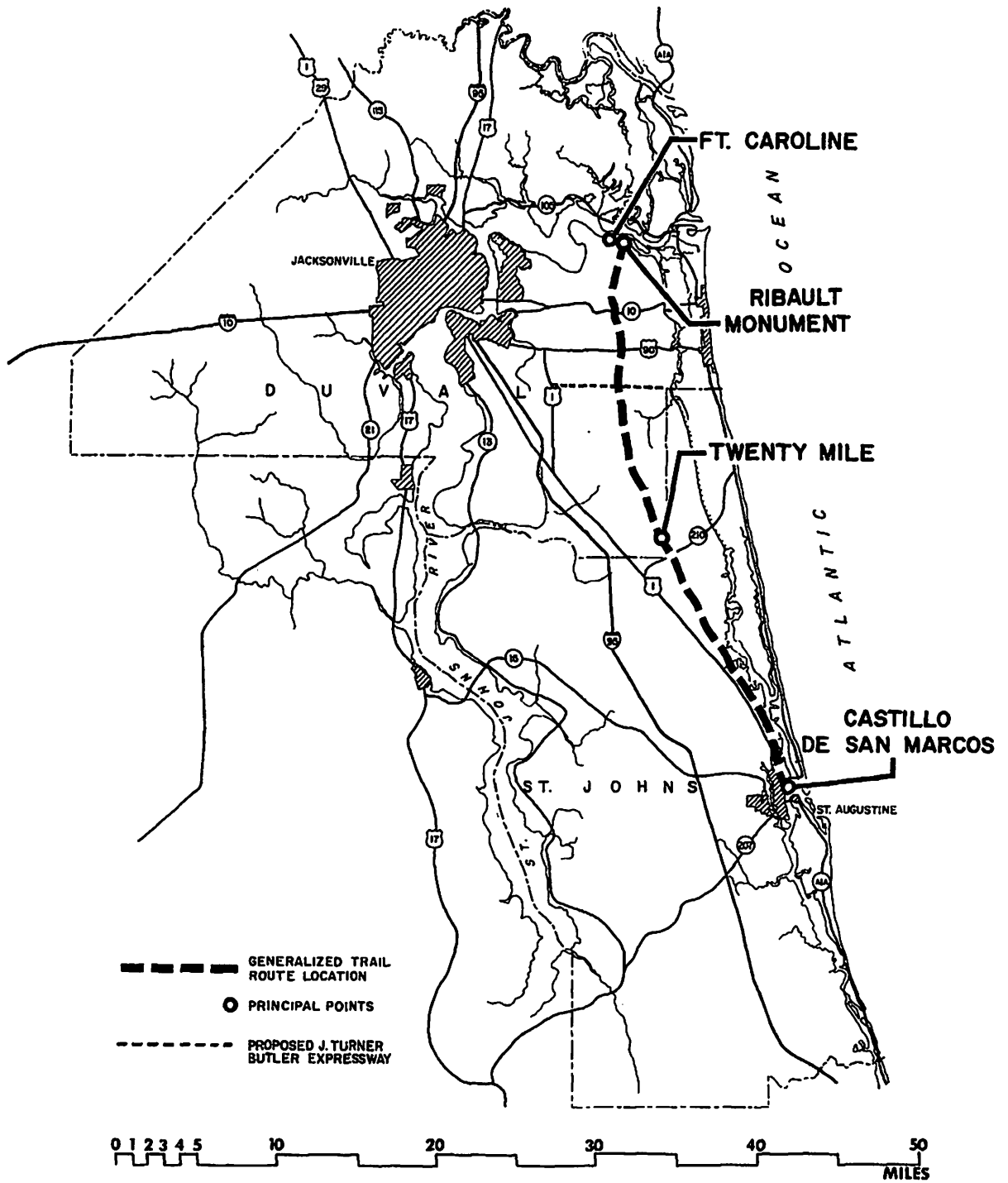
Encountering residential and commercial development north of the Castillo de San Marcos National Monument, a trail route northward from St. Augustine would necessarily have to parallel U.S. Highway 1 for approximately 5.5 miles. In the vicinity of Fairchild-St. Augustine Airfield, the trail would depart eastward away from U.S. Highway 1 assuming a northwesterly direction. Bridges would be required at two small creeks in the ensuing 3 miles after leaving U.S. Highway 1. The trail continues northward, meandering through land which is virtually undeveloped until reaching the Palm Valley Road approximately 18 miles north of St. Augustine. Deep Creek would require a bridge and the trail tread would require raising as it passes through several hundred yards of swampy terrain.

Just north of the Palm Valley Road is the site of the no longer standing Twenty-mile House, once serving as a way station during the second Spanish Era (1784-1821). This site would be a valuable acquisition to enhance the historic significance of the trail; however, if the site could not be acquired, an alternate route could be taken from a point south of Palm Valley Road passing the Twenty-mile House site on the west.

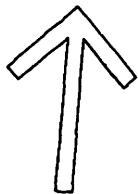
Leaving the Twenty-mile site, the trail route continues northward for the next 10 miles following various paths and dirt roads past several wet, low areas. A bridge would be required to cross Pablo Creek immediately east of the confluence of Cedar Swamp Creek with Pablo Creek.

Approximately 10 miles from the Fort Caroline National Memorial the trail route encounters the more extensively developed lands of metropolitan Jacksonville beginning with the proposed J. Turner Butler Expressway. Two other four-lane highways cross the trail corridor from an east-west direction in the next 5 miles--Beach Boulevard (Florida Route 212 and U.S. 90) and Atlantic Boulevard (Florida Route 10).

As the trail route continues northward after negotiating the three four-lane highways, it passes lands developed both residentially and commercially. The trail would pass the entrance of Ribault Monument less than  $\frac{1}{2}$  mile before reaching its terminus at the Fort Caroline National Memorial.



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**TRAIL LOCATION**

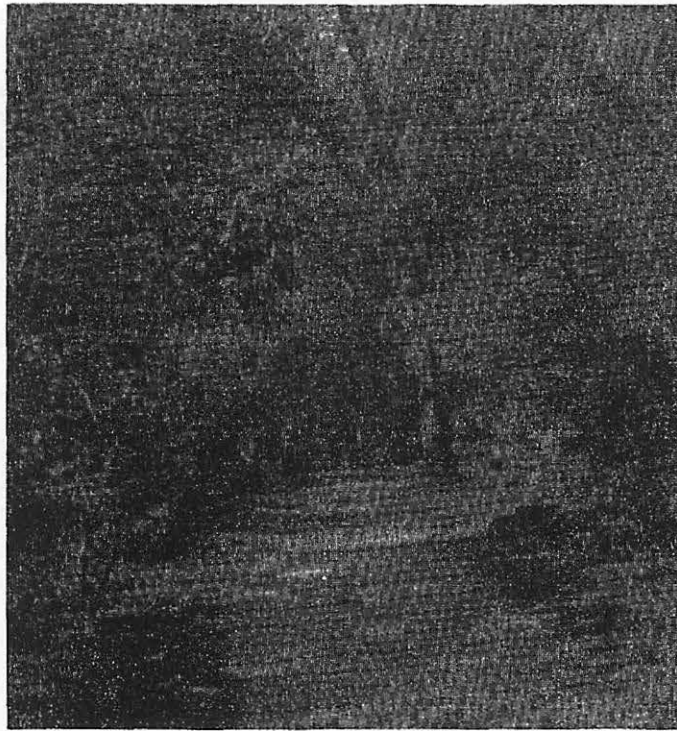
## HISTORICAL SIGNIFICANCE

Spanish heritage in Florida dates to the 16th century, when Fort Caroline was the focal point of French and Spanish conflict for dominance of Florida. Fort Caroline was first established by the French as a colony named for King Charles IX of France. The location was on a broad, flat knoll, 5 miles from the mouth of the St. Johns River, now lost to the river channel. In 1562, when Jean Ribault claimed this area for the King of France, a stone pillar was placed on a high point near the mouth of the St. Johns River. In 1564, the French returned to the St. Johns and established their colony at Fort Caroline hoping to gain control of Florida by colonization.

