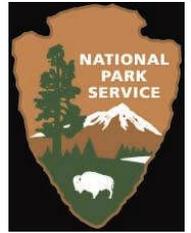


National Park Service
U.S. Department of the Interior



Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

ENVIRONMENTAL ASSESSMENT

Proposed Marine Research and Education Center and Abandoned Hotel Demolition



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Prepared for:

National Park Service
Southeast Regional Office
100 Alabama Street
Atlanta, Georgia 30303

June 2008

EXECUTIVE SUMMARY

This Environmental Assessment (EA) was prepared for the National Park Service (NPS) to support two proposed projects at Salt River Bay National Historical Park and Ecological Preserve (SARI) located along the north/central coast of St. Croix, United States Virgin Islands (USVI). The National Environmental Policy Act (NEPA) of 1969 process was conducted in accordance with the NPS regulations for implementing NEPA, and it examined the consequences of these two proposed projects on the environment. This EA presents the alternatives considered during the NEPA process, the affected environment, the impacts associated with the proposed projects and alternatives, potential mitigation measures, environmental commitments, the public involvement completed as part of the projects, and the agency and public coordination conducted to support these projects.

In 1992 Congress created SARI as part of the National Park System to preserve, protect, and interpret nationally significant natural, historical, and cultural resources. SARI boundary contains a combination of marine, estuarine, and terrestrial habitats including coral reefs, seagrass beds, an undersea canyon, and the largest remaining mangrove forest within the U.S. Virgin Islands. Salt River Bay also contains prehistoric and colonial-era archeological sites and ruins that are found in this dynamic tropical ecosystem. At one time SARI's reef and hard bottom habitats in the submarine canyon were among the most extensively studied and characterized coral structures in the world. However, since the closing of the National Oceanic and Atmospheric Administration's (NOAA) Undersea Research Center in Salt River Bay, this is no longer the case.

There are concerns for the future of coral reef ecosystems in the Caribbean region. Although there are over 93 million of acres of coral reef submerged lands under U.S. jurisdiction, few have been properly studied to assess their overall health, and evidence is overwhelming that coral reefs and associated ecosystems are deteriorating at a rapid rate throughout the world. The concerns about the state of coral reef ecosystems in the Caribbean and elsewhere in the world has led to the formation of a partnership between the U.S. Department of Interior (DOI), through the NPS, the Department of Commerce/National Oceanographic & Atmospheric Administration, and the Joint Institute for Caribbean Marine Studies (JICMS). JICMS is a university-based organization consisting of four initial members, including the University of North Carolina at Wilmington, the University of the Virgin Islands, Rutgers (the State University of New Jersey), and the University of South Carolina. The JICMS has long considered St. Croix the most desirable location to establish a new Marine Research and Education Center (MREC) (JICMS 2004). St. Croix's central location within the Caribbean region, the rich coral reef research history of St. Croix, and the availability of the site at Salt River Bay which is owned and managed by the NPS, make it a perfect location for the MREC. The MREC would have programs to promote the sustainable utilization and conservation of marine resources through sound scientific principles with application throughout the Caribbean, West Indies and southern U.S.

The NPS is proposing two projects. The first project includes the construction and operation of a Marine Research and Education Center. The proposed MREC would include the following facilities: Education Center, Student Center, dormitories, cafeteria, library, a boat launch and dock, wet lab, parking lots, a maintenance building, and space for a Museum Collections Facility. For research purposes, a seawater supply pipeline would be routed to an appropriate intake point in the ocean to support wet laboratory operations and projects.

The second project includes the demolition of an abandoned hotel structure on the east side of SARI. The hotel structure was part of a development project started in the late 1960s that encompassed the entire Judith's Fancy peninsula which was never completed. The hotel structure was abandoned following partial completion in the 1970s. Currently, the structure is deteriorating and presents a safety and

environmental concern for the park. The park proposes to remove the entire structure, reuse and recycle as much of the material as possible, and rehabilitate the site to a more natural condition. In addition, the NPS proposes to construct a Haul Road to connect into Route 79 for equipment access and removal of debris. Following demolition, the site would be rehabilitated, revegetated with native plants, and returned to a more natural condition providing for bird nesting habitat and recreational opportunities consistent with natural area.

For the MREC project, three alternatives - an East Site Alternative, a South Site Alternative, and a West Site Alternative, as well as a No Action Alternative were evaluated. For the demolition of the abandoned hotel, the Proposed Action and the No Action Alternative were considered. Together, the two projects are referred to as the Proposed Projects. The Proposed Projects include the Preferred Alternative (East Site Alternative) for the MREC and the Proposed Action for the hotel demolition. The potential duration of the impacts (short-term or long-term), the intensity of the impacts (negligible, minor, moderate, or major), and the classification of the impacts as beneficial or adverse were analyzed in detail for this project. Cumulative effects for were also considered. By comparing the Proposed Projects with other alternatives, and identifying mitigation measures that would minimize adverse effects, this EA assists in the decision-making process.

For the proposed MREC, comparisons of the Preferred Alternative (East Site Alternative), the South Site Alternative, and the West Site Alternative result in similar resource impacts for the three alternatives. The construction phase of the MREC, including the installation of the seawater supply pipeline and maintenance dredging would result in short-term, minor, adverse effects to the soils and sediments, coastal zone, air quality, noise, water quality, coral reef/hardbottom substrate, fish, recreation, aesthetics, and visitor use at the park regardless of the alternative. Best management practices (BMPs) would be used to minimize potential soil erosion and minimize impacts to Salt River Bay and the use of semi-pervious surfaces (i.e., gravel and grass parking areas) would be used wherever possible to minimize the creation of new impervious surfaces areas.

In the long-term, implementation of the MREC would have minor, adverse effects to the hydrology, air quality, noise, water quality, and energy requirements at the park regardless of the alternative. Maintenance dredging proposed for all three alternatives would have long-term, minor, adverse impacts to the bathymetry, seagrasses, and the benthic community at the park. Long-term, minor, adverse effects to the 100-year floodplain and Coastal Barrier Resources System (CBRS) Areas would occur from the construction of structures (i.e., Wet Lab, boat dock and ramp) regardless of the alternative. The Web Lab would be constructed on pilings so as to not impede the function of the floodplain and the CBRS. Implementation of the MREC would have long-term, minor to moderate, adverse effects to the birds, mammals, and vegetation at the South and West Site Alternatives. However, long-term, minor to moderate, beneficial impacts would result from the replacement of non-native invasive plant species with appropriate native vegetation and revegetating disturbed areas (i.e., mud flats, bare areas, areas dominated by African guinea grass) beyond the MREC footprint at the Preferred Alternative (East Site).

No direct adverse impacts to Federally-listed species are anticipated from the MREC alternatives. For all three project site alternatives, the MREC facility would provide long-term, moderate, beneficial impacts to the unique natural systems at SARI, especially the coral reefs and mangrove habitat by fostering public awareness of the importance of coral reefs and other marine ecosystems from economic, aesthetic and global health standpoints through educational programs for students and the general public. The MREC would also foster the understanding and proper management of coral reef and other tropical and sub-tropical marine ecosystems by initiating a comprehensive long-term research and education program in the U. S. Virgin Islands. Under the No Action Alternative, no long-term beneficial impacts associated with the MREC facility would occur.

Of the three alternatives under consideration for the implementation of the MREC, only a portion of East Site has received comprehensive archaeological surveys and is the location of known archaeological sites. Regardless of the alternative, detailed archeological surveys would likely be required. Additionally, there is also the potential for submerged resources (shipwrecks, etc.) in the bay itself for all three project site alternatives. However, none of the alternative has the potential to affect historic resources at the park. All three alternatives could potentially have a long-term, minor to moderate, adverse visual effect on the cultural landscape of SARI.

Implementation of the MREC would improve the quality of life in the Salt River Bay region by providing additional opportunities for educational programs for students and the general public regardless of the alternative. As an individual entity, it is estimated that the MREC would contribute to the local economy by attracting more visitors to SARI. In addition, the MREC would contribute directly to the local economy by hiring permanent and part-time employees and purchasing goods and services from local suppliers.

For the Hotel Demolition, the implementation of the Proposed Action would result in some short-term, adverse impacts to SARI's resources, but in the long-term, beneficial impacts of the proposed action far outweigh the short-term, adverse impacts anticipated during demolition and implementation of the proposed action. Minor, short-term impacts to the water quality (increased turbidity) at SARI are expected during the demolition and road construction/improvement activities. Some resources may be affected in the short-term due to minor increases in turbidity at Salt River Bay: aquatic species (fish species), critical habitat (mangroves), EFH, HAPC, or designated natural areas. Long-term, beneficial impacts to floodplains, CBRS Area, and Tier 1 of the coastal zone would occur because abandoned building materials would be removed, impervious surfaces (such as the hotel) would be replaced with pervious surfaces, and the peninsula would be rehabilitated and revegetated with native species. Returning the site to a more natural setting which also would benefit the long-term water quality in the bay and ultimately benefit the seagrasses. Minor, adverse impacts to estuarine wetlands would result from activities associated with the hotel demolition, including roadway improvement activities and the removal of debris on the peninsula. No direct impacts to mangrove wetlands are anticipated as a result of the Proposed Action. There would be a temporary net loss of terrestrial habitat during the demolition and rehabilitation/revegetation process; however, a permanent increase in improved habitat (including shoreline habitat, least tern and sea turtle nesting habitat, herbaceous and scrub/shrub wetland habitat, and upland habitat) would be created as a result of the Proposed Action. Also note, long-term beneficial impacts to native bird habitat and migratory bird nesting, i.e., Least Tern. This is provided by control of visitor off road activities, reclamation of hotel area and coastal area by removal of concrete structure and debris, and replanting of area with appropriate native plants for coastal area. The Proposed Action would have a long-term, beneficial impact to the aesthetics of SARI. Demolition of the hotel would be a visual improvement enhancing the viability of the resources within SARI as well as the viewshed and cultural landscape to the surrounding communities. Currently, the deteriorating abandoned hotel structure that poses a safety hazard for the public. Removing the hotel would have a long-term, beneficial impact on visitor safety and would not impair any park resources.

The Proposed Projects, which include the MREC (Preferred Alternative - East Site) and the hotel demolition, would have some adverse effects on the natural resources at SARI. However, the long-term, beneficial impacts of the Proposed Projects far outweigh the anticipated adverse impacts, the majority of which are minor and short-term. Overall, there would be no impairment to park resources from either of the proposed projects.

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LIST OF ACRONYMS

ADA	Americans with Disabilities Act
APC	Areas of Particular Concern
ATVs	All-Terrain Vehicles
BE	Biological Evaluation
BMP	Best Management Practices
CAA	Clean Air Act
CBA	Choosing By Advantages
CBIA	Coastal Barrier Improvement Act
CBRA	Coastal Barriers Resource Act of 1982
CBRS	Coastal Barrier Resources System Areas
CEQ	Council on Environmental Quality
CFMC	Caribbean Fisheries Management Council
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CRCP	Coral Reef Conservation Program
CRTF	Coral Reef Task Force
CWA	Clean Water Act
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DEP	Division of Environmental Protection
DFW	Division of Fish and Wildlife
DO	Dissolved Oxygen
DOI	Department of the Interior
DPNR	Department of Planning and Natural Resources
DPW	Department of Public Works
EA	Environmental Assessment
EC	Environmental Concepts
EFH	Essential Fish Habitat
EO	Executive Order
EIS	Environmental Impact Statement
EMP	Exotic Plant Management
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FDU	Fairleigh Dickinson University
FEMA	Federal Emergency Management Agency
FMO	Facilities Management Office
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
GPD	Gallons per Day
GVI	Government of the Virgin Islands
HAPCs	Habitat Areas of Particular Concern

HC	Hydrocarbons
HWY	Highway
IASD	Interagency Archaeological Services Division
IRF	Island Resources Foundation
JICMS	Joint Institute for Caribbean Marine Studies
MOA	Memorandum of Agreement
MPAs	Marine Protection Areas
MPRSA	Marine Protection Research and Sanctuaries Act
MREC	Marine Research and Education Center
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMIM	National Mobile Inventory Model
NOAA	National Oceanic and Atmospheric Administration
NO _x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NPSP	Non Point Source Pollution
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
NTUs	Nephelometric Turbidity Units
NURP	National Undersea Research Program
NWRs	National Wildlife Refuges
O ₃	Ozone
OPAs	Otherwise Protected Areas
Pb	Lead
PM ₁₀	Particulate Matter Less Than 10 µm ³
PSU	Practical Salinity Units
REA	Rapid Environmental Assessment
RHA	Rivers and Harbors Act
ROI	Region of Influence
SARI	Salt River Bay National Historic Park and Ecological Reserve
SAV	Submerged Aquatic Vegetation
SCC	Source Classification Code
SEAC	Southeast Archaeological Center
SHPO	State Historic Preservation Officer
SO ₂	Sulfur Dioxide
SOF	Statement of Findings
STORET	STorage and RETrieval System
SWPPP	Stormwater Pollution Prevention Plan

T&E	Threatened and Endangered
TMDL	Total Maximum Daily Load
TOY	Time of Year
TPDES	Territorial Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USVI	United States Virgin Islands
UVI	University of Virgin Islands
VI	Virgin Islands
VICZMA	Virgin Islands Coastal Zone Management Act
VICZMP	Virgin Islands Coastal Zone Management Program
VING	Virgin Islands National Guard
VOC	Volatile Organic Compound
VR&R	Virgin Islands Air Pollution Control Act Rules and Regulations
WAPA	Water and Power Authority
WIL	West Indies Laboratory
WPC	Water Pollution Control
WSR	Wild and Scenic Rivers
WWTP	Waste Water Treatment Plant

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

The NPS is preparing this environmental assessment (EA) to consider the environmental consequences related to the potential construction and operation of a Marine Research and Education Center (MREC) and the demolition of an abandoned hotel structure at Salt River Bay National Historical Park and Ecological Preserve (SARI).

1.2 PROJECT LOCATION

SARI is located along the north/central coast of St. Croix, United States Virgin Islands (USVI) (Figure 1-1). The NPS and the Government of the Virgin Islands (GVI) jointly manage the 1,015-acre park. SARI is five miles from Christiansted National Historic Site and can be reached by car via Rt. 75 from Christiansted, connecting to Rt. 80.

1.3 SALT RIVER BAY NATIONAL HISTORICAL PARK AND ECOLOGICAL PRESERVE

In 1992 Congress created SARI as part of the National Park System (Figure 1-2). SARI was created to preserve, protect, and interpret nationally significant natural, historical, and cultural resources. In 1994, the Salt River Bay Commission recommended approval of a Land Protection Plan, which was signed by the Governor of the Virgin Islands and the Director of the NPS in 1995. This plan set the priorities for the purchase of lands within the boundary of SARI.

SARI contains a combination of marine, estuarine, and terrestrial habitats including coral reefs, seagrass beds, an undersea canyon, and the largest remaining mangrove forest within the U.S. Virgin Islands. Salt River Bay is fringed by mangrove forests, creating a habitat that plays a critical role where land and sea meet. Mangroves in SARI are still recovering from Hurricane Hugo (1989). Restoration is underway for red mangroves, which held (before Hugo) the last major natural mangrove stand set in an estuary in the Virgin Islands. The mouth of the bay, with its undersea canyon and coral covered walls, opens to the sea, which falls away into the deep Virgin Islands Trough. SARI is a protected natural area that exhibits many of this region's important ecological relationships in a small area. The water acreage of SARI was also designated as a National Natural Landmark (1980) that is home to 27 species that have been listed as threatened or endangered.

Salt River Bay is an estuary, where fresh and salt waters mix. The diverse terrestrial environment is dominated by shrub land and much of the flora is adapted to dry conditions. This dynamic relationship between land and bay is ecologically important. The survival of the local fishery, for example, may depend on preserving healthy natural conditions both inside and outside Salt River Bay. Endangered hawksbill turtles feed and rest along the coral canyon walls. Snappers and grunts hide among coral reefs by day and feed at night in seagrass beds. Threatened green sea turtles and queen conch thrive on turtle grasses. Coral reefs have built up in the Caribbean over the past 13,000 years. More than 400 species of reef fish are known in near-shore waters. Coral reefs may support one-third of all fish species globally and possibly a total of a half-million animal species.

Salt River Bay also contains prehistoric and colonial-era archeological sites and ruins that are found in this dynamic tropical ecosystem. Every major period of human habitation in the Virgin Islands is represented at SARI including several South American Indian cultures, the 1493 encounter with Columbus, Spanish extermination of the Caribs, attempts at colonization by a succession of European nations, and enslaved West Africans and their descendants. More than a dozen major archeological investigations since 1880, together with historical research, have revealed this remarkable story.

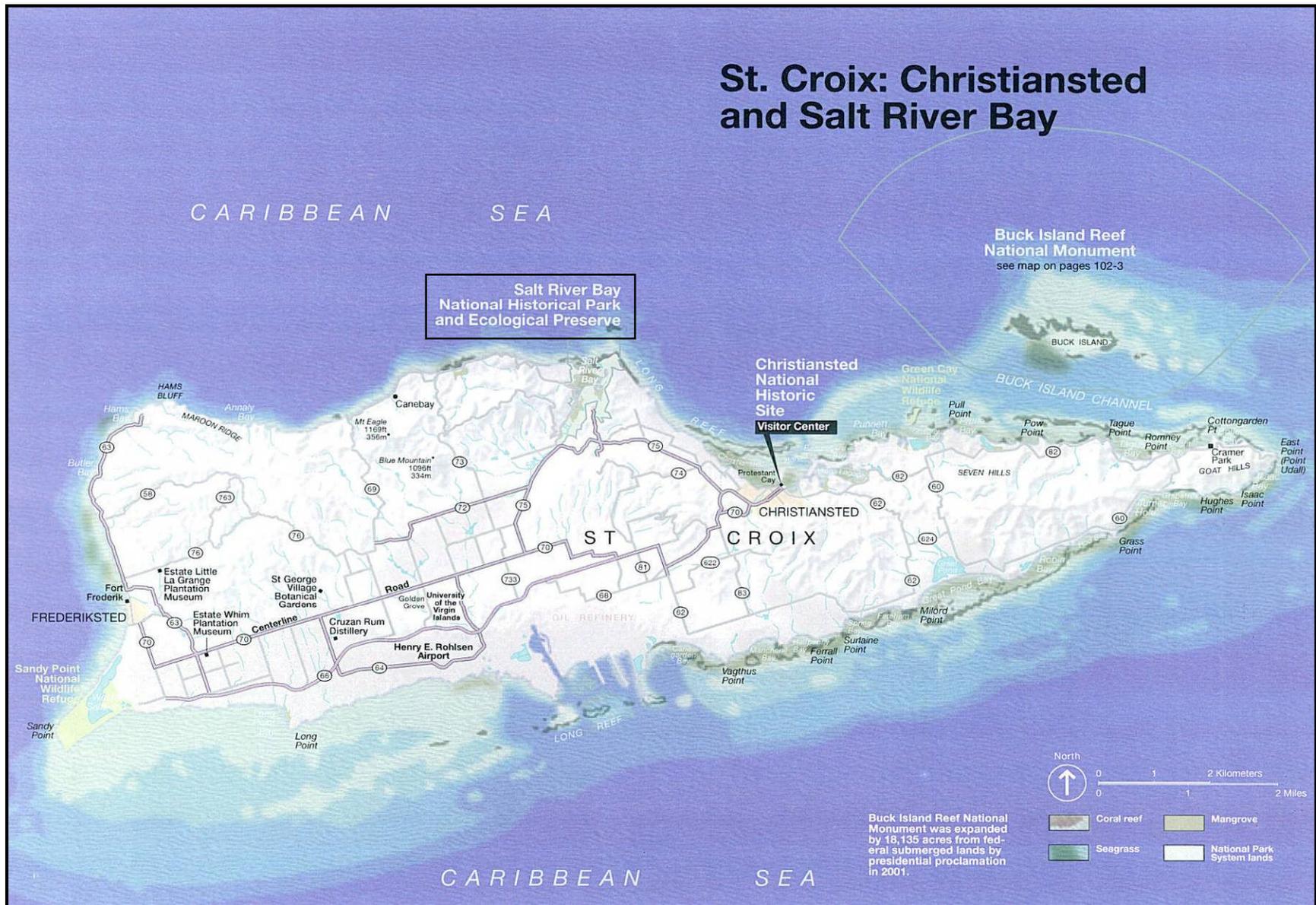


Figure 1-1 Location Map of Salt River Bay National Historical Park and Ecological Preserve

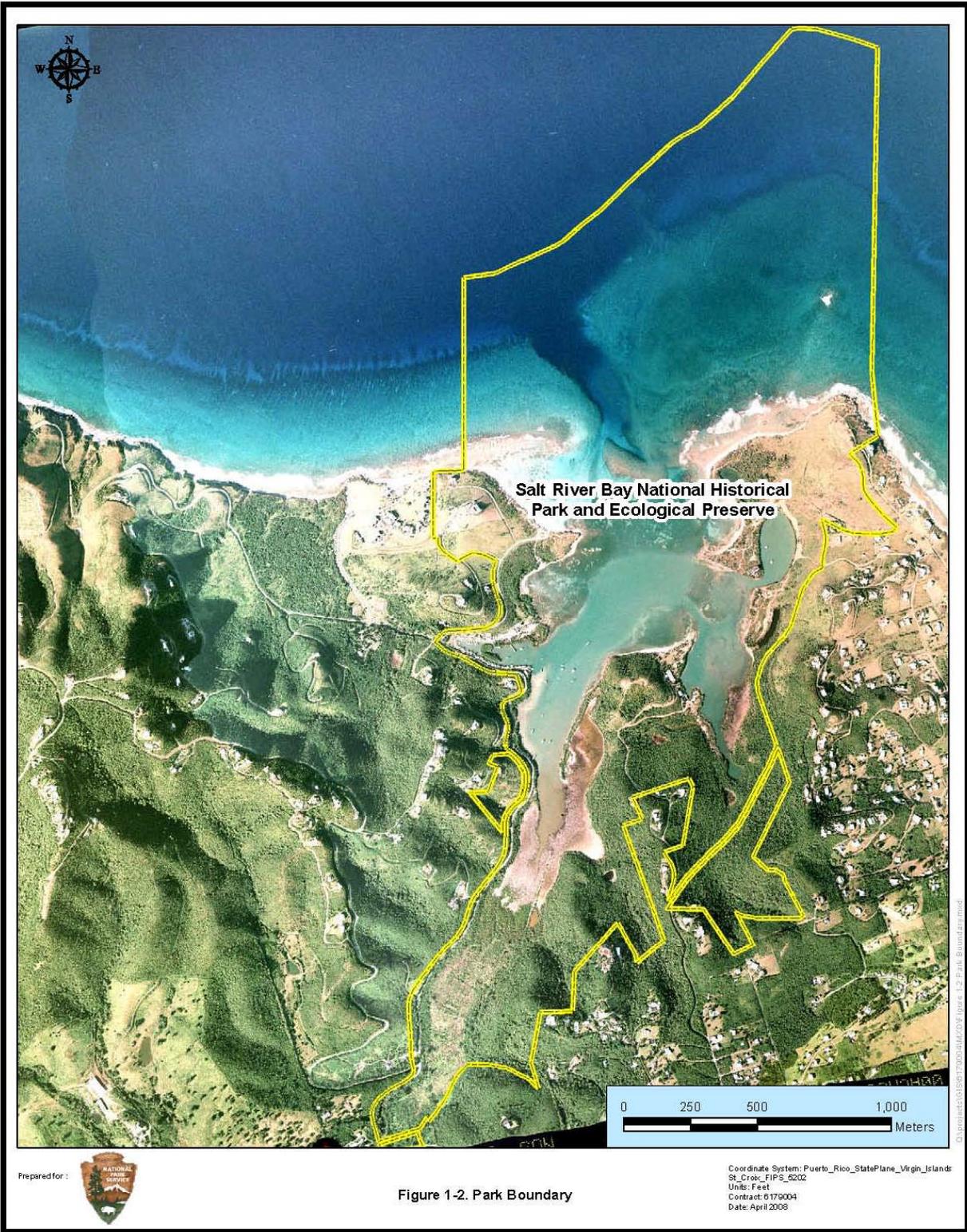


Figure 1-2. Park Boundary

1.4 PROJECT BACKGROUND

1.4.1 Marine Research

At one time SARI's reef and hard bottom habitats in the canyon were among the most extensively studied and characterized coral structures in the world. However, since the closing of the National Oceanic and Atmospheric Administration's (NOAA) Undersea Research Center in Salt River Bay, this is no longer the case. Reefs that fall within the boundaries of SARI but are outside of the canyon itself are currently monitored by the University of Virgin Islands (UVI) Seagrass Program and the USVI Department of Planning and Natural Resources (DPNR); however, with limited funds and resources. The seagrass and algae communities which were also studied by the NOAA facility researchers receive limited monitoring by USVI DPNR Division of Fish and Wildlife (DFW) and Division of Environmental Protection (DEP). These communities are of increasing concern due to water quality issues in the bay.

There are concerns for the future of coral reef ecosystems in the Caribbean region. Although there are over 93 million acres of coral reef submerged lands under U.S. jurisdiction, few have been properly studied to assess their overall health, and evidence is overwhelming that coral reefs and associated ecosystems are deteriorating at a rapid rate throughout the world.

1.4.1.1 Joint Institute for Caribbean Marine Studies

Concerns about the state of coral reef ecosystems in the Caribbean and elsewhere in the world has led to the formation of a partnership between the U.S. Department of Interior (DOI), through the NPS, the Department of Commerce/ National Oceanographic & Atmospheric Administration, and the Joint Institute for Caribbean Marine Studies (JICMS). JICMS is a university-based organization consisting of four initial members, including the University of North Carolina at Wilmington, the University of the Virgin Islands, Rutgers (the State University of New Jersey), and the University of South Carolina.

The purpose of JICMS is:

- To foster understanding and proper management of coral reef and other tropical and sub-tropical marine ecosystems by initiating a comprehensive long-term research and education program in the U. S. Virgin Islands;
- To foster public awareness of the importance of coral reefs and other marine ecosystems from economic, aesthetic and global health standpoints through educational programs for students and the general public; and
- To share information and research and to form partnerships with other nations within the Caribbean and adjacent regions with common interests in and concerns for the marine environment.

1.4.1.2 Siting the Proposed Marine Research and Education Center at Salt River Bay

JICMS has long considered St. Croix the most desirable location to establish a Marine Research and Educational Center (JICMS 2004). Considering that coral reef systems are linked throughout the Caribbean, St. Croix's central location and proximity to many nations within the region make it a perfect site for a MREC.

Additionally, the island has a rich coral reef research history. Extensive research was conducted from 1970-1989 at the former West Indies Laboratory on the eastern end of the island and at the NOAA Undersea Research Center based at Salt River Bay. Scientists collected significant amounts of chemical, physical and biological data that will serve as a baseline for comparative studies in the future. A NOAA-

CREWS meteorological and oceanographic monitoring platform has been moored at Salt River Bay since 2002 and is collecting physical and biological data as part of NOAA's International Coral Health and Monitoring Program (JICMS 2004).

Perhaps most important is the federal ownership and availability of the site at Salt River Bay and other property, both dry and submerged, owned or managed by the NPS in St. Croix. The SARI and the Buck Island Reef National Monument can all be closely linked to the MREC's programs (JICMS 2004).

The Salt River Bay site is also within a short distance by boat and vehicle to a diverse ecosystem that is representative of coral reef systems throughout the Caribbean.

1.4.1.3 Research and Educational Programs

A MREC would have programs to promote the sustainable utilization and conservation of marine resources through sound scientific principles with application throughout the Caribbean, West Indies and southern U.S. (JICMS 2004). The research program may include programs to:

- Provide long- and short-term monitoring of physical, biological, chemical, geological and meteorological parameters to track the processes governing stability and change in coral reef systems;
- Conduct indigenous marine aquaculture research that could lead to stock enhancement of species that have been severely depleted in the wild;
- Conduct specific research on the causes of coral reef diseases and degradation;
- Conduct research that would lead to the restocking of depleted species of fish and other marine organisms; and
- Study deep reef systems including the effects of global warming and the cataloguing of its virtually unknown biodiversity.

The MREC would also establish an educational program on marine issues aimed at Caribbean stakeholders (i.e., students, resource managers, local elected officials and the general public). The programs would include:

- Full-semester classes for credit in the marine sciences provided by the university partners;
- Short-term field courses taught by university partner faculty and visiting professors;
- Student internships featuring hands-on field and lab experiences;
- Partnership programs between scientists and K-12 educators that bring real world marine science experiences into Caribbean classrooms;
- Coastal training programs and services to support science-based management of Caribbean coastal resources;
- Public programs focusing on current coastal policy and management issues; and
- Interaction with scientists in the field through video and telecommunication systems.

1.4.2 Demolition of the Abandoned Hotel

A second project evaluated in this EA is the demolition of an abandoned hotel structure located on the east side of SARI. The hotel structure was part of a development project started in the late 1960s that encompassed the entire Judith' Fancy peninsula. This development project as well as other previous projects proposed to develop the entire peninsula. The structure (proposed to be known as the Virgin Grand Hotel) was abandoned and never completed. This structure is referred to as the "abandoned hotel structure" throughout this document. Currently the structure is deteriorating and presents a safety and environmental concern for the park. The park proposes to remove the entire structure, reuse and recycle

as much of the material as possible, mitigate previous development impacts, and rehabilitate the site to a more natural condition. In addition to these actions, the park is proposing to construct a haul road for the construction vehicles to get to and from the site, and for the haul out of materials produced from the demolition of the abandoned hotel structure.

1.5 PURPOSE AND NEED OF THE PROJECT

1.5.1 Marine Research and Education Center

The purpose of this project is to implement a proposed MREC at SARI. As mentioned previously, St. Croix has been the host of over thirty years of world class marine research. Both Fairleigh Dickinson University's (FDU), West Indies Laboratory (WIL), and NOAA's National Undersea Research Program (NURP) facility and their manned undersea research habitats "Hydrolab" and "Aquarius" were located in Salt River Bay. These two facilities brought hundreds of students and researchers from local communities and from all over the world to study and work in and around the island's marine environment annually. Unfortunately both facilities were closed after Hurricane Hugo. The loss of these facilities greatly impacted the educational opportunities the island resources offer and hindered on-going and future research.

There is a need to reestablish a MREC on the island of St. Croix. SARI was selected by JICMS as the ideal location for the MREC for the following reasons:

- Long-term conservation and education goal for the NPS and the Government of the Virgin Islands who jointly manage and maintain the 1,015-acre park;
- Legacy of the former FDU/WIL and NOAA/NURP programs with years of baseline information on the marine community inside and outside the bay and into the depths of the submarine canyon;
- Need for scientific information for the Government of the Virgin Islands to restore and maintain St. Croix's last living and functioning mangrove, estuarine, and coral reef ecosystem;
- Close proximity to the target resources for education and research, and
- Long-term security for the project through park ownership and management.

1.5.2 Abandoned Hotel Structure

The purpose of removing the abandoned hotel structure is to alleviate the safety and environmental concerns of the structure and to improve the cultural landscape at the park. The abandoned hotel is a modern intrusion visible throughout the park. The hotel structure has deteriorated since it was abandoned in the 1970s, and it now is a safety hazard and is incompatible with the surrounding environment. Once the abandoned hotel structure is removed the park would be able to rehabilitate the peninsula through revegetation of native plant species and to return the area to a more natural condition. This project also needs a Haul Road to be constructed to transport the demolition equipment to and from the site and to haul materials away from the site. The Haul Road would also divert the construction and demolition vehicles from going through Estate Judith's Fancy.

1.6 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

This EA was prepared in accordance with National Environmental Policy Act (NEPA) guidelines, and it examines the consequences of a proposed action and alternatives on the environment. This document analyzes the short-term, long-term, and cumulative effects of the proposed action for the MREC, along with two other alternatives and the "no action alternative." This document also analyzes the short-term, long-term, and cumulative effects of the demolition of the abandoned hotel and the "no action alternative." By comparing the proposed action with other alternatives, and identifying mitigation

measures that would minimize adverse effects, this EA will assist stakeholders in the decision-making process.

1.7 ORGANIZATION OF THE ENVIRONMENTAL ASSESSMENT

Chapter 1 discusses the location and background of the project, the history of SARI, the purpose and need of the project, and the scope of the EA (these topics were previously discussed in Sections 1.1 through 1.6), organization of the EA (current section being discussed – Section 1.7), impact topics considered, evaluated, and dismissed (Section 1.8), and applicable statutory and regulatory requirements (Section 1.9). Chapter 2 discusses the preferred alternative for the MREC, the South Site Alternative, the West Site Alternative, the no action alternative, and the environmentally preferred alternative. Chapter 2 also includes the demolition of the abandoned hotel, the no action alternative for this action, and the environmentally preferred alternative for this project. Chapter 3 describes the affected environment and discusses the physical, natural, socio-economic, and cultural resources in relation to the alternatives. Chapter 4 presents the environmental consequences for the described alternatives (preferred, South Site, West Site, and no action) for the MREC to physical, natural, socio-economic, and cultural resources. Chapter 5 presents the environmental consequences for the described alternatives (proposed action and no action) for the abandoned hotel demolition to physical, natural, socio-economic, and cultural resources. Chapter 6 discusses the cumulative impacts on each resource of actions in the past, the present, and the future. Chapter 7 discusses the mitigation measures that would minimize any adverse impacts. Chapter 8 describes the environmental commitments including the unavoidable adverse impacts and irreversible or irretrievable commitments of resources. Chapter 9 discusses compliance with environmental regulations. Chapter 10 discusses the public involvement and scoping process that occurred throughout the NEPA process, and agency consultation and coordination. Chapter 11 is the list of document preparers and is followed by a list of document references (Chapter 12) and appendices.

1.8 IMPACT TOPICS AND ISSUES

Issues can be defined as the relationship between the alternatives and the human, physical, and natural environment (NPS 2001a). Issues are used to define which environmental resources may experience either negative or beneficial consequences from an action. They do not predict the degree or intensity of potential consequences that might result from an action. Issues were identified by the NPS, Territorial and Federal agencies, and by the public during the scoping process. For more information, see Chapter 10 on Public and Agency Involvement and Consultation and Coordination. From these issues, impact topics were developed for each affected environmental resource area. Impact topics are used to define and focus the discussion of resources that could be affected by the alternatives, and are the focus in the evaluation of the potential environmental consequences of the alternatives.

Potential impact topics were identified based on legislative requirements, executive orders, topics in *Director's Order #12 and Handbook* (NPS 2001a), *NPS Management Policies* (NPS 2006), guidance from NPS, input from other agencies, public concerns, and resource information specific to Salt River National Historical Park and Ecological Preserve. A summary of impact topics analyzed and dismissed from further analysis is provided below, along with the rationale for their inclusion or dismissal.

1.8.1 Impact Topics that were Analyzed in this EA

The following impact topics have the potential to be affected by the alternatives for both the MREC and the demolition of the abandoned hotel and are evaluated in detail in this EA:

Soils – Soil disturbance during construction of the MREC and demolition of the abandoned hotel would have implications for this resource.

Bathymetry – Potential maintenance dredging needed for the MREC would create minor impacts to the bathymetry.

Air Quality – During the short-term construction phase of the MREC project, the operation of construction equipment would generate some criteria pollutant emissions, including carbon monoxide and particulate matter. Demolition of the abandoned hotel would also have implications for this resource.

Noise – The construction phase of MREC project is expected to create minor and short-term noise impacts at the site. Demolition of the abandoned hotel is expected to create moderate and short-term noise impacts.

Climate/Seismicity- The potential for coastal storms and earthquakes should be considered for implementation of the MREC.

Water Quality– The construction of the MREC would cause temporary minor impacts to the water quality of the bay.

Hydrology – The construction of the MREC and the demolition of the abandoned hotel structure would impact the hydrology of the site.

Floodplains – The water dependent structures (i.e., boat dock, wet lab) of the MREC and the abandoned building materials for the hotel are located within the 100-year floodplain.

Coastal Zone/Coastal Barrier Resources System (CBRS) Area – The proposed projects are located within the coastal zone and the CBRS area.

Wetlands/Mangroves – The proposed MREC would impact wetland and mangrove areas.

Terrestrial Resources – Vegetation and wildlife habitat would be disturbed during construction activities of the MREC and demolition of the abandoned hotel.

Aquatic Resources – Potential maintenance dredging needed for the MREC would create minor impacts to the seagrasses and fish habitat. Installation of the seawater supply pipeline has the potential to impact the coral reefs.

Threatened and Endangered Species – Protected species utilize the habitats within park. This environmental document will serve as the basis for appropriate consultation with the agencies charged with protecting listed species.

Unique Natural Areas/ Ecologically Critical Areas – Salt River Bay and watershed is one of 18 Areas of Particular Concern (APC's) designated by the V.I. Department of Planning and Natural Resources due to its unique mix of resources. The “Salt River Bay Complex” was also identified as a potential *Significant Natural Area* by the Coastal Zone Management (CZM) Program. Additionally, a 690-acre portion of Salt River Bay was designated as one of five *National Natural Landmarks* for the U.S. Virgin Islands included in the National Registry of Natural Landmarks.

Cultural Resources – SARI is home to several known historically significant sites and the Salt River Bay itself is a significant historic landscape.

Indian Sacred Sites and Indian Trust Resources – There are no Indian trust resources associated with SARI since there are no Indian sacred sites located there. The Native population didn't survive European settlement.

