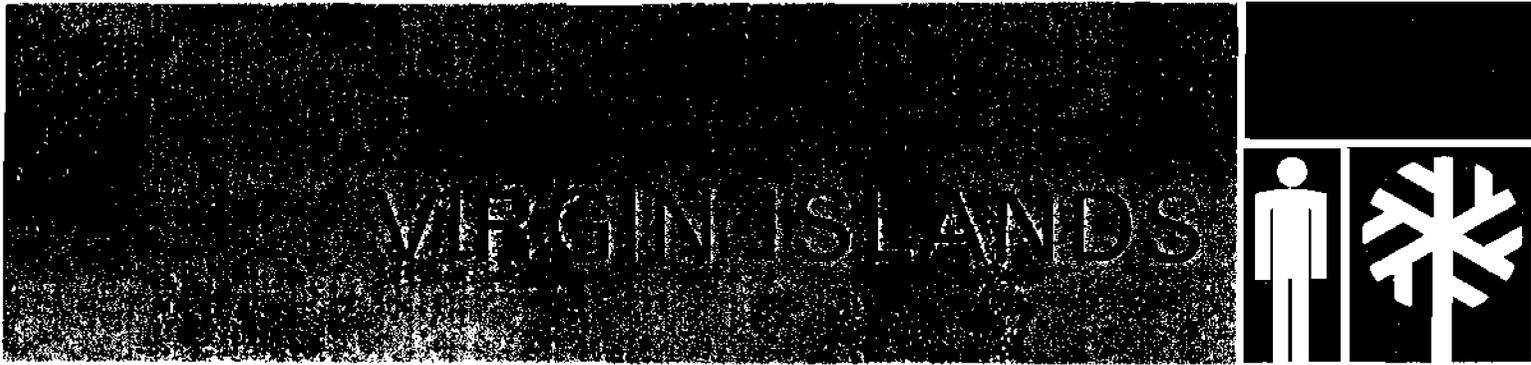


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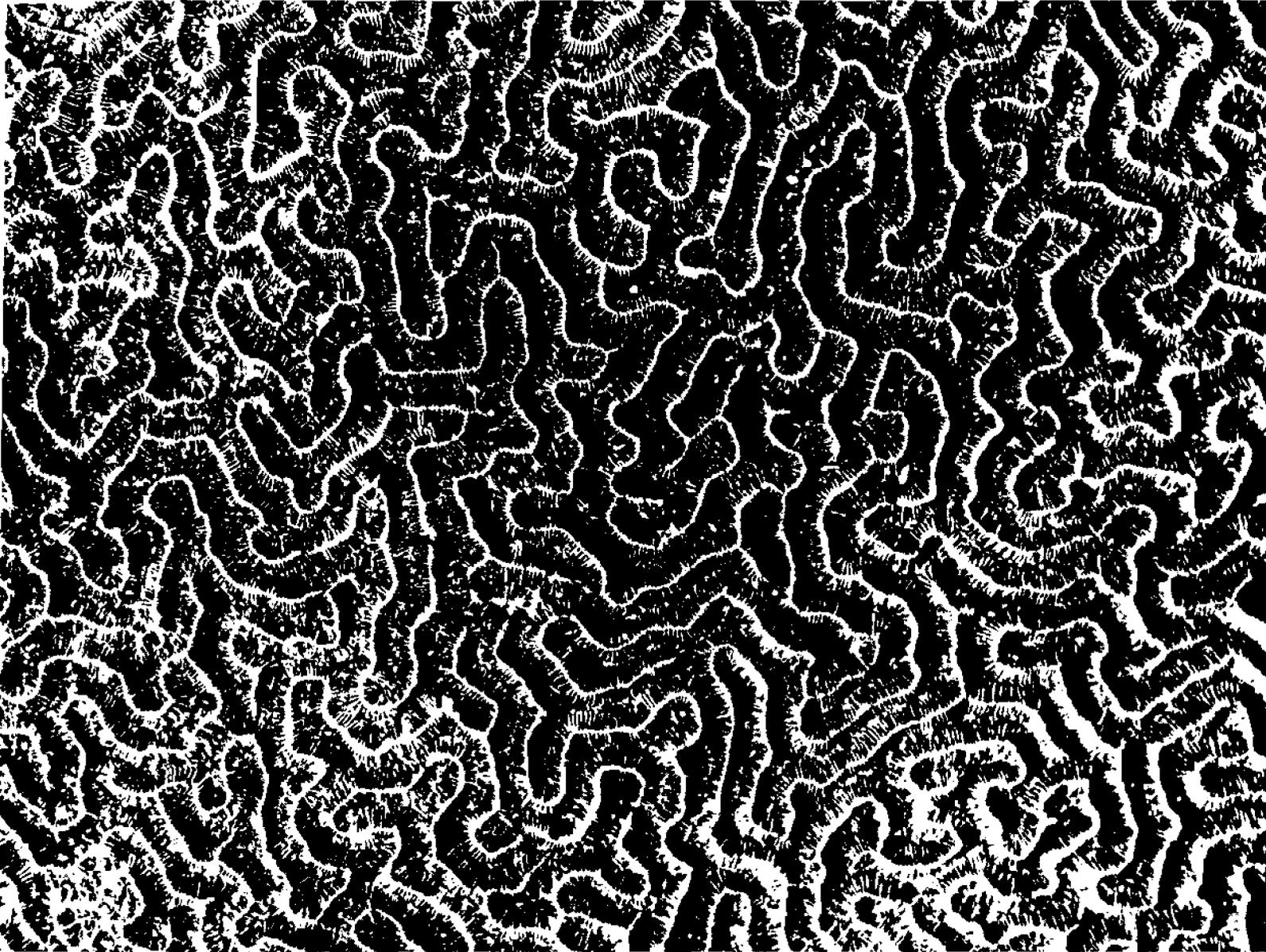
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NATIONAL PARK / UNITED STATES VIRGIN ISLANDS

VIRGIN ISLANDS NATIONAL PARK

St. Thomas and St. John Islands
United States Territory of the Virgin Islands



GENERAL MANAGEMENT PLAN DEVELOPMENT CONCEPT PLAN ENVIRONMENTAL ASSESSMENT

U.S. Department of the Interior / National Park Service

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SUMMARY

This document presents a proposal--in the form of a combined general management plan/development concept plan--for the long-term management of Virgin Islands National Park. The proposal provides improved opportunities for visitors to directly experience the park; management strategies to perpetuate and enhance significant resources and environmental systems; and developments to facilitate use, offset visitor impacts, and meet NPS operational requirements. The proposal also fulfills the requirements of the National Parks and Recreation Act of 1978, which calls for long-range planning to ensure the protection of park values. In compliance with the National Environmental Policy Act, two alternatives to the proposal are also presented, and the impacts on natural and cultural resources and the local economy are analyzed.

The two main objectives of the proposal are to perpetuate and enhance the park's nationally significant natural and cultural resources and to continue the variety of resource-based activities now enjoyed by visitors. To this end, the park's nationally significant resources are identified, including coral gardens, tropical beaches, landscapes and seascapes, salt ponds, island terrestrial habitats, and selected historical ruins of forts, maritime developments, and plantations. Further, existing patterns of visitor use are described in terms of visitor experiences in specific planning units, ranging from solitary hiking or isolated snorkeling to group tours of old sugar mills to swimming and sunning on popular beaches.

If implemented, the proposal would provide new developments to make park visits more convenient and to foster an understanding of park opportunities and an appreciation of park values. It would reduce congestion, improve safety, and provide a slight expansion in visitor capacity. It would also add new park operation facilities for administration, maintenance, visitor services, and resources management.

OVERVIEW OF PROPOSAL AND ALTERNATIVES

The proposal and the two alternatives accomplish essentially the same ends but in different ways. Overall, these strategies compare as follows:

Proposal: Provides long-term protection of park resources and upgrades visitor facilities to meet near-term needs for improved experiences and slight increases in capacity. This is the management direction now preferred by the National Park Service; it represents a mid-range choice between the alternatives and is cost-effective.

Alternative 1--No Action: Provides long-term protection of natural resources and otherwise continues current park operations and facilities. This was rejected because the park would not meet its full potential.

Alternative 2--Recreation Emphasis: Provides long-term protection of park resources, upgrades existing visitor facilities, and adds new facilities in anticipation of increased use. This was rejected because it would alter the visitor experience and because new facilities are not currently needed; it is also too costly.

PLANNING ISSUES

The proposal and the alternatives respond to the following specific issues that have been raised by the general public, interested governmental agencies, and NPS managers.

Issue: Newly acquired parklands at Hassel Island are not developed for visitor use; natural and cultural resources there are unmanaged.

Proposal: Arrange for public boat access and provide a trail system over the island. Stabilize selected historic structures, including several at Creque's Marine Railway. Provide a ranger station as an adaptive use of buildings at the Royal Mail Inn site. Cooperatively manage historic properties owned by the territorial government (Garrison House, Fort Willoughby, and Cowell's Battery) under a negotiated agreement. Maintain natural resources as a refuge for species and processes now impacted on the adjacent island of St. Thomas. Rehabilitate landings or docks at Creque's Marine Railway, Careening Cove, and Garrison House. Provide primitive group camping at Careening Cove. Establish the park boundary off the eastern and western shores and cooperatively manage the waters therein, with the Virgin Islands government, to ensure protection of park values. (The Congress set a limit of \$1 million for facility development and stabilization of cultural resources on Hassel Island; the proposal is within the limit.)

Alternative 1: Stabilize only the cultural resources at Creque's Marine Railway. Provide no trail system, group campground, or public boat access. Do not participate in the management of historic properties owned by the Virgin Islands government. Manage natural resources as in the proposal. Establish the park boundary at the water line, with the territorial government managing the adjacent waters compatibly with park values and use. (Alternative 1 would be within the congressional spending limit.)

Alternative 2: Provide additional activities at Hassel Island by involving the private sector, as the cost of planned developments would exceed the \$1 million congressional spending limit. Provide the same elements as described in the proposal, plus construct more trails. Provide concession-operated boat transportation. Restore Creque's Marine Railway, including its head house; provide food service, boat repair service (with an apprenticeship program), and a maritime museum. Provide a housekeeping tent campground, with a camp store, at Careening Cove as well as the undeveloped group site. Permit concessioner to charge fees, which would be applied to the restoration and visitor programs. Transfer historic properties owned by the territorial government at Garrison House, Fort

Willoughby, and Cowell's Battery to the National Park Service through a negotiated agreement. Manage natural resources the same as in the proposal. Establish the park boundary 100 yards off the island's shore except on the north where it would be onshore along most of the channel. Negotiate an agreement with the territorial government for cooperative management of these waters to ensure protection of park values.

Issue: Scenic quality and other resources within the park on St. John Island are vulnerable to potential development by non-NPS owners; access to much park area is now closed.

Proposal: Redraw the park boundary to exclude 930 acres along the present boundary that are not owned by National Park Service and that do not possess park values; add 172 acres in the Fish Bay Gut/Battery Gut area that have both natural and cultural park values and that have been offered for donation. Within the new boundary where private interests exist, emphasize the use of cooperative agreements for protection and access. (The proposed boundary adjustment would require a congressional amendment to the park's legislation.)

Alternative 1: Continue the present park boundary; emphasize the use of cooperative agreements to protect resources and to provide access.

Alternative 2: Same as the proposal.

Issue: The effect of the park on the local economy should be considered in NPS planning efforts.

Proposal: Minimize use of fee acquisition for the protection of lands and waters. Continue to permit appropriate commercial activities in the park, such as local taxi and boat entries. Continue to encourage residents to apply for park employment. Add visitor attractions at Hassel Island. Improve visitor experiences and expand capacity for use at St. John Island for both off-island visitors and local residents. Continue outdoor recreation, environmental education, and cultural activities.

Alternative 1: Continue current conditions.

Alternative 2: Same as proposal, plus provide greater visitor attractions at Hassel Island and new facilities for visitors on St. John Island.

Issue: If visitor use greatly increases, overcrowding and the demand for expanded services could detract from resource-related recreational opportunities and could lead to overdevelopment.

Proposal: Continue to cooperate with commercial tour and transportation providers to arrange schedules to more evenly distribute park use. Upgrade current visitor facilities with slightly expanded capacity, emphasize reducing congestion and improving

safety while continuing to base visitor use on sensory observation of park features.

Alternative 1: Continue visitor facilities mostly as they are.

Alternative 2: Same as proposal plus provide expanded facilities at Saltpond Bay and greatly expanded facilities at Francis Bay.

Issue: Many visitors arrive in the park without adequate information on how to use it, and some are not aware that they are in a national park.

Proposal: Improve information/orientation facilities at the airport, Redhook, and Cruz Bay (at both the NPS and public docks); orient cruise ship passengers; establish a system of wayside signs; improve publications.

Alternative 1: Continue current information/orientation services.

Alternative 2: Same as proposal, except at the Redhook and Cruz Bay public ferry docks, provide orientation/interpretation facilities in cooperation with the Virgin Islands government.

Issue: Resources are being managed under a broad NPS policy but the absence of a general management plan makes it difficult to prepare action plans that address specific park situations.

Proposal: Select historic structures and sites for stabilization and maintenance on St. John Island at Annaberg sugar factory and mill, Reef Bay sugar factory and great house, Cinnamon Bay plantation, Catherineberg-Jockumsdahl-Hammer farm, Trunk Bay factory, Lameshur plantation and great house, and Brown Bay plantation. Manage natural resources to perpetuate remnant natural systems and to establish stable ecosystems and native species on disturbed sites (this includes protection of endangered species and research to support programs and maintenance of the interactive terrestrial/marine ecosystem).

Alternative 1: Continue current management of cultural resources without formal selection of sites for stabilization. Manage natural resources as in the proposal.

Alternative 2: Preserve all cultural resources. Manage natural resources as in the proposal.

Issue: Park resources are subject to damaging visitor use, pollution, disruption by exotic species, and decay over time.

Proposal: Monitor, study, and manage marine resources, including fisheries, coral reefs, seagrass beds, and water quality. Inventory terrestrial vegetation, native wildlife and feral animals, and soils; and conduct research to improve management of natural resources. Prepare a cultural resource preservation guide to aid day-to-day management and systematic monitoring.

Alternative 1: Same as proposal.

Alternative 2: Same as proposal.

Issue: Operational facilities and staff are insufficient to administer the park, maintain its developments, manage its natural and cultural resources, and serve its visitors at NPS standards.

Proposal: Improve park administrative offices at Redhook and Cruz Bay and increase staff. Provide a ranger station at Hassel Island. Improve maintenance and research/resources management facilities.

Alternative 1: Improve maintenance facility at Cruz Bay and add research/resources management facility.

Alternative 2: Same as proposal, but to a larger scale.

A summary comparison of the proposal and the alternatives is shown in the following table.

COMPARISON OF PROPOSAL AND ALTERNATIVES

	<u>Proposal</u>	<u>Alternative 1 (no action)</u>	<u>Alternative 2 (recreation emphasis)</u>
Capacity for use	Slight increase	No change	Moderate increase
Visitor experience	Experience slightly closer to resources	No change	Experience farther from resources than now
Boundaries			
St. John	Delete 930 acres; add 172 acres	No change	Same as proposal
Hassel Island	Offshore at use areas, elsewhere at shoreline	At shoreline	100 yards offshore except at north channel
Cultural resource management	Priority designation of seven sites for continued stabilization	Similar to proposal, but no formal priority designation	Maintain all sites on or eligible for National Register, restore Creque's Marine Railway
Natural resource management	Protect and enhance natural ecosystems; conduct research	Same as proposal	Same as proposal
Significant environmental impacts	None	None	None
<u>Costs</u>			
NPS capital costs (gross)	\$5,817,000	\$ 497,000	\$7,340,000
Other NPS one-time costs	\$ 550,000	\$ 550,000	\$ 600,000
NPS operational costs	\$1,685,000	\$1,451,000	\$2,204,000
Non-NPS capital costs (Hassel Island)	0	0	\$2,325,000

CONTENTS

PURPOSE OF AND NEED FOR THE PLAN

PLANNING ISSUES AND OPPORTUNITIES	3
Planning Issues	3
Legislative/Administrative Directions and Constraints	5
Management Objectives	6
Visitor Use and Interpretation	6
Transportation	6
Natural Resource Management	7
Cultural Resource Management	7
Protection of Lands and Waters	7
Planning, Development, and Operations	8
Intergovernmental Cooperation	8
Management Priorities	8

PARK DESCRIPTION AND SIGNIFICANCE	9
Brief Description of the Park	9
Park Significance	9
Natural Features	11
Cultural Features	11
Interpretive Theme	14

THE PROPOSAL AND ALTERNATIVES ADDRESSING THE ISSUES

INTRODUCTION	17
Planning Perspective	17
Hassel Island	17
St. John Island--Developed Recreation Unit	17
St. John Island--Rural Landscape Unit	18
St. John Island--Roadless Unit	18
St. John Island--Marine Unit	18
Proposal and Alternatives	18
Proposal	21
Alternative 1	22
Alternative 2	23

THE PROPOSAL	24
Hassel Island	24
Visitor Use and Related Development	24
Creque's Marine Railway	24
Royal Mail Inn	24
Careening Cove	27
Garrison House	27
Northwest Beach	27
Shipley's Battery	27
Management of Natural Resources	27
Management of Cultural Resources	27
Protection of Lands and Waters	27
Management Zoning	28

St. John Island	28	
Visitor Use and Related Development		28
Developed Recreation Unit	31	
Rural Unit	41	
Roadless Unit	47	
Marine Unit	47	
Management of Natural Resources		47
Management of Cultural Resources		49
Protection of Lands and Waters		50
Management Zoning	51	
Natural Zone	51	
Historic Zone	52	
Park Development Zone		52
Special Use Zone		52
 IMPLEMENTATION		55
Costs	55	
Phasing	55	
Compliance, Mitigation, and Design and Development Considerations		55
Facilities	55	
Natural Resources	56	
Cultural Resources	57	

AFFECTED ENVIRONMENT

THE PARK'S REGIONAL SETTING		61
Natural Environment	61	
Geology and Soils	61	
Climate	61	
Hurricanes and Flooding		62
Water Resources	62	
Biological Resources	62	
Plant Life	62	
Animal Life	63	
Prehistory and History of the Virgin Islands		64
Prehistoric Settlement	64	
Early European Settlement	65	
Interim British Occupations	65	
U.S. Interest	65	
Regional Socioeconomic Description		66
Demography	66	
General Economy	67	
Tourism	67	
Boating Industry	69	
Transportation	70	
Land Transportation	70	
Water Transportation	70	
Territorial Land Management		70
Other Regional Recreation Resources		73

HASSEL ISLAND	74	
Natural Resources	74	
Historical Overview	74	
Cultural Resources	75	
Prehistoric Archeological Sites	75	
Historic Structures	75	
Cultural Resources Adjacent to Hassel Island	75	75
Visitor Activities and Development	75	
ST. JOHN ISLAND	79	
Natural Resources	79	
Biological Resources	79	
Flood Hazard	81	
Water Resources	82	
Soils	82	
Cultural Resources	82	
Prehistoric Archeological Sites	82	
Historic Structures	84	
Cultural Resources Adjacent to Park	84	84
Park Collections	84	
Visitor Use	89	
Circulation and Distribution	89	
Information and Interpretive Programs	89	89
Visitor Characteristics	90	
Use Patterns and Trends	93	
Visitor Protection	93	
Facilities for Park Operations	93	
Cruz Bay	93	
Caneel Bay	99	
Hawksnest Bay	99	
Trunk Bay	99	
Cinnamon Bay	99	
Maho Bay	100	
Francis Bay	100	
Annaberg	100	
Centerline Road/Catherineberg	100	100
Saltpond Bay	100	
Lameshur	100	
Reef Bay	101	
Trails	101	
Roads	101	
PARK MANAGEMENT AND OPERATIONS		102
Park Management	102	
Headquarters Facilities	102	
Landownership	103	
Agreements	104	
Jurisdiction	107	

ENVIRONMENTAL CONSEQUENCES
OF THE PROPOSED ACTION AND ALTERNATIVES

ALTERNATIVES	111
Alternative 1--No Action	111
Alternative 2--Recreation Emphasis	117
Hassel Island	117
St. John Island	121
Implementation	121
Visitor Capacities	122
ENVIRONMENTAL CONSEQUENCES	140
Visitors	140
Natural Resources	140
Cultural Resources	142
Socioeconomic Environment	142
Park Management	143
APPENDIX A: LEGISLATION, AGREEMENTS, AND PERMITS	151
APPENDIX B: BIOLOGICAL ASSESSMENT FOR ENDANGERED SPECIES	164
APPENDIX C: VISITATION STATISTICS	168
APPENDIX D: COST ESTIMATES FOR CULTURAL RESOURCE MANAGEMENT	175
REFERENCES CITED	176
LIST OF PREPARERS	179

ILLUSTRATIONS

Maps

Region	10
Vicinity	12
Planning Units--St. John Island	19
Development--Proposal: Hassel Island	25
General Development--Proposal: St. John Island	29
Development--Proposal	
Redhook	32
Cruz Bay	33
Hawksnest Bay/Trunk Bay	35
Cinnamon Bay	37
Francis Bay/Annaberg	39
Catherineberg	42
Saltpond Bay	43
Lameshur	45
Proposed Management Zoning--St. John Island	53
Government Zoning--St. John Island	71
Cultural Resources--Hassel Island	76
Cultural Resources--St. John Island	85
Existing Conditions--St. John Island	97
Landownership	105
Development--Alternative 1: Hassel Island	113
General Development--Alternative 1: St. John Island	115
Development--Alternative 2: Hassel Island	119
General Development--Alternative 2: St. John Island	123

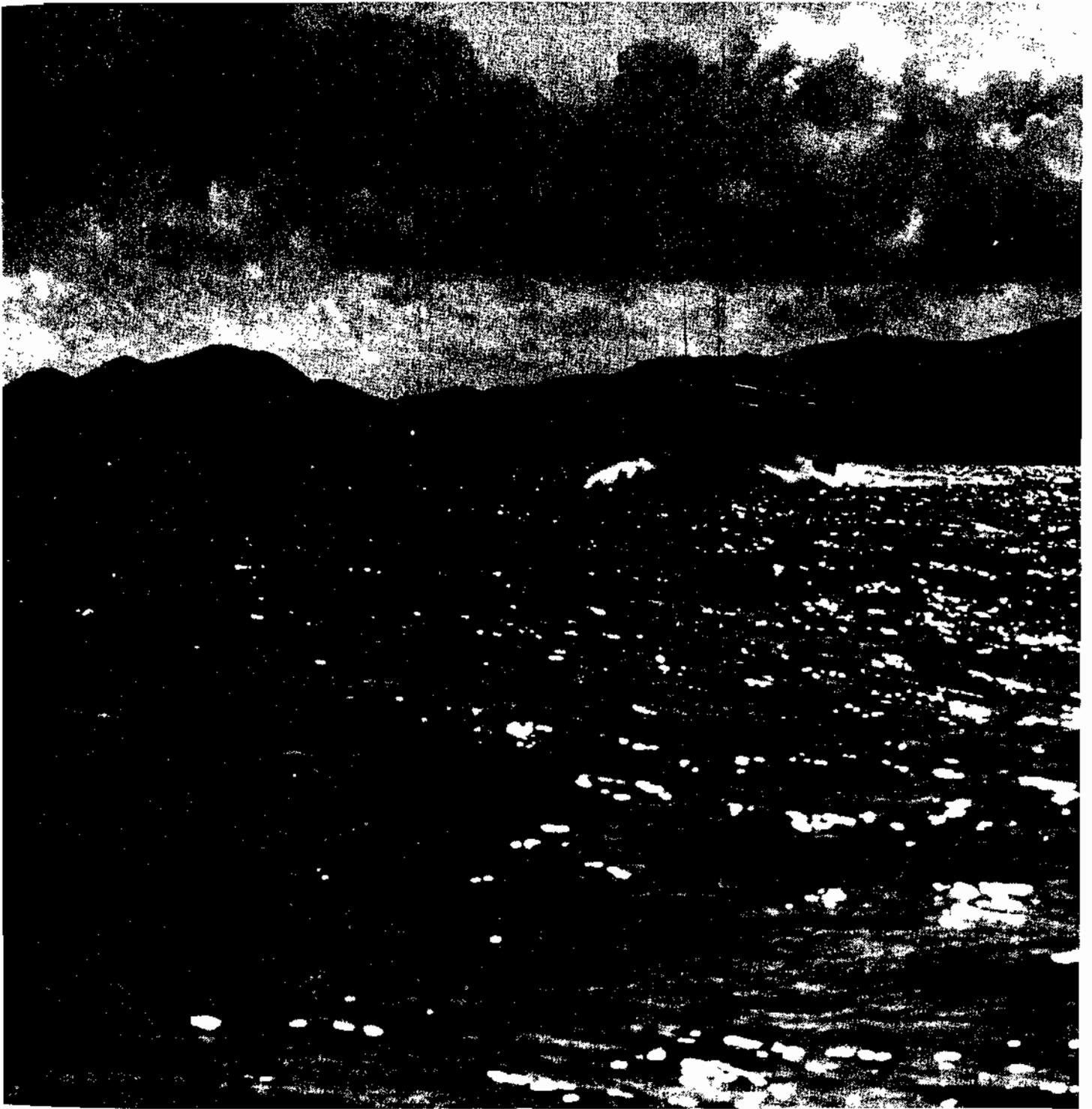
Graphics

Biological Cross-Section, St. John Island	80
Visitor Use Trends	94
Visitor Day Use Trends	95
Monthly Recreational Visits	96

TABLES

1. Population Figures and Estimates	66
2. Economic Impact of Virgin Islands National Park on St. Thomas and St. John Islands	68
3. Historic Resources, Hassel Island	77
4. St. John Prehistoric Archeological Sites	83
5. Historic Resources within the Park, St. John Island	87
6. Visitor Characteristics and Use Patterns	91
7. Partial Summary of Facilities	103
8. Ownership of Virgin Islands National Park	103
9. Comparison of Proposal and Alternatives	126
10. Estimate of NPS Development Costs (Net)	133
11. Implementation Costs of Proposal and Alternatives	136
12. Current and Proposed Staffing Requirements	137
13. Equipment Needs of Proposal and Alternatives	138
14. Capacities at One Time of Park Facilities and Resources	138
15. Environmental Consequences	144

PURPOSE OF AND NEED FOR THE PLAN



PLANNING ISSUES AND OPPORTUNITIES

The purpose of this General Management Plan/Development Concept Plan/Environmental Assessment is to present the proposal of the National Park Service (NPS) for the long-term management and use of Virgin Islands National Park. The proposal has been developed in accordance with the congressional mandate that the park's outstanding scenic and other features of national significance "be administered and preserved . . . in [their] natural condition for the public benefit and inspiration, in accordance with the laws governing the administration of the national parks." These features include beaches of white sand, clear warm waters, coral reefs and marine life, seascapes, salt ponds and mangrove swamps, vegetated hills and valleys, remnants of early Indian occupation, and ruins from the colonial plantation period and later eras.

PLANNING ISSUES

Issues addressed in this document were derived from several sources. A preliminary proposal was outlined in a brochure published in 1980. Public responses from meetings held on St. John and St. Thomas islands in July of that year, and from written comments subsequently submitted to the National Park Service, were considered in the development of the proposal and alternatives presented in this document. Comments received from territorial and federal agencies, as well as from NPS managers and professionals, were also considered. The planning issues are listed below.

Newly acquired parklands at Hassel Island are not developed for visitor use; natural and cultural resources there are unmanaged. The National Park Service has already made a significant expenditure in land acquisition, and now it is important to provide public benefits. But until resources are protected, hazards corrected, and a management presence established, visitor use would be premature. Also access and circulation systems need to be developed.

Scenic quality and other resources within the park are vulnerable to potential development by non-NPS owners; access to much park area is now closed. This issue is a most sensitive one because of the conflict between private landowners' attachments to and aspirations for their properties and the public need for protected park landscapes, and for preserved cultural resources and natural systems, along with the opportunity for visitors to explore parklands freely. Fee acquisition of property by the National Park Service to protect park resources is not always feasible because of public objections and cost. Other options for protection--such as cooperative agreements and scenic easements--may hold more promise in some instances. Donations or exchanges are possible in special cases.

The effect of the park on the local economy should be considered in NPS planning efforts. Numerous opinions and various studies have detailed some of the positive and negative aspects of the existence of

the Virgin Islands National Park. Aspects of this concern include employment opportunities for residents, land values, tourist-oriented businesses, the impact on commercial fishing and sportfishing, and park expenditures for supplies and equipment. The Park Service is responding to this concern now and will respond in additional ways where consistent with its basic mandate.

If visitor use greatly increases, overcrowding and the demand for expanded services could detract from resource-related recreational opportunities and could lead to overdevelopment. Visitor use of the park has grown in recent years, but not steadily, making projections uncertain. Continuing present conditions could leave the park unprepared for further potential increases, but overreaction could result in unneeded and incompatible activities and development.

Many visitors arrive in the park without specific information on how to use it, and some are not aware that they are in a national park. Although residents and repeat visitors are knowledgeable about sites and opportunities, first-time visitors are less knowledgeable about them. Many of the latter arrive on organized tours that structure their time and movements in such a way that they do not require information as such but could benefit from an increased awareness of park values. Other visitors arrive by public transportation or by boat, but they often miss available services that are located away from their circulation routes.

Resources are being managed under a broad NPS policy, but the absence of a general management plan makes it difficult to prepare action plans that address specific park situations. Resource management guidelines have been initiated but have not yet been completely reviewed by other NPS offices or the public. Recent research about natural terrestrial systems has stimulated interest in defining long-term objectives. In defining these objectives, resource values also need to be reconsidered, and thus a reanalysis of existing park funding and programming in terms both of local park and broader NPS priorities will be important.

Park resources are subject to damaging visitor use, pollution, exotic species, and decay over time. Problems related to park resources need to be better identified. Potential problem situations include feral animals roaming in the park, survival of endangered species, deterioration of coral along an underwater trail, waste-dumping by small boats, oil spills, and the inevitable deterioration of most standing ruins due to inadequate funds for maintenance.

Operational facilities and staff are insufficient to administer the park, maintain its developments, manage its natural and cultural resources, and serve its visitors at NPS standards. The park's operational capability has not been expanded in step with its growth in visitation. Virtually all management and maintenance structures are made over from buildings adapted from other uses. A major thrust is beginning in both natural and cultural resources management. The legislative mandate to protect Hassel Island must be met.

LEGISLATIVE/ADMINISTRATIVE DIRECTIONS AND CONSTRAINTS

The management and use of Virgin Islands National Park is guided both by specific legislation enacted by Congress and by the mandate of the National Park Service. The park was established in 1956, and as previously stated, its outstanding scenic and other features are to be administered and preserved in a natural condition. The organic act that established the National Park Service further states that the purpose of national parks is "to conserve the scenery and the natural and historic objects and the wildlife therein."

The park and its role have been further defined in subsequent legislation. In 1962 offshore areas were added to preserve for public benefit significant coral gardens, marine life, and seascapes. This act also specified that there was no intent to limit customary uses of or access to offshore areas "for bathing and fishing (including setting out of fishpots and landing of boats), subject to such regulations as the Secretary of the Interior may find reasonable and necessary for protection of natural conditions and prevention of damage to marine life and formations." It further authorized the acquisition of lands, waters, and interests therein by purchase, exchange, or donation or with donated funds.

Until 1978, the park consisted entirely of a portion of the lands and waters of St. John Island and a small administrative area on St. Thomas Island. In that year Hassel Island, which is located about 10 miles west of St. John and in St. Thomas Harbor, was added to the park (see Vicinity map). That act also authorized the appropriation of such funds as necessary for the acquisition of lands and interests in lands within the park. It further authorized that not more than \$1 million be spent to restore and rehabilitate historic structures and to develop public facilities on Hassel Island. Procedures for land acquisition were set, with the Virgin Islands government having a five-year option to assume protection and use of Hassel Island for park and recreation purposes. Also a \$500,000 grant was authorized to the Virgin Islands government to further programs such as outdoor recreation and natural and cultural resource preservation upon transfer of its properties on Hassel Island to the United States. The act also states that residents of the Virgin Islands are to be employed and trained to the maximum extent feasible to develop, maintain, and administer the national park.

In summary, the park is authorized to include the following areas:

St. Thomas Island--15 acres (authorized by 1956 act; used in part for administrative site at Redhook; the park also maintains a residential area on federal, nonpark land at Wintberg)

St. John Island--9,485 acres of land area (authorized by 1956 act); 4,100 acres north offshore area (added by 1962 act); 1,550 acres south offshore area (added by 1962 act); and unspecified acreage of parcels at Estate Contant Enighed (authorized by 1978 act)

Hassel Island--135 acres of land, plus waters not to exceed 100 yards offshore (added by 1978 act)

The National Park Service does not own all the lands within the park. There are also private interests (including residences, a resort, and a campground) and territorial government properties, as well as easements.

The National Park Service has arranged with several parties to allow certain uses within the boundaries, such as taxi service, utility rights-of-way, commercial rental of beach and water sports equipment, charter boating, food service, camping and lodging, and research facilities. (See appendix A for pertinent legislation, permits, and agreements.)

MANAGEMENT OBJECTIVES

The management objectives that have been proposed for Virgin Islands National Park represent the desired conditions, and they provide a framework to enable managers and planners to work toward fulfilling the park purpose while still considering alternative planning strategies. Public comments on these objectives are being solicited in conjunction with comments on the proposal and alternatives.

Visitor Use and Interpretation

Provide opportunities and facilities for visitors to experience park resources through onsite use; maintain park areas for different user densities, including portions with more primitive surroundings, and manage the use of these areas within appropriate capacities; encourage visitors to help preserve park resources.

Provide opportunities for day and overnight visits (including rooms and camping) where necessary; offer food services inside the park where necessary; provide facilities as needed for visitor comfort.

Provide information/orientation services before and during park visits to make visitors aware of the variety of experiences available; inform and educate visitors about hazards and how to avoid them.

Establish a parkwide interpretive theme, based on natural and cultural resources, to increase visitor understanding and appreciation of the islands' natural resources, history, and culture; establish specific subthemes at particular locations.

Make the essence of the park experience available to virtually all visitors.

Arrange programs for individuals and organized groups, including school classes.

Transportation

Maintain sufficient access and circulation for visitors by means of trails, roads, boats, and public transportation services.

Ensure that visitors have access to Hassel Island from St. Thomas Island.

Natural Resource Management

Manage the park predominantly as a natural area, with recognized exceptions only in specially zoned areas.

Preserve outstanding natural features; ensure the survival of threatened and endangered species.

Determine the character of the island's ecological systems in prehistoric, historic, and future contexts; apply this knowledge to manage stable ecosystems.

Establish baselines of resource information and then monitor changes as a basis for pollution abatement, visitor use allocations, revolving visitor use of resources, and restorative programs.

Recognize external threats to the park's resources and develop responses to them before they result in damage.

Manage marine life to sustain natural populations and allow fishing within this context.

Manage the park as an international biosphere reserve; actively participate in the Man and the Biosphere program; and provide appropriate research opportunities to the national, international, and Caribbean scientific communities.

Cultural Resource Management

Preserve or restore historic resources according to a priority system that considers intrinsic values as well as practical maintenance requirements and interpretive potential.

Provide visitors with examples of cultural resources meaningful to the interpretive theme, while at the same time safeguarding these resources from wear and abuse.

Recognize indigenous island folklife as part of the park's cultural attributes.

Maintain records of cultural sites; research historical accounts and evolving folk cultures; and document or salvage archeological materials as they are discovered.

Protection of Lands and Waters

Ensure that park boundaries include those lands that are essential to resource protection and management and visitor access needs.

Protect scenic and other resource values of park lands and waters by acquiring only the minimum necessary interests through cost-effective means.

Planning, Development, and Operations

Use designs that are environmentally compatible and aesthetically pleasing.

Stress public and employee safety in design, construction, and operation of facilities.

Provide facilities within the park for efficient and effective operations and maintenance.

Provide patrol services to protect visitors and monitor use; provide systems for warning and evacuating visitors during storm or flood threats; and provide land and water search and rescue services.

Provide quarters for park employees to the extent necessary to protect park resources, visitors, and facilities.

Facilitate visits by handicapped persons and others who may need special services.

Encourage development of appropriate visitor facilities outside the park.

Provide opportunities for local residents to acquire skills necessary for park employment.

Intergovernmental Cooperation

Coordinate park activities and programs with other countries, U.S. agencies, territorial bureaus, and private enterprises and individuals.

Maintain cooperative agreements with the Virgin Islands territorial government for safety, law enforcement, rights-of-way, maintenance activities, and signs on roads through the park.

Cooperate with the Virgin Islands government in planning, coastal zone management, resource management, coordination of visitor services, and other mutual interests.

Jointly operate facilities and utilities with neighboring communities and the territorial government where mutually beneficial.

Management Priorities

Allocate staff and funds in general accord with the following priority order: maintain habitat for endangered species and preserve selected cultural resources that are imminently threatened; perpetuate intact marine and terrestrial ecosystems; provide for visitor use; stabilize disturbed ecosystems.

PARK DESCRIPTION AND SIGNIFICANCE

BRIEF DESCRIPTION OF THE PARK

The U.S. Virgin Islands lie between the Atlantic Ocean and the Caribbean Sea, about 70 miles east of Puerto Rico. They include three fairly large islands--St. Croix, St. Thomas, and St. John--and some 50 smaller islands. The national park consists of approximately 14,700 acres of lands and waters, primarily on and around the island of St. John, and Hassel Island, in St. Thomas Harbor. Administrative headquarters are located at Redhook on St. Thomas Island.