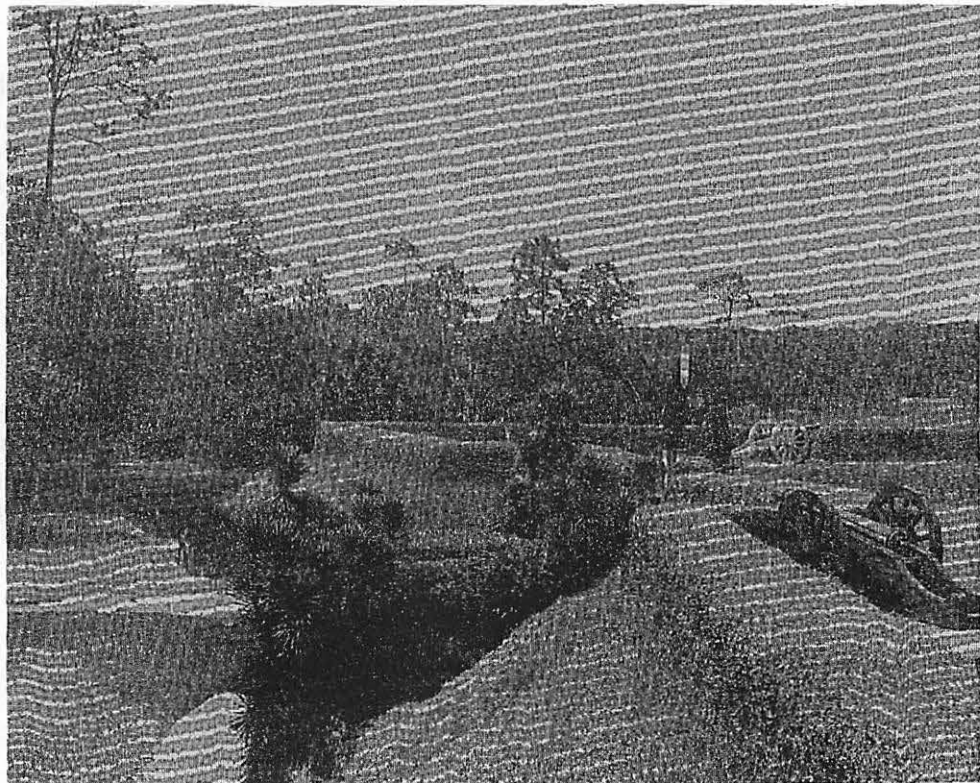
The Spanish, feeling Florida to rightly be their territory on the basis of earlier discoveries, sent an armada to Florida in 1565 under the command of Pedro Menendez de Aviles. King Phillip charged him to explore and colonize Florida, and if there were "settlers or corsairs of other Nations whatsoever not subject to us ... to drive them out by what means you see fit." Jean Ribault was already sailing for Florida with reinforcements for Fort Caroline, however, and reached Fort Caroline on August 28, 1565. That same day Menendez was off Cape Canaveral searching for the French colony. A few days later, finding the French ships anchored at the mouth of the St. Johns, Menendez unsuccessfully tried to board the ships and was forced to drop down the coast a few leagues. On September 8, 1565, he established the colony destined to live through the years as St. Augustine.

Against the advice of his captains and Rene de Laudonniere, commander of the Fort Caroline colony, Ribault decided to attack the Spanish by sea. A storm blew up and Ribault's fleet was driven ashore and wrecked many leagues south of St. Augustine. Menendez knew that Ribault's fleet was paralyzed by the weather; so with 500 men, guided by Indians and a French prisoner, he marched toward Fort Caroline under cover of the storm. The Spanish captured Fort Caroline sparing only women and children. Those Frenchmen who escaped were picked up by a French vessel anchored downstream and sailed for France.

Menendez returned to St. Augustine and headed south to meet Ribault's shipwrecked soldiers, returning overland to their settlement. Helpless and hungry, 350 of the French surrendered, of whom Menendez killed 334. The site of the massacre still bears the name Matanzas (slaughters). Those who did not surrender were captured later and their lives spared, for they were no longer a threat.