Recreation – The construction of the MREC and the demolition of the abandoned hotel would affect local recreational activities.

Socioeconomic Resources – Implementing the MREC would improve the quality of life in the Salt River Bay region by providing additional opportunities for educational programs for students and the general public, recreational opportunities, and additional opportunities for employment.

Environmental Justice – Environmental justice was retained to thoroughly analyze the presence of minority or low-income populations in the vicinity of the project. However, no disproportionate impacts are expected.

Aesthetics – Aesthetics at the site may be temporarily altered during construction of the MREC and demolition of the abandoned hotel.

Public Health and Safety – The demolition of the abandoned hotel would improve the safety concerns at SARI.

Energy Requirements and Conservation Potential– The proposed actions would require temporary increases in energy use during construction of the MREC and demolition of the abandoned hotel. The MREC would also permanently impact energy once implemented.

Infrastructure – The MREC would require electricity, telecommunications, a road structure, and waste disposal.

Visitor Use and Experience – Construction of the MREC and demolition of the abandoned hotel would cause minor alterations to visitor use and experience.

Park Operations – Construction of the MREC and demolition of the abandoned hotel and would cause minor alterations to park operations. Additionally, implementation of the MREC would have a permanent impact on park operations.

1.8.2 Impact Topics Dismissed from Further Analysis

Geology – The major geologic formations for the Salt River watershed consist of two primary lithologic units, the Miocene Kingshill Formation and the Cretaceous Judith's Fancy Formation. The Kingshill Formation is primarily limestone whereas the Judith's Fancy Formation is a mixture of volcanoclastics, sandstone, and mudstone, and contains a few small dioritic or gabbroic intrusions. The proposed projects do not have the potential to affect the geology at SARI.

Topography – The topography of SARI and the surrounding watershed is varied, and ranges from near flat land behind the mouth of Salt River to steep slopes in both the western and eastern portions of the watershed. The proposed actions would not affect the topography or alter the slope of the site, as no extensive grading is needed.

Prime and Unique Farmlands – Prime farmland, as defined by the United States Department of Agriculture (USDA), is described as land that has the best combination of physical and chemical characteristics for producing specified crops and is available for these uses. Sometimes, soils are only considered prime farmland under certain conditions (USDA 1998). The soil series Glynn gravelly loam, 5 to 12 percent slopes, rarely flooded (GyC) is described as prime farmland, but only if this soil series is irrigated (USDA 1998). This soil series is located within the NPS boundary of the West Site. This soil series is not currently irrigated, so based upon this condition, the area is not technically considered prime

farmland by the USDA. Therefore, the proposed projects do not have the potential to affect prime farmland at SARI.

Land Use -Most of the land within the boundaries of SARI is currently zoned for low and medium density residential development, and for waterfront pleasure. Land use designations in SARI include public (owned by Federal or local government), and mixed waterfront/pleasure/industrial. Within SARI boundaries lies the Columbus Landing Site (owned by the V.I. Government), the former Triton Bay Wildlife Sanctuary, the Salt River Marina (privately owned), and the former NOAA Undersea Research Center (privately owned). Implementing the proposed projects would not conflict with the current land use plans for SARI.

Groundwater - Groundwater resources are significant within the Salt River watershed. The area contains three of the major groundwater areas of the island, and potential yields of as much as 15,000 gallons per day (GPD) in the lower parts of the valley (IRF 1993). Sand and gravel alluvium can be found within the Salt River basin, capable of producing 10 to 50 gallons per minute (GPM) of groundwater (NPS 1990). Cisterns and reverse-osmosis freshwater production are proposed for the MREC facilities; therefore, the proposed projects do not have the potential to affect the groundwater at SARI.

Wild and Scenic Rivers – There are no designated wild and scenic rivers on the island of St. Croix or within SARI as defined in the Wild and Scenic Rivers (WSR) Act (16 U.S.C. 1271-1287). Additionally, no study rivers defined as “designated for potential addition to the national wild and scenic rivers system” by the WSR Act are located in the vicinity of SARI (NPS 2004).

The Nationwide Rivers Inventory (NRI) is a listing of more than 3,400 free-flowing river segments in the United States that are believed to possess one or more “outstandingly remarkable” natural or cultural values judged to be of more than local or regional significance by the NPS (NPS 2004). Under a 1979 Presidential directive and related Council on Environmental Quality Procedures, all Federal agencies must seek to avoid or mitigate actions that would adversely affect one or more NRI segments. There are no streams in the NRI in the vicinity of the site.

Natural or Depletable Resources - Natural or depletable resources include resources such as oil, gas, coal, minerals, and water. No depletable resources at SARI would be used.

1.9 APPLICABLE LAWS AND REGULATIONS

Applicable Federal policies, executive orders and regulations are listed in Table 1-1 below, and how they relate to each resource that was originally considered. In addition, NPS *Management Policies* (NPS 2006) was used for guidance for numerous impact topics. Other regulations specific to NPS include the Director’s Orders listed below, and NPS Organic Act of 1916.

Table 1-1. Applicable Federal Laws and Regulations

Resource	Relevant Laws and Regulations
Soils, Geology, Topography	National Cooperative Soil Survey Standards
Air Quality	Clean Air Act NPS Organic Act
Noise	Director's Order #47 Noise Control Act
Water Quality, Hydrology	Clean Water Act Rivers and Harbors Appropriation Act Executive Order 12088
Floodplains	Executive Order 11988 Director's Order #77-2
Coastal Barriers	Coastal Barrier Resources Act
Coastal Zone Management	Coastal Zone Management Act
Wetlands	Executive Order 11990 Clean Water Act Executive Order 12088 Director's Order #77-1 Rivers and Harbors Appropriation Act
Terrestrial Resources	Migratory Bird Treaty Act Wilderness Act Executive Order 13112
Aquatic Resources	Magnuson-Stevens Fishery Conservation and Management Act Marine Mammal Protection Act
Threatened and Endangered Species	Endangered Species Act NPS Organic Act
Ecologically Critical Areas	Endangered Species Act
Wild and Scenic Rivers	Wild and Scenic Rivers Act Director's Order #46
Prime and Unique Farmlands	Farmland Protection Policy Act Memorandum on Prime and Unique Agricultural Lands and NEPA (CEQ 1980)
Cultural, Historic, and Archaeological Resources	National Historic Preservation Act Archaeological Resources Protection Act Director's Order #28 NPS Organic Act
Indian Sacred Sites and Indian Trust Resources	DOI Secretarial Orders No. 3206, 3175 Director's Orders #66 and #71B Executive Orders 13007, 13175
Socioeconomic Resources	Director's Orders #2 and #12
Environmental Justice	Executive Order 12898
Aesthetics	NPS Organic Act
Public Health and Safety	Architectural Barriers Act Americans with Disabilities Act Director's Orders #42 and #83 Executive Order 13045

Resource	Relevant Laws and Regulations
Energy Requirements and Conservation	Energy Policy Act Executive Orders 13031, 13123, 13149
Visitor Experience and Experience	NPS Organic Act Director's Order #12
Park Operations	NPS Organic Act

1.10 REQUIRED PERMITS

Table 1-2 provides information on permits and certifications that would be required for the MREC. Certifications and permit applications for the MREC would be prepared accordingly depending on the final design of the proposed project. Certifications and permits will be obtained from the appropriate agencies following completion of this EA, signing of the Finding of No Significant Impact (FONSI), and before construction of the MREC commences. Chapter 4 discusses certifications and permit requirements for each resource as applicable.

For the demolition of the abandoned hotel structure, a Coastal Zone Consistency Certification is required. See Section 5.3.3 for more information on the Coastal Zone Consistency. Any other permits or certifications for the demolition of the abandoned hotel structure would be prepared accordingly depending on the final design of the proposed project.

Table 1-2 Permits and Certifications Required for the Marine Research and Education Center

Permit/ Consultation	Level (Territorial/ Federal)	Authority	Responsible Agent	Description
404 Permit	Federal	Clean Water Act (CWA), Section 404 33 Code of Federal Regulations	United States Army Corps of Engineers (USACE)	To protect waters of the U.S., including wetlands, by authorizing only necessary and unavoidable impacts, including filling, soil movement and placement of certain pilings in wetlands. Discharges of dredged or fill material are regulated for all waters and wetlands regardless of size. Required for any activity that involves filling waters of the U.S., including rivers and wetlands. Required for construction of marine facilities and construction that may impact wetlands.
Section 10 Permit	Federal	Rivers and Harbor Act, Section 10 30 Code of Federal Regulation (CFR) Part 322	USACE	Regulates any activity that affects the course location and capacity of a navigable water. Regulates all activities, including construction, excavation, or deposition of materials, that take place in, on, above, or underneath navigable waters. Permits issued under Section 10 are not associated with protection of wetlands. Section 10 permits are required along with permits under Section 404 of the CWA. Permit may be required for construction of seawater lines associated with the proposed wet labs and construction of marine facilities.
401 Water Quality Certification	Territorial	CWA Section 401	USVI DPNR/DEP	To prevent violations of water quality standards. Required for wetlands and waterways construction permits, potentially including construction of the marine facilities and seawater lines associated with the proposed wet labs.
Coastal Zone Management Certification	Territorial	Virgin Islands Coastal Zone Management Act (VICZMA) Section 910	USVI DPNR Division of Permits	Required for any development activity in the first tier of the coastal zone including alteration of the shoreline or submerged lands, construction of new structures for commercial or private use, discharge or disposal of waste materials, enlargement or expansion of existing structures, land clearing, grading, or excavation, and placement of permanent or temporary structures on submerged lands (e.g., moorings, docks, etc.).

2.0 DESCRIPTION OF ALTERNATIVES

2.1 MARINE RESEARCH AND EDUCATION CENTER

After reviewing the proposed building, research and educational programs and evaluating four potential locations for the MREC at SARI, conceptual site plans for three alternatives were developed. The potential locations included two on the western side of the Salt River Bay: the NPS Visitor Contact Station and the Salt River Marina; one at the southern edge of the Bay: the former NOAA Undersea Research Center; and one on the eastern side, west of Estate Judith's Fancy (Figure 2-1).

These sites were examined in detail, given the information available on existing conditions, and preliminary site plans were developed for each alternative. Among the elements evaluated were floodplains, topography, susceptibility to hurricanes and earthquakes, cultural and historic resources, and environmental impacts. The individual site plans attempted to mitigate impacts to these elements and accommodate the building program in an environmentally responsible manner while providing the means to compare the advantages of each alternative.

The alternatives were designed to keep the MREC buildings in close proximity to one another and thus allow for the efficient use of each site. The MREC was developed in a campus-like pattern to reinforce the center's role as a research facility and to take advantage of site amenities and the proximity of the center to the Bay.

After examining the Visitor Contact Station site, it was determined that the site did not have sufficient water access for a docking facility to accommodate the complete program. Additionally, the land area at the marina is insufficient to support the MREC program without eliminating some, if not all, of the existing marina uses. Given these constraints, the Salt River Marina and the Visitor Contact Station were combined into one alternative. Therefore, three alternatives were developed for the MREC: East Site Alternative located west of Estate Judith's Fancy; South Site Alternative the former NOAA Undersea Research Center; and West Site Alternative the Visitor Contact Station and Salt River Marina.

The site plans developed for this assessment are conceptual in nature and more study, including engineering and geotechnical review, would be done to determine an optimal design for the Preferred Alternative. This would be accomplished during future design phases of the project.

2.1.1 Guidelines for the Physical Plant

The conceptual alternatives were developed from the JICMS guidelines found in *Guidelines from the Joint Institute for Caribbean Marine Studies to the National Park Service, St. Croix, Virgin Islands for A Feasibility Study to Establish the Salt River Bay Marine Research and Educational Center Draft Twenty-Year Plan for the Salt River Bay Marine Science and Education Center*. For summary purposes, these guidelines are listed below. Provision was made to include windmills for wind power as appropriate on the sites. In places where water tanks would cause an inappropriate visual impact, it is assumed that they would be partially concealed at or below grade.

The MREC facilities would include a series of buildings and other structures of approximately 35,000 square feet, not including parking, roads, and related site improvements.

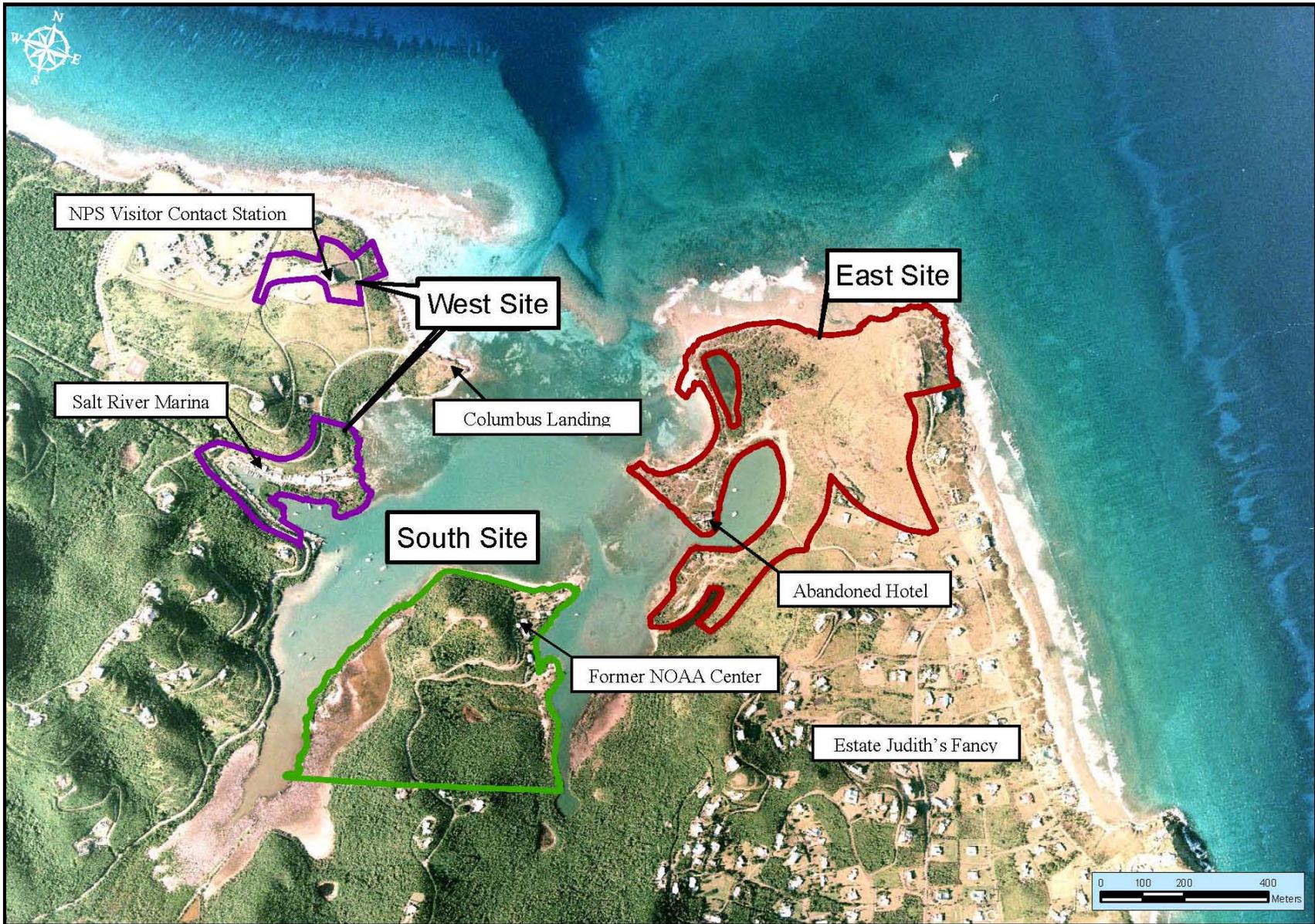


Figure 2-1. Alternative Locations for the MREC and Location of the Abandoned Hotel

The Main MREC Complex

The main complex would include:

- One large structure or a series of smaller units spread out over a larger area.
- A footprint built on a “no flood zone” and no more than two stories high.
- Three classrooms to accommodate at least 20 students each.
- Lecture and conference auditorium to accommodate at least 100 persons, wired for presentations and real-time video-audio communications.
- Large multifunctional room equipped with wireless Internet capability to serve as a library and for seminars.
- At least one teaching laboratory for 20 students with wireless Internet capability.
- A separate building with adequate space for dining and kitchen facilities to accommodate at least 100 people. This space would serve as a recreation meeting place for students and others and can be incorporated into the dormitories.
- Two administrative offices to accommodate 4-5 people with wireless Internet capability.
- Five small offices equipped with computers with wireless Internet capabilities.
- A Museum Collections Facility and preservation room to isolate preservatives.
- An interactive interpretation center with aquaria for public viewing of local species and ecosystems.
- A small data management room.
- Two climate-controlled dry labs equipped with pH meters, balances, centrifuges, research-quality compound and dissecting scopes.
- Dorms separate from the main building for thirty students and ten visiting scientists with wireless Internet capability.
- A small GIS laboratory with plotters and a satellite receiving station.
- Parking for staff and the public on site of approximately 30 to 45 spaces, depending on the site layout.

Wet Labs

According to the JICMS, the wet labs and associated teaching spaces should be separate from the main building complex. JICMS also recommended that the wet labs be close to the marine operations (boats, diving) and to the main building for convenience and to assure the shortest possible seawater lines.

In addition, the wet labs would include:

- Three small research/teaching wet labs with clean seawater available and fume hoods for handling and storing hazardous materials.
- Four outside seawater wet tables with shading.
- Two small air conditioned computer rooms equipped with at least six computers and wireless Internet capability.
- Four to five holding tanks for live organisms.

Marine Facilities

The marine facilities would include:

- Docks with space for two medium-sized vessels (25-45 ft) and four small boats (outboards), equipped with 110/220v power.
- Mooring space for 4 to 6 small boats.
- Space for a diving boat (45 ft) equipped with HP compressor, diving ladder and emergency oxygen, and two smaller dive boats.
- Two-lock decompression chamber 60 inches in diameter in a closed building.
- Full dive locker with 20 sets of gear and two HP/HV compressors and dressing area.
- Small boat and diving gear maintenance shop.
- Two small boat trailers and vehicles to reach other regions of study on the island.

Support Facilities

The JICMS proposed that several facilities be developed to support the MREC:

- Primary power should come from the St. Croix power company with redundant (2) 200KW generator sets equipped with automatic starting and switching systems.
- Installation of alternative power such as solar panels and windmills should be considered where practical and cost efficient (e.g., solar hot water systems).
- A reliable and clean seawater system is a priority and should be drawn from a region of the ocean free of contaminants and wide swings in salinity and temperature. It should be a dual parallel system of both raw and sand-filtered water. The intake should preferably come from the open ocean away from the bay tidal plume and beyond the coastal high-energy region.
- Plans for landscaping the property will include native plants, as much as possible, and the removal of non-native invasive species, as much as possible.
- High-volume rainwater collecting cisterns and a reverse-osmosis freshwater production system that produces about 3,000 gallons a day should be considered.
- A state-of-the-art sewage treatment system that assures minimum contamination of the bay, its surrounding area and the research projects is of the highest priority and needs to be above any flood zone. Composting toilets are another option for sewage treatment.

In addition, the facility would include:

- A holding tank with a 20,000-gallon capacity and capable of gravity feeding seawater to the wet labs.
- Maintenance facilities, including a well tooled workshop and small boat haul-out; this could serve as a warehouse and storage for hazardous materials.
- Roofed-over concrete containment bunkers built around fuel storage tanks and other potentially polluting liquids.

Museum Collection Storage Facility

A Museum Collection Storage Facility of approximately 5,000 square feet would be included as part of the MREC campus. This facility would contain space for collections consisting of 440,000 objects, both natural and cultural materials, including pre-historic, colonial, militaria, archeological, wet specimens, flora, herpetological, insect, geological, and archival space.

2.1.2 DESCRIPTION OF ALTERNATIVES

Care was taken to develop these alternative site concept plans in a responsible manner, given the topography of the sites, the needs of the program and the goal of creating an integrated campus environment that supports the research objectives of the facilities and encourages the public to visit and take part in its programs. However, these plans are conceptual in nature and are not intended to be an actual building program. More analysis is needed to determine the best layout and design for these facilities. They do, however, provide the basis for comparing the alternatives and identifying the primary issues that must be considered when designing the MREC at these locations.

2.1.2.1 No Action Alternative

The No Action Alternative is required for the NEPA process to review and compare feasible alternatives to the existing baseline conditions. Under the No Action Alternative, a MREC would not be constructed within the boundaries of SARI. Current activities (i.e., scuba diving, snorkeling, kayaking, and hiking) would continue at SARI if the MREC is not constructed. Unauthorized access of off-road vehicles would continue at the East Site. This activity would continue to contribute to the erosion problems at the site, ultimately to the water quality issues in the bay, and wildlife disturbances. The South Site is currently privately owned and offers no park activities, it would continue as a privately owned site. The NPS Visitor Contact Center would continue to operate at the West Site and the marina would continue to operate as a privately owned marina.

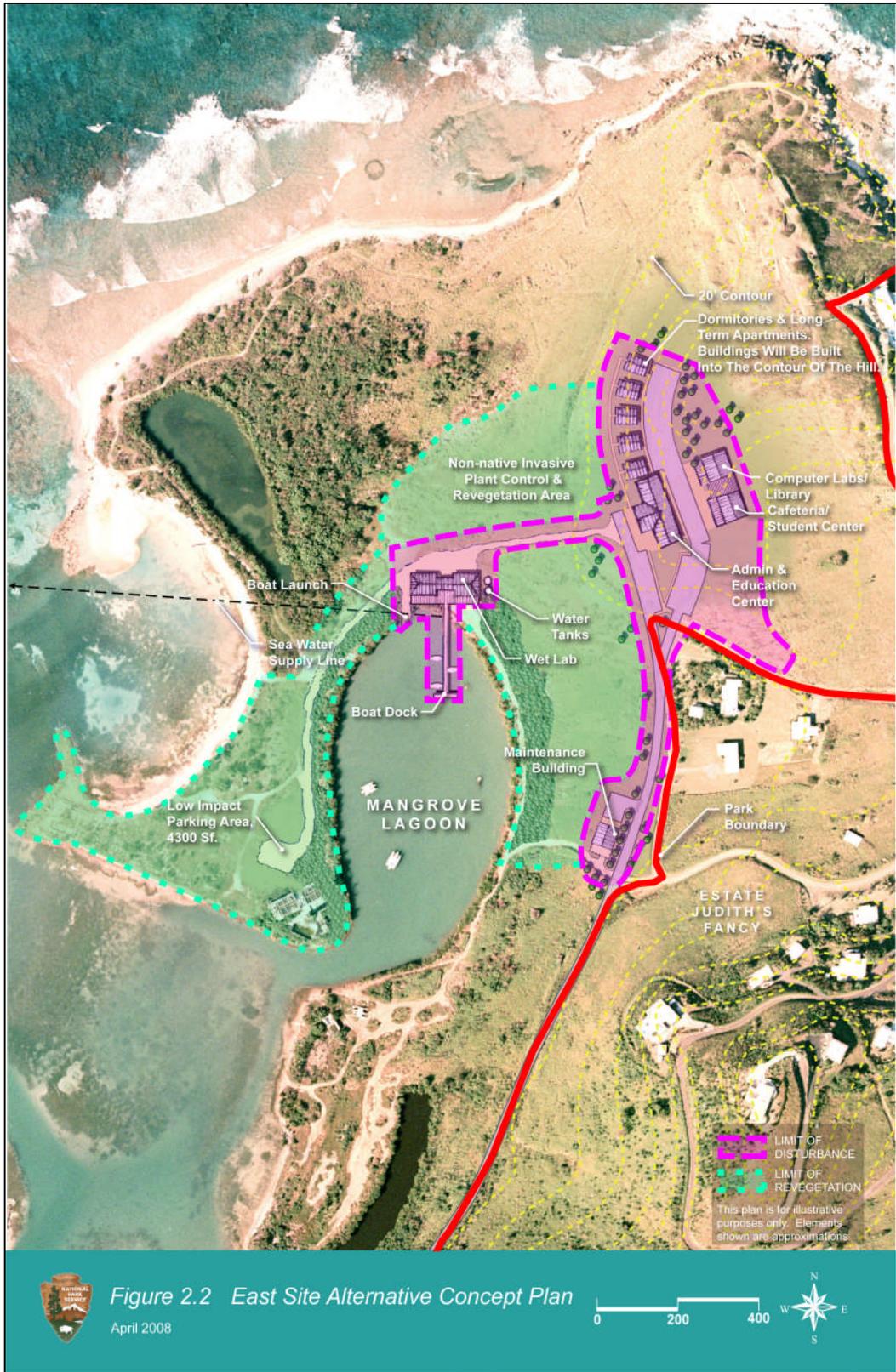
2.1.2.2 East Site Alternative (Preferred Alternative)

Figure 2-2 presents the concept plan for the Preferred Alternative (East Site) which is located within the East Site boundary location presented in Figure 2-1. Figure 2-3 presents the site access route for this alternative.

Description of Site

On the eastern side of Salt River Bay are approximately 70 acres of land owned by the NPS, adjacent to the Estate Judith's Fancy residential community. The site was previously re-landscaped by a developer in the 1960s. Several road contours were carved into a large hill about 130 feet above sea level that provides a panoramic view of the ocean and the bay. The bay side shoreline was also dramatically altered and the peninsula expanded, and a lagoon was created for a proposed boat marina. The 10-foot-deep manmade lagoon (referred to in this document as the Mangrove Lagoon) opens into Salt River Bay and is about 300 meters from the primary Bay inlet and the open ocean.

The site currently contains no structures except for an abandoned hotel structure (26,000 sq ft) located on a partially dredged and filled peninsula that extends out into the bay. Whatever historic vegetative cover that existed was removed during the 1960s development and the current landscape along the shoreline and hills is covered with non-native grasses, weedy trees, and escaped landscape plants. The area immediately adjacent to the mangrove lagoon has been eroded and denuded by unauthorized vehicle use and is now a wide open mud flat that floods during heavy rains. Surrounding the site on the east and south side are over thirty residential homes ranging in size from 1,200 to over 20,000 sq ft, most are two stories some three, and many are on a ridge line. In addition, a partially completed and abandoned canal for another proposed marina exists at southern portion of the East Site, referred to as the "Mangrove Canal."





The site is currently accessed by private paved roads that traverse a residential neighborhood (Estate Judith's Fancy) to the south and east of the NPS-owned property. The roads are circuitous and narrow. The East Site Alternative can currently be accessed by going north on North Side Road (Route 75) to Hamilton Drive (Route 751).

Site Concept Plan

The site analysis began by examining the dredge soil peninsula. Three factors led to the conclusion that the peninsula was inappropriate for construction: the fact that water surrounded it on three sides making it more susceptible to storm surge, the fact that it was made of dredged materials, and its susceptibility to seismic activity. Consequently, development planning was focused on the east side of the lagoon.

The building facilities for the MREC would be constructed at the end of an access road that would run east of the lagoon. The boat launch, water tanks and boat dock would be located on the northern end of the lagoon. East of the wet lab/boat dock and up the hill would be a parking lot for the Education Center. The cafeteria, library, and Student Center would be located across from the Education Center. To the north would be the dormitories which would be built into the hillside. To the south would be the maintenance building for vehicles and boats. A small parking area for cars and boat trailers would be located adjacent to the maintenance building. The maintenance building would be screened from the nearby community so as to minimize its visual impact. Overall, the proposed MREC buildings would blend into the natural surroundings, but would cause no more effect on the landscape than the existing surrounding residential homes. The MREC would be visible from the Columbus Landing Site and the interior of the bay, but would be shielded from the ocean.

The concept plan would also include space for a Museum Collections Storage Facility, which was added to the building program after the original concept was completed.

The seawater intake line would be either routed under the peninsula or along the Salt Pond to an appropriate intake point in the ocean. The water tanks at the lagoon would be connected by seawater supply pipeline to the MREC so the seawater would be available at the center for experimental work.

All buildings would be low profile structures and shielded by native plantings to minimize visual intrusion to adjacent residents and to the mangroves/wetlands. The buildings would be hurricane resistance. The facilities would be constructed in a location and manner to minimize the disturbance to the viewshed of the Columbus Landing site located across the bay.

There is a possibility that maintenance dredging may be needed at this location if future bathymetry studies reveal that the water depths are too shallow in the bay and/or the lagoon for research boats to reach the MREC boat dock.

Characteristics of the Site Concept Plan

The site concept plan has the following characteristics:

- The facilities would be located on the inland slopes of the main hill and slightly behind a minor spur of the hill. No development is proposed for the top of the hill.
- The Education Center would be located so that it is oriented for views across the bay of the Columbus Landing site. It also has an oblique view of the ocean.

- The Education Center would be separate and have separate parking facilities from the rest of the complex to distinguish between public and private areas.
- A sidewalk system would connect the various components of the MREC Complex (i.e., Education Center, wet lab, maintenance building, and boat dock). This sidewalk would continue down the hill and have views of the bay, forming a pedestrian connection throughout the site.
- The dormitories would be bungalow-style structures, each with balconies having unobstructed views to the bay and oblique views to the ocean.
- The cafeteria would be in very close proximity to both the Education Center and the dormitories but would not have significant views.
- Most buildings and parking would be sited so that grades would not be a major difficulty.
- The wet lab is located within the 100-year flood boundary; all other buildings are located outside of the 100-year flood boundary.
- Reforestation would partially screen the site from surrounding development. Buildings on the site would be oriented so that the surrounding development does not have a significant effect on the site.

2.1.2.3 South Site Alternative

Figure 2-4 presents the concept plan for the South Site Alternative which is located within the South Site boundary location presented in Figure 2-1. Figure 2-3 presents the site access route for this alternative.

Description of Site

The former NOAA Undersea Research Center was located on eastern shore of this site where operations for the NOAA Undersea Research Program saturation diving facilities (Hydrolab and Aquarius) were once based. The site is located between Triton Bay and Sugar Bay at the headwaters of Salt River Bay. This privately-owned, 58-acre parcel includes several structures and a bulkhead on the water for docking boats. Road access is limited to a private road that winds north to the site from the nearest public road (Route 79 - Bennie Benjamin Road).

Site Concept Plan

The cafeteria, dormitories, and Student Center would be constructed along the existing road. The Education Center would be located about 500 feet from the water's edge at a bend in the road. The road would continue along the western and northern sides of the building and continue to a drop-off area at the boat dock adjacent to the Education Center at the shoreline.

East of the Student Center would be a parking lot connecting back to the road, as well as dormitories and cafeteria building in a line roughly parallel to the Student Center parking lot.

The boat dock and Education Center would be connected to the wet lab and maintenance building by a path along the water. A second road south of the Education Center access road would be constructed to connect to a boat launch at the bay and to provide separate access to the wet lab and maintenance building. The seawater intake line would be routed through Triton Bay and Salt River Bay to an appropriate intake point in the ocean. The seawater intake system would connect directly to the wet lab.

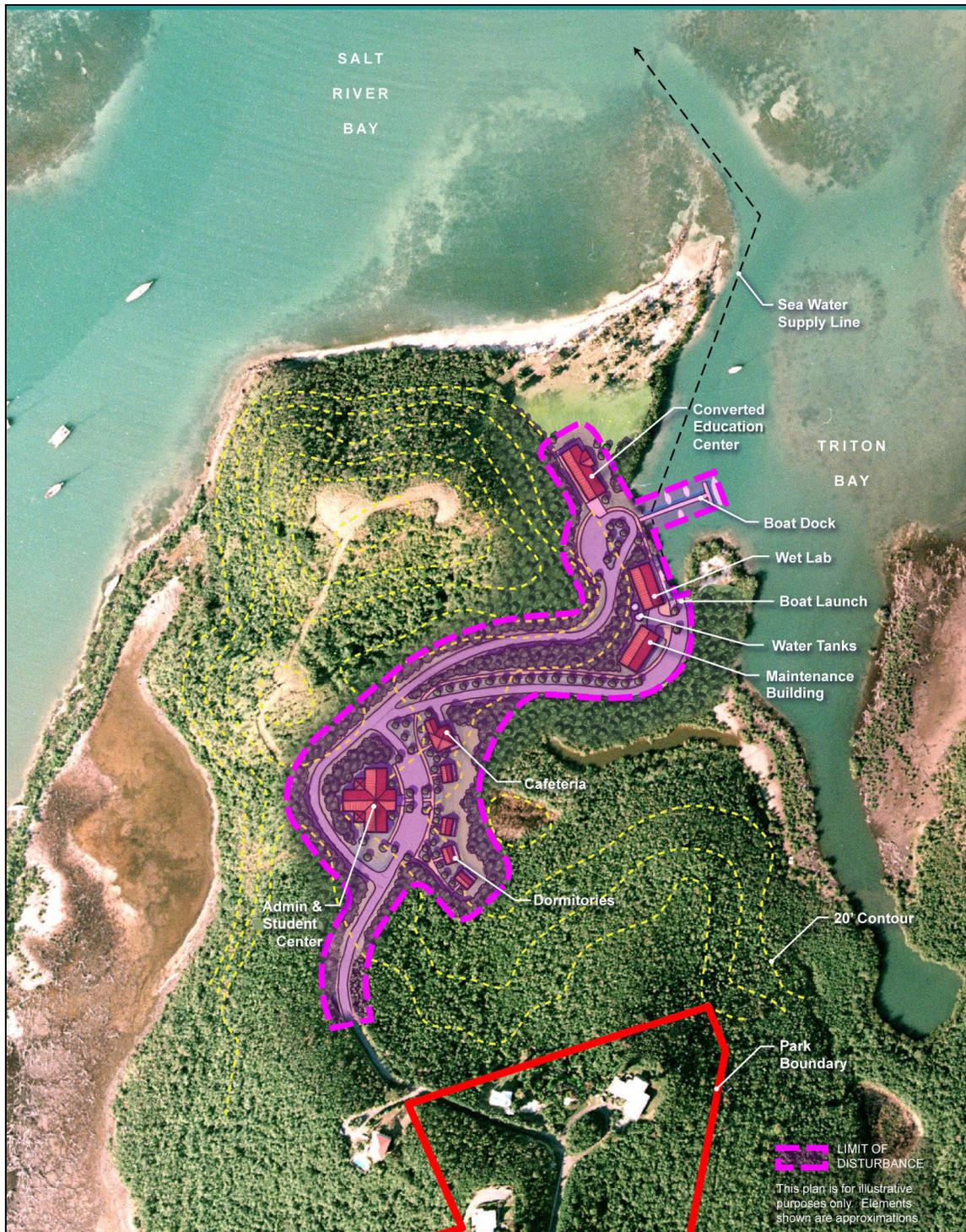


Figure 2-4. South Site Alternative Concept Plan.



November, 2006

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This site has little potential for wind power as it lacks an appropriate ridge and is further inland.

This plan is contingent upon the acquisition of the property by the NPS. Road access is circuitous and would have to be improved to support the public use of the site.

There is a possibility that maintenance dredging may be needed at this location if future bathymetry studies reveal that the water depths are too shallow in the bay for research boats to reach the boat dock.

Characteristics of the Site Concept Plan

- The Education Center would be located in an existing building. The other buildings would be screened by topography and vegetation.
- This site is in a more protected location than the other two sites and may be less susceptible to storm damage.
- The low lying nature of the site and its proximity to wetlands would result in fewer breezes and potentially more mosquitoes and other nuisance insects.
- The Education Center could have views of the bay, but might not have direct views of the Columbus Landing site. Constructing a new building could create more potential for views, but would most likely increase visual impact. Views could also be increased by selective clearing of vegetation.
- The Education Center would be separate from the rest of the complex to distinguish between public and private areas.
- The Student Center, cafeteria, and dormitories are in proximity to one another.
- The dormitories are in separate bungalow style buildings, each having balconies and unobstructed views to the mangrove area.
- The cafeteria deck has a view of mangrove area.
- The wet lab and maintenance building are accessible by sidewalk and a separate road from the Education Center.
- The wet lab and maintenance building would have a boat launch and would be located near the boat dock.
- The Education Center would have a drop off area that would provide a drop off for the boat dock.
- The wet lab is located within the 100-year flood boundary; all other buildings are located outside of the 100-year flood boundary.

2.1.2.4 West Site Alternative

Figure 2-5 presents the concept plan for the West Site which is located within the West Site boundary location presented in Figure 2-1. Figure 2-3 presents the site access route for this alternative.

Description of Site

This alternative encompasses two non-contiguous areas: the NPS Visitor Contact Station and the Salt River Marina. The NPS Visitor Contact Station is located on the northwest shore of the bay. This site is made up of several parcels of approximately 6.0 acres in all and includes a split-level house, guest quarters, accessory structures and a community beach. The NPS Visitor Contact Station can be accessed from North Shore Road (Route 80) to Route 801.