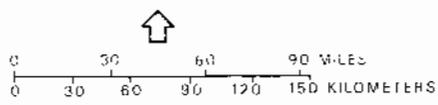
Visitors come to the park to sunbathe and play on its clean white beaches, swim in its clear warm waters, sail over its blue seas, snorkel among the coral reefs populated with tropical fish, view its picturesque seascapes, and discover for themselves the remains of early Indian sites and ruins from the plantation era. This experience is heightened by the tropical setting of the islands. Visitor use peaks during winter when the park offers a respite from the cold, snowy weather and short days of the northern United States; a second peak occurs in summer, during the typical family vacation period.

About 10 square miles (54%) of St. John Island is included in the park, constituting the park's largest land area, and 8.7 square miles of offshore waters are also within the park boundary. The island is mountainous, and the shoreline is generally steep, with protruding headlands and deep indentations that shelter bays having narrow sand beaches at their heads. Islands and reefs dot the offshore waters. Second-growth forests claim much of the land because the original forest cover was largely removed in the 1700s to make room for the expanding plantations. Today, vegetation ranges from moist forest to short scrub with cactus. Remains of numerous historic structures dot the island. Of the park land area on St. John, 3 square miles are owned by either private interests or the Virgin Islands government.

Approximately 135 acres of Hassel Island are included within the park. This island is hilly, with few level areas, and only short segments of cobbly beaches. Remnants of structures from several historical periods are present, and these occur on the island ridge and along the eastern shore facing Charlotte Amalie and the harbor. The National Park Service has acquired almost all of the lands here and has a limited first right to match any offers on most of the remaining private interests. The Virgin Islands government also owns lands on Hassel Island.

PARK SIGNIFICANCE

In terms of visitor attractions, scenery is probably the most significant feature of Virgin Islands National Park. However, the park's natural resources are nationally and internationally significant in that they provide an undeveloped sample of a tropical environment where the processes of nature can be observed, studied, and used as a base for comparing the development of natural ecosystems in similar areas. With



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respect to cultural resources, the park includes sites that are significant in the settlement and colonial development of the New World and in maritime history and commerce.

Natural Features

The features that are regarded as being of prime significance, according to the National Park System Plan: Natural History, include coral islands, reefs, and atolls; tropical ecosystems; and marine environments. Significant resources include mountain systems; works of volcanism; seashores, lakeshores, and islands; Paleocene-Eocene geological history; and estuaries.

Despite extensive disturbance, park lands and waters are a valuable refuge for remnant native species, and they provide an important opportunity for possible future restoration of some elements of the original condition. The park provides habitats for federally protected species--including the brown pelican, green turtle, hawksbill turtle, and leatherback turtle. Several plant species found on St. John are being considered for inclusion on the federal list of endangered species. It is especially important that the habitats required by these plants and animals continue to be protected.

The natural resources of the park have been recognized as being internationally significant, and the park has been designated an international biosphere reserve under the Man and the Biosphere program of the United Nations Educational, Scientific, and Cultural Organization (UNESCO). The park was selected as a reserve because it represents the Lesser Antillean biogeographic province and because it has long-term legal protection as a national park. It was also considered because it is an example of a degraded ecosystem that is capable of being restored to more natural conditions. Furthermore, it provides a protected collection of plant and animal genes that will be useful in researching ways to reestablish or increase natural productivity in similar areas.

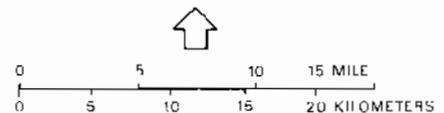
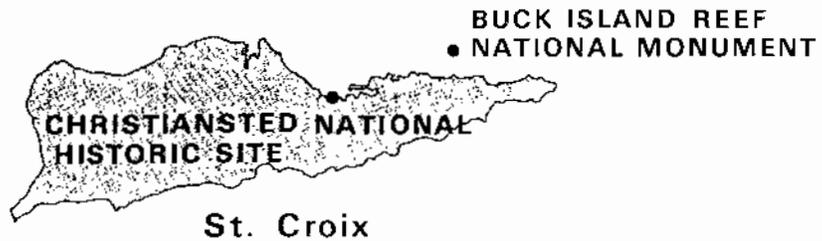
Cultural Features

Several historic sites and districts within the park are listed on the National Register of Historic Places, and additional resources have been nominated for listing. Hassel Island in its entirety is on the National Register as a nationally significant site. On St. John, ruins from former plantations are found at several dozen sites--those at Annaberg are in the best condition, while the remains at some other sites are little more than crumbled walls.

The primary historical significance of the park is that its cultural resources reflect the early European settlement of the New World, the colonial struggles--including the Napoleonic Wars--for dominance of the West Indies by the major European powers, the growth and development of a European colonial empire, and agricultural and governmental systems of a European colonial province.



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The story provides a unique opportunity to view the history of certain institutions that were once present in America but that developed separately on these islands before they came under U.S. jurisdiction. The history of slavery here, for instance, reflects European--not New World--efforts to deal with that question and so gives Americans a basis for comparing their own struggles.

Specific themes are identified based on those listed in History and Prehistory in the National Park System and the National Historic Landmarks Program (USDI, NPS 1982). These themes are listed chronologically below:

"The original inhabitants"--exemplified by the Arawak and Carib Indian cultures. The archeological site at Cinnamon Bay represents this culture.

"European exploration and settlement"--exemplified by the voyages of Columbus and the Danish occupation, with periods of British control. Forts representing this theme are Forts Fortsberg and Fort Willoughby, both of which are on the National Register.

"America at work--agriculture"--exemplified by agricultural practices that differed from those used on the U.S. mainland. European colonial plantations here produced sugar and cotton by using slave labor. This theme expands into the themes of "society and social conscience--American ways of life: slavery" and "social and humanitarian movements--Civil Rights Movement" because of the 1733 slave rebellion and the 1848 emancipation (14 years before the U.S. Emancipation Proclamation), the later development of a subsistence economy, and the partial assumption by the natives of the agricultural industry. Representative sites on the National Register are Annaberg, Catherineberg, and Reef Bay.

"Commerce and transportation"--exemplified by the use of the islands as headquarters for marine companies operating throughout the Atlantic. Resources representing this theme are sites on Hassel Island, including Creque's Marine Railway, Royal Mail Steam Packet Company, East Asiatic Company, Hamburg American Line, and St. Thomas Dock, Engineering and Coaling Company.

"Political and military affairs: America becomes a world power"--exemplified by the U.S. purchase of the Danish Virgin Islands in 1917 to expand U.S. naval presence in the Caribbean. Portions of Cowell's Battery on Hassel Island represent this theme.

"Society and social conscience--environmental conservation"--exemplified by the establishment of Virgin Islands National Park. One aspect of this theme is the importance of tourism to the islands' economy, and cultural interaction and evolution. Another aspect is the donation of park lands by the private sector, representing support for the park purpose.

Interpretive Theme

Interpretation and visitor use programs emphasize those activities most pertinent to experiencing the park's special natural and cultural attributes. Interpretive themes used in programs and publicity include the following (in order of importance): the land-sea interface (reefs and associated marine life, bays, beaches, mangrove swamps, and salt ponds), the plantation history of the islands (evidenced by remaining structures as well as ruins), the folk culture that developed after the plantation period, the island's local and international maritime history, and the worldwide significance of the park as an international biosphere reserve.

To communicate the natural history themes, programs focus on the islands' geologic origin, the ecological distinctions and relationships of plant and animal communities both on the land and in the water, endangered species and their survival, and international environmental concerns. Programs relating to human history focus on prehistoric Indian settlement, the islands' colonial history, the development of social and political institutions during colonial times compared to the development of similar institutions in the United States, and the establishment of the park.

THE PROPOSAL AND ALTERNATIVES ADDRESSING THE ISSUES



INTRODUCTION

PLANNING PERSPECTIVE

In planning for Virgin Islands National Park, natural and cultural resources, characteristics of different visiting publics, and visitor use patterns were reviewed. Based on this information, the park was divided into five conceptual planning units: Hassel Island was considered as a separate unit, and St. John was divided into developed recreation, rural landscape, roadless, and marine units (see Planning Units map). To guide the development of alternatives, planning goals were developed for each unit. The values of each planning unit, and the subsequent goals, are presented below.

Hassel Island Unit

Historic ruins on Hassel Island evoke a sense of colonial and maritime history. The scenic undeveloped character of the island, particularly in relation to the urban landscape of nearby Charlotte Amalie, and opportunities for open-space recreation are additional values. Although little is known about the ecology of the island, it may have biological value as a refuge for unusual species. Anticipated visiting publics include Virgin Islanders (both individually and in organized groups) and cruise-ship and other off-island visitors.

Planning goal: Protect and adaptively use selected historic structures, provide access for visitors, preserve the scenic quality, and determine the island's ecological value.

St. John Island--Developed Recreation Unit

This unit on the northwest shore of St. John Island encompasses the most actively used beaches, viewpoints, anchorages, historic ruins, roads, and visitor facilities in the park. The unit extends from Cruz Bay to Annaberg and includes Centerline Road. Its popularity stems from its easy access from the Cruz Bay debarkation area, its spectacular landscape/seascape, and its white coral sand beaches. Visitors tend to use the beaches in varying social groupings, based on adjacent facilities, traditional patterns, and natural attractions. All park overnight facilities are located in this unit. Visitors often come with a tour or group, and many are on a limited schedule (often they have less than three hours for their visit). Others, such as those staying overnight on the island, find sight-seeing and visiting Annaberg or other historic sites important secondary interests.

Planning goal: Provide visitors with quality recreational experiences relating to the park's natural and cultural resources; provide appropriate visitor services while still protecting scenic quality and natural coastal processes that support the coral beaches; orient visitors so they can best plan their activities; manage visitor use as necessary to avoid overuse of sites and facilities.

St. John Island--Rural Landscape Unit

This planning unit includes the road corridors on Bordeaux Mountain, East End (to Haulover), and the Saltpond Bay/Lameshur sections of the park. Motor vehicle access is less convenient than in the developed recreation unit, so there are fewer visitors and facilities. Visitors are most often local residents or off-island visitors with rented vehicles, and they are typically interested in getting away from more crowded areas. Sight-seeing is an important activity, and during the winter this unit's southern beaches provide an alternative for snorkeling when north-shore waters are too choppy.

Planning goal: Maintain the intermediate accessibility of the unit and its less-concentrated visitor activities.

St. John Island--Roadless Unit

This planning unit provides a backcountry experience in a tropical setting. It includes the Reef Bay Gut drainage and the northeastern shore in the vicinity of Leinster and Brown bays. Resources include large tracts of second-growth vegetation and wildlife habitat, ruins of plantations and sugar factories, and a petroglyph site. The unit must be visited on foot, so it attracts those interested in hiking and provides comparative solitude.

Planning goal: Maintain the unit's remoteness, and protect its cultural and natural values.

St. John Island--Marine Unit

This unit consists of designated offshore waters north and south of the island. Important natural resources include unpolluted seawater, fringe and patch reefs, seagrass beds, algal plains, sand flats, and associated fish and other marine life. Visitor activities include boating, snorkeling and scuba-diving, windsurfing, sportfishing, and boat-camping. Primary users are off-island visitors on extended trips in chartered or private yachts and, to a lesser degree, local or off-island visitors in open boats. Visitor experiences range from socializing at popular anchorages to exploring the undeveloped shoreline.

Planning goal: Continue the current experience while protecting fragile marine ecosystems and water quality.

PROPOSAL AND ALTERNATIVES

Three independent strategies for park management and development have been prepared: a proposal and two alternatives (1--"no action" and 2--"recreation emphasis"). Each of these strategies would fulfill the park's management objectives and address the planning issues. Each would also continue the overall pattern of visitor use within the conceptual planning units, and each would provide a different level of

visitor experience that is based on direct and personal involvement with the park's natural and cultural features.

The strategies are the same with respect to natural resource management. In all, ecosystems will be allowed and encouraged to continue succeeding toward more natural communities, necessary habitat will be provided for remnant native species, and marine resources will be protected from pollution and overuse. Cooperative agreements with other agencies will also be arranged to ensure protection. Research will establish baseline information about the interrelationships of ecosystems, both terrestrial and marine. These actions will maintain the international biosphere reserve status of the park and ensure the long-term preservation of stable systems and the continued restoration of impacted ones.

Another aspect that is the same in all the strategies is the protection of lands and waters within park boundaries, which would be done by acquiring the minimum necessary interest to ensure conservation of park values and provision of necessary access. This will allow private owners maximum continued use of their properties, while satisfying requirements of the park legislation at least cost to the federal government.

Facilities for park management will be provided in each strategy to meet the proposed activity level. This will ensure that park operations will be efficient and effective.

The strategies differ primarily with regard to facilities for visitors, management of cultural resources, and placement of park boundaries. For each of these elements, the proposal presents a middle ground between the alternatives.

Proposal

The proposal constitutes the general management plan that is preferred by the National Park Service for Virgin Islands National Park. In addition to aspects of natural resources management, protection of lands and waters, and operational facilities that have already been described, the proposal presents other actions.

The proposal will make information and orientation services available to visitors as they approach the park, and it will improve information, orientation, and interpretation services and facilities for visitors while they are in the park. This will enable visitors to better select among their options on both St. John and Hassel islands, and to better understand and appreciate the park's values and stories, leading to improved visits and fewer incidents of unwitting or careless resource destruction.

The most important cultural resources will be selected for preservation by the National Park Service, and others will be maintained through cooperative agreements with the Virgin Islands government and others. Stabilization will ensure safety and the perpetuation of the more significant resources, because funding required to do this is within national priorities.

For Hassel Island, boat access and a trail system will be provided so that visitors can conveniently and effectively experience the historical and scenic qualities. A primitive group-use campground will be provided so that this traditional use is continued, with a minimum of sanitation and other facilities. A park operations base and ranger living quarters will provide security and visitor safety.

The proposed actions are within the spending authorization for Hassel Island, which will allow early installation of visitor facilities and observation of patterns to help determine the ultimate use concept. The park boundary will be up to 100 yards off the eastern and western shores, but at mean high tide on the north and south ends of the island. Water areas will be managed cooperatively under an agreement with the Virgin Islands government. This will ensure access to the island and its setting, leaving intact the jurisdiction of the territorial government over the water.

For St. John Island, general upgrading of existing beach facilities will improve the visitor experience and accommodate the slight increase in park use envisioned for the next several years. Also, realigning and paving the road from Saltpond to Lameshur will improve safety. Deletion of 930 acres will remove lands without significant features and which are privately owned and partly developed. No such lands form headwaters for remaining park lands or marine areas. A 172-acre parcel will be added to the park upon donation to preserve a prime natural area and a National Register historic site.

Overall, the proposal was selected over the alternatives because it is the optimum, cost-effective point between an alternative presenting so little facility development and cultural resources management that visitor convenience and resource protection would not be achieved and one offering so much development that the visitor experience would begin to be dependent on the facilities rather than on the features of the park.

Alternative 1

Alternative 1, the no-action alternative, would generally continue present park programs and developments, although maintenance and renovation would proceed as required. Existing visitor information/orientation services would be continued. Natural resources management would be the same as the other strategies. Stabilization and maintenance of cultural resources would be as at present, depending on the park's annual budget. Current programs to protect lands and waters within park boundaries would also continue.

On Hassel Island, boat access would be arranged individually by visitors. There would be no new trails. The park boundary would ring the island at the shoreline.

For St. John Island, virtually no new visitor facilities would be provided. The park boundary would remain as now established.

Alternative 1 was rejected because it makes almost no improvements to present park programs, which are not adequate to serve visitors and protect cultural resources, and it would not accommodate any increase in use.

Alternative 2

Alternative 2 would add to the elements of the proposal. Visitor information and orientation would be improved as in the proposal; additionally, new visitor contact centers would be provided at Redhook and Cruz Bay in cooperation with the Virgin Islands government, with the possibility of providing for community functions. Natural resources would be managed as in the other strategies.

For cultural resources, the National Park Service would stabilize all that are listed on the National Register of Historic Places and then maintain them for the long term.

For Hassel Island, Creque's Marine Railway would be restored as an operating boat yard, with a maritime museum, marine and souvenir sales, and food service. A private operator (preferably a nonprofit institution) would manage these facilities and services, provide boat access, and apply all or a portion of the profits to restoration or operations. As in the proposal, a primitive group campground would be provided. In addition, the operator of the maritime area would provide rental tent cabins. The park boundary would encircle Hassel Island 100 yards offshore except on the north along the channel where it would be onshore.

For St. John Island, new beach facilities at Francis and Saltpond bays would encourage the expansion of use to those places. The park boundary would be the same as in the proposal.

Alternative 2 was rejected because visitation levels and resource values do not justify a program this extensive and because it would shift the visitor experience away from one based on natural and cultural park values toward one oriented to recreation development.

In the following subsection, the proposal is described. The alternatives are discussed in more detail in the "Environmental Consequences" section, where they are compared to the proposal.

THE PROPOSAL

The detailed actions of the proposal are presented first for Hassel Island, then for St. John Island. For each island, visitor use and related development, management of natural and cultural resources, resource protection, and management zoning are described. Costs, phasing of the actions, and compliance requirements are discussed in the last part of this section.

HASSEL ISLAND

Visitor Use and Related Development

On Hassel Island, remnants of historic structures representing the colonial and maritime commercial history of the Virgin Islands will be maintained and interpreted for visitors. Outdoor recreation based on the scenic and natural qualities of the island will also be provided.

Visitors will be informed of NPS programs and activities at Hassel Island, and the park as a whole, through a system of unmanned orientation kiosks, park brochures, and an orientation film. Kiosks will be placed at several locations, including Truman Airport and the Charlotte Amalie public dock, upon arrangement with involved organizations. The orientation film will be made available to local television stations, hotels, and cruise ships. Interpretation will be primarily self-guiding, and an interpretive leaflet, along with wayside exhibits at points of interest, will be provided.

Boat access to Hassel Island will be provided by one or more permittees from a central point on the nearby Charlotte Amalie waterfront, where an information/orientation exhibit kiosk will also be located. Cooperative arrangements will be made with the territorial government and other involved organizations or individuals for this purpose. Additional access may be provided directly from cruise ships in the harbor. Docking facilities on Hassel Island will use rehabilitated docks or existing bulkheads at Creque's Marine Railway, Careening Cove, and Garrison House; the docks will include limited space for passengers to disembark from private boats.

A trail system will be constructed to connect the docks with selected historic features, the island spine, and the northwest beach. No vehicular transportation will be provided on the island. Facilities for handicapped persons will be provided only at Creque's Marine Railway, where leveler grades, more development, and concentrated visitation make this feasible.

Creque's Marine Railway. Vegetation will be selectively cleared so visitors can view the site more clearly. The ruins will be stabilized for preservation, interpretation, and safety.

Royal Mail Inn. The structure will be stabilized and in part adaptively used for NPS operations and quarters. These uses will be compatible

with uses on adjacent private properties. A ranger station will be established for monitoring use and providing visitor and resource protection.

Careening Cove. A primitive campground for groups will be developed, including a low-water-use comfort station and minimal water supplies for camping. The St. Thomas Dock, Engineering and Coaling Company ruins will be stabilized.

Garrison House. The existing dock near Garrison House will be rehabilitated. A picnicking area will be provided under the adjacent coconut trees, and toilet facilities will be installed. Nearby historic structures (Cowell's Battery, Fort Willoughby, and Garrison House) will be maintained and interpreted in cooperation with the Virgin Islands government, the owner.

Northwest Beach. Toilet facilities will be provided if warranted by future visitor use.

Shipley's Battery. This military fortification on the northern summit of the island will be stabilized.

Management of Natural Resources

A survey of vegetation on the island is underway, and wildlife will be inventoried. Monitoring will determine the significance of sea turtle nesting and the extent of predation of turtle eggs (see the biological assessment, appendix B). Inventories will also determine if other protected or rare species are present and will guide future resource management actions.

Management of Cultural Resources

National Register sites other than those already mentioned will be recorded, stabilized to the extent necessary for visitor safety, and managed as archeological sites. Nonhistoric structures owned by the National Park Service but not used for park operations will be removed and the sites restored to natural conditions.

A historic resource study, including an archeological component, will be completed for Hassel Island. This will serve to recommend future archeological and historical studies. As required, historic structure reports, historic structure preservation guides, and cultural resource preservation guides will also be completed. From these studies, a list of classified structures will be developed to indicate the level of treatment of the resources. Depending on findings, treatment of the island's cultural resources may be modified.

Protection of Lands and Waters

The majority of Hassel Island is owned by the National Park Service; some private inholdings remain next to the Royal Mail Inn complex. Sufficient

interests in these properties to permit park management will be acquired only if necessary. An agreement will be made with the Virgin Islands territorial government to ensure continued preservation of their properties (Garrison House, Fort Willoughby, Cowell's Battery, and underwater areas) and visitor access where appropriate. Several structures at Careening Cove now under NPS ownership have been temporarily leased to prior occupants. These leases will be phased out as the proposal is implemented.

As provided in the 1978 legislation, the park boundary at Hassel Island will be located to manage access, anchorage, and mooring, to maintain historic scenes, and to protect underwater archeological values. The boundary will follow the mean high water line except for two areas: (1) the eastern side of Hassel Island, where it will extend 50 to 100 yards offshore to include all of Careening Cove and to protect the shoreline at Creque's Marine Railway, and (2) the western side of the island, where it will extend offshore to encompass the northwest beach and other smaller coves. The National Park Service will not seek a transfer of ownership of submerged lands but will cooperate with the Virgin Islands government to establish concurrent jurisdiction over the water and to manage possible submerged cultural resources.

Management Zoning

In keeping with its listing on the National Register of Historic Places, Hassel Island will be placed in a historic zone for the preservation, protection, and interpretation of cultural resources and their setting.

ST. JOHN ISLAND

Visitor Use and Related Development

Existing patterns of visitor use at St. John will continue under the proposal; however, some facilities and services will be improved. A major objective will be to maintain the present variety of resource-related activities and social interactions. The proposal will improve visitor information and orientation services so that visitors can make the most of their time.

Visitors will be informed of NPS programs and activities on St. John Island and the park as a whole through a system of unmanned orientation kiosks, park brochures, and an orientation film. Kiosks will be placed at several locations, including Truman Airport, the Charlotte Amalie public dock, the Redhook public dock, and locations on St. John. The orientation film will be made available to local television stations, hotels, and cruise ships; it may also be presented at park developed areas.

Access to St. John Island will continue to be by public and private means; transportation within the park will continue to be provided through permit arrangements with commercial tour and other providers. Cooperation will be continued with commercial tour and transportation providers to arrange schedules so that park use is fairly evenly distributed.

Facilities at Redhook, Cruz Bay, Hawksnest Bay, Trunk Bay, and Cinnamon Bay will generally be accessible to handicapped visitors. Exceptions to general accessibility are isolated camp or picnic sites, some sections of trails, and for some visitors the underwater trail. Some visitors will require assistance entering boats or crossing the beach to the water, especially at Hawksnest, Trunk, and Cinnamon bays.

Other proposed facilities and services are described below by planning unit.

Developed Recreation Unit. Although Redhook is on St. Thomas Island, it is related to this unit and will continue to be the primary departure point for visitors to park lands on St. John Island. In cooperation with the Virgin Islands government, an information, orientation, and interpretation wayside exhibit will be installed at the public ferry dock (across the bay from NPS headquarters), where individuals depart for St. John. Tour groups and Caneel Bay guests will continue to use the NPS dock. The existing visitor contact area will be improved to better introduce the park, particularly activities and resources available on St. John. The park headquarters will be enlarged to provide additional office space for park division chiefs and administrative personnel. All other facilities will be retained (dock, storage, park residence).

Cruz Bay will remain the arrival point for visitors to the island and the location for St. John's park operation center (it is about 20 minutes by boat from Redhook). Organized groups will continue to use the NPS dock, where the existing visitor contact space will be remodeled to improve orientation and information. Individuals will continue to arrive at the public ferry dock, located $\frac{1}{4}$ mile from the NPS dock. If feasible, an information/orientation kiosk will be installed at the public dock, and signs will be erected to direct visitors to the NPS contact facility. The playfield will be retained. The existing maintenance area will be improved with new shops, storage, and an office. Because a portion of the operations facility is within the coastal high-hazard area, remodeling will be guided by the criteria and standards set by the national flood insurance program. Park collections, permanent records, and any irreplaceable objects subject to flooding at Cruz Bay will be moved to the proposed park research and resources management facility at Lind Point. It will include museum storage space, a curatorial work area, a laboratory, a meeting room, and temporary accommodations for researchers. All park collections, specimens, artifacts, and the library will be transferred here. NPS housing will be retained at Lind Point.

At Caneel Bay the private resort will continue to operate compatibly with park objectives.

At Hawksnest Bay, facilities will continue to be provided for users other than tour groups, the road will be relocated a short distance inland, and off-road parking will be constructed on the old road alignment. This, along with removing the existing pit toilet and installing a new vault toilet on the bay side of the road, will reduce traffic congestion and increase pedestrian safety. The existing picnic tables and shelters will remain. The existing changing stalls will be replaced by new showers and changing facilities. A new orientation/interpretation wayside exhibit kiosk will be installed.

At Denis Bay overlook, the existing gravel pulloff will be paved to provide parking for five cars. The trail will be improved, and the view will be maintained by vista clearing.

Trunk Bay will continue to be the principal beach access and day use area serving tour groups and other visitors. Concessioner-operated equipment rental (fins, masks, and snorkels) and snack services will continue. The existing picnic tables and shelters, flush toilets, changing stalls, and showers will be retained. Lifeguard service will continue. A new orientation/interpretation wayside exhibit kiosk will be constructed. The underwater trail will be improved with new interpretive and directional signing. Because of questions about visitor impacts on corals at Trunk Bay--particularly along the underwater trail--research will be undertaken to determine the characteristics and magnitude of the resource deterioration, if any, and the cause (USDI, NPS 1973). If the effects are found to be a result of visitor use, appropriate measures to mitigate the impacts will be taken. The NPS employee residence will be removed when other quarters become available at a less intrusive site. Handicap access will be provided throughout the developed area, and access to the water will also be provided.

Cinnamon Bay will be retained as a principal developed area for day use and overnight accommodations. The concessioner-operated campground, cafeteria, campstore, and equipment rental will be continued, as will NPS interpretive and lifeguard services. Although the campground is outside the 100-year floodplain, as designated by the Federal Emergency Management Agency, portions of the campground are subject to occasional flooding from upland runoff. A design study will be conducted to correct this problem either by relocating some campsites or by improving drainage of the affected portions of the campground. Other NPS visitor facilities will be retained, including the amphitheater, the beachside interpretive area, the interpretive display area in the Danish warehouse, and the Cinnamon Bay plantation interpretive trail. A new orientation/interpretation wayside exhibit kiosk will be installed. Handicap access will be provided throughout this developed area wherever feasible, including principal interpretive and concessioner-operated areas; access to the water will also be provided. An incinerator located in the service area will be removed when the island's solid-waste disposal facility is improved. An NPS trailer/residence and a storage building will be removed and replaced by new facilities at a new location within the service area to alleviate the present scenic intrusion on the Cinnamon Bay plantation ruins. Existing water, sewer, and power facilities will be maintained.

At Maho Bay, the existing beach pavilion for groups will be retained. The private campground as now operated provides accommodations compatible with park objectives, and on this basis beach and water use permits will be continued.

Francis Bay will continue to be a principal anchorage and beach area for boaters in the park. Visitors will continue to have access to the beach. The primitive road will remain unpaved, but it will be improved; parking will be increased to approximately 10 spaces. The picnic tables

picnic tables will be retained, and pit toilets will be replaced with self contained toilets. The NPS employee residence, which intrudes on the scene, will be removed when quarters become available at less intrusive sites.

Annaberg will continue to be the focal point for historical interpretation for the St. John portion of the park. Activities that have been documented as having occurred at this location will be emphasized in program design, and the sites of any other activities interpreted here will be identified. The interpretive trail will be improved with wayside exhibits to augment the leaflet that is keyed to a series of numbered posts. The parking area will be relocated away from the ruins to remove visual and noise intrusion, and self-contained toilets will be provided.

As much of the Annaberg site as feasible will be made accessible to handicapped visitors. Those areas that cannot be made accessible will be more fully interpreted for handicapped visitors offsite.

Centerline Road will continue to be maintained by the Virgin Islands government, with the National Park Service helping to maintain and improve vista points and trailhead parking. NPS employee residences along the road will be retained.

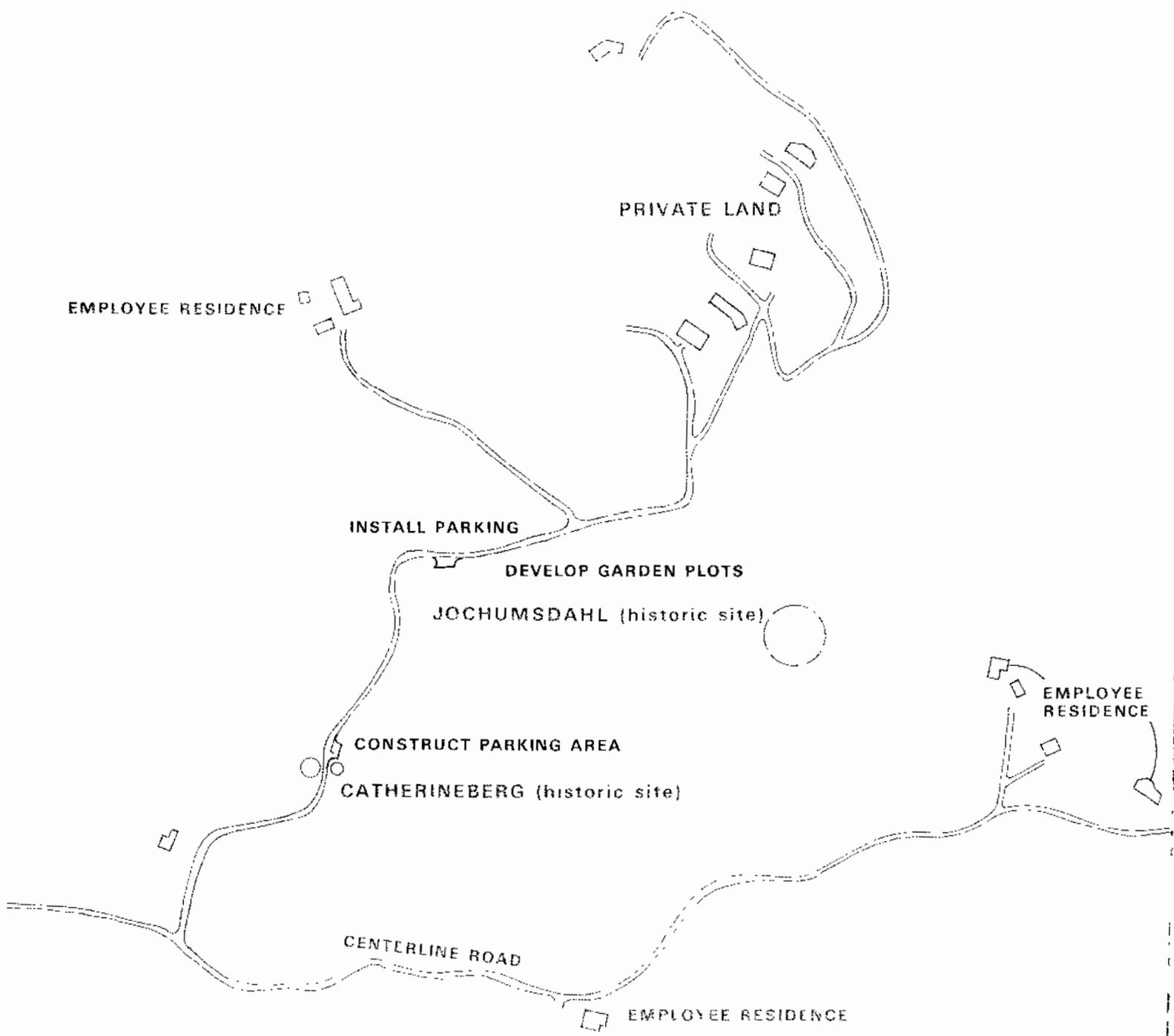
At Catherineberg, a small parking area will be developed near the stabilized sugar mill ruins at the Hammer Farm. In this vicinity an experimental gardening program (about 2 acres) is being developed in cooperation with Project St. John, a nonprofit cultural organization. The objective is to provide agricultural education opportunities to Virgin Islanders over the short term while also developing soil stabilization and improvement techniques to enhance eventual natural succession to forest cover (see "Natural Resources Management").

Rural Unit. At East End, parking areas with scenic overlooks will be developed along the existing road. The headland trail between Water Creek and Otter Creek will be upgraded.

The Bordeaux Mountain Road will be maintained for low-density use. Vistas will be cleared and areas to turn around or park will be provided.

Saltpond Bay will continue to be a low-use beach area. The existing parking area will be paved, and the access trail will be retained. Trails to major features will include interpretation. The present bulletin board will be replaced with an orientation/interpretation wayside exhibit kiosk. Other existing facilities will be retained, including maintenance access to the beach, picnic tables, and self-contained toilets.

For Lameshur, the existing access road will be reconstructed and paved. At Little Lameshur beach the road will be relocated a short distance inland to provide off-beach parking. A new paved parking area will be provided at the Lameshur factory historic structures, where there is a trailhead; one historic structure will be adaptively used for park operations. Changing stalls, new toilets, and water and sewer systems will be installed. Other facilities in the Lameshur area (ranger



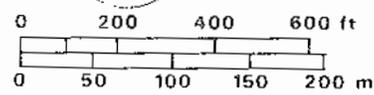
L'ESPERANCE PLANTATION (historic site)  RUINS

DEVELOPMENT-PROPOSAL
CATHERINEBERG

VIRGIN ISLANDS NATIONAL PARK
 UNITED STATES VIRGIN ISLANDS

UNITED STATES DEPARTMENT OF THE INTERIOR
 NATIONAL PARK SERVICE

Legend:
 Base from aerial photo 12MAR78BP16 1816
 All development proposals are shown in black;
 all existing features are shown in grey.



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station/residence, dock and marine wet lab, research station) will be retained. Handicapped access will be provided as feasible.

Roadless Unit. Access will continue to be by trail from Lameshur or Centerline Road, or by boat to selected natural and historical features. Within Reef Bay at Genti Bay a small-boat landing will be constructed, and self-contained toilets will be provided. The picnic tables will be retained. A wayside exhibit will be installed to interpret the Reef Bay sugar factory ruins.

Trail access to Leinster and Brown bays from Coral Bay and Annaberg will be maintained. A parkwide design study will establish trail maintenance and construction needs, including possible routing for a north shore trail, new trail connectors, trailhead parking, and vista clearing.

Marine Unit. Use in this unit will be managed to protect water quality and marine life and to enhance safety. At sites frequented by boaters, proposed information kiosks as well as map and safety leaflets will explain proper waste disposal, preventing damage to coral or seagrass beds from anchors and propellers, using designated park anchorages, and boating ethics. Patrol service will be provided. Markers will be maintained to designate swimming areas and some anchorages to protect resources and for visitor safety. At selected anchorages where boating use is heavy and benthic resources are vulnerable, moorings may be provided. Garbage facilities will be provided for boaters near present beach areas. Territorial and federal boating regulations prohibiting boat waste discharges will continue to be enforced.

Management of Natural Resources

Resource management in areas such as Virgin Islands National Park consists of perpetuating or, in the case of highly disturbed areas, directing dynamic ecological processes. In the Virgin Islands such processes include the balanced exchange of sediments between beach and inshore marine communities, the slow succession of upland cut-over land to mature forests, and the even slower maturation of heavily eroded hillside soils (see "Affected Environment" section and Ecological Cross-section drawing.) These processes are often retarded by artificial forces, including water pollution, grazing or competitive pressures from exotic species, and encroachment from human developments.

Recognizing the dynamic character of the park's natural resources, resource management within the park's natural zone on St. John will have three major objectives. First, where natural processes and native species have been relatively unaltered (e.g., coral reefs, mangrove swamps, salt ponds), communities will continue to be protected from human-caused disturbances. Second, on disturbed uplands and in park waters, pressures from exotic species and other artificial interferences will be managed to encourage stable ecosystems and native species. Third, the physical component of the park's ecosystems, particularly water quality and soils, will be managed to protect natural communities. Emphasis will be placed on monitoring and improving water quality and on stabilizing disturbed upland soils.

Although complete removal of terrestrial exotic species is virtually impossible, exotic plants and animals will be controlled where practicable opportunities are identified to encourage or reintroduce native species. Over much of the park, formerly disturbed terrestrial areas will continue to succeed toward mature communities without additional management actions. At selected sites reestablishment of native vegetation may be encouraged by thinning, soil improvement, or other silvicultural activities. Research will be undertaken to better determine the characteristics of original communities to provide a basis for practical management of stable upland ecosystems. Research topics will include the following:

floristic information and vegetation mapping, with particular attention given to protected or rare species and sites containing concentrations of native species (e.g., salt ponds, mangroves)

wildlife distribution and habitat requirements, especially for rare or protected species (e.g., hawksbill sea turtle, brown pelican, Virgin Islands tree boa)

impacts of feral and exotic species on native vegetation, wildlife, and soil stability

hydrology, soils, historic land uses, groundwater and surface water quality, and other factors relating to watershed management, mangrove habitat, and salt ponds

Based on this research, a vegetation management action plan will be developed.

In park waters, programs will be continued or initiated to maintain the health of the marine environment. Through cooperation with other federal and territorial agencies, terrestrial and water-borne pollution sources will be identified and controlled. A contingency plan will be developed in cooperation with the U.S. Coast Guard and the Virgin Islands government to deal with oil or toxic substance spills that may threaten the resources. The National Park Service will cooperate with the Corps of Engineers, the Environmental Protection Agency, the U.S. Coast Guard, and the territorial government in reviewing applications for dredge, fill, or effluent-discharge permits that may affect water quality or marine communities.