Foot trail to visitor center at Fort Caroline National Memorial

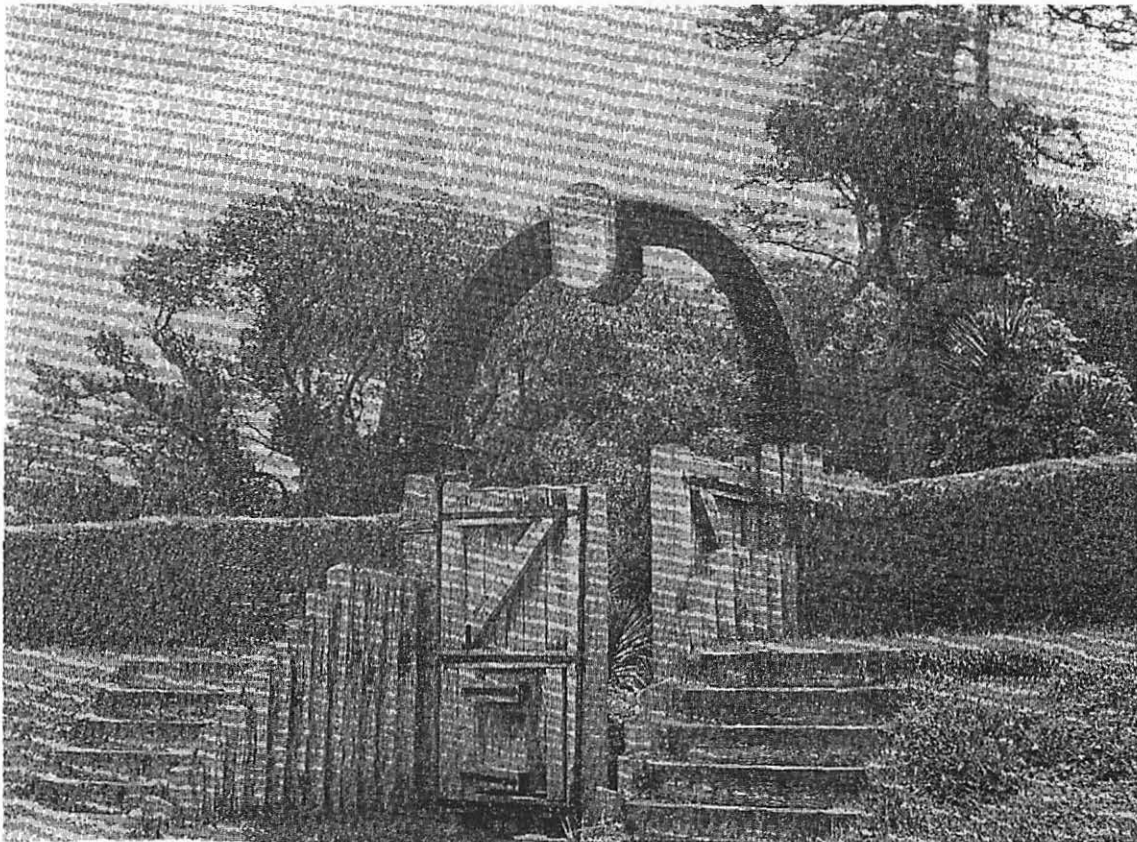


South wall and entrance to Fort Caroline National Memorial

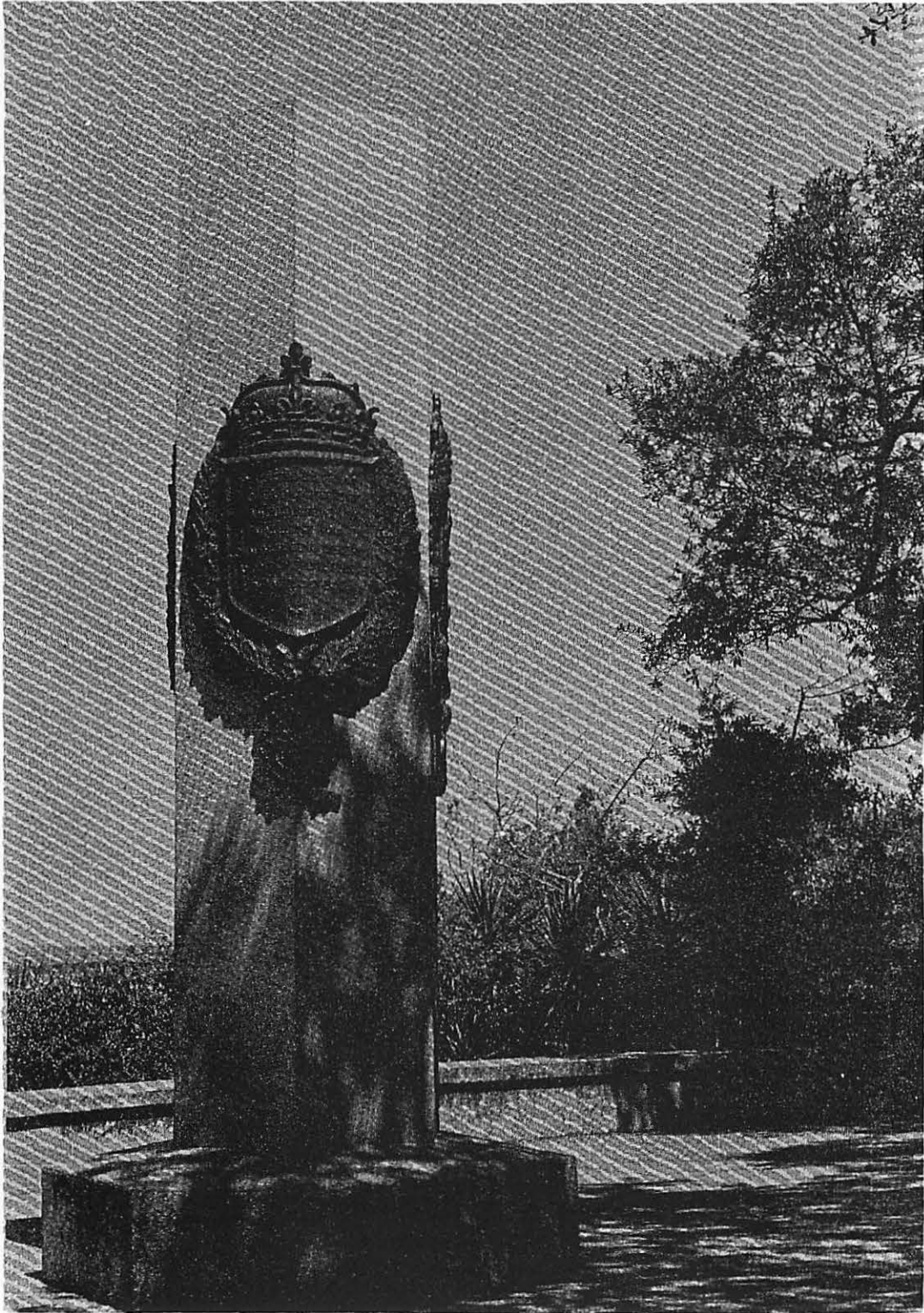
Thus, the El Camino Real has been studied to determine the feasibility of establishing a trail which would commemorate the first crossland journey by Spaniards from St. Augustine to capture Fort Caroline. The decisive Spanish victory over the French was the outcome of the first conflict between Europeans in the area, for a much larger region that eventually became America. In the meantime, during the next two centuries, Spain dominated Florida. St. Augustine developed slowly but steadily. Although no traces of the actual trail remain today, it is probable that high ground routes were used by the Spanish for travel between St. Augustine and their strategic outpost at Fort Caroline, which they had renamed San Mateo.

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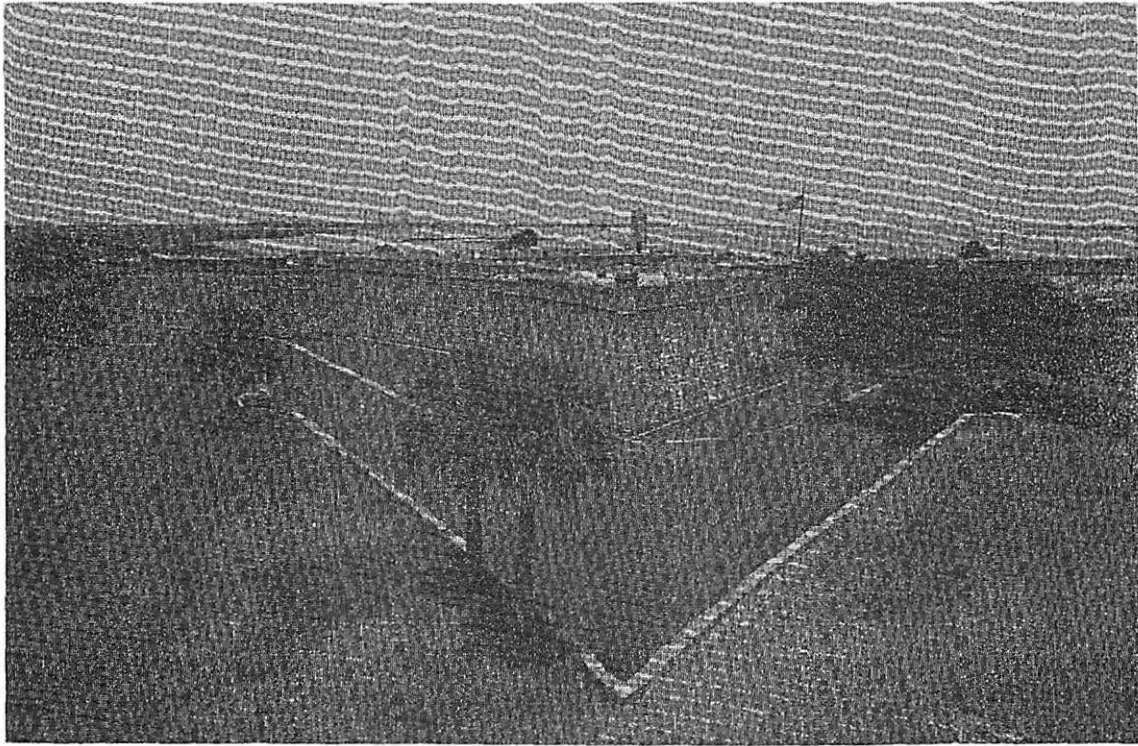
NOTE: Historical information obtained from National Park Service brochures and collaboration with Castillo de San Marcos Staff Historian, Luis R. Arana.



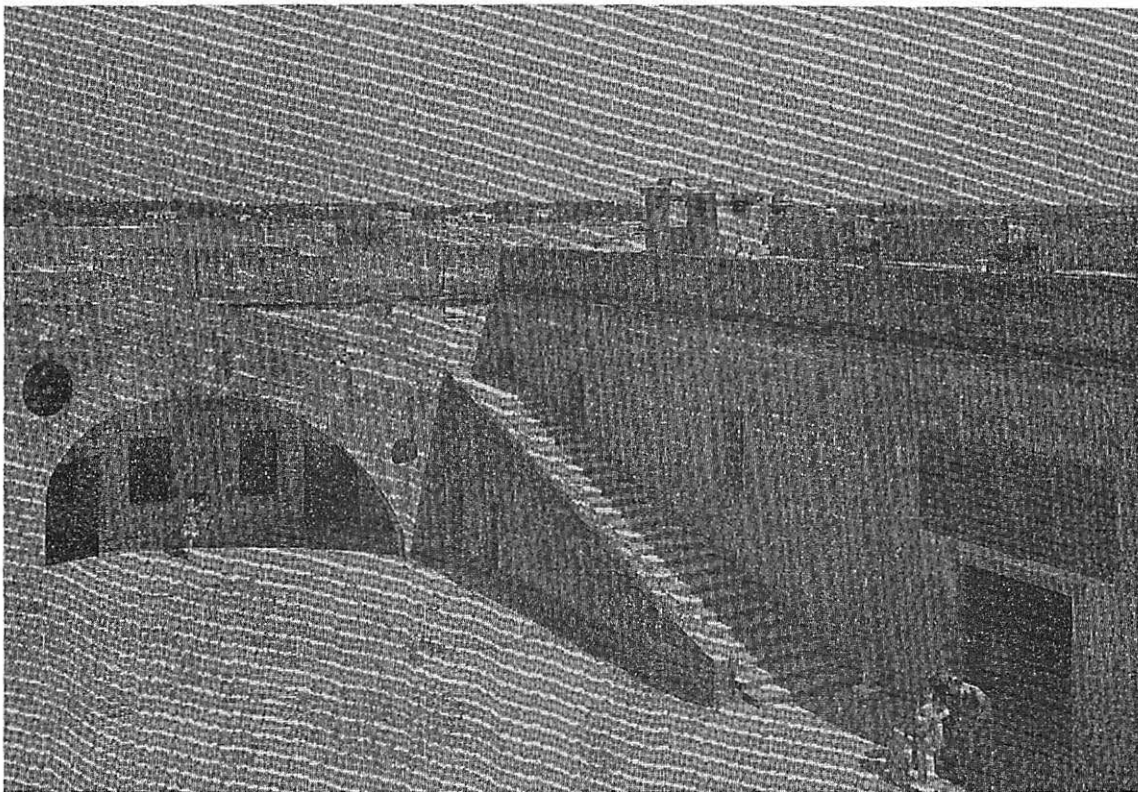
Fort Caroline National Memorial - Gate of Memorial Fort