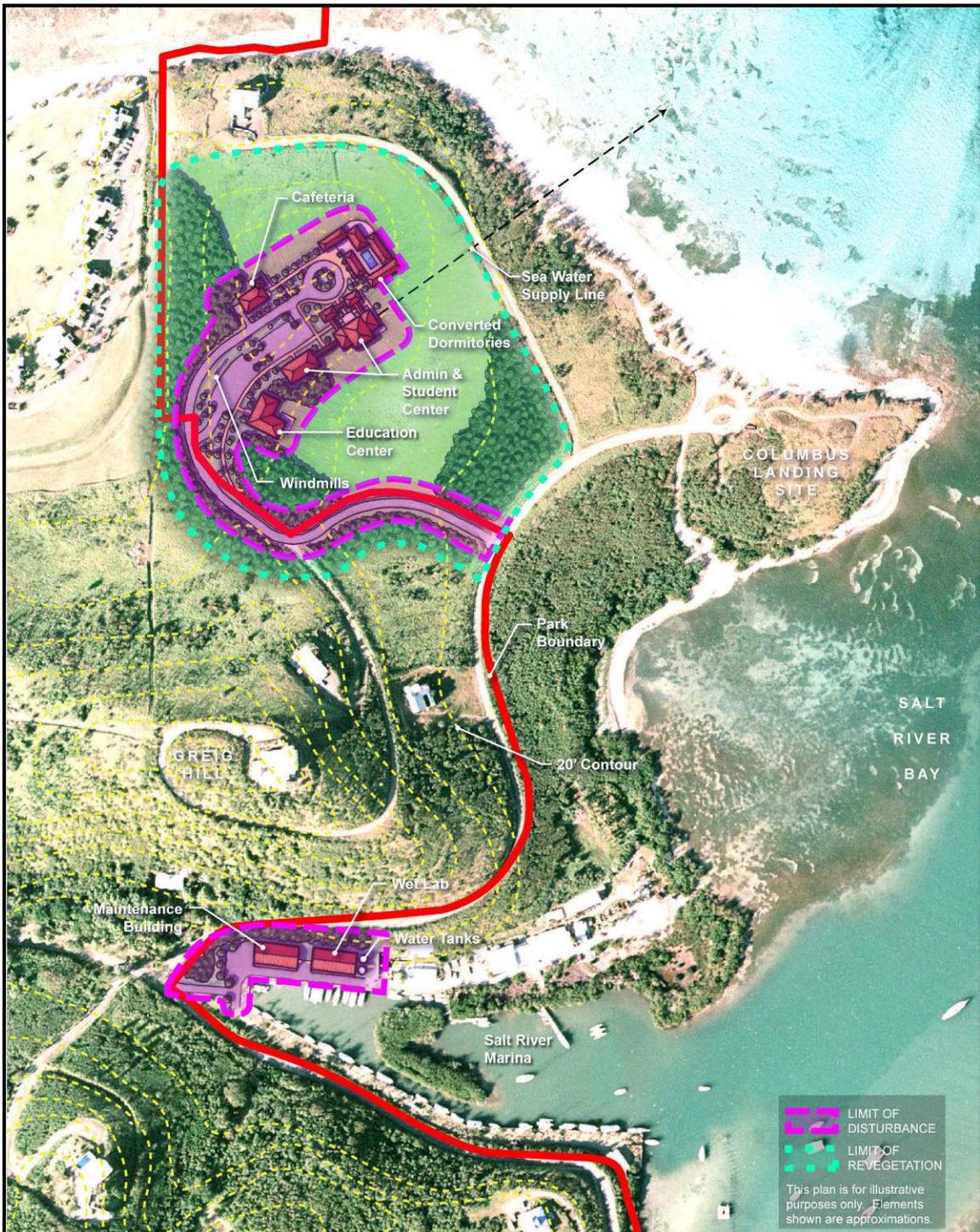


Figure 2-5. West Site Alternative Concept Plan.



November, 2006



The marina hugs the shoreline on approximately 14 acres along the western edge of the bay. This property is privately owned and includes buildings used for maintaining, constructing and painting boats, as well as for office space, and parking lots for marina guests. The shoreline consists of long sections of steel bulkheads with docking facilities. Several mooring buoys are available in the bay. The highest levels of fecal coliform in Salt River Bay were detected at the Salt River Marina according to the NOAA Technical Memorandum, *An Ecological Characterization of the Salt River Bay National Historical Park and Ecological Preserve, U.S. Virgin Islands*, (Kendall et al 2005). The marina can be accessed by going north on North Shore Road (Route 80) from North Side Road (Route 75).

Site Concept Plan

As noted above, both sites were analyzed and determined it was appropriate to combine them into one alternative. Most of the building program would be located on the NPS Visitor Contact Station site. This would include administration, the Student Center, Education Center, cafeteria building, and dormitories converted from the existing residential buildings (currently the NPS Visitor Contact Station).

At the marina would be located the maintenance building and wet lab, either constructed as new or located in an existing building.

The seawater intake line would be routed from the Education Center to an appropriate intake point in the ocean. Water holding tanks could be located near the Education Center or down at the marina, with a pipe connecting the Education Center and wet lab along the public right-of-way. It is anticipated that the seawater supply pipeline would have the shortest in-water route to the sea.

In this plan, it is assumed that the NPS would acquire most, if not all, of the parcels adjacent to the Visitor Contact Station to minimize impacts of the site on the existing and potential uses and vice versa.

This alternative also assumes that the marina owners would be willing to sell the marina to the NPS.

Characteristics of the Site Concept Plan

- The Education Center would be located in close proximity to the Columbus Landing site, providing direct views to the location and allowing for pedestrian access to the site.
- The Education Center parking would allow for the removal of the unauthorized parking and direct road access at the Columbus Landing site. Access would be limited to pedestrians.
- The Education Center and deck would have views of the Columbus Landing site, Salt River Bay, and oblique views of the ocean.
- The main sidewalk along the parking lot would terminate with a view through the MREC facility courtyard of the ocean beyond. The view would be through an arcade connecting the MREC buildings.
- The sidewalk that crosses the road would have a terminal view through an arcade of Salt River Bay and the interior of the island. The other end would terminate with a view of the ocean.
- The sidewalk between the dormitories and the cafeteria would have an open view of the ocean.

- When one turns onto the entry drive, the road is on axis with the Education Center. The view is framed by trees on either side, which then opens up.
- The dormitory building would have an open vista of the ocean and bay on three sides. The patio overlooks the ocean.
- The cafeteria and cafeteria patio would have an open vista of the ocean.
- Most of the MREC buildings would have views of Salt River Bay and the ocean.
- The dormitories and other facilities are in close proximity to one another. Both of these are also convenient to the cafeteria building.
- The Education Center is slightly set apart from the other facilities since it would be open to the public. The cafeteria is located close enough to allow for convenient pedestrian access.
- A drop-off area provides access to the MREC buildings including the dormitories.
- The ridge-top location would result in more breezes and may allow for the use of wind power although such a use would contribute to the visual impact of the development.
- Access to the wet lab and maintenance building would be by vehicle or pedestrian sidewalk.
- The wet lab and maintenance building is located within the 100-year flood boundary; all other buildings are located outside of the 100-year flood boundary.
- The site's location on a ridge top results in visual impacts. However, most facilities would be located on the inland side of the ridge to reduce the visual impact from the ocean. The very top of the hill would be left undeveloped.

Reforestation would screen views of the development to the west and help frame other views. A balance between maintaining important views and reestablishing native plants would be a priority.

2.1.3 Alternatives Considered but Dismissed

Other Islands in the Caribbean

Since coral reef systems are linked throughout the Caribbean, other islands besides St. Croix were considered as alternative locations for the MREC. St. Croix was selected due to its central location in the Caribbean and its proximity to many nations within the region. Additionally, the island has a rich coral reef research history. Extensive research was conducted from 1970-1989 at the former West Indies Laboratory on the eastern end of the island and at the NOAA Undersea Research Center based at Salt River Bay. Scientists collected significant amounts of chemical, physical and biological data that can serve as a baseline for comparative studies in the future. Additionally a NOAA-CREWS meteorological and oceanographic monitoring platform has been moored at Salt River Bay since 2002 and is collecting physical and biological data as part of their International Coral Health and Monitoring Program. Logistical support in terms of transportation, labor, housing, etc., available on the island is paramount to successful operations of a research, educational and service center.

Former West Indies Laboratory

Due to the constraints of operating a Marine Research Center and land acquisition challenges, potential options for the location of the Center are limited on the island of St. Croix. Some of the constraints include easy access from the Center to estuarine and ocean ecosystems by boat and land, access to clean seawater, and adequate docking and mooring for boats. Using the site of the Former West Indies Laboratory was considered as an alternative for the MREC. This site previously conducted extensive marine research and has adequate docking facilities for boats. This privately owned alternative was dismissed when NPS property became available.

2.1.4 Selection of the Preferred Alternative

Selection of a preferred alternative was accomplished by using the “Choosing by Advantages” (CBA) process developed by Jim Suhr (Suhr 1999). CBA is a decision making process based on calculating and compiling the advantages of different alternatives for a variety of factors. By using the CBA process, the NPS was able to determine which of the three alternatives would be the best location for the MREC. The alternatives (or sites) were examined in detail, given the information available on existing conditions, and preliminary site plans were developed for each alternative. Among the elements evaluated were floodplains, topography, susceptibility to hurricanes and earthquakes, cultural and historic resources, and impacts to natural resources. The individual site plans attempted to mitigate impacts to these elements and accommodate the building program in an environmentally responsible manner while providing the means to compare the advantages of each alternative. The CBA process for determining the Preferred Alternative for the MREC is presented in Appendix A

In the CBA process, factors represent areas of concern (i.e., minimize impacts to wetlands, protect cultural landscape) that were expressed by the NPS technical advisors and park staff. High and low assessment criteria were established for each factor. High criteria describe very favorable or desirable environmental conditions. Minimum criterion generally reflect the minimum standards permitted by Federal Law or NPS policy. Advantages were determined by calculating the difference between attributes for each factor among the alternatives.

Elements of a “factor” are considered “attributes” in CBA parlance. For example, under the factor of “Minimizing Impacts to Water Resources,” the “attribute,” or measure, of the factor was determined to be the number of feet that the seawater intake line would need to traverse on the Bay floor to reach an acceptable intake point. The length of these lines would differ depending on where the MREC would be sited, and the advantage of an alternative is a shorter line, measured in feet.

The advantages of each factor were determined and these advantages were compared to one another, to determine which advantage was most important to this project, or “paramount.” The next step is to compare the other advantages to this “paramount advantage” to determine their importance relative to the paramount advantage and then to assign an appropriate score for each. After this exercise is completed, the scores of each alternative are calculated, and the alternative that scores the highest is considered the best alternative.

The factors developed for the CBA process were grouped under the following functions: Protecting Natural and Cultural Resources; Meeting the Needs of the MREC; Providing for Visitor Enjoyment; and Providing Benefits to the Local Community. For example, under the function (Protect Natural and Cultural Resources) the following advantage was concluded:

Minimize Impacts to Mangroves/Wetlands - This factor refers to the impact of the MREC to the mangroves and wetlands located at SARI. **Advantage:** This factor’s attributes were measured as acres. The West Site was considered to have the lowest impact to mangroves/wetlands.

Conclusion

The final steps in analyzing the alternatives involved a cost analysis as well as the CBA process. A preliminary estimate of probable costs based on schematic designs was prepared for each of the alternatives, which resulted in similar costs among alternatives. The factors or attributes

developed for the CBA process were to protect natural/cultural resources, meet the needs of the MREC, provide for visitor enjoyment, and provide benefits to the local community. CBA scores for each alternative were calculated, and the alternatives were ranked based on total CBA scores. The East Site Alternative scored the highest, so it was considered the preferred alternative for the MREC.

2.1.5 Selection of Environmentally Preferred Alternative

The environmentally preferred alternative is determined by applying the criteria from Section 2.7(D) of NPS DO-12. These are the same criteria outlined in NEPA, which is guided by the Council of Environmental Quality (CEQ) regulations. CEQ regulations provide direction that “[t]he environmentally preferable alternative is the alternative that would promote the national environmental policy as expressed in Section 101(b) of NEPA. Generally, this means the alternative that causes the least damage to the biological and physical environment. It also means the alternative that best protects, preserves, and enhances historic, cultural and natural resources.” [Question 6a, “Forty Most Asked Questions Concerning Center of Environmental Quality’s (CEQ) National Environmental Policy Act Regulations” (40 CFR 1500-1508), *Federal Register* Vol. 46, No. 55, 18026-18038, March 23, 1981].

Following comparisons of the Preferred Alternative (East Site Alternative), the South Site Alternative, and the West Site Alternative, the Preferred Alternative (East Site Alternative) has been selected as the environmentally preferred alternative. Although all three alternatives result in similar adverse impacts to the natural and human environment, implementation of the MREC at the Preferred Alternative (East Site Alternative) results in more beneficial impacts to the resources at the park.

The three action alternatives result in similar resource impacts from the proposed activities. The construction phase of the MREC, installation of the seawater supply pipeline, and maintenance dredging would result in short-term (ranging from 1 to 6 months) impacts to many of the resources at the park regardless of the alternative. Soils and sediments, air quality, noise, water quality, the coral reef/hardbottom substrate, fish, recreation, aesthetics, and visitor use at the park would result in minor-adverse (measurable or perceptible but would be localized within a relatively small area) impacts from these activities. All three alternatives are located within Tier 1 of the coastal zone resulting in short-term, minor adverse impacts; however, the project is expected to be consistent, to the maximum extent practicable with the Virgin Islands Coastal Zone Management Program (VICZMP). In the long-term (through the next 10 years), impacts occurring from the implementation of the MREC, would have minor, adverse effects to the 100-year floodplain, Coastal Barrier Resources System (CBRS) Areas, hydrology, air quality, noise, water quality, and energy requirements at the park regardless of the alternative. Maintenance dredging proposed for all three alternatives would have long-term, minor, adverse impacts to the bathymetry, seagrasses, and the benthic community at the park. The Preferred Alternative (East Site) could potentially have a long-term, minor, adverse visual effect on the cultural landscape of SARI and the South and West Site Alternatives could potentially have a long-term, moderate, adverse visual effect.

Some impacts occur only at the Preferred Alternative (East Site Alternative) and the South Site Alternative like construction of a boat dock and ramp which would result in short-term, minor, adverse impacts to the soils and sediments, water quality, fish, and mangroves/wetlands at these alternatives. Since mangroves are critical habitat, mitigation measures through plantings at a specified ratio of 3:1 would be required to partially offset the loss of mangrove habitat associated with the construction of the MREC.

Impacts that occur at the South and West Site Alternatives but not at the Preferred Alternative (East Site) include long-term, minor to moderate, adverse effects to the birds, mammals, and vegetation from implementation of the MREC. Forested (semi-deciduous) habitat, vegetated fields, and shrub habitat would be impacted due the MREC facilities, roads, and associated parking facilities. This would not be an adverse impact to the Preferred Alternative (East Site) because this alternative includes the replacement of non-native invasive plant species with appropriate native vegetation and revegetating disturbed areas (i.e., mud flats, bare areas, areas dominated by African guinea grass). Minor, long-term, adverse impacts to local communities would occur from increased vehicle traffic during the operational phase of the MREC for the South and West Site Alternatives. This would not be an adverse impact for the Preferred Alternative (East Site) since park vehicle traffic would be diverted from the Estate Judith's Fancy community to the proposed Haul Road.

Implementation of the MREC would improve the quality of life in the Salt River Bay region by providing additional opportunities for educational programs for students and the general public, contribute to the local economy by attracting more visitors to SARI, and contribute directly to the local economy by hiring permanent and part-time employees regardless of the alternative. However, for the West Site Alternative, there is a potential that the project would have a negative impact on the current businesses at the marina and on the use of the public boat slips, since the MREC would need to acquire the use of as much as ½ of the existing slips that are currently available to the boating community, which would result in a long-term, moderate adverse impact to some of the current boat slip users and long-term, major, adverse impact to the current business owners.

The long-term benefits to the natural and human environment from implementing the MREC at the Preferred Alternative (East Site) include:

- The coastal environment, Mangrove Lagoon, and salt pond at this site offers the public the opportunity for educational opportunities of environmentally sensitive environments.
- Provides the public with the opportunity to interpret archeology through a demonstration dig in the low lands to the north of Mangrove Lagoon.
- Creation of a “gateway into the park” through the use of the Haul Road as a park entrance road. This would be a benefit to the Estate Judith's Fancy community by diverting the current park traffic from the gated community to the proposed Haul Road.
- Provides for access to the public for recreational (i.e., swimming, beaching, snorkeling, walking, hiking, and camping by permit) opportunities that are completely contained on NPS lands and would not impact private lands adjacent to the beach environment.
- Has the lowest levels of fecal coliform detected at the park, which was found at Crescent Beach.
- Utility development at the East Site may be a benefit. The lack of utility infrastructure at this site would provide the NPS with the opportunity to design the MREC infrastructure independent of existing territorial utilities, which would not cause an additional burden on the existing system. Additionally, the utility infrastructure would be underground with no overhead poles which would reduce utility service, reduce hurricane impacts, and provide for the lowest profile on the landscape.
- Archeological concerns at the other alternatives. The East Site has been surveyed on several occasions, the West Site has had limited surveys conducted, and no archaeological surveys have been completed at the South Site. Due to the data collected

at the East Site, it has been determined that the MREC can be sited at this site safely around and above remaining archeology.

- Opportunity for mangrove restoration and rehabilitation of the peninsula. Non-native invasive plant species would be replaced with native vegetation and disturbed areas (i.e., mud flats, bare areas, areas dominated by African guinea grass) would be revegetated. These activities would also benefit the birds and wildlife at the site.
- Dredging in the Mangrove Lagoon would prevent the mouth of this lagoon from eventually becoming closed off to the bay due to siltation. This is being currently observed in the Mangrove Canal (see Figure 2-2), located immediately south of the Mangrove Lagoon. The mangrove trees that exist along the shoreline of the Mangrove Canal are being lost, potentially from the lack of flushing due to siltation that is occurring at the mouth of the canal. There is the possibility that the existing mangrove trees located along the shoreline of the Mangrove Lagoon could be lost as well if dredging does not occur to maintain flushing between the bay and the lagoon.

The No Action Alternative would not meet the management goals and objectives of this park unit. In addition, this alternative does not realize the provisions of the national environmental policy goals. Although the No Action Alternative would not create any additional disturbance, the existing conditions would continue without providing additional benefits to visitor use, the local economy, employment, and education on the sustainable utilization and conservation of marine resources. Additionally, the benefit that the MREC would provide to unique natural systems at SARI, especially the coral reefs and mangrove habitat would not be realized with the No Action Alternative.

Like all alternatives, the environmentally preferred alternative would not impair any park resources. In conclusion, although environmental impacts as a result of the three Project Site Alternatives are similar, it is anticipated that the Preferred Alternative (East Site) would have more benefits in the long-term on the biological and physical environment of SARI compared to both the South Site Alternative and the West Site Alternative. The Preferred Alternative (East Site) would meet park purposes and national environmental policy goals by improving and preserving the natural resources, and protecting and enhancing cultural resources. Thus, the Preferred Alternative (East Site) is the environmentally preferred alternative because it would be providing protection to natural and archaeological resources for which the park was established.

2.2 ABANDONED HOTEL DEMOLITION ALTERNATIVES

Currently, a partially completed, abandoned hotel structure exists on the peninsula of the East Site, immediately adjacent to the Mangrove Lagoon in Salt River Bay (Figure 2-1). The hotel structure was part of a development project started in the late 1960s that was never completed; the hotel structure was abandoned following partial completion in the 1970s. During the original development of the hotel, approximately 14,500 cubic yards of land was excavated. The original hotel construction project included developing 74 acres of land as a multi-phase development project that included 288 hotel units, 300 condominium units, a 157-slip marina, and necessary support facilities (Sugar Bay Land Development, Ltd. 1986). The maximum building height of the hotel was set at four stories. The abandoned hotel structure was partially completed from building materials such as cinder blocks, concrete, piping, and rebar. The basement of the structure, at least two stories of the hotel, a tall steeple with a cross (potentially constructed as a viewing area), and an outdoor swimming pool was completed before the project was abandoned. Currently, the structure is deteriorating and presents a safety and environmental concern for SARI; a chain-link fence surrounds the abandoned hotel structure to discourage public access to the hotel site. The abandoned hotel structure was inspected for asbestos on August 25, 2006 by

Environmental Concepts (EC). Results of the asbestos analysis on the samples collected at the time of inspection revealed that the samples contained no asbestos (EC 2006).

The abandoned hotel can currently be accessed by going north on North Side Road (Route 75) to Hamilton Drive (Route 751).

2.2.1 No Action Alternative

Under the No Action Alternative, the abandoned and partially completed hotel structure would remain on the site and not be demolished. Debris and discarded building materials located throughout the peninsula would not be removed preventing this area from being revegetated or rehabilitated to return the area to a more natural condition. The abandoned hotel would continue to deteriorate and would continue to present a safety and environmental concern for SARI.

2.2.2 Proposed Action

The NPS proposes to demolish and remove the existing partially constructed hotel structure and abandoned building materials, construct a haul road, and return the developed area to a more natural, vegetated setting (Figure 2-6). The proposed action includes the following projects in chronological order of anticipated completion:

1. The NPS proposes to construct a Haul Road (eventually to become a park access/service road) from the abandoned hotel site around the lagoon to the beginning of the overgrown former access road (Figure 2-6). The Haul Road would continue south along the former access road to connect into Route 79. The Haul Road would be for equipment access and removal of debris from the hotel demolition site.
2. The NPS proposes to mechanically demolish the abandoned hotel structure.
3. Following demolition, the NPS proposes to reuse and recycle as much of the debris material as possible. If feasible, the concrete from the site would be crushed to construct the road bed for the Haul Road. Un-recyclable materials would be removed from the site.
4. The Haul Road would be improved and converted into a low traffic park access/service road and parking area for the east side of the park.
5. Finally, the site would be rehabilitated, revegetated, and returned to a more natural condition.

Haul Route

Debris from the hotel would be either recycled or disposed of, possibly at the Anguilla Municipal Landfill. Potential recyclable materials from the site would include the concrete slabs and crushed concrete remaining after demolition. Only necessary debris (i.e., rotting roofing materials, un-recyclable concrete) would be taken to the Anguilla Landfill. A solid waste disposal permit would be obtained from the VI Solid Waste Authority before demolition debris is transported to the landfill. Several local agencies and private companies have expressed an interest in reusing the concrete from the site. SARI would finalize the arrangements and the logistics for this recycling activity before demolition begins. The trucking route for the distribution of the recycled materials is unknown at this time but disposal of debris would be as follows from the site: Haul Road around the lagoon and continue south until it exits Park property, head south on Route 79, right on Route 75, right on Route 70, and left on Route 64 to Anguilla Landfill (Figure 2-7).



Figure 2.6 Proposed Action for the Abandoned Hotel

April 2008





Figure 2-7. Haul Route for the Abandoned Hotel

Site Rehabilitation

Following demolition activities and debris removal, a small parking lot (10-15 vehicles) would be constructed on the west side of the peninsula mainly for park use and limited use by visitors (i.e., special use permit). From the parking lot a low traffic access/service road would continue around the lagoon and along the haul road to connect into Route 79 (Figure 2-6). The parking lot and access road would be constructed with pervious materials that blend with the predominant landscape tones. Permeable paved surfaces allow limited percolation of precipitation while providing better wear than unpaved surfaces. Finally, the NPS, in consultation with appropriate resource agencies, would rehabilitate the peninsula through revegetation of native plant species to return the area to a more natural condition.

According to Section 4.8.1 of NPS' *Management Policies 2006*, the Service's policy is to "allow natural geologic processes to proceed unimpeded." Such natural processes include but are not limited to erosion and sedimentation, and shoreline processes. In an effort to improve the long-term viability of SARI, the Proposed Action is a feasible alternative that would allow the current area to naturally return to its original setting through natural processes of wave action erosion and shoreline processes.

2.2.3 Selection of the Environmentally Preferred Alternative

The proposed action best promotes the national environmental policy as expressed in Section 101(b) of NEPA by protecting, preserving, and enhancing the historic, cultural and natural resources.

The proposed action was determined as the environmentally preferred alternative due to the long-term beneficial impacts associated with the demolition of the abandoned hotel structure and associated projects. The implementation of the Proposed Action would result in short-term impacts to SARI's resources, but the long-term benefits of the proposed action far outweigh the short-term, adverse impacts anticipated during construction of the proposed action. The proposed action is therefore referred to as the environmentally preferred alternative for the remainder of this section.

The following discussion on how the environmentally preferred alternative was selected was based on the environmental consequences as presented in Chapter 5. See Chapter 5 for detail on the resource topics discussed below.

Short-term, adverse impacts to soils, air quality, and noise quality are anticipated during the demolition of the abandoned hotel and the road improvement activities. These demolition and improvement impacts would be short-term in nature, lasting only for the duration of the activity.

The environmentally preferred alternative is expected to create minor, short-term, adverse impacts to the water quality at SARI during the demolition and road improvement activities, lasting only for the duration of the activity. The following resources may be affected in the short-term due to minor increases in turbidity at Salt River Bay: seagrasses, aquatic species (fish and benthic species), critical habitat (mangroves), essential fish habitat (EFH), HAPC, or designated natural areas. However, there would be long-term beneficial impacts to all the above-mentioned resources due to improved water quality from the environmentally preferred alternative through the rehabilitation and revegetation of areas that are currently impervious surfaces, such as the abandoned hotel, discarded construction debris, and bare unvegetated areas. Revegetating these areas would reduce current runoff into the bay.

Long-term, moderate, beneficial impacts to floodplains, coastal barriers, and Tier 1 of the coastal zone would occur because abandoned building material would be removed, impervious surfaces (such as the hotel) would be replaced with pervious surfaces, and the peninsula would be rehabilitated and naturally revegetated. These activities would ultimately improve the area and allow it to function as a floodplain and a coastal area.

Minor, adverse impacts to NPS-defined estuarine wetlands and terrestrial, vegetated habitat would be affected by activities associated with the hotel demolition, including roadway improvement activities and the removal of debris on the peninsula. No direct impacts to mangrove wetlands are anticipated as a result of the proposed action. Based upon the mitigation strategy, impacts to the existing wetlands and terrestrial vegetation are expected to be short-term and have a long-term beneficial effect through rehabilitating the peninsula to a more natural setting. Existing, non-native invasive plant species such as African guinea grass and tan tan would be removed and replaced with native vegetation species. The replacement of non-native invasive species with native plant species would have a long-term beneficial impact on the terrestrial wildlife species and other vegetation species that inhabit the area as well as the greater island of St. Croix. Non-native invasive plant species threaten the biodiversity of fragile island ecosystems such as St. Croix.

The environmentally preferred alternative would have a short-term, minor indirect impact on the avian and wildlife species that currently utilize the habitat. There would be a short-term loss of available habitat at the site during construction activities, but an increase in approximately 0.5 acres of improved habitat would be created as a result of the Proposed Action. It is expected that these species would become re-established at the site after completion of the project. Overall, the Proposed Action would provide a long-term, beneficial impact to avian and wildlife species due to the increase of available, quality vegetated habitat for avian species.

The environmentally preferred alternative would have a long-term beneficial impact to the aesthetics at SARI. Aesthetics would be altered from current conditions; however, the unfinished remains of the abandoned hotel represent a visual intrusion on SARI's cultural landscape. Demolition of the hotel shell would be a visual improvement enhancing the viability of the resources within SARI as well as the viewshed to the surrounding communities.

The human environment, including park operations and visitor experience would be subjected to minor, short-term impacts during demolition and road improvements. The environmentally preferred alternative would remove the deteriorating abandoned hotel structure that poses a safety hazard for the public. Removing the hotel would have a long-term positive impact on visitor safety and would not impair any park resources.

2.2.4 Alternatives Considered but Dismissed

Completing or finishing construction of the abandoned hotel structure or building a new structure on the footprint of the hotel site was considered as an alternative in the initial stages of this project, but was dismissed due to significant, adverse impacts to the environment. Adverse impacts to Tier 1 of the coastal zone, water quality in the Mangrove Lagoon and Salt River Bay, the adjacent forested mangrove wetlands that fringe the Mangrove Lagoon, and the aesthetic viewshed/landscape of the site would occur as a result of building a new structure on the footprint of the site. Additionally, it was found that the building could not be re-used because the structure is currently deteriorating and presents a safety problem. The existing abandoned hotel is located on fastland, but the site is located adjacent to land created by placement of fill material that was

dredged from the Mangrove Lagoon. Waterfront areas that have undergone construction on filled (reclaimed land) land are vulnerable to impacts from earthquakes (IRF 1993). These areas have a greater chance of liquefaction and ground settling. Buildings constructed on loose alluvial or man-made fill soils along the waterfront are at risk of destruction should an earthquake occur (Geoscience Associates 1984). Therefore, due to safety issues and adverse environmental impacts associated with the hotel's close proximity to reclaimed land, this alternative was considered in the initial planning stages, but was dismissed from further study.

3.0 EXISTING CONDITIONS AT SARI

3.1 INTRODUCTION

Chapter 3.0 describes the existing environmental conditions of the three sites, which include the East, South, and West Sites at SARI (Figure 3-1). This chapter also describes the overall general existing environmental conditions within the entire SARI boundary prior to more detailed descriptions of the East, South, and West Sites. The information in Chapter 3.0 is organized by the same environmental topics used to organize the impact analysis in Chapters 4.0 and 5.0. The descriptions, data, and analyses focus on the specific conditions or consequences that may result from implementing the alternatives as required by *NPS Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making*, which sets forth the policy and procedures by which the NPS will comply with NEPA (NPS 2001a). A detailed description of the alternatives can be found in Chapter 2. Existing conditions at the proposed Virgin Grand Hotel, referred to as the “abandoned hotel structure” throughout this document are included within the resource descriptions of the East Site.

The following description of existing environmental conditions provides a better understanding of planning issues and establishes a benchmark by which the magnitude of potential environmental impacts of the alternatives can be compared. The majority of the information used to describe the existing environmental conditions in this chapter was taken from the NOAA Technical Memorandum entitled *An Ecological Characterization of the Salt River Bay National Historical Park and Ecological Preserve, U.S. Virgin Islands* (Kendall et. al 2005), unless otherwise stated. Information presented in the NOAA Technical Memorandum was based on data collected from the early 1980's to 2003. Detailed species information (i.e., fisheries, corals, seagrasses, and vegetation) from this report is included in the Appendices of Kendall et. al 2005. For this chapter, data that were not available or surveyed in the Kendall et. al 2005 report (i.e., avian species and listed species) are included as Appendix B, Ecological Appendix, of this report.

3.2 PHYSICAL FEATURES

The physical environment at SARI, including soils, bathymetry/currents, air quality, noise, and water resources is described in the following sections.

3.2.1 Soils

There are a total of 13 soil types of varying grade (slope) within SARI (Table 3-1), as described by the USDA, National Resources Conservation Service (NRCS). The majority of top soils are approximately 0-9 inches deep, consisting of gravelly, sandy, stony, or clay loam. These include the Arawak, Cramer-Victory, Glynn, Solitude, and Victory-Southgate soil series. Tidal areas around Sugar Bay and Triton Bay are flat (0-2% grade) sections of sandy clay loam and black muck (fine, well decomposed organic soil) from the Sandy Point/Sugar Beach series, and patches of gravelly fine sandy loam from the Solitude series. These are frequently flooded by the waters of the estuary, and typically contain some salt. The Salt River Bay floodplain south of the Sugar Bay tidal region consists of clay loam from the Carib series, frequently flooded by freshwater from the upland watershed. Beaches are located on the northern facing shores, in the mouth of the bay. Most of soils within SARI are not well suited for crops.

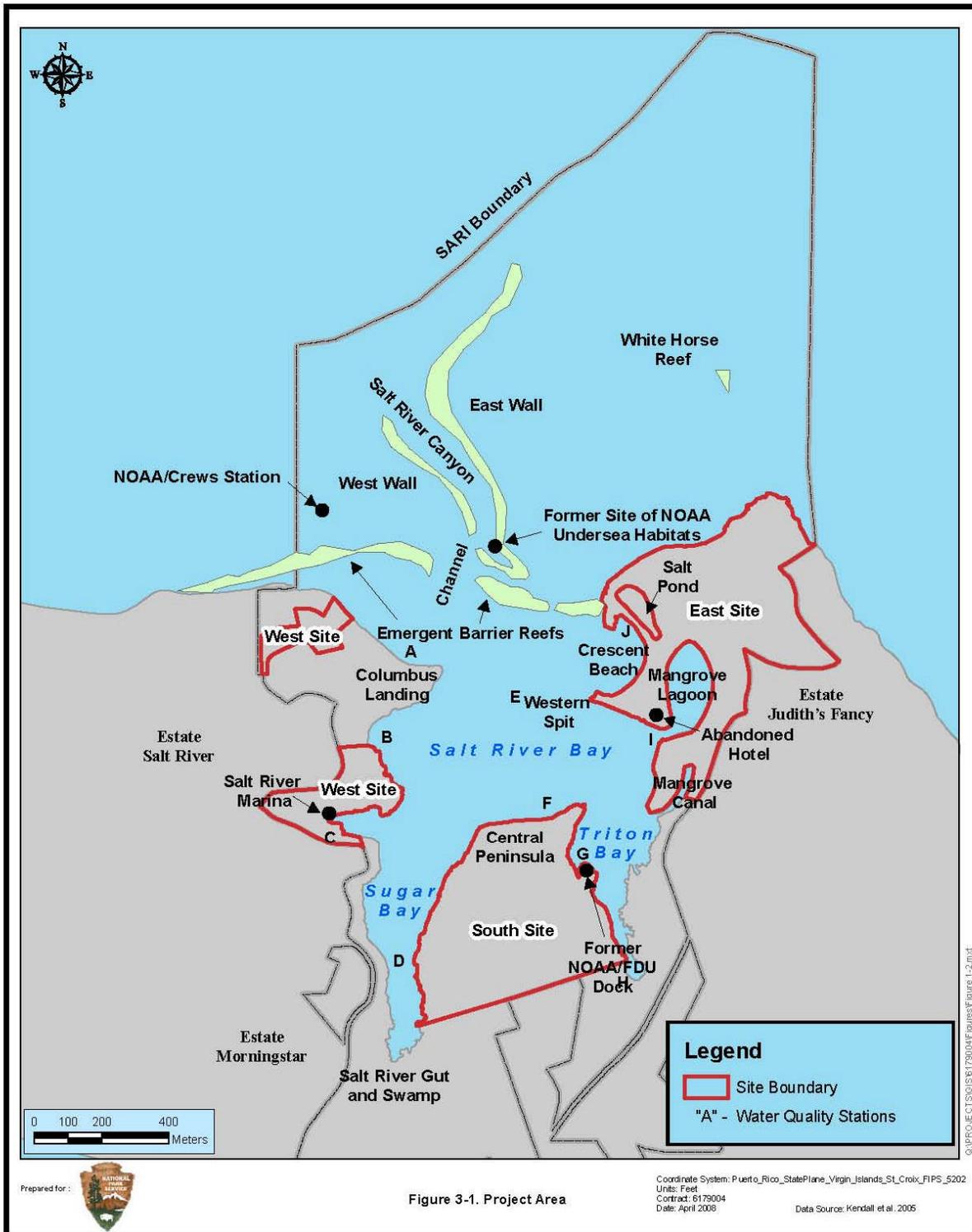


Table 3-1. Characteristics of Soils Present at SARI

Soil Series	Soil Description	Total Area (acres)
Arawak	Gravelly loam, very stony	90.93
Carib	Clay loam, frequently flooded; slightly saline to non-saline	39.78
Cramer-Victory Complex	Gravelly clay loam and loam (patchy)	83.77
Glynn	Gravelly loam, rarely flooded	14.08
Jaucas	Sand on calcareous coastal beaches, rarely flooded	2.47
Pitts, Quarries	Areas where rock, gravel, or sand have been removed by humans	0.25
Redhook*	Extremely stony sand, rubbly, rarely flooded	5.68
Salt Flats*	Flooded, unvegetated areas of saline flats, saline marshes and salt ponds	1.73
Sandy Point and Sugar Beach	Frequently flooded, sandy clay loam and black muck (patchy)	60.29
Solitude*	Gravelly fine sandy loam, frequently flooded; slightly to strongly saline	37.56
Southgate-Rock Outcrop Complex	Gravelly loam, extremely stony surface, exposed bedrock	1.24
Ustorthents	Altered from natural state by human activity	18.78
Victory-Southgate Complex	Very stony loam and gravelly loam (patchy)	51.15

Source: 1998 USDA/NRCS Soil Survey of the US Virgin Islands

*characterized as hydric soils by USDA NRCS 1998

Dredge and fill activities have taken place at SARI since the 1960s in various locations around the bays to create marinas and improve boat access. This dredging resulted in alterations to the natural shape of the shoreline and bathymetry of the bays. Dredged material disposal from these activities was deposited in several locations around the bay perimeter, creating new land and influencing soil characteristics. Therefore, portions of SARI are significantly disturbed with respect to soils. Areas that were either dredged or filled with dredged material include the Salt River Marina (West Site), the southern tip of Triton Bay, a channel through the sand bar at the mouth of Triton Bay, the NOAA dock (South Site), and the Mangrove Canal (abandoned marina) and Mangrove Lagoon (East Site).

The USDA NRCS has mapped hydric soils (one of the required wetland indicators) in the Caribbean (USDA 1998). The definition of a hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USACE 1987). Hydric soils are one of the required criteria for a site to be characterized as a wetland and include soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation. Hydric soils at SARI are noted in Table 3-1 above.