Fisheries management in the park will protect natural conditions and prevent damage to marine life and formations, as called for in section 3 of the 1962 park legislation. To better define "natural conditions" in the marine environment, a research project under the Man and the Biosphere program will inventory marine populations, habitat distribution and condition, and the current impact of sport and commercial fisheries in the park and region. Based on this information, a fisheries management plan will be developed in consultation with the territorial government and the Caribbean Fisheries Management Council to revise park fishing regulations as necessary. Interpretive programs will be designed to better educate boaters and divers on nondestructive use of reef and seagrass areas.

Marine resources will be monitored as a basis for management actions. The following categories and uses will be monitored:

marine water quality (specifically, to detect pollutants, excessive sedimentation, and offshore oil spills)

commercial and sport fishing

diver and boater impacts on corals

Endangered and threatened species and their habitat will continue to be protected, in compliance with the Endangered Species Act (see appendix B). Specific proposed actions include the following:

improved monitoring of sea turtle nesting and hatchling success, further research into nesting habitat requirements, reduction or exclusion of predators from nesting sites during the turtle nesting season, and relocation of nests threatened by high tides or shoreline erosion

improved monitoring of brown pelican nesting and reproduction, and continued protection of nesting sites

investigation of the occurrence of the Virgin Islands tree boa

The National Park Service will continue to cooperate with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Virgin Islands Bureau of Fish and Wildlife in the management of protected species.

Pertinent scientific research will continue to be supported through participation in the Virgin Islands Resource Management Cooperative, UNESCO's Man and the Biosphere program, and the Virgin Islands Ecological Research Station. The National Park Service will maintain a park research staff and will continue to contract or permit appropriate research by qualified institutions. Research results will be used to guide and refine proposed management actions.

Specific actions for carrying out these general strategies will be detailed in a resource management plan, and individual action plans will be developed as necessary. As studies are completed, the boundaries of management zones will be adjusted if needed to protect additional special resources.

Management of Cultural Resources

Seven resources on St. John will be funded for yearly maintenance and stabilization. These sites, listed in order of significance, are the Annaberg sugar factory and mill, Reef Bay sugar factory, Cinnamon Bay plantation, Cathrineberg-Jockumsdahl-Hammer farm, Trunk Bay factory, Lameshur plantation and great house, and Brown Bay plantation. The rest of the sites on St. John will be recorded to the level and type recommended by regional office cultural resource specialists and managed

as archeological sites. Enough land around sites will be maintained to ensure site integrity and to protect adjacent cultural resources. For example, the Reef Bay site will include the Reef Bay petroglyphs as well as the sugar factory.

The sites to be maintained and stabilized were selected based on the park's List of Classified Structures, professional evaluations, the National Register of Historic Places nomination forms (completed by park staff and others), the historical and architectural significance of each resource, site integrity and completeness, significance in illustrating the park's theme, accessibility, and past park expenditures on maintenance and interpretation.

An administrative history of the park will be completed. This will look at park origin and establishment, boundary placement, land acquisition, selection of development and interpretive sites, cooperative programs within the region, management emphases at various periods, and the interrelationships between the park and Virgin Islanders.

Protection of Lands and Waters

As mandated by the legislation for Virgin Islands National Park, the National Park Service must ensure the preservation of natural and cultural values on all parklands, as well as provide for visitor access, services, and facilities. The lands that have been set aside for these purposes are all those shown within the park boundary on the Landownership map. Although lands within the park are owned by various parties--the federal government, the territorial government, corporations, and individuals--under the legislation, it is the National Park Service that has the task of maintaining park values on all.

If these values are threatened, the legislation provides the means whereby the National Park Service can secure through donation, exchange, or purchase the rights necessary to maintain park values. In such cases, negotiation with the other landowners is the first step. The Park Service will secure only those rights necessary to meet its management objectives. The Virgin Islands government zoning will be relied upon to the extent feasible, and land use management plans will be coordinated with other government agencies. Cooperative agreements will be used in appropriate cases. Subject to the availability of appropriated funds, fee acquisition will be used if these methods have failed and resource impairment is imminent.

The National Park Service has reanalyzed the park's area. For the proposal, certain tracts along the park boundary have been identified as unneeded because they do not possess special resource values, are not used by visitors, and do not protect other parklands. None of these lands are owned by the federal government, and many of the properties have been developed or subdivided. The following tracts will be deleted from the park under the proposal (also see General Development--Proposal map), a step that requires legislation by the U.S. Congress.

Coral Bay--746 acres on the upper slopes of the valley will be deleted. This strip of steeply sloped land does not contain exceptional natural or cultural resources, does not protect a watershed within the park, and has no visitor use potential.

Cocoloba Village--82 acres in the Fish Bay drainage will be deleted. The site is located at the base of the watershed, and park values have been lost because of a major subdivision development.

Guinea Gut/Susannaberg--102 acres near Centerline Road will be deleted. This site includes private and municipal (St. John solid waste disposal facility, hospital) developments and is at the head of a nonpark watershed.

An area of 171.6 acres along the western park boundary in Battery and Fish Bay guts will be added to the park. It contains comparatively undisturbed natural features and a site on the National Register of Historic Places. Owners of the properties have indicated their intentions to donate their lands to the National Park Service.

A land protection plan is being prepared and will provide more detailed information to supplement this General Management Plan. The National Park Service will be guided by the following priorities in protecting park lands owned by other parties:

- 1) historic resources identified for preservation, outstanding natural areas, and habitat supporting endangered species
- 2) lands slated for development that would be incompatible with park values or that would contain potential threats to park resources
- 3) development sites for visitor use and operational facilities
- 4) general access routes
- 5) general natural area lands

The park's Proposed Management Zoning map will assist in guiding land protection strategies.

Management Zoning

Park lands and waters are placed within management zones and subzones, which reflect the most appropriate uses and NPS management philosophies for specific areas. Zoning is based on the park's enabling legislation, NPS policies, and park resources and their capability to support uses consistent with the park's management objectives. The zones described here are proposed and do not necessarily reflect present conditions. (Management zoning differs from the planning units used to describe visitors' experiences.)

Natural Zone (12,328 acres; 85 percent of St. John park lands). Lands and waters in the natural zone will be managed to conserve natural

resources and processes while accommodating visitor uses and experiences that do not adversely affect the natural systems. No major park developments will be proposed for this zone.

Outstanding Natural Feature Subzone--Lands and waters in this subzone possess unusual intrinsic values. The water portions of the subzone contain major coral reefs, and land areas encompass mangrove stands and salt ponds. These areas will be managed to conserve these values, and public appreciation and interpretation will be emphasized.

Historic Zone (170 acres; 1.2 percent of St. John park lands). The historic zone will be managed to preserve, protect, and interpret cultural resources and their settings. Not all lands with cultural resources will be placed in this zone; only lands containing significant cultural resources that are to be actively maintained will be so categorized. On St. John these include the Annaberg sugar factory and mill; Reef Bay sugar factory, great house, and petroglyphs; Cinnamon Bay plantation; Catherineberg-Jockumsdahl-Hammer farm; Trunk Bay factory; Lameshur plantation and great dunes; and Brown Bay plantation.

Park Development Zone (97 acres; 0.7 percent of St. John park lands). This zone will allot more ordinary parklands to development so as to serve the needs of management and visitors.

Access and Circulation Subzone--Park roads open to the public will be assigned to this subzone.

Recreational Development Subzone--Visitor use nodes along the north shore (including maintenance and storage facilities at Cinnamon Bay) and at Lameshur and Saltpond Bay will be placed in this subzone.

Administrative Development Subzone--This subzone will include park administrative and maintenance facilities at Redhook and Cruz Bay and the proposed NPS research and resources management station at Lind Point.

Residential Development Subzone--Park employee residences at Lind Point, Little Cinnamon Bay, Trunk Bay, Cinnamon Bay, Francis Bay, along Centerline Road, and at Lameshur will be included. Present residences at Trunk Bay and Francis Bay are shown in the natural zone, from which they will be removed.

Special Use Zone (1,939 acres; 13.3 percent of St. John park lands). In this zone NPS administrative control will either be lacking or secondary to that of another agency, government, or private party. The National Park Service will ensure that lands are managed to protect park values through cooperative agreements, understandings, easements, or other instruments. Limited trail access, preservation of natural and historical values, and scenic vistas will be part of this zone.

IMPLEMENTATION

COSTS

Capital and annual operating costs for implementing the proposal are given in Table 11, which compares the proposal with the alternatives.

PHASING

Development work at Hassel Island will be undertaken in the initial phases to make this area, in which the National Park Service has already made a substantial investment, available for public use. At the same time, resource management projects will be initiated to preserve resources from deterioration and to obtain the information needed to guide future resource management.

Projects to improve information/orientation services and to upgrade existing facilities at places such as Hawksnest Bay, Francis Bay, and Centerline Road will then be undertaken. At this time improvements will also be made to the Redhook headquarters and the Cruz Bay operations center.

In the latter phases, facilities at Saltpond Bay will be improved, the road to Lameshur and the facilities there will be reconstructed, the trail at East End will be rebuilt, and the Reef Bay facilities will be upgraded.

COMPLIANCE, MITIGATION, AND DESIGN AND DEVELOPMENT CONSIDERATIONS

Facilities

Existing and proposed beach recreation facilities and some park operations facilities (for example, docks, picnic tables, and changing stalls) are within the coastal high-hazard area and 100-year floodplains (see discussion of flood hazard in the "Affected Environment" section). Because their functions depend on being close to water, they are excepted under NPS guidelines from the restrictions of Executive Order 11988, "Floodplain Management" (see Federal Register, Aug. 23, 1982). Rehabilitation of the existing dockside operations/visitor contact center at Cruz Bay will incorporate methods for minimizing flood damage, as contained in the national flood insurance program's "Floodplain Management Criteria for Flood-Prone Areas" (44 CFR 60.3). Although campground facilities are excepted under NPS guidelines from restrictions on floodplain development, the proposal calls for modifying portions of the existing Cinnamon Bay campground, which will better ensure visitor safety and restore floodplain values to the extent practicable. The park staff will continue to maintain a hurricane preparedness plan to provide for adequate evacuation time and property security in floodplains prior to a hurricane or major storm; the preparedness plan has proven effective in the past.

The essence of the park experience will be available to virtually all visitors, including those with handicaps. Architectural barriers will be removed wherever feasible, and new facilities and programs will be accessible, in compliance with the Architectural Barriers Act of 1968 and the Rehabilitation Act of 1973. In particular, picnic areas and the ocean water at popular beach sites will be accessible on the basis that swimming is a kind of activity especially suited for persons having certain ambulatory handicaps.

New or remodeled structures will be designed to minimize energy consumption, in accordance with Executive Order 12003, "Energy Policy and Conservation." To the extent practical, site and building designs will incorporate concepts included in the NPS "Energy Conscious Planning Guidelines."

Realignments or other improvements to the North Shore Road, Bordeaux Mountain Road, Lameshur Road, or East End Road will be designed in cooperation with the Virgin Islands Department of Public Works, in accordance with Territorial Act No. 806 (see appendix A). All design will be in context with the natural and cultural setting.

Natural Resources

In keeping with Executive Order 11990, "Protection of Wetlands," no wetland areas will be adversely affected to a significant degree by the proposal. Wetland values will be enhanced by continued protection, proposed research, and interpretive programs to improve understanding of wetland values by the public, scientists, and NPS managers.

The National Park Service has reviewed the Virgin Islands coastal zone management program and has informally consulted with the Virgin Islands Department of Conservation and Cultural Affairs, Division of Coastal Zone Management. Based on this contact, the National Park Service believes that the proposal (as well as the alternatives) fully conforms with the territory's coastal management program. The National Park Service will review the final proposal for management of the park for consistency with the territorial program and will submit to the territory a formal consistency determination, in accordance with the 1972 Coastal Zone Management Act.

The proposed rehabilitation of docks at Hassel Island will comply with the permit requirements of section 404 of the Federal Water Pollution Control Act; section 10 of the River and Harbors Act; and the Territorial Trustlands, Occupancy, and Alteration Control Act. Silt screens or other methods will mitigate turbidity during construction and/or dredging and disposal of spoil.

Potable water systems will meet standards set by the Safe Drinking Water Act and territorial regulations. Wastewater treatment will be in accord with the federal and territorial water pollution control acts. The park will cooperate with the territorial government in monitoring threats to park resources addressed in the Territorial Oil Spill Preservation and Pollution Control Act.

The National Park Service will ensure that disposal of its solid wastes, whether at an NPS-operated facility as at present or a disposal facility operated by another party, will meet the requirements of the Resources Conservation and Recovery Act and the Clean Air Act.

As specified in the biological assessment for endangered or threatened species (appendix B), proposed management and development actions are designed to avoid adverse impacts on listed species and to maintain their habitats within the park, in accordance with the Endangered Species Act. The National Park Service has informally consulted with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service in the preparation of the proposal and alternative strategies, and it has been determined that neither the proposal nor the alternatives will significantly affect listed species.

Cultural Resources

All cultural resources will be preserved on site if possible. Any area to be affected by construction, human use, or natural erosion will have a complete inventory of cultural resources (as defined by section 110 of the National Historic Preservation Act), and least-impact management alternatives will be developed from that information. The review requirements in section 106 of the National Historic Preservation Act, as amended, will be accomplished under the terms of the programmatic memorandum of agreement (September 11, 1981) among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers. All undertakings included in this plan have been developed in consultation with the Advisory Council on Historic Preservation and the territorial historic preservation officer following the programmatic memorandum of agreement process and in full compliance with applicable laws, executive orders, and policies. As this plan is implemented, all undertakings that may affect cultural resources will be considered in advance by NPS regional cultural resource specialists to ensure that all feasible planning or design measures are taken to avoid or minimize impairment of the resources. Unavoidable adverse affects will be mitigated by professional data retrieval involving controlled excavation, architectural recording, or other acceptable means. If required, data recovery will be programmed in advance of construction (a minimum of one fiscal year is recommended).

As part of its cultural resource management responsibilities, the National Park Service will conduct parkwide historic resources studies, including surveys of and evaluation of all cultural resources on lands and waters under its jurisdiction. Evaluation is by means of the criteria of the National Register of Historic Places. In addition to this evaluation, the National Park Service has developed an internal list of classified structures that identifies all known historic and prehistoric structures within the national park system. All cultural resources eligible for the National Register must be recorded and/or measured to the level and type recommended by regional cultural resource specialists.

Sites that now exist only as ruins will remain as undisturbed discovery sites. If visitor hazards are present or develop, they will be alleviated

with the least impacts on the resources once the structures are recorded. A priority list for all structures not maintained by the National Park Service will be developed, and historical societies and other interested groups will be sought to form cooperative agreements to maintain them. Deviation from the fixed priority list is not contemplated except in extraordinary circumstances and after consultation between the park and regional office cultural resource specialists.

Parkwide historic structure preservation and cultural resource preservation guides will be prepared by NPS cultural resource specialists in collaboration with the park staff. The guides will provide specific, detailed directions for the day-to-day and cyclic management of cultural resources, with emphasis on schedules and procedures for monitoring the impacts on cultural resources. Historic structures reports will be prepared or updated as required.

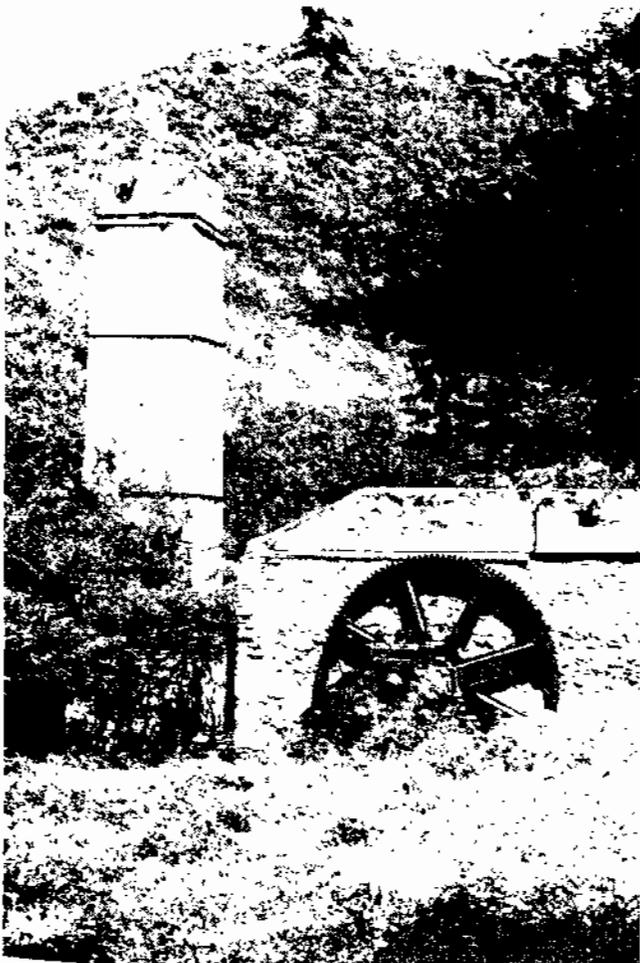
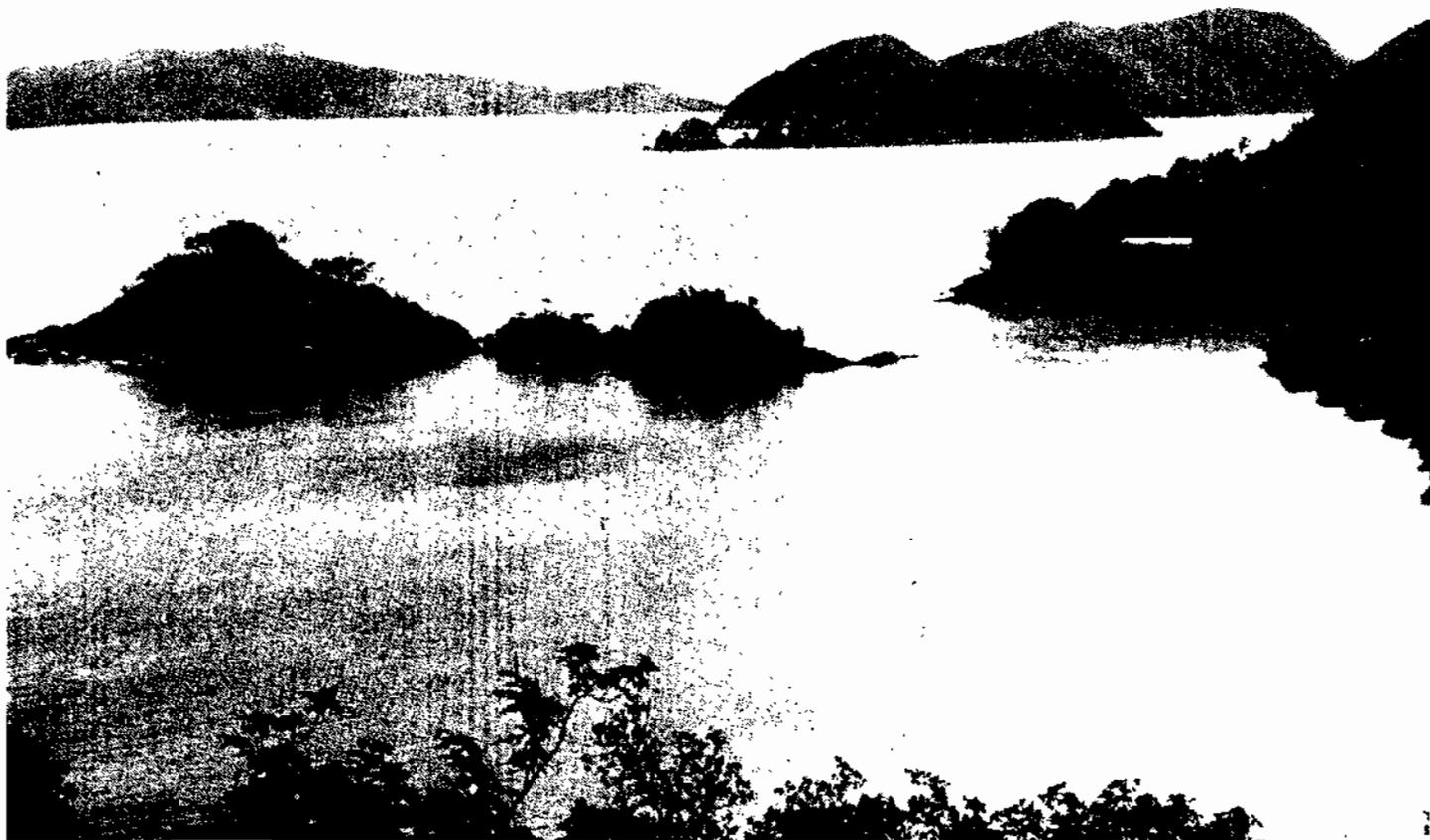
Management of park collections will be guided by an updated scope of collections statement based on the park theme. Collections will be used in a beneficial but nonconsumptive manner, such as for scholarly study or protected display. They will be kept outside flood-hazard areas and in environmentally controlled storage or exhibit areas. Collection preservation guidelines will also be updated. Adequate curatorial storage and work space will be identified in consultation with the NPS regional curator.

Submerged resources will be surveyed to determine the number, the significance, and the level of treatment. In addition, the best management strategy and treatment will be recommended. The Virgin Islands historic preservation officer will be notified and consulted regarding the results of this survey.

The type and extent of property rights and agreements negotiated by the National Park Service will be carefully considered to ensure the preservation of historic structures and archeological sites. Cultural resources coming under NPS purview through cooperative agreements will be evaluated to determine their eligibility for the National Register of Historic Places. Alternatives for these cultural resources, and also for newly discovered ones, will be evaluated in consultation with NPS regional cultural resource specialists.

Park publications will not identify location details of cultural resources susceptible to degradation from unsupervised visitor use.

AFFECTED ENVIRONMENT



THE PARK'S REGIONAL SETTING

The U.S. Virgin Islands lie in the tropics, at 18° latitude north of the equator (southernmost Florida is at 25° north). To the west is the U.S. Commonwealth of Puerto Rico, and to the north are other islands of the Virgin Islands group that belong to the United Kingdom and that are close enough to be seen from the park. The three largest U.S. islands are St. Croix (84 sq mi), St. Thomas (28 sq mi), and St. John (19 sq mi).

In this section, the park's setting is described, including an overview of the natural environment, the islands' prehistory and history, and the regional socioeconomic environment. Then the natural and cultural resources, visitor use, and park facilities are described for Hassel Island and St. John Island, respectively. The last section describes parkwide operations and management, landownership, agreements, and NPS jurisdiction.

NATURAL ENVIRONMENT

Geology and Soils

Hassel Island and the bulk of St. John are basically volcanic in origin, with the rock being very hard and impermeable, and much of it having been metamorphosed by volcanic intrusions and faulted. Soils derived from this rock are typically shallow (10-20 inches), are on steep slopes, and are moderately permeable. Because of the steep topography of St. John and St. Thomas, land that is capable of supporting development and agriculture is primarily limited to coastal alluvial areas.

Climate

The Virgin Islands are famous for their dependably warm, tropical climate. There is a remarkably small variation in temperature.

Normal winter temperatures range from the low 80s during the day to the low 70s or high 60s at night; summer temperatures range from the high 80s, or occasionally the 90s, during the day to the mid 70s at night. It never gets much below the mid 60s. Humidity is high, averaging 80 percent, which is uncomfortable in combination with the high summer temperatures. High humidity and temperatures are partially alleviated by an almost constant easterly breeze, part of the trade winds.

Annual precipitation for St. John and St. Thomas ranges from 30 to 60 inches, depending on location. Most of this precipitation occurs as frequent, brief showers. It rains throughout the year, with October and November being the wettest months, and February and March the driest. Despite the precipitation, much of St. John and St. Thomas are very dry owing to rapid evaporation, transpiration, and runoff. Consequently, localized drought is common, as reflected in the dry vegetation types covering much of the islands.

Small-craft warnings are issued for park waters by the U.S. Coast Guard an average of 100 days per year.

Air quality in the Virgin Islands is generally good because of the lack of major pollution sources and the dispersing effect of the trade winds. Virgin Islands National Park has been designated a class I air quality area under the Clean Air Act.

Hurricanes and Flooding

Severe wind and rain storms are infrequent but expected events in the Virgin Islands. The islands lie within a broad corridor of tropical storms in the Caribbean and have a history of occasional hurricane strikes. The peak of the season of potential hurricanes extends from June through October.

Although high winds from tropical storms have caused considerable destruction, storm damage is more common from flooding that accompanies torrential rains and storm surges. The highest surge estimated for Charlotte Amalie was 12 feet, associated with an 1867 hurricane (Bowden 1974). Most recorded hurricanes have caused surges of 3 feet or less.

Inland flooding is not limited to hurricane conditions. Other tropical storms may bring torrential rains, and slow-moving cold fronts may sustain rains for several days. Because of the steep topography of the islands, rapid flooding can occur in the guts.

In October 1980, the Federal Emergency Management Administration issued flood insurance rate maps outlining the estimated 100-year and 500-year floodplains and the coastal high-hazard area for the U.S. Virgin Islands.

Flood levels are general estimates based on storm surges and inland flooding. According to the maps, the coastal high-hazard area on St. Thomas and St. John is limited to a narrow margin less than 25 feet wide along the shoreline. The 100-year floodplain extends to the 5-foot elevation on the north side of the islands and the 6-foot elevation on the south. Park facilities within floodplains are described in this chapter under the headings of Hassel Island and St. John Island.

Water Resources

Fresh water is very limited in the Virgin Islands. Water for human consumption, including that for park facilities, comes primarily from three sources: roof or hillside catchment and cistern systems, wells, or by barge from Puerto Rico. Desalination of sea water is used for public water systems and some private developments.

Biological Resources

Plant Life. The terrestrial vegetation on St. John and Hassel islands is almost entirely second growth, a result of the long history of human

occupation in the Virgin Islands. There is little information on the pre-Columbian plant cover; however, the original natural vegetation had been changed by Arawak agriculture before Europeans arrived. Beginning in the 17th century, Danish colonizers cleared land extensively for plantation agriculture and introduced exotic plants and animals. The only sites that may have escaped major man-caused disruption were those unsuitable for agriculture or development, including mangroves, salt ponds, beach strands, and rock outcrops. These sites support distinctive vegetation types today (Weaver and Woodbury 1982). Natural disturbance to vegetation is periodically caused by hurricane damage; wildfires do not occur.

A research project is underway to identify and map plant communities and rare species (Weaver and Woodbury 1982). A tentative vegetation map for St. John was prepared by William Robertson in 1957 and is the source of vegetation types referred to in this document. References to Hassel Island's vegetation are from a 1982 map produced for the National Park Service by Peter L. Weaver.

In their preliminary investigations of the vegetation on St. John and Hassel islands, Weaver and Woodbury observed that recovery of the original vegetation is virtually impossible because of the extirpation of some native species, the tenacity of many exotic plants, grazing pressure from feral livestock, and extensive soil erosion from historic land uses. Disruption of the original soil cover has reduced the moisture-holding capacity of the islands' soils to the extent that most of the current vegetation probably consists of much drier types than were present at the time of European discovery.

Despite the high degree of disturbance, undeveloped areas of the park are slowly succeeding toward mature communities, some of which may closely resemble pristine habitats. For this reason Virgin Islands National Park has been recognized as an international biosphere reserve under UNESCO's Man and the Biosphere program. The biological value of the parklands lies not only in their function as a refuge for remnant native species, but also in the opportunity for long-range management to restore a stable vegetation and soil cover as a semblance of the original island ecosystems (USDA, Forest Service 1964; Herrmann and Baron 1980). In this respect, the park is being viewed as a management model by several Caribbean countries.

Animal Life. Native land mammals are limited to six species of bats. Introduced mammals include two species of rats, house mouse, Virginia white-tailed deer, domestic animals (dogs, cats, burros, goats, and others), and the Indian mongoose. Of these, the mongoose, introduced in the late 1800s to control rats, is perhaps the most destructive; it is responsible for the reduction, and in some cases the extirpation, of several native ground-nesting birds and reptiles.

St. John has about 95 species of breeding native birds. DeBooy's rail, formerly endemic to the Virgin Islands, is now extinct, apparently because of mongoose predation (Bond 1974).

There are 17 species of native terrestrial reptiles and amphibians on St. Thomas and 13 on St. John. Almost all are endemic to the Virgin Islands and Puerto Rico. One native ground lizard, Ameiva exsul, has been severely reduced on St. John, apparently from mongoose predation. A remnant population remains in the southeastern portion of the park.

In compliance with section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service and the National Marine Fisheries Service were contacted about protected species potentially within the area affected by the park's general management plan. The species identified by the agencies are listed below, and the current status of each is given in appendix B.

Endangered Species

Humpback whale (Megaptera novaeangliae)

Sperm whale (Physeter catodon)

Finback whale (Balaenoptera physalus)

Brown pelican (Pelecanus occidentalis)

Peregrine falcon (Falco peregrinus tundrius)

Hawksbill turtle (Eretmochelys imbricata)

Leatherback turtle (Dermochelys coriacea)

Olive Ridley turtle (Lepidochelys olivacea)

Virgin Islands tree boa (Epicrates monesis granti)

Threatened Species

Green turtle (Chelonia mydas)

Loggerhead turtle (Caretta caretta)

PREHISTORY AND HISTORY OF THE VIRGIN ISLANDS

Prehistoric Settlement

Aboriginal occupation of St. Thomas, and presumably of St. John, is known from about the fifth century B.C., with sites of this age having been found on St. Thomas, but so far none on St. John. These people had a hunting, gathering, and fishing culture.

These earliest inhabitants were displaced about the first century A.D. by Arawak people, who migrated from South America. On St. John Island, sites associated with the Arawaks' first occupation have been found at Cruz Bay and Coral Bay. Subsistence for the Arawaks was based primarily upon agriculture, with some irrigation.

The Arawaks were in turn displaced about A.D. 1000 by Carib people, who had also migrated from South America. Caribs based their subsistence upon fishing, intensive cultivation of root crops, and hunting.

Despite the prehistoric use of St. Thomas and St. John islands as places of aboriginal occupation and habitation, Columbus found them to be uninhabited in 1493 when he discovered them on his second voyage to the New World. Afterward, there was no reestablishment of aboriginals on the Virgin Islands.

Early European Settlement

Although Columbus claimed the Virgin Islands for Spain in 1493, successful settlement by Europeans did not occur until much later. During the interim, the islands were visited by Spanish, French, English, and Dutch explorers and freebooters. Finally, in 1671, the Danish West Indies Company was granted a charter from the king of Denmark, and in 1672 they established a permanent colony on St. Thomas Island. This led to Danish control.

About 1715, a plantation named Orkan Hullet was established on Hassel Island, along with a few other miscellaneous structures and a gun battery. This served as part of the overall defenses for St. Thomas Harbor.

About 1717, a company of planters, Negro slaves, and soldiers traveled to St. John Island to establish a permanent settlement.

The colonies on St. Thomas and St. John islands prospered, beginning with 39 plantations surveyed and assigned in 1720, then 87 in 1728, and 109 in 1733. (Only one-half to three-fourths of the plantations surveyed and assigned were ever established.) In November 1733, a general slave revolt occurred on St. John Island. Plantation owners were killed or forced to flee. The slaves controlled the island until the following April, when French mercenaries brutally put the rebellion down. The plantation owners then reestablished themselves.

Interim British Occupations

The sugar and cotton industries of St. John Island prospered during the rest of the 18th century, but the sugar industry declined during the first years of the 19th century. This was partially due to the French Revolution and the resulting Napoleonic Wars, which disrupted European trade. During this worldwide struggle between France and Great Britain, the British twice seized the Virgin Islands from Danish control to prevent the French from using the islands' resources. The first time was in April 1801, and Great Britain held them for eight months before Denmark reclaimed them. The second time was from December 1807 until April 1815. During both occupations, the British constructed fortifications on St. John and Hassel islands. The islands were returned to Danish control in 1815.

U. S. Interest

In 1867 the United States sought to purchase St. John and St. Thomas islands in an effort to establish a naval presence in the Caribbean, but

this attempt failed. Finally in 1917, the U.S. government purchased the entire Danish Virgin Islands for \$25 million.

REGIONAL SOCIOECONOMIC DESCRIPTION

Demography

As a result of migrations and national interactions, the people of the Virgin Islands are composed of many different races and geographic origins, including native Virgin Islanders of African descent, Puerto Ricans, U.S. continentals, immigrants from the West Indies to the south, and others from throughout the world. The population is predominantly black (72 percent), with whites comprising the second largest group (17 percent) and all other races the remainder. Native-born residents make up 42 percent of the total population; another 12 percent have been residents for more than 15 years.

The population of the Virgin Islands has been growing rapidly in recent years, and has been projected to continue, as shown in table 1.

Table 1: Population Figures and Estimates

<u>Year</u>	<u>St. John</u>	<u>St. Thomas</u>	<u>St. Croix</u>	<u>Totals</u>
1960	925	16,201	14,973	32,099
1970	1,924	37,285	35,942	75,151
1975	2,509	47,825	49,647	99,981
1983 (est)	3,324	62,683	69,106	135,113
1990 (est)	4,017	86,431	94,630	185,078
2000 (est)	4,750	91,500	107,500	203,750

Source: Bureau of Research and Statistical Services, Department of Health, Virgin Islands Planning Office, and Department of Conservation and Cultural Affairs, "Territorial Comprehensive Outdoor Recreation Plan of the U.S. Virgin Islands, 1980-1985," 1980.

The population on St. Thomas Island is concentrated in the urban area at Charlotte Amalie, around the harbor. The ridge above Charlotte Amalie and the northwestern shore of the island are also populated.

In October 1982 there were 40 residents on Hassel Island, 31 of whom occupied 16 NPS structures under temporary use permits; the other nine lived in five private residences.

St. John is less populated than St. Thomas, with an average density of 120 persons per square mile. Most of the residents live in Cruz Bay (on the western tip of the island) and Coral Bay (on the eastern shore). About half the residents are native born or have lived on the islands 15

years or more; 35 percent are U.S. continentals (mainly retirees). The present growth rate is projected to continue. Based on building permits, residential growth is concentrated south of Cruz Bay in Great Cruz Bay, Fish Bay, and Chocolate Hole. Another development has begun on the slope above Coral Bay.

The educational level on St. John is higher than the norm for the Virgin Islands: 43 percent have a college degree or at least some college, and 56 percent have at least high school educations.

Demand for outdoor recreation by Virgin Islanders has increased. Peak use by residents occurs on Sundays all day and on weekdays from 4 p.m. to 9 p.m. Swimming, snorkeling, beach use, picnicking, baseball, and basketball are all popular. Organized recreational programs include mainly those related to school, church, and community youth groups.

General Economy

Before the 1950s, the Virgin Islands economy was primarily agrarian, but this has now changed. Tourism is the dominant economic activity, and existing primary industries include oil refining, aluminum processing, watch assembly, woolen processing, and construction trades. Local government jobs have also expanded in recent years.

Material costs are extremely high because most items are shipped from the United States or Europe; goods for St. John must then be barged from St. Thomas. This expense is reflected in high construction costs.

Land on the northern coast of St. John sells for \$25,000 to \$100,000 per acre; land on the southern coast ranges from \$15,000 to \$75,000 per acre. In Cruz Bay, an acre costs approximately \$35,000.

Tourism

As the dominant economic activity in the U.S. Virgin Islands, tourism is actively promoted, and this is expected to continue. Freeport shopping attracts tourists, as do water sports, the scenery, the national park, and the climate. Facilities operate near capacity from December to April and also in July and August; slow times are May/June and September/October. This pattern parallels visitor use in the park, and park facilities are open year around (an analysis of the park's effect on the economy of St. John and St. Thomas appears in table 2). Numbers of tourists and amounts of expenditures are shown below:

<u>Year</u>	<u>Tourists to Virgin Islands</u>	<u>Tourist Expenditures</u>
1960	176,000	\$ 35,000,000
1965	348,000	\$ 54,000,000
1968	814,000	\$101,000,000
1970	960,000	\$107,000,000
1973	1,173,000	\$133,000,000
1980	1,174,000	\$175,000,000

Table 2: Economic Impact of Virgin Islands National Park
on St. Thomas and St. John Islands
(1980 data)

	<u>Direct</u> (000)	<u>Indirect</u> (000)	<u>Total</u> (000)
<u>Park Costs</u>			
Operations and maintenance	\$1,250		
Interest on federal investment in park properties		\$ 670	
Taxes lost on property removed from local government rolls		176	
Total	<u>\$1,250</u>	<u>\$ 846</u>	<u>\$ 2,096</u>
<u>Park Benefits</u>			
Park outlays to local economy	\$ 830		
Park concessioner outlays to local economy	2,500		
Imputed impact on tourism		\$12,061	
Imputed impact on boat industry		3,000	
Imputed impact on increased land values on St. John, as an indicator of increased economic growth on St. John		<u>\$ 5,000</u>	
Total	<u>\$3,330</u>	<u>\$20,061</u>	<u>\$23,391</u>

Source: Economic Impact Analysis for the Virgin Islands National Park,
Island Resources Foundation, 1981

Note: Reduced to ratios, the above tabulation indicates that

the benefit/cost ratio of the park on the local economy, based on direct costs and benefits only, is 2.7 to 1

the benefit/cost ratio of the park on the local economy, based on indirect (imputed) costs and benefits only, is 23.7 to 1

total benefit/cost ratio of the park on the local economy, based on all costs (direct and indirect), is 11.1 to 1

These ratios are, of course, approximations. It would take very little change in assumptions to alter them substantially--in either direction. In sum, however, they support the proposition that Virgin Islands National Park even if measured on only a dollar basis, plays a very significant role in the economy of St. Thomas/St. John--well beyond the costs incurred in its operation and maintenance.

Most visitors to the Virgin Islands arrive first on St. Thomas Island, either by plane or cruise ship. In 1980, 691,000 tourists came by ship, and some 500,000 came by air. Because St. Thomas has the major attractions--shopping, accommodations, restaurants, boat rentals, an undersea observatory, historic sites, a race track, and beaches--many tourists tend to focus their activities around the Charlotte Amalie urban area and some never visit the park.