Ribault Monument - Fort Caroline National Memorial



Castillo de San Marcos National Monument - St. Augustine, Florida





### SCENIC SIGNIFICANCE

Along the southern portion of the trail, some 20 miles north of St. Augustine and before reaching the developed zones of Jacksonville, the trail route traverses terrain generally unmodified by development. Vegetative cover usually is sufficiently dense to create a feeling of isolation and remoteness. Visual qualities of the trail route are representative of a distinct type of natural coastal plain environment.

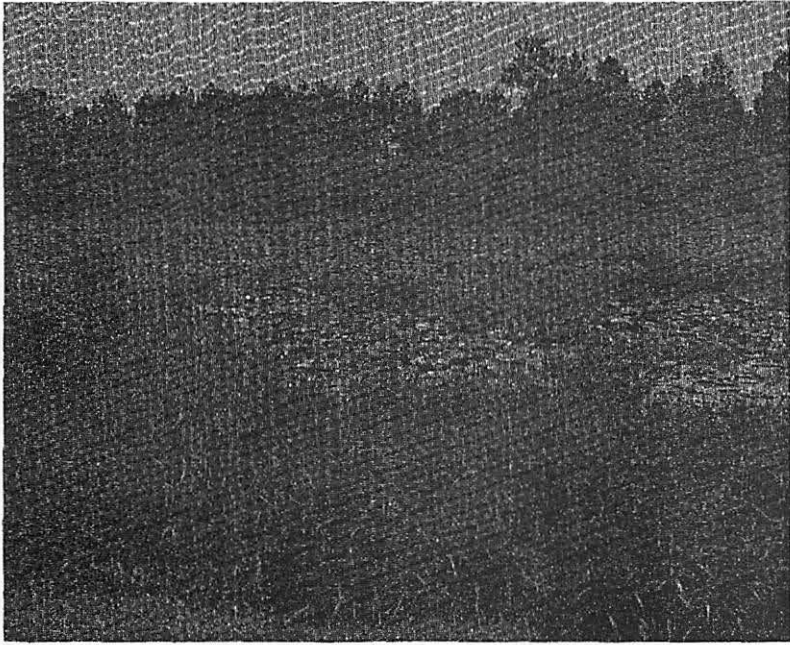
From higher elevations along possible spur trails, a view is presented of the Atlantic Ocean and the Intracoastal Waterway. However, from the main trail, a view of the Atlantic Ocean from the low, relatively flat terrain would be impeded by a strip of sand dunes which runs parallel to the ocean just west of the beach. The proposed trail alignment affords a good opportunity for viewing the scenic and ecological qualities of the Deep Creek estuary area.

### NATURAL SIGNIFICANCE

There are no known natural features or phenomena of exceptional or outstanding significance related to the trail and its immediate environment.

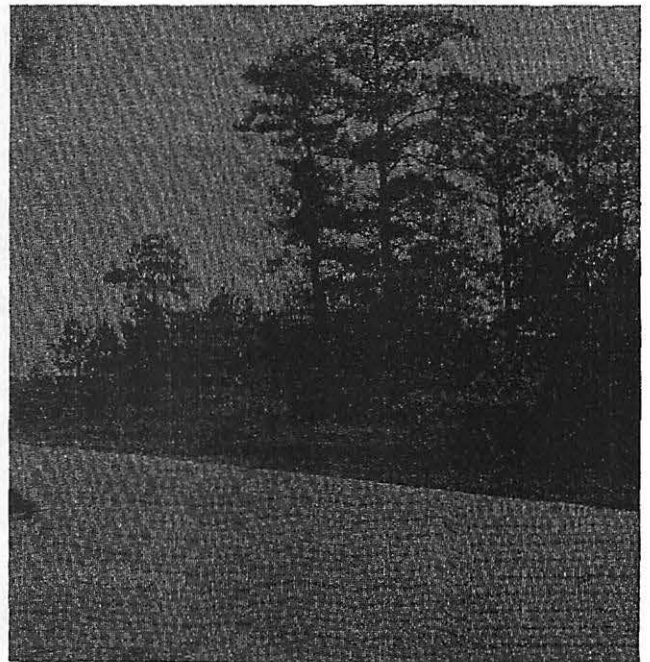
### CULTURAL SIGNIFICANCE

The St. Augustine region, colonized in the 16th Century, is the oldest area of continuous European settlement on the North American Continent. Although the cultural climate has changed and evolved through periods of Spanish, English, and American dominance, its origin as a Spanish colony is reflected in its architecture and the names of streets and physical features. Despite some construction, derivative of Spanish colonial forms and other attempts to relate to early European origins, there is a viable restoration program in progress which is attempting to achieve historical validity in keeping with the major early structures which have endured. At certain sites, original foundations have been excavated and used for restorative construction. As greater public consciousness develops and increased value is placed on buildings and artifacts related to the national heritage, more historic reproduction and interpretation can be expected within the city of St. Augustine.

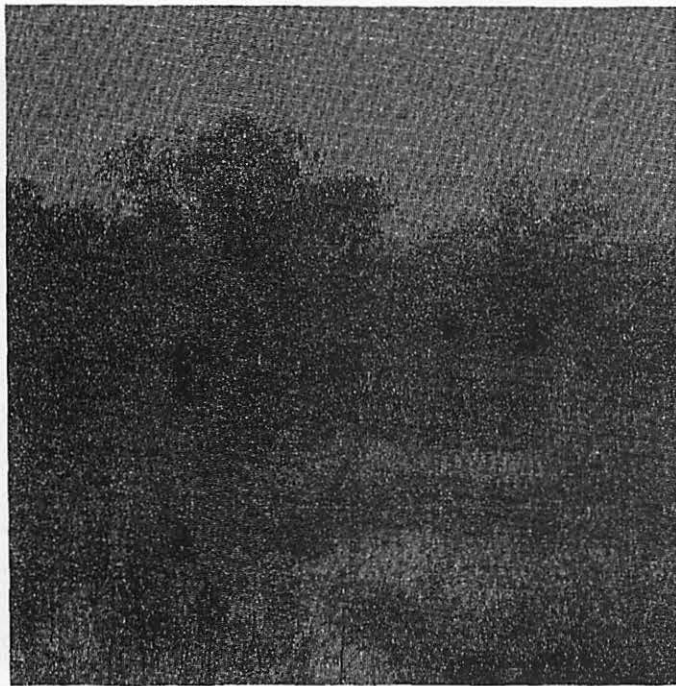


Marsh south of Fort Caroline  
National Memorial

Intersection of McCormick Road  
in the vicinity of Twenty-mile  
House



A typical vegetative  
community along the  
trail corridor: Slash  
pine, palmetto, and  
wax myrtle



Representative soil and  
terrain of trail corridor:  
vegetation dominated by  
scrub oak at this point

## VIII. PROJECT ALTERNATIVES

It is customary in national trail studies to consider project alternatives in order to reach the best possible conclusion for each route investigated. Although this study does not find the El Camino Real to qualify as a national scenic trail, the following alternatives were considered.