East Site – The eastern northern facing shore consists of fine sand formed from calcareous deposits, classified as the Jaucas series. Spoils from dredging the Mangrove Lagoon (proposed marina for the former hotel/marina development) and bay area were deposited around the Mangrove Lagoon and the soil there contains elevated amounts of salt. Areas that were either dredged or filled with dredged material can also be found on the peninsula between the Western Spit and the Mangrove Lagoon, on the peninsula west of the Mangrove Canal, and east of the salt pond (Figure 3-1). The soils on the peninsula of the East Site are characterized as Ustorthents, or soil altered from natural state by human activity. Three soil series in the vicinity of the East Site are characterized as hydric soils and include Redhook extremely

stony sand, Salt flats, ponded, and Solitude gravelly fine sandy loam (USDA 1998). The soils in the vicinity of the abandoned hotel structure are characterized as Ustorthents (Us), or altered soil (USDA 1998), most likely due to the dredge and fill activities that have taken place at SARI since the 1960's. No hydric soils are located in the vicinity of the abandoned hotel structure.

South Site – The northwestern mouth of Triton Bay and the eastern shore of Sugar Bay is composed of Jaucas series sand.

West Site – Spoils from dredging portions of Salt River Bay were deposited along the western side of the bay just north of the Salt River Marina up to the Columbus Landing Site. The beach located adjacent to the NPS Visitor Contact Station is calcareous, with a surface layer composed of large weathered coral pieces, characteristic of the Redhook series.

3.2.2 Bathymetry

A bathymetry map for the Salt River Bay area was created based on soundings from NOAA hydrographic surveys. The average mapped depth in Salt River Bay (shoreward of the barrier reef) is 2.2 m with a maximum of 5.4 m found in mid-bay. The average depth within SARI boundaries (including Bay and Canyon waters) is 23 m. The deepest part of the Canyon within SARI boundaries is 289 m. Using a tidal range of 0.3 m, the total area of the intertidal zone within the bay is estimated to be 5.9 acres. Salt River, Triton Bay, and Sugar Bay comprise a shallow estuary connected to a deep submarine canyon through a narrow break in the reef crest at the mouth of Salt River Bay. This unique geomorphology has important consequences for the ecology of the Bay-Canyon system and is responsible for the Salt River Bay's value as a small protected harbor or "hurricane hole". The narrow channel between the Bay and the Canyon allows for flux of water, nutrients, and marine organisms between these two areas, while protecting the Bay from waves. Dredge and fill activities, which have altered the natural bathymetry of the Bay, have taken place at SARI as described in Section 3.2.1.

Notable bathymetric features within SARI include the east and west canyon walls of Salt River Canyon, a barrier reef that extends across the mouth of the Bay, and a channel located through the barrier reef system. The east and west canyon walls have contrasting bathymetric profiles resulting from the interplay between longshore currents, sediment transport, and coral growth. The western canyon wall is vertical or overhanging in some places and steeper than the eastern wall. Higher sedimentation rates along the eastern wall discourage extensive coral growth and account for the occurrence of a more gradual slope on that side of the canyon. Lower sedimentation rates along the western wall result in more vigorous coral growth and the formation of steeper, often overhanging slopes. Natural processes responsible for changes in bathymetry due to movement of sediments include sedimentation from runoff and removal of sediment from the bays and canyon during storms. Continuing development of the watershed is likely to increase erosion and sedimentation. Current, detailed bathymetry is not available adjacent to the East, South, and West Sites.

East Site – Three transects for depth profiles were conducted in the Mangrove Lagoon for the 1986 Sugar Bay Land Development, Ltd. Environmental Assessment. The three transects depicted deep, steep dredged slopes near the eastern and western shorelines of the Mangrove Lagoon, with maximum depths of 2.6, 3.4, and 3.1 meters (Sugar Bay Land Development 1986).

3.2.3 Air Quality

The Federal Clean Air Act (CAA) requires all Federal agencies to comply with existing Federal, State, and local air pollution control laws and regulations. The USEPA sets National Ambient Air Quality Standards (NAAQS) required by the CAA for air pollutants that cause health threats. There are two types

of NAAQS: primary and secondary. Primary standards set limits to protect public health and secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, buildings and other property and ecological resources. The CAA defines six criteria pollutants that include the following: carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter with size less than 10 μm³ (PM₁₀), nitrogen oxides (NO_x), ozone (O₃), and lead (Pb). Volatile organic compounds (VOCs) are not criteria pollutants, but are of interest since they participate in the formation of ozone. The territories in the U.S. Virgin Islands have adopted, without change, the Federal NAAQS (NPS 2006).

The USVI DPNR/DEP is responsible for managing St. Croix's air resources and implementing programs designed to ensure that St. Croix's air quality meets Federal standards. This includes laws and requirements under Title V of the CAA, as well as Virgin Islands Air Pollution Control Act Rules and Regulations (VR&R). Ambient air quality is monitored at various stations around the Territory for PM₁₀, PM_{2.5}, and SO₂. There are no monitoring stations located within the vicinity of the sites. The regional air quality around the U.S. Virgin Islands is generally considered excellent (NPS 2006) and the Island Resource Foundation (IRF) (1993) reported that air quality within SARI is generally considered to be excellent as well. Some sources of air pollution besides vehicle and boat emissions is from dust generated by boat sanding during construction of boats at Gold Coast Yachts at the Salt River Marina. Various industrial plant sources have also been associated with intermittent increases in air pollution emissions as well (USVI DPNR/DEP 2004). However, the region is in attainment for all six criteria pollutants. The USVI has insignificant regional air quality impacts and is in conformity with the NAAQS.

3.2.4 Noise and Light

Current noise sources in SARI are predominantly the result of human activities such as traffic from the local roadways, recreation, and boating activities (i.e., boat motors, boat construction). A secondary source of sound in SARI is natural and includes birds and wildlife. Existing noise levels at SARI are typical of those normally associated with nearby land uses. There are no constant sources of noise at SARI, except for the Salt River Marina, located at the West Site and described in more detail below.

Current light sources in SARI are predominantly the result of human activities such as residences surrounding the park and from vehicles on the local roadways.

East Site – Current noise distractions at the East Site include unauthorized recreation activities, such as the use of off-road vehicles (ORVs) and all-terrain vehicles (ATVs). There are no known light sources associated with the East Site, except for the nearby residences of Estate Judith's Fancy.

South Site – Light sources associated with the South Site include the current structures associated with the private residence.

West Site – Noise sources at the West Site include activities at the Salt River Marina and human activities at the NPS Visitor Contact Station. Typical noises from the marina include the operation of boats, boat construction noises from the boat yard, Gold Coast Yachts, typical residential noise sources such as lawn mowers and household vehicles, and holiday weekend camping activities which historically have generated extensive noise from loud speaker sound systems. The NPS and the GVI are attempting to control this through recreational camping permits. In the past, music has been known to be heard above the Columbus Landing area. Light sources at the West Site include the Salt River Marina (i.e., boats, restaurant), the NPS Visitor Contact Station, and nearby residences.

3.2.5 Climate/Seismicity

3.2.5.1 Climate

The USVI's climate is dominated by the trade winds that vary seasonally in magnitude and direction. During the winter season (December through February) the trade winds are at their maximum intensity of 10 to no more than 20 knots from east-northeast. The trade winds typically are reduced during the spring months (March through May) and fall months (September through November). During the summer months (June through August) winds increase to moderate intensity and blow from the east or east-southeast. Winds play a dominant role in controlling currents in the Bay and along the mouth of the Bay. The easterly direction of winds throughout the year maintains an east to west longshore current that plays a principle role in the gradual process of transporting shelf sediments into Salt River Canyon down the east canyon wall.

Rainfall is seasonably variable in SARI. Typical rainfall for the area is 25 to 45 inches annually and mostly occurs in the late summer and fall wet season. Periods of heavy rain from thunderstorms and tropical storms cause the only occurrences of freshwater flow down Salt River Gut into Sugar Bay. The dry season occurs in late winter and early spring. The average daily temperature ranges from a low of approximately 27 °C in February to a maximum of approximately 29 °C in September.

Tropical storms and hurricanes occur between the months of June through November with a peak in abundance during August and September. The intense rain from tropical storms and hurricanes can cause flash flooding in the Salt River watershed. This can temporarily reduce salinity and aggravate already high turbidity levels in the vicinity of Salt River.

3.2.5.2 Seismicity

IRF (1993) reported that as a result of convergence between the Caribbean and North American tectonic plates, the Virgin Islands are located in one of the most earthquake prone regions of the world. Strong seismic shocks were recorded for the Virgin Islands in 1777, 1843, 1867, and 1918. Destructive tsunamis occurred in the Virgin Islands in 1867 and in 1918; the latter resulted in 116 deaths and economic losses estimated at \$4 million (in 1918 dollars) (US 1984) (IRF 1993). The 1867 tsunami was reported to have a wave height of 27 ft above sea level (Geoscience Associates 1984). Potential human and economic losses for a similar event occurring today would be several orders of magnitude higher (IRF 1993). There is a high seismic potential for a major fault rupture in the Puerto Rico Trench, located north of Puerto Rico and the Virgin Islands (USGS 1984). The Virgin Islands are classified as "Zone 4" for earthquake vulnerability, the highest damage zone and the same classification given to many parts of California (Brower and Beatley 1988).

East Site – Waterfront areas that have undergone construction on filled (reclaimed land) land are vulnerable to impacts from earthquakes (IRF 1993). The peninsula between the East Cove and the Mangrove Lagoon was filled with dredged material from the lagoon to create a marina for the former hotel marina development. These areas have a greater chance of liquefaction and ground settling. Buildings constructed on loose alluvial or man-made fill soils along the waterfront are at risk of destruction should an earthquake occur (Geoscience Associates 1984).

3.2.6 Water Resources

3.2.6.1 Hydrology

The Bethlehem and the Salt River watersheds are the two largest watersheds on St. Croix. The Salt River watershed drains an area of approximately 2,880 acres (4 square miles) via the principal gut, Salt River (IRF 1993). There are no large freshwater lakes or ponds, and no perennial streams on the island, only intermittent streams can be seen after heavy rainfall. The absence of large freshwater resources and perennial streams means the guts form the foundation for watershed management on St. Croix (Torch 2006). Salt River Bay encompasses both Sugar Bay and Triton Bay. Salt River Bay is a partly-closed embayment, protected from the sea by a barrier reef with a natural channel opening (IRF 1993). Topography in the watershed is varied, and ranges from near flat land behind the mouth of Salt River to steep slopes in both the western and eastern portions of the watershed. Today Salt River is an intermittent stream, although there is historical evidence that it was once a greater and more permanent source of freshwater discharge into Salt River Bay (Hubbard 1989).

The hydrology of the watershed has been significantly altered by a combination of clearing, filling, channelization, and road construction (IRF 1993). The cumulative effects of such changes has been both a reduction in the frequency of flushing activity in Salt River, and an increase in stormwater carried sediments which discharge into the bay during episodic, intense rainfall events (IRF 1993). The steep slopes combined with poorly drained soils result in short saturation times and relatively high runoff rates (IRF 1993). Waters within the Salt River Bay are designated by DEP as Class B. Class B waters are designated for Primary Contact Recreation and Aquatic Life Use Support with allowable pollutant levels set according to the Virgin Islands Water Quality Standards (USVI DPNR 2004).

3.2.6.2 Water Quality

The most valuable natural resources within the USVI are the pristine waters and distinctive marine and wildlife habitats. The USVI DPNR/DEP is responsible of planning and implementing Water Quality Management Projects to ensure the protection of the marine waters of the USVI. Projects include ambient monitoring, review, and revision of water quality standards, establishment and support of Total Maximum Daily Load (TMDL) projects, and preparation of water quality inventories.

The DEP has established a Water Pollution Control (WPC) Program that implements and enforces water quality and pollution control laws in the USVI. Under the Clean Water Act, Section 303(d), the WPC Program monitors marine waters and controls discharges into those waters. The major objectives of this program are to ensure compliance with Territorial water quality standards, build and maintain information management systems for ongoing data analysis, develop critical environmental parameters, monitor the health of potentially threatened biological communities, prevent degradation of marine waters by reviewing development proposals, and ensure that discharges to the waters of the USVI meet the requirements established by the CWA and the Territorial Pollutant Discharge Elimination System (TPDES) Permitting Program. The WPC Program also includes programs such as Ambient Monitoring Program, TPDES, and Virgin Islands Beach Monitoring Program.

Under the CWA, Section 303(d), States and Territories are required to develop a list of impaired waters needing TMDLs. An impaired waterbody is one for which technology-based pollution controls are not stringent enough to attain or maintain compliance with applicable water quality standards. A TMDL is a quantitative assessment of the amount of pollution that certain waterbody can assimilate while still meeting water quality standards. A TMDL must be developed and implemented for the waterbody and pollutant(s) of concern. Salt River, including the Mangrove Lagoon, Sugar Bay, Salt River Marina, and Salt River Bay, has been listed on the 2004 303(d) list for only dissolved oxygen (DO) (Squiabro 2004).

The TMDL was completed in 2004 and there were no source(s) of impairment for the low DO levels reported to the USEPA (USEPA 2006).

The DEP has collected several variables on water quality in SARI since 1972. The variables include dissolved oxygen (DO), fecal coliform, nutrients, salinity (collected in practical salinity units, or PSU), temperature, and turbidity (collected in nephelometric turbidity units or NTU). Data collected are provided to the USEPA and archived into the STORET (STORage and RETrieval) system. Average values of the variables measured are listed in Table 3-2 and Figure 3-1 depicts the station locations.

Table 3-2. Average Values of Water Quality Variables Collected at Locations within SARI

Nearest Site Location	Station/ Station Description	DO (mg/l)	Fecal Coliform (#/100ml)	Salinity (PSU)	Temperature (C)	Turbidity (NTU)
East Site	I-Steeple	5.9	2.3	36.4	27.7	4.6
East Site	J-Crescent Beach	6.6	0.2	36.7	27.7	2.1
Middle of Bay	E-Deep Grassbed	6.9	0.2	36.3	27.4	1.3
South Site	F-Beach	6.6	0.0	36.5	27.8	4.2
South Site	G-Old NOAA Dock	5.8	42.8	36.4	28.1	3.6
South Site	H-Triton Bay Wildlife Sanctuary	5.5	0.3	36.2	28.3	3.0
West Site	C-Salt River Marina	5.3	50.5	35.9	28.5	2.6
South Site	D-Sugar Bay	5.4	0.6	36.1	28.2	4.3
West Site	B-Shallow Grassbed	6.7	0.2	36.4	27.5	3.3
West Site	A-Columbus Landing	6.8	4.8	36.3	27.8	1.0

Source: NPS 2001

East Site – Among the lowest levels of fecal coliform detected were at Crescent Beach. In 1986, water quality within the Mangrove Lagoon was tested and reflected conditions typical for estuarine waters, including high turbidities due to poor water exchange, elevated nutrients input and biological productivity (algal populations) (Sugar Bay Land Development 1986). Poor water exchange in the Mangrove Lagoon is most likely due to the small size of the lagoon opening to Salt River Bay. Water circulation within the Mangrove Lagoon was studied in 1986. It was estimated that water would be exchanged in the lagoon over approximately 10 to 12 tidal cycles (Sugar Bay Land Development 1986). However, flushing could also be less vigorous than this estimate, given the damping of the tidal range in the lagoon (Sugar Bay Land Development 1986).

South Site – Stations farthest from the Bay mouth in the vicinity of the South Site, including Sugar Bay, Former NOAA Undersea Research Facility, and the Triton Bay Wildlife Sanctuary showed low levels of DO, high turbidity, poor circulation, and a slightly higher mean temperature. Among the lowest levels of fecal coliform detected were at the beach in the southern portion of the bay, deep and shallow grassbeds, and the Triton Bay Wildlife Sanctuary. Among the highest levels of fecal coliform detected were at the NOAA Undersea Research Facility.

West Site – Stations farthest from the Bay mouth, including the Salt River Marina, showed low levels of DO, high turbidity, poor circulation, and a slightly higher mean temperature. In contrast, stations closest to the Bay mouth, Columbus Landing (close to the West Site, the NPS Visitor Contact Station), had a mean DO of 6.8 mg/l and low levels of turbidity. Parameters with the highest variability were fecal coliform concentration values. Among the highest levels of fecal coliform detected were at the Salt River Marina.

3.2.6.3 Sediment Quality

Delivery of excess sediments to the Salt River Bay is of concern. Eroded sediments from upland and riverine sources enter Salt River Bay in quantities considerably greater than natural levels as a consequence of human activities and landscape alterations. Accumulating sediments could possibly shoal navigation channels. Nutrients adsorbed to fine-grained sediments derived from eroded topsoil contribute to eutrophication. Contaminants harmful or toxic to aquatic life bind to fine-grained sediments in urban and industrial areas. Fine-grained sediments can remain suspended in the water column for extended periods of time. This reduces water clarity, limiting growth of submerged aquatic vegetation (SAV). Wave re-suspension of bottom sediments and shoreline erosion are a major source of suspended sediments in shallow water areas.

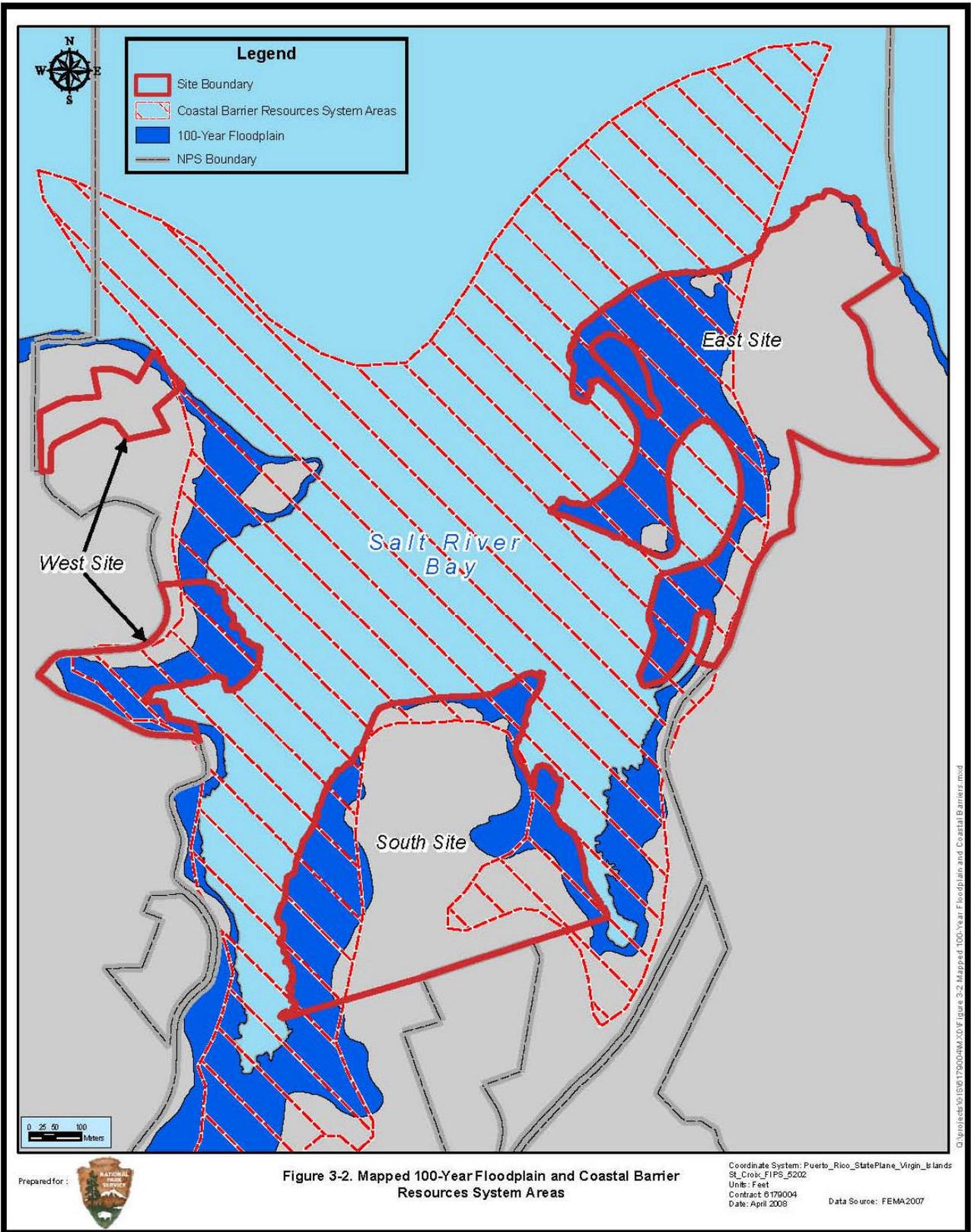
3.3 FLOODPLAINS, COASTAL ZONE, AND COASTAL BARRIER RESOURCES SYSTEM AREAS, AND WETLANDS

3.3.1 Floodplains

Floodplain Management, Executive Order 11988 (Special Directive 93-4) issued May 24, 1977, directs all Federal agencies to avoid both long- and short-term adverse effects associated with occupancy, modification, and development in the 100-year floodplain when possible. Floodplains are defined in this order as “the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.” Flooding in the 100-year zone is expected to occur once every 100 years on average. All Federal agencies are required to avoid building in a 100-year floodplain, unless no other practical alternative exists. NPS has adopted guidelines pursuant to Executive Order 11998 stating that it is NPS policy to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains.

Additionally, when practicable alternatives exist, Class I actions are required to avoid being located within a 100-year floodplain. Class I actions include the location or construction of administration, residential, warehouse and maintenance buildings, non-excepted parking lots, or other man-made features that by their nature entice or require individuals to occupy the site. Class 2 actions are defined as those that would create an added disastrous dimension to a flood event. These include the location or construction of schools, hospitals, fuel storage facilities, museums, and archaeological artifact storage. Excepted actions include those which are functionally dependent on their proximity to water and those relative to park functions that are often located near water for the enjoyment of visitors but do not involve overnight occupation.

The 100-year floodplain as mapped in April 2007 by the Federal Emergency Management Agency (FEMA) is depicted in Figure 3-2.



East Site – The western portion of the East Site is located within the 100-year flood boundary. However, two small areas within the western portion of the site are not located within the 100-year flood boundary.

South Site – Areas of the South Site that fringe the water are located within the 100-year flood boundary.

West Site – Most of the southern portion of the West Site (Salt River Marina) is located within the 100-year flood boundary whereas most of the northern portion of the West Site (NPS Visitor Contact Station) is not located within the 100-year flood boundary.

3.3.2 Coastal Zone Management

In 1978, the Virgin Islands Legislature enacted the Virgin Islands Coastal Zone Management Act as a means of regulating development and managing coastal resources in the Territory. The Virgin Islands Coastal Zone Management Program (VICZMP) was established to carry out the mandates and objectives of this Act. The VICZMP was approved by NOAA in 1979. The lead agency is the USVI DPNR. The coastal zone includes the entire Territory of St. Croix and is managed according to the Virgin Islands Coastal Zone Management Act. One of VICZMP's goals is to protect, preserve and, where feasible, enhance and restore the overall quality of the environment in the coastal zone.

Coastal zone means the coastal waters and the adjacent shorelands, strongly influenced by each other and in proximity to the shorelines. The coastal zone also includes islands, transitional and intertidal areas, salt marshes, wetlands and beaches. The coastal zone extends seaward to the outer limits of the United States Territorial Sea. In the Virgin Islands, the coastal zone is composed of two parts, a first tier and a second tier. The VICZMP regulates all development within the first tier of the Virgin Islands coastal zone. The first tier comprises of a relatively narrow strip along the coast, excluding all Federal land, and all off-shore islands and cays. The second tier includes the other portions of the island not included in the first tier. Although all three sites are located in Tier 1 of the Coastal Zone, the East Site is excluded from regulations within the coastal zone because this land is federally owned by the NPS.

3.3.3 Coastal Barrier Resources System Area

Congress passed the Coastal Barrier Resources Act (CBRA) in 1982, and the Coastal Barrier Improvement Act (CBIA) in 1990, defining and establishing a system of protected coastal areas (including the Great Lakes) known as the Coastal Barrier Resources System (CBRS) Areas (FEMA 2005). Coastal barriers are unique landforms that serve as a protective barrier against the forces of wind and tidal actions caused by coastal storms. In addition, coastal barriers provide a protective habitat for a variety of aquatic species.

The CBRA was initially enacted to reduce or restrict Federal actions that were believed to encourage development in certain undeveloped coastal barrier areas, including both islands and mainland property. While the CBRA and CBIA do not prevent private financing and development within the CBRS, they do limit financial assistance by Federal agencies. Any form of expenditure of Federal funds for a loan, grant, guarantee, insurance payment, rebate, subsidy, or any other form of direct or indirect Federal assistance within the CBRS is prohibited, with specific and limited exceptions.

Designated CBRS areas within SARI as mapped by FEMA in April 2007 are depicted in Figure 3-2. Although coastal barriers are described above as “unique land forms,” FEMA has mapped both land and water within SARI as CBRS areas. All three sites have areas designated as CBRS areas.

3.3.4 Wetlands

Wetlands are defined as areas sufficiently inundated or saturated by surface or groundwater to support vegetation adapted for life in saturated soils. Wetlands include swamps, bogs, marshes, and wet meadows. Wetlands filter pollutants, nutrients, and sediment, protect water quality in the ocean, lakes, rivers, and streams; they store runoff from storm events; act as shoreline buffers; provide essential habitat for fish, waterfowl, and other animals; and create recreational opportunities. Anthropogenic activities, including building, road construction, dredging, and vegetation removal, increase the sediment input and turbidity in Salt River Bay. Increased sediment deposits and turbidity influence vegetation growth. The alteration of lands has the potential to alter water flow to the wetland communities located nearby.

Section 404 of the CWA and a number of Territorial laws and provisions regulate activities in wetlands. The USVI DPNR/DEP has a program designated to monitor wetlands in the Territory. The objectives of this program are to update mapping in the Virgin Islands Rapid Environmental Assessment (REA) and design and test monitoring tools for wetland characterization in the USVI. The USVI DPNR/DEP programs work to protect wetlands by creating a wetlands inventory and maps, by limiting construction or clearing of wetlands, by monitoring water quality as part of the WPC Program and by managing discharges into the near-shore and marine environment through the TPDES and NPS Programs. The USVI DPNR/DEP works closely with the USEPA, the United States Fish and Wildlife Service (USFWS) and the USVI DPNR/DFW, the University of Virgin Islands and other agencies to protect wetlands. In addition, the NPS regulates activities in wetlands to comply with the NPS *Director's Order #77-1* (Wetland Protection). Wetland protection is discussed in more detail in Section 4.3.4.

Mangrove wetlands exist at SARI and are considered a significant natural community that is protected by numerous Federal and Territorial organizations, including the USACE and the USVI DPNR. Mangrove wetlands are discussed in more detail in the section below; a general discussion of other wetland resources at SARI follows the discussion of mangroves.

3.3.4.1 Mangroves

Mangroves contribute many benefits to the SARI ecosystem. Mangroves stabilize coastal sediment, buffer harmful effects of terrestrial runoff, regulate water temperature on tidal flats, and provide habitat for a diverse assemblage of terrestrial and aquatic organisms. They also trap various organic materials, distributing important nutrients to nearby marine habitats. Mangroves also serve as nursery grounds for commercially and recreationally important fishes in the USVI. The mangrove wetlands of the USVI have been impacted by natural and anthropogenic forces. Natural stressors include sea level rise and coastal erosion, hypersalinity, and hurricanes. Anthropogenic stressors include filling wetlands, drainage, or alteration for development. In addition, sewage and thermal effluent, oil pollution, fire, excessive harvesting, herbicides and pesticides, and sedimentation are also anthropogenic stressors that impact the mangrove wetlands.

At one time, the mangroves of SARI were considered the best in the U.S. Virgin Islands. The mangroves of SARI represent the only large patch of this forest type along the northwestern quarter of St. Croix. However, the intense winds off Hurricane Hugo damaged much of the old-growth mangrove forests in 1989. In 1992, aerial photographs showed that mangroves only covered 43% of their former spread. More recent aerial photographs taken in 2000 indicate that naturally occurring and restored mangroves now cover 29.7 acres or 54% of the 1988 forest. There are three main species of mangroves observed within SARI which include black mangroves (*Avicennia germanis*), white mangroves (*Laguncularia racemosa*), and red mangroves (*Rhizophora mangle*). The following sections describe the mangrove habitat at the three sites. Distribution of these mangrove areas within SARI are shown in Figure 3-3.

East Site – Approximately 1 acre of mangroves are located at the East Site. Red mangroves populate the shoreline surrounding the inlet and the 1-acre salt pond at the East Site, and just northeast of the inlet there is a patch of mixed white and red mangroves that thrive.

South Site – Wetlands at the South Site include mangrove habitat and an inland saltwater pond, surrounded by mangroves. A total of approximately 26 acres of mangroves are located within this site. The mangrove wetlands of the South Site are composed of Red and black mangroves that dominate the shores of both the east and west sides of the site. Dead mangroves account for 5.6 acres of the 35 acres which are located on the southwestern side of the site. A 3-acre inland salt pond with a fringe of mangroves is also located at the South Site. Red and black mangroves dominate the shores of both the east and west sides of the South Site.

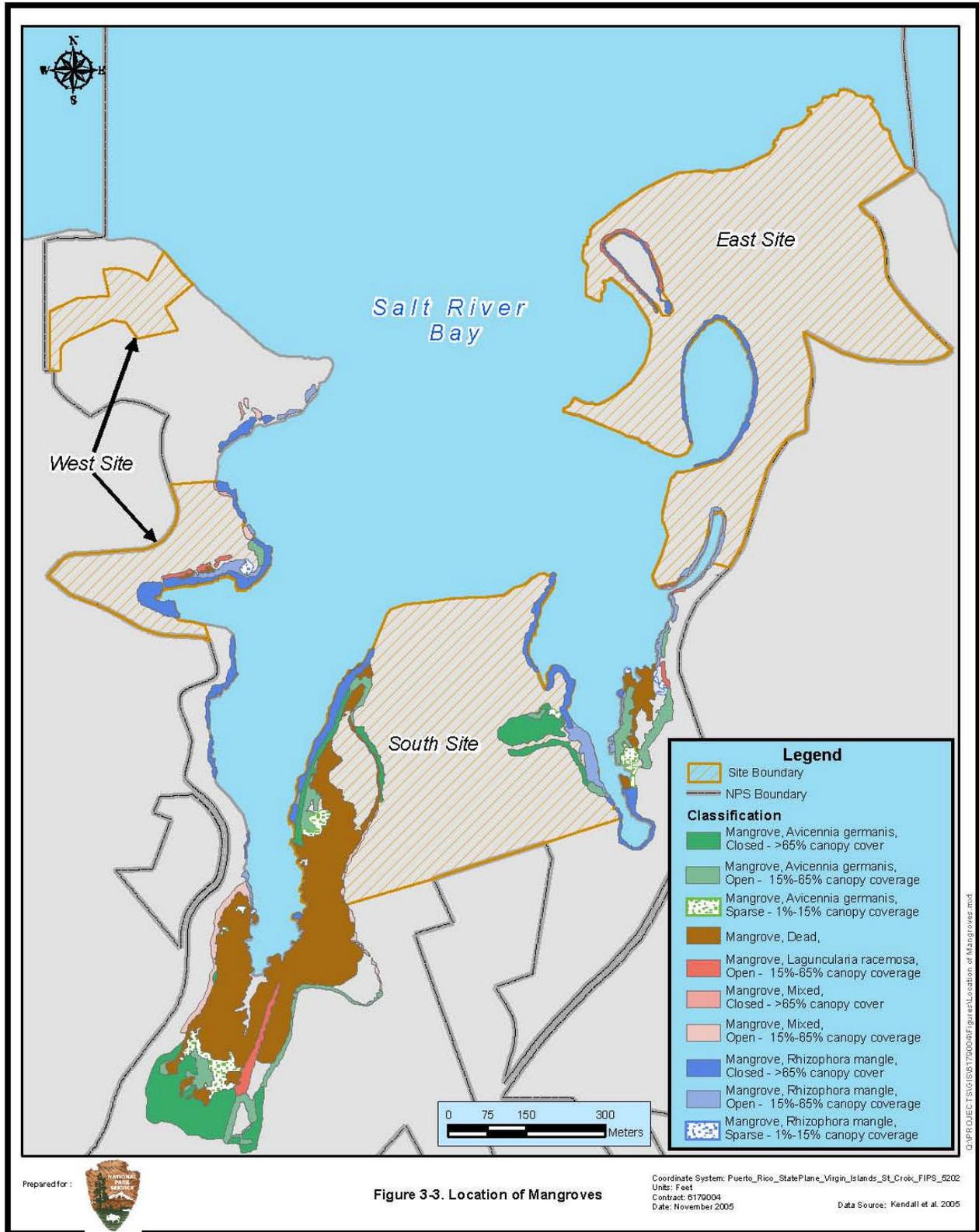
West Site – Wetlands at the Salt River Marina include mangrove habitats. A total of approximately 3 acres of mangroves are located within the marina. Red mangroves are the dominant species found at the marina, which occur along the shoreline with some areas mixed with white mangroves. The Visitor Contact Station is not located in an area populated by wetlands/mangroves.

3.3.4.2 Other Wetland Areas

The NPS defines wetlands as vegetated areas that are flooded or saturated for a duration of time sufficient to allow development of at least one of the three wetland indicators described in the 1987 USACE Wetland Delineation Manual (USACE 1987). The three wetland indicators used include wetland hydrology, hydric soil, or hydrophytic vegetation. Compared to the NPS, the USACE has a less stringent definition of wetlands. Generally, all three wetland criteria are required for an area to be approved as a Federal wetland by the USACE. Therefore, all Federally-defined wetlands are also defined as NPS wetlands. The NPS also uses the Cowardin Classification (Cowardin et al., 1979) to define wetland areas and deepwater habitats. The USACE has a Caribbean Office in Puerto Rico (Antilles Regulatory Office), which permits Federally-defined wetlands on St. Croix. The NPS-defined wetlands within SARI include mangrove swamps, inland salt ponds, estuarine wetlands, and shoreline/coastal wetlands. A general assessment of the existing wetland resources was completed for a portion of the East Site only (Appendix D); a short discussion of these results is included below.

East Site – Five NPS-defined wetlands were observed at SARI within portions of the East Site project boundary at SARI. The wetlands located at the site are located on and surround the western peninsula of the East Site and are bounded by the Mangrove Lagoon, Salt River Bay, the Salt Pond, and the existing “mudflats.” The USACE-defined wetlands at the East Site include 1 acre of mangrove habitat (as described in Section 3.3.4.1 above) and the inland 1-acre salt pond. A minimum of approximately 0.479 acres of NPS-defined wetlands (not including the 1 acres of mangroves) have been assessed and are located at the East Site (see Figure 5 in Appendix D for location of wetlands).

It is important to note that normal circumstances do not exist at the East Site; the entire peninsula could potentially be characterized as dredged material, as the natural shoreline is located inland from the peninsula. One wetland area (W-1) was located in the vicinity of the hotel structure, along the shoreline of the Mangrove Lagoon. Wetland W-1 is a narrow fringe red mangrove shoreline wetland that is characterized as an estuarine, intertidal, forested, broad-leaved evergreen (E2FO3) wetland. The shoreline at the abandoned hotel structure in the vicinity of W-1 is very rocky and sandy, and two species of algae washed up on the shore that were identified as disk alga (*Halimeda incrassate*) and soft fan weed (*Avrainvillea nigricans*). Wetland W-2 is marine, intertidal, unconsolidated shore, sand (M2US2)



wetland located along the entire coastline of the peninsula from adjacent to the hotel (where the mangroves cease to exist), along the western spit and Crescent Beach, to the extent of the survey area at the northern beach (adjacent to the salt pond). Two wetland types were classified in the vicinity of the Salt pond and described as Wetland W-3 and includes a vegetated estuarine, intertidal, forested, broad-leaved evergreen wetland (E2FO3) that fringes the Salt Pond, and an estuarine, subtidal, open water wetland (E1OW) that constitutes the open water portion of the Salt Pond. The peninsula is the area defined as inland from the shoreline from the existing hotel structure and western spit to the southernmost portion of the salt pond. Based upon the hydrophytic vegetation observed, Wetland W-4 is considered a wetland by NPS standards and is characterized as an estuarine, intertidal emergent / scrub-shrub, broad-leaved evergreen (E2EM/SS3). The area located along the Mangrove Lagoon, interior from the fringe of red mangroves is an area referred to as existing “mudflats” or Wetland W-5. Current, public access has impeded vegetation growing on the “mudflats;” the soil is exposed and water often pools following rain events. This area is considered a wetland based upon NPS standards due to the hydric soils and is characterized as an estuarine, intertidal, unconsolidated shore, mud (E2US3).

South Site – The only known wetlands at the South Site are associated with the mangrove wetlands and the inland salt pond discussed in the previous section. A wetland assessment of this site was not completed because access to this land parcel was not granted.

West Site – The only known wetlands at the West Site are associated with the mangrove wetlands discussed in the previous section. A wetland assessment of this site was not completed because access to the Salt River Marina was not granted.