To get to St. John Island, visitors can either go on organized tours or by public taxi and ferry. The ferry leaves from Redhook at the east end of St. Thomas and in 20 minutes docks at Cruz Bay on the west end of St. John. Caneel guests go from Redhook straight to Caneel Bay on St. John. Cruise ships also anchor off St. John Island and transfer their passengers directly to the shore. Park visitors can also get to St. John by private or rental boat (with or without crew) from St. Thomas, Puerto Rico, or the British Virgin Islands.

Almost all park visitors are Americans, two-thirds of them from the U.S. mainland (particularly the East Coast) and about one-third from the Virgin Islands (mainly St. John) and Puerto Rico. Foreign visitation is 8 percent of the total.

Most of the park visitor use is concentrated on St. John Island, and use patterns and facilities are described later. According to the "Virgin Islands Household Survey," prepared in 1978 by the Economic Policy Council (U.S. Virgin Islands, Office of Policy Planning and Research), St. John residents support the promotion of tourism on their island, feeling they should get a bigger share of the Virgin Islands total. But they would also like to see limits on automobile traffic and on the number of hotel and condominium developments. There is a desire to have more tourists stay overnight because overnighters spend more than do cruise ship passengers. Residents would also like to see other industries expanded and agriculture reestablished.

Boating Industry

Boating in the waters of the U.S. Virgin Islands has grown rapidly from 1,583 registered boats in 1975 to 2,644 as of December 1980 (Island Resources Foundation 1981).

In 1980, 232,000 persons entered park waters by means of charter boats (crewed and without), of which there were 399 operated by 11 companies. Gross annual income for both types of charter boat operations approximated \$17.5 million.

Prices for crewed boats ranged from \$1,500 a week for a two-passenger boat, which includes meals, snacks, beverages, wine, and use of snorkel and fishing equipment. Bareboats ranged from \$350 a week for a two-passenger boat to \$1,500 for up to six.

Transportation

Land Transportation. On both St. Thomas and St. John, fleets of privately owned taxis are available to transport visitors and residents. Some of these are modified trucks with bench seats that can carry 20 or more persons. Although the taxis circulate regularly, few are on schedules. On St. John, there are over 40 taxis and six tours operating, employing over 100 persons and hauling 800,000 people per year. Revenues generated in 1981 were \$1.6 million. Group fares are usually nominal between major destinations (Charlotte Amalie to Redhook is \$2; Cruz Bay to Cinnamon Bay is \$2.50 to \$5.00, depending on the number in the group), and slightly more to farther, lesser used sites (Cruz Bay to Saltpond Bay is \$7 to \$11, depending on number in group). It may be difficult for passengers to find a way back from more remote sites after the cab has dropped them off. Tours, some of which include snorkeling, are also provided, at rates from \$10 to \$20 per person.

The transportation industry has a tradition of strong interest in programs affecting tourism.

Water Transportation. Two private companies provide public ferry service across the channel between Redhook on St. Thomas and Cruz Bay on St. John. One-way fare is \$2; discounts are available on commuter books and for students. In 1981, the ferries transported about 600,000 persons; revenues were \$900,000 (see appendix C).

A ferry service operated by the public ferry companies also provides tours to St. John for cruise ship passengers. Some tours include ferry service between the NPS docks at Redhook and Cruz Bay. During 1981 more than 400,000 persons were carried.

Water taxis are based on St. Thomas and are also available for private hire, usually at rates of \$20 per hour.

Transportation the short distance from Charlotte Amalie to Hassel Island is available upon individual arrangement.

Territorial Land Management

The U.S. Congress has conferred certain responsibilities for self-government on the residents of the Virgin Islands by means of an organic act. The Office of Territorial Affairs under the secretary of interior has an oversight role in administering the act. Other federal agencies also provide programs, much as they do in the continental states. Virgin Islanders are citizens of the United States, but they do not vote in national elections. They have an elected representative in the House of Representatives, but the delegate can only vote in committee. Residents pay income taxes under a mirror federal income tax system, with the same procedures as for mainland residents, but all monies collected are retained by the territorial government.

The territorial government has implemented zoning regulations. For St. John Island, most of the acreage is zoned for public use, reflecting the

presence of the national park. The remainder is primarily zoned for single- or multiple-family residential developments. Cruz Bay is zoned for business (see the Government Zoning--St. John Island map).

The Virgin Islands coastal zone management program controls the development of lands, along with zoning and other laws. Although federal lands are excluded from the program, management of them is to be consistent with the local program.

The coastal zone management program has made the following recommendations for Hassel Island:

Because of [Hassel Island's] close proximity to Charlotte Amalie . . . development potential is high. Presently the island serves to preserve the visual integrity of St. Thomas Harbor. The maintenance of Hassel Island in its present state is essential to the preservation and enhancement of the visual quality and character of the harbor. . . . Water dependent uses such as reviving and restoring Creque's Boat Yard or the mooring of small boats in Careening Cove should be allowed.

Under the Department of Conservation and Cultural Affairs, a five-year comprehensive outdoor recreation plan has been developed.

OTHER REGIONAL RECREATION RESOURCES

Virgin Islands National Park is one of three units of the national park system located in the U.S. Virgin Islands. Christiansted National Historic Site, on the island of St. Croix, was the Danish colonial capital from the early 1800s to 1916, and it includes several government buildings, among them a customs house/post office and Fort Christianvaern. Buck Island Reef National Monument, just north of the island of St. Croix, is a small tropical island with a sand beach, lagoon, and fringing coral reef. Recreational visitation to Christiansted in 1982 was 99,531 and to Buck Island Reef, 49,915. The Park Service also operates San Juan National Historic Site in Puerto Rico, which consists of two massive Spanish colonial forts; visits there in 1982 were 1,508,333. (For comparison purposes, there were 673,480 recreational visits to Virgin Islands National Park in 1982.)

Other federally managed areas in the Virgin Islands include a wildlife refuge, bird rookery, and bird sanctuary, all of which are under the jurisdiction of the U.S. Fish and Wildlife Service. The refuge is Green Cay off the north shore of St. Croix at Christiansted. The rookery is composed of a triangular area of islands and reefs on the southeast tip of St. Thomas Island. The sanctuary is on Buck Island, which is a part of the Capella Islands south of St. Thomas Island.

The Virgin Islands territorial government has established a conservation area called Lagoon Point on St. John Island along the Coral Bay shore near Calabash Boom. In addition Great Britain has established Mount Sage National Park--a rain forest preserve--on nearby Tortola Island and is in the final stage of developing an eight-unit park system in the British Virgin Islands.

HASSEL ISLAND

NATURAL RESOURCES

Hassel Island is a rocky, cactus-scrub covered island lying in St. Thomas harbor off Charlotte Amalie. It is separated from the mainland and the city of Charlotte Amalie by 400 feet of water. This island is a north-south trending ridge 1 mile long and 2,000 feet wide with steep side slopes. The island ridgeline peaks at its extremities; the southern peak, Cowell's Battery, is the highest point on the island, at 267 feet above the harbor. NPS docks at Hassel Island are in the coastal high-hazard area (i.e., subject to wave action in a 100-year flood) according to the October 1980 flood insurance rate maps. Historic structures at the Royal Mail Inn and Creque's Marine Railway are within the 100-year floodplain.

There are no permanent streams on Hassel Island and no natural surface storage except for brackish or hypersaline salt ponds.

Some residents practice open burning, creating smoke.

HISTORICAL OVERVIEW

Following the second British occupation, Hassel Island (then the peninsula Estate Orkanhullet) became the focal point for a variety of commercial activities. The Hassel family had by 1806 a careening wharf and bridge at Careening Cove that may have been built before the first British occupation. In 1840 the Royal Mail Steam Packet Company, a major British company shipping between Europe and the Caribbean, chose Hassel Island for its center of operations. The company built a dock, warehouse, machine shop, and other support facilities on the island; these facilities were used until 1885.

Also in 1840, a group of St. Thomas businessmen formed the St. Thomas Marine Railway Company for the purpose of hauling boats out of the water for repairs. The next year they purchased land on Hassel Island to construct the railway and completed test runs in 1843. (As Creque's Marine Railway, portions remained in operation into the 1960s.)

Hassel Island was originally connected to St. Thomas by a narrow land strip, and early settlers placed a fence across the land connection so the peninsula beyond would serve as a livestock common. The neck of land was excavated in 1865 to create a boat channel.

Over the ensuing years, additional companies established docking and warehouse facilities on Hassel Island. Major ones were the St. Thomas Dock, Engineering and Coaling Company (Broensted and Company), the Hamburg American Line, and the East Asiatic Company. Between 1917 and 1931, the U.S. Navy established and maintained a station on the island; the station was reactivated during World War II and used until 1947. A signal station at Cowell's Battery was used until the late 1960s.

CULTURAL RESOURCES

Prehistoric Archeological Sites

No archeological survey has been conducted on Hassel Island. The territorial archeologist has found evidence of pre-Columbian occupation near some of the existing docks. Some of the residential, military, and industrial sites may be built upon or near archeological sites.

Historic Structures

Today all of Hassel Island is on the National Register of Historic Places. It is nationally significant in terms of 18th, 19th, and 20th century historic archeology, architecture, commerce, engineering, industry, military, and transportation. The nomination forms mention several resources, including those listed on the Hassel Island Cultural Resources map. The most important structures are described in table 3.

Cultural Resources Adjacent to Hassel Island

Charlotte Amalie historically has been the center of governmental, military, and commercial activity for St. Thomas Island, and at times (including today) for St. John and St. Croix islands. The town and adjacent countryside contain archeological and historical districts along with individual National Register sites. The most important of these is Fort Christian, which has been designated as a national historic landmark; today it houses a museum and a prison. Fortifications on Hassel Island were defensive lines for this fort. Harbor facilities and warehouses were historically located in the town of Charlotte Amalie (where some remain in use), as well as on Hassel Island. An example on Hassel Island is the Hamburg American Line wharves and warehouse, with administrative offices in Charlotte Amalie. Thus the resources of Hassel Island and Charlotte Amalie complement one another.

VISITOR ACTIVITIES AND DEVELOPMENT

Virtually no use now occurs on Hassel Island. Occasionally a youth group camps near the Garrison House dock. Both inspection and interviews indicate the island has little or no appeal for beach use or snorkeling. Permitteds and inholders now occupy quarters on the island. Tours are taken infrequently to Fort Willoughby, and some persons apparently hike up the steep trail to Cowell's Battery. There are no park facilities at the present time.

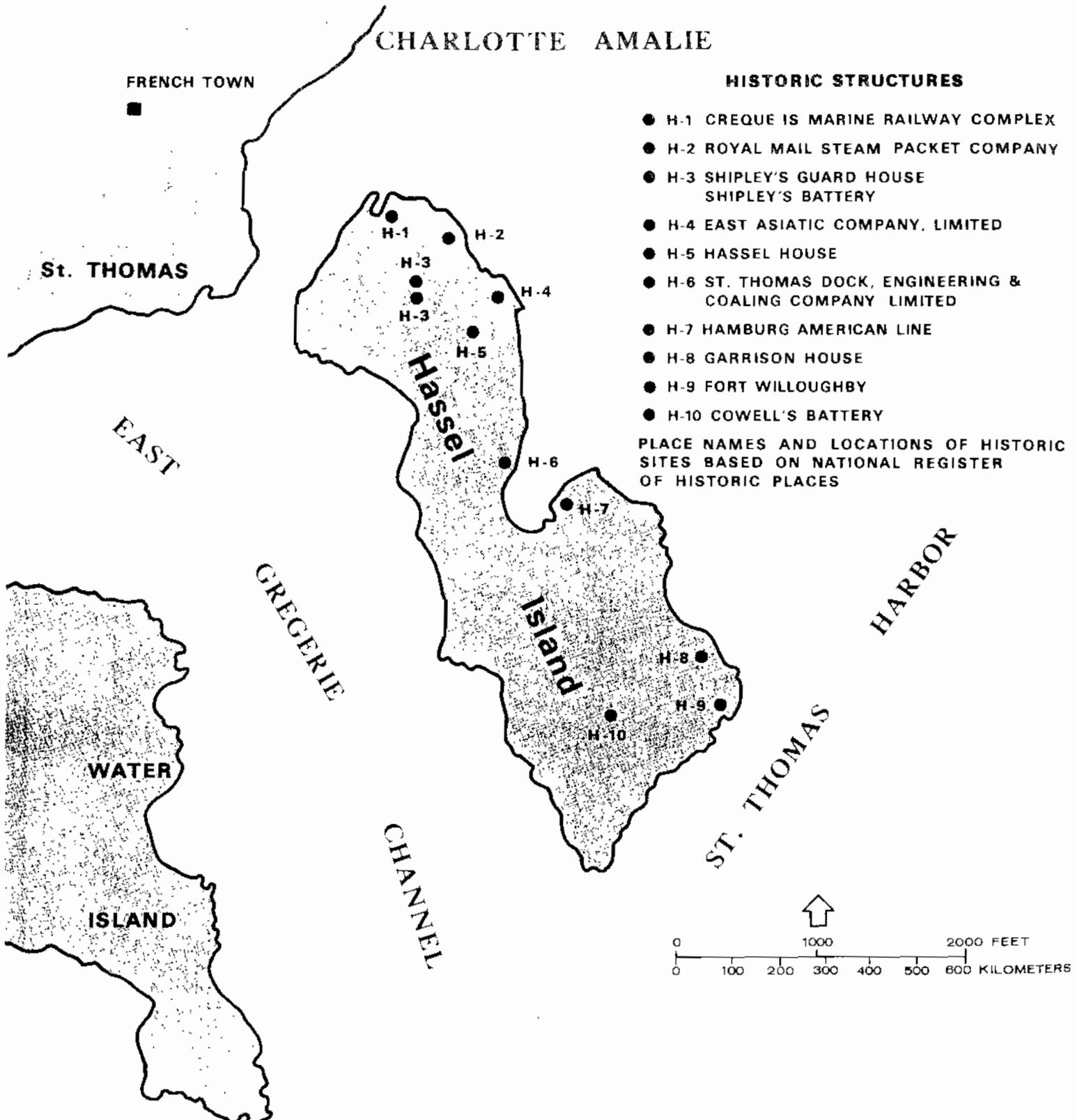
CHARLOTTE AMALIE

FRENCH TOWN

HISTORIC STRUCTURES

- H-1 CREQUE IS MARINE RAILWAY COMPLEX
- H-2 ROYAL MAIL STEAM PACKET COMPANY
- H-3 SHIPLEY'S GUARD HOUSE
SHIPLEY'S BATTERY
- H-4 EAST ASIATIC COMPANY, LIMITED
- H-5 HASSEL HOUSE
- H-6 ST. THOMAS DOCK, ENGINEERING &
COALING COMPANY LIMITED
- H-7 HAMBURG AMERICAN LINE
- H-8 GARRISON HOUSE
- H-9 FORT WILLOUGHBY
- H-10 COWELL'S BATTERY

PLACE NAMES AND LOCATIONS OF HISTORIC SITES BASED ON NATIONAL REGISTER OF HISTORIC PLACES



CULTURAL RESOURCES Hassel Island

VIRGIN ISLANDS NATIONAL PARK

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

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Table 3: Historic Resources, Hassel Island

Reference Number ^a	Name and Description of Resource
H-1	<u>Creque's Marine Railway Complex</u> --remains of a 156-foot railway, 200-foot pier, repair shop, winch house, residence, and storage buildings. These facilities were originally built in the 1860s and were used until the 1960s. Boats and ships of ever-changing types and styles (sail, steam, war, merchant, passenger, and other) frequented the adjoining harbor; a variety of these were repaired at this facility. Today the vacant marine yard has a 60-foot-wide masonry wet dock, two parallel 200-foot-long railways, a 30-foot cradle, an addition to the repair shop, the ruins of the winch house/residence, and an iron cistern. These are in states of disrepair to disintegration. This site illustrates 19th and 20th century commercial development in the Danish West Indies.
H-2	<u>Royal Mail Steam Packet Company, Ltd.</u> --a commercial venture that operated on Hassel Island from 1841 to 1885. The company's facilities consisted of wharves, a cistern, warehouses, office buildings, and a seawall. Most of these historic structures were later incorporated into the Royal Mail Inn, which itself is now abandoned. Additional construction overlies historic structures, and there are modern intrusions such as a swimming pool. Despite these, the site has potential for the interpretation of the commercial history of the Virgin Islands. The many buildings of the site are in good enough condition to be adaptively used for park purposes.
H-3	<u>Shipley's Guardhouse and Battery</u> --a complex constructed on the north crest of the island during the first British occupation of 1801-1802, consisting of a guardhouse, storerooms, a casemated magazine, flagstaff, palisades, and five-gun platform. Today only ruins remain. These fortifications, along with a few on St. Thomas and St. John islands, are the only ones from the Napoleonic Wars on land owned by the United States.
H-4	<u>East Asiatic Company, Ltd.</u> --a commercial venture that began operations in 1903 on Hassel Island. By 1905, it had completed a coaling depot on Hassel Island and created the Danish West India Company to manage its interests in St. Thomas. Operations were transferred to mainland St. Thomas after 1915. Today only traces of the dock remain, creating a boating hazard, and only a portion of the original seawall. Other portions of the coaling station have been incorporated into the surrounding structures. The ruins are not stabilized. This site illustrates 20th century commercial development of the Danish West Indies.
H-5	<u>Hassel House</u> --a two-story rectangular structure that now consists only of rubble walls. The building was constructed before 1840 for use by the Hassel family. Today the north and east walls of the house and the front terrace form part of the cistern and catch basin used by the Royal Mail Inn.

Note: All resources are on the National Register of Historic Places.

^aSee Hassel Island Cultural Resources map.

- H-6 St. Thomas Dock, Engineering and Coaling Company, Ltd.--a commercial venture that occupied a site originally owned by Broensted and Company (a Virgin Islands and Danish financed concern that purchased the site from the heirs of James Hassel, Jr., in the 1870s). By 1881 Broensted and Company had constructed a coaling wharf, a large warehouse, a cistern, and other facilities. The company ceased operation in 1907 on Hassel Island, and the site was taken over by the St. Thomas Dock, Engineering and Coaling Company in 1910, and operations continued until after World War I. Today the warehouse and cistern stand in a ruined condition. Piling stubs create a boating hazard. The site is another representation of 20th century commercial development of the Danish West Indies.
- H-7 Hamburg American Line--a shipping line that began operations in 1873 on St. Thomas. At its zenith it included an 8-acre site on Hassel Island on the south shore of Careening Cove. This site contained a coaling depot, wharves, warehouse, a marine railway, and cistern. Today the cistern remains, along with ruins of the railway and warehouses. They represent 19th and 20th century commercial development in the Danish West Indies.
- H-8 Garrison House--a magazine built during the second British occupation of 1807-1815. The interior was greatly altered in the 1860s, but portions of the exterior contain some of the original structure. Recent restoration work has been done. The Virgin Islands government owns this resource.
- H-9 Fort Willoughby, or Prince Frederik's Battery--a battery constructed by the Danes in 1779. First named Prince Frederik's Battery, it was taken over by the British during their two occupations and renamed Fort Willoughby. The gun battery consisted of a parapet wall, gun platform, guardhouse, small magazine, storeroom, troops' sleeping quarters, cistern, and a structure that served as privy, storeroom, and kitchen. Today the battery is in ruins, but in the 1950s-1970s, some preservation and stabilization work was undertaken. This site represents both the Danish and British military presence on the island. The Virgin Islands government owns this resource.
- H-10 Cowell's Battery--a gun platform and parapet wall. These remain in good condition. A signal station has been constructed using a portion of the south wall. The Virgin Islands government owns this resource.

ST. JOHN ISLAND

NATURAL RESOURCES

The island of St. John, where the bulk of the park is located, is about 9 miles long and 5 miles wide. It is extremely rugged and mountainous (73 percent of the island's land surface has slopes steeper than 20 percent). A central east-west trending ridge forms the backbone of the island, with several prominent spur ridges extending southward. One of the spur ridges, Bordeaux Mountain, is the highest point on St. John (1,280 feet above sea level). The shoreline is made up of rocky promontories or sheltered coves containing scattered mangrove stands or beaches of coral sand or cobbles and gravel.

Biological Resources

The park has three main communities--coral reef environments, other marine environments, and terrestrial environments. Understanding the ecological interaction of these communities is critical in managing the natural resources of the park. As shown on the Ecological Cross Section, the stability and health of upland communities is integral to maintaining the stability and health of coral reefs and other marine life. A decrease in the ability of the vegetation on the island's slopes to control runoff and soil erosion, an increase in polluted effluent from upland sources, or a decrease in the mangrove/salt pond system's ability to filter upland runoff would jeopardize downslope systems.

Terrestrial communities on St. John were described in the section on the park's regional setting. Marine communities off St. John fall generally into four types: algal plains, coral reefs, seagrass beds, and beaches.

Algal plains occur on the offshore perimeter of the park in water 80 to 100 feet deep. These areas are relatively uniform and infertile tracts of carbonate-producing algae and brushy seaweeds. There are no apparent threats to algal plains in the park.

Coral reefs occupy shallower areas where a narrow range of requirements of substrate, light penetration, water temperature, salinity, available oxygen, and water currents are met. The coral reef is a complex biological colony that provides nursery, cover, and feeding habitat for numerous fish and invertebrate fauna, including such sport and commercial species as spiny lobster and yellowtail snapper.

Because of the restricted environmental conditions required to support coral growth, coral reefs are very susceptible to increased turbidity, siltation, nutrient overloading, or other water pollutants. Consequently, ill planned dredge and fill operations or upland runoff contaminated by silt, sewage effluent, or other wastes pose a direct threat to park coral reefs (Grigg, Rainey, and Towle 1977). Less extensive but potentially significant injury to reefs also results from breakage caused by anchors, boats, thoughtless divers, or from infrequent vandalism and illegal harvesting of coral.

ECOLOGICAL CROSS-SECTION ST. JOHN ISLAND VIRGIN ISLANDS NATIONAL PARK

UPLAND FOREST



STABLE VEGETATION AND SOILS
CONTROL THE QUANTITY AND
QUALITY OF UPLAND RUNOFF

MANGROVE



MANGROVE STANDS AND SALT PONDS
FILTER SEDIMENTS AND POLLUTANTS
FROM MUCH OF THE RUNOFF

NATURAL
FILTRATION

BEACH

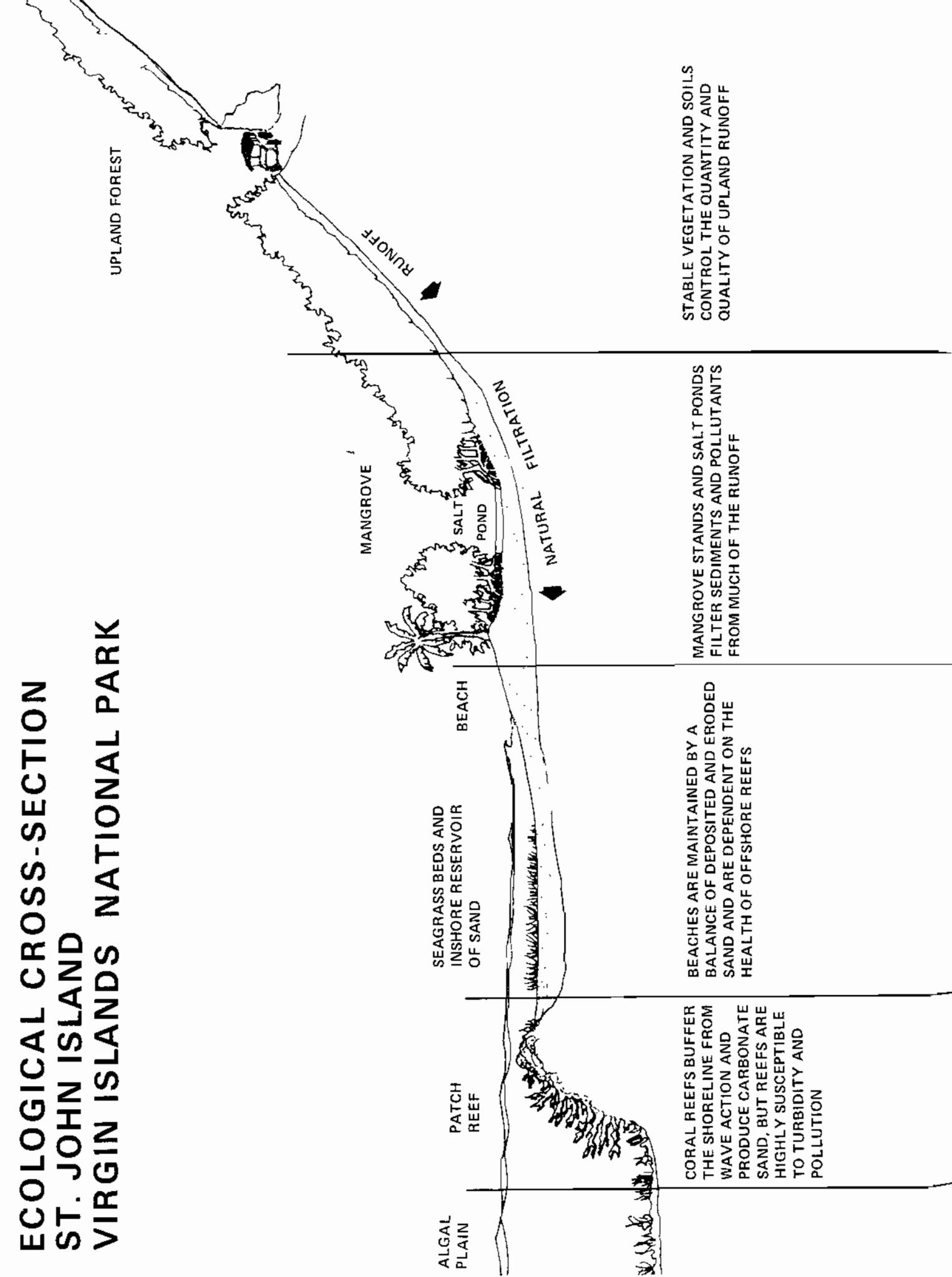
SEAGRASS BEDS AND
INSHORE RESERVOIR
OF SAND

BEACHES ARE MAINTAINED BY A
BALANCE OF DEPOSITED AND ERODED
SAND AND ARE DEPENDENT ON THE
HEALTH OF OFFSHORE REEFS

ALGAL
PLAIN

PATCH
REEF

CORAL REEFS BUFFER
THE SHORELINE FROM
WAVE ACTION AND
PRODUCE CARBONATE
SAND, BUT REEFS ARE
HIGHLY SUSCEPTIBLE
TO TURBIDITY AND
POLLUTION



Seagrass beds are interspersed among the patch and fringing coral reefs in the inshore areas. These consist primarily of turtle grass and manatee grass, providing grazing habitat for queen conch, the threatened green turtles, and other herbivores.

The white carbonate beaches on St. John are prime recreational resources, and therefore important to the economy. Beaches are also a valuable natural resource, providing nesting areas for sea turtles and habitat for ghost crab and several mollusks. Although they may appear timeless, coral beaches are in constant flux, and their configuration changes dramatically. The carbonate particles that make up the beach sands are produced by the coral reef community and are carried landward and seaward by wave action. The reef also serves to dampen incoming waves, deflecting and dispersing their energy. Landward of the reefs, seagrass beds form a protective mat that reduces erosion and encourages the deposition of sand in the inshore area, creating a reservoir of sand for beach building.

Beaches remain relatively stable when the accumulation of sand equals the amount of sand removed from the system. Natural changes in beach configuration often occur seasonally, when the direction and intensity of wave action change. Artificial disturbance to the system from dredging, filling, or water pollution, however, may so greatly alter the system that beaches may be partially or even totally eroded to cobbles or bedrock. Therefore, the stability and quality of park beaches is directly dependent on the health of adjacent coral reefs, seagrass beds, and water quality (USDI, NPS 1974).

Flood Hazard

Flood insurance rate maps prepared by the Federal Emergency Management Agency show that the NPS docks and dockside facilities at Redhook (including the dock, visitor contact and storage building), Cruz Bay (dock, visitor contact station/operations building and storage shed), and Great Lameshur Bay (dock only) are in the coastal high-hazard area (i.e., subject to wave action in a 100-year flood). Facilities within the 100-year floodplain (but not subject to wave action) include picnic/beach recreation structures at Hawksnest Bay, Trunk Bay, Cinnamon Bay, Francis Bay, Saltpond Bay, and Little Lameshur Bay. More substantial facilities within the 100-year floodplain are the the Cinnamon Bay Danish warehouse (historic), the Maho Bay picnic pavilion, the wet lab at Great Lameshur Bay, and two historic structures at Little Lameshur Bay. No park residences lie within the 100 year floodplain.

In addition to flood levels shown on the insurance rate maps, specific flood levels have been mapped by the U.S. Geological Survey for the Cinnamon Bay campground. Although the campground is not shown on the flood maps to be within the 100-year floodplain, portions of it are periodically subjected to flooding from upland runoff.

Water Resources

There are no permanent streams or rivers on St. John Island. Freshwater surface storage is limited to artificial livestock ponds, although there are brackish or hypersaline salt ponds. There are several intermittent springs and spring-fed pools of generally low yield.

Waters of the inshore marine environment are generally of high quality. In a few localized areas such as Cruz Bay, dredging, pollution from runoff and wastewater, and poor flushing characteristics have degraded the water quality (USDI, NPS, DSC 1976). Recent commercial activity has also contributed to this degradation. Increases in both turbidity and nutrient loading and a decrease in dissolved oxygen concentration, along with changes in other characteristics of the inshore waters, may produce undesirable effects on marine life, particularly coral reef and seagrass systems.

Soils

The U.S. Soil Conservation Service has identified soil types in the Virgin Islands that are particularly suited to agriculture. Approximately 120 acres on St. John have been classified as prime farmland, 23 percent (34 acres) of which are owned by the National Park Service. Most of the prime farmland on the island is in small scattered tracts. The largest single unit, about 67 contiguous acres, occurs outside the park at Coral Bay.

CULTURAL RESOURCES

Prehistoric Archeological Sites

The prehistoric archeological sites on St. John consist of petroglyphs, agricultural areas, burials, habitations, and temporary use sites. Except for the petroglyphs, these sites show at most as small mounds or shallow depressions. Upon or within these are numerous shell fragments and pot shards.

Archeological surveys have been done by Sleight (1962), Hamilton and Prokopetz (USDI, NPS 1976), and Johnston (USVI, DCCA 1981). Because of the islands' vegetation, land configuration, and patterns of ownership, these surveys are not considered exhaustive. The known prehistoric sites are in the vicinity of Salomon Bay, Caneel Bay, Turtle Point, Cinnamon Bay, Francis Bay, Haulover Bay, Coral Bay, Lameshur Bay, Reef Bay, Fish Bay, Dittlef Point, Chocolate Hole, Calvary Bay, Cruz Bay, Coral Bay, Trunk Bay, Henley Cay, Durloe Bay, Peter Bay, Yawzi Point, Oyen Hill, Mary's Point, Denis Bay, Leinster Bay, and Congo Cay. Of these, two are on the National Register of Historic Places because of local and regional significance. Nineteen others are within the authorized boundaries of the Virgin Islands National Park; 13 are either wholly or partially on park land, and six are on private inholdings. Detailed information on each site appears in table 4; National Register sites are shown on the St. John Cultural Resources map.

Table 4: St. John Prehistoric Archeological Sites

Site Number*	Name (map code)	Owner	Current Use	Percentage Intact	National Register Nomination
12VAm2-1	Coral Bay	Private	Agricultural	10	On register
12VAm2-2	Francis Bay (a-2)	NPS	Recreational	75	Eligible
12VAm2-3	Cinnamon Bay (a-1)	NPS	Recreational	70	Modify nom.
12VAm2-4	Turtle Point (a-10)	Rockresorts**/NPS	Resort	20-30	Eligible
12VAm2-5	Trunk Bay (a-8)	NPS	Recreational	25	Eligible
12VAm2-7	Henley Cay	Private**	Recreational	85	Eligible
12VAm2-8	Congo Cay 1	V.I. govt.	Wildlife Refuge	90	On register
12VAm2-9	Reef Bay petroglyphs (a-6)	NPS	Interpretive	90	On register
12VAm2-10	Salomon Bay	Rockresorts**	Resort	10	Eligible
12VAm2-11	Durloe Bay 1	Rockresorts**	Resort	50	Eligible
12VAm2-12	Durloe Bay 2	Rockresorts**	Resort	40	Eligible
12VAm2-13	Peter Bay	Private**	Agri./Recreational	90	Eligible
12VAm2-14	Haulover (a-3)	NPS/Private**	Public access	10	?
12VAm2-15	Yawzi Point (a-9)	NPS	Biological Res.	50	Eligible
12VAm2-21	Oyen Hill	Private**	Res. Development	?	?
12VAm2-22	Reef Bay 2 (a-5)	NPS	Interpretive	95	Eligible
12VAm2-23	Mary Point (a-4)	NPS	Recreational	90	Eligible
12VAm2-26	Congo Cay 2	V.I. govt.	Wildlife Refuge	90	On register
12VAm2-27	Sewers Bay (a-7)	Private**/NPS	Residential	70	Eligible
12VAm2-48	Reef Bay 5 (a-5)	NPS	Interpretive	90	Eligible

*This numbering system is found in U.S. Virgin Islands, Department of Conservation and Cultural Affairs, "St. John Prehistoric Inventory," by Barbara Rose Johnston (Charlotte Amalie, St. Thomas, 1981).

**Within park boundary but not now owned by the National Park Service.

Historic Structures

Of the many historic structures within the park on St. John, 20 sites and districts have been listed on the National Register. The National Register sites include two fortifications, 23 sugar and cotton plantations (some with mills), three great houses, a customs guardhouse, a subsistence farm, an abbatoir (slaughterhouse), and two schools. Several of the sites contain many structures. All sites but one (Fortsberg) are federally owned. The resources are described in table 5 and shown on the St. John Cultural Resources map.

Twelve historic sites and districts within Virgin Islands National Park were found not eligible for the National Register of Historic Places. These are the Sieben plantation, Mollendal plantation, Genti Bay, Paquerau plantation, Par Force factory, Hope plantation, Bordeaux plantation west, Bordeaux plantation east, Johnny Hern (Base Hill), the Lameshur school, the Mary Point customs house, and the Cabritte house. Two sites in the park are being considered for nomination, Klein Caneel II and Leinster Bay. All these sites are federally owned.

Additional federally owned sites of interest but of lesser significance are on the park's List of Classified Structures.

Cultural Resources Adjacent to Park

Prehistoric sites include two on the National Register of Historic Places, one at Congo Cay and one at Coral Bay. Eight other prehistoric archeological sites have been located and determined potentially eligible for the National Register by a recent survey (USVI, DCCA 1981).

Three plantations from the time of Danish occupation have been placed on the National Register. These are Enighed (H-9 on the St. John Cultural Resources map), Estate Beverhoudt (H-10), and Estate Carolina sugar plantation (H-11). A local historical society is gathering background information for over 20 plantations to determine their potential eligibility for listing on the National Register. Other nonpark structures and sites that are on the National Register are the shipwreck of HMS Santa Monica (H-13), Emmaus Moravian Church and manse (H-8), and Keating's Inn (H-16). Nonpark sites on St. John potentially eligible for the National Register include buildings of distinctive vernacular architecture, administrative centers such as Government House, sites illustrative of colonial fortifications, and submerged resources.

Park Collections

A small collection of original specimens, such as artifacts, rocks, archival records, implements and other objects, and historical photographs, is maintained by the park. Currently housed in a storage building adjacent to the NPS operations center at Cruz Bay, the collection is exposed to storm waves. Original botanical and zoological specimens are under the care of the Virgin Islands Ecological Research Station.

Table 5: Historic Resources Within the Park
St. John Island

Reference Number*	Name and Description of Resource
H-1	<u>America Hill</u> --site of ruin of great house for Cinnamon Bay Plantation, constructed around 1900. Other structures are cookhouse, servants' quarters, and boundary walls. Many have been stabilized.
H-2	<u>Annaberg School</u> --a building constructed in 1844 to implement Danish regulations calling for compulsory education. Now in ruins.
H-3	<u>Annaberg Sugar Factory and Mill</u> --established in 1720 and owned, at various times, by several Danish governors of Virgin Islands. Today extensive ruins include a windmill, a horsemill, slave cabins, warehouse, factory, oxpounds, stable, cookhouse, bake oven, and unidentified structures. Some structures date from the 18th and 19th centuries. The ruins are stabilized and interpreted.
H-4	<u>Brown Bay Plantation and Great House</u> --ruins of a horsemill, sugar factory, plantation house, farm buildings, drinking troughs, bake ovens, slave cabins, and several unidentified structures. Features date from 1780 to the mid-19th century.
H-5	<u>Catherineberg-Jockumsdahl-Herman Farm</u> --plantations. Sometime before 1780 Catherineberg and Jockumsdahl operated as separate plantations; later they consolidated. At beginning of 20th century, "Herman or Hammer Farm" began operations near or on grounds of these two estates. Site contains a mill, storage buildings, and troughs. The park has cleared vegetation from around remaining ruins and stabilized.
H-6	<u>Cinnamon Bay Plantation</u> --one of the island's first sugar plantations, established around 1717, and the site of significant events during 1733 slave rebellion. Remains include a horsemill, bagasse shed, factory building, still, combination curing and storage house, plantation house, cookhouse, bridge, oxpound, wells and drinking troughs, and warehouse. The buildings illustrate steps of the early sugar-making process. Most structures are deteriorated, but they have been stabilized.
H-7	<u>Denis Bay Plantation</u> --land cleared in 1728, and a horsemill, sugar factory, and portions of other plantation buildings erected prior to 1800. Structures built or modified after that time include slave cabins, horsemill, windmill, and plantation house. Some structures are in a ruined condition, while others are still being used as a private residence. The horsemill and windmill have been stabilized.
H-10	<u>Estate Beverhoudt</u> --a plantation found on a 1780 map of St. John and operating into the 19th century. The plantation ruins now consist of foundations, walls of an animal pen, an animal mill, sugar factory, "physician's house," and a warehouse. The sugar factory and physician's house are architecturally significant examples of the design and construction techniques used during the early 19th century in the Virgin Islands. It is outside the park and is privately owned, but it is proposed for donation and additon.
H-12	<u>Fortsberg or Fort Frederiksvaern</u> --constructed by Denmark in 1717 to protect a fledgling settlement. In 1733, it was captured by slaves, which was a crucial event in the six-month rebellion. Around 1760, the present structure was built--also by Denmark--on ruins of the earlier fort. It was later occupied by British troops during the Napoleonic Wars. The site contains ruins of a rubble masonry fort with a sallyport in the southwest curtain, a center opening in the northwest wall, an enclosed staircase to the curtain walkway, and evidence of flat brick roofs on bastions. The site encompasses ruins of trapezoidal shape, supporting shore battery. It is privately owned.