### LAND ACQUISITION

Acquisition methods which would provide the necessary land for a trail in the area studied are fee title purchase, use easement, and scenic easement. Additional acreage would be required at several locations along the trail for support facilities and for scenic vistas located at areas of higher elevation. The methods described below could be used in acquisition:

Fee-Simple: Fee-simple acquisition allows all land use to be controlled, simplifying management. It guarantees the right of public access and use and provides maximum assurance against land uses which are not compatible with a trail. This type of acquisition would be necessary where actual trail construction is planned and at all support facility development. Full compensation to the landowner for the value of his property is required.

Use-Easements: Where less stringent control of lands within a trail corridor is necessary, easements have been used in the past on projects to obtain partial control over corridor lands. However, use easements usually approximate the cost of fee-simple acquisition, and the problems inherent with easement lands have been found deterrent to management in many cases.

Scenic Easements: Scenic easements would be advantageous along the trail route in areas where the elevation affords a scenic vista for users. In the case of scenic easements, trail users would not be permitted onto or over the easement lands and essentially the landowner's property rights would be limited only to the extent that he could not appreciably alter the view or aesthetic experience which his land provides the trail user. As in other types of easements, however, the cost of scenic easements has been found to be high, and the lack of control afforded by scenic easements has caused constant management problems in enforcement of the agreement stipulations.

Zoning: Jacksonville and Duval and St. Johns Counties could use zoning ordinances to discourage industrial development, high density housing, and similar undesirable land uses, immediately adjacent to the trail corridor.

## NO LAND ACQUISITION

This alternative most likely would deny any future public use of the identified trail corridor between Fort Caroline National Memorial and the Castillo de San Marcos. As Jacksonville and St. Augustine continue to grow and urbanize, the feasibility of a trail route memorializing the area's historic significance would be lost to development. In the Duval County portion of the trail, single family unit development is already encroaching rapidly into the trail study corridor as the population seeks conveniently located homes between Jacksonville and the Jacksonville beaches. Due to the low, wet nature of lands in and around the trail corridor, development in the past has been in areas of higher elevation in both Duval and St. Johns Counties; however, in the last 5 years population increases and a proportionate demand for housing has pushed the urban areas of both Jacksonville and St. Augustine closer to, and in some instances into, the trail study corridor. The highest elevation along the trail is immediately south of Fort Caroline National Memorial. Approximately 1 mile of the trail study corridor, immediately south of Fort Caroline National Memorial, has been developed since 1970 with a golf course, country club, and single family housing. Without acquisition of a trail corridor, this trend can be expected to continue until all potential for a trail has been lost.

## RECOMMENDED ACQUISITION ALTERNATIVE

State or local governments interested in acquisition of a trail corridor in the area considered in this report could seek Federal funding assistance in acquiring a trail corridor approximately 200 feet wide and 40 miles long. Stated in acres, 25 acres should be acquired in fee per trail mile for the trail with an additional 20 acres acquired in fee for support facilities and scenic vistas. Thus, a total of 1,020 acres would be required for the trail.

Due to the increasing pressures of the urban community and its concomitant land development and rising costs, expeditious land acquisition would be necessary.

## DEVELOPMENT

Activities--Before a conceptual development plan is prepared, it is necessary to determine what activities can best be supported by the resource. The trail corridor studied could foreseeably support hiking, nature study, historic interpretation, bicycling, sightseeing, picnicking, and off-road recreation vehicle (ORRV) use. Although the resource itself will support some degree of use for each of the above activities, not all of these activities are compatible. Each activity is discussed below:

- a. Hiking: Section VI. of this report indicates a need for more hiking trails in the vicinity of the El Camino Real study area. A trail such as the potential El Camino Real could satisfy a substantial portion of that need. Hiking does not require

acquisition of large tracts of land, sophisticated construction, or elaborate support facilities. Due to the summer heat in the area, hiking would be mainly a seasonal activity with most of the annual participation during the coolest 6 months of the year; however, short hikes, or walks, in the immediate vicinity of the historic sites would be an exception and would continue throughout the year.

- b. Bicycling: Bicycling along the trail route would greatly increase the expected number of annual user occasions due to a large existing need for bicycle trails in the region. Bicycling would extend the season of activity from approximately 6 months per year for hiking, to 12 months per year for bicycling. Although the climate is not conducive to hiking during the summer months, year-round bicycling would be entirely practical. By increasing the width of the trail tread to accommodate both hiking and bicycling, there should be little or no conflict between the two types of users.

Bicyclists would enjoy those activities mentioned in paragraph (c) both while riding and when making intermittent stops along the trail, but to a lesser degree than hikers, since some wildlife species would be more likely to shy from an approaching cyclist.

- c. Sightseeing, Nature Study, and Historic Interpretation: Each of these activities is consistent with, and complementary to, a hiking or bicycling experience. Each of these activities could be realized within the trail corridor. Future development within and adjacent to the trail corridor would result in a decrease in the quality of these activities. Participation in these activities would be limited by the hiking season if hiking were the primary trail use. The quality of these experiences is not dependent on extensive development. On the contrary, minimal development or no development (in addition to the trail) would best serve these activities. The cost of providing such recreation experiences in conjunction with a hiking trail would consist of the acquisition costs of a limited number of additional acres of land. These additional lands might consist of several 2- to 5-acre areas, dispersed along the trail route.
- d. Picnicking: The activity of picnicking would be consistent with all of the previously mentioned activities; however, due to the trail's relatively short length, extensive picnicking facilities would not be necessary.

- e. ORRV's: The use of ORRV's on the trail would be in direct conflict with each of the previously mentioned activities. A common trail would not support hiking, bicycling, and ORRV use. The sightseeing, nature study and historic interpretation experiences envisioned would be adversely affected. Trail tread construction costs and annual maintenance costs would be increased. Although controversial, past experiences on public lands indicate that adjoining landowners object to ORRV use. The need to acquire buffer zones could overburden the acquisition problems and prevent favorable acceptance by adjoining landowners. Admittedly, there is a valid demand for ORRV areas in this part of the State; however, an area for exclusive use by ORRV's may be most practical on recreational lands well removed from the other activities discussed above.

#### NO DEVELOPMENT

- a. With Acquisition: Should the trail corridor be purchased, the resource would be preserved. However, without orderly resource development and the construction of a trail tread, the public would be unable to fully enjoy the trail potential. Undefined paths would not be feasible. Justifications for land acquisition expenditures would be negligible unless the projected attendance for extensive hiking and bicycling can be realized.

#### RECOMMENDED DEVELOPMENT ALTERNATIVE

State and local or private interests may wish to consider a 40-mile trail tread which would support hiking and bicycling in conjunction with such complementary recreation activities as sightseeing, nature study and historic interpretation. Several areas along the route which afford opportunities for these experiences and for day use and overnight supporting facilities for trail users would have to be purchased in addition to the trail corridor itself. Interpretive areas would be limited to foot trails. At each terminus of the trail, facilities to support the trail users should be constructed to complement those facilities at Fort Caroline National Memorial and at the Castillo de San Marcos National Monument. In any detailed site planning for this trail, consideration should be given to making the southern terminus adjacent to the St. Augustine visitor center and the St. Johns County Chamber of Commerce. This area could accommodate facilities necessary to support trail users.

Any detailed site planning to lay out the trail route should also carefully consider the existing land use of the area through which the trail would pass in order to minimize possible adverse impact and reduce hardship or inconvenience to the landowners along the route. In the urbanized areas at each end to the trail corridor, maximum use should be made of existing streets and highway rights-of-way.