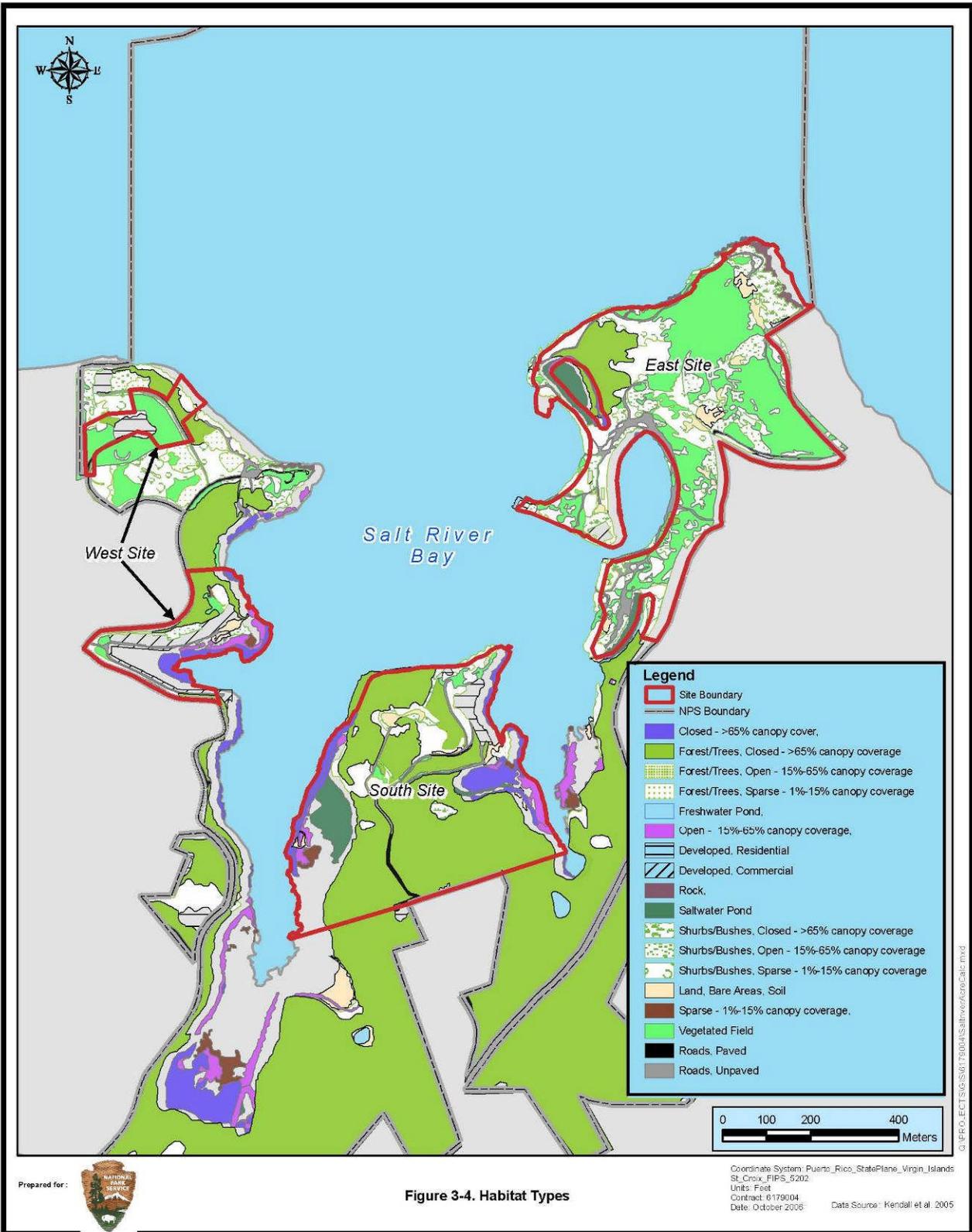
3.4 TERRESTRIAL RESOURCES

3.4.1 Plants

The USVI DPNR/DFW is the responsible agency for inventorying and monitoring plants and wildlife according to the Virgin Islands Indigenous and Endangered Species Act. A list of plant species that have been historically observed in SARI can be found in the report, *An Ecological Characterization of the Salt River Bay National Historical Park and Ecological Preserve, U.S. Virgin Islands* (Kendall et. al 2005).

Approximately 262 acres of SARI consist of forest (not including mangroves, mangroves were discussed previously in Section 3.3.4.1). The bulk of forest (semi-deciduous) cover is located in the southern inland portions of SARI. Smaller patches exist in western portions of SARI, between the Columbus Landing Site and Salt River Marina, and along the northwestern ocean front shores (Figure 3-4). Vegetated fields cover approximately 35 acres. Most of the shrub and field cover is concentrated in the northeastern and northwestern portions of SARI.

Non-native invasive plant species reside in island habitat, including St. Croix and SARI, and threaten the biodiversity of these fragile island ecosystems. “Exotic plants are defined as nonnative, invasive plant species” (NPS 2006). About 25 percent of plant species in the Caribbean national parks, including SARI, are defined as non-native invasive species (NPS 2006). In addition, more than 2.5 million acres of NPS lands are infested with non-native invasive plants (NPS 2006). In response to this problem, the NPS made the decision to integrate non-native invasive plant management into every aspect of planning by developing non-native invasive plant management partnership plans and programs that coordinate resources, funding, and scientific expertise (NPS 2006). A *Draft South Florida and Caribbean Parks Exotic Plant Management Plan (EMP)/Environmental Impact Statement (EIS)* (NPS 2006) was just completed that includes SARI for non-native invasive plant management. Although numerous non-native



invasive plant species have invaded the national parks, including SARI, only seven high-priority species for which information exists concerning the non-native invasive species' effects on other resources were included in the EMP/EIS (NPS 2006). Two of the seven priority species, African guinea grass (*Urochloa maxima*, formerly known as *Panicum maximum*) and tan tan (*Leucaena leucocephala*), currently occur at SARI and are discussed in detail in the Draft EMP/EIS (NPS 2006).

Table 3-3 details the approximate amount (in acres) and type of land cover within each site being considered for the MREC.

East Site – The terrestrial vegetation of the East Site is composed of forested (semi-deciduous) areas, vegetated fields, and shrubs dominated by non-native invasive species including African guinea grass, tan tan, and purple allamanda (*Allamanda blanchetii*) as presented in Table 3-3 and Figure 3-4. During a site visit, portions of SARI were surveyed for plant species. In the immediate vicinity of the abandoned hotel structure, the area is extremely disturbed. Piles of rocks, dirt, and debris were observed adjacent to the existing hotel structure and to the shoreline. Steep slopes existed from the hotel to the shoreline and casha (*Acacia tortuosa*) was observed as the dominant species in this location surrounding the hotel structure. The area located from the Mangrove Lagoon up to Judith's Fancy Estates exists as rolling topography that increases in slope and is dominated by the upland species African guinea grass, tan tan, casha, purple allamanda, giant milkweed (*Calotropis procera*), and bread-and-cheese (*Pithecellobium unguis-cati*). The species tan tan is indicative of disturbed areas and often is a pioneer plant species following areas that have been cleared, such as old roadbeds. The eastern portion of the peninsula, north of the abandoned hotel structure is dominated by upland vegetation species that include casha, bread-and-cheese, and African guinea grass. Discarded debris and concrete were present on the eastern portion of the peninsula, similar to the description above for the western portion of the peninsula.

A May 2006 site visit documented the following non-native plant species at the East Site: coconut palm (*Cocos nucifera*), wild cotton species (*Gossypium* sp.), tan tan, African guinea grass, Mother-in-law's tongue (*Sansevieria trifasciata*), tamarind (*Tamarindus indica*), and Spanish bayonet (*Yucca aloifolia*). Of these species, African guinea grass, tan tan, and purple allamanda have been identified as high-priority species for non-native invasive plant management at SARI (NPS 2006).

South Site – The terrestrial vegetation of the South Site is composed of forest (semi-deciduous) habitat, vegetated fields, and shrubs as described in Table 3-3 and Figure 3-4. A vegetation assessment of this site was not completed because access to this land parcel was not granted.

West Site – The terrestrial vegetation of the Salt River Marina is composed of forest (semi-deciduous) habitat, shrubs, and vegetated fields as described in Table 3-3 and Figure 3-4. The terrestrial vegetation of the Visitor Contact Station consists of forest (semi-deciduous), vegetated fields, and shrubs as described in Table 3-3 and Figure 3-4. A vegetation assessment of the Salt River Marina was not completed because access to the site was not granted. The majority of the West Site in the vicinity of the Visitor Contact Station has been developed and/or landscaped with vegetation.

Table 3-3. Land Cover (in acres) within Each Site Location*

Land Cover	Site Locations			
	East Site	South Site	West Site (Salt River Marina)	West Site (Visitor Contact Station)
Forest (semi-deciduous)	12	23	3	1
Mangroves	1	26	3	---
Shrubs	16	1	1	<1
Vegetated Field	25	1	<1	3
Bare Areas (rock/soil/unpaved roads)	3	2	<1	<1
Inland Waterbodies	1	3	---	---
Developed (paved roads, residential)	4	2	4	1
Total	62	58	11	5

* Acreage calculated for entire site (see Figure 2-1), not the footprint area proposed for the MREC.

3.4.2 Birds

Specific bird species information for SARI is limited; however, species that occur in habitats elsewhere on the island of St. Croix that are similar to those habitats found within the SARI boundaries are likely to occur at SARI. The USVI DPNR recently completed a Comprehensive Wildlife Strategy (USVI-DPNR 2005) and unless otherwise noted, the information regarding the species and status of birds on St. Croix was found within that document. Additional information on bird species found on St. Croix was obtained from National Audubon (National Audubon Society 2005.). A detailed discussion of Federal and Territorially-listed avian species is included in Section 3.6.

Habitats at SARI provide nesting, roosting and foraging for a wide variety of birds including year round residents, overwintering residents, and species that stop briefly at St. Croix during annual migrations. SARI habitats that support avian species include two inland ponds, and approximately 30 acres of sand and mud salt flats, approximately 3 acres of sandy beach and approximately 6 acres of intertidal habitats, including mangroves. The forested (semi-deciduous) areas, shrubs, and vegetated fields also provide habitat for avian species. Mangrove habitat at SARI is important to birds as nesting habitat for resident species and foraging habitat for over wintering and migrant species. Shallow water areas adjacent to the intertidal habitat provide foraging areas of shallow mud, sand, and seagrass areas for wading birds like bitterns, herons, egrets and shorebirds. Colonial waterbirds such as seabirds, herons, egrets and terns of a variety of species nest on cays and offshore islands near St. Croix. Many of these species visit St. Croix, particularly while foraging. One of the most common seabirds to visit SARI is the brown pelican (*Pelecanus occidentalis*), listed as federally endangered in the USVI (USFWS 2005).

Several wading bird species, such as those listed in Table B-1 of Appendix B, may use mangrove, shoreline, and wetland habitats for foraging. Shorebirds, marshbirds, and waterfowl typically use the open water, shoreline and wetland habitats for nesting and foraging. Table B-1 of Appendix B provides a list of the avian species that may utilize these habitats at SARI. Many species of landbirds migrate for the winter from the Arctic and temperate areas of North America to the tropics including the U.S. Virgin Islands and St. Croix. As many as 60 species of migrant Nearctic landbird species have been observed during the winter months in the U.S. Virgin Islands. The common wintering migrants include the

shorebirds listed in Table B-1 of Appendix B. The nearctic migrant passerine species listed in Table B-1 of Appendix B can be found wintering on St. Croix.

East Site – The north end of Crescent cove or East cove is utilized seasonally by the migratory least tern. Fewer than 10 pairs will attempt to nest along the coral cobble shoreline. This nesting area is monitored by USFWS. Based on USFWS monitoring and the poor nesting success that migratory least terns are having on Saint Croix, NPS has proposed to improve nesting area habitat for the species during the demolition of the hotel and restoration of the dredge spoil peninsula. Currently the least tern is in need of coastal areas, with no limited vegetation to protect from mongoose. This can be provided on the peninsula and protected from impacts of recreation during the critical nesting period (April to June) each year.

South Site – Adjacent to the South Site, the nearby low-lying salt flat communities at Triton Bay Wildlife Sanctuary provide habitat and important food source for many of the bird species described above.

West Site – Cattle egrets (*Bubulcus ibis*) and little blue herons (*Egretta caerulea*) currently nest in a 200 square meter rookery within a large patch of red mangroves near the Salt River Marina.

3.4.3 Reptiles and Invertebrates

Several species of terrestrial reptiles have either been recorded or are expected to occur at SARI. These species include anole lizards (*Anolis acutus*), dwarf gecko (*Sphaerodactylus macrolepis*) and woodslaves (*Hemidactylus mabouia* and *Thecadactylus rapicauda*), and green iguana (*Iguana iguana*) (IRF 1993). There are no site-specific reptile data for SARI and no invertebrate data for either the South Site or the West Site.

East Site – Terrestrial invertebrates that were observed on the peninsula near the abandoned hotel site during a site survey included soldier crab and land crab (Sugar Bay Land Development 1986).

3.4.4 Mammals

Bats are the only native terrestrial mammal species that inhabits the USVI, St. Croix. Approximately 10 species of terrestrial mammals have established feral populations, including: domestic cat (*Felis domesticus*), domestic dog (*Canis familiaris*), small Indian mongoose (*Herpestes javanicus*), burro (*Equus asinus*), pig (*Sus scrofa*), white-tailed deer (*Odocoileus virginianus*), goat (*Capra hircus*), roof rat (*Rattus rattus*), Norway rat (*Rattus norvegicus*), and house mouse (*Mus musculus*) (DPNR/DFW 2005). Within SARI, there are several habitats including beaches, wetlands, shrubland/grassland, and forest (Figure 3-4) that provide habitat for terrestrial mammals as described for each site below.

East Site – The habitats at the East Site include all four habitat types listed above and shown on Figure 3-4. Mammals that occupy these habitats and have the potential to be observed at the East Site include the white-tailed deer, red fruit bat (*Stenoderma rufum*), cave bat (*Brachyphylla cavernarum*), mice (*Mus musculus*), dogs (*Canis domesticus*), and cats (*Felis catus*), and rat species (*Rattus* spp.). A small Indian mongoose was observed at the East Site during a site visit conducted in May 2005. In addition, a bat survey of the East Site was conducted on July 14 -17, 2007 and velvety free-tailed bats (*Molossus molossus*) were observed living in the abandoned hotel (Fly by Night 2007). The velvety free-tailed bat is an insectivore that is widely distributed in the Caribbean and is not on the list of Endangered Species for the Territory (Appendix B). However, it is one of only five (all five are bats) extant native terrestrial mammal fauna in St. Croix (St. Croix Environmental Information Repository 2006).

South Site – The habitats located within the South Site include beaches, wetlands, and forest (Figure 3-4). The mammals that occupy these habitats and have the potential to be observed at the South Site include the small Indian mongoose, donkey (burro), white-tailed deer, red fruit bat, cave bat, and rat species.

West Site – The area within the Salt River Marina is primarily developed. Surrounding the developed area of the marina includes a small portion of shrubs/bushes, bare areas, and small patches of mangrove wetland habitat (Figure 3-4). Within these habitats, the small Indian mongoose, donkey (burro), white-tailed deer, red fruit bat, cave bat, and rat species thrive. The habitat types within the Visitor Contact Station is dominated by shrubland and grassland surrounded by sparse forest (semi-deciduous) (Figure 3-4). The terrestrial mammals that occupy this habitat include the red fruit bat, cave bat, small Indian mongoose, white-tailed deer, and rat species.

3.5 AQUATIC RESOURCES

This section discusses the aquatic resources at SARI, including coral reefs, seagrasses, fisheries (including commercially important finfish species), benthic macroinvertebrates, essential fish habitat, aquatic reptiles, and marine mammals.

3.5.1 Coral Reefs

Coral reefs are the most complex, species-rich marine ecosystems. Reefs are formed by corals, which are animals that secrete a calcium carbonate skeleton. Coral reefs provide essential fish habitat, support threatened and endangered species, and protect marine mammals and turtles. In addition, coral reefs reduce wave action and protect the coastline from erosion and flooding. Coral reefs are being threatened mainly from human activity, including coastal development, over-fishing, over exploitation of marine resources, marine pollution, and increased terrestrial runoff. Sedimentation is a major control on reef characteristics at SARI. Transport of sediments serves to limit coral growth in the area.

Within SARI, a submerged barrier reef extends west of Buck Island, along the length of the north coast narrow shelf, broken only by the Christiansted submarine canyon off Christiansted, and the Salt River submarine canyon off Salt River. The Salt River canyon walls differ in coral cover. The east wall ranged from less than 1% coral cover within the inner portion to 25% coral cover near the shelf. The most common species included *Mycetophyllia* spp., *M. annularis*, *D. strigosa*, *Agaricia* spp., and *M. cavernosa*. The west wall is steeper with solid substrate that ranged from 22% to 59% coral cover with the most common species including *M. cavernosa*, *Agaricia* sp., *Porites* spp., and *S. sidera* (USVI DPNR/DFW 2005).

There have been approximately 287 acres of reef and hardbottom mapped at SARI; however this is an underestimate of the total area. In the northern portion of SARI, the deepest waters were mapped as “unknown” as the extreme depth did not allow for visual classification. These deep waters most likely contain large areas of reef/hard bottom. There are ten different coral reef and hard bottom types identified within SARI, however there may be other varieties that can be found within the deep “unknown” waters. Approximately 41 species of corals have been observed during the studies at submarine canyon within SARI, 33 on the east wall and 38 on the west wall. A coral reef species list for Salt River Canyon found during previous research and monitoring activities can be found the report *An Ecological Characterization of the Salt River Bay National Historical Park and Ecological Preserve, U.S. Virgin Islands* (Kendall et al 2005). Two species of coral, elkhorn coral (*Acropora palmata*) and staghorn coral (*Acropora cervicornis*) that are listed as Federally threatened have been observed at SARI (Kendall et al 2005) and are discussed in more detail in Section 3.6.

East Site – Uncolonized hardbottom reef rubble and uncolonized bedrock can be found in the northern facing shores of the East Site (Figure 3-5). The East Wall of the Salt River Canyon is located approximately 0.12 nautical miles from the East Site.

South Site – There are no coral reefs located near the South Site (Figure 3-5). The East Wall of the Salt River Canyon is located approximately 0.37 nautical miles from the South Site.

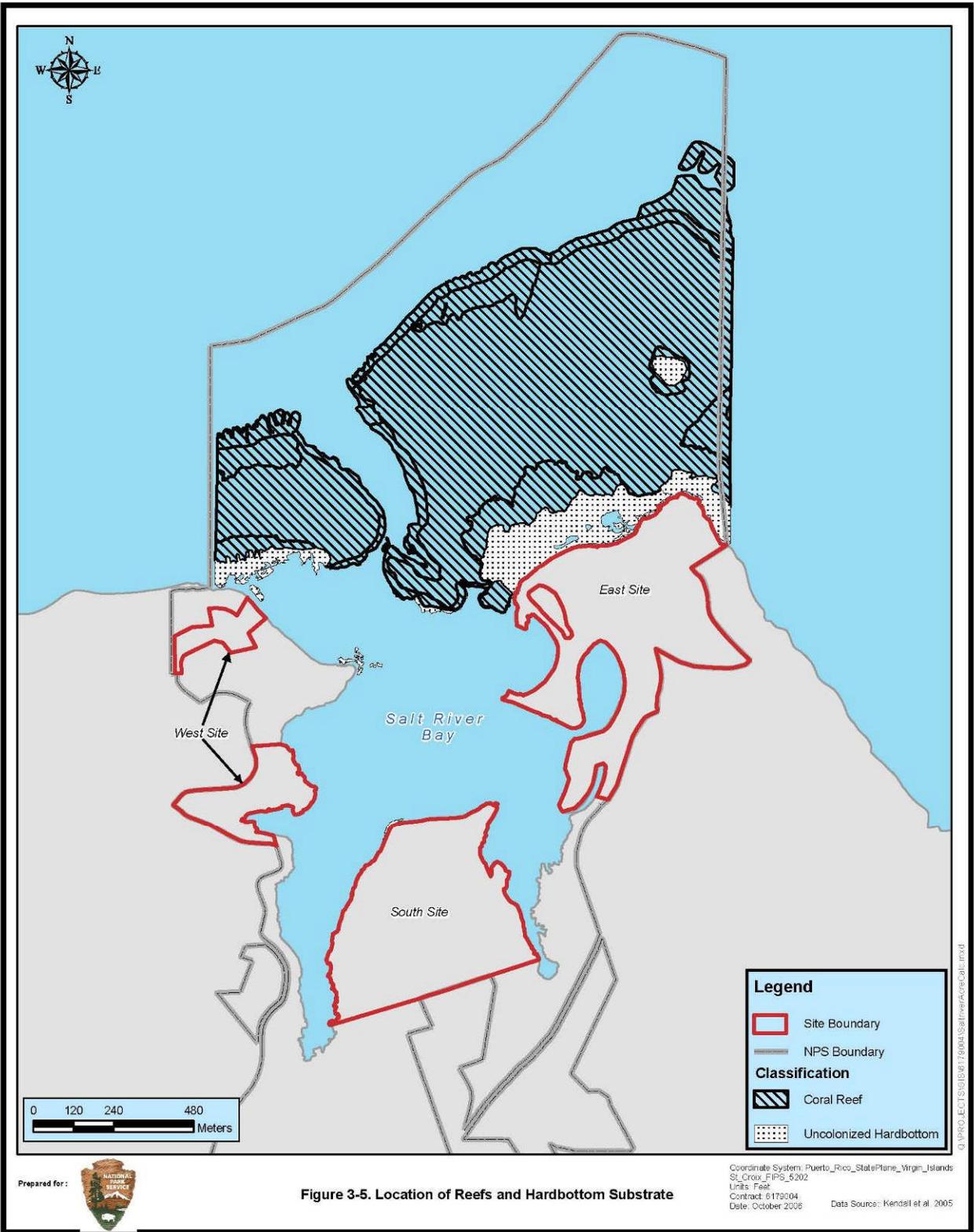
West Site – There are no coral reefs located near the Salt River Marina, but uncolonized hardbottom with uncolonized pavement can be found in the northern facing shores of the NPS Visitor Contact Station (Figure 3-5). The West Wall of the Salt River Canyon is located approximately 0.23 nautical miles from the West Site.

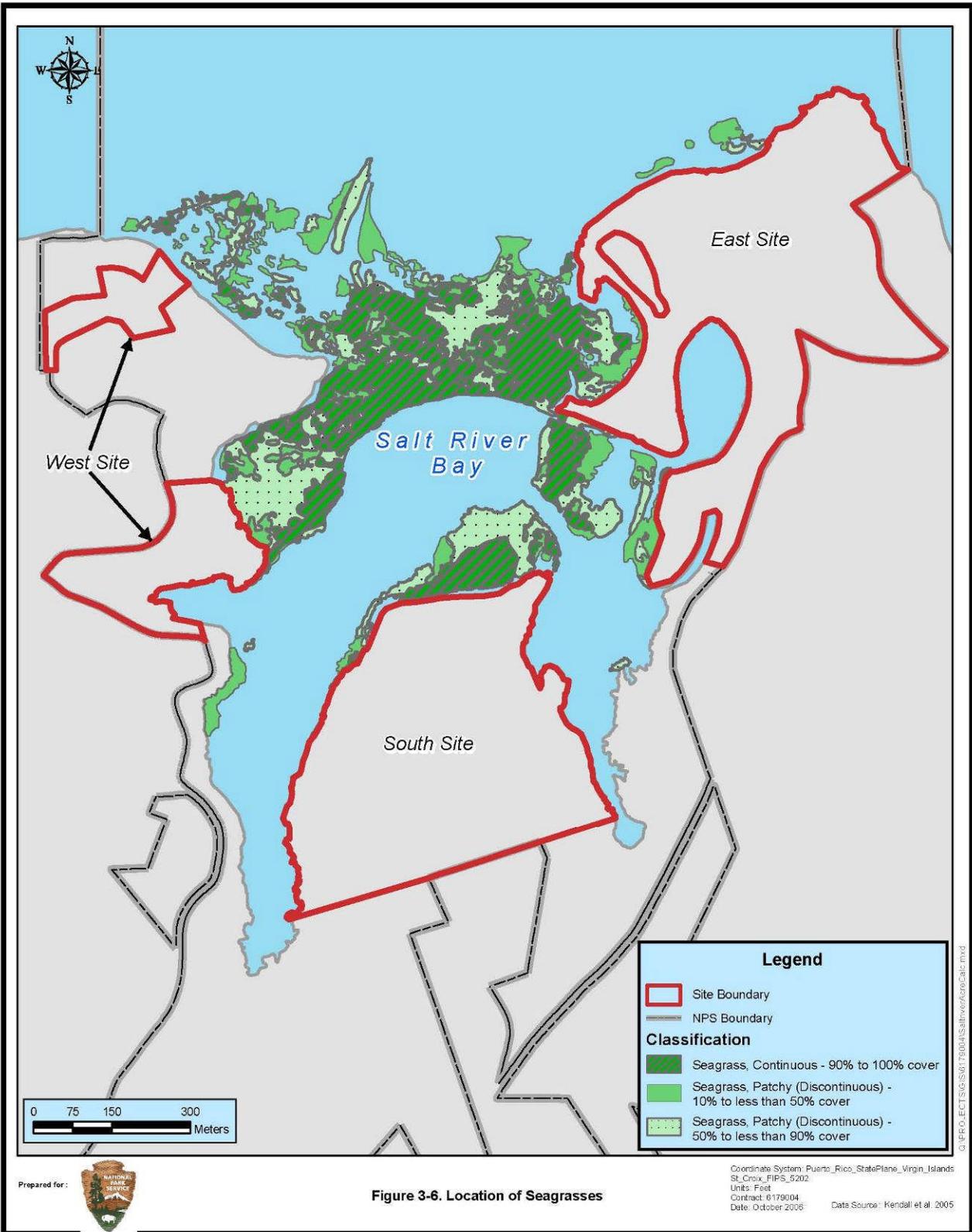
3.5.2 Seagrasses

Seagrasses are seed-producing, flowering marine plants that occur in shallow, nearshore, temperate, and tropical waters. Seagrasses also require circulation of the overlying water, which delivers nutrient and substrate material and removes waste products. They spread annually by dispersal of seeds. Seagrasses provide habitat and a source of food for a variety of small fishes and invertebrates such as shrimp and crabs. Seagrasses also trap sediment, which helps prevent erosion of the shallow sediments. Major problems that affect seagrasses include dredge and fill activities, soil erosion, and increased levels of water pollution. Excessive nutrients from residential septic tanks have caused short-term eutrophic conditions as well. Natural stressors include tropical storms and hurricanes and grazing by herbivores (natural exploitation of resource). Anthropogenic sources of stresses include dredging and filling, oil pollution, physical disturbance (i.e., boat propeller and anchor damage), and chemical pollutants from industry and non-point source pollution.

In the year 2000, seagrasses were mapped by NOAA using a hierarchical classification scheme, using digitized orthorectified aerial photos to delineate areas of seagrass coverage in the Bay (Kendall et al. 2005). The seagrass classification system included 10% to less than 50% cover, 50% to less than 90% cover, and 90% to 100% cover. Seagrass coverage observed in 2000 was slightly higher than the last survey in 1992. Most of the seagrass in the bays of SARI consists of two species, turtle grass (*Thalassia testudinum*) and manatee grass (*Syringodium filiforme*), with lesser areas of shoal grass (*Halodule wrightii*). Figure 3-6 shows the distribution of seagrasses within the SARI boundary.

East Site – Patchy and continuous seagrasses are located within the East Cove and in the Bay south of the abandoned hotel structure. It is unknown if seagrasses currently occur within the Mangrove Lagoon. The flushing rate of the Mangrove Lagoon is lower than that of Salt River Bay, due to the narrow inlet that currently exists. Due to historic dredging activities that have occurred, the silt character of the material in the vicinity of the East Site, and the low flushing rate within the Mangrove Lagoon, seagrasses would not be expected to thrive in this type of habitat. A silt-laden bottom largely devoid of seagrass or algae dominates a large area in the center portion of the Bay, owing to past dredging, continued sediment loading, and low light penetration (NPS 1990). High water turbidities have been observed in the Mangrove Lagoon due to poor water exchanges, elevated nutrient input, and biological productivity (Sugar Bay Land Development 1986). In 1986, five transects in the Mangrove Lagoon were conducted for depth profiles and distribution of seagrasses; recovery at these transects yielded a majority of algae and some patchy areas of seagrasses (Sugar Bay Land Development 1986). The following algae species were identified in the Mangrove Lagoon: *Halimeda opuntia*, *Halimeda incrassata*, *Caulerpa mexicana*, *Penniculus capitatus*, *Hypnea musciformis*, *Caulerpa sertularoides*, *Caulerpa verticillata*, *Acanthophora spicifera*, *Dictyota* species, *Thalassia* species, *Syringodium* species and *Ceramium* species. The only true seagrasses, turtle grass, was recovered at two shallow transects, located on the eastern and western shorelines of the Mangrove Lagoon and the seagrass *Halodule wrightii* was recovered at one transect





(Sugar Bay Land Development 1986). Turtle grass is the most common seagrass in the Caribbean Sea. During the May 2006 site visit, two species of algae, *Halimeda incrassata* and *Avrainvillea nigricans* were observed washed up on shore of the Mangrove Lagoon at the abandoned hotel site.

South Site – Continuous seagrasses can be found north of the South Site. Patchy seagrasses are located along the mouth of Sugar Bay and Triton Bay.

West Site – No seagrasses are located within the Salt River Marina; however, patchy seagrasses are located northeast of the Visitor Contact Station, and northeast of the Salt River Marina. The majority of seagrasses are located within the mouth of the Bay due to the water quality, turbidity, and the solar irradiance in that area.

Seagrasses are protected under the VICZMA which stimulates state and Territorial leadership in planning and managing the use of coastal areas. Territorial regulations include designation of Areas of Particular Concern (APCs) that would provide conservation guidelines and site protection strategies for valuable resources. Section 3.7.2 includes a more detailed discussion of APCs.

3.5.3 Fish

The USVI contains many natural resources that provide food and shelter for a variety of marine and terrestrial life. There are residential populations of fish and a variety of fish that migrate through the USVI annually. The marine waters are heavily fished by both recreational and commercial fisherman. In addition, tourist and economic development (i.e., housing development and hotel construction) continues to infringe on the coastal environment. The USVI DPNR/DFW manages fisheries and marine resources by advising and supporting the Local Fisheries Advisory Committees, conducts research to assess the fisheries and marine resources, reviews scientific literature and provides guidance when needed, and advise the USVI DPNR Commissioner on issues relating to fisheries and marine resources. The USVI DPNR/DFW began monitoring programs using a variety of fish census techniques to survey fish communities around St. Croix, including a site at the west canyon wall at SARI.

In order for marine fish to complete their life cycles, marine fish need a variety of benthic habitats such as mangroves, seagrass meadows, and reefs, all which SARI has in close proximity to each other. Larval fish need seagrass and sand areas for initial settlement sites when they transition from ocean drifting forms to bottom dwelling forms. During their juvenile stage, fish may use the prop roots of red mangroves for structural refuge and foraging. A recent case study of fishery use found that 57 different species of fish utilize mangrove habitat at SARI (Kendall et. al. 2005). The most abundant families were snappers (Lutjanidae), grunts (Haemulidae), and mojarras (Gerreidae), which accounted for 82% of the fish observed on transects and 72% of fish caught in traps. Most fish caught during these studies were juveniles. Species richness was greater close to the Bay mouth relative to sites farther in Triton and Sugar Bay. The study revealed the importance of Salt River mangroves as a nursery ground to many recreational and commercial fish species. A list of fish species observed within SARI at the mangrove habitats, canyon walls habitat, and in water column as pelagic fishes can be found in the report *An Ecological Characterization of the Salt River Bay National Historical Park and Ecological Preserve, U.S. Virgin Islands* (Kendall et. al 2005).

All three site locations contain mangrove habitat (see Figure 3-3). A diverse number of fish can find suitable combination of habitats for larval settlement, juvenile growth, and adult life stages within the small boundaries of SARI. Inshore mangroves and seagrass beds provide important nursery areas for fish that ultimately migrate to the reefs. In addition, mangroves have been shown to enhance biomass of commercially important fish.

There have been 200 species of fish observed in SARI reefs so far (Kendall et. al 2005), and this despite nearly all sampling efforts expended only on the canyon walls. During the monitoring program at the west canyon wall lead by USVI DPNR/DFW, a total of 91 species have been observed and are included in the report *An Ecological Characterization of the Salt River Bay National Historical Park and Ecological Preserve, U.S. Virgin Islands* (Kendall et. al 2005). None of the 91 fish species were listed because there are no federally listed or territorially listed fish species for SARI. However, the Caribbean Fisheries Management Council (CFMC) maintains a list of fish species that currently require protecting, which are discussed in more detail in Section 3.7.12.

Larval or juvenile stages of the commercially important fish species have been recorded at SARI. These fish species include white mullet (*Mugil curema*), dwarf herring (*Jenkinsia lamprotaenia*), snook (*Centropomus undecimalis*), bonefish (*Albula vulpes*), schoolmaster snapper (*Lutjanus apodus*), and gray snapper (*Lutjanus griseus*) (IRF 1993).

East Site – A fish survey was conducted in the Mangrove Lagoon in 1986 that recovered the following species: chestnut moray (*Enchelycore* sp.), white mullet (*Mugil curema*), and yellowfin mojarra (*Gerres cinereus*) (Sugar Bay Land Development 1986).

South Site – No site-specific fish surveys have been conducted in the vicinity of the South Site.

West Site – No site-specific fish surveys have been conducted in the vicinity of the West Site.

3.5.4 Benthic Macroinvertebrates

Larval or juvenile stages of commercially important crustacean have been recorded for Salt River Bay. These macroinvertebrates include queen conch (*Strombus gigas*) and Caribbean spiny lobster (*Panulirus argus*). Other macroinvertebrates that have been observed at SARI include the mangrove cupped oyster (*Crassostrea rhizophora*), flat tree oyster (*Isognomen allatus*), and jellyfish (*Cassiopeia* sp.) (IRF 1993). Macroinvertebrates that would potentially utilize the mangrove root as substrate for attachment include sponges, tunicates, mollusks, anemones, and tube worms (IRF 1993). Other invertebrates that are partially dependent upon aquatic habitats that would be expected to utilize habitat at SARI include the large land crab (*Cardisoma guanhumi*), ghost crab (*Ocypode* spp.), fiddler crab (*Uca pugnax rapax*), rock crab (*Grapsus* sp.), and the soldier crab (*Coenobita clypeatus*) (IRF 1993).

East Site – Three transects for depth profiles were conducted in the Mangrove Lagoon for the 1986 EA (Sugar Bay Land Development 1986). The three transects depicted similar benthic communities developed near the shallow shorelines (approximately 2.1 meters or less in depth). The most common invertebrates recovered were tunicates and mangrove oysters (*Isognomon alatus*). Beyond approximately 2.1 meters in depth, fine muds were present in the Mangrove Lagoon. Two additional shallow transects approximately 0.25 meters in depth were conducted along the eastern and western shorelines of the Mangrove Lagoon. These sediments consisted of fine muds and small “reefs” with sabellid tubeworms (*Sabella melanostigma*) and hard substrates with mangrove oysters.

3.5.5 Aquatic Reptiles

Four sea turtles are expected to potentially occur, or have a reasonable probability of occurring in Salt River Bay and include the Federally listed endangered hawksbill turtle (*Eretmochelys imbricata*) and leatherback turtle (*Dermochelys coriacea*) and the Federally listed threatened green sea turtle (*Chelonia mydas*) and the loggerhead sea turtle (*Caretta caretta*) (IRF 1993). Because the four sea turtles are Federally listed, these species are discussed in more detail with threatened and endangered species in Section 3.6.

3.5.6 Marine Mammals

Numerous species of whales have been historically and recently documented within the waters and offshore of Salt River Bay. The humpback whale (*Megaptera novaengliae*), listed as Federally endangered, was sighted at the Salt River site on February 17, 1989 (VI Government 1990). Other whale species that were observed at the Salt River site documented in the 1990 EA (VI Government) included three Federally endangered whale species: the sperm whale (*Physeter catodon*), the finback whale (*Balaenoptera physalus*), and the sei whale (*Balaenoptera borealis*). The four whales listed above are discussed in more detail with threatened and endangered species in Section 3.6. Additional sightings of non-listed whales include the pilot whale (*Globicephala* sp.) – observed in waters offshore from SARI, the rarely seen Cuvier's beaked whale, also known as the goosebeak whale (*Ziphius cavirostris*) – documentation of a stranding in Salt River Bay, and the pygmy sperm whale (*Kogia breviceps*) – observed in vicinity of SARI (Hillis-Starr 2007). In addition to the whales observed and discussed above, the common dolphin (*Delphinus* sp.) is regularly observed by divers in the vicinity of Salt River Bay (Hillis-Starr 2007) and the bottlenose dolphin (*Tursiops truncatus*) has also been observed (Hillis-Starr 2008).

3.6 THREATENED AND ENDANGERED SPECIES

3.6.1 General Discussion

The Endangered Species Act (ESA) of 1973 was enacted to protect plant and animal species considered to be in danger of extinction. The Act affords legal protection to species listed as endangered and threatened, including protection of their habitats. The Act requires Federal agencies to undertake affirmative actions to protect and restore populations of listed threatened and endangered species, and to prevent proposed and candidate species from being listed. Two additional Federal regulations protect endangered and threatened wildlife species, these include the Fish and Wildlife Coordination Act of 1934 (as amended), which includes provisions for the protection of bald and golden eagles and endangered species of fish and wildlife, and the Bald and Golden Eagle Protection Act, which prohibits pursuing, wounding, killing, or capturing of bald and golden eagles.