Note: All resources are on the National Register of Historic Places.
*See St. John Cultural Resources map.

- H-14 Hermitage--a plantation that was established in 18th century and that remained active until the early 20th century. Existing ruins (plantation house, slave quarters, warehouse, shop buildings, and water troughs) date from the mid-19th century, with portions of earlier structures incorporated into later buildings.
- H-15 Jossie Gut--an area containing several structures used after 1800 in sugar producing. The structures are in a deteriorated condition and include a factory, horsemill, oxpound, stable, storage building, and dam with irrigation sluices. Once owned by Frederik Suhn, governor-general of all Danish West Indies, later by Governor Berg.
- H-17 Lameshur Plantation and Great Dunes--a plantation in the Little Lameshur Bay area that was founded in the 18th century. It produced sugar, cotton, bay and lime oil, and cattle. Structures surviving are the horsemill, sugar factory, plantation house, cattle dip, bay oil still, well and drinking troughs, great house, cookhouse, and service building.
- H-18 L'Esperance Plantation--developed early in the 18th century and operated into the 19th century. The plantation site contains ruins of the great house, cookhouse, horsemill, oxpound, storage buildings, factory, service buildings, and minor structures. The great house is significant both architecturally and because of its historical association with Virgin Island Governor Eric Bredal.
- H-19 Liever Marches Bay--ruins of a mid-19th century rendering plant (abattoir). The structure was erected during the period of livestock raising, one of few remaining ruins associated with that era.
- H-20 Lind Point Battery--a fortification erected by the British army in their second occupation of the Virgin Islands (1807-1815) and part of their worldwide defense system against Napoleon. Today, a semicircular earthwork with a gun platform remains, although in a ruined condition.
- H-21 Mary Point Great House and Factory--a complex started in the 18th century.
- H-22 More Hill Plantation--a cotton plantation constructed between 1780 and 1800. Ruins of the plantation house, servants' quarters, and warehouse remain. It is an excellent example of this type of agricultural development.
- H-23 Reef Bay Great House--constructed in the early 19th century. The ruins are the most important in-park example of West Indian architecture. The site contains the great house, cookhouse, servants' quarters, privy, stable, and retaining walls with fences.
- H-24 Reef Bay Sugar Factory--best-preserved example of technology used in mid-19th century sugar making. Contains stabilized ruins of the horsemill, factory, bake oven, oxpound, several houses, and well with drinking trough.
- H-25 Rustenberg Plantation (South)--developed in the 18th century, with most structures built before 1780. The site contains ruins of a horsemill, sugar factory, warehouse buildings, slave quarters, cookhouse, and oxpound.
- H-26 Trunk Bay Sugar Factory--a T-shaped structure divided into work and storage areas and built between 1780-1800. It was operated into the 19th century. The factory building is rubble and brick masonry.

VISITOR USE

Circulation and Distribution

Most visitors spend their time on, in, or near the water. Beach use (including sunning, picnicking, swimming, and snorkeling) and boating are the most popular activities. The waters are often calm enough for sailing by beginners and for windsurfing. The National Park Service provides lifeguard service at some popular beaches. An underwater interpretive trail that attracts many beginning snorkelers is an important feature of organized tours.

Visitors on St. John Island are served by private taxis, with the most frequent service on the northwest shore between Cruz Bay and Cinnamon Bay. Rental vehicles are also available, but exceedingly steep roads and the custom of driving on the left are disadvantages for tourists. Land tours attract many visitors for excursions to high-elevation viewpoints and sugar mill ruins. Trails lace the island and lead to a petroglyph site, plantation ruins, into the tropical forest, and to remote sea overlooks.

Visitors using boats are free to move in the offshore waters at will; many tow small boats that they use to come ashore.

More overnight visitors sleep in boats anchored in park waters than in the campground at Cinnamon Bay. Others stay in private lodges within the park (Caneel Bay--130 rooms, and Maho Bay--94 tents), or in rented homes both inside and outside the park.

The Virgin Islands school system uses park sites in its environmental studies.

Information and Interpretive Programs

Information about the Virgin Islands and the park is usually gathered long before visitors come, so that many arrive with a good understanding of their general options. Accommodations have been reserved, and transportation services have been surveyed if not arranged.

Once on the islands, visitors can get information at the NPS dock at Redhook, where visitors on organized tours embark to St. John. Many visitors who use the public ferry dock at Redhook (across the harbor from the NPS dock) miss the NPS information service; they also miss the NPS information service at Cruz Bay, as it is separated from the public ferry dock where they arrive. Visitors--whether on tours, ferries, or private boats--may obtain information at the NPS Cruz Bay contact station, but because many visitors prearrange their transportation services, many do not take this opportunity. Additional information services are provided at concession facilities, lifeguard stations, and interpretive facilities. Water safety, boat use, dangerous animals, marine life, plants, hiking advice, driving tips, and the importance of preserving resources and practicing good park manners are included in the program.

Orientation to the park's special values and themes is provided primarily through publications (available at Redhook and Cruz Bay), and also through interpretive events.

Interpretive services are generally onsite, participatory events. There are living-history demonstrations, seashore walks, and snorkeling instruction. One popular ranger-led activity starts with a bus ride, then goes on a downhill walk through the tropical forest, past Indian petroglyphs and a sugar plantation mill ruin, and on to a remote beach for a boat ride back to the start. There are also bus tours and evening programs. History and nature exhibits are provided at Cinnamon Bay beach, adjacent to the campground. Interpretive trails are offered at Cinnamon Bay (through plantation ruins and the tropical forest), Annaberg (sugar mill), Trunk Bay (underwater nature trail stressing coral reef ecology), Saltpond Bay (salt pond ecology), and along the Reef Bay trail (tropical forests, petroglyphs). The park maintains four wayside and roadside exhibits and displays: Konge Vey overlook from Centerline Road, the Danish Road display from Leinster Bay Road, the petroglyphs in Reef Bay Valley, and offshore views from the Annaberg overlook. There are three environmental study areas: Annaberg (historical ruins site), Reef Bay (natural area trail), and Saltpond (hiking trail and beach). There is an amphitheater at Cinnamon Bay for 150 (with audiovisual facilities) and a campfire circle along the shore for 80 people.

Outside the park at Cruz Bay, but near the NPS contact facility, the St. John Historical Society operates a museum in the Enighed house that displays objects from the early days.

Visitor Characteristics

According to observations by park staff contained in the park's "Statement for Interpretation," most Virgin Islands National Park visitors (60 percent) are between the ages of 18 and 61. Over 60 percent come with a peer group, organized tour group, or their immediate family, and 25 percent come alone. Most visitors (about 60 percent) come from the U.S. mainland (particularly the East Coast). About 30 percent come from the Virgin Islands or Puerto Rico. Five percent are non-English speaking, and 0.5 percent are handicapped. Forty percent stay several nights, while 60 percent are through-visitors and home-based day visitors. Winter draws the highest number of visitors, with a greater percentage of affluent senior citizens; the other three seasons attract about equal numbers of visitors, with more families coming during summer.

More than half of the visitors prefer natural environments with only a moderate level of facilities for comfort and convenience. Fifty percent of the visitors use NPS information services, and an additional 20 percent attend personally conducted activities; 30 percent do not make use of any programs. More complete information on visitor characteristics, as reported in the park's "Statement for Interpretation," is contained in table 6.

Table 6: Visitor Characteristics and Use Patterns

Age groups	
Children (0-12 years)	10%
Teenagers (13-17 years)	10%
Adults (18-61 years)	60%
Senior Citizens (62+)	20%
Group affiliation	
Alone	25%
Peer groups	17%
Organized tour	25%
Nuclear family	20%
Extended family	5%
Partial family	2%
Other	1%
Special populations	
Black	25%
Non-English speaking (primarily Spanish)	5%
Handicapped	1%
Origins	
National (mainland U.S. and Puerto Rico)	65%
Local residents (St. John)	18%
Regional residents (other Virgin Islands)	12%
Foreign	5%
Durations of stays/overnight locations	
Extended users (remain in area several nights)	40%
Through-visitors (people on extended trip)	30%
25% day use only	
5% stay one night	
Home-based day users	30%
Visitor use patterns (direct resource contact versus development)	
Activities based on park's primary resources (only a moderate degree of human development; basic natural environments preferred with some modification for comfort and convenience)	55%
Activities incidental to park's primary resources (modern, human-designed environments for comfort and convenience, providing a strong feeling of safety and security)	30%
Activities dependent on park's primary resources (areas preferred where natural environment is unaltered)	15%

Use of visitor services	
Use information services only	50%
Do not use programs	30%
Attend personally conducted activities	20%
Seasonal use variations	
Winter (December through March--4 mos)-- more senior citizens, more affluent	40%
Spring (April through June 15--2½ mos)-- transition period, mixed adult groups	20%
Summer (June 16 through August--2½ mos)-- younger adults, more families, more locals	22%
Fall (September through November--3 mos)-- younger adults, more singles, less affluent	18%
Average lengths of stay	
Campers	7 days
Tourists on land tours	6 hours
Tourists from cruise ships	3 hours
Time variations	
Weekends--primary arrival and departure days for campers	
Tuesdays through Fridays--primary cruise ship days with associated tours	

Source: U.S. Department of the Interior, National Park Service, Virgin Islands National Park, "Statement for Interpretation," 1981. On file at park headquarters.

Use Patterns and Trends

From a base of about 150,000 recreational visitors per year, annual use leaped during 1977 and 1978 to over three times that level. Several years of stable visitation then followed, but in 1982 recreational visitation increased to 674,000 (see graphs of visitor use). (Businesses, residents, and park employees would increase total use by about one-third.) Activity patterns are similar throughout the year.

Overnight stays within the park have risen, but not as fast as total visitation, indicating an increasing proportion of day visitors. Also more of the overnight visitors are staying in boats and fewer are camping on the land. Because the park campground has served more visitors in past years than at present, its capacity is adequate. There also appears to be adequate area for boat anchoring.

Day use is also becoming more oriented to the water. Both beach use and boating have trended upward, while land tours have declined. Beaches have a great capacity to absorb additional use, although the experience may be shifting from one of observing the natural features to a more social one. Local residents generally prefer to use the beach at Hawksnest.

Visitor Protection

The National Park Service provides lifeguard services at Trunk Bay and Cinnamon Bay during peak use times. Information services tell about park hazards and give procedures for emergencies. Ranger personnel are available to respond when called and to perform land and sea patrols. They provide first aid, search and rescue, and police services. The Virgin Islands government, however, patrols roads and has a police station in Cruz Bay. Structural/vehicular fire-fighting equipment and brigades are organized by the Virgin Islands territorial government at Cruz Bay and Coral Bay, and these respond to calls within the park as well as outside.

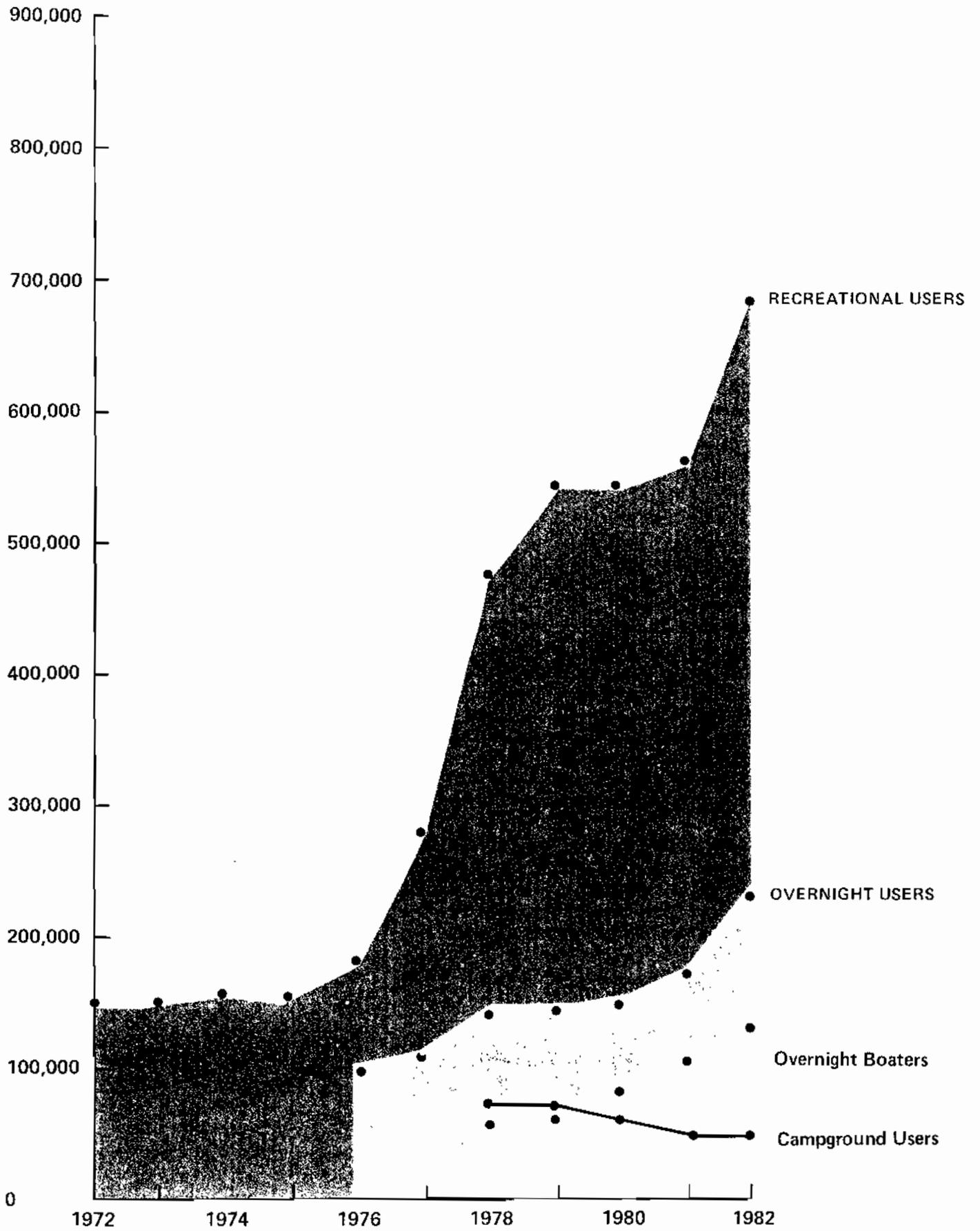
Hurricane warnings are issued by national weather services when storms develop in the Caribbean. Further advices are issued if these storms approach the Virgin Islands. If park visitors must be evacuated, most leave by means of public transportation to St. Thomas, where they can either leave the area or be protected by the territorial government. The National Park Service is responsible for protecting those employees who reside in government quarters, and it provides adequate shelters for this purpose.

FACILITIES FOR PARK OPERATIONS

Cruz Bay

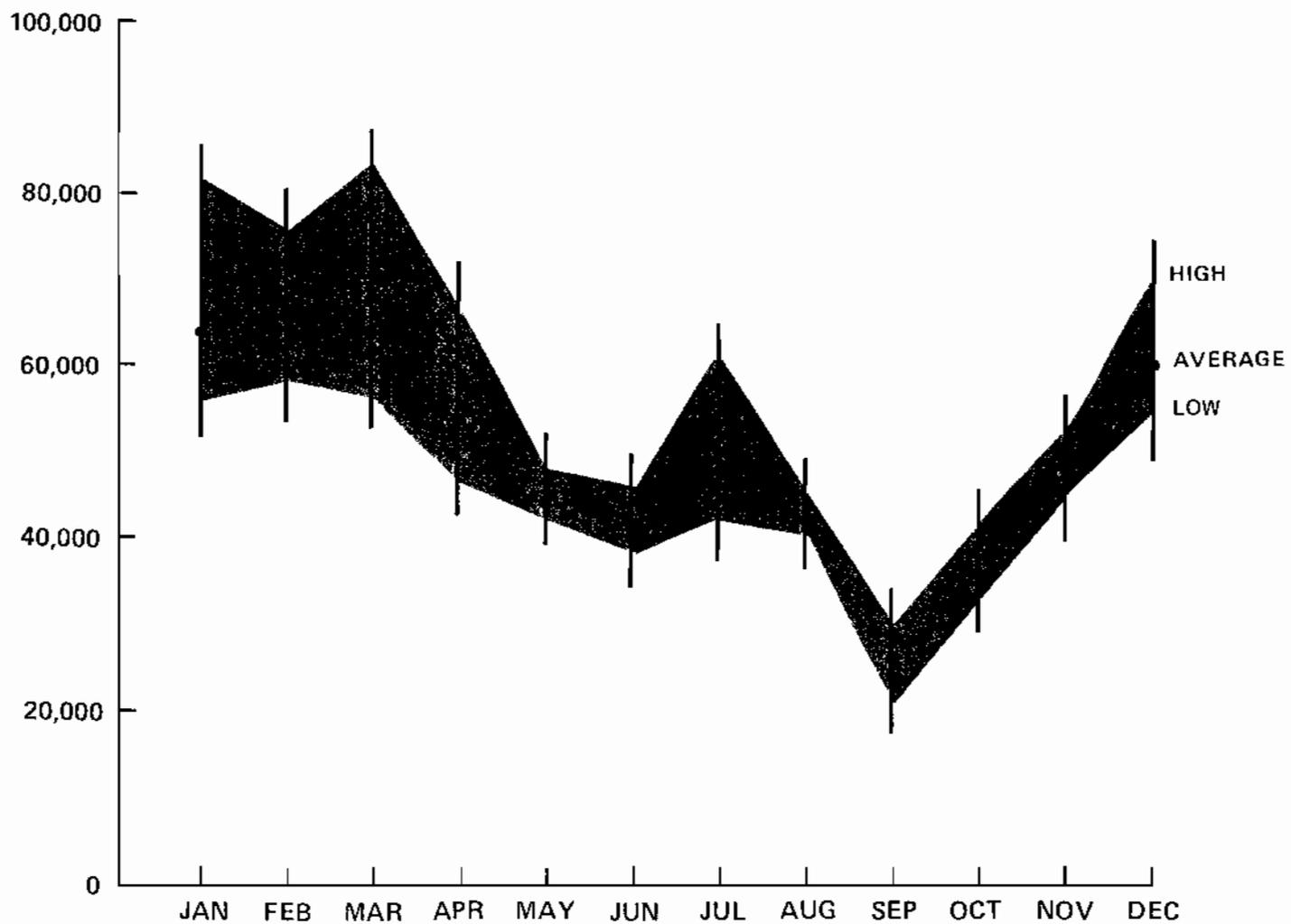
The park operations center at Cruz Bay provides good boat and road access to the park lands on St. John. It operates out of what was originally designed as the maintenance building for the park. This

VISITOR USE TRENDS

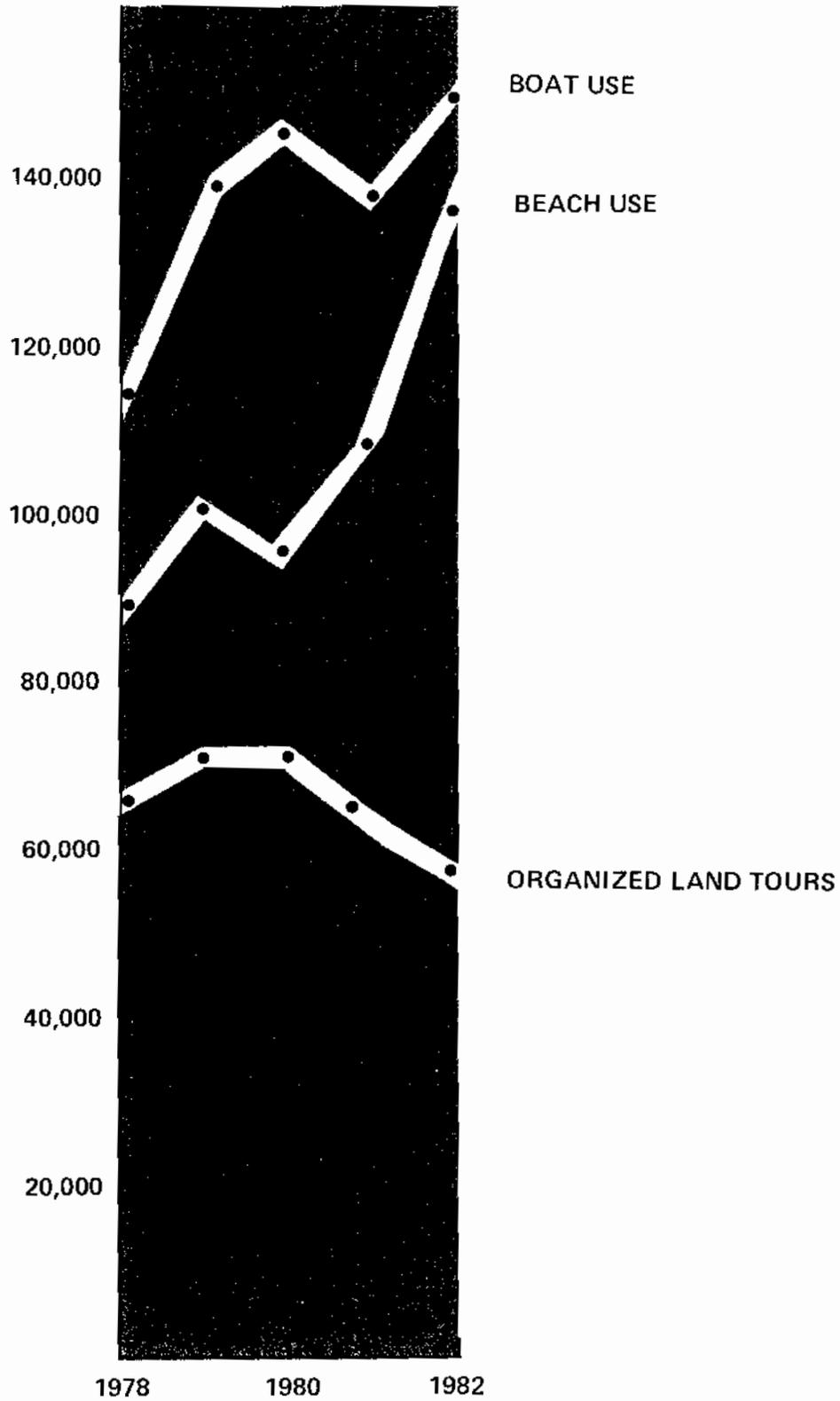


MONTHLY RECREATIONAL VISITS THREE-YEAR AVERAGE (1980-1982)

PEAK USE – December through April
LOW USE – September/October
SUMMER USE – July/August



VISITOR DAY USE TRENDS



building, located at the St. John/NPS dock, contains the office facilities for operations, a storage area for maintenance and other supplies, park collections, and a small exhibit/visitor contact area. Although in fair repair, this structure is quite cramped for present uses. Adjacent to the operations center and NPS dock is a small comfort station. All these structures are subject to flooding.

The NPS dock, bulkhead system, and pier are in fair condition.

The maintenance center for park facilities on St. John is in a gut adjacent to the operations center, and it is now being augmented with a new structure above flood level at the side of the gut.

Five NPS residences are located at Lind Point in Cruz Bay. Built in 1961, they each have one bedroom, with some additions.

Caneel Bay

A private resort operates here, offering 130 rooms and meal service.

Hawksnest Bay

Facilities at this beach area include changing stalls and covered pavilions, both of which are heavily used. Parking along the road is inadequate. Pit toilets are across the road from the beach, resulting in a hazard for pedestrians. Circulation for handicapped persons is difficult, and there is no provision for entering the water.

Trunk Bay

The Trunk Bay site is approximately 6 acres, with a narrow strand of beach approximately 1,200 feet long. There are two metal frame picnic shelters (20 ft by 30 ft) and 10 picnic tables. A structure containing a comfort station, showers, and changing stalls has recently been renovated. A snack bar (new in 1982) and an older structure for renting snorkeling equipment are operated by a concessioner. The parking area, designed for 50 cars or 20 taxis, is often filled, limiting the amount of beach use. Access to the water for handicapped persons is not provided.

Cinnamon Bay

Cinnamon Bay is the major NPS developed area within the park. A concessioner operates 10 housekeeping cabin clusters of four units each, 40 tents, 10 campsites, and two group sites with 8 tents each. A commissary/cafeteria is operated by the concessioner. These facilities were being refurbished in 1982. The concessioner also has an employee residence here. A 150-seat amphitheater, with a projection booth and permanent screen, is near the parking area, and a campfire circle for 80 people is along the shore. A large part of the camping and housekeeping area is in a flood hazard area. Across the North Shore Road from the

campground are an operating incinerator, two storage buildings, and an NPS residence trailer. The existing NPS trailer intrudes on adjacent ruins. The historic Danish warehouse on the beach is adaptively used for interpretive displays and concessioner beach rentals. Circulation around the site for handicapped persons is difficult, and there is no provision for getting to the water.

Maho Bay

A day use beach pavilion, open to the general public, is provided at Maho Bay. With reservations, groups are given access to water and toilets. Parking is inadequate. A campground operates on private land within the park here, with 90 housekeeping tents plus food service; beach use is allowed through an NPS permit.

Francis Bay

Facilities at Francis Bay are limited to a primitive access road, parking for several cars, two chemical toilets, a few picnic tables, and two park employee quarters. Francis Bay is a favored anchorage for boats. On shore the park has installed two large trash collection bins for use by boaters.

Annaberg

A small primitive parking area encroaches on the historic resource. The trail surface and gradient are below standard for handicapped visitor access. Pit toilets are at the base of the approach hill. A picnic area gets minimal use.

Centerline Road/Catherineberg

There are no visitor facilities at Catherineberg. Four park employee quarters, two of which are used as employee hurricane shelters, are provided here.

Saltpond Bay

Parking for this beach area takes place along a widened portion of the road. The maintenance vehicle access/visitor trail is approximately $\frac{1}{4}$ mile long and follows a historic way outside the park boundary. It is not accessible to handicapped persons because of its steep gradient and rough surface. Chemical toilets and a few picnic tables are provided. There is an information bulletin board on the beach.

Lameshur

Road access to Lameshur from the end of the paved road at Saltpond Bay is difficult because of excessive grades and requires four-wheel-drive or

other rugged vehicles. Poor sight distances make this road still more hazardous. Parking occurs along the road at a wide spot near the beach. Pit toilets and four picnic tables are available. A ranger station, research camp, wet lab, and dock are located here.

Reef Bay

There are picnic tables at the beach, wayside markers along the Reef Bay trail, and pit toilets.

Trails

Trails do not meet design standards except for signing. Excessive grades and poor walking surfaces are typical. Many have been adapted from historical roads and trails.

Roads

All roads in the Virgin Islands are under the jurisdiction of the Department of Public Works except for administrative roads in the park, which are under NPS jurisdiction. Under a 1962 agreement between the National Park Service and the territorial government, the territory retains control and jurisdiction but the Park Service maintains the following:

- Northshore Road from Cruz Bay to Mary Creek
- Annaberg road to Mary Point Spur Road
- Kings Hill Road from North Shore Road to Centerline Road
- Bordeaux Road from Centerline Road to the Alphonse Jacobs property
- Lameshur Road from end of the pavement to Lameshur

Maintenance activities by the park include litter pickup, surface and drainage repair and rehabilitation, signs, and pavement markings.

PARK MANAGEMENT AND OPERATIONS

PARK MANAGEMENT

Virgin Islands National Park is managed by a superintendent who also has general responsibility for Buck Island Reef National Monument and Christiansted National Historic Site, both on or near the island of St. Croix.

Park headquarters, including administrative offices and desk space for park division chiefs, is on the island of St. Thomas at Redhook. Operations offices are on the island of St. John at Cruz Bay, about 20 minutes by boat from headquarters. Most maintenance functions are also centered at Cruz Bay, where there is good boat and road access to the parklands on St. John.

Limited staff housing is provided on St. Thomas at Wintberg and the Redhook headquarters, and at several sites on St. John. Park housing is only made available within the park when NPS personnel must be present for the security of park visitors, resources, and development or for special recruitment.

HEADQUARTERS FACILITIES

The NPS enclave at Redhook includes an administrative building, employee residence, visitor contact pavilion (with some storage), NPS dock, and parking (see table 7). It comprises 6 acres of the 15 authorized for this purpose. The visitor contact/storage building was adapted from maintenance storage bays. Interpretive exhibits at the visitor contact pavilion are now being restudied. The original storage facility for Redhook was remodeled into a headquarters/administrative office in 1972. The headquarters building is inadequate. Additional space is needed for three offices, a conference room (540 sq ft), upstairs office supply storage, and a map files area. The NPS dock at Redhook adequately accommodates NPS, concessioner, and tour boats.

The park's operational equipment includes a radio system, maintenance and patrol boats, jeeps, trucks, and road equipment. There is no wildfire problem. The National Park Service has a cooperative agreement with the Virgin Islands government to respond to structural fires within the park. There is also specialized life-support and water/road ambulance service. The present equipment meets the needs of the proposal, with minor expansion to accommodate new services at Hassel Island.

Table 7: Partial Summary of Facilities

NPS Residences:	Wintberg	4
	Redhook	1
	Lind Point	6
	Trunk Bay	1
	Cinnamon Bay	1
	Francis Bay	2
	Lameshur	1
	Catherineberg area	4
Roads:	paved, 13 miles; unpaved, 2.8 miles	
Trails:	2 miles	
Parking:	paved, 75 spaces; unpaved, 30 spaces (undesigned)	
Boat Docks:	Redhook, Cruz Bay, Lameshur, Hassel Island (two)	
Maintenance Buildings:	Redhook, 900 sq ft (includes storage space)	
	Cruz Bay, 2,250 sq ft	
Visitor Buildings:	Redhook, 648 sq ft	
	Cruz Bay (included under staff office)	
Staff Offices:	Redhook, 1,471 sq ft	
	Cruz Bay, 3,939 sq ft (includes visitor area)	
Curatorial Area:	Cruz Bay, 100 sq ft	
Hurricane-Protection Structures:	Wintberg--Estate house (shelter for occupants of the five NPS houses on St. Thomas)	
	Centerline Road--Superintendent's house (shelter for occupants of seven NPS houses on St. John) and maintenance chief's house (shelter for occupants of eight NPS houses on St. John)	

LANDOWNERSHIP

Not all lands within Virgin Islands National Park are federally owned; some are private and some are the property of the Virgin Islands government. These ownerships are shown in table 8, and the property lines are indicated on the Landownership map; ownerships on Hassel Island are shown on the Hassel Island development proposal map.

Table 8: Ownership of Virgin Islands National Park (in acres)

<u>Category of Ownership</u>	<u>St. Thomas Island</u>	<u>St. John Island</u>	<u>Hassel Island</u>
Federally owned lands	15.0	6,957.35	122.40
Federally owned waters	0	5,650.00	0.00
Territorially owned lands	0	132.02	0.90
Territorially owned waters	0	0	--*
Privately owned lands	0	1,806.86	11.01
	<u>15.0</u>	<u>14,546.23</u>	<u>134.31*</u>

*To be established, total does not include these waters.

Besides being mandated to protect all resources within the park and to serve the general public good, the National Park Service must recognize valid prior rights and arrive at appropriate arrangements as amicably as possible.

Developments on privately owned parklands have compromised park values in some cases, and there is often an access problem where private lands occur. In the past, private lands acquired by the National Park Service in the Virgin Islands have generally been transferred in "fee simple," meaning that the former owner sold or donated all rights and interests of the property. Scenic easements can also be used. Under this procedure, an interested landowner and the Park Service decide what land uses are mutually acceptable and what uses are not, and their value. A contract is then drawn up and the Park Service acquires specified interests in the property. The landowner retains ownership and is only bound by the conditions of the scenic easement contract.

If individuals donate their land, the Park Service can preserve uses that may be personally important to the owners. Also there is an opportunity to contribute to society's need for open space, and a chance to help provide natural habitat for wildlife and special plants. Furthermore, there may be tax advantages for the owners.

In some cases, a seller may elect an option to use the land for a stated period by agreeing to certain adjustments in the negotiated price or other arrangements. Qualifying individuals can also be compensated for relocation expenses.

Certain lands just inside the park boundary on St. John Island have marginal value in meeting the park purpose; some of these lands are privately owned, and some have been developed. Other lands along the boundary in the Battery Gut area are being held in an undisturbed state by The Nature Conservancy and another owner and have been offered for donation to the park. Removing or adding these lands requires congressional legislation.

According to the 1978 act, the National Park Service is to set the initial park boundary at Hassel Island within 100 yards of mean high water.

AGREEMENTS

A number of agreements and permits have been developed to facilitate park operations. The most important ones are summarized below; all of them are listed in appendix A.

Under a 1962 Road Agreement Act (Act 806) entered into by the National Park Service and the territorial government, certain roads are to be maintained and improved by the park, but ownership and jurisdiction remain with the territorial government.

A memorandum of agreement exists between the Park Service and the College of the Virgin Islands for the operation of a research station at Greater Lameshur Bay.

A concession contract authorizes specified visitor services on the St. John parklands, including a campground, food service, and water activities at Cinnamon Bay and food service and snorkeling equipment rental at Trunk Bay. The prime concessioner is Caneel Bay, Inc., which also operates a resort within the park on private land. Limited concession permits have been issued for other water-sports/boat-rental businesses within the park. Commercial use licenses are being issued to private businesses using park resources but without land assignments or facilities within the park, such as taxi service and crewed boats.

A permit for a playing field at Cruz Bay augments the community's need for open space and recreational areas. The area is in a developed zone adjacent to the park's visitor center and office complex.

A seaplane is permitted to use a ramp on the park shore at Cruz Bay as the only suitable site at which this service may be accommodated. Flights connect with St. Croix and St. Thomas.

JURISDICTION

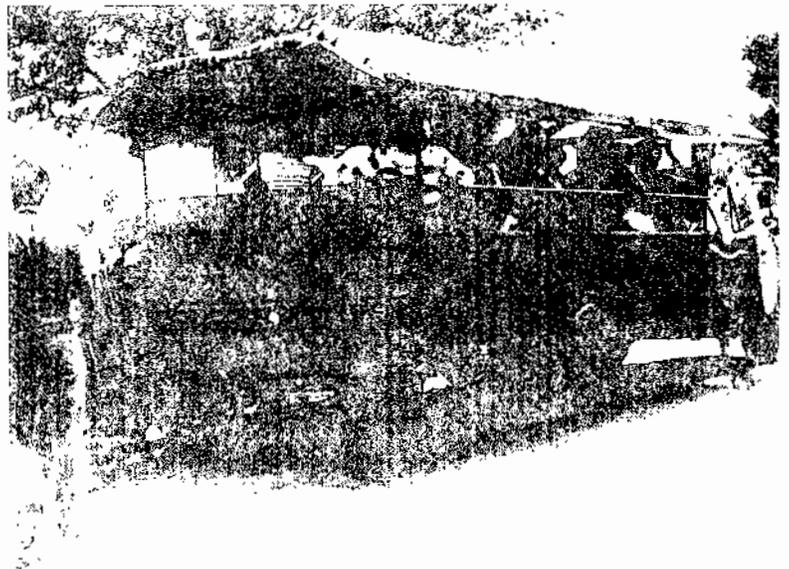
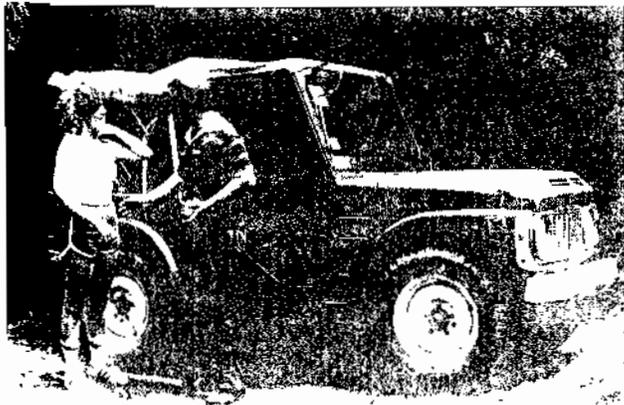
The National Park Service has concurrent jurisdiction with the Virgin Islands government on federally owned land areas of the national park. Offshore water areas within the park are under the jurisdiction of the Park Service, Corps of Engineers, Virgin Islands government, and U.S. Coast Guard.

Acts of the Virgin Islands government and the U.S. Code of Federal Regulations apply to lands and waters of the national park. The Virgin Islands government has jurisdiction over the enforcement of traffic regulations on roads in the park. It retains rights-of-way for all dedicated roads, as defined by an official map that includes traces now reverted to trails or completely overgrown.

The territorial government exerts control over lands and activities on St. John through public health and safety laws. It also has legislation providing for the protection of water resources, wildlife, and the environment. The National Park Service cooperates with the territorial government in these matters.

Zoning regulations of the territorial government were approved August 8, 1972. They permit residential development on most privately owned park lands (see Government Zoning map).

ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION AND ALTERNATIVES



ALTERNATIVES

Two alternatives have been considered in addition to the proposal. Alternative 1 is a no-action alternative that would continue present management policies for Virgin Islands National Park. Alternative 2 would emphasize recreation-oriented development.