## ADMINISTRATION

1. Federal: Since this report does not find the El Camino Real to qualify for national scenic trail status under the criteria of Public Law 90-543, administration by the Federal Government of any portion of a trail that may be constructed in the future by State or local agencies in the study area would not be appropriate. However, National Park Service personnel at Fort Caroline National Memorial and the Castillo de San Marcos could serve in an advisory and consultative capacity to any State or local agency considering trail acquisition and construction in the area studied to assure a trail theme complementary to their existing historic sites.
2. State: Administration of a trail in the area by the State of Florida is possible and would be in keeping with the current Federal efforts to encourage State park and recreation projects which meet identifiable needs. State administration could require additional State personnel in St. Augustine or Jacksonville.
3. Local Government: Administration by one or a combination of the cities and counties through which the trail passes would be feasible. It could require additional local staffing and, as with State administration, would necessitate careful coordination with the National Park Service staff at Fort Caroline National Memorial and the Castillo de San Marcos.
4. Private Trail Council: Total trail administration under a private trails council comprised of members from both the public and private sector is feasible. However, such a council would serve best as an advisory body to a government agency acting as the administrator. A private advisory council in addition to government administration would enable local participation in planning and administering the trail.

## RECOMMENDED ADMINISTRATION ALTERNATIVE

It is suggested that State or local agencies be responsible for administration of any future trail in the study corridor. In addition to the availability of local BOR and National Park Service assistance, there should be established a trail advisory council consisting of members from both government and local private trail interests to assist in planning and establishing trail policies to assure that the best public interests are fulfilled.

## MANAGEMENT

1. Federal: Since this report does not find the El Camino Real to qualify for national scenic trail status under the criteria of Public Law 90-543, management by the Federal Government of any portion of a trail that may be constructed in the future by State or local agencies in the study area would not be appropriate.



2. State: Management by the State of Florida would require additional staff and equipment and coordination with the National Park Service at Fort Caroline National Memorial and at the Castillo de San Marcos. Segments of the trail adjacent to areas which the State is currently maintaining, such as along and adjacent to U.S. Highway 1, would not pose a great additional burden; however, those portions of the corridor which are not adjacent to existing roads would require a significant additional commitment by the State of manpower, funds, and equipment.
3. Local: With the trail passing through several city and county jurisdictions it would be logical for local governmental entities to participate in a management program. Additional funding and personnel may be necessary.
4. Private Trail Interest Groups: It does not appear likely that a private trail organization would shoulder the burden of trail management; however, such a group or groups could assist in trail marking, clearing, trash removal from the interior portions of the trail, and other maintenance tasks.

#### RECOMMENDED MANAGEMENT ALTERNATIVE

It is suggested that the State of Florida manage any continuous trail constructed, including all facilities, the trail tread, and the surrounding trail corridor lands. In areas where either Federal or local governments are currently maintaining lands, facilities, streets or roads, these non-State interests should assist with the maintenance effort. Additional help might be solicited by the managing agency from local trail users and organized groups to conduct periodic "clean up" campaigns and to assist when possible with the overall maintenance of the trail corridor.

If State or local government agencies or the private sector develop and manage all or part of the trail suggested, or other trails not considered in this report which meet established criteria for National Recreation Trails designation, the Secretary of the Interior could include such a trail or trails in the National Recreation Trails System.

## IX. GENERALIZED TRAIL PLAN

### TRAIL PLAN

Relying upon the experiences and expertise of the National Park Service and various State and private trails planning and administering groups, a conceptual plan for a recreation trail through the corridor has been developed. Although this report does not recommend the El Camino Real as a national scenic trail, the information compiled during the field study can serve State, local and private interests in meeting the recreation trail needs of the area.

The study area has been limited to a 2 to 8-mile-wide corridor between Fort Caroline National Memorial and the Castillo de San Marcos. Various alternatives have been considered and what is believed to be the most feasible single route is presented in this discussion. Consideration has been given various loop trails which could be provided by some combination of State, local, and private interests. They are as follows:

1. South from the Castillo de San Marcos to Fort Matanzas.
2. West from the approximate halfway point along Palm Valley Road to U.S. Highway 1.
3. East from the approximate halfway point along Palm Valley Road to the Intracoastal Waterway, Ponte Verda Beach, and Palm Valley.
4. East along Beach Boulevard to the Jacksonville beaches.
5. West along Atlantic Boulevard to the city of Jacksonville.
6. West along Monument Road to the city of Jacksonville.

### BASIC OBJECTIVES FOR DEVELOPMENT

Due to the area's low elevation, a major design consideration for any future trail constructed in the study area would be drainage. The route considered is relatively flat and straight with the elevation ranging from 5 feet m.s.l. to 35 feet m.s.l. Several marshy, low-lying areas must be negotiated without disturbing the natural drainage.

Access would be very good to a trail route through existing highway arteries. Due to the shortness of the trail, limiting access would be a greater consideration than providing sufficient access.

Day-use visitor service facilities located along a trail approximately halfway between Fort Caroline National Memorial and the Castillo de San Marcos would assure a distance of no more than 18 miles between public facilities. These service facilities could include a comfort station, drinking water, bike service, telephone and parking for cars and bikes. No overnight support facilities would be essential because of the relatively short length of the trail corridor and the numerous access roads crossing east-west through the trail corridor would facilitate day-use by both hikers and bikers.

A trail along the route considered would be essentially urban in nature, connecting two urban areas and, consequently, would be a recreation trail with two main points of destination. Fort Caroline National Memorial and the Castillo de San Marcos are the primary points of scenic and historical significance.

Additional points of scenic or historical significance could be developed, possibly as interpretive areas, to permit users to realize greater recreation/historical opportunities along the entire length of the trail. The trail design should not encourage users to stop at points along the trail where encroachment upon private lands could occur or where the surrounding delicate flora would be damaged. Specific locations, with additional public lands, could be provided for interpretive purposes.

#### BASIC OBJECTIVE FOR MAINTENANCE

By providing a trail tread wide enough to accommodate both bicyclists and hikers, sufficient tread would be available for use by small maintenance vehicles. Maintenance considerations should include erosion control, trail surface maintenance, care and protection of adjacent plant material and trash removal. Local governments and trail groups could assist with the necessary general trail maintenance.

#### GENERAL STANDARDS FOR TRAIL CONSTRUCTION

Right-of-Way: A trail corridor should be of sufficient width to provide an adequate buffer between private lands and the trail, and to preserve the natural environment for a quality trail experience. In locations with extensive existing development, the corridor necessarily would be narrow. Areas with higher elevations affording a scenic vista should have a wider corridor to take advantage of these opportunities.

Markings: Uniform signs designating the trail route should be placed at all access points along the trail. Directional/informational signs directing the public to the trail should be placed in appropriate locations.

Surface: A trail for hiking and bicycling necessitates a surface treatment conducive to both uses. The most feasible surface treatment would be asphalt for the entire route with marking to indicate which portion of the trail will be used for each activity. Double lane bicycling and two-way hiking would provide for optimum use and enjoyment of the trail. A double lane bicycle tread would receive year-round use; however, heat and humidity would not encourage long distance hiking for the hottest 5 to 6 months of each year.