An endangered species is defined as any species that is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as any species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Due to habitat loss and species fluctuations, the lists of protected species are constantly changing. In addition to Federal protection from the ESA of 1973, the Legislature of the U.S. Virgin Islands enacted the Indigenous and Endangered Species Act (Title 12 Chapter 2) in 1990 "to protect, conserve, and manage indigenous fish, wildlife, and plants, and endangered or threatened species for the ultimate benefit of all Virgin Islanders, now and in the future" (Government of the U.S. Virgin Islands et al 1991). The institution responsible for the management of marine resources in the U.S. Virgin Islands is the USVI DPNR. Within USVI DPNR, there are other divisions that have responsibilities relating to the marine environment, including the Division of Fish and Wildlife. The DFW cooperates with both the USFWS and NMFS to monitor and protect endangered and protected species. The USVI currently contains ten species with Federal endangered or threatened status (five reptiles, three birds, two plants). Territorially endangered species include 28 animals (one reptile, 22 birds, three mammals, one fish, and one coral) and 49 plant species. Tables B-2 and B-3 of Appendix B provide a list of all Federally and Territorially threatened and endangered (T&E) species potentially found within the USVI.

All Federally and Territorially listed species require protection and in some cases, monitoring. Direct impacts on listed species include introduction of non-native species (including the non-native hogs, goats, *Salt River Bay National Historical Park and Ecological Preserve* June 2008
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donkeys, and the West Indian mongoose), boats speeding through SARI waters and upland development that results in people, lights, and dogs.

3.6.2 Site-Specific Listed Species

Detailed T&E species surveys have not been conducted for this study at SARI to date. However, detailed terrestrial and aquatic surveys have been conducted for previous projects proposed at SARI, including an Environmental Assessment (EA) for the Columbus Landing Site (Coastal Consultants 1987), an EA and alternatives analysis for the Columbus Landing Site (Government of the U.S. Virgin Islands 1990), an EA for the East Site in 1986 (Sugar Bay Land Development, Ltd 1986), and a comprehensive analytical study for SARI conducted by the USVI DPNR (IRF 1993). Other sightings and recordings of listed species have been documented by the NPS. The results of the above mentioned studies and the documentation by the NPS are discussed below in more detail for the entire SARI Site and for the East, South, and West Site (if species information was available).

Four Federally listed sea turtles could potentially occur or have been observed in Salt River Bay based upon historic and recent observations (IRF 1993 and Hillis-Starr 2007). Two of the four Federally listed sea turtles that could potentially occur in the bay: the Federally listed leatherback turtle and the Federally listed threatened loggerhead sea turtle (IRF 1993). The remaining two the four Federally listed sea turtles are known to reside inside and outside the bay: the Federally listed endangered hawksbill turtle and the Federally listed threatened green sea turtle (Hillis-Starr 2007). In the past, the loggerhead turtle was rarely sited in the Virgin Islands, but recently has been discovered nesting at Buck Island Reef; juveniles loggerheads have also been observed foraging in the area adjacent to Frederiksted (Hillis-Starr 2007). Leatherback sea turtles have been caught in gillnets located outside of the bay as recently as 2006, but are not expected to regularly occur inside the bay (Hillis-Starr 2007). Additionally, observations of hawksbill sea turtles have been documented by scuba divers on the east and west walls of the submarine canyon (Hillis-Starr 2007). Green sea turtles and hawksbill sea turtles have also been documented nesting at the Columbus Landing site. These observations are discussed by site in the paragraphs below and in Agency Correspondence (Section 3.6.3). Juvenile hawksbill sea turtles can forage in the bay on seagrasses and juvenile green sea turtles can forage on a variety of zooxanthids, salps, tunicates, and other marine invertebrates (Hillis-Starr 2007). Hawksbill turtles are omnivores and will therefore consume a variety of food sources found on the reef and along mangrove prop roots.

In addition to listed sea turtles, the following Federally endangered whale species could potentially occur in Salt River Bay: the humpback whale, the sperm whale, the finback whale, and the sei whale. Although the humpback whale was sited at the Salt River site in 1989 (VI Government 1990), it is currently thought that humpback whales migrate past SARI (Hillis-Starr 2007). Other whale species observed in the vicinity of Salt River Bay documented in the 1990 EA (VI Government) include the sperm whale, the finback whale, and the sei whale.

The following Territorially-listed bird species currently or once used the habitat at SARI: snowy egret, bahama duck, Caribbean coot, least tern, and white-crowned pigeon (Government of the U.S. Virgin Islands 1990). The following Territorially-listed bird species that use SARI for feeding/roosting include: brown pelican, great blue heron, black-crowned night heron, Federally-listed peregrine falcon (*Falco peregrinus*), willet, and bridled quail-dove (Government of the U.S. Virgin Islands 1990). The following Territorially listed plant species have been observed at SARI: egger's agave (*Agave eggersiana*), olive psychilis (*Epidendrum bifidum*), Christmas orchid (*Epidendrum ciliare*), lignum vitae (*Guaiacum officinale*), stinging brush (*Malpighia infestissima*), cowage cherry (*Malpighia woodburyana*), and wooly nipple (*Mammillaria nivosa*) (Coastal Consultants 1987, IRF 1993, and Government of the U.S. Virgin Islands 1990). The white-crowned pigeon and bridled quail dove are proposed for downlisting from Territorially endangered to threatened.

Based upon a review of avian habitat requisites for the three Federally-listed species and results of prior surveys, all three federally listed avian species may utilize the habitats within SARI, including the three sites. The federally listed endangered brown pelican is one of the most common seabirds to visit SARI. The USFWS is currently evaluating the brown pelicans nesting success and is considering this species for delisting. The Federally listed endangered peregrine falcon is a winter migrant within St. Croix and the Federally listed threatened roseate tern (*Sterna dougallii*) is a summer resident within St. Croix.

East Site – Previous avian surveys, conducted in 1986, resulted in the observation of the following Territorially-listed species at the East Site: snowy egret (roosting near the Salt pond and tracks found on the peninsula and surrounding areas), least tern (*Sterna antillarum antillarum* - observed on Crescent beach), white-crowned pigeon (observed flying over peninsula), brown pelican, great blue heron, black-crowned night heron, bahama duck, and peregrine falcon (Sugar Bay Land Development, Ltd 1986). The following listed bats may feed, rest, or nest on the East Site, based upon previous site investigations: fisherman bat (*Noctilio leporinus*) and the cave bat (*Brachyphylla cavernarm*) (Sugar Bay Land Development, Ltd 1986). The USVI DPNR/DFW marked a least tern nesting site that covers approximately 4,000 square meters on the northeast side of SARI west of Estate Judith's Fancy within the location of the East Site. Least terns have been documented nesting at 26 sites on St. Croix in various habitat types, including Crescent Beach at the East Site. Although the Caribbean race of least tern is not Federally listed, it is listed as endangered in the U.S. Virgin Islands Territory. Populations of least tern have declined on St. Croix due to predation by dogs, cats, and mongoose as well as human disturbance.

South Site –No site-specific T&E data are available for the South Site.

West Site – As stated previously, leatherback sea turtles have been caught in gillnets located outside of the bay as recently as 2006, and although the leatherback sea turtle would rarely nest near the West Site, a female recently (summer 2006) tried to nest at the Columbus Landing Site (Hillis-Starr 2007). A reference letter from W. Tobias dated 27 July 1993 stated that “occasionally a leatherback turtle nests at the sandy beach at the Columbus Landing Site (IRF 1993).” In addition, the West Site also provides nesting habitat for hawksbill and green sea turtles (Hillis-Starr 2007). In addition, the following Territorially-listed avian species have been observed at the West Site: snowy egret, brown pelican, and great blue heron (Ecosystems 1983). The Territorially-listed plant species stinging bush (*Malphigia infestissima*) has been observed along the western shoreline of SARI, near the Columbus Landing site; this plant has only been found on the north shore of St. Croix and Buck Island (Government of the U.S. Virgin Islands 1990).

3.6.3 Agency Correspondence

In a September 8, 2006 agency response coordination letter, NMFS stated that the ranges of four listed sea turtles (hawksbill, leatherback, loggerhead, and green sea turtles) occur in the vicinity of the three sites (See Appendix C for Agency Coordination Letters). Two Federally listed endangered sea turtles, hawksbill turtle and leatherback sea turtles, and two Federally listed threatened sea turtles, green turtle and loggerhead sea turtle, have the potential to be found within SARI. The hawksbill sea turtle requires coral reefs for food and refuge and has a peak nesting season that ranges from July through November. The leatherback sea turtles live in oceanic waters and come ashore to nest on beaches during the summer months. The green sea turtle feed in seagrass beds and comes ashore on beaches from June through July to nest. Juvenile green sea turtles can be found in coastal bays, inlets, lagoons, and offshore warm reefs. IRF (1993) reported that green and hawksbill sea turtles have been observed nesting on beaches on both sides of the bay and occasionally, a leatherback turtle nests at the sandy beach at Columbus Landing. Sea turtle refuge and forage habitat is discussed in more detail in Section 3.7.1.1.

Also in the September 8, 2006 agency coordination letter, NMFS stated that the ranges of two Federally-listed (threatened) species of coral, including elkhorn coral and staghorn coral, occur in the vicinity of the three sites (See Appendix C for Agency Coordination Letters). These species of coral have been observed in Salt River Canyon (Kendall et al 2005). Staghorn coral was observed on both the east and west wall; elkhorn coral was observed on the west wall only (Kendall et al 2005). The east wall is located approximately 0.12 nautical miles from the mainland of St. Croix.

An agency coordination letter requesting T&E information at SARI was sent to the USFWS on July 21, 2006 and no response has been received to date. In addition, a similar letter requesting T&E information at SARI was sent to the Commissioner of the USVI DPNR and to contacts at both the USVI DPNR/DEP and the USVI DPNR/DFW on July 21, 2006. No responses have been received to date from the USVI DPNR.

3.7 UNIQUE NATURAL RESOURCES

3.7.1 Ecologically Critical Areas

Ecologically critical areas include habitat designated as critical habitat for listed T&E species, essential fish habitat and habitat areas of particular concern, and other habitats that are protected by the DPNR, the CFMC in association with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), or other Executive Orders. These critical areas are discussed in more detail in the sections below.

3.7.1.1 Designated Critical Habitat for T&E Species

Public Law 95-632 (92 Stat. 375), signed in 1978, made extensive revisions to the Endangered Species Act of 1973. It requires consideration of the economic impact of designating critical habitat and review of the list of Federally endangered and threatened species every five years. Critical habitat is defined in the ESA as a specific geographic area that contains habitat features essential for the conservation of a threatened or endangered species (USFWS 2004). Designated critical habitat areas are necessary for the recovery of endangered or threatened species, even though the species of concern may not be documented in these areas.

The Endangered Species Act Amendments of 1978 define the term “critical habitat” as follows: (i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management consideration or protection; and (ii) specific areas outside the geographical area. Not all Federally listed species have designated Critical Habitat. The following species applicable to the project area have Federally designated Critical Habitat:

Leatherback Turtle Critical Habitat

The National Marine Fisheries Service (NMFS) has determined Critical Habitat for the leatherback sea turtle (*Dermochelys coriacea*) in waters adjacent to Sandy Point Beach, St. Croix, U.S. Virgin Islands. Sandy Point Beach is located within the Sandy Point National Wildlife Refuge, located on the southwestern tip of St. Croix, over 15 miles south west of Columbus Landing site, on the other side of the island. The action is being taken under Section 7 of the Endangered Species Act of 1973, as amended. 16 U.S.C. 1531 et. seq. (the “Act”) to provide protection to sea turtles using these waters for courting, breeding, and access to and from their nesting areas on Sandy Point Beach. All Federal departments and agencies are required to insure that actions authorized, funded, or carried out by them do not result in the

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destruction or adverse modification of the critical habitat. In an September 8, 2006 agency coordination letter, NMFS stated that the waters adjacent to Sandy Point on the southwest corner of St. Croix, up to and including the waters from the hundred fathom curve shoreward are designated as critical habitat for the leatherback sea turtle (50 CFR 226.207) (See Appendix C for Agency Coordination Letters).

3.7.1.2 Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC)

The Magnuson-Stevens Fishery Conservation and Management Act, (16 United States Code (USC) 1801 et seq. Public Law 104-208) authorizes responsibilities for the protection of Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPCs). The Act specified that each Federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by such agency that may adversely affect any EFH identified under this act. EFH is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Within SARI, ecologically critical areas include EFH, as identified by the CFMC (CFMC 2004), and HAPCs, as defined by the NOAA (NPS 2006).

The CFMC is responsible for the management of fisheries in Federal waters off the coasts of Puerto Rico and the USVI, including St. Croix, and specifies areas for protection in association with the MSFCMA (NOAA 1999). The CFMC has identified the following marine habitats as EFH within SARI: coral reefs, hard and soft bottoms, sand/shell bottoms, pelagic habitat (water column), benthic algae, and seagrass (CFMC 2004). In addition, mangroves are identified as estuarine EFH within SARI. EFH includes virtually all marine waters, substrates (mud, shell, rock, coral reefs), and associated biological communities within the defined exclusive economic zone, which includes SARI. These habitats provide forage and nesting areas for species that are included in detailed Fishery Management Plans (FMPs), including 15 species of reef fish, the spiny lobster, the queen conch, and corals/coral reefs. FMPs describe and identify EFH for a fishery, minimize to the extent practicable adverse effects on that EFH caused by fishing, and identify other actions to encourage the conservation and enhancement of that EFH. The EFH for 15 species of reef fish by the CFMC has been described in a Reef FMP. Of the 15 fish species included in the Reef FMP, 12 of these fish species have been observed utilizing mangrove habitat and/or the reef canyon walls at SARI (Kendall et. al 2005). The following fish species were observed utilizing mangrove habitat and/or the reef canyon walls at SARI and are part of the Reef FMP: banded butterfly fish (*Chaetodon striatus*), gray snapper (*Lutjanus griseus*), queen triggerfish (*Balistes vetula*), mutton snapper (*Lutjanus analis*), nassau grouper (*Epinephelus striatus*), red hind (*Epinephelus guttatus*), redbtail parrotfish (*Sparisoma chrysopterum*), schoolmaster (*Lutjanus apodus*), squirrelfish (*Holocentrus ascensionis*), sand tilefish (*Malacanthus plumieri*), yellowtail snapper (*Ocyurus chrysurus*), and white grunt (*Haemulon plumieri*) (CFMC 2004).

Within the U.S. Virgin Islands, for each category of fishery, all waters, from mean high water to the outer boundary of the exclusive economic zone, are protected for eggs and/or larvae. For other life stages, the following EFH are defined:

Designated Species with Fishery Management Plans (FMPs)	Defined Essential Fish Habitat (EFH)
Reef fish (15 species)	All substrates from mean high water to 100 fathoms depth
Spiny Lobster	Seagrass, benthic algae, mangrove, coral, and live/hard bottom substrates from mean high water to 100 fathoms depth
Queen Conch	Seagrass, benthic algae, coral, live/hard bottom and sand/shell substrates from mean high water to 100 fathoms depth
Coral Fishery	Coral and hard bottom substrates from mean low water to 100 fathoms depth

In addition to EFH, SARI (and the entire estuary of Salt River Bay) has also been designated as a HAPC for reef fisheries because of the ecological importance, sensitivity to human-induced degradation, and undergoing development activities that stress the habitat (CFMC 2004). Barrier reefs, deep reefs, patch reefs, extensive hard-bottom communities of gorgonid corals and sponges, unique elkhorn coral formations, and extensive seagrass beds, characterize the area. Salt River estuary is a nursery area for many commercially and recreationally important finfish and shellfish species, including spiny lobsters. Because all three sites (West Site, South Site, and East Site) are located adjacent to Salt River Bay, the three sites contain habitats designated as EFH and HAPC in association with the Bay, including mangrove wetlands, intertidal flats/salt ponds, soft bottom lagoons, mud flats, sandy beaches, rocky shores, the water column, seagrass beds, non-vegetated bottoms, coral reefs, algal plains, geologic features, and live bottoms.

3.7.1.3 Other Critical Areas

In addition to Federally designated Critical Habitat, other habitats exist in the vicinity of SARI that are protected by the VIPDNR, the CFMC in association with the MSFCMA, or other Executive Orders. These habitats are discussed in more detail in the following paragraphs.

Least Tern Habitat

Least terns have been documented nesting at 26 sites on St. Croix in various habitat types including beaches, salt flats, dredge spoil piles, and at the HOVENSA oil refinery. Although, the Caribbean race of least tern is not Federally listed, it is listed as endangered in the U.S. Virgin Islands Territory. Populations of least tern have declined on St. Croix due to predation by dogs, cats, and mongoose as well as human disturbance. At the East Site, the USVI DPNR/DFW marked a least tern nesting site that covers approximately 4,000 square meters on the northeast side of SARI west of Estate Judith's Fancy. Although protected by the USVI DPNR/DFW, this nesting site is not Federally recognized as Critical Habitat.

Mangrove Habitat

Salt River Bay has been characterized as supporting one of the largest remaining areas of mangrove forest in the Territory. Mangroves are considered both EFH and critical habitats. The fringing red mangrove prop roots provide critical habitat for juvenile reef fish species and provides critical nursery habitat for a variety of commercially and recreationally important marine organisms, including fish and crustacea (IRF 1993). The mangroves are critical habitats for winter migrating birds and numerous endangered species.

Coral Reef Habitat and Submarine Canyon

Coral reefs are the most complex, species-rich marine ecosystems. Coral reefs are considered both EFH and critical habitats and support T&E species, protect marine mammals, and sea turtles. Within the SARI property, a submerged barrier reef extends west of Buck Island, along the length of the north coast narrow shelf, broken only by the Christiansted submarine canyon off Christiansted, and the Salt River submarine canyon off Salt River. Approximately 41 species of corals have been observed during the studies at the SARI submarine canyon, two species that are listed as Federally threatened have been observed at SARI (Kendall et al 2005) and are discussed in more detail in Section 3.6. Executive Order 138090, *Preserve and Protect Coral Reef Ecosystems*, recognizes the significant ecological, social, and economic values provided by the Nation's coral reefs and the critical need to ensure that Federal agencies are implementing their authorities to protect these valuable ecosystems. In addition, NOAA established a Coral Reef Conservation Program (CRCP) as part of the national effort to conserve coral reefs.

3.7.2 Designated Natural Areas

Executive Order 13158, Marine Protected Areas (MPAs), helps to protect the significant natural and cultural resources within the marine environment for the benefit of present and future generations by strengthening and expanding the Nation's system of MPA. An MPA is defined as an area of the marine environment that has been reserved by Federal, state, Territorial, tribal or local laws or regulations to provide lasting protection to part or all of the existing natural or cultural resources. In addition to MPA, the VICZMA of 1978 stipulates that certain areas in the USVI are of greater significance, whether for economic, cultural, or environmental reasons, and are nominated as APC. As part of the VICZMP, the USVI government has developed the criteria for areas that are nominated as being of particular concern. MPAs also include areas designated at APCs. The following MPAs have been described in the vicinity of and including SARI:

Salt River Bay Marine Reserve and Wildlife Sanctuary – This MPA encompasses the water acreage of SARI. Within the defined area, there are various types of marine/wetland ecosystems within small and manageable units, maximizing biodiversity within minimum areas. In February 1980, this MPA was designated a *National Natural Landmark* by the Secretary of the Department of the Interior.

Salt River Bay and Watershed APC – The Salt River Bay and watershed is one of 18 APCs designated by the USVI DPNR (IRF 1993). The Bay was selected as an APC due to its unique mix of resources. There are a total of 27 T&E plants and animals that reside within the Salt River Bay Area. This area is home to the largest remaining mangrove forest in the USVI, which supports many algae and invertebrates, including the valuable Mangrove and Flat Tree Oysters. This site also supports extensive seagrass beds, coral gardens, and the reef beyond. It is also the only known land area in the United States visited by Christopher Columbus. This 690-acre portion of Salt River Bay is also included in the National Registry of Natural Landmarks.

Salt River Bay National Historical Park and Ecological Preserve – The Salt River system is located along the north-central coast of St. Croix, and contains the most significant historical and natural resources known in the Virgin Islands. Prehistoric and colonial-era archeological sites and ruins are found in a dynamic, tropical ecosystem that supports T&E species.

St. Croix Coral Reef System APC – This APC is located offshore of St. Croix; it is a 3 mile Territorial sea portion of a geological platform which extends from Point Udall and parallels the shoreline from Coakley Bay to the area of Great Pond Bay. The coral reef is of great scientific interest for the variety of reef types and forms it supports. Of 60 species of stony corals in the Western Atlantic Ocean, 3 species of fire corals and 34 species of hard corals are found in this APC. Because the east wall and west wall of the submarine canyon at SARI are located within the St. Croix Coral Reef System APC, both elkhorn coral and staghorn coral have been observed in this APC.

St. Croix Natural Heritage Area – The entire island of St. Croix was recently and officially designated as Heritage Area 1594 by the U.S. Congress.

3.8 CULTURAL RESOURCES

This section describes the cultural resources within SARI. Cultural resources include archaeological sites; historic resources, which are defined as buildings and structures that are 50 years old or older; and cultural landscapes.

3.8.1 Background

Salt River Bay is the only known location on U.S.-owned land where Columbus landed. On November 14, 1493, during his second voyage to the New World, Columbus anchored off-shore at Salt River Bay and sent a boatload of more than two dozen armed men to a Carib Indian village located on the Bay's western shore. Returning from their reconnaissance with several enslaved Taino women and children whom they had "liberated," this party encountered a canoe of villagers who briefly skirmished with Columbus' party, resulting in a fatality on each side. Columbus would name this location Cabo de las Flechas or Cape of the Arrows, in memory of this encounter. The village where the Spaniards landed is known as the Columbus Landing site and is the only prehistoric village in the USVI that is known to have had a stone-lined ball court with petroglyphs, and associated social and religious significance. Salt River Bay was subsequently home to seventeenth-century English (1641, 1645-50), Dutch (1642-1645), and French (1650-1696) settlements, and the triangular fortification (known as Fort Flamand or Fort Salé) begun by the English in 1641 and subsequently completed by the Dutch in 1642 remains in SARI. SARI is thus home to several known historically significant sites and the Salt River Bay itself is a significant historic landscape.

The archaeological resources of SARI have been the subject of investigations, excavations, and collection since the 1880s. A number of archaeological surveys and site investigations occurred prior to SARI's establishment in 1992, and the NPS has conducted additional investigations since SARI's establishment. All of the land and waters within SARI's boundaries have yet to be investigated for archaeological resources, and there is the potential for the identification of sites and resources in areas that have yet to be inventoried.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR Part 800), requires Federal agencies to consider the effects of their undertakings on historic properties and affords the Advisory Council on Historic Preservation a reasonable opportunity to comment. The purpose of the NHPA is to ensure that Federal agencies consult with state and local groups before non-renewable cultural resources are impacted or destroyed and ensures that preservation values are factored into Federal agency planning and decisions.

3.8.2 Archaeological Resources

Information on identified archaeological resources at SARI is taken from the draft *Archaeological Overview and Assessment of Salt River Bay National Historical Park and Ecological Preserve* (Hardy In review) by Archaeologist Meredith Hardy of the NPS' Southeast Archaeological Center (SEAC), and should not be cited without the permission of SEAC. Several terrestrial and underwater archaeological surveys have taken place on SARI prior to the creation of the park, and in some instances information on sites is missing and/or contradictory. This listing of sites is taken from the Appendix: Description of Archaeological Sites, from the draft *Overview and Assessment*, and employs the site numbers assigned by the NPS. Several of these sites are complexes of one or more resources, which are described separately. Table 3-4 describes the recorded archaeological sites within the boundaries of SARI. All sites described in this table are located within SARI.

Table 3-4. Recorded Archaeological Sites at SARI

Site #	Site Name	Location	Description
SARI-1	Salt River Point	Western mouth of Salt River Bay	Site complex containing two sites
SARI-1.01 (12VAm1-6)	Columbus Landing Site	Salt River Point	Prehistoric village site where Columbus Landing occurred; location of a prehistoric ball court; subject of archaeological investigations since the 1880s, with major excavations by Gudmond Hatt in the early 1920s; related to other prehistoric sites in the region, possibly including those in Estate Judith's Fancy in SARI
SARI-1.02	Fort Salé	Salt River Point	English-Dutch triangular fortification built in 1641-1642. Overlies Columbus Landing Site. Unreported excavations in late 1970s by OSA
SARI-2 (12VAm1-5)	Judith's Fancy	Hemer's Peninsula, East Side of Bay	Site complex consisting of satellite prehistoric occupations associated with SARI-1.01 as well as possible historic occupations
SARI-2.01	Lignum Vitae Site	West of Judith's Fancy	Prehistoric midden with burials located on the ocean front on the east side of the bay; reported as FS 4 in Joseph 1989
SARI 2.02	Spiceberry Site	West of Judith's Fancy	Site consisting of plain earthenwares, lithics and one lead shot. Possible Danish/English period slave occupation; reported as FS 3 in Joseph 1989
SARI-2.03	Button-wood Site	West of Judith's Fancy	Prehistoric/historic artifact scatter; recorded by Vescelius as Site 5
FS 1	Torchwood Site	West of Judith's Fancy	Prehistoric lithic scatter on hillslope, possibly displaced; reported as FS 4 in Joseph 1989
SARI-2.05	Oysterwood Site	West of Judith's Fancy	Prehistoric scatter; reported by Hatt
SARI-2.06	Soldierwood Site	West of Judith's Fancy	Prehistoric lithic/ceramic site; recorded as FS 2 in Joseph 1989
SARI-3	English Village	Eastern Shore of Salt River Bay	Location of four or five English house sites from the late 1640s. Scattered brick concentrations reports along the eastern shore of the bay. Site boundaries not defined
SARI-4	Machineel Site	Estate Morningstar	Danish windmill/water tower site, not field identified, most likely located in Estate Morningstar
SARI-5	Whitehorse Reef	East of the entrance to Salt River Bay	Reef containing several known shipwrecks; managed by the VI government

The Columbus Landing Site (SARI-1.01) and Fort Salé (SARI-1.02) are listed on the National Register of Historic Places (NRHP) as a National Historic Landmark, the highest designation of significance offered by the NHPA. The Lignum Vitae site (SARI-2.01) has been determined eligible for listing on the NRHP by the VI SHPO. The NRHP eligibilities of the Spiceberry Site (SARI-2.02), Buttonwood Site (SARI-

2.03), Torchwood Site (SARI-2.04), Oysterwood Site (SARI-2.05), and Soldierwood Site (SARI-2.06) are presently unknown. The locations of the English Village (SARI-3) and Machineel Sites (SARI-4) are unknown as is their NRHP status. The NRHP eligibility of shipwrecks on Whitehorse Reef (SARI-5) is also unknown

MREC Alternative Sites

Preferred Alternative (East Site) – The East Site has been surveyed on several occasions, most recently by Meredith Hardy during the summer of 2005. Gudmond Hatt visited this side of the Salt River Bay in 1924, while he was conducting excavations of the Columbus Landing Site (SARI-1.01); the site was identified as a small archaeological site on the basis of surface deposits (SARI-2.05). Gary Vescelius conducted a survey in the area in the early 1950s as part of an island-wide survey of St. Croix by Yale University, and recorded a site with prehistoric components that he thought was Hatt's site, although it was recorded at a different location and hence is given its own subsite number (SARI-2.03). Alfredo Figueredo conducted a survey along Salt River Bay's eastern shore in 1986 for a proposed development by the Sugar Bay Land Development Company, and identified a large prehistoric site on the oceanfront (SARI-2.01). Both Figueredo and later New South Associates conducted testing of this site (SARI-2.01); New South Associates' (Joseph 1989) survey of the area (1989) was for a planned development that never came to fruition. Testing at SARI-2.01 revealed a dense dispersed midden deposit with human remains, suggesting the presence of multiple households. The 1989 survey also identified the locations of three more archaeological sites in Estate Judith's Fancy (SARI-2.02, 2.04, and 2.06) (Joseph 1989).

Meredith Hardy of the NPS Southeast Archaeological Center surveyed NPS portions of the MREC alternatives in 2005, with the most intensive survey directed on the East Site. The results of Hardy's survey (2007) in this area confirmed the findings of prior surveys and suggest that three of the sites on the East location, SARI-2.03, SARI-2.05 and SARI-2.06, may be connected. Hardy's survey consisted of two transects of shovel tests along the eastern shore of the marina that were dug for the proposed Virgin Grand hotel. Cultural materials (artifacts) were found in shovel tests conducted between SARI-2.03 and SARI-2.05, suggesting that these sites and SARI-2.06 between them may be part of the same occupation. However, Hardy found that the area had been heavily disturbed and the deposits from both sites may have been scattered. Hardy's shovel tests in this area revealed a scatter of shell, possibly indicative of a prehistoric midden, although also possibly reflecting the excavation of the marina from the salt pond that was once present in this location. Hardy's efforts were not sufficient to determine the National Register of Historic Places (NRHP) eligibility of archaeological deposits in this location.

Hardy's shovel tests A29, A30, and A31, located near the base of the hill that is located in the northeast corner of SARI's boundaries, encountered a small earthen mound covered with a scatter of burned and fire-cracked rocks. Shovel tests A30 and A31 encountered prehistoric sherds as well as shell. Hardy suggested that these deposits were likely associated with SARI-2.01 and are present within that site's western boundaries. She further indicated that time constraints precluded further testing of this location (Hardy 2007).

Testing of SARI-2.01 completed by Hardy as well as prior investigations indicates that this is a potentially NRHP eligible site. Hardy (2007:49) recovered C14 days from the site between AD 540 and 890, and human remains have been uncovered during excavations by Hardy and others. The relationship of SARI-2.01 to the contemporary Columbus Landing Site (SARI 1) is unknown, but it is assumed that SARI-2.01 is either a satellite domestic occupation or a special activity locus. Next to the Columbus Landing Site, SARI-2.01 is the second most significant prehistoric site in SARI and should be protected.

South Site Alternative – No archaeological survey has been completed for the South Site. This property is located on a knoll and small projections in the upper reaches of the bay and should also be considered to have moderate to high site potential, with impacts where the existing structures are located.

West Site Alternative – Historically, Grieg Hill, which overlooks the Columbus Landing Site, was reportedly a sacred site associated with the ball courts and village of the Columbus Landing Site. However, this site was bulldozed and distributed by modern construction, including the building of the 5,600 square-foot Kumpitch House, the current SARI Visitors Center. Meredith Hardy conducted an intensive archaeological survey of the former Kumpitch House grounds, located within the West Site (Hardy 2007). Hardy noted that "the area around the Kumpitch House has been terraced and landscaped" and no sites were found on Greig Hill, on which the Kumpitch House sits. Alfredo Figueredo et al. (1989) conducted a reconnaissance on Salt River Marina portion of this alternative in 1989. Only limited shovel testing was conducted during this reconnaissance, which did not identify any archaeological remains on the marina site proper but which did recover prehistoric pottery due north of the marina that was attributed to the Columbus Landing Site (SARI-1.01). This reconnaissance was not of sufficient intensity to assess the presence of archaeological remains on the Salt River Marina site. As the Salt River Marina is not on NPS property, this location was not surveyed by Hardy (2007). The Salt River Marina site is partially mangrove swamp with low archaeological potential. Elevated portions of this location would appear to have a moderate to high site potential; however, these are also the locations of the existing buildings of the Marina that may have impacted any archaeological resources that might be present.

Abandoned Hotel and Haul Road Site

Abandoned Hotel – There are no known archaeological resources on the location of the abandoned hotel site. One-half to one-third of the landform on which this hotel rests is largely land created with dredged spoil acquired from the Mangrove Lagoon located behind the hotel.

Haul Road Site – As previously stated under the East Site Alternative, Gudmond Hatt visited the east side of the Salt River Bay in 1924 and located a small archaeological site on the basis of surface deposits (SARI-2.05). Hardy found that the area had been disturbed and the deposits from the site may have been scattered. Hardy's efforts were not sufficient to determine the National Register of Historic Places (NRHP) eligibility of archaeological deposits in this location.

Meredith Hardy conducted a site visit along the route of the proposed Haul Road on the 12th and 13th of June 2007. The site visit consisted of a field walk along the existing overgrown road bed, which is primarily a bulldozed road approximately 20 feet wide. She observed no standing ruins, although there is some potential for buried historic deposits at the site. Previous lay down areas and "road intersections" were also observed.

Underwater Archaeology

An underwater archaeological reconnaissance of Salt River Bay was conducted in 1989 by the Interagency Archaeological Services Division (IASD) of the NPS. The following description of this reconnaissance survey is taken from Hardy (In review).

The first element of this survey was a magnetometer remote sensing survey of the bay. This survey identified six large anomalies possibly representing historic shipwrecks, however, it was noted that the presence of dredge lines and spoil made the interpretation of the remote sensing results difficult.

Snorkel reconnaissance was conducted of near-shore locations adjacent to known archaeological sites in the bay and of the reefs outside the bay. Five areas were examined: Area 1 – a small cove south of Fort Salé, Area 2 – an area on the eastern shore south of the abandoned hotel, Area 3 – the beach north of the Columbus Landing Site, Area 4 – Whitehorse Reef (east of Salt River Bay Canyon) and Area 5 – the reefs west of the canyon.

This reconnaissance identified four clusters of brick in Area 2, which were interpreted as off-shore evidence of the English Village (SARI-3). Brick included bright-red high-fired examples found elsewhere on 17th century English sites and yellow to buff colored Flemish examples. However, an English-style glass wine bottle and a piece of historic ceramic known as Willowware (pearlware) encountered with the bricks both dated to the first quarter of the nineteenth century, too late to have been part of the seventeenth century settlement. A historic ceramic sherd, a metal rod, and a chain were also found in Area 2. Additional scatters of brick were found in Area 1. Artifacts in Area 3 included ballast stone scatters, a rudder brace, more bricks, a piece of Willow Ware transfer-printed earthenware, and an intact English wine bottle. The survey in Area 4 identified a "snub-nosed" cannon – conversations with personnel from the NOAA facility revealed that four additional pieces of ordnance, including two more "snub-nosed" cannons had been observed by NOAA staff in this area. The IASD survey also identified a 1970s era freighter wreck in this area. Finally, NOAA personnel reported an anchor in Area 5, but that was not identified in the IASD survey.

3.8.3 Historic Resources

There are two historic resources in SARI: Fort Salé, which is recorded as archaeological site SARI-1.02; and a Danish well tower located on the edge of the mangrove swamp whose NRHP eligibility is also unknown. The ruins of a Danish Customs House are located on lands adjacent to the park that either the NPS or Virgin Islands Government may acquire in the future. None of the alternatives would have an effect on these historic resources.

There is a possibility that the road bed that the proposed Haul Road would follow is the same one illustrated on historic maps (ca. 1647). On the historic map there are historic structures located nearby (on the land/east and upland side of the road).

3.8.4 Cultural Landscape

Given the historical significance of the Columbus Landing Site and the association between this site and the natural landscape of Salt River Bay, SARI must be considered as a cultural landscape. The elements of this landscape should include, at a minimum, the Columbus Landing Site, Fort Salé, and the Bay itself.

There are various modern intrusions visible on the slopes surrounding the bay and in the vicinity of the Columbus Landing Site itself. Notable among these are the unfinished building and tower of the abandoned hotel structure, opposite the Columbus Landing Site. Over the last five years development in SARI watershed has greatly increased, and most of the ridgeline to the southeast and south are scarred with new land clearing or recently completed large homes in excess of 3000 sq ft. This development has taken place without consideration of its impact on SARI's viewshed. Recently, with the creation of the SARI Task Force (an informal group of agency representatives, homeowners, and business parties working together to improve compliance in the Salt River Bay), the Virgin Islands Government has provided copies of building permits to NPS for review, especially those adjacent to NPS owned property. However the viewshed today has been altered dramatically from the way it was almost 25 years ago when the bay was first proposed as a NP unit and is significantly different from its appearance at the time the park was created in 1993.

3.9 HUMAN ENVIRONMENT

This section discusses the human environment at SARI, including recreation, socioeconomic conditions, environmental justice, aesthetics, public health and safety, energy requirements and conservation, and infrastructure.

3.9.1 Recreation

Salt River Bay offers visitors a variety of recreational activities. Guided land tours, scuba diving, snorkeling, kayaking, hiking tours, beach going, picnicking, swimming, and camping by permit for special occasions along the Columbus Landing beach. Tours can be arranged through the Virgin Islands Department of Tourism and the St. Croix Chamber of Commerce has information on various tours. There are no campsites at Salt River Bay; however, St. Croix has one private campground at Mount Victory on the island's west end. The St. Croix Coral Reef System provides recreational resources that include recreational activities such as water skiing, scuba diving, pleasure boating and jet skiing. Salt River Bay also provides opportunities for avian and other wildlife viewing.

The USVI DPNR/DFW is responsible for the conservation and management of fisheries and enforcement of boating and fisheries regulations (authority: V.I. Code Title 12 Conservation, Title 25 Navigation, and the Boating Safety Act of 1972). Currently, Salt River Marine and Wildlife Sanctuary Regulations prohibit fishing or harvesting of fisheries resources within the Sanctuary (VIDPNR 2004)

3.9.2 Socioeconomic Conditions

The Region of Influence (ROI) is a geographic area selected as the basis on which demographic and economic impacts of project alternatives are analyzed. The ROI for socioeconomic conditions is considered to be the census tracts within SARI. The census tracts are 9706 and 9707 within SARI.