The specific actions of the alternatives and the proposal are shown in table 9. Development and implementation costs are shown in table 10 and 11 and in appendix D. Current and proposed staffing requirements are outlined in table 12, and equipment needs are given in table 13. Elements of the alternatives that are not specifically addressed in the tables are presented below. The carrying capacities of the proposal and alternatives are also discussed.

ALTERNATIVE 1--NO ACTION

Existing facilities and programs for visitors would be continued on St. John, and minimal access and development would be provided on Hassel Island, as shown in table 9 and on the alternative 1 development maps for Hassel Island and St. John Island.

Natural resources would be managed as in the proposal.

Cultural resources, including park structures, ruins, and sites listed on the National Register of Historic Places, would be managed as at present. They would be maintained in the following priority, based on the funds annually available to the park: Reef Bay factory, Annaberg sugar factory and mill, Catherineberg-Jockumsdahl-Herman farm, Cinnamon Bay plantation, Lameshur plantation and great house, Brown Bay plantation, and Trunk Bay factory. All other historic structures throughout the park would be recorded, then managed as archeological sites. Nonhistoric structures owned by the National Park Service but not used for park operations would be removed and the sites restored to natural conditions.

The present park boundary on St. John Island would not be changed. On Hassel Island, the boundary would be established at the mean high water mark. An arrangement would be sought with the territorial government whereby they would protect access routes and park values through appropriate management of the nearshore waters. Protection of lands and waters within the boundaries would be the same as the proposal. Park lands would be zoned as described in the proposal.

The park would be operated as described in the proposal, but fewer developments would be required for operations, and there would be a smaller staff and budget. This alternative would not require phasing. Design and development considerations would be the same as the proposal, as would compliance requirements.

ALTERNATIVE 2--RECREATION EMPHASIS

Alternative 2 would provide new activities on Hassel Island and new or additional facilities there and on St. John Island that would expand the park's capacity for visitor use. Facilities for orientation/interpretation and park operations would increase to a level moderately above that of the proposal. Park staff would increase proportionately.

Hassel Island

On Hassel Island, this alternative would provide all the aspects of the proposal, plus a housekeeping tent campground at Careening Cove, more trail connectors, and restoration (rather than stabilization) of Creque's Marine Railway for historical interpretation. As with the proposal, any development or activity on Hassel Island would have to respect the island's significant natural and historical values as well as its scenic backdrop role for the St. Thomas Harbor. (This is based on public input to date and would also be required by NPS policy.)

The National Park Service is constrained from providing this package directly, however, because Congress limited appropriations for development and stabilization/restoration on Hassel Island to \$1 million. That amount is required to implement the proposal alone, whereas this expanded package would require over \$2 million more. To generate these funds outside of federal appropriations, a private operator or cooperator would provide the development/restoration and then collect fees for various services and sales to recover capital and operational costs and any margin requirements. A transportation fee could be charged for boat access, for instance, although current legislation precludes a park entrance fee.

At Creque's Marine Railway, the rails and cradles would be restored. Haul-out and repair would be provided for larger boats, for which service is not available locally. To the extent that demand exists or could be generated, aspects of boat building and repair similar to past practices could be emphasized or encouraged. Deteriorated shop buildings on the site could be restored to provide needed space. Sailmaking and small-boat making, and perhaps restoration of historic vessels, have been suggested as appropriate. Educational and apprenticeship programs could be developed to provide training in boat maintenance skills to native Virgin Islanders and others.

The railway's head house would be restored and its interior adaptively used for a maritime museum. A use fee would be charged (approval for which would be required from the secretary of the interior). Exhibits, programs, activities, and sales items provided within the museum would interpret three themes relating to Virgin Islands National Park and the Virgin Islands and, more specifically, to Hassel Island and Charlotte Amalie: "European exploration and settlement"; "America at work: commerce"; and "America at work: transportation." The operator would provide exhibits (depending on the availability of suitable items), programs, and activities, and could also sell publications, theme-related mementos and objects, and marine supplies. The museum would further

provide information, services, and programs that would enable and encourage park visitors to have safe and enjoyable visits; to appreciate and enjoy park resources in thoughtfully planned activities that have minimum impact on park resources; and to understand the significance of the park's resources, their relationship to other resources and activities, and the management policies and programs necessary to preserve them.

If docks were provided, ships of historical pertinence would be encouraged to dock near the museum to augment the displays.

Food services (snacks and meals) would be provided on the site.

Both the restored railway and its associated museum as well as all other aspects of Hassel Island would be managed as an integral part of Virgin Islands National Park. Operations would be guided by published NPS policies and guidelines. Interpretive exhibits, programs, activities, and sales offerings would be reviewed and approved in advance by the Park Service.

A preliminary study indicates that the activities outlined would generate only part of the profits needed to attract investment capital, and thus the operator should be a nonprofit organization. Such an arrangement would also enhance the potential to raise funds from charitable sources. However, this would not necessarily exclude a profit-seeking company.

Before this package could be adopted, a more specific analysis of the site and estimated costs and revenues would be necessary. Also a more thorough exploration of the interpretive need and historical themes would be required.

A purpose of presenting this alternative is to assess the public desire for this concept of development/restoration and associated services versus the concept outlined under the proposal (which would provide for lower density visitor use and an experience that would largely be one of self-discovery of resource values). Another purpose is to assess attitudes regarding the financial, developmental, and operational aspects of the package, both from the general public and the business community, including those now operating in the vicinity and potential operators.

The alternative 2 development map for Hassel Island shows the visitor facilities. As in the proposal, walking would be the means for visiting the various features of the island. Boat access would be provided as in the proposal.

Concerning cultural resources, the National Park Service would negotiate with the Virgin Islands government to transfer ownership of three Hassel Island sites--Garrison House, Fort Willoughby, and Cowell's Battery--to the National Park Service, under the provisions of the 1978 act. Creque's Marine Railway and its head house would be restored in a fashion consistent with NPS management policies for cultural resources. All other cultural resources on the island would be stabilized. Nonhistoric structures on federal land that were not needed for park operations would be removed. Other aspects of cultural resources management (archeological surveys, data recovery, and management plan) would be the same as the proposal.

Natural resources would be managed as described in the proposal.

The park boundary at Hassel Island would be placed 100 yards offshore from mean high water except along the north channel where the boundary would be at mean high water. In this water area, an agreement would be arranged with the Virgin Islands government whereby the Park Service would protect access routes and park values, including the historic scene and submerged archeological resources. Private landowners would be able to continue present land uses as long as they were compatible with park resource management objectives, visitor use, and operations. Temporary leases would be phased out, as in the proposal.

Management zoning would be the same as the proposal.

St. John Island

On St. John Island, all actions for visitor use and related development that are included in the proposal would be implemented. Additionally, new orientation/interpretation buildings would be constructed at Redhook and Cruz Bay in cooperation with the Virgin Islands government, and other visitor facilities would be provided at selected sites as shown on the map of general development. At Francis and Saltpond bays, paved roads and parking would be constructed to provide automobile access adjacent to the beach.

Every site on St. John that is on or is eligible for the National Register of Historic Places would be maintained and stabilized.

Natural resources on St. John would be managed as described in the proposal.

Boundary changes on St. John would be the same as the proposal (delete 930 acres of nonfederal lands and add 172 acres). Other land and water protection strategies would be the same as the proposal.

Management zoning for St. John Island would be the same as the proposal except a new developed recreation zone would be added if the Cinnamon Bay campground was relocated.

Implementation

The first actions that would be implemented under alternative 2 would be those involving visitor and staff safety and resource impacts and threats. The actions that are the same as those described for the proposal would be implemented in the same order; additional actions would then be undertaken. For example, the restoration of Creque's Marine Railway and the development of visitor facilities by the private sector could be preceded by NPS actions. At Cinnamon Bay, where the campground is in a flood-hazard area, a study to redesign the facility in its present area would precede (and possibly preclude) a study to relocate the entire campground. The developments at Francis and Saltpond bays would be undertaken only when warranted by overcrowding at Trunk Bay. In this

case, Francis Bay (in the developed recreation unit) would be developed for use before Saltpond Bay (in the rural landscape unit).

Design and development considerations, as well as compliance requirements, would be the same as the proposal. Francis Bay and Saltpond Bay would also be made accessible to handicapped persons. Unmanned orientation kiosks, park brochures, and an orientation film would inform arriving visitors, as in the proposal.

VISITOR CAPACITIES

Determination of visitor capacities for park resources is a complex process involving considerations of the resources themselves, the types of experiences those should generate (including user density), and the types of development that are judged appropriate. For example, although the addition of facilities does change the character of the park, these are often designed to reduce the impact of people so that more visitors can come than before. Thus, in many cases, a sociological capacity is the final one, and the question of park capacity often comes down to deciding how many persons should share a site.

In the Virgin Islands National Park, few problems resulting from too much use have been identified. There has been concern about damage to the Trunk Bay underwater trail, but available research and casual observation indicate that may be due to a naturally marginal reef environment, coupled with some design problems on the trail.

Although there are times when the park's campground at Cinnamon Bay is full, during many months of the year there are vacancies. Furthermore, the use of the campground on an annual basis has been declining in recent years, probably because of the facility now provided privately at Maho Bay within the park.

An increase in boating use within the park has been noted, but here the capacity is self-limiting, because most of the boats that visitors use are rented in the area. Operators are unable to expand their fleets solely to meet short-term demand peaks, so use automatically tends to shift into lower use periods.

Thus, a means to determine the capacity of Virgin Islands National Park, given present development and the apparent acceptability of visitor concentrations during peak times, is to take the peak use to date of all of the park facilities at one time and to extend that use throughout the year. The peak month was March 1982, when 84,615 recreation visitors were counted. By inference the park could support at least this many visitors in any month. Although it would take a more detailed study to determine how many additional visitors (if any) the park could have supported during March 1982, it is apparent that a growth in annual use of at least 20 percent and perhaps as much as 50 percent could be sustained by the park at present (alternative 1).

With the proposal, which adds facilities at Hassel Island and improves them on St. John, the capacity would increase by perhaps 10 to 20

percent above the growth possible with present facilities. With alternative 2, an increase in use of perhaps 50 percent above the growth possible with present facilities could be supported by the new developments. Capacities of park facilities under the proposal and alternatives are shown in table 14.

Table 9: Comparison of Proposal and Alternatives

	Proposal: Improve Resource- Based Visitor Experience	Alternative 1, No Action	Alternative 2 Recreation Emphasis
Hassel Island (historic boatyard, forts, warehouses), Access.	Provide public transportation by permit from Charlotte Amalie dock and from cruise ships; limited space for private boats	Have individuals arrange their own transportation	Same as proposal
Creque's Marine Railway and head house	Stabilize and interpret ruins; provide boat landing, clear vegetation	Stabilize; develop boat landing	Restore marine railway; adaptively use boat yard for boat maintenance and visitor interpretation, demonstration/ services; establish apprentice program, restore head house, provide food service, maritime museum, and souvenir sales
Royal Mail Inn:	Adaptively use selected structures for NPS operations and employee quarters (compatible with inholders)	Record and manage as an archeological site	Same as proposal
Careening Cove.	Provide for group camping (primitive); stabilize St. Thomas Dock, Engineering and Coaling Co. ruins; record other historic ruins and manage as archeological sites; provide boat landing	Record ruins and manage as archeological site	Treat cultural resources same as proposal, provide for group camping (primitive); provide 30 concessioner-operated tent cabins; provide camper store if economically feasible, provide boat landing
Garrison House area:	Rehabilitate dock; provide day use area, with picnic tables, toilets; maintain and interpret historic structures (Cowell's Battery, Fort Willoughby, and Garrison House) in cooperation with Virgin Islands government (the owner)	Rehabilitate dock; continue management of historic resources by Virgin Islands territorial government	Same as proposal except ownership of Cowell's Battery, Fort Willoughby, and Garrison House would be transferred to the Park Service
Faills:	Provide trail network with spurs to docks, selected features	Maintain existing trail to Cowell's Battery; rehabilitate trail to northwest beach	Provide trail network with spurs to docks and features
Northwest Beach.	Improve existing trail; provide toilets if necessary	No action	Same as proposal
Shipley's Battery	Stabilize	Manage as archeological site	Stabilize; provide trail access
Other National Register Sites:	Record and manage as archeological sites; remove NPS-owned nonhistoric structures	Same as proposal	Stabilize
Boundary:	Establish up to 100 yards offshore on the eastern side of the island and off western beaches; establish at mean high water elsewhere, negotiate cooperative agreement with Virgin Islands government for management of water	Establish at shoreline; negotiate with Virgin Islands government for management of water to protect park values	Establish at 100 yards offshore excepting north end, negotiate cooperative agreement for NPS management of water

	Alternative 1, No Action	Alternative 2 Recreation Emphasis
<p><u>St. Thomas Island-- Developed Recreation Unit</u></p> <p>Redhook, St Thomas (park headquarters, docks for St John departures/arrivals)</p> <p>Visitor circulation:</p>	<p>Same as proposal</p>	<p>In cooperation with Virgin Islands government, expand public dock for use by individuals and groups, coordinate development with actions for Cruz Bay</p>
<p>Orientation/ interpretation:</p> <p>Park operations facilities:</p> <p><u>St. John Island-- Developed Recreation Unit</u></p> <p>Cruz Bay (NPS operations center on St. John, docks for St. Thomas arrivals/ departures)</p> <p>Visitor circulation:</p>	<p>Improve information/orientation center at NPS dock</p> <p>Retain existing facilities</p> <p>Same as proposal</p>	<p>Construct a new orientation interpretation facility at public dock in cooperation with Virgin Islands government</p> <p>Same as proposal except convert dock to park operations only</p>
<p>Orientation/ interpretation:</p> <p>Park operations facilities:</p> <p>Caneel Bay (private resort)</p>	<p>Retain separate contact center at NPS dock</p> <p>Retain existing facilities</p> <p>Same as proposal</p>	<p>Expand or relocate public dock for individuals and groups in cooperation with Virgin Islands government</p> <p>Construct new orientation/interpretation facility in cooperation with Virgin Islands government (the structure could be designed to serve community needs)</p> <p>Convert visitor space in park office to operations office; renovate and enlarge existing residences at Lind Point, same as proposal for dock, playfield, maintenance facility, and research/resources management station.</p> <p>Same as proposal</p>

	Proposed: Improve Resource- Based Visitor Experience	Alternative 1: No Action	Alternative 2: Recreation Emphasis
Hawksnest Bay (beach access/nontour use)			
Parking	Realign Northshore Road and provide expanded parking	Retain existing parking area	Same as proposal
Orientation/interpretation:	Install wayside exhibit kiosk	None	Same as proposal
Beach facilities:	Construct new showers, vault toilets, changing stalls	Retain existing changing stalls and pit toilets	Same as proposal
Picnic tables and shelters:	Retain existing facilities	Same as proposal	Same as proposal
Demis Bay Overlook (vista)			
Parking	Construct and pave area for five cars	Retain existing gravel pullout	Same as proposal
Trail:	Improve existing	Maintain existing	Same as proposal
Trunk Bay (beach day use, tour groups and others)			
Parking:	Retain existing area	Same as proposal	Redesign and expand parking area
Beach facility:	Retain showers, flush toilets, and changing stalls; continue lifeguard service; make accessible to handicapped	Same as proposal	Same as proposal
Food service/beach equipment rental:	Retain existing facility	Same as proposal	Same as proposal
Picnic tables/shelters:	Retain	Same as proposal	Same as proposal
Orientation/interpretation:	Install wayside exhibit kiosk	None	Same as proposal
NPS residence:	Remove when less-intrusive quarters become available	Same as proposal	Same as proposal
Interpretive trails:	Improve underwater trail	Retain existing underwater trail	Improve underwater trail, develop land trail near historic plantation ruins to provide alternative activity for visitors not wanting to snorkel
Beach/reef carrying capacity:	Conduct research to establish capacity; manage use in accord with findings	Manage according to staff observation	Same as proposal

	Proposal: Improve Resource- Based Visitor Experience	Alternative 1: No Action	Alternative 2 Recreation Emphasis
Cinnamon Bay (camping, beach use)			
Parking:	Retain area	Same as proposal	Same as proposal
Orientation/ interpretation:	Install wayside exhibit kiosk	None	Same as proposal
Visitor facilities:	Retain existing campground, food service, store, beachside interpretive area, amphitheater, lifeguard service, concessioner residence, conduct study to relocate individual sites out of flood-hazard zone; prepare flood warning, evacuation, and management plan; make site accessible to handicapped	Retain existing campground, food service, store, beachside interpretive area, lifeguard service, concessioner residence, amphitheater; prepare flood warning, evacuation, and management plan	Conduct study to relocate entire campground and facilities away from high-hazard area, consider day use if appropriate, retaining some food and beach facilities
Danish warehouse:	Continue adaptive use for interpretation and beach equipment rental	Same as proposal	Same as proposal
Ruins interpretive trail:	Retain trail	Same as proposal	Same as proposal
Sewage treatment plant, water system, and incinerator:	Retain facilities; remove incinerator when solid waste disposal facility is provided elsewhere	Same as proposal	If campground is relocated, reduce sewage treatment plant operations; remove incinerator as in proposal or to new campground location
NPS residence and storage:	Relocate facilities away from historical area and trail	Retain on present sites	Relocate, possibly to new campground location
Concessioner residence: Retain	Retain	Retain	Retain
Maho Bay (beach day use and private camping)			
Parking:	Continue present parking	Same as proposal	Negotiate easement to relocate road and construct parking area for 15 cars
Beach shelter:	Retain pavilion	Same as proposal	Same as proposal
Private campground/meal service:	Continue as private inholding as long as compatible with park values	Same as proposal	Same as proposal
Francis Bay (beach day use for boaters and others)			
Parking:	Expand area for approximately 10 cars	Retain area	Expand and pave area
Access road:	Upgrade unpaved road	Retain road	Upgrade and pave road
Beach facilities:	Replace pit toilets with other self-contained toilets; retain picnic tables	Retain pit toilets and picnic tables	Add new showers, flush toilets, changing stalls, water and sewer systems, lifeguard service, and picnic tables at scale of Trunk Bay

	Proposal. Improve Resource- Based Visitor Experience	Alternative 1: No Action	Alternative 2. Recreation Emphasis
Beach/reef carrying capacity.	Manage according to staff observations	Same as proposal	Establish carrying capacity through research and manage according to findings
NPS residences:	Remove when less intrusive quarters become available	Same as proposal	Same as proposal
Annaperg (historical interpretation)			
Parking	Relocate area a short distance from historic ruins	Retain near ruins	Same as proposal
Historic ruins.	Continue this as focal point for historical interpretation on St. John	Same as proposal	Same as proposal
Visitor comfort:	Provide self-contained toilets	No facilities	Same as proposal, and add water fountain
Interpretive trail	Improve	Retain	Same as proposal
Centerline Road (circulation route)			
Parking and overlooks:	Improve parking at trailheads; maintain and improve overlooks	Retain undeveloped parking, maintain overlooks	Same as proposal
Wayside signs:	Upgrade existing signs	Maintain existing signs	Same as proposal
NPS residences:	Retain residences	Same as proposal	Same as proposal
Catherineberg (historic site)			
Parking/circulation:	Construct small parking area at historic site and experimental gardening plot	Retain undeveloped parking	Relocate Catherineberg Road in cooperation with Virgin Islands government to minimize impact on historic resources; otherwise, same as proposal
Experimental gardening:	Permit for educational purposes in cooperation with Project St. John	Same as proposal	Same as proposal
<u>St. John Island--Rural Unit</u>			
East End to Haulover (rural driving and hiking)			
Paved road:	Retain existing road; develop parking/scenic overlooks	Retain existing road	Same as proposal
Trails:	Improve existing foot trail along Water Creek/Otter Creek peninsula	None	Same as proposal, plus construct new foot trail to Turner Point; provide primitive campsite at headland between Otter and Water creeks
Bordeaux Mountain Road (primitive road)	Maintain road; improve vistas, turn-around	Same as proposal	Same as proposal

	Proposal: Improve Resource- Based Visitor Experience	Alternative 1: No Action	Alternative 2: Recreation Emphasis
Saltpond Bay (beach day use)			
Parking:	Pave existing area	Retain gravel parking area	Construct and pave parking area near beach
Access:	Retain combined visitor trail/maintenance vehicle access way	Same as proposal	Construct and pave new road to parking area near beach
Orientation/interpretation:	Replace bulletin board with kiosk	Retain bulletin board	Same as proposal
Beach facilities:	Retain self-contained toilets	Same as proposal	Provide additional self-contained toilets
Picnic tables:	Retain	Same as proposal	Provide additional tables and add sun shelters
Interpretive trails:	Provide interpretation of major features	No interpretation	Same as proposal
Lameshur (beach day use)			
Road:	Realign, reconstruct, and pave road from Saltpond to Little Lameshur	Retain existing graded road	Same as proposal
Parking:	Realign road inland from Little Lameshur beach and add parking for 10 cars; pave 10-car parking area at historic structure	Retain existing unpaved road shoulders for parking	Same as proposal
Beach facilities:	Provide changing stalls, new toilets, and water and sewer systems	None	Same as proposal
Little Lameshur historic structure:	Adapt for operations; retain vista	Retain for storage, vista	Same as proposal
NPS dock:	Retain	Same as proposal	Same as proposal
Research camp and wet lab:	Retain	Same as proposal	Convert camp to group campground, remove wet lab
NPS residence:	Retain	Same as proposal	Same as proposal

	Proposed: Improve Resource- Based Visitor Experience	Alternative 1, No Action	Alternative 2 Recreation Emphasis
<u>St. John Island--Roadless Unit</u>			
Reef Bay (historic ruins, tropical forest, petroglyphs)			
Interpretation:	Add interpretive wayside at sugar factory	None	Same as proposal
Shore facilities:	Provide small-boat landing and self-contained toilets; maintain picnic tables	Same as proposal	Same as proposal
Trails:	Retain present trail network, conduct routing and maintenance study	Retain present trail network	Same as proposal
<u>St. John Island--Marine Unit</u>			
Information/safety:	Continue present map and safety leaflet, plus patrol service for boaters	Same as proposal	Same as proposal
Navigation aids:	Maintain markers for channels, anchorages, add markers for visitor safety and resource protection	Same as proposal	Same as proposal
Garbage facilities:	Provide facilities near present beach areas	Same as proposal	Same as proposal

Table 10: Estimate of NPS Development Costs (Net)

	<u>Proposal</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
<u>Hassel Island Unit</u>			
boat landings	\$ 15,000	\$ 15,000	\$ 15,000
operations/ranger station	318,000	0	318,000
primitive group campground	149,000	0	149,000
picnic area	5,000	0	5,000
self-contained toilets	40,000	0	40,000
trails	100,000	0	110,000
information/orientation/interpretation	15,000	0	15,000
Subtotal for Hassel Island unit	<u>\$ 642,000</u>	<u>\$ 15,000</u>	<u>\$ 652,000</u>
<u>Developed Recreation Unit</u>			
St. Thomas Island-Redhook			
public dock in cooperation with Virgin Islands government	\$ 0	\$ 0	\$ 24,000
information/orientation/interpretation facility	24,000	24,000	120,000
exhibits	9,000	9,000	9,000
rehabilitation of headquarters	66,000	0	66,000
Subtotal for Redhook	<u>99,000</u>	<u>33,000</u>	<u>219,000</u>
St. John Island			
Cruz Bay			
expansion or relocation of public dock in cooperation with Virgin Islands government	0	0	24,000
information/orientation/interpretation facility	24,000	0	210,000
exhibits	5,000	5,000	5,000
new maintenance facility	1,000,000	0	1,000,000
rehabilitation of operations facility	60,000	0	40,000
renovation of residences	0	0	30,000
research/resources management facility	180,000	180,000	180,000
Subtotal for Cruz Bay	<u>1,269,000</u>	<u>185,000</u>	<u>1,489,000</u>
Hawksnest Bay			
parking and road realignment	149,000	0	149,000
orientation/interpretation	6,000	0	6,000
beach facilities, picnic tables, shelters	255,000	0	255,000
Subtotal for Hawksnest Bay	<u>410,000</u>	<u>0</u>	<u>410,000</u>
Denis Bay Overlook			
parking	9,000	0	9,000
trail	4,000	0	4,000
Subtotal for Denis Bay	<u>13,000</u>	<u>0</u>	<u>13,000</u>

Note: Costs are rough "class C" estimates based on comparable installations rather than site-specific designs. They are net figures (actual construction costs). At the end of this table, a summary adds factors for project supervision and contingencies.

	<u>Proposal</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
Trunk Bay			
parking	\$ 0	\$ 0	\$ 72,000
orientation/interpretation	9,000	0	9,000
NPS residence removal	5,000	5,000	5,000
interpretive trails (land)	0	0	25,000
underwater trail	25,000	0	25,000
Subtotal for Trunk Bay	<u>39,000</u>	<u>5,000</u>	<u>136,000</u>
Cinnamon Bay			
orientation/interpretation	11,000	0	11,000
incinerator removal	10,000	10,000	10,000
NPS residence and storage relocation	148,000	0	148,000
Subtotal for Cinnamon Bay	<u>169,000</u>	<u>10,000</u>	<u>169,000</u>
Maho Bay			
road relocation and parking	0	0	72,000
Subtotal for Maho Bay	<u>0</u>	<u>0</u>	<u>72,000</u>
Francis Bay			
parking	15,000	0	90,000
access road	10,000	0	150,000
beach facilities	40,000	0	200,000
NPS residence removal	5,000	5,000	5,000
Subtotal for Francis Bay	<u>70,000</u>	<u>5,000</u>	<u>445,000</u>
Annaberg			
parking relocation	25,000	0	25,000
visitor comfort	40,000	0	42,000
interpretive trail improvement	4,000	0	4,000
exhibits	29,000	29,000	29,000
Subtotal for Annaberg	<u>98,000</u>	<u>29,000</u>	<u>100,000</u>
Centerline Road			
parking and overlooks	36,000	0	36,000
wayside signs	6,000	0	6,000
Subtotal for Centerline Road	<u>42,000</u>	<u>0</u>	<u>42,000</u>
Catherineberg			
parking	19,000	0	19,000
Subtotal for Catherineberg	<u>19,000</u>	<u>0</u>	<u>19,000</u>
Subtotal for developed recreation unit	\$2,228,000	\$ 267,000	\$3,114,000
<u>Rural Unit</u>			
East End to Haulover			
parking/overlooks; 3 cars (4 areas)	\$ 22,000	\$ 0	\$ 22,000
trails/campsites	70,000	0	175,000
Subtotal for East End	<u>92,000</u>	<u>0</u>	<u>197,000</u>
Bordeaux Mountain Road			
parking, vistas, turn-around	16,000	16,000	16,000
Subtotal for Bordeaux Mountain	<u>16,000</u>	<u>16,000</u>	<u>16,000</u>

	<u>Proposal</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
<u>Saltpond Bay</u>			
parking	\$ 18,000	\$ 0	\$ 18,000
access road/trail	8,000	8,000	120,000
orientation/interpretation	9,000	0	9,000
beach facilities, picnic tables	0	0	30,000
interpretive trails (800' graded trail)	8,000	0	8,000
Subtotal for Saltpond Bay	<u>43,000</u>	<u>8,000</u>	<u>185,000</u>
<u>Lameshur</u>			
road realignment and paving	1,200,000	0	1,200,000
parking	18,000	0	18,000
beach facilities	95,000	0	95,000
conversion of research camp to group campground	0	0	20,000
operations station (600 sq ft.)	30,000	0	30,000
Subtotal for Lameshur	<u>1,343,000</u>	<u>0</u>	<u>1,363,000</u>
Subtotal for rural unit	\$1,494,000	\$ 24,000	\$1,761,000
<u>Roadless Unit</u>			
<u>Reef Bay</u>			
interpretation	\$ 3,000	\$ 0	\$ 3,000
shore facilities	53,000	53,000	53,000
Subtotal for roadless unit	<u>\$ 56,000</u>	<u>\$ 53,000</u>	<u>\$ 56,000</u>
<u>Marine Unit</u>			
buoys and markers	\$ 20,000	\$ 20,000	\$ 20,000
Subtotal for marine unit	<u>\$ 20,000</u>	<u>\$ 20,000</u>	<u>\$ 20,000</u>

Summary of NPS Construction Costs (Gross)

	<u>Proposal</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
<u>Hassel Island Unit</u>			
Net construction cost	\$ 642,000	\$ 15,000	\$ 652,000
Project supervision (+15%)	96,000	2,000	98,000
Contingencies (+16%)	103,000	3,000	104,000
Subtotal (gross)	<u>841,000</u>	<u>20,000</u>	<u>854,000</u>
<u>Redhook/St. John</u>			
Net construction cost	3,798,000	364,000	4,951,000
Project supervision (+15%)	570,000	55,000	743,000
Contingencies (+16%)	608,000	58,000	792,000
Subtotal (gross)	<u>4,976,000</u>	<u>477,000</u>	<u>6,486,000</u>
Parkwide total (gross)	\$5,817,000	\$ 497,000	\$7,340,000

Table 11: Implementation Costs of Proposal and Alternatives
(1983 dollars)

	Proposal	Alternative 1	Alternative 2
<u>Hassel Island</u>			
NPS development	\$841,000 capital cost	\$20,000 capital cost	\$854,000 capital cost
NPS cultural resource management*	\$155,000 annual cost	\$101,000 annual cost	\$155,000 annual cost
Concessioner development	0	0	\$715,500 private capital
Concessioner historical restoration	0	0	\$1,610,000 private capital
<u>Redhook & St. John Island</u>			
NPS development	\$4,976,000 capital cost	\$477,000 capital cost	\$6,486,000 capital cost
Cultural resource management*	\$100,000 annual cost	\$70,000 annual cost	\$500,000 annual cost
<u>Parkwide</u>			
Natural resource studies	\$550,000 over 5 years	\$550,000 over 5 years	\$600,000 over 5 years
Park operations (not included above)	\$1,430,000 annual cost	\$1,280,000 annual cost (1983 budget is \$1,270,000)	\$1,549,000 annual cost
Interpretive motion picture	\$125,000	0	\$125,000

Note: Costs are rough "class C" estimates based on comparable installations rather than site-specific designs. They are gross figures, including actual construction costs plus 31 percent for supervision and contingencies.

*See appendix D for more detail on cultural resource management costs.

Table 12. Current and Proposed Staffing Requirements

Current Staff*	Proposer		Alternative 1		Alternative 2	
	No.	Area	Duties	No.	Area	Duties
Permanent	47	2	47	2	47	2
Other	11	3	11	3	11	3
Subtotal	58	5	58	5	58	5
Additional Staff Needs						
Maintenance						
Permanent	1	Hassel Island	Maintain water and permanent sewer system, trails, quarters, administrative buildings, and boat docks	0		Same as proposal plus the following Permanent laborer (WG-3)
laborer (WG-3)	1	Hassel Island	Assist maintenance worker and provide garbage cleanup	0		laborer (WG-3)
laborer (WG-3)	1	St. John	Maintain trails (crew increased to three people to allow for regular trail maintenance rather than just emergency repairs)	0		
Other (seasonal) laborer (WG-3)	2	St. John	Help carpenter and plumber allowing them to use their skills on technical projects while laborers do labor-type work now done at the journeyman level	0		Other (seasonal) laborer (WG-3)
laborer (WG-3)	1	St. John	Provide garbage collection and incineration	0		
Resource Protection and Visitor Services						
Permanent						
lifeguard (GS-3)	2	St. John	Provide lifeguard services at Hawsnest and Cinnamon Bay beaches	0		Same as proposal plus the following Permanent park ranger (GS-6) lifeguard (GS-3)
Administration						
Other						
clerk-typist (GS-3)	1	Headquarters	Provide typing services to cover current and increased administrative functions (0.5 workyear)	0		Permanent clerk-typist (GS-3)
Resource Management						
animal handler (WG-5)	1	St. John	Coordinate and serve as government representative on feral animal control within the park, halt livestock trespass on to park lands			Same as proposal

* Current staff is the full-time equivalent ceiling allowed for Virgin Islands National Park during the 1983 fiscal year; permanent full-time and subject-to-furlough staff are shown as permanent, while part-time and seasonal are shown as other. No discussion is provided concerning the possibility of contracting any of the above. A-76 compliance will have to be determined. Cost estimates will cover contract or NPS employee.

Table 13: Equipment Needs of Proposal and Alternatives

	<u>Proposal</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
Pickups	1	0	1
Radio (NPS)	2	0	2
Computer	1	0	1
Rescue Boards	2	0	2
20-foot Boats*	2	0	2

*If adequate public ferry service to Hassel Island is developed by others and if it can be used to haul NPS supplies, materials, and workers to the island, then one boat may be eliminated.

Table 14: Capacities at One Time of Park Facilities and Resources Under Proposal and Alternatives

	<u>Proposal</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
<u>Hassel Island (persons)</u>			
Creque's Marine Railway	30	10	100
Trail system	100	50	120
Western beaches	50	30	80
Garrison House, Ft. Willoughby, Cowell's battery	50	50	50
Shipley's Battery	25	0	30
Careening Cove	25	0	100
<u>St. Thomas Island--</u>			
<u>Developed Recreation Unit</u>			
Redhook contact station or visitor center (persons)	50	50	100
<u>St. John Island--</u>			
<u>Developed Recreation Unit</u>			
Cruz Bay contact station or visitor center (persons)	50	50	50
Hawksnest Bay parking (cars)	15	5	15
beach (persons)	135	135	135
Denis Point Overlook parking (cars)	5	2	5
trail and overlook (persons)	15	15	15
Trunk Bay parking (cars/taxis)	50/20	50/20	70/30
beach (persons)	500	500	500
underwater trail (persons)	30	30	30

	<u>Proposal</u>	<u>Alternative 1</u>	<u>Alternative 2</u>
<u>Cinnamon Bay</u>			
parking (cars)	50	50	50
beach (persons)	350	350	350
campground (persons)	360	360	360
Danish warehouse (persons)	20	20	20
cafeteria (persons)	150	150	150
camp store (persons)	20	20	20
beach talk area (persons)	50	50	50
amphitheater (persons)	100	100	100
<u>Maho Bay</u>			
parking (cars)	5	5	5
pavilion (persons)	60	60	60
<u>Francis Bay</u>			
parking (cars)	10	5	75
beach (persons)	250	50	550
<u>Annaberg</u>			
parking (cars)	10	10	10
trail (persons)	100	100	100
living-history demonstrations (persons)	30	30	30
<u>Catherineberg</u>			
parking (cars)	5	5	5
ruins (persons)	15	15	15
gardening plots (acres)	2	2	2
research/resources management center (people)	10	10	10
<u>Rural Unit</u>			
<u>East End</u>			
camps	0	0	10
trails	30	0	60
<u>Saltpond Bay</u>			
parking (cars)	5	5	10
beach (persons)	65	65	65
trails (persons)	50	50	50
<u>Lameshur</u>			
parking (cars)	10	10	20
beach (persons)	150	150	150
<u>Roadless Unit</u>			
<u>Reef Bay</u>			
beach (persons)	20	20	20
trails (persons)	90	90	90
ruins (persons)	25	25	25
<u>Marine Unit (anchorage)</u>			
Caneel Bay	30	30	30
Hawksnest Bay	10	10	10
Trunk Bay	10	10	10
Cinnamon Bay	12	12	12
Maho Bay	20	20	20
Francis Bay	50	50	50
Leinster Bay	20	20	20
Saltpond Bay	12	12	12
Grootpan/Kiddell Bays	10	10	10
Lameshur/Europa Bay	20	20	20
Reef Bay	15	15	15

ENVIRONMENTAL CONSEQUENCES

The environmental consequences of the proposal and the alternatives are presented in terms of impacts on visitors, natural resources, cultural resources, the socioeconomic environment, and park management. The impacts are summarized below; specific impacts are presented in table 15.

VISITORS

Under the proposal, visitors to Hassel Island would be provided with exploration and discovery experiences. Access to the island would be provided, and a trail system would be developed. Visitors would walk to see the island. A primitive campground would be provided for group use. On St. John, the present visitor experience and activities would be continued, with moderate expansion of facilities as needed to accommodate increased use. The improvement of facilities and orientation/interpretation facilities would enhance the overall visitor experience. Efforts would be made to continue opportunities for different types of experiences, thus ensuring that areas were available for solitude as well as for group-oriented or more programmed visits. Maintaining only selected cultural resources and treating others as archeological sites would detract from the experience of some visitors.

Under alternative 1, the visitor experience and recreational opportunities would not change from the present. Visitors to Hassel Island would be assured of safe visits, but no facilities would be provided. Existing facilities and services on St. John would be continued.

Alternative 2 would improve facilities and orientation/interpretation services, as under the proposal, but certain additional developments that would be undertaken would greatly change aspects of the visitor experience. On Hassel Island, development of Creque's Marine Railway would create a focus for activities and events, and a tent-cabin campground would be provided as well as group camping. This would result in the loss of low-density opportunities at some sites on Hassel Island. Visitor use on St. John would also be more concentrated, particularly at Francis and Saltpond bays. The addition of transportation/orientation/interpretation centers would make it easier for visitors to find out what the park offers. Because all cultural sites on or eligible for listing on the National Register of Historic Places would be maintained, the experience for history enthusiasts would be enhanced.

NATURAL RESOURCES

The National Park Service, in consultation with the U.S. Fish and Wildlife Service, has determined that there will be no effect on endangered or threatened species or on critical habitat (see biological assessment, appendix B).

None of the actions of the proposal or alternatives, or routine NPS operations, would significantly affect air quality, particularly visibility, in

the park. The construction of new facilities and park operations under the proposal and alternative 2 would probably have little impact on water quality. Silt screens or other methods would be used to mitigate turbidity during construction. Although some release of petroleum products is unavoidably associated with normal boat use and maintenance, this would not be expected to significantly affect park resources. Fish and shellfish populations would be sustained in a natural condition. User regulations, boater education, and programs to reduce marine pollution would sustain the natural seagrass/coral reef/beach system.