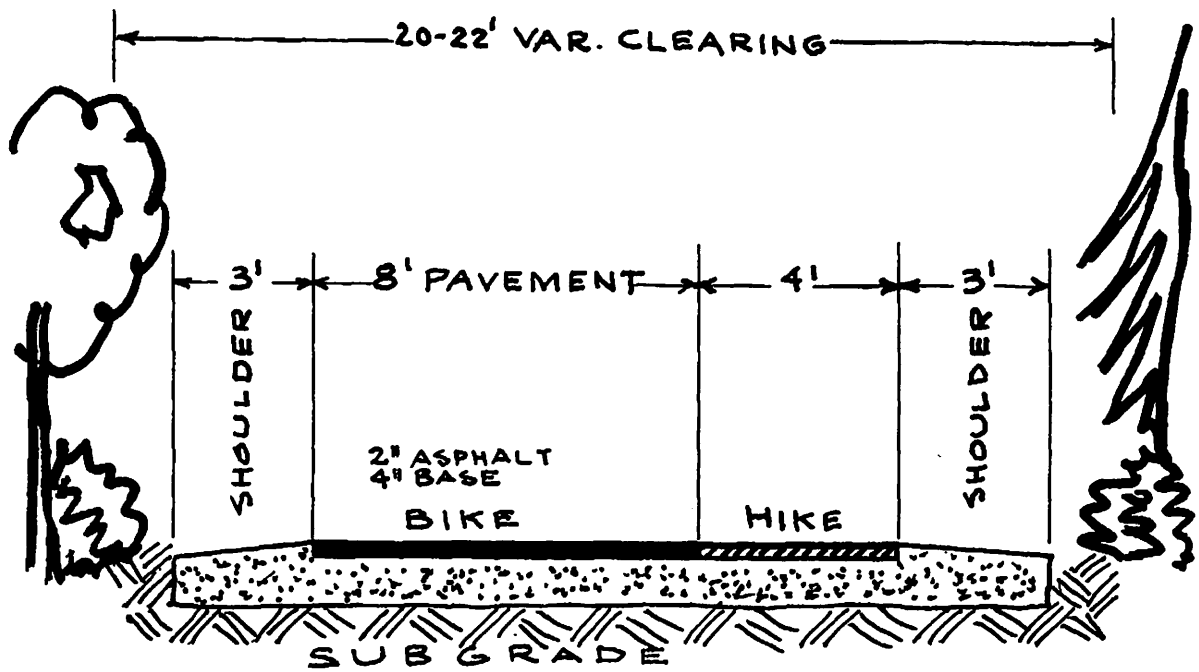
In swampy areas a raised boardwalk trail should be used to minimize environmental disturbance and to afford access in wet periods without altering drainage. Approximately 1.5 miles of boardwalk would be required. The use of steps to approach boardwalks can also serve to discourage use by motorized vehicles.

Drainage: The trail surface should be crowned to encourage drainage to either side and collected along approximately 3 feet of shoulder. Because there is little variation in slope, the design should allow for drainage runoff to prevent standing water which would encourage insect propagation. Since much of the trail corridor is within the natural drainage pattern of Duval and St. Johns Counties, careful consideration should be given the surface water runoff during wet seasons. Generally, runoff would be in a southeasterly direction. The two major drainage concerns would be (1) prevention of standing water and (2) care not to alter natural runoff.

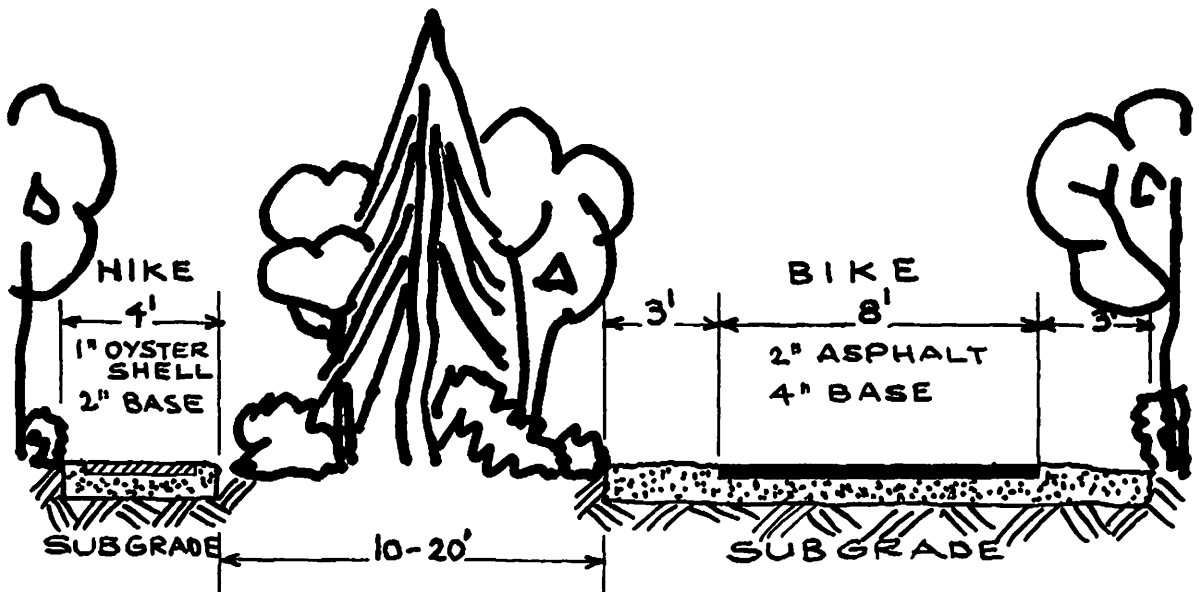
Grade: Applying a standard for maximum grade of bicycle paths, which is 5 percent slope, there should be no grade problem on the entire trail. There is only 25 feet difference in elevation from the lowest to the highest point along the studied corridor with slopes being very gradual.

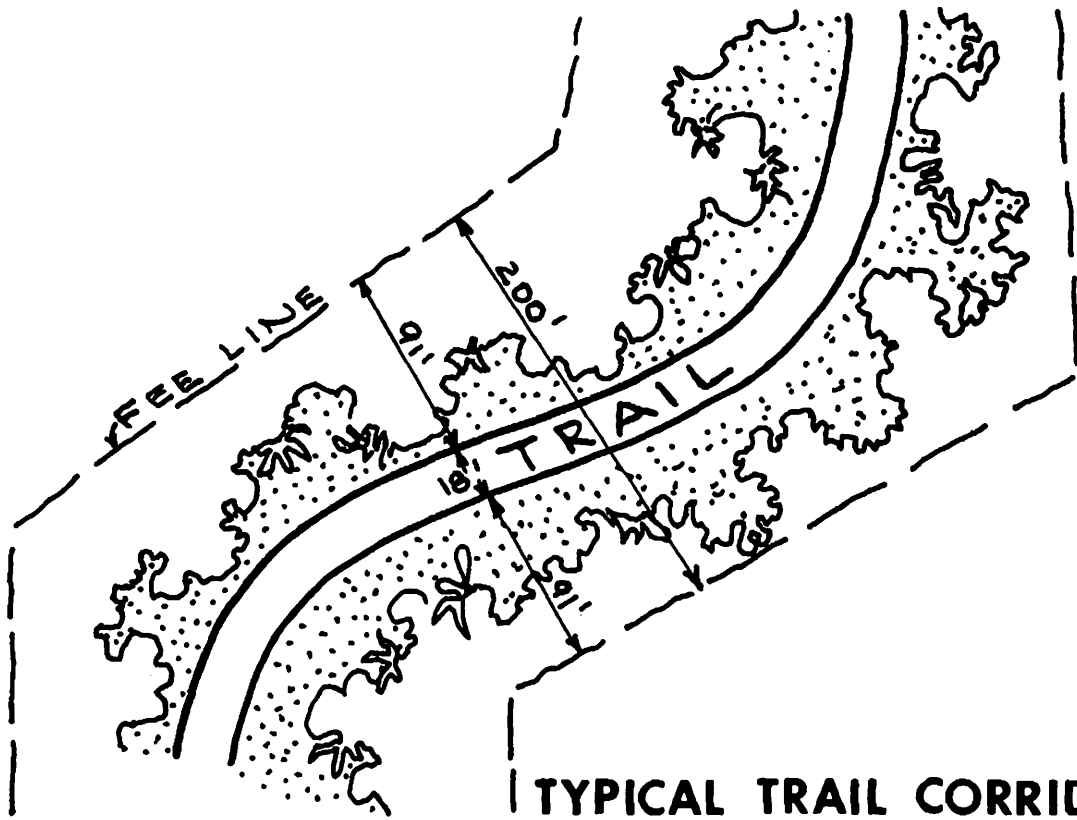
Curvature: The trail would be essentially straight with gentle curves to take advantage of scenic areas and topography and to avoid natural or manmade obstacles.

Clearance: Vertical clearance would not present a problem with trees, predominantly slash pine, void of low hanging branches. Where oaks and hardwoods do exist, the overhead clearance and location of the tread should allow for a mounted bicyclist. Horizontal clearance would need continued maintenance as undergrowth in the region grows rapidly.