Demographics

Population demographics to the census block level are available from the U.S. Census Bureau for SARI from the 2000 census. Census blocks are the smallest geographic entity for which the Census Bureau collects and tabulates decennial census information. The U.S. Census Bureau provides data for these areas and their subareas in hierarchical sequences down to the census tract, block group, and block. SARI is located within the census tract 9706 (block groups 1 and 4) and census tract 9707 (block group 2). Data for the block groups are located on Table 3-5.

Table 3-5. Population Demographic Data within the ROI for SARI

Area	Total Population	% White	% Non-white	% Multi-racial
Census Tract 9606				
Block Group 1	360	55	34	11
Block Group 4	130	34	51	15
Census Tract 9707				
Block Group 2	283	68	30	2

Source: 2000 US Census

According to the 2000 census, the total population in the vicinity of SARI is 773 persons and is 55 percent white; 31 percent black; 1.6 percent Asian; 3.4 percent "other," which includes American Indians, Native Alaskans, Native Hawaiians, and Pacific Islanders; and 9 percent multi-racial, which includes

persons reporting two or more races (U.S. Census Bureau 2005). In addition, out of the 773 persons within the vicinity of SARI, 5.8 percent were children under the age of 5, and 19.9 percent were school age (5-19 years).

East Site

The East Site falls within Block Group 1, Blocks 1000, 1003, 1007, 1008, and 1009. The 2000 census did not provide data on Blocks 1007 and 1009. Within Blocks 1000, 1003, and 1008, the total population is 40 persons and is 70 percent white, 22.5 percent black, 5 percent “other,” and 2.5 percent multi-racial. Out of the 40 persons within Blocks 1000, 1003, and 1008, 2.5 percent were children under the age of 5, and 20 percent were of school age (5-19 years). Census Blocks 1000, 1003, and 1008 are located within SARI as well as outside the SARI boundary. The population within these blocks lives within the Estate Judith’s Fancy community. No persons currently live within the East Site.

South Site

The South Site falls within Block Group 4, Block 4000 and 4001. The 2000 census did not provide data on Block 4000 and 4001.

West Site

The West Site falls within Block Group 2, Block 2000. The total population within Block 2000 is six people. Three people are white and 3 people are black. There are no children under the age of 20 within this Block (U.S. Census Bureau 2005).

3.9.3 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, is designed to focus the attention of Federal agencies on the human health and environmental conditions in minority communities and low-income communities. It requires Federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. In an accompanying Presidential memorandum, the President emphasized that existing laws, including NEPA, provide opportunities for Federal agencies to address environmental hazards in minority communities and low-income communities.

Table 3-6 shows the racial and income distribution of the resident population of the census tracts in the Salt River Bay area. The minority population is defined as the non-white and multi-racial population of a given area and includes black, Asian, American Indian, Native Alaskan, Native Hawaiian, Pacific Islander, persons reporting some other race, and persons reporting two or more races.

Table 3-6. Race, Income and Poverty Data for the Salt River Bay Area

Census Tract Block Group	Site Location	Total Population	Total Minority Population	Medium Household Income in 1999 (US Dollars)	Persons Living Below Poverty Level
Block Group 1	East Site	360	162 (45%)	77,500	134 (37%)
Block Group 4	South Site	130	85 (65%)	37,500	120 (92%)
Block Group 2	West Site	283	90 (32%)	38,750	113 (40%)

Source: 2000 US Census

For the purpose of evaluating environmental justice for the MREC, low income populations were defined as people living in poverty, according to the 2000 census data. The U.S. Census Bureau uses a set of

money income thresholds that vary by family size and composition to determine who is poor. If a family's total income is less than that family's threshold, then that family, and every individual in it is considered poor. The poverty thresholds do not vary geographically, but they are updated annually for inflation using the Consumer Price Index.

3.9.4 Aesthetics

The aesthetic nature of SARI's surrounding area is well preserved as most of the surrounding lands have been set aside for conservation due to the outstanding historic and natural resources that exist at the sites. Human influences at the sites can be seen from the water and include previously developed residential parcels of land, existing roadways, and other existing structures.

East Site – The site is currently accessed by private paved roads that traverse a residential gated neighborhood to the south and east of the NPS-owned property. The 70-acre East Site was previously graded and re-sculpted by heavy machinery for the 1960 development project. Figure 3-7 depicts the historic shoreline of the east side of Salt River Bay before the area was re-sculpted. The only area that was not disturbed is an archeological area located on the north side of the site. The site features a large vegetated hill about 130 feet above sea level that provides a panoramic view of the ocean and the bay. However, this hill was flattened and several roads cut into contours along its southwest slope during the 1960 development project. This site also has a 10-foot-deep manmade lagoon (Mangrove Lagoon) that opens into Salt River Bay and is about 300 meters from the primary Bay inlet and the open ocean. The Mangrove Lagoon was dredged and the shoreline repositioned to support the proposed 230 cottages for the hotel/yacht marina development. The site has been neglected for the last 40 years. The majority of the landscape other than adjacent to the Mangrove Lagoon and the Salt Pond is dominated by non-native invasive plants. Mangrove wetlands fringe the Salt Pond, Mangrove Lagoon, and Mangrove Canal. The mud flat area adjacent to the Mangrove Lagoon is regularly used for ORV sport which inhibits vegetation growth. Undeveloped roads also exist at the East Site, due to visitor access for recreation along the beach areas.

There are many developed residences located in Estate Judith's Fancy, located to the east of the East Site on Jefferson Way, Bacuba Lane, and Hamilton Drive.

South Site – The former NOAA Undersea Research Center is located on the eastern shore of the 58-acre South Site. The site is located between Triton Bay and Sugar Bay at the headwaters of Salt River Bay and mangrove wetlands line the shores of these bay areas. This privately-owned parcel includes several structures and a bulkhead along the water for docking boats. Road access is limited to a private road that winds north to the site from the nearest public road. Two Estates, Estate Montpeller and Estate St. John, are located to the south of this site.

West Site – This site encompasses two non-contiguous areas, including the developed NPS Visitor Contact Station and the Salt River Marina. The NPS Visitor Contact Station, a former private home, is located on a hilltop approximately 100 feet above the beach on the northwest side of the bay. The portion of the West Site with the NPS Visitor Contact Station is made up of several parcels of approximately 6.0 acres in all and includes a house, guest quarters, accessory structures and a beach. The portion of the West Site with the marina hugs the shoreline on approximately 14 acres along the western edge of the bay. Mangrove wetlands fringe the area surrounding the marina. This property is privately owned and includes several buildings used for boat maintenance, painting, constructing boats, and office space, plus parking lots for marina guests. Several mooring buoys are located in the bay. Estate Salt River, Greig Hill, and Sugar Bay Subdivision are located adjacent to the West Site.

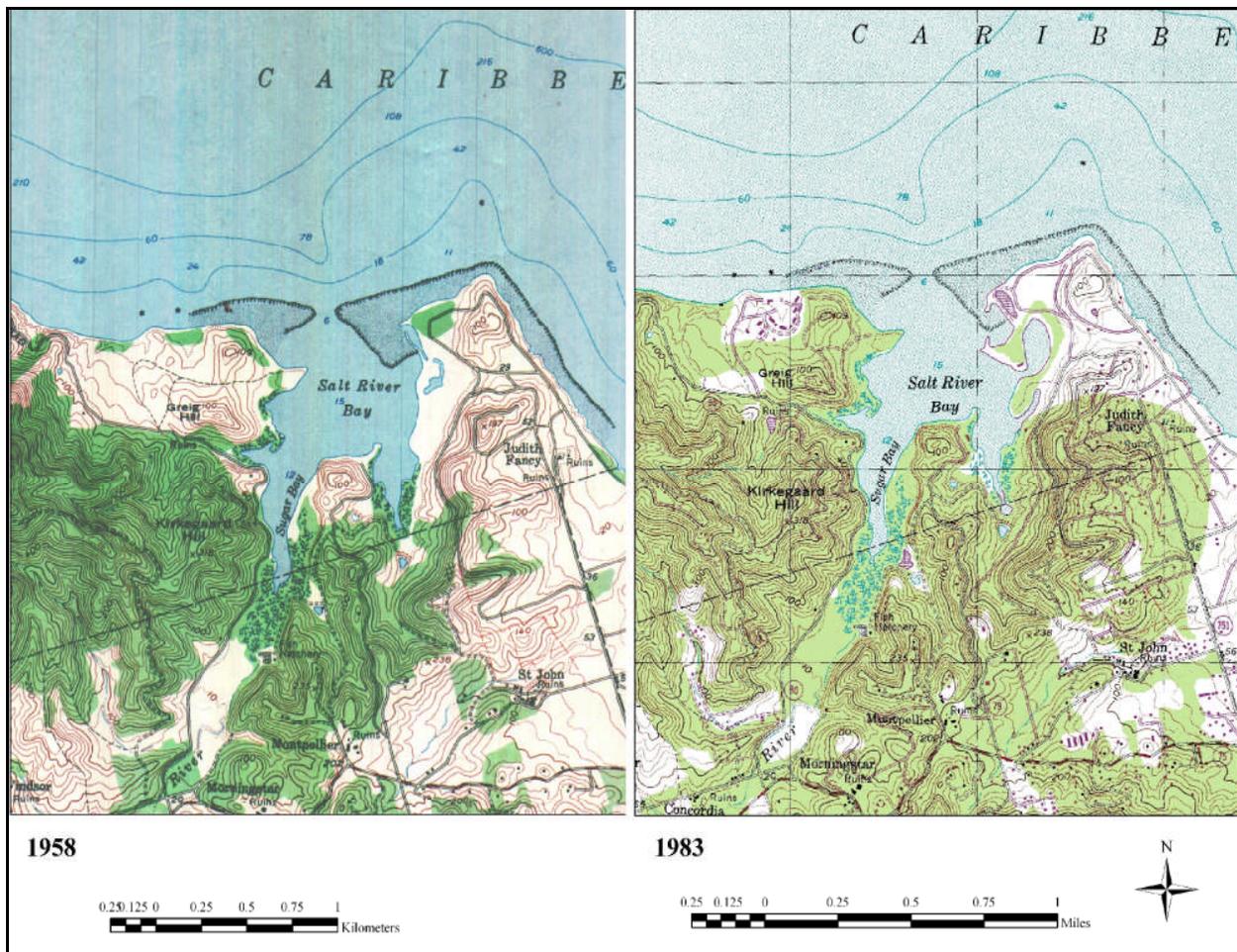


Figure 3-7. Topographic Maps (1958 and 1983) of Salt River Bay

3.9.5 Public Health and Safety

General public health and safety concerns throughout SARI include:

- Sunburn
- Hazardous surf conditions and crosscurrents
- Potentially harmful stingrays, fire coral, spiny sea urchins, and other stinging organisms inhabit shoreline shallows and in near-shore reefs
- Contact with hazardous vegetation includes the poisonous manchineel tree (includes sap, leaves, bark, and fruit) which can cause a chemical burn and the Christmas bush – holly-like, that can cause a severe rash.
- Illegal drug sales
- Poaching
- Spearfishing
- Trash dumping
- Abandoned ruins
- Wells and culverts
- Feral dogs

Site-specific public health and safety concerns would be the deteriorating condition of the abandoned hotel. Additionally, the poisonous manchineel tree has been observed at the East Site.

3.9.6 Energy Requirements and Conservation

Existing energy requirements at SARI are minimal. The NPS Visitor Center is only open 3 days a week in November through June.

3.9.7 Infrastructure

3.9.7.1 Utilities

Utilities – The following utilities currently serve the Island of St. Croix:

- **Electricity** – is provided by the USVI Water and Power Authority (WAPA), a public-power utility. WAPA is an autonomous governmental instrumentality of the Government of the Virgin Islands that produces and distributes electricity. Power is produced at the Richmond Plant, which consists of 2 steam turbine generators and 4 combustion turbine-generators.
- **Water** – Groundwater and desalinization are the main potable water sources on St. Croix. The WAPA produces desalinated water that is sold exclusively to the USVI Department of Public Works (DPW) for distribution. The St. Croix public water supply is supplemented (about 30 percent) by well fields.
- **Natural Gas** – Although there are no natural gas pipelines, gas appliances use bottled propane gas, which is readily available from private suppliers. Other types of petroleum distillate fuels are available.
- **Sanitation** – Sanitation on St. Croix includes a public sewer system and a combination of private disposal systems which are not connected to the public system, individual septic systems, or small private treatment plants. The DPW is responsible for operations and maintenance of the public sewer systems. St. Croix is served by one primary waste water treatment plant (WWTP). The treatment plant has an 8,000 foot ocean outfall. The sewage collection system consists of 87 miles of gravity and force mains with 3 major sewage lift stations and 12 feeder pump stations.
- **Solid Waste Disposal** - Solid waste operations, which include collection and disposal, are under the direction of the DPW. Solid waste collection is a combination of curbside collection and roadside garbage bins. Waste is disposed via landfill on the island.
- **Telecommunications** – Internet service providers include NetZero and Comcast.com. NetZero services include internet access, accelerated dial-up services, premium email, and personal Web-hosting and domain services. Comcast.com is pure broadband. There is a large number of separate telephone companies located at St. Croix and include AT&T, Verizon, Mediacom Phone, and Choice Communications.

East Site – The East Site is undeveloped therefore, no utilities are located within this site. The community (Estate Judith's Fancy) located directly to the east of this site is not serviced by public water and sewer utilities but relies on domestic groundwater wells for potable water (EA 2006). Private home rely on cistern water, where down spouts are lead into the cistern where water is stored for household consumption. Septic systems are used in each household throughout Estate Judith's Fancy; electric power is provided by VI WAPA (EA 2006). During power outages, the majority of homes in SARI are equipped with gasoline powered generators. Information regarding either the quantity or location of

groundwater wells is unknown. At times, when water runs low, desalinated water is delivered by truck for approximately \$200 for 3,500 gallons.

South Site – The South Site is not serviced by public water and sewer utilities. It was probably served by one or more groundwater wells while operating under the direction of NOAA, but the existence of a well could not be verified (EA 2006). A septic system was probably used at this site and electric power is provided by VI WAPA (EA 2006).

West Site – This Visitor Contact Station is not serviced by public water and sewer utilities, but relies on domestic groundwater wells for potable water. A septic system is in operation at the site; electric power is provided by WAPA. One domestic groundwater well exists on-site; water from this well is treated by reverse osmosis prior to consumption.

The marina is not serviced by public water and sewer utilities, but relies on domestic groundwater wells for potable water (EA 2006). A septic system is probably in operation at the marina but the existence of one has not been verified; electric power is provided by WAPA. The marina site is probably served by one or more groundwater wells providing adequate potable water for consumption or various marina related needs. However, the existence of a well could not be verified (EA 2006).

3.9.8 Road Network

Site Access

East Site - The site is currently accessed by private paved roads that traverse a residential neighborhood (Estate Judith's Fancy) to the east and south of the NPS-owned property. Additionally, an overgrown unused access road (north-south road alignment) connects the East Site to Route 79 (Bennie Benjamin Road) (see Figure 2-3).

South Site - Road access is limited to a private road that winds north to the site from the nearest public road Route 79 (Bennie Benjamin Road) (see Figure 2-3).

West Site - Road access to the Salt River Marina and the Visitor Contact Station is from the south by way of public roads, Route 80 (North Shore Road) and Route 801 (see Figure 2-3).

Traffic

There is very little traffic flow to the East Site. The East Site is accessed through the Estate Judith's Fancy community which allows public access to the beach. The South Site is privately owned; therefore no public vehicles can access the site. The West Site experiences some vehicular traffic to the marina and to the Visitor Contact Station.

The highway safety issues that are relevant to traffic flow to and from the sites are common to all alternatives. Narrow, winding, roads with no paved shoulders, and sometimes overgrown travel lanes on certain segments of Estate Judith's Fancy roads, Route 79, and Route 80 exist (see Figure 2-3).

3.10 VISITOR USE AND EXPERIENCE

Currently there are limited commercial visitor services authorized by the NPS at SARI. SARI is still in the developmental stage. The Visitor Center is open November through June. The hours are 9:00 am to 4:00 pm Monday, Wednesday, and Friday. Park staff are available for scheduled tours of SARI by appointment only. When the Visitor Center is closed, information may be obtained at the NPS visitor

contact station at Fort Christianvaern, Christiansted National Historic Site. Salt River Bay offers visitors a variety of recreational activities. Guided land tours, scuba diving, snorkeling, kayaking, and hiking tours. The St. Croix Coral Reef System provides recreational resources that including water skiing, scuba diving, pleasure boating, and jet skiing. Food, lodging, and other services are available in Christiansted, Frederiksted, and at other island locations. SARI is five miles from Christiansted National Historic Site and can be reached by car via Rt. 75 from Christiansted, connecting to Rt. 80.

3.11 PARK OPERATIONS

Factors in this category describe the existing conditions related to park operations and administration necessary to currently manage SARI. Most of the operations necessary to manage SARI occur at Christiansted National Historic Site, as there are few daily operations related to maintaining SARI including the Visitor Contact Station at SARI.

Personnel – Due to the early developmental stage of SARI there are no permanent NPS staff located at SARI. The staff for SARI is located at park headquarters at Christiansted National Historic Site in Christiansted. SARI is one of three parks managed by one management team which also oversees Christiansted NHS and Buck Island Reef NM. Park staff consists of 15 persons and many intermittent volunteers. Park management includes the Superintendent and five Division Chiefs, including Law Enforcement, Resource Management and Research, Interpretation/Education and Outreach, Facility Management, and Administration. Park full-time staff provides visitor safety, interpretation and resource education, guide park resource management and research projects, and review and permit special activities.

Parking – The only park authorized public parking area at SARI currently consists of a single lot adjacent to the visitor center at the West Site.

4. ENVIRONMENTAL CONSEQUENCES OF THE MREC ALTERNATIVES

4.1 INTRODUCTION AND OVERVIEW

NEPA requires the disclosure of environmental impacts associated with the proposed Federal action, other alternatives, and the No Action Alternative. The environmental impact analyses provide the basis for comparing the effects of the alternatives. NEPA requires consideration of context, intensity and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate for impacts. NPS policy also requires that “impairment” of resources be evaluated in all environmental documents. Chapter 4 describes and analyzes potential environmental effects on the physical, natural and human environment associated with the Preferred Alternative (East Site), the South Site Alternative, the West Site Alternative, and the No Action Alternative. When potential impacts for the three sites (East, South, and West Sites) are similar, impacts are discussed together under the heading *Project Site Alternatives*. Cumulative impacts are discussed in Chapter 6.

4.1.1 Statutory Requirements

Primary laws and guidance documents that guided the development of this EA are:

- NPS Organic Act of 1916 (16U.S.C. 1-4, et seq.) – Created the NPS to promote and regulate the use of national parks, monuments, and reservations, by such means and measures as to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the land in such manner as would leave them unimpaired for the enjoyment of future generations.
- National Historic Preservation Act of 1966 as amended (16 U.S.C. 470) – To protect and preserve historic districts, sites and structures, and archeological, architectural and cultural resources. Section 106 and Section 110 (36 CFR 800), respectively, require consultation with the State Historic Preservation Office and that NPS nominate all eligible resources under its jurisdiction to the National Register of Historic Places.
- National Environmental Policy Act of 1969 – Public Law 91-190 established a broad national policy to improve the relationship between humans and their environment and sets out policies and goals to ensure that environmental considerations are given careful attention and appropriate weight in all decisions of the Federal government. This legislation requires and guides the preparation of this EA.

NPS Regulations and Policies – Actions proposed in this document are subject to the NPS Director’s Order #28 (Cultural Resource Management), Director’s Order #2 (Park Planning), Director’s Order #12 (Conservation Planning, Environmental Impact Analysis, and Decision-making), and Director’s Order #77 (Natural Resource Protection). Actions are also subject to the service-wide policy document, Management Policies (2006).

4.1.2 Methods for Evaluating Environmental Effects

The method of analysis of potential effects is based on *Director’s Order #12 Handbook* [sec 5.4(f)]. Four categories of effects are considered: direct effects, indirect effects, cumulative effects and impairment. The context, duration, and intensity of the impacts must also be defined. Intensity of effects and thresholds of significance are defined for both beneficial and adverse effects. These are further defined in Section 4.1.2.2.

Where quantitative data were not available, best professional judgment was used to determine impacts. In general, the thresholds used come from existing literature, consultation with subject experts, and appropriate agencies.

To analyze impacts, methods were selected to predict the potential change in park resources that would occur with the implementation of the alternatives. Evaluation factors were established for each impact topic to assess the changes in resource conditions of the alternatives. The study area was defined to include resources within SARI and the region that might reasonably be affected. Because resources vary in function and relation to environmental factors, the study area was defined independently for each impact topic.

4.1.2.1 Impact Categories

The three impact categories used in this chapter are defined below. The fourth impact category is cumulative effects which are defined in Chapter 6.

Direct Effects - Those impacts occurring from the alternative at the same time and in the same place as the action.

Indirect Effects - Those actions caused by the alternative that cause impacts to a resource or condition that occur later in time or farther in distance.

Impairment - The NPS *Management Policies 2006* requires an analysis of potential effects to determine whether or not actions would impair park resources. The primary purpose of the NPS, as established by the Organic Act and reaffirmed by the General Authorities Act, as amended, is to conserve park resources and values. Impacts to park resources and values are allowed when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Impairment is an impact that would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.

NPS conducted an analysis to determine whether the magnitude of impacts identified for specific impact topics reached the level of “impairment,” as defined. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of SARI; key to the natural or cultural integrity of SARI or to opportunities for enjoyment of SARI; or identified as a goal in SARI’s general management plan or other relevant NPS planning documents.
- An impact would be less likely to constitute impairment to the extent that it is an unavoidable result, which cannot reasonably be further mitigated, of an action necessary to preserve or restore the integrity of park resources or values.
- Impairment may occur from visitor activities, NPS activities in the course of managing a park, or activities undertaken by concessionaires, contractors, and others operating in SARI.

4.1.2.2 Impact Definitions

Each potential impact is described in terms of its context (site-specific, local, or regional), duration (short-term or long-term), and intensity (negligible, minor, moderate, or major). For the purposes of analysis, the following definitions, unless stated otherwise, are used for all impact topics:

Duration

Short-term impacts: Impacts that might occur in the short-term (1 to 6 months) during construction or after implementation of the MREC.

Long-term impacts: Those impacts occurring from of the implementation of the MREC through the next 10 years.

Intensity

Negligible: Impacts would have no measurable or perceptible changes to the resource.

Minor

Adverse: Impacts would be measurable or perceptible but would be localized within a relatively small area. The overall viability of the resource would not be affected and, if left alone, would recover.

Beneficial: Resource improvement would be perceptible, but barely, and localized within a small area of SARI.

Moderate

Adverse: Impacts would cause a change in the resource; however, the impact would remain localized.

Beneficial: Resource improvements would be measurable, enhancing the viability of the resource within SARI.

Major

Adverse: Impacts to the resource would be substantial, highly noticeable, and permanent.

Beneficial: Resource improvements would be substantial, enhancing the viability of the resource within SARI, the surrounding community, and beyond.

4.2 PHYSICAL FEATURES

This section discusses the impacts of the Preferred Alternative (East Site), the South Site Alternative, the West Site Alternative, and the No Action Alternative on the physical environment, including soils/sediments, bathymetry, air quality, noise, climate/seismicity, and water resources (water quality and hydrology).

4.2.1 Soils/Sediments

Preferred Alternative (East Site) – The construction phase of the MREC (includes the buildings and roads) would have short-term, minor, adverse effects to soils, but these impacts would be localized at the site. During the movement of soil through construction activities, the potential for erosion and sedimentation into nearby stormwater culverts and waterways exists. This potential would be minimized through the use of approved sediment and erosion control measures set in place before construction.

The project would require a seawater supply pipeline to bring reliable, clean, water from the sea to the wet lab and the Education Center for marine research and education activities. The exact location of the pipeline would be dependent on future hydrodynamic and water quality studies. These studies would

determine the best location for the open-ocean intake as well as the location of suitable clean water for the research activities. A potential location for access to clean water for the East Site would be from inside the reef on the extreme northeast side of the site directly out to deep water beyond the coral rubble surf zone. The pipeline then could run parallel to the coastal beach road and over to either the wet lab/boat dock area or up to the main research facility. The 1960 development project installed a pipeline, which exists currently, to provide flushing between the Salt Pond and the Mangrove Lagoon. Re-use of this pipeline may be feasible. General construction methods for the installation of the pipeline would include burying the pipeline below grade on land and tethering the pipeline to the bottom substrate (i.e., sediment, sand, rock) for installation in the lagoon, bay, and sea. Short-term, minor, adverse impacts to the soils and sediments would occur at SARI from the installation of the seawater supply pipeline.

Sediments in Salt River Bay and the Mangrove Lagoon would be disturbed if future bathymetry studies reveal the need for maintenance dredging at the Preferred Alternative (East Site). Maintenance dredging would be required if the bathymetry studies revealed that the water depths were too shallow for research boats to reach the MREC boat docks. The types of vessels needed for the MREC would include one main diving boat (45 ft), two medium-sized vessels (25-45 ft), and four small boats (outboards). These vessels would need to have access to and from the facility boat docks for marine research activities. The areas directly south of the East Site and within the Mangrove Lagoon are the most likely locations for maintenance dredging. Placement of the dredge material would need to be addressed in future studies. Maintenance dredging would result in short-term, minor, adverse effects to the sediments at the East Site due to this activity.

Finally, soils and sediments would be disturbed during construction of a boat ramp and installation of a boat dock and moorings for the Preferred Alternative. A floating boat dock system would be constructed since it minimizes impacts to the sediments. A minor amount of bottom (i.e., lagoon, bay) disturbance would occur during installation of pilings to be used for keeping the floating dock in place. The floating dock would need to accommodate one main diving boat (45 ft), two medium-sized vessels (25-45 ft), and four small boats (outboards). Mooring space would be needed for four to six small boats. Short-term, minor, adverse effects to the soils and sediments would occur from construction of the boat ramp and installation of the boat dock and moorings.

Appropriate agencies (i.e., U.S. Army Corps of Engineers, V.I. Department of Planning and Natural Resources) have been notified on the proposed project to ensure compliance with Federal laws (Sections 401 and 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Appropriation Act). The next step in the compliance process would be agency review of this EA. Finally, applicable permits (10/404 permit) associated with construction in waters of the U.S. would be obtained from the U.S. Army Corps of Engineers following completion of the EA and signing of the FONSI but prior to the start of the installation of the seawater supply pipeline, boat dock, and moorings, construction of the boat ramp, and maintenance dredging.

South Site Alternative – Impacts to soils and sediments as a result of the South Site Alternative are similar to impacts discussed above for the Preferred Alternative (East Site). The construction phase of the MREC (i.e., buildings, boat dock) and the installation of the seawater supply pipeline would have short-term, minor, adverse effects to soils and sediments. Sediments in Salt River Bay have the potential to be disturbed if future bathymetry studies reveal the need for maintenance dredging at the South Site Alternative. Areas directly east and northeast of the South Site Alternative are the most likely locations for maintenance dredging. Maintenance dredging would result in short-term, minor, adverse effects to the sediments. As stated above, appropriate agencies would be consulted and applicable permits would be obtained prior to the initiation of construction activities.

West Site Alternative – Impacts to soils and sediments as a result of the West Site Alternative are similar to impacts discussed above for the Preferred Alternative (East Site) and South Site Alternative. The construction phase of the MREC (i.e., buildings, roads) and the installation of the seawater supply pipeline would have short-term, minor, adverse effects to soils and sediments. Currently boat access is adequate for research boats at the existing marina, however it is anticipated that this would change in the future since the entire bay is progressively filling in with silt. Therefore, maintenance dredging would be required in the future resulting in disturbed sediments in Salt River Bay due to this activity. Maintenance dredging would result in short-term, minor, adverse effects to the sediments. As stated above, appropriate agencies would be consulted and applicable permits would be obtained prior to the initiation of construction activities. Due to the limited number of marinas and boat slips on the island (Salt River Marina is 1 of only 3 functioning marinas), the current Salt River Marina would be allowed to continue to function as a commercial marina. However, the MREC would need to acquire the use of as much as ½ of the existing boat slips that are currently available to the boating community. Some of the current private boats would lose their preferred slips in the marina.

No Action Alternative – SARI would remain in its current use and no action would be taken. There would be no new construction at SARI. The No Action Alternative does not result in environmental impacts to the soils and sediments at SARI. However, if dredging in the Mangrove Lagoon at the East Site does not occur, there is the potential that the mouth of this lagoon would eventually become closed off to the bay due to siltation. This is being currently observed in the Mangrove Canal, located immediately south of the Mangrove Lagoon. The mangrove trees that exist along the shoreline of the Mangrove Canal are being lost, potentially from the lack of flushing due to siltation that is occurring at the mouth of the canal. There is the possibility that the existing mangrove trees located along the shoreline of the Mangrove Lagoon could be lost as well if dredging does not occur to maintain flushing between the bay and the lagoon.

Conclusion – Construction of the MREC facilities, maintenance dredging, and installation of the seawater supply pipeline, boat dock and/or moorings is expected to create minor adverse impacts to soils and sediments at SARI regardless of the alternative. These construction, installation, and dredging impacts would be short-term in nature, lasting for the duration of the activity. The No Action Alternative would not impact the soil or sediments at SARI. None of the alternatives would cause impairment to park resources.

4.2.2 Bathymetry

Project Site Alternatives – The bathymetry in the bay would be altered if future bathymetry studies reveal the need for maintenance dredging. Impacts to bathymetry would be localized. For the East Site, the areas most likely considered for maintenance dredging include the area directly south of the East Site and along the south side of peninsula and narrow entrance into the Mangrove Lagoon. For the South Site, maintenance dredging would include the area directly east and northeast of the South Site. For the West Site, maintenance dredging would include the existing dredged channel in the bay and areas within the marina. Water depths are expected to increase in Salt River Bay resulting in long term minor impacts to the bathymetry of SARI from maintenance dredging activities.

No Action Alternative – The No Action Alternative does not result in any alteration to the bathymetry at SARI. There would be no change in water depths at SARI.

Conclusion – The bathymetry in Salt River Bay has the potential to be altered if future bathymetry studies reveal the need for maintenance dredging regardless of the alternative. Long term minor impacts to the bathymetry of SARI would occur due to maintenance dredging. The No Action Alternative would not alter the bathymetry at SARI. None of the alternatives would cause impairment to park resources.

4.2.3 Air Quality

Project Site Alternatives – Negligible, long-term, adverse impacts to air quality may occur from stationary sources regardless of the alternative. Potential stationary sources include emergency generators. Water is proposed to be heated by solar power. Mobile sources (ground support equipment, vehicles, and boats) would have a minor, long-term, adverse impact. The Virgin Islands has insignificant regional air quality impacts and is in conformity with the NAAQS. It is also in attainment with USEPA for all six air quality criteria pollutants.

During the short-term construction phase of implementing the MREC, the operation of construction equipment would generate some criteria pollutant emissions, including carbon monoxide, nitrogen oxides, and particulate matter (PM). However, these emissions would be minimal since the proposed construction activities are temporary. Short-term fugitive dust emissions would be generated primarily due to land-disturbing activities to remove the vegetation and install new parking areas and roads. The amount of PM₁₀ should not be expected to be high due to the short duration and can be mitigated by using control techniques such as wet suppression and truck bed covers for construction vehicles hauling soil. Overall, the construction phase of the MREC facility is expected to create minor adverse impacts. These impacts would be short-term in nature, lasting only for the duration of construction activities.

No Action Alternative – Under the No Action Alternative, the site would remain in its current use, which does not emit substantial quantities of air pollutants.

Conclusion – Negligible, long-term, adverse impacts to air quality may occur from stationary sources (i.e., emergency generators) and minor, long-term, adverse impacts to air quality would occur from mobile sources (ground support equipment, vehicles, and boats). Minor, short-term, adverse impacts to air quality from the additional emissions created during the construction phase of the project would also occur. Under the No Action Alternative, the site would remain in its current use, which does not emit substantial quantities of air pollutants. None of the alternatives would cause impairment to park resources.

4.2.4 Noise/Light

4.2.4.1 Noise

Project Site Alternatives – The construction phase of the project is expected to create short-term, adverse, minor impacts to noise at the site regardless of the alternative. These impacts would be short-term in nature, lasting for the duration of construction activities and would temporarily impact visitor experience at SARI. Noise is expected, but noise impacts would be temporary and localized at the vicinity of the construction site and would not disrupt the surrounding area. Day-time construction only would occur; no nighttime construction is currently anticipated. Short-term sources of noise associated with all three project alternatives includes the clearing of vegetation from the site, construction of the MREC buildings, construction of the boat dock, and maintenance dredging activities. Construction on and closest to the water has the most potential to create short-term disturbances, due to noise, since sound can be heard over water at greater distances than sound can be heard over land. Short-term, temporary impacts from noise and construction activities may cause existing avian and other wildlife species to avoid areas in close proximity to the construction, including both terrestrial and aquatic habitats, but these effects would diminish after construction is completed. In addition, time-of-year (TOY) restrictions required for wildlife species (specifically, the least tern nesting season) would be adhered to throughout the duration of the project. TOY restrictions would be developed in coordination with appropriate Federal and Territorial agencies, including NMFS, USFWS, and USVI DPNR.

The potentially increased effects of noise would be associated with recreational boaters for all three sites. Long-term sources of noise would be associated with the ongoing human activities from the daily activities at the MREC facility. Noise associated with the use of the facility may increase relative to current levels from standard building features (i.e., generators), additional vehicle traffic, and the operation of boats. The park is planning to control current un-authorized recreation activities, such as the use of off-road vehicles (ORVs) and all-terrain vehicles (ATVs) at the Preferred Alternative (East Site) with limited use. Although temporary noise impacts are anticipated during construction activities, construction noise typically occurs along the shoreline of the north-central portion of St. Croix when new parcels of land are developed. Therefore, recreational boaters in the vicinity should be somewhat accustomed to noise on the water.

Maintenance dredging would result in temporary minor noise impacts to the local community surrounding the site during the dredging activity. Additionally, noise impacts may occur from hauling dredged material off-site or placement of dredged material on-site.

No Action Alternative – Current noise sources in SARI would not change since the site would remain in its current use under the No Action Alternative. The current noise sources are predominantly the result of ongoing human activities (i.e., vehicles, boat operation at the marina, activities at the NPS Visitor Center).

Conclusion – Implementation of the MREC would produce short-term, minor, adverse noise effects during the construction phase of the project regardless of the alternative. Maintenance dredging activities would also result in short-term, minor, adverse noise effects to the surrounding local community. Current noise sources in SARI would not change since the site would remain in its current use under the No Action Alternative. None of the alternatives would cause impairment to park resources.

4.2.4.2 Light

Project Site Alternatives – The construction phase of the project is not expected to create light impacts at the park since no nighttime construction is currently anticipated. Long-term sources of light would be associated with the nighttime human activities at the MREC facility. Light associated with the use of the MREC facility may increase relative to current levels; however, nighttime lighting would be at low levels and would not include any bright intrusive lights.

No Action Alternative – Current light sources in SARI would not change since the site would remain in its current use under the No Action Alternative. The current light sources are predominantly the result of ongoing human activities (i.e., vehicles on local roadways, nearby residences).

Conclusion – Implementation of the MREC would produce negligible long-term, adverse light effects to the surrounding local community. Current light sources in SARI would not change under the No Action Alternative. None of the alternatives would cause impairment to park resources.

4.2.5 Climate/Seismicity

4.2.5.1 Climate

Project Site Alternatives – Impacts from coastal storms to the proposed MREC facility are anticipated at SARI. The U.S. Virgin Islands faces a serious threat from hurricanes and other coastal storms, and the resulting shoreline flooding and water surges (IRF 1993). Although Salt River Bay is considered to be a “hurricane hole” for boats seeking refuge from a tropical storm, Hurricane Hugo demonstrated that the

area is not safe during a storm of that magnitude (IRF 1993). The siting of a facility along the coast increases a cumulative threat potential with respect to three types of coastal storm impacts: (1) threats to public health, safety, and welfare; (2) costs for disaster relief and protection; and (3) losses of irreplaceable natural resources. Implementing strict building standards to achieve increased wind and/or flooding resistance during the design phase of the project would minimize damage from coastal storms.

No Action Alternative – Under the No Action Alternative, the MREC would not be built at SARI. Mitigation for coastal storm hazards for the MREC would not be necessary.

Conclusion – Impacts from coastal storms to the proposed MREC facility are anticipated at SARI. Implementing strict building standards to achieve increased wind and/or flooding resistance would minimize damage from coastal storms. Under the No Action Alternative, mitigation for coastal storm hazards for the MREC would not be necessary.

4.2.5.2 Seismicity

Project Site Alternatives – The Virgin Islands are located near the northeastern corner of the Caribbean Plate and as such are highly susceptible to earthquakes and seismic hazards (IRF (1993). Earthquake potential at St. Croix is relatively high. Site-specific vulnerability to earthquake damages would depend upon localized construction practices, and soil and geologic conditions. Although earthquakes are not frequent they have resulted in major damage and loss of life in the region, and they tend to be severe when they do occur. Waterfront areas that have undergone construction on filled (reclaimed land) land would be avoided for construction of the MREC facilities since this land is vulnerable to impacts from earthquakes. Reclaimed land includes the peninsula between the East Cove and the Mangrove Lagoon located in the East Site.