Under the proposal and alternative 2, deletion of lands from the park would remove the following vegetative types (approximate) from future protection:

	<u>dry forest</u>	<u>moist forest</u>	<u>croton-acacia scrub</u>
-746 acres above Coral Bay	-250	-496	0
- 82 acres at Cocoloba Village*	- 36	- 36	-10
<u>-102 acres at Guinea Gut/ Susanaberg*</u>	<u>- 10</u>	<u>- 46</u>	<u>-46</u>
-930	-296	-578	-56

*many tracts in these areas are developed

Addition of lands to the park would protect the following:

<u>+172</u>	<u>+103</u>	<u>+ 69</u>	<u>0</u>
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Net change:

-758	-193	-509	-56
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Research programs would increase knowledge about and understanding of natural ecosystems. This would result in better management of vegetation and soil processes and improved watershed management. Approximately 34 acres of soils classed as prime farmland by the U.S. Soil Conservation Service would continue to be protected. Wetlands would not be directly or indirectly occupied or modified. Distinctive features, including salt ponds, mangrove stands, and rock outcrops, would be avoided by development. Use levels would not threaten beachfront vegetation. Other vegetation types would not be significantly affected by proposed development.

Under alternative 2, additional impacts would result from more development, especially at Francis and Saltpond bays and at the site of a relocated campground, if that action is undertaken to remove flood-hazard impacts. If the campground was moved, succession could restore a few acres of natural vegetation.

CULTURAL RESOURCES

Under the proposal, which calls for continued management of major portions of the park as natural areas, further concealment and deterioration of cultural sites would result. Cultural sites in the park that are not selected for maintenance would face long-term irreversible effects in that they would revert to archeological sites. Selected sites on the National Register of Historic Places (seven on St. John and seven on Hassel Island) would be protected. Changing the boundary to include the Battery Gut drainage would add Estate Beverhoudt, which is on the National Register of Historic Places, to the park. Research and surveys would be undertaken to better identify known and unknown resources, thus ensuring as complete a cultural record as possible. The stabilization, preservation, and adaptive use of historic structures might result in the removal of structurally unsound original fabric in order to preserve other parts of a structure.

Under alternative 1, the continued management of major portions of the park as natural areas would have the same effects on cultural resources as under the proposal. The absence of a firm priority list to guide the maintenance of historic sites (seven on St. John and one on Hassel Island) would result in uneven treatment of sites, the loss of some sites, and inadequate protection of others. Structures that were not maintained would suffer long-term irreversible effects in that they would gradually become archeological sites.

Under alternative 2, the effects of natural area management on cultural resources would be the same as under the proposal and alternative 1. However, all cultural resources on or eligible for the National Register would be stabilized. Research and surveys to better identify known and unknown resources would ensure a full cultural record. The stabilization, preservation, adaptive use, or restoration of historic structures might result in the removal of structurally unsound original fabric in order to preserve other parts of a structure. Including the Battery Gut drainage within the boundary would add Estate Beverhoudt, which is on the National Register, to the park.

SOCIOECONOMIC ENVIRONMENT

Additional park facilities and new activities under the proposal, along with improved orientation/interpretation services, would tend to attract more visitors. Visitors also might be encouraged to stay longer, resulting in both demands and opportunities for the local economy. Capital expenditures and increased staffing would have the same effect. Boundary changes would not affect existing land uses, but they would settle uncertainties about the extent of the park. Upon acquisition of 172 acres of land on St. John Island, the federal act on payments in lieu of taxes (31 USC 1601 et seq.) would apply. Existing private uses within the park would be continued under mutually satisfactory agreements as long as the uses were compatible with park values. Sport and commercial fishing would continue as long as they are compatible with maintaining natural marine populations.

Present trends would continue under alternative 1.

Under alternative 2, the types of effects would be similar to the proposal except they would be greater in extent. The visitor capacities on both St. John and Hassel islands would be increased, resulting in higher levels of visitation and possibly longer stays than under the proposal. Capital expenditures and staffing levels would also be higher than under the proposal. Major increases in cultural resources management and the investment of private sector capital at the historical maritime center on Hassel Island would be a significant local stimulus, as would the cooperative transportation/orientation centers. Some services could compete with those in Charlotte Amalie.

PARK MANAGEMENT

New operational facilities would increase staff efficiency and standards achieved. Additional staff and equipment would be required under the proposal for new operations on Hassel Island, for natural resource management programs, and potentially for interpretive programs. Research programs for natural resource management would initially require research staff and contractors, followed by additional operations personnel to put new programs into practice. The research programs would have the benefit of helping to focus long-term staff efforts. Improved orientation/information services could increase demands for additional interpretive programs, resulting in a need for more staff. With regard to cultural resource management, establishing priorities for the maintenance of cultural resources would allow activities to be more effectively coordinated, and no increase in staff would be required. Park land deletions on St. John Island would remove the obligation from the National Park Service of preserving lands without park values. Park land additions on St. John would add to the NPS resource management obligations.

Under alternative 1 there would be no change from present park operations except for natural resource management activities. Research staff and contractors would be needed initially, followed by additional operations personnel.

The impacts on park management under alternative 2 would be similar to the proposal, but at a much larger scale. Maintaining all cultural resources would require new staff and equipment. Concession operations at Hassel Island and new facilities at Francis and Saltpond bays, along with the cooperative development of visitor facilities at Redhook and Cruz Bay by the National Park Service and the Virgin Islands government, would also require additional staff and equipment. If funding sources were not dependable, programs could be adversely affected.

Table 15: Environmental Consequences

Area	Proposal: Improve Resource-Based Visitor Experience	Alternative 1: No Action	Alternative 2: Recreation Emphasis
Hassel Island			
Visitors:	<p>The island's scenic quality would be preserved; visitors would have opportunities to hike and picnic and to view historic ruins, with low-key interpretation. The scenic panoramas of St. Thomas Harbor would be available. Organized groups would be provided with primitive camping facilities. Safety would be improved by stabilization of ruins.</p>	<p>Impacts would be similar to the proposal; however, visitor capacity would be less and no camping would be provided for organized groups.</p>	<p>The visitor experience on Hassel Island would be more activity oriented, and the quality of the ruins would be lost in the restoration. Visitors could observe a working boat yard and would be told about the historic use of Creque's Marine Railway. Food services would be available. The island's scenic quality would be preserved, and visitors could hike and picnic, and stay overnight in simple tent-cabins. Groups could use primitive camping facilities. Scenic panoramas of St. Thomas Harbor would be available. Safety would be improved by ruins stabilization.</p>
Natural Resources:	<p>Vegetation cleared would amount to 1.7 acres of acacia and other successional plant species around structures: 0.7 acre (partial) for the group campground, and 2 linear miles for trail construction. Development and visitor use would result in a minor alteration of existing wildlife habitat; populations of some opportunistic species, such as exotic rodents, could expand because of increased use. Species would be inventoried and natural processes researched to provide a basis for objective management. Water quality would be improved with the installation of better treatment facilities and solid waste disposal. Control of open burning on the island would improve air quality.</p>	<p>Impacts would be similar to the proposal except that clearing would total 1 acre and there would be no clearing for new trail construction.</p>	<p>Impacts would be similar to the proposal plus an additional linear 0.5 mile would be cleared for new trail construction.</p>
Cultural Resources:	<p>Opening Hassel Island to visitation could result in increased vandalism to cultural resources; however, the park would protect cultural sites and offset the impact of increased visitation. Construction of a new trail and a group campground in Careening Cove could disturb some historical ruins or archeological sites. Treatment of historic ruins would preserve historic fabric that would otherwise be lost.</p>	<p>Impacts would be similar to the proposal. The historic fabric at Creque's Marine Railway and head house would be preserved, all other resources would be lost. Fort Willoughby, Garrison House, and Cowell's Battery would be managed independently by Virgin Islands government.</p>	<p>Impacts would be similar to the proposal. A partial or complete restoration of Creque's Marine Railway would offer increased protection of some of the historic fabric. Other portions of the complex would be subject to wear from use. Additionally, the apprenticeship building/repairing program and boat-making demonstration would support a regional cultural tradition.</p>
Socioeconomic Environment:	<p>A new visitor attraction in St. Thomas Harbor would be provided, enhancing tourism.</p>	<p>An opportunity for local use of Hassel Island would be provided.</p>	<p>A significant new attraction in St. Thomas Harbor would enhance tourism. Employment and training opportunities would be provided. Services would compete with those offered in Charlotte Amalie.</p>
Park Management:	<p>Providing operational facilities (ranger station/residence, docks) would make management more effective. The proposed boundary would give adequate control over access and resource values.</p>	<p>There would be no change from the present. The boundary would minimize NPS responsibility over adjacent waters but might not provide adequate authority.</p>	<p>Providing operational facilities (ranger station/residence and docks) would enhance management. Park's concession management function would increase. This boundary would give maximum control over access and resource values, but it would also maximize NPS obligations.</p>

Table 15: Environmental Consequences

Area	Proposal: Improve Resource-Based Visitor Experience	Alternative 1: No Action	Alternative 2 Recreation Emphasis
Hassel Island			
Visitors:	<p>The island's scenic quality would be preserved; visitors would have opportunities to hike and picnic and to view historic ruins, with low-key interpretation. The scenic panoramas of St. Thomas Harbor would be available. Organized groups would be provided with primitive camping facilities. Safety would be improved by stabilization of ruins.</p>	<p>Impacts would be similar to the proposal; however, visitor capacity would be less and no camping would be provided for organized groups.</p>	<p>The visitor experience on Hassel Island would be more activity oriented, and the quality of the ruins would be lost in the restoration. Visitors could observe a working boat yard and would be told about the historic use of Creque's Marine Railway. Food services would be available. The island's scenic quality would be preserved, and visitors could hike and picnic, and stay overnight in simple tent-cabins. Groups could use primitive camping facilities. Scenic panoramas of St. Thomas Harbor would be available. Safety would be improved by ruins stabilization.</p>
Natural Resources:	<p>Vegetation cleared would amount to 1.7 acres of acacia and other successional plant species around structures: 0.7 acre (partial) for the group campground, and 2 linear miles for trail construction. Development and visitor use would result in a minor alteration of existing wildlife habitat; populations of some opportunistic species, such as exotic rodents, could expand because of increased use. Species would be inventoried and natural processes researched to provide a basis for objective management. Water quality would be improved with the installation of better treatment facilities and solid waste disposal. Control of open burning on the island would improve air quality.</p>	<p>Impacts would be similar to the proposal except that clearing would total 1 acre and there would be no clearing for new trail construction.</p>	<p>Impacts would be similar to the proposal plus an additional linear 0.5 mile would be cleared for new trail construction.</p>
Cultural Resources:	<p>Opening Hassel Island to visitation could result in increased vandalism to cultural resources; however, the park would protect cultural sites and offset the impact of increased visitation. Construction of a new trail and a group campground in Greening Cove could disturb some historical ruins or archeological sites. Treatment of historic ruins would preserve historic fabric that would otherwise be lost.</p>	<p>Impacts would be similar to the proposal. The historic fabric at Creque's Marine Railway and head house would be preserved, all other resources would be lost. Fort Willoughby, Garrison House, and Cowell's Battery would be managed independently by Virgin Islands government.</p>	<p>Impacts would be similar to the proposal. A partial or complete restoration of Creque's Marine Railway would offer increased protection of some of the historic fabric. Other portions of the complex would be subject to wear from use. Additionally, the apprenticeship building/repairing program and boat-making demonstration would support a regional cultural tradition.</p>
Socioeconomic Environment:	<p>A new visitor attraction in St. Thomas Harbor would be provided, enhancing tourism.</p>	<p>An opportunity for local use of Hassel Island would be provided.</p>	<p>A significant new attraction in St. Thomas Harbor would enhance tourism. Employment and training opportunities would be provided. Services would compete with those offered in Charlotte Amalie.</p>
Park Management:	<p>Providing operational facilities (ranger station/residence, docks) would make management more effective. The proposed boundary would give adequate control over access and resource values.</p>	<p>There would be no change from the present. The boundary would minimize NPS responsibility over adjacent waters but might not provide adequate authority</p>	<p>Providing operational facilities (ranger station/residence and docks) would enhance management. Park's concession management function would increase. This boundary would give maximum control over access and resource values, but it would also maximize NPS obligations</p>

St. John's Island--
Developed Recreation Unit

Redhook

Visitors:

A park wayside at the public dock would better orient and inform visitors leaving for St. John.

Visitors would receive a more intensive orientation to the park and the Virgin Islands as a whole, however, space restrictions at the public dock could result in traffic congestion and conflicts between visitor and commuter needs.

There would continue to be a lack of information concerning the park at the public dock.

Natural resources:

No significant impact.

No new impact

Approximately 0.5 acre of existing disturbed land would be occupied by a new visitor contact station and expanded parking area, some filling could be necessary at the public dock.

Cultural resources:

Although no impact would be expected, construction at park headquarters would be monitored for unknown archeological resources.

No new impact.

Although no impact would be expected, construction of the visitor contact station and parking lot site would be monitored during construction.

Socioeconomic environment:

Because of improved orientation/interpretation services, tourists would have better visits.

No change from present.

Land for a new NPS/Virgin Islands visitor contact station would be very limited and potentially costly, both to the Virgin Islands government and the NPS, depending on how expenses were shared. Because of improved information/orientation/interpretation services, tourists would have better visits.

Park management:

Expanded park office space would help improve efficiency.

No change from present.

Expanded park office space would help improve efficiency. NPS would devote staff time to cooperative planning and operation of new facility. NPS dock would be used for park operations only, avoiding visitor conflicts.

St. John Island--Developed Recreation Unit

Cruz Bay

Visitors:

Visitors arriving by public ferry would be better informed of NPS programs and opportunities. Better design and organization of the area at the entrance to the existing maintenance yard would result in less of a visual intrusion.

There would be no new impact, many visitors arriving on St. John by public ferry would continue to be uninformed of the role of Virgin Islands National Park on St. John.

Visitors would receive more intensive orientation and interpretation of the St. John portion of the park. There would be less confusion for many visitors because of the proximity of the new orientation/interpretation facility to their circulation patterns. Because of space restrictions, traffic congestion and conflicts between visitor and commuter needs could result. Expansion of the existing houses on Lind Point would have a minor effect on the view of Cruz Bay from the harbor entrance.

Area	Proposal: Improve Resource-Based Visitor Experience	Alternative 1: No Action	Alternative 2 Recreation Emphasis
Natural resources:	Approximately 0.3 acre of land would be cleared in the vicinity of the existing maintenance yard. New maintenance facilities would improve the control of waste motor oil and other refuse at the site and reduce the potential for water pollution from contaminated runoff. Access to the facility would be designed to avoid constricting the floodway in the gut, and the new building would be sited above the 100-year floodplain. About 0.3 acre of dry forest vegetation would be cleared for a parking and work area at the new research and resources management station.	No new impacts	Several hundred square feet of previously disturbed land would be occupied by the new orientation/interpretation facility. Expansion of the existing houses on Lind Point would have little impact. Expansion of maintenance site would affect 0.5 acre. About 0.3 acre of dry forest vegetation would be cleared for a parking and work area at the new research and resources management station.
Cultural resources:	The site for the new maintenance facility would be surveyed for archeological resources prior to construction and appropriate action would be taken to protect any resources encountered.	No new impacts.	The site of the new visitor orientation/interpretation facility would be surveyed for archeological resources, and appropriate actions would be taken to protect any encountered.
Socioeconomic environment:	Because of improved orientation/interpretation services, tourists would have better visits. Some of the proposed construction and rehabilitation projects could be contracted to local companies.	No change from present.	Land available for the NPS/Virgin Islands visitor orientation/interpretation facility would be very limited and potentially costly, both to Virgin Islands government and to NPS, depending on how expenses were shared. Because of improved orientation/interpretation service, tourists would have better visits.
Park management:	Expanded park operations offices and maintenance facility would improve efficiency.	No change from present.	Expanded park operations offices and maintenance facility would improve efficiency. NPS would devote staff time to cooperative planning and operation of new facility. NPS dock would be used for park operations only, avoiding conflicts with visitor use.
Hawksnest Bay			
Visitors:	Visitor safety would be improved by providing adequate parking, reducing traffic congestion, and reducing pedestrian crossing of the Northshore Road. Improved facilities would enhance visitor enjoyment of the area.	No new impact; traffic congestion and pedestrian flow across the Northshore Road would continue to be a safety problem.	Same as the proposal.
Natural resources:	Approximately 0.7 acre of moist forest vegetation would be removed to realign the Northshore Road; the potential for water pollution would be reduced by installing vault toilets.	No new impact; potential pollution of Hawksnest Bay from pit toilets would continue.	Same as the proposal.
Cultural resources:	Before Northshore Road realignment, the construction area would be surveyed for archeological resources, and appropriate action would be taken to protect any encountered.	No new impact.	Same as the proposal.
Denis Bay Overlook			
Visitors:	Improving parking and trail access to the overlook could increase visitation to the site.	No new impacts.	Same as the proposal.
Natural resources:	There would be no significant impact. Soil erosion on the existing trail would be better controlled.	No new impacts.	Same as the proposal.
Cultural resources:	No significant impact is expected at the Denis Bay sugar mill ruins. If a cooperative agreement on care of site was not accomplished, then it would become an archeological site.	No new impacts.	Same as the proposal.

Area	Proposal: Improve Resource-Based Visitor Experience	Alternative 1 No Action	Alternative 2 Recreation Emphasis
Trunk Bay			
Visitors:	If a carrying capacity was established that was lower than future demand, then some visitors would be turned away from the beach; but visitors using the beach would have a less crowded situation. Although visitors would not be encouraged to visit the Trunk Bay ruins, safety at the ruins would be improved by stabilization.	No impact	Visitors would have an additional opportunity to hike a self-guided nature trail and observe historic ruins.
Natural resources:	No significant impact is expected, if research indicated that coral damage on the underwater nature trail was primarily visitor-related, then a carrying capacity would be established to allow restoration of the coral. Nesting habitat for the rare bridled quail dove could be disturbed during stabilization of the Trunk Bay ruins, stabilization work would be conducted during the nonnesting period.	No impact.	Approximately 0.3 acre of second-growth moist forest vegetation would be removed for expansion of existing parking lot. Nesting habitat for the rare bridled quail dove could be disturbed by visitor use and by stabilization of the Trunk Bay ruins, stabilization work would be conducted during the nonnesting period.
Cultural resources:	Stabilization of the Trunk Bay ruins would preserve their cultural value.	No impact; the ruins would continue to deteriorate.	Providing a self-guiding trail through the ruins could increase vandalism of the sites.
Cinnamon Bay			
Visitors:	Visitor safety and convenience would be improved by redesigning drainage or relocating some campsites out of the high-hazard area.	No new impact; occasional flooding in portions of the campground would continue.	If warranted by a study, the campground would be moved to a new location, and visitors would no longer be able to camp at Cinnamon Bay. Visitor safety would be improved by removing the existing facility from a floodplain.
Natural resources:	Redesign of the existing campground could allow more natural vegetation to be restored on part of the site. Inadvertent impacts could occur to beach processes if drainage patterns were altered. Relocating the existing storage and residences would allow 0.5 acre of moist forest vegetation to be restored while a comparable amount of vegetation adjacent to the new site would be removed. Removing the NPS incinerator and ash disposal area would remove a potential source of air pollution at Cinnamon Bay.	Impacts of removing the incinerator and ash disposal area would be the same as the proposal.	If it was feasible to relocate the campground out of the floodplain, about 8 acres at the existing site would revegetate and about the same quantity of land would be partially cleared at a new location (to be determined). Much of the existing campground site would be restored to mangrove wetland. Impacts of removing the incinerator and ash disposal area would be the same as the proposal.
Cultural resources:	Relocating the residences, storage area, and incinerator would improve the historic scene at the Cinnamon Bay ruins. Sites would be surveyed for archeological resources prior to new construction.	No new impact; storage facilities and residences would continue to be visible from the historic ruins.	Prior to relocating the campground, the new campground site would be surveyed for archeological resources, and appropriate actions would be taken to protect resources.
Maho Bay	No new impact.	Same as the proposal.	Same as the proposal.

Area	Proposal: Improve Resource-Based Visitor Experience	Alternative 1: No Action	Alternative 2 Recreation Emphasis
Francis Bay			
Visitors:	Visitation could increase moderately with an improved gravel access road. The current semi-isolated character of Francis Bay would be maintained.	No new impact.	Paving the access road and providing showers and other recreation facilities would greatly increase visitation opportunities for developed beach recreation in the park. There would be increased but some visitors would perceive the area as crowded.
Natural resources:	Replacing pit toilets with chemical toilets would reduce the potential of polluting Francis Bay. Expanded parking would require removal of 0.1 acre of vegetation.	No new impacts.	A new water and sewer system, showers and changing stalls, and paved access and parking would require removal of 0.8 acre of croton/acacia scrub vegetation. Greatly increased visitation adjacent to the Francis Bay salt pond could disturb Bahama duck nesting habitat.
Cultural resources:	No impact would be expected; construction to expand the parking lot would be monitored to avoid destroying archeological resources.	No new impact.	Similar to the proposal.
Park management:	No significant impact.	No new impact.	Increased use would require added staffing and facilities.
Annaberg			
Visitors:	Relocating the parking area would improve the historic setting for some visitors; others might object to the increase in walking distance. New toilets would provide for visitor comfort.	No new impact	Similar to the proposal; a new water fountain would add to visitor comfort
Natural resources:	Construction of a new parking area would require removal of 0.3 acre of croton/acacia scrub vegetation. Most of the existing parking area would be allowed to revegetate. Soil erosion at the current site would be alleviated.	No new impact.	Similar to the proposal; providing a water fountain would require removal of some vegetation for water lines and a storage tank
Cultural resources:	Relocating parking away from the ruins would improve the historic scene. The new parking area would be surveyed for archeological resources prior to construction. Interpretive signs would affect the historic scene.	No new impact.	Similar to the proposal.
Centerline Road/Catherineberg			
Visitors:	New trailhead parking would improve visitor safety. Interpretive signing would make visits more interesting.	No new impact.	Same as proposal
Natural resources:	Approximately 1 acre of second-growth croton/acacia scrub vegetation would be intensively managed as part of the experimental gardening program. A 0.1-acre parking site would be cleared of croton/acacia scrub vegetation. About 0.5 acre total would be cleared for trailhead parking on Centerline Road.	Same as proposal.	Relocation of the Catherineberg road would affect croton/acacia scrub along the alignment; other impacts would be the same as the proposal

Area	Proposal: Improve Resource-Based Visitor Experience	Alternative 1: No Action	Alternative 2: Recreation Emphasis
Cultural resources:	No impact would be expected; construction would be monitored for archeological resources. Interpretive sign would affect historic scene. Gardening program would foster interest in local farming tradition.	No new impact.	Relocation of the Catherineberg road could disturb cultural resources along the alignment; other impacts would be the same as the proposal.
<u>St. John Island--Rural Unit</u>			
East End to Haulover			
Visitors:	Upgrading a portion of the headland trail would enhance hiking experiences.	No new impacts.	Same as the proposal, plus visitors would be provided with a 1-mile roundtrip hike and views of Round Bay and Hurricane Hole. Opportunities would be available for backcountry camping.
Natural resources:	No new impacts.	No new impacts.	Constructing a new trail to Turner Point would require removal of about 0.3 acre of cactus/woodland vegetation.
Cultural resources:	No new impacts.	Same as proposal.	No impacts would be expected; construction of the trail would be monitored for archeological resources.
Saltpond Bay			
Visitors:	Providing a paved parking area along the road could moderately increase visitation. The character of the bay would be maintained.	No new impact.	Providing paved access and parking near the beach would increase recreational use particularly during winter months. There would be less opportunity for solitude.
Natural resources:	Paving the parking area would not significantly affect natural resources.	No new impact.	Constructing a new road access and parking area would require clearing about 0.4 acre of cactus/acacia scrub and could affect a lizard that is rare on St. John.
Cultural resources:	No impacts would be expected.	No new impact.	No impact on cultural resources would be expected. The roadway and parking area would be surveyed for archeological resources prior to construction.
Lameshur			
Visitors:	Paving the road to Little Lameshur would increase visitation in the area. Beach facilities would add to visitor comfort and convenience.	No new impact.	Similar to the proposal; there would be an increased opportunity for group camping. Researchers would lose their facility.
Natural resources:	Reconstructing the road to Little Lameshur, including partial realignment, and adding a new parking area would remove 0.6 acre of croton/acacia scrub vegetation. Installing water and sewer systems plus pipeline would destroy additional vegetation.	No new impact.	Same as proposal; conversion of the Virgin Islands Ecological Research Station to a group campground could reduce research in the park.

Area	Proposal. Improve Resource-Based Visitor Experience	Alternative 1- No Action	Alternative 2. Recreation Emphasis
Cultural resources.	No impact would be expected; the road realignment would be surveyed for archeological resources prior to construction. Adaptive use of historic structure could damage historic fabric.	No new impact.	Same as proposal.
Park management:	Increased use would require added staffing and facilities for maintenance, patrol, litter cleanup, etc.	No new impact.	Increased use would require added staffing and facilities. The agreement with the research station would no longer need to be administered.
<u>St. John Island--Roadless Unit</u>			
<u>Reef Bay</u>			
Visitors:	Interpretive exhibit at sugar factory would provide more effective interpretation. Adding a dock and picnic area would enhance visits.	Same as proposal.	Same as proposal.
Natural resources:	Adding a dock would cause temporary disturbances during construction and could alter beach currents. Picnic area would partially disturb 0.2 acre.	Same as proposal.	Same as proposal.
Cultural resources.	Interpretive exhibit placed at sugar factory would intrude on the historic scene.	Same as proposal.	Same as proposal.
<u>Parkwide Trails</u>			
Visitors:	Trails would lead more directly and continuously to the park's most attractive and interesting sites.	No new impact.	Same as proposal.
Natural resources:	Vegetation would be cleared, and soils would be disturbed along routes identified in the trail system study.	No new impact.	Same as proposal.
Cultural resources:	No impact expected, as archeological surveys would precede construction, and trails would be located to avoid impacting any sites discovered.	No new impact.	Same as proposal.
Socioeconomic environment.	If trails could not be routed entirely on federal lands, landowners would forego some uses of their property where trails crossed their lands, in such cases the Park Service would seek easement agreements.	No new impact.	Same as proposal.
Park management:	Added miles would require trail maintenance and patrol, but access to remote parklands would be facilitated.	No new impact.	Same as proposal.
<u>Marine Unit</u>			
Visitors.	Use could expand from present levels because of improved information, markers, and management.	Same as proposal.	Same as proposal.
Natural resources:	Protection from pollution would be enhanced, management based on increased knowledge of fishery productivity and condition of ecosystems would ensure long-term survival.	Same as proposal.	Same as proposal.
Socioeconomic considerations:	Improved natural resources knowledge would ensure successful sustained-yield harvest of fishery.	Same as proposal.	Same as proposal.

APPENDIX A: LEGISLATION, AGREEMENTS, AND PERMITS

Virgin Islands National Park

An Act To authorize the establishment of the Virgin Islands National Park, and for other purposes, approved August 2, 1956 (70 Stat. 910)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That a portion of the Virgin Islands of the United States, containing outstanding scenic and other features of national significance, shall be established, as prescribed in section 2 hereof, as the "Virgin Islands National Park".

Virgin Islands National Park.

The national park shall be administered and preserved by the Secretary of the Interior in its natural condition for the public benefit and inspiration, in accordance with the laws governing the administration of the national parks (16 U.S.C. 1, and the following). (16 U.S.C. § 398.)

Administration.

39 Stat 535.

SEC. 2. The Secretary of the Interior is hereby authorized, subject to the following conditions and limitations, to proceed in such manner as he shall find to be necessary in the public interest to consummate the establishment of the Virgin Islands National Park:

Conditions and limitations.

(a) The acreage of the national park shall be limited to a total of not more than nine thousand five hundred acres of land area, such total to be comprised of not more than fifteen acres on the island of Saint Thomas, and not more than nine thousand four hundred and eighty-five additional acres to be comprised of portions of the island of Saint John and such small islands, rocks, and cays not in excess of five hundred acres in the general vicinity thereof as may be desirable for inclusion within the park:

(b) Tentative exterior boundary lines, to include land not in excess of the aforesaid acreage limitations, may be selected for the park in order to establish the particular areas in which land may be acquired pursuant to this Act, such tentative boundaries to be selected and adjusted as may be necessary by the Secretary of the Interior:

(c) The Secretary, on behalf of the United States, is authorized to accept donations of real and personal property within the areas selected for the park until such time as the aforesaid total of nine thousand five hundred acres shall have been acquired for the park by the United States, and he may also accept donations of funds for the purposes of this Act;

(d) Any Federal properties situated within the areas selected for the park upon agreement by the particular agency administering such properties that such properties should be made available for the park, may be transferred without further authorization to the Secretary by such agency for purposes of this Act;

(e) Establishment of the Virgin Islands National Park, in its initial phase, shall be and is hereby declared to be accomplished and effective for purposes of administration when a minimum acreage of not less than five thousand acres in Federal ownership for purposes of this Act shall have been acquired by the United States in specific areas containing such acquired lands to be designated by the Secretary; and

Publication
in F.R.

(f) Notice of the establishment of the park as authorized and prescribed by this Act shall be published in the Federal Register. (16 U.S.C. § 398a.)

Appropriation.

Sec. 3. There is hereby authorized to be appropriated from Federal funds a sum not in excess of \$60,000 for capital improvements for said Virgin Islands National Park, and a sum of not in excess of \$30,000 annually for the administration of the Virgin Islands National Park. (Repealed, 16 U.S.C. § 398b.)

An Act To amend the Act of August 2, 1956 (70 Stat. 940), providing for the establishment of the Virgin Islands National Park, and for other purposes, approved May 16, 1958 (72 Stat. 112)

16 U.S.C. 398.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Act of August 2, 1956 (70 Stat. 940), entitled "An Act to authorize the establishment of the Virgin Islands National Park, and for other purposes" is hereby amended by striking section 3 therefrom. (16 U.S.C. § 398b.)

An Act To revise the boundaries of the Virgin Islands National Park, Saint John, Virgin Islands, and for other purposes, approved October 5, 1962 (76 Stat. 746)

Virgin Islands
National
Park, Saint
John, V.I.
Boundary
revision.
16 U.S.C. 398.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That, in furtherance of the purposes of the Act of August 2, 1956 (70 Stat. 940), as amended, providing for the establishment of the Virgin Islands National Park, and in order to preserve for the benefit of the public significant coral gardens, marine life, and seascapes in the vicinity thereof, the boundaries of such park, subject to valid existing rights, are hereby revised to include the adjoining lands, submerged lands, and waters described as follows:

NORTH OFFSHORE AREA

25 F.R. 6408.

Beginning at the hereinafter lettered point A on the shore of Cruz Bay, a corner in the Virgin Islands National Park boundary, being also a corner of lot F, Cruz Bay, added to the park by order of designation signed June 29, 1960, by the Assistant Secretary of the Interior pursuant to the Act of August 2, 1956 (70 Stat. 940), and published in the Federal Register of July 7, 1960, the said corner being the terminus of the course recited therein as "north 58 degrees 50 minutes west a distance of 20.0 feet, more or less, along Government land to a point;" for the third call in the metes and bounds description lot F, Cruz Bay.

From the initial point A, distances in nautical miles, along direct courses between the hereinafter lettered points at geographic positions (latitudes north, longitudes west):

Northwestward approximately 0.13 mile to point B, latitude 18 degrees 20 minutes 08 seconds, longitude 64 degrees 47 minutes 43 seconds in Cruz Bay;

0.43 mile to point C, latitude 18 degrees 20 minutes 08 seconds, longitude 64 degrees 48 minutes 10 seconds in Pillsbury Sound;

1.99 miles to point F, latitude 18 degrees 22 minutes 30 seconds, longitude 64 degrees 48 minutes 10 seconds in Windward Passage;

1.64 miles to point E, latitude 18 degrees 22 minutes 10 seconds, longitude 64 degrees 46 minutes 35 seconds in the Atlantic Ocean;

1.99 miles to point F, latitude 18 degrees 22 minutes 45 seconds, longitude 64 degrees 44 minutes 35 seconds in the Narrows;

3.18 miles to point G, latitude 18 degrees 22 minutes 00 seconds, longitude 64 degrees 41 minutes 20 seconds in Sir Francis Drake Channel;

1.04 miles to point H, latitude 18 degrees 21 minutes 10 seconds, longitude 64 degrees 40 minutes 40 seconds in Haulover Bay;

Southwestward approximately 0.22 mile to point I, a bound post on the shore of Haulover Bay marking a corner of the Virgin Islands National Park boundary as shown on drawing numbered NP-VI-7000 entitled "Acquisition Area Virgin Islands National Park", approved November 15, 1956, by the Acting Secretary of the Interior in accordance with the provisions of the Act of August 2, 1956, supra, being also the southeasterly corner of estate Haulover 5a and 5c east end quarter as delineated on the municipality of Saint Thomas and Saint John drawing PW file numbered 9 24-T51 dated October 26, 1950;

Thence running generally westward along the Virgin Islands National Park northerly boundary as it follows the northerly shore of the island of Saint John as shown on the said drawing numbered NP-VI-7000 and on drawing numbered NP-VI-7003 entitled "Land Ownership Cruz Bay Creek" depicting the boundary adjustment affected by the said order of designation to point A, the point of beginning.

The area described contains approximately 4.100 acres.

SOUTH OFFSHORE AREA

Beginning at the hereinafter lettered point L, a concrete bound post on the shore of Drunk Bay marking a northeasterly corner in the Virgin Islands National Park boundary as shown on the said drawing numbered NP-VI 7000, being also the northeasterly corner of parcel numbered 1, estate Concordia (A), as delineated on the Leo R. Sibilly, civil engineer, drawing file numbered C9-13-T55.

From the initial point L, distances in nautical miles, along direct courses between the hereinafter lettered points at geographic positions (latitudes north, longitudes west):

Eastward approximately 0.32 mile to point M, latitude 18 degrees 18 minutes 48 seconds, longitude 64 degrees 41 minutes 50 seconds in Sabbat Channel;

0.88 mile to point N, latitude 18 degrees 17 minutes 55 seconds, longitude 64 degrees 41 minutes 50 seconds in the Caribbean Sea;

0.40 mile to point O, latitude 18 degrees 17 minutes 55 seconds, longitude 64 degrees 42 minutes 15 seconds in the Caribbean Sea;

1.88 miles to point P, latitude 18 degrees 18 minutes 48 seconds, longitude 64 degrees 41 minutes 00 seconds in the Caribbean Sea;

1.74 miles to point Q, latitude 18 degrees 18 minutes 48 seconds, longitude 64 degrees 45 minutes 50 seconds in the Caribbean Sea;

0.15 mile to point R, latitude 18 degrees 19 minutes 15 seconds, longitude 64 degrees 45 minutes 50 seconds in Fish Bay;

Eastward approximately 0.08 mile to point S on the shore of Fish Bay, a corner in the present Virgin Islands National Park, as delineated on said drawing numbered NP-VI-7000, being the northwesterly corner of parcel numbered 2 estate Fish Bay, numbered 8 Reef Bay Quarter, and the terminus of the delineated course "south 78 degrees 52 minutes west distance 1,178.9 feet" as depicted on the Leo R. Sibilly, civil engineer, drawing file numbered G9-385-T56.

Thence running generally eastward along the present southerly park boundary as it follows the southerly shore of the island of Saint John as depicted on the said drawing numbered NP-VI-7000 to point L, the point of beginning.

The area described contains approximately 1,550 acres.

Lands, submerged lands, and waters added to the Virgin Islands National Park pursuant to this Act shall be subject to administration by the Secretary of the Interior in accordance with the provisions of the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1-4), as amended and supplemented.

SEC. 2. Within the boundaries of Virgin Islands National Park as established and adjusted pursuant to the Act of August 2, 1956 (70 Stat. 940), and as revised by this Act, the Secretary of the Interior is authorized to acquire lands, waters, and interests therein by purchase, exchange or donation or with donated funds.

Acquisition of
lands, etc.
16 U.S.C. 398.

SEC. 3. Nothing in this Act shall be construed as authorizing any limitation on customary uses of or access to the areas specified in section 1 for bathing and fishing (including setting out of fishpots and landing boats), subject to such regulations as the Secretary of the Interior may find reasonable and necessary for protection of natural conditions and prevention of damage to marine life and formations.

SEC. 4. There are hereby authorized to be appropriated such sums, but not more than \$1,250,000, as are necessary to acquire lands pursuant to section 2 of this Act.

An Act to provide for increases in appropriation ceilings and boundary changes in certain units of the National Park System, to authorize appropriations for additional costs of land acquisition for the National Park System, and for other purposes. (88 Stat. 1445) (P.L. 93-477)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

TITLE I—ACQUISITION CEILING INCREASES

Sec 101. The limitations on appropriations for the acquisition of lands and interests therein within units of the National Park System contained in the following Acts are amended as follows:

* * * * *

(10) Virgin Islands National Park, Virgin Islands: Section 4 of the Act of October 5, 1962 (76 Stat. 748; 16 U.S.C. 398f) is amended by changing "\$1,250,000" to "\$12,250,000".

* * * * *

Approved October 26, 1974.

An Act to authorize appropriations for certain insular areas of the United States, and for other purposes. (92 Stat. 487) (P.L. 95-348)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

* * * * *

VIRGIN ISLANDS NATIONAL PARK

Sec 7. (a)(1) The first paragraph of section 1 of the Act of October 5, 1962 (76 Stat. 746, 16 U.S.C. 398c), is amended by adding a comma after the words "adjoining lands, submerged lands, and waters" and inserting "and Hassel Island located in Saint Thomas Harbor and adjoining lands, submerged lands, and waters."