**TYPICAL TRAIL SECTIONS**





**TYPICAL TRAIL CORRIDOR**

## X. TRAIL COSTS

Land: To acquire a trail corridor 200 feet in width and 40 miles in length, 25 acres of land per linear mile of trail corridor would be necessary. To allow for acquisition of additional lands along the trail for scenic vistas, and to allow for support facility development, an additional 20 acres would be necessary. Land costs in fee have been estimated to average \$1,350 per acre along the interior 27 miles of trail, dependent upon access, elevation, and existing development.<sup>16/</sup> The remaining 13 miles of corridor studied (urbanized lands) are now estimated to average \$4,500 per acre.<sup>16/</sup> Therefore the total estimated costs of fee lands for a trail within the corridor studied would be at least \$2,400,000 at 1976 prices. Due to the highly speculative nature of real estate in northeast Florida, the above-mentioned land costs are considered conservative.

Construction: Table 9 presents a breakdown of construction costs as estimated using 1974 unit cost furnished by the National Park Service, Florida-Caribbean District Office, updated through December 1976.<sup>17/</sup>

Total construction costs for the entire 40-mile hiking and bicycling trail are estimated to be approximately \$2.7 million, which includes 10 percent contingencies and 25 percent for planning, design, specifications and supervision. The cost per mile for a dual purpose trail is estimated to be approximately \$67,500. Construction of only a hiking trail would reduce the estimated costs per mile to approximately \$45,000. The primary cost difference in a "hiking only" or dual purpose trail is attributed to paving costs needed for an adequate bikeway. Problems resulting from wet, swampy areas along the trail cause construction costs estimates for either the dual purpose or single purpose trail to be higher than trail costs on many similar projects.<sup>18/</sup>

Operation and Maintenance: The annual cost of operation and maintenance on a trail in the study corridor will vary considerably depending upon such factors as the quality of the original trail construction, number of paid operations and management staff, standard of trail maintenance maintained, amount of vandalism and littering, availability of local volunteer maintenance assistance, concessionaire arrangements and others. A conservative procedure for estimating total annual operation and maintenance

<sup>16/</sup> Based on Jacksonville Area Planning Board estimates, December 1976.

<sup>17/</sup> Original National Park Service detailed cost 1974 data were revised to December 1976 by applying construction cost indices reported in The Engineering News Record, December 1976, published by McGraw-Hill which reported a 26 percent increase in construction costs between January 1974 through December 1976.

<sup>18/</sup> Both land and construction costs might be somewhat less than presented above through use of highway rights-of-way at each urbanized end of the trail corridor.

costs is to apply 10 percent of the total original construction costs. It could, therefore, cost roughly \$270,000 per year to operate and maintain the 40-mile biking-hiking trail and associated facilities or roughly \$180,000 per year to operate and maintain the 40-mile hiking-only trail. The actual annual operating and maintenance costs could be less, however, especially in the first few years of operation.



**TABLE 9**  
**Estimated Average Construction Costs**  
**El Camino Real Biking-Hiking Trail**

Fort Caroline National Memorial to Castillo de San Marcos

Trail 40 miles long = 211,200 linear feet x 8 feet paved

**A. Dual Purpose Hiking and Bicycling Trail:**

<u>ITEM</u>	<u>ESTIMATED TOTAL COST</u>
1. Site Preparation (Cleaning, grubbing, excavation & grading)	\$322,000
2. Trail Tread - Base Preparation & grading)	\$415,000
3. Asphalt Surface	\$590,000
4. Culverts, bridges, drainage	\$186,000
5. Elevated trail (pier type)	\$322,000
6. Signing	\$51,000
7. Rest-Stop & Support Facilities (1 primary)	\$115,000
<hr/>	
8. Gross Total of Trail & Rest-Stop	\$2,001,000
Gross Total of 10% Contingencies	200,000
Gross Total of 25% P, D, S & S	500,000
Gross Total	<u>\$2,701,000</u>
<hr/>	
9. Land Acquisition	<u>\$2,400,000</u>
<hr/>	
10. Grand Total	<u>\$5,101,000</u>
<hr/>	
(Annual Operation and Maintenance Costs will probably run at 10% of construction costs)	\$270,000

TABLE 9 (Cont'd)

**B. Hiking Trail Only:**

<u>ITEM</u>	<u>ESTIMATED TOTAL COST</u>
1. Site Preparation	\$264,000
2. Trail Tread	\$414,000
3. Culverts, bridges, drainage	\$185,000
4. Elevated Trail	\$322,000
5. Signing	\$44,000
6. Rest-Stop & Support Facilities	\$101,000
<hr/>	
7. Gross Total of Trail & Rest-Stop	\$1,330,000
Gross Total of 10% Contingencies	133,000
Gross Total of 25% P, D, S & S	332,000
Gross Total	<u>\$1,795,000</u>
8. Land Acquisition	<u>\$2,400,000</u>
9. Grand Total	<u><u>\$4,195,000</u></u>
 (Annual Operation and Maintenance Costs will probably run at 10% of construction costs)	
	\$180,000

TABLE 10  
Estimated Average  
Land Costs

<u>ITEM</u>	<u>UNIT</u>	<u>AMOUNT</u>
Trail length	miles	40
Trail corridor width - fee	feet	200
Trail corridor - fee	acres	1,000
Vistas and support facilities	acres	<u>20</u>
Total fee	acres	1,020

<u>ITEM</u>	<u>UNIT</u>	<u>AMOUNT</u>	<u>COST/UNIT</u>	<u>TOTAL COST</u>
Fee land (interior)	acres	695	\$1,350	\$ 940,000
Fee land (urban)	acres	325	\$4,500	<u>\$1,460,000</u>
Grand Total				\$2,400,000

APPENDIX

Comments by Federal Departments and the State of Florida.



DEPARTMENT OF AGRICULTURE  
OFFICE OF THE SECRETARY  
WASHINGTON, D. C. 20250

Honorable Cecil D. Andrus  
Secretary  
Department of the Interior  
Washington, D.C. 20240

Dear Mr. Secretary:

Thank you for the opportunity to review and comment on the El Camino Real Study Report.

We concur with the findings that the El Camino Real fails to meet most of the established criteria for a National Scenic Trail. We also agree that the recreation potential and historic significance associated with this route is sufficient to encourage State and local governments to consider trail development in their future plans. Such trail development could be considered for designation as a National Recreation Trail.

Sincerely,

A handwritten signature in cursive script, appearing to read "Bob E. ...".

Bob E.  
Secretary

State of Florida



REUBIN O'D. ASKEW  
Governor  
BRUCE A. SMATHERS  
Secretary of State  
ROBERT L. SHEVIN  
Attorney General  
GERALD A. LEWIS  
Comptroller  
PHILIP F. ASHLER  
Treasurer  
DOYLE CONNER  
Commissioner of Agriculture  
RALPH D. TURLINGTON  
Commissioner of Education

DEPARTMENT OF NATURAL RESOURCES

HARMON W. SHIELDS  
Executive Director

CROWN BUILDING / 202 BLOUNT STREET / TALLAHASSEE 32304

March 24, 1977

Honorable Cecil D. Andrus  
Secretary  
Department of the Interior  
Washington, D. C. 20240

Dear Mr. Secretary:

Reference is made to Governor Askew's letter of March 1, 1977, regarding the El Camino Real Study, and his request that the Department of Natural Resources comment on behalf of the State of Florida.

Generally speaking, we found the study to be very well done and complete in factual detail. We concur that the trail route does not fully satisfy criteria for inclusion in the National Scenic Trail System. For the same reasons the El Camino Real Trail would not be appropriate as a national trail, it probably would not qualify as a state trail--as suggested in the study.

The study clearly identified problems associated with establishing the El Camino Real Trail, giving us important direction and preventing any wasted efforts on our part.

We thank you for allowing us this opportunity to comment.

Sincerely,

Ney L. Landrum  
Director  
Division of Recreation and Parks

NCL/pmb

cc: Governor Reubin O'D. Askew