Mitigation for earthquakes at the MREC would include minimizing injury and damage from seismic activity by constructing earthquake-resistant structures by enforcing strict building standards (i.e., insulated steel-enforced concrete walls, stronger windows and doors).

No Action Alternative – Under the No Action Alternative, the MREC would not be built at SARI. However, SARI should avoid future construction of buildings on reclaimed land.

Conclusion – Waterfront areas that have undergone construction on filled (reclaimed land) land would be avoided for construction of the MREC facilities since this land is vulnerable to impacts from earthquakes. Reclaimed land includes the peninsula between the East Cove and the Mangrove Lagoon located in the East Site.

4.2.6 Water Resources

4.2.6.1 Water Quality

Preferred Alternative (East Site) – The construction phase of the MREC (includes the buildings and roads) would have short-term, minor, adverse effects to water quality. These impacts would result from potential sediment runoff into nearby waterways during the clearing of vegetation and construction and grading activities. These activities may result in increases in sediment input and turbidity in the bay. Because disturbed soils are susceptible to erosion until revegetation takes place, standard sediment and erosion control measures, best management practices (BMPs) would be used to minimize potential soil erosion and minimize impacts to Salt River Bay. A Stormwater Pollution Prevention Plan (SWPPP) would be required and implemented prior to, during, and following ground-disturbing activities. Contractors would also be required to prepare an Erosion Control Plan that requires a description of

specific erosion and sediment control measures that would be implemented. With these restrictions and controls in place, no long-term adverse effects to water quality would be expected as a result of the project. TMDLs for DO exist for Salt River, due to low oxygen levels. This project is not expected to exacerbate the existing DO levels in the Bay.

The operational phase of the MREC would result in new impervious surface area (i.e., buildings, roads) which has the potential to increase runoff from the site into the bay. The use of semi-pervious surfaces (i.e., gravel and grass parking areas) would be used wherever possible to minimize the creation of impervious surfaces areas. The gravel and grass parking areas would be landscaped with native plants to control stormwater runoff toward the bay. Implementing these stormwater management techniques in the design phase of the project would minimize additional impacts to current surface water quality in the area by controlling stormwater runoff from the newly developed areas. Impermeable paved roads at the MREC would be minimized. Permeable paved surfaces allow limited percolation of precipitation and would be used wherever possible. However, some impermeable paved surfaces may be needed for the roads associated with the MREC due to higher load and traffic requirements. Sanitary waste from the MREC as well as seawater discharge from research activities would be contained on-site in appropriate holding tanks that would routinely be pumped and hauled to St. Croix's Waste Water Treatment Plant. If feasible, another waste treatment alternative for the MREC would include composting toilets located in low-lying buildings such as the marine facilities and wet labs as well as a waste treatment greenhouse. This state-of-the-art sewage treatment system would assure minimum contamination of the bay and its surrounding area. A roofed-over concrete containment bunker would be built around storage tanks for fuel and other potentially polluting liquids to reduce contamination from these substances into the bay. The operation of motorized watercraft associated with the MREC would also affect water quality through the introduction of chemicals and oils into the water via engine exhaust or during maintenance and fueling through drips and spills. Overall, the impacts to water quality from the operational phase of the MREC would be expected to be minor, adverse, and long-term.

Minor impacts to the water quality at SARI would occur as a result of the seawater supply pipeline installation. The impacts would be primarily an increase in the turbidity of the bay/sea from the activities associated with the installation of the pipeline (i.e., tethering, placement of pipe) in the bay. This effect would be minor, adverse, and temporary and would dissipate quickly after the installation ceases and suspended sediments resettle.

Maintenance dredging activities would create short-term, adverse minor impacts to the water quality of Salt River Bay and the Mangrove Lagoon. The impacts would be primarily an increase in the turbidity of the bay and lagoon from the dredging activities. This effect would be temporary and would dissipate quickly after the dredging ceases and suspended sediments resettle. Increases in turbidity of Salt River Bay have the potential to impact the existing seagrasses that currently inhabit the shallow-water areas of the bay, the fisheries resources in the bay, the surrounding mangrove wetlands, and other aquatic wildlife (such as sea turtles). To mitigate for impacts due to turbidity, a silt curtain placed during dredging activities would be required. In addition, TOY restrictions required by Federal and Territorial agencies would be strictly adhered to, thus reducing water quality impacts on the aquatic species that utilize areas in close proximity to project activities. In the long term, water quality in the Mangrove Lagoon has the potential to improve from being dredged. Maintenance dredging would provide improved flushing of the lagoon which would improve water quality in the lagoon as well as providing a benefit to the mangroves.

Finally, construction of a boat ramp, boat dock, and moorings would be required at this site. Minor, adverse effects on water quality would occur during the installation of moorings and for the pilings to be used for keeping the floating dock in place; however, a minor amount of lagoon bottom disturbance would occur, and measures would be taken to minimize turbidity and sedimentation. The impact would be both short-term and temporary and would dissipate quickly after the construction has ended and

suspended sediments resettle. To minimize effects on water quality, erosion and sediment control measures, in accordance with state regulations, would be implemented during construction. Constructing the dock on site and floating it into its designated location would minimize effects on water quality.

South Site Alternative – Impacts to water quality as a result of the South Site Alternative would be similar to impacts discussed above for the Preferred Alternative (East Site). Temporary and minor adverse impacts to the water quality at SARI would occur during the construction phase of the MREC, the installation of the seawater supply pipeline, maintenance dredging, and the construction of a boat ramp/boat dock/moorings. Long-term, minor, adverse impacts to the water quality would occur during the operational phase of the MREC.

West Site Alternative – The West Site Alternative would have impacts similar to the Preferred Alternative as discussed above, although no boat ramp or boat slip would be required at this site. Existing roads at the West Site would be utilized since they are currently composed of a permeable paved road surface (sand and gravel). Temporary and minor adverse impacts to the water quality at SARI would occur during the construction phase of the MREC, the installation of the seawater supply pipeline, and maintenance dredging. Long-term, minor, adverse impacts to the water quality would occur during the operational phase of the MREC.

No Action Alternative – The MREC would not be implemented under the No Action Alternative. This alternative would not create any disturbance to the water and, therefore, would result in no impact or impairment to water quality.

Conclusion – The operational phase of the MREC would potentially cause minor, long term, adverse effects to the water quality in the bay. Construction of the MREC facilities, installation of the seawater supply pipeline, construction of the boat dock and/or ramp/moorings, and maintenance dredging are expected to create minor short term adverse impacts to the water quality at SARI regardless of the alternative. However, dredging of the Mangrove Lagoon at the East Site would flush the lagoon which could potentially improve the water quality long term in the lagoon as well as providing a long term benefit to the mangroves located in the lagoon. The No Action Alternative would not impact the water quality at SARI. None of the alternatives would cause impairment to park resources.

4.2.6.2 Hydrology

Project Site Alternatives – The construction phase of the MREC would have similar impacts to hydrology at SARI regardless of the alternative. Long-term, minor adverse effects to the Salt River Bay watershed drainage would occur due to wetland impacts at the East and South Site locations (as discussed in detail in Section 4.3.4) and increasing the impervious surface areas associated with the MREC facilities at all alternative locations. Construction of the MREC facilities would require clearing of forest (semi-deciduous), shrubs, and vegetated field habitats. The clearing of vegetation and increasing impervious areas would have a long-term, minor impact on hydrology. However, where possible and practical, new road surfaces would be semi -permeable. Revegetating and stabilizing the area at the end of the construction period and implementing stormwater control techniques would minimize the impacts to hydrology. If applicable, water collected on impervious surfaces would be collected through drainage channels that would flow into gray water catchments basins for use on landscape. This would reduce impacts to the mangrove area from storm drainage and provide additional water for use at the MREC.

The Salt River Bay is characterized as tidal waters, so flow coming from land would be flushed out daily. The MREC would need to withdraw clean seawater from the sea to maintain a flow-through ambient seawater system for research activities, regardless of the site alternative. The seawater supply system (pipeline, storage tanks and pipeline connecting the tanks to the Wet Lab and the MREC) would take in

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an amount of water, most likely at high tide, to fill the tanks when the system is set up. From that point forward, through the operation of the MREC and the tests undertaken with the seawater both within the MREC and the Wet Lab, any additional ocean water taken in would be dependent upon the amount used in testing. On many days, this amount would be negligible. On days with more active use of the testing facilities, the amount would vary but is not likely to be significant. Therefore, impacts to hydrology in the sea from seawater withdrawal would be negligible.

No Action Alternative – Under the No Action Alternative, the site would remain in its current use, which would not change or impact the hydrology and drainage at SARI.

Conclusion – Construction of the boat dock and boat ramp would impact wetlands at the East and South Sites and the clearing of vegetation for the MREC facilities would increase impervious areas at each alternative, which is expected to create minor, adverse long-term effects to the hydrology at SARI. Wetland and vegetation resources are discussed in detail in Section 4.3.4 and 4.4.1, respectively. The No Action Alternative would not impact the hydrology at SARI. None of the alternatives would cause impairment to park resources.

4.3 FLOODPLAINS, COASTAL ZONE, COASTAL BARRIER RESOURCES SYSTEM AREAS, AND WETLANDS

4.3.1 Floodplains

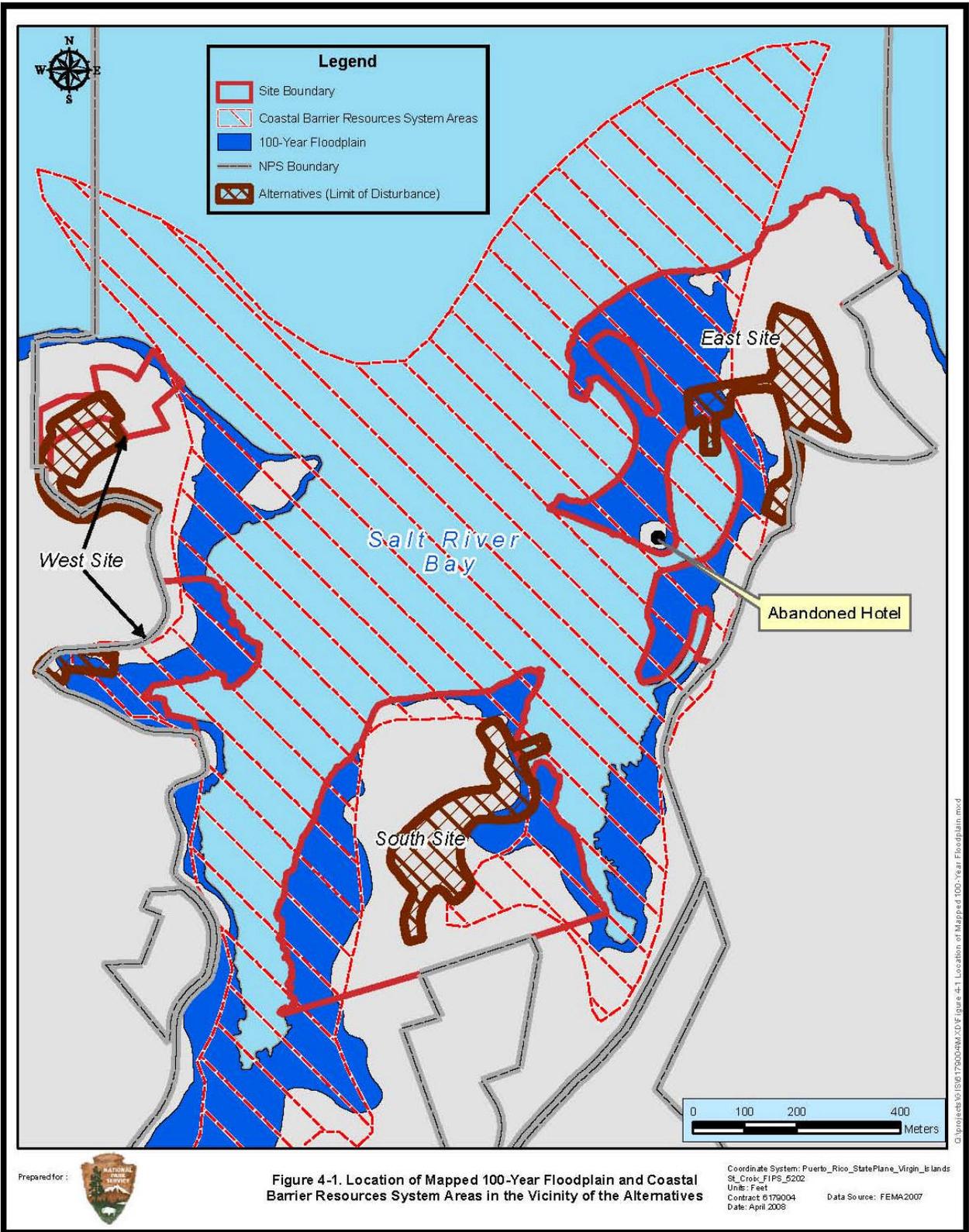
Preferred Alternative (East Site) – The 100-year floodplain, as mapped by FEMA in 2007, is located within the site boundary (Figure 4-1). NPS has adopted guidelines pursuant to Executive Order 11998 stating that it is NPS policy to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. Water-dependent structures including the boat dock and wet lab would be located in the 100-year floodplain resulting in minor, adverse, long-term alterations to the floodplain. These water-dependent structures would impact approximately 1 acre of the floodplain. A floating boat dock system would be constructed since it minimizes impacts to the floodplain. Additionally, the Wet Lab would be constructed on pilings above the flood zone so as to not impede the function of the floodplain. Non-water dependent buildings associated with the MREC were purposely placed outside of the floodplain to avoid impacts to the floodplain. Only those facilities that are water-dependent were placed in the floodplain because no other practical alternative was available.

The seawater supply pipeline, which is water-dependent, would also be located within the 100-year floodplain. Impacts to the floodplain would not be expected since the pipeline would be located below grade. The pipeline would not interfere with the function of the floodplain.

South Site Alternative – Impacts to the floodplain as a result of the South Site Alternative are similar to impacts discussed above for the Preferred Alternative (East Site) (Figure 4-1).

West Site Alternative – Impacts to the floodplain as a result of the West Site Alternative are similar to impacts discussed above for the Preferred Alternative (East Site) (Figure 4-1).

No Action Alternative – No development or alteration of the floodplains within SARI would occur with the No Action Alternative. The site would remain in its current use; therefore, there would be no impact to floodplains at the site.



Conclusion – Minor, adverse, long-term impacts to floodplains would occur due to proposed activities associated with the Preferred Alternative (East Site), the South Site Alternative, and the West Site Alternative relating to the construction of water-dependent structures (i.e., boat dock, wet lab, seawater supply pipeline), which would be located in the 100-yr floodplain. No development or alteration of the floodplains within SARI would occur with the No Action Alternative. Due to floodplain impacts, a Statement of Findings for floodplains is required and is included as Appendix D. None of the alternatives would cause impairment to park resources.

4.3.2 Coastal Zone

Project Site Alternatives – All three sites are located within Tier 1 of the coastal zone, as defined by the VICZMP. Short-term, minor impacts to the coastal zone are anticipated. Activities proposed within the coastal zone by a Federal agency, such as the NPS, require a certification of consistency. A certification of consistency is supported by necessary data and information that a proposed activity or development complies with the VICZMP and that such activity shall be conducted in a manner consistent with the program. A Federal consistency is the review of Federal projects for consistency with State coastal policies. The term “Federal consistency” refers to the review process mandated by Section 307 of the CZMA, and NOAA regulations (15 CFR Part 930). The CZMA requires that Federal actions, which are reasonably likely to affect land or water use, or natural resource of a Territory’s coastal zone, be conducted in a manner that is consistent with the federally approved Coastal Zone Management Program. The Federal consistency review is based on the enforceable policies of the VICZMP. The USVI DPNR is the principal agency requiring permit applications for construction activities in the coastal zone and comments on Federal permit applications to ensure consistency with the CZMP.

The NPS would be consistent to the extent practicable for the proposed project to be in compliance with the VICZMP. The NPS has determined that the project is in compliance with the VICZMP and will request concurrence from the VICZMP to ensure compliance between the Federal and Territorial coastal zone management programs. To comply with the VICZMP, the NPS initiated preliminary consultation with the Division in the form of a scoping meeting to discuss the proposed project. The preliminary meeting occurred on August 21, 2006 and a list of attendees is presented in Appendix C. The NPS would prepare a consistency determination in the form of a letter stating that the project is consistent, to the maximum extent practicable with the VICZMP. This letter would be prepared after completion of this EA and the signing of the FONSI but prior to construction. The VICZMP would review the consistency determination and determine if the project is in compliance with the VICZMP. If the project is in compliance, a notice of agreement would be provided by the VICZMP, thus completing all relevant CZM requirements.

No Action Alternative – Under the No Action Alternative, no impacts to the coastal zone would occur.

Conclusion – Short-term, minor adverse impacts to the coastal zone are anticipated. However, the project is expected to be consistent, to the maximum extent practicable with the VICZMP. The NPS would prepare a consistency determination in the form of a letter stating that the project is consistent, to the maximum extent practicable with the VICZMP. None of the alternatives would cause impairment to park resources.

4.3.3 Coastal Barrier Resources System Areas

Coastal barriers are unique landforms that serve as a protective barrier against the forces of wind and tidal actions caused by coastal storms. They are protected by the Coastal Barrier Resources Act (CBRA) and the Coastal Barrier Improvement Act (CBIA) which defined and established a system of protected coastal areas known as the Coastal Barrier Resources System (CBRS) Areas. CBRS areas, as mapped by FEMA

in 2007, are shown on Figure 4-1. Exceptions for certain activities, such as fish and wildlife research, are provided, and National Wildlife Refuges and other, otherwise protected areas are excluded from the CBRS areas.

Preferred Alternative (East Site) – Water-dependent structures including the boat ramp and Wet Lab would be located in the CBRS area resulting in minor, adverse, long-term alterations to this resource (Figure 4-1). The Wet Lab would be constructed on pilings so as to not impede the function of the CBRS area. Non water dependent buildings associated with the MREC were purposely placed outside of the CBRS area to avoid impacts to this resource. Only those facilities that are water-dependent were placed in the CBRS area because no other practical alternative was available.

It is possible that the seawater supply pipeline would be located within a CBRS area. Impacts would not be expected since the pipeline would be located below grade. The pipeline would not interfere with the function of the CBRS area.

South Site Alternative – Impacts to the CBRS area as a result of the South Site Alternative are similar to impacts discussed above for the Preferred Alternative (East Site) (Figure 4-1).

West Site Alternative – Impacts to the CBRS area as a result of the West Site Alternative are similar to impacts discussed above for the Preferred Alternative (East Site) (Figure 4-1).

No Action Alternative – Under the No Action Alternative, the shoreline at SARI would remain the same. The No Action Alternative would not impact the CBRS area.

Conclusion – Placement of the Wet Lab is expected to create negligible to minor, adverse long-term impacts to CBRS areas at the East, South, and West Sites. However, exceptions for certain activities, such as fish and wildlife research, are provided in the CBRS area. The No Action Alternative would not impact the CBRS areas. None of the alternatives would cause impairment to park resources.

4.3.4 Wetlands/Mangroves

The wetland areas within SARI are composed of mangrove swamps, salt ponds, estuarine wetlands, and shoreline/coastal wetlands. Based upon both the NPS and Federal definition of wetlands, construction at all three sites would impact wetland areas, including areas designated as mangrove wetlands. The NPS defines wetlands as areas with at least one of the three wetland indicators (wetland hydrology, hydric soil, or hydrophytic vegetation) as described in USACE 1987; the USACE defines wetlands as areas with all three wetlands indicators as described in USACE 1987. This section discusses impacts to all wetland types, including impacts to mangrove wetlands.

Both Federal and Territorial laws protect wetlands in St. Croix. Section 404 of the Clean Water Act establishes a Federal program to regulate the discharge of dredge and fill material in waters on the United States, including wetlands. The Virgin Islands wetlands are covered by the *Endangered and Indigenous Species Act of 1990* (Title 12, Chapter 2) and paragraph 906, *Coastal Zone Management*. The USVI DPNR/DEP works closely with the USEPA, the USFWS and USVI DPNR/DFW, the University of Virgin Islands and other agencies to protect wetlands. Federal Executive Order 11990 – Protection of Wetlands, directs all Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the absence of such alternatives, parks must modify actions to preserve and enhance wetland values and minimize degradation. The NPS *Director's Order #77-1* (Wetland Protection) states that for new actions where impacts to wetlands cannot be avoided, proposals must include plans for compensatory mitigation that

restore wetlands on NPS lands where possible at a minimum acreage ratio of 1:1. A Statement of Findings (SOF) for wetlands was completed, which includes appropriate mitigation measures for wetlands (see Appendix D). The SOF documenting compliance with *Director's Order #77-1* and *Procedural Manual 77-1* would be attached to the FONSI for this EA. The paragraphs below discuss the wetland impacts for each Alternative. A figure depicting the impacts to mangrove wetlands for all three sites is included as Figure 4-2.

Applicable permits associated with wetlands would be acquired, potentially including a Section 404 Permit, prior to construction activities to ensure compliance with both Federal and Territory laws (i.e., CWA Sections 401 and 404). In addition, the appropriate agencies, including the USACE and USVI DPNR, would be notified and consulted with prior to permit submittal or construction activities to ensure compliance with the CWA. This discussion does not include impacts to submerged lands based upon impacts from proposed maintenance dredging activities. It is currently unknown if maintenance dredging would be required, exactly where dredging would occur, and how large of an area would be dredged/impacted. If future studies reveal that current water depths are too shallow for appropriately-sized MREC boats to access the sites, then the areas directly south of the East Site and within the Mangrove Lagoon, directly east and northeast of the South Site, and in and around the marina at the West Site are the most likely locations for maintenance dredging. The placement of dredged material would be addressed in future studies. The impacts associated with dredging and installation of the seawater supply pipeline and associated impacts would be analyzed in detail if a Section 10/404 Permit application and other permits or assessments are required. Appropriate coordination and consultation concerning the future dredging would occur following the completion of the EA and signing of the FONSI. Depending on the final design location of the seawater supply pipeline to bring salt water from the sea to the MREC facility, mangrove wetlands may be impacted by this pipeline as well for all three alternatives. Mangroves would be avoided to the maximum extent possible, when designing the location of this pipeline. However, there is the potential, depending on the exact pipeline route chosen for each alternative, for minor impacts to wetlands to occur at SARI regardless of the alternative from the installation of the pipeline.

Preferred Alternative (East Site) – Approximately 0.03 acres of Federally-defined (and NPS-defined) mangrove wetlands (Wetland W-1) would be impacted as a result of constructing the boat dock and launch, and approximately 0.66 acres of an NPS-defined estuarine wetland (Wetland W-5) would be impacted by the wet lab and associated roads/facilities, located on the northern shoreline of the Mangrove Lagoon. A maximum of approximately 0.38 acres of open water would be impacted in the Mangrove Lagoon from the construction of the boat dock; this is a conservative estimate based upon the footprint from conceptual drawings, even though piers (which would decrease the footprint) would be used in the final design document for the boat dock. Therefore, approximately 1.07 total acres of NPS-defined wetlands would be impacted by the MREC and associated structures, including the boat dock. Due to these impacts, a SOF for wetlands was completed, which includes appropriate mitigation measures for wetlands (see Appendix D). Figure 7 included in the SOF shows the location of wetlands impacted as a result of the Preferred Alternative and is included in Appendix D. The SOF also includes a wetland mitigation plan for the Preferred Alternative that is two-fold: 1.) a mangrove wetland mitigation plan and 2.) an estuarine wetland mitigation plan proposed to compensate for the impacts associated with both the construction of the MREC. The paragraphs below summarize the proposed mitigation.

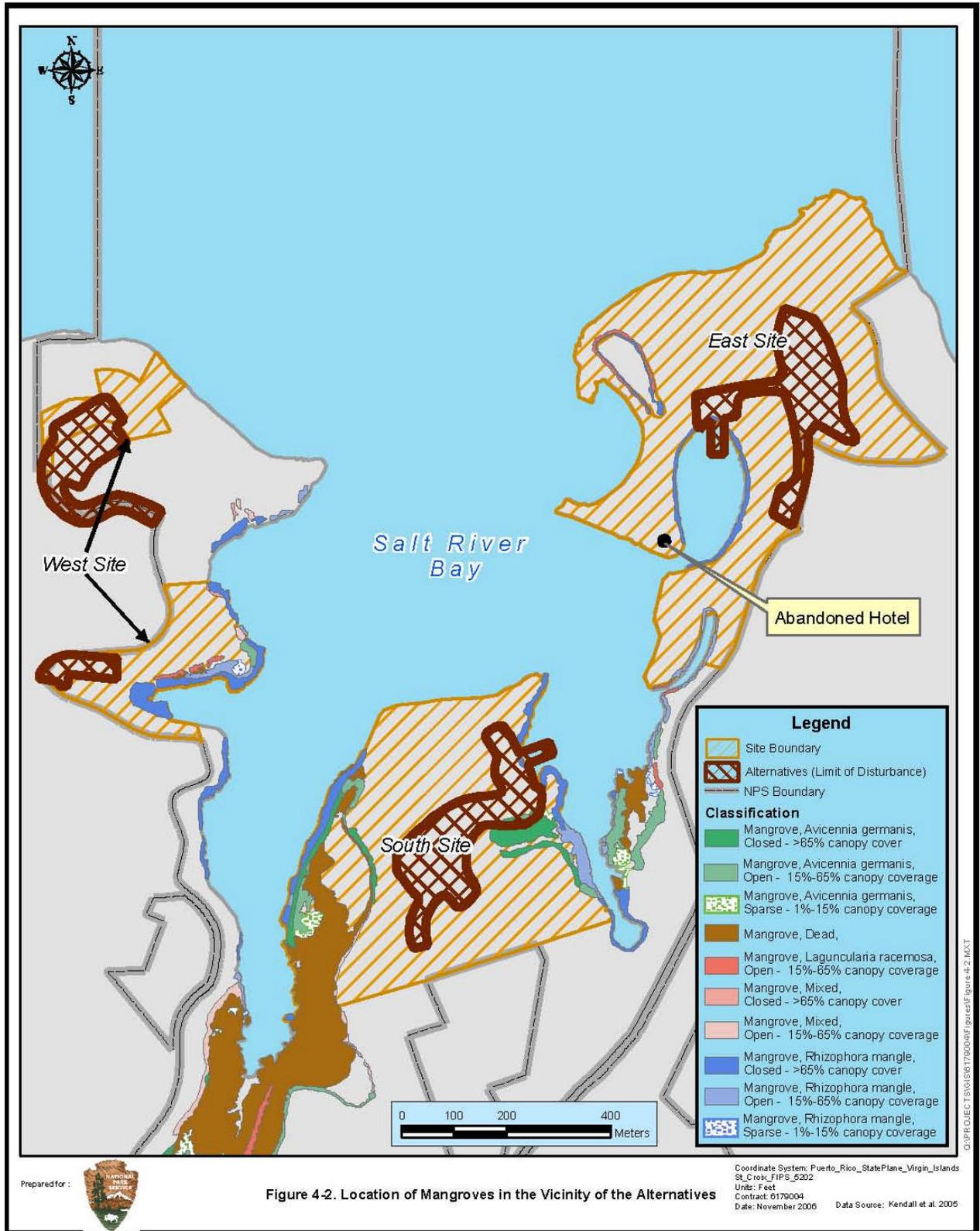


Figure 4-2. Location of Mangroves in the Vicinity of the Alternatives

Based upon positive results from past mangrove restoration efforts in Salt River Bay, mangrove revegetation/enhancement along the shoreline of the Mangrove Lagoon is the mitigation strategy to partially offset the 0.03 acres of mangrove impacts at Wetland W-1 associated with the Preferred Action (East Site). The specific ratio of mangrove revegetation was discussed with the USACE and was determined to be a 3:1 ratio (see Appendix C of the Environmental Assessment for phone conversation with the USACE). For each mature mangrove plant removed as a result of the boat dock, three mangrove seedlings would be planted as mitigation. The compensation proposal for the additional 1.04 acres of estuarine emergent / scrub shrub wetlands (excluding mangrove wetlands) and open water as a result of the MREC construction is wetland mitigation through wetland vegetation plantings and site rehabilitation on the peninsula at the East Site at a 1:1 ratio. However, because the entire peninsula would be rehabilitated and is approximately 7 acres, a ratio above 1:1 may be achieved at this site. This mitigation site is envisioned as a rehabilitated peninsula with groupings of mature wetland shrubs (and some trees) that were flagged and avoided during construction activities, a shoreline stabilized with herbaceous wetland forbs and ground covers, and more interior (inland) areas of sparse wetland vegetation that would attract and support least tern nesting.

Wetland impacts were minimized by placing the wet lab and boat dock on piers to raise the structure above the wetland areas. Wetland W-5 currently is not vegetated due to unrestricted visitor access and is functioning poorly as a wetland. The restriction of visitor vehicular access in the vicinity of Wetland W-5 (mudflats fringing the Mangrove Lagoon behind the existing mangrove vegetation) may be authorized to promote the natural re-growth of wetland vegetation in this area. It is expected that if left fallow, wetland vegetation would recolonize in this location; the area would then constitute additional wetland acreage enhanced at the site, potentially achieving above the minimum 1:1 ratio of mitigation. Based upon the mitigation strategy, short-term, adverse impacts to the mangrove wetlands and estuarine wetlands are expected to be minor. A long-term, minor, beneficial impact of revegetating the historically decimated shoreline of the Mangrove Lagoon with mangroves and the rehabilitation of the peninsula at the East Site is anticipated.

South Site Alternative – Minor, adverse impacts to mangrove wetlands are anticipated as a result of the South Site Alternative. On the eastern side of the South Site, a mangrove wetland is located along the shoreline. Approximately 0.04 acres of mangrove wetlands would be impacted as a result of constructing the boat dock and launch. Because a wetland assessment has not occurred at this site due to access restrictions, it is unknown if additional wetlands would be impacted as a result of the South Site Alternative. As stated previously for the Preferred Alternative (East Site), the appropriate Federal and Territorial agencies would be consulted with and required permits would be obtained prior to the initiation of construction activities.

West Site Alternative – No impacts to mangrove wetlands are anticipated with the West Site Alternative. The current boat ramp and slips at the marina would be utilized and the Wet Lab and Maintenance Building would be located to the west of the existing mangrove wetlands (Figure 4-2). Even though a wetland assessment has not occurred at the marina due to access restrictions, it is anticipated that no impacts to mangrove wetlands would result from the construction of these structures. There is no documentation of wetlands occurring at the Visitor Contact Station; therefore, no impacts to wetlands are anticipated at the Visitor Contact Station.

No Action Alternative – Under the No Action Alternative, SARI would remain in its current use and no action would be taken. There would be no new construction or maintenance dredging at SARI. The benefits of mangrove restoration at Wetland W-1 and the rehabilitation of the peninsula associated with the estuarine wetland impacts described for the Preferred Alternative (East Site) would not occur under the No Action Alternative. No impacts to wetlands are anticipated as a result of the No Action Alternative. However, if dredging in the Mangrove Lagoon at the East Site does not occur, there is the

potential that the mouth of this lagoon would eventually become closed off to the bay due to siltation. This is being currently observed in the Mangrove Canal, located immediately south of the Mangrove Lagoon. The mangrove trees that exist along the shoreline of the Mangrove Canal are being lost, potentially from the lack of flushing due to siltation that is occurring at the mouth of the canal. There is the possibility that the existing mangrove trees located along the shoreline of the Mangrove Lagoon could be lost as well if dredging does not occur to maintain flushing between the bay and the lagoon.

Conclusion – Short-term, minor, adverse impacts to mangroves are anticipated with both the Preferred Alternative (East Site) and the South Site Alternative. Additional short-term minor adverse impacts to NPS-defined wetlands are also anticipated from the Preferred Alternative (East Site). The Preferred Alternative (East Site) impacts approximately 0.03 acres of mangrove wetlands and approximately 1.04 acres of estuarine wetlands (totaling 1.07 acres, including Federally- and NPS-defined wetlands) and the South Site Alternative impacts approximately 0.04 acres (includes Federally-defined wetlands only) of mangrove wetlands. As a result of the NPS-defined wetlands impacted by the proposed MREC and associated structures including a new boat dock, a SOF for wetlands was prepared and is included in Appendix D. The wetland mitigation plan included in the SOF would offset the majority of proposed wetland impacts. As a result of the Federal (USACE) mangrove wetlands impacted by the proposed MREC and associated structures including a new boat dock, and maintenance dredging activities, a Section 10/404 Permit would be required, and therefore, a *Joint Application for Environmental Resource Permit/Authorization to use State Owned Submerged Lands/Federal Dredge and Fill Permit* would be completed and submitted to both USACE and the USVI DPNR. The permits would be received prior to the initiation of construction or dredging activities. The exact acreage of wetlands impacted and a detailed mitigation plan (the same mangrove mitigation that is proposed in the SOF, Appendix D) for the loss of Federal mangrove wetlands would be included in the joint application as a requirement of the Section 10/404 Permit. No impacts to wetlands are anticipated as a result of the No Action Alternative. None of the alternatives would cause impairment to park resources.

4.4 TERRESTRIAL RESOURCES

4.4.1 Plants

Impacts to terrestrial vegetation are expected from implementation of the MREC facility for all three sites. During the construction phase, the loss of forest (semi-deciduous), shrubs, and vegetated field habitat would occur. The loss of vegetated habitat by the MREC would be partially mitigated by revegetating and stabilizing the MREC area at the end of the construction period with appropriate vegetative species. This would be addressed in a landscaping plan for the MREC facility that would be developed following the completion of the EA and signing of the FONSI. Replanting native trees, shrubs, and maintained grasses at the site would occur regardless of which alternative is selected. Additionally, the removal of non-native invasive species would be attempted. Existing, non-native invasive plant species such as African guinea grass and tan tan would be removed and replaced with native vegetation species. The replacement of non-native invasive species with native plant species would have a long-term, moderate, beneficial impact on the terrestrial wildlife species and other vegetation species that inhabit the area as well as the greater island of St. Croix. Non-native invasive species threaten the biodiversity of fragile island ecosystems such as St. Croix.

For all three project alternatives, a seawater supply pipeline would be required, although the exact location would be dependent on future studies. Construction methods for the installation of the pipeline would include burying the pipeline below grade on land, which would cause short-term, minor, adverse impacts to terrestrial vegetation. The route of the pipeline would follow existing roads to the extent possible to minimize additional disturbance to vegetation. On terrestrial locations, the pipeline would be buried underground and the disturbed areas would be returned to pre-construction conditions. Therefore,

no long-term impacts are anticipated as a result of the pipeline. Table 4-1 depicts the approximate land cover that would be impacted for each alternative considered.

Table 4-1. Land Cover Affected (in acres) within the Limit of Disturbance (LOD) for each MREC Alternative

Land Cover	Alternatives			
	Preferred Alternative (East Site)	South Site Alternative	West Site Alternative	
			NPS Visitor Contact Station	Salt River Marina
Forest (semi-deciduous)	0.23	7.0	0.88	0.21
Mangroves	0.03	0.04	---	---
Other Wetlands/Open Water	1.04	---	---	---
Shrubs	3.0	0.04	0.71	---
Vegetated Field	4.0	0.17	2.0	0.24
Bare Areas (rock/soil/unpaved roads)	0.75	0.69	0.34	0.15
Developed (paved roads, buildings)	0.04	0.76	1.0	0.58

Preferred Alternative (East Site) – Approximately 0.23 acres of forest (semi-deciduous) habitat, 4 acres of vegetated fields, and 3 acres of shrubs would be impacted due the MREC facilities, roads, and associated parking facilities. Adverse impacts to plants from the MREC are expected; however, most of the vegetation at this site includes non-native invasive species, including African guinea grass and tan-tan, due to the previously altered soils that exist at the site in the vicinity of the Mangrove Lagoon. The vegetation proposed for clearing to develop the MREC is not exceptional habitat; similar habitat is located on and adjacent to NPS property. Mitigation of this non-native vegetation is an option for this alternative and could include the removal of non-native invasive species with the replacement of appropriate native vegetation. The landscaping plan for the East Site would include revegetating disturbed areas (i.e., mud flats, bare areas, areas dominated by African guinea grass) beyond the MREC footprint. This plan would be developed following the completion of the EA and signing of the FONSI. A long-term, moderate, beneficial impact would result from the replacement of non-native invasive plant species with appropriate native vegetation.

South Site Alternative – Approximately 7 acres of forest (semi-deciduous), 0.04 acres of shrubs, and 0.17 acres of vegetated fields would be impacted by the MREC. Impacts to plants are expected to be moderate. Because detailed information is not currently available for the South Site, a vegetative species survey would be completed prior to the initiation of construction activities to ensure that no T&E vegetation species occupy the site.

West Site Alternative – Approximately 0.88 acres of forest (semi-deciduous), 0.71 acres of shrubs, and 2 acres of vegetated fields would be impacted within the northwest section by the MREC. Approximately 0.21 acres of forest (semi-deciduous) and 0.21 acres of vegetated fields would be impacted within the southwest section by the MREC. Impacts to plants are expected to be minor, since the vegetation proposed for clearing to develop the MREC is not exceptional habitat. However, because detailed information is not currently available, a vegetative species survey would occur prior to the initiation of construction activities to ensure that no T&E vegetation species occupy the site.

No Action Alternative – The site would remain in its current state and terrestrial habitat and