(2) Such section 1 is further amended by inserting immediately before the last paragraph, the following:

"HASSEL ISLAND

"The area known as Hassel Island in Saint Thomas Harbor consisting of approximately 135 acres, together with such adjoining lands, submerged lands, and waters as the Secretary of the Interior deems appropriate, but the boundaries shall not, in any event, extend beyond 100 yards from the mean high water mark of the island."

(b) Section 2 of such Act is amended by—

(1) inserting "(a)" after "Sec. 2";

(2) adding at the end of the first sentence the following: "In acquiring such lands, up to 6.6 acres, the Secretary may, when agreed upon by the landowner involved, defer payment or schedule payments over a period of ten years and pay interest on the unpaid balance at a rate not exceeding the current prevailing commercial rate.", and

(3) adding the following at the end thereof:

"(b) The Secretary is authorized and directed to the maximum extent feasible to employ and train residents of the Virgin Islands to develop, maintain, and administer the Virgin Islands National Park.

"(c) Subject to continued protection and use of Hassel Island for park and recreation purposes, and such other conditions as the Secretary may deem appropriate, the Territory of the Virgin Islands may, within, but not after, five years after the date of the enactment of this subsection, by duly enacted legislation acquire all interests of the United States in Hassel Island by reimbursing the United States in an amount equal to the amount actually expended by the United States for the acquisition of lands and interests in lands and for the costs of construction of permanent improvements, if any.

"(d)(1) Except for property deemed necessary by the Secretary of the Interior for visitor facilities or administration of the park, any owner or owners of improved property on Hassel Island on the date of its acquisition, may retain for themselves a right of use and occupancy of the property for noncommercial residential purposes for twenty-five years or, in lieu thereof, for a term ending at the death of the owner or the owner's spouse, whichever is later. The owner shall elect the term to be reserved. The Secretary shall pay to the owner the fair market value of the property on the date of such acquisition, less the fair market value on such date of the right retained by the owner. The authority of the Secretary to acquire the property commonly known as the Royal Mail (hotel) by condemnation shall be suspended for ten years from the date of enactment if such owner or owners agree, in writing, within ninety days after the enactment of this subsection to grant to the United States the right to purchase such property at a purchase price, mutually agreed upon by the Secretary and the landowner, which does not exceed the fixed value of said property on July 1, 1978.

"(2) As used in subsection (d)(1), 'improved property' means a single-family dwelling, the construction of which began before January 1, 1977, together with such lands as are in the same ownership and appurtenant buildings located thereon.

"(3) The Secretary may terminate a right of use and occupancy retained pursuant to subsection (d)(1) upon

his determination that such use and occupancy is being, or may be, exercised in a manner inconsistent with the purposes for which they were included within the park and upon tender to the holder of such right of the amount equal to the value of that portion of the right which remains unexpired on the date of termination."

(4) Section 3 is amended by inserting "(a)" immediately after "Sec. 3." and by adding the following new subsection at the end thereof:

"(b) Notwithstanding any provision of law to the contrary, no fee or charge shall be imposed for entrance or admission into the Virgin Islands National Park."

(5) Section 4 is amended to read as follows:

"SEC. 4. Effective October 1, 1978, there are authorized to be appropriated such sums as may be necessary for the acquisition of lands and interests in lands within the Virgin Islands National Park. For purposes of this section, acquisitions of land on Hassel Island shall be deemed to be acquisitions qualifying for payment under the provisions of paragraph (2) of the Act of June 10, 1977 (Public Law 95-42; 91 Stat. 210). In addition to such sums as may have heretofore been appropriated for development of public facilities within the Virgin Islands National Park, effective October 1, 1978, there are authorized to be appropriated not more than \$1,000,000 for restoration and rehabilitation of historic structures and for development of public facilities on Hassel Island, and not more than \$500,000 as a grant to the Territory of the Virgin Islands for its use in furthering projects undertaken pursuant to the Land and Water Conservation Fund Act, the Historic Preservation Act, or other comparable programs upon the transfer of title to the United States of all properties held by the territory on Hassel Island."

(6) Section 2(c) of the Act entitled "An Act to authorize the establishment of the Virgin Islands National Park, and for other purposes" (70 Stat. 940; 16 U.S.C. 398) is amended by adding the following sentence at the end thereof: "Notwithstanding the acreage limitations and boundary designations contained in this section, the Secretary is authorized to accept through donation, or purchase from a willing seller, the real and personal property located on Lots 251-252 Estate Contant Enighed, Parcels 86B and 86AA Cruz Bay Quarter."

AUTHORIZATIONS TO REMAIN AVAILABLE

SEC. 8. Any amount authorized by this Act or by the Act entitled "An Act to authorize certain appropriations for the territories of the United States, to amend certain Acts relating thereto, and for other purposes" (Public Law 95-134; 91 Stat. 1159) but not appropriated for a fiscal year is authorized to be available for appropriation in succeeding fiscal years.

TECHNICAL AMENDMENTS

SEC 9. Section 501 of the Act entitled "An Act to authorize certain appropriations for the territories of the United States, to amend certain Acts relating thereto, and for other purposes" (Public Law 95 134; 91 Stat. 1159) is amended—

(1) by inserting ", notwithstanding any provision of law to the contrary," after "it is hereby declared to be the policy of the Congress"; and

(2) in subsection (a) by striking out "Notwithstanding any provision of law to the contrary, any" and inserting in lieu thereof "Any".

SEC 10. Authorizations of moneys to be appropriated under this Act shall be effective on October 1, 1978.

* * * * *

Approved August 18, 1978.

CODE OF FEDERAL REGULATIONS
Title 36 – Parks, Forests, and Public Property

§ 7.74 Virgin Islands National Park.

(a) *Submerged features.* (1) No person shall cut, carve, injure, mutilate, remove, displace or break off any underwater growth or formation. Nor shall any person dig in the bottom, or in any other way injure or impair the natural beauty of the underwater scene. No rope, wire or other contrivance whether such contrivance is temporary or permanent in character or use shall be attached to any coral, rock or other underwater formation.

(2) No person shall destroy, mark, deface, displace, remove or tamper with any underwater sign, notice, float, placard or underwater device.

(b) *Marine operations.* No dredging, excavating or filling operations of any kind are permitted, and no equipment, structures, byproducts or excavated materials associated with such operations may be deposited in or on the waters or ashore within the boundaries of the Park.

(c) *Wrecks.* No person shall destroy, molest, remove, deface, displace or tamper with wrecked or abandoned waterborne craft of any type or condition, or any cargo pertaining thereto unless permitted in writing by an authorized official of the National Park Service.

(d) *Boats.* (1) No watercraft shall be operated in such a manner, nor shall anchors or any other mooring device be cast or dragged or placed, so as to strike or otherwise cause damage to any underwater features.

(2) Anchoring or maneuvering watercraft within the waters that contain underwater marked swimming trails and interpretive signs is prohibited.

(3) Vessels desiring to enter Trunk Bay must enter and depart between the two outer buoys delineating the prescribed anchorage area, and shall anchor within described area, and no other, making sure the vessel will lie within this area regardless of wind or sea conditions: Except, that hand-propelled craft may be used to transport passengers and equipment between the anchorage area and the beach.

(4) All vessels carrying passengers for hire shall comply with applicable laws and regulations of the United States Coast Guard and Territory of the Virgin Islands.

(e) *Fishing.* (1) Taking of fishes or any other marine life in any way except with rod or line, the rod or line being held in the hand, is prohibited: *Provided,* That fish may be taken by pots or traps of conventional Virgin Islands design and not larger than five feet at the greatest dimension, and bait fish may be taken by nets of no greater overall length than 20 feet and of mesh not larger than 1 inch stretched: *Provided further,* That paragraphs (e) (3), (4), and (5) of this section shall apply.

(2) The use of possession of any type of spearfishing equipment within the boundaries of the park is prohibited.

(3) The species of crustaceans known as Florida Spiny Lobster (*Panulirus argus*) may be taken by hand or hand-held hook. No person shall take female lobsters with eggs; or take more than two lobsters per person per day; or have in possession more than two days' limit: *Provided,* That paragraph (e)(5) of this section shall apply.

(4) Species of mollusks commonly known as whelks and conchs may be taken by hand. No person shall take more than two conchs or one gallon of whelks, or both, per day, or have in possession more than two days' limit: *Provided,* That paragraph (e)(5) of this section shall apply.

(5) All known means of taking fish, crustaceans, mollusks, turtles, or other marine life are prohibited in Trunk Bay and in other waters containing underwater signs and markers.

[29 FR 17091, Dec. 15, 1964]

ACT. NO. 806

BILL No. 1562

FOURTH LEGISLATURE OF THE VIRGIN ISLANDS

OF THE UNITED STATES

Regular Session

1962

Act Accepting and Authorizing National Park Service Participation in the Building and Maintaining Public Roads in St. John, Virgin Islands.

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WHEREAS the lack of decent roadways has been and continues to be one of the major deterrents to the economic growth and development of the island of St. John; and

WHEREAS the National Park Service has informed the Governor of the Virgin Islands, by letter dated October 26, 1961, that it will improve and maintain the following public roads in St. John: (1) the North Shore Road from the park boundary at Cruz Bay to the intersection of said road with the Center Line Road at King Hill; (2) the spur road to Annaberg and Mary Point; (3) the Bordeaux Road; (4) the Lameshur Road from Park boundary to Lameshur; and (5) the East End Road from Park boundary at Coral Bay eastward to the East boundary of the Park and to cooperate fully to the end that all private properties have passable road access, wherever necessary, to the aforesaid public roads; and

WHEREAS the undertaking by the National Park Service to improve and maintain the roadways specified is hereby recognized as a substantial financial benefit to the government of the Virgin Islands; Now, therefore

BE IT ENACTED by the Legislature of the Virgin Islands:

SECTION 1. The Legislature of the Virgin Islands hereby accepts the offer of the National Park Service to improve and maintain the following named public roads in St. John: the North Shore, Annaberg and Mary Point, Bordeaux, Lameshur and East End Roads and the said National Park Service is hereby authorized to proceed to make improvements to said roads in accordance with the following conditions:

A. All road improvement plans initiated by the National Park Service shall be first submitted to the Commissioner of the Department of Public Works for approval before the particular road improvement project is commenced.

B. All road improvement plans for the North Shore and East End Roads shall, where the topography of the terrain permits, meet the minimum construction specifications as to materials, width of road, depth of roadbed, curbs, drains and culverts as set by the Department of Public Works or any applicable law existing at the commencement of any road improvement project.

SECTION 2. Nothing contained in this Act shall be construed as conveying title or any other proprietary interest in and to the aforesaid roadways to the National Park Service nor as transferring control and jurisdiction to the National Park Service.

The roads involved herein shall retain their character as public roads. The Government of the Virgin Islands retains title to said roads as well as its usual rights with respect to public thoroughfares, subject only to the rights herein conferred upon the National Park Service.

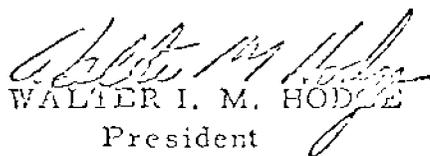
SECTION 3. The Commissioner of the Department of Public Works is hereby authorized, when called upon, to cooperate fully with the National Park Service in road design and planning and in such other ways as may be feasible, in order to facilitate any public road improvement project undertaken by the National Park Service pursuant to the authority contained herein.

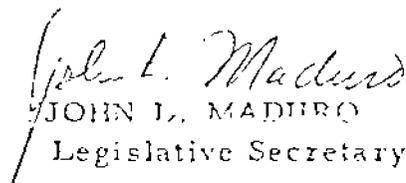
SECTION 4. Should any provision of this Act be in conflict with any provision of any other presently existing law, the provisions of this Act shall take precedence during, but only during, such time as may be required for the improvement of the roads or parts of roads referred to in Section 1 of this Act.

SECTION 5. This Act shall become effective upon approval of the Governor of the Virgin Islands.

Thus passed by the Legislature of the Virgin Islands on January 10, 1962.

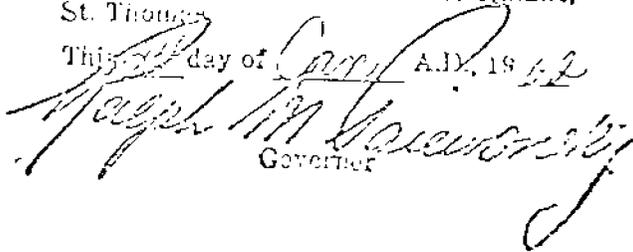
Witness our Hands and the Seal of the Legislature of the Virgin Islands this 10th Day of January, A. D., 1962.


WALTER I. M. HODGE
President


JOHN L. MADURO
Legislative Secretary

The above Bill is hereby sanctioned and approved.

Witness my hand and Seal of the Government of the Virgin Islands of the United States at Charlotte Amalie, St. Thomas.

This 10th day of Jan, A.D., 1962

GOVERNOR

SPECIAL USE PERMITS (as of September 1, 1982)

- 1:161:7 - Caneel Bay, Inc., use of park lands
- 1:161:18 - Department of Conservation and Cultural Affairs--land use (playfield)
- 536080706 - A.C. O'Connor--land use
- 5360-28 - U.S. Navy Crown Mountain--access
- 5360-9-14 - Department of Conservation and Cultural Affairs--bulkhead use
- 5360-9-15 - Caribbean Fishery Management Council--bulkhead use
- 5360-0-05 - VITELCO--utility rights-of-way
- 5360-0-09 - Caneel Bay, Inc.--Lyne house use
- 5360-1-04 - Caneel Bay, Inc.--use of park facilities
- 5360-1-05 - Ralf Boulon--access to inholding
- 5360-1-06 - Federal Bureau of Investigation--use of radio tower
- 5360-1-07 - Immigration & Naturalization Service--use of radio tower
- 5360-1-08 - Caneel Bay, Inc.--use of radio tower
- 5360-1-10 - Transportation Services--use of park facilities
- 5360-1-11 - Varlack Ventures--use of park facilities
- 5360-1-12 - The Project St. John--land use
- 5360-2-01 - Lamont-Doherty Geological Observatory--seismic station
- 5360-2-02 - V.I. Seaplane Shuttle--airboat ramp

LIMITED CONCESSION PERMITS

- Tradewinds Charters - boat rentals
- Maho Bay, Inc. - water sports
- Caneel Bay, Inc. - water sports

CONCESSION CONTRACT

- Caneel Bay, Inc. - campground, snack bar, water sports (subconcession)

MEMORANDUM OF AGREEMENT

- College of the Virgin Islands - operation of a research station at Greater Lameshur Bay

APPENDIX B: BIOLOGICAL ASSESSMENT FOR ENDANGERED SPECIES

PURPOSE

In compliance with section 7 of the Endangered Species Act, the National Park Service (NPS) has conducted an assessment of the probable impacts on endangered or threatened species, or designated critical habitat, from implementing the proposed general management plan (GMP) for Virgin Islands National Park, St. Thomas and St. John islands, U.S. Virgin Islands. Data relating to studies of threatened or endangered species are presented below as well as the conclusions of the National Park Service concerning impacts of the plan. Impacts of two alternatives to the plan are also included.

THE PROPOSED PLAN

The GMP will guide development, visitor use, and resource management at Virgin Islands National Park for the next 10 or more years. Proposed developments will primarily be upgrading existing facilities. Activities that will disturb the ground include construction of a new maintenance building in the existing maintenance area at Cruz Bay, realignment of the Northshore Road at Hawksnest Bay with expanded parking, redesign of existing trailhead parking along Centerline Road, establishment of an experimental/educational garden plot near Catherineberg, and realignment of the road between the park boundary near Saltpond Bay and Little Lameshur Bay.

On Hassel Island second-growth vegetation around several historic ruins will be cleared, historic structures at the Royal Mail Inn complex will be adaptively used, modest visitor day use facilities (comfort station and picnic tables) will be provided near Garrison House, and a trail system will be established along the central ridge.

Resource management will emphasize monitoring of marine water quality and visitor use impacts on coral and other benthic resources, and investigations of the vegetation and wildlife of St. John and Hassel Island. Monitoring of endangered and threatened species will be improved; and cooperation with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Virgin Islands Bureau of Fish and Wildlife will continue for the management of protected species.

Two alternatives to the proposal are also presented. Alternative 1 (no action) would essentially continue present management and use. Alternative 2 (recreation emphasis) would add developments at Francis and Saltpond bays and provide development on Hassel Island.

LISTED SPECIES

Augustus Valido of the U.S. Fish and Wildlife Service and Charles Oravetz of the National Marine Fisheries Service were informally consulted about listed species. They advised that eight endangered species and

two threatened species are potentially in the project area. In addition, park files record one other federally protected species, the peregrine falcon. These species are listed below:

Endangered Species

Humpback whale (Megaptera novaeangliae)

Sperm whale (Physeter catodon)

Finback whale (Balaenoptera Physalus)

Brown pelican (Pelecanus physalus)

Peregrine falcon (Falco peregrinus tundrius)

Hawksbill turtle (Eretmochelys imbricata)

Leatherback turtle (Dermochelys coriacea)

Olive Ridley turtle (Lepidochelys olivacea)

Virgin Islands tree boa (Epicrates monensis granti)

Threatened Species

Green turtle (Chelonia mydas)

Loggerhead turtle (Caretta caretta)

SURVEYS CONDUCTED/STUDY METHODS

The data were collected from a review of NPS files; informal consultation with the U.S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Virgin Islands Bureau of Fish and Wildlife personnel. Field surveys were conducted as described below.

RESULTS OF SURVEYS

Critical Habitat

No critical habitat has been designated within Virgin Islands National Park.

Whales

Humpback whales overwinter and calve in the Caribbean between November and April and often swim close to shore. Park records for the past 10 years include many sightings of adult and young humpbacks in waters adjacent to the park and a few sightings within the park. Most observations were made from boats between the months of January and March. Humpbacks are sensitive to harassment from boats, but this does not appear to be a problem in the park. Harassment of all wildlife is prohibited by NPS regulations, and park waters are frequently patrolled. There are no reports of sperm or finback whales within park waters.

Brown Pelican

Brown pelicans are commonly seen along the shore of St. John and Hassel islands. Rookeries are located on Mary Point and Whistling Cay. Nesting is most active between December and June, when 30 to 50 nests have been reported. Scattered summer nesting by a few individuals has been recorded. The rookeries are relatively inaccessible, and there are no significant threats to the pelican within the park.

Peregrine Falcon

One or two sightings of migrant Arctic peregrine falcons have been reported annually. There are no known threats to the species in the park.

Sea Turtles

There is significant nesting by hawksbill sea turtles on St. John, with a minimum of 20 nests per year. Peter Pritchard, leader of the Fish and Wildlife Service sea turtle recovery team, advises that normal daytime recreational beach use, such as occurs on St. John, is compatible with turtle nesting. A few incidents of poaching of turtle eggs have been reported, but the threat does not appear to be significant on St. John. Predation by mongoose and dogs, however, occurs more often. In 1982 one turtle nest was reported on Hassel Island on a small cobble beach on the northwestern shore of the island. The nest was probably from a hawksbill turtle and had been destroyed. The eggs showed evidence of both human and animal predation.

The green turtle is often seen in park waters and infrequently nests on park beaches. Like hawksbill nests, green turtle nests are subject to predation by mongoose and dogs.

The leatherback turtle is occasionally sighted in park waters, apparently migrating to their nesting beaches on St. Croix. There have been a few unconfirmed reports of leatherback nesting on St. John.

There are no records of loggerhead or Kemp's Ridley turtles from the park.

Virgin Islands Tree Boa

Although there have been no confirmed reports of the Virgin Islands tree boa from St. John or Hassel Island, the late Howard Campbell, former Fish and Wildlife Service tree boa recovery team leader, and Ronald Crombie, Smithsonian Institution herpetologist, advised that it is likely that the snake occurs within the park. The tree boa is secretive and nocturnal, and its ecology is poorly understood. It is known only from a few scattered locations on St. Thomas, Tortola, and a small island off Puerto Rico.

Despite the scarcity of sightings, the range of habitats (that is, beach vegetation, moist and dry forests) from which the snake has been collected indicates that it could occupy a variety of sites and may be widespread within its narrow geographical distribution. Predation by cats, pigs, rats, or other exotics may threaten the species.

CONSIDERATIONS OF CUMULATIVE EFFECTS ON ENDANGERED AND THREATENED SPECIES

Overall, the proposal will continue the long-term protection afforded to listed species and their habitats at Virgin Islands National Park. Proposed developments at the park will not affect endangered species habitat. Expanded natural resource research programs and improved monitoring of sea turtle and brown pelican nestings will enhance the managers' understanding for species protection. Efforts to reduce exotic animal populations in the park may reduce predation on sea turtle eggs and hatchlings as well as on the Virgin Islands tree boa. The establishment of an NPS presence on Hassel Island will aid in reducing poaching of sea turtle eggs there; protection will continue on St. John. Both alternatives to the proposal would produce essentially the same effect as the proposal.

DIFFICULTIES ENCOUNTERED IN OBTAINING DATA AND COMPLETING STUDIES

There is a lack of available information on the Virgin Islands tree boa due to the secretive nature of the species and the corresponding limited number of studies of the snake. The National Park Service will continue to cooperate with the U.S. Fish and Wildlife Service and the Virgin Islands Bureau of Fish and Wildlife in determining if the species occurs on St. John and Hassel islands. Should the presence of the boa in the park be confirmed, appropriate investigations will be conducted, as practical, to guide management of the species. The existing information on the boa supports continued management of the majority of Virgin Islands National Park as a natural area to protect potential tree boa habitat.

Further monitoring of sea turtle nesting on Hassel Island is needed and will be conducted to determine the species nesting on the island, the amount of nesting activity, and further management needs. It is reasonable to assume that protection of the northwestern beach as a natural area will maintain the nesting habitat.

No other difficulties were encountered during the survey, and the data obtained are considered adequate to assess impacts on endangered and threatened species.

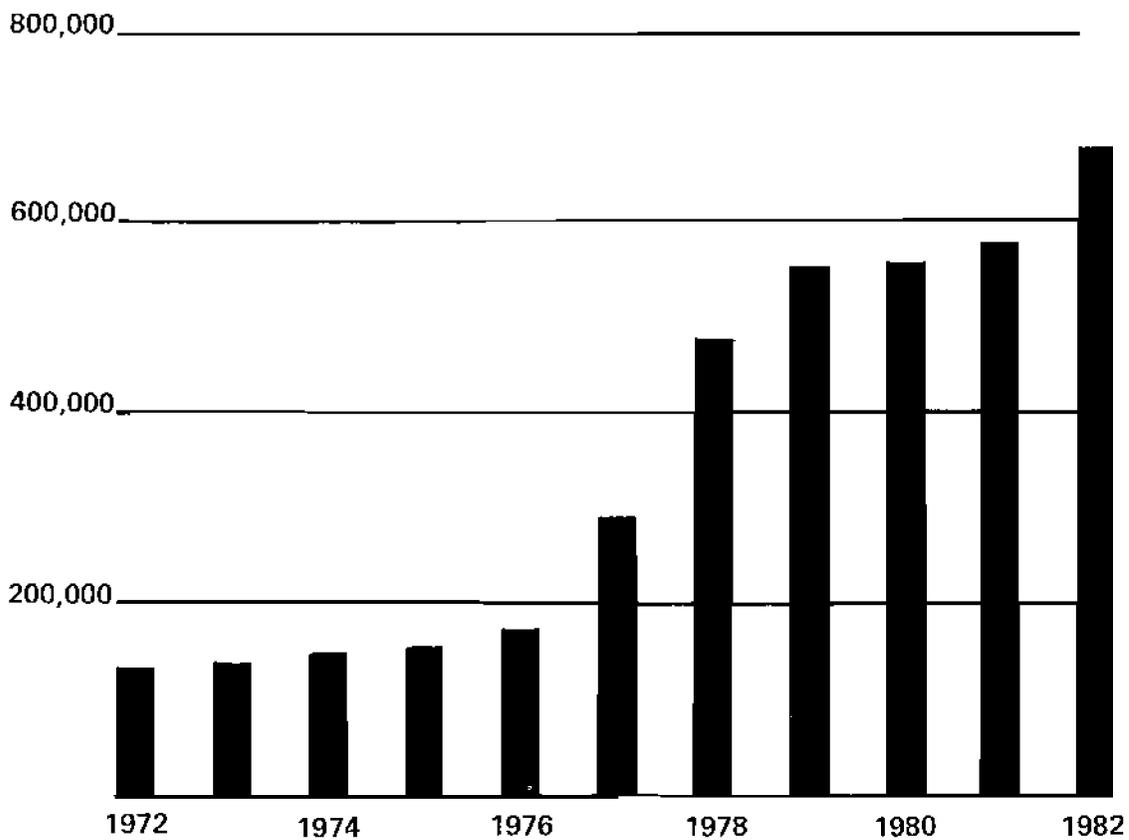
CONCLUSIONS OF THE AGENCY

The National Park Service concludes that there will be no new effect on endangered or threatened species or critical habitat from the GMP proposal for Virgin Islands National Park or from the two alternatives considered. Existing and proposed park management will continue to provide adequate protection of listed species.

APPENDIX C: VISITATION STATISTICS

Table C-1: Virgin Islands National Park - Annual Visits 1970-1982
(in thousands)

	<u>Recreational Visits</u>	<u>Nonrecreational Visits</u>	<u>Total</u>	<u>Overnight Stays</u>
1970	NA	NA	126.6	161.2
1971	NA	NA	252.6	90.0
1972	148.6	132.9	281.6	110.6
1973	150.1	143.5	293.6	92.9
1974	154.8	143.5	298.2	90.1
1975	156.9	146.2	303.1	106.8
1976	182.6	132.8	315.4	101.3
1977	289.1	165.6	454.7	111.6
1978	481.7	162.1	643.8	138.2
1979	549.7	185.2	734.9	136.3
1980	547.9	260.8	808.7	143.2
1981	566.5	274.7	841.3	166.9
1982	673.5	296.8	970.3	194.9



**RECREATIONAL VISITS – VIRGIN ISLANDS NATIONAL PARK
1972 – 1982**

Table C-2: Visits by Month, 1976-1982

	<u>Recreational</u>	<u>Nonrecreational</u>	<u>Total</u>	<u>Overnight Stays</u>
<u>1976</u>				
January	16,996	9,700	26,696	11,610
February	17,875	8,987	26,862	10,394
March	20,495	9,580	30,075	12,454
April	15,911	9,885	25,796	11,731
May	13,219	10,454	23,673	7,889
June	14,545	8,993	23,538	8,943
July	16,265	16,364	32,629	9,558
August	17,327	13,509	30,836	9,501
September	9,621	9,260	18,881	3,645
October	11,090	14,108	25,198	3,300
November	14,201	8,982	23,183	5,110
December	15,089	12,954	28,043	7,196
	<u>182,634</u>	<u>132,776</u>	<u>315,410</u>	<u>101,331</u>
<u>1977</u>				
January	17,195	11,183	28,378	12,351
February	16,396	13,618	30,014	7,459
March	19,562	11,116	30,678	11,154
April	27,173	13,284	40,457	14,382
May	18,352	10,334	28,686	9,147
June	19,910	15,219	35,129	8,356
July	30,349	13,200	43,549	10,919
August	36,257	23,548	59,805	10,462
September	18,101	16,767	34,868	4,633
October	20,074	10,000	30,074	4,837
November	25,790	13,225	39,015	6,884
December	39,952	14,103	54,055	10,972
	<u>289,111</u>	<u>165,597</u>	<u>454,708</u>	<u>111,556</u>
<u>1978</u>				
January	54,064	18,056	72,120	13,951
February	47,296	12,609	59,905	13,000
March	48,786	11,923	60,709	16,251
April	39,881	12,325	52,206	12,847
May	37,408	12,895	50,303	10,900
June	36,759	12,957	49,716	11,340
July	40,644	14,125	54,769	13,169
August	39,217	16,648	55,865	13,703
September	21,521	11,510	33,031	5,520
October	27,975	7,720	35,695	6,372
November	33,974	13,557	47,531	8,870
December	54,137	17,766	71,903	12,231
	<u>481,662</u>	<u>162,091</u>	<u>643,753</u>	<u>138,154</u>
<u>1979</u>				
January	54,773	16,639	71,412	16,711
February	53,364	19,644	73,008	15,038
March	53,784	17,304	71,088	15,491
April	48,277	21,248	69,525	14,319
May	43,627	10,553	54,180	13,421
June	42,920	14,990	57,910	11,179
July	55,220	17,353	72,573	15,103
August	45,575	17,498	63,073	9,874
September	25,042	11,715	36,757	2,507
October	35,736	15,086	50,822	3,860
November	38,491	9,537	48,028	10,159
December	52,923	13,627	66,550	15,724
	<u>549,732</u>	<u>185,194</u>	<u>734,926</u>	<u>143,386</u>

	<u>Recreational</u>	<u>Nonrecreational</u>	<u>Total</u>	<u>Overnight Stays</u>
<u>1980</u>				
January	54,719	20,773	75,492	17,254
February	61,614	19,842	81,456	16,005
March	61,245	19,089	80,334	18,665
April	45,525	25,545	71,070	16,419
May	41,922	22,942	64,864	13,194
June	38,272	22,206	60,428	12,423
July	44,895	33,503	78,398	12,750
August	42,832	24,977	67,809	11,591
September	21,109	18,464	39,573	5,875
October	30,551	18,474	49,025	7,094
November	51,394	17,018	68,412	9,524
December	53,890	17,929	71,819	13,780
	<u>547,918</u>	<u>260,762</u>	<u>808,680</u>	<u>154,573</u>
<u>1981</u>				
January	56,857	24,094	80,951	18,942
February	56,987	20,118	77,105	19,349
March	56,013	21,515	77,528	18,939
April	46,973	21,199	68,172	15,806
May	42,897	21,452	64,349	10,683
June	37,772	16,452	54,224	10,831
July	41,838	17,024	58,862	12,511
August	39,826	16,665	56,491	10,699
September	24,035	15,783	39,818	6,556
October	41,725	17,260	58,985	9,168
November	51,309	22,074	73,383	13,956
December	70,296	61,094	131,390	19,481
	<u>566,528</u>	<u>274,730</u>	<u>841,258</u>	<u>166,921</u>
<u>1982</u>				
January	80,832	26,585	107,417	24,994
February	77,372	28,248	105,620	25,602
March	64,615	28,275	112,890	27,293
April	65,846	27,556	93,402	22,239
May	48,325	23,034	71,359	14,888
June	44,971	22,478	67,449	13,568
July	60,645	24,393	85,038	21,537
August	45,510	27,808	73,318	13,356
September	30,476	20,066	50,542	8,880
October	34,579	21,074	55,653	9,643
November	43,550	23,654	67,204	13,932
December	56,759	23,638	80,397	16,512
	<u>673,480</u>	<u>296,809</u>	<u>970,280</u>	<u>194,882</u>
<u>1983</u>				
January	77,827	26,847	104,674	25,798
February	75,071	26,594	101,665	25,813
March	82,358	29,384	111,742	27,324
April	66,329	27,886	94,215	21,793
May	49,029	23,327	72,356	14,415
June	47,661	22,153	69,814	12,772

Table C-3. Recreational Day Use and Overnight Stays 1978-1982

	Day Use					Overnight Stays				
	Land Tours	Water Tours	Beach Use	Boaters	Campgrounds	Cabins	V.I.F.R.S.	Mans	Boaters	Boat Crews
1978										
January	7,466	467	11,636	11,391	7,819	1,500	251	14,470	5,264	525
February	6,224	447	7,750	10,415	7,872	1,400	60	13,049	4,512	563
March	7,187	446	9,820	9,710	9,226	1,300	90	11,057	6,375	500
April	6,244	316	5,349	9,268	7,547	1,100	62	9,650	4,228	500
May	5,226	530	6,501	9,190	5,524	1,000	45	9,341	4,765	450
June	4,933	432	7,638	8,079	6,163	900	123	8,403	5,163	NA
July	4,282	419	8,317	11,814	5,813	1,000	178	8,727	6,548	500
August	5,164	468	8,644	12,027	7,148	900	123	4,796	5,852	500
September	3,048	263	4,550	5,236	2,575	900	40	5,009	2,359	500
October	4,494	316	3,929	8,019	2,464	1,000	0	7,754	3,186	700
November	5,150	309	5,377	8,832	4,043	1,200	0	8,983	8,822	800
December	4,319	319	7,920	9,725	6,082	1,500	146	11,358	5,370	800
	64,342	4,820	87,431	113,700	72,276	13,600	1,708	111,746	63,793	
1979										
January	4,837	453	10,123	15,686	8,181	NA	570	NA	7,151	NA
February	5,700	398	9,790	14,700	7,984		23		6,360	
March	8,536	416	8,845	10,905	8,764		79		6,094	
April	6,288	401	9,372	10,220	7,938		81		5,740	
May	4,900	496	7,029	10,980	7,762		49		5,120	
June	5,230	413	8,495	12,786	5,213		111		5,323	
July	11,701	427	9,723	14,263	7,119		102		7,311	
August	6,282	407	9,468	10,160	6,777		113		7,063	
September	3,669	290	5,760	2,058	1,639		143		1,441	
October	4,679	337	6,666	10,131	2,758		62		4,902	
November	4,603	290	7,057	10,020	5,560		54		4,132	
December	5,213	348	10,027	16,161	6,590		243		8,083	
	71,618	4,676	102,355	138,070	76,225		1,630		66,726	
1980										
January	6,912	NA	8,695	13,898	7,737	1,050	949	NA	7,711	NA
February	8,147		10,243	18,578	7,567	1,348	93		7,510	
March	6,976		10,288	17,197	8,532	1,449	519		8,674	
April	5,675		7,904	14,074	7,322	1,376	141		8,060	
May	4,790		7,375	11,716	5,246	1,298	124		7,042	
June	5,092		5,374	10,389	5,337	1,121	102		6,286	
July	6,081		7,686	14,887	5,065	1,046	77		6,847	
August	4,742		8,525	10,584	5,343	1,316	124		5,512	
September	3,216		4,162	6,330	1,655	570	79		3,727	
October	6,250		4,441	7,885	1,841	1,169	111		4,628	
November	5,384		4,372	10,786	3,000	1,260	116		5,767	
December	7,809		8,430	16,048	5,158	1,500	156		7,619	
	70,874		87,505	152,975	56,066	14,503	2,591		74,383	

Note. Totals do not add to monthly or annual parkwide totals.

NA - Data not available

	Day Use				Overnight Stays					
	Land Tours	Water Tours	Beach Use	Boaters	Campground	Caneel	V.I.E.R.S.	Maho	Boaters	Boat Crews
1981										
January	6,490	NA	8,018	16,800	7,487	NA	712	NA	9,766	NA
February	6,443		8,712	18,245	7,049		288		10,811	
March	7,897		8,135	14,767	7,680		364		9,806	
April	5,847		5,918	NA	6,645		127		8,136	
May	5,220		6,974	12,052	3,877		56		6,075	
June	4,248		7,955	8,787	3,600		50		6,463	
July	4,490		9,635	12,181	4,140		43		7,455	
August	3,550		10,385	11,623	3,640		46		6,251	
September	3,742		6,582	4,712	511		230		5,235	
October	6,797		10,221	6,073	1,02		235		7,498	
November	5,565		11,546	8,201	2,463		243		10,125	
December	1,190		18,343	11,972	4,506		195		13,302	
	62,579		112,424	138,400 *st	52,204		2,589		100,963	
1982										
January	8,298	NA	18,569	29,993	6,780	NA	674	NA	15,786	1,754
February	6,981		14,854	15,168	6,508		368		16,853	1,673
March	8,787		18,620	15,694	7,611		306		17,438	1,939
April	6,021		11,558	12,515	6,591		198		13,905	1,545
May	4,410		8,476	10,140	6,591		190		11,267	1,252
June	4,324		8,451	8,550	2,911		302		9,300	855
July	753		12,247	14,114	3,868		243		15,683	1,743
August	4,025		10,966	8,173	3,212		54		9,081	1,009
September	3,275		6,350	7,141	0		64		7,934	882
October	6,218		6,917	7,736	0		200		8,595	860
November	943		9,291	8,995	2,677		149		9,995	1,111
December	4,361		10,746	10,875	4,429		52		12,083	1,343
	58,386		138,045	149,094	51,178		2,800		148,120	16,166

Table C-4: Monthly Recreational Visits (1980-1982) and Averages

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
1980	54,719	61,614	61,245	45,525	41,922	38,222	44,895	42,832	21,109	30,551	51,394	53,890	547,918
1981	56,857	56,987	56,013	46,973	42,897	37,772	41,838	39,826	24,035	41,725	51,309	70,296	566,528
1982	80,332	77,372	84,615	65,846	48,325	44,971	60,645	45,510	30,476	34,579	43,550	56,759	673,480
Average	64,136	65,324	67,291	52,781	44,381	40,321	49,126	42,722	25,206	35,618	48,751	60,315	595,975

Table C-5: Number of Ferry Passengers
Traveling to and from St. John Island
1980

	Varlack Ventures		Transportation Services		Total
	Redhook to Cruz Bay	Cruz Bay to Redhook	Redhook to Cruz Bay	Cruz Bay to Redhook	
January	14,600	14,623	13,300	13,112	55,635
February	15,400	14,497	14,590	13,404	57,891
March	15,780	15,550	14,350	14,250	59,930
April	16,400	16,447	13,393	12,800	59,040
May	13,422	13,200	13,100	12,113	51,835
June	11,000	10,543	13,403	13,200	48,146
July	16,349	12,141	13,341	10,341	52,172
August	19,420	10,242	11,102	10,400	42,164
September	8,682	8,500	9,159	8,500	34,841
October	11,100	10,166	10,533	10,300	42,099
November	12,000	11,296	10,200	10,099	43,595
December	13,300	12,644	11,182	10,100	47,226
Total	158,453	149,849	147,653	138,619	594,574

Source: Virgin Islands Port Authority, Marine Division, Office of Marine Manager. Cited in Economic Impact Analysis for the Virgin Islands National Park, Island Resources Foundation, 1981.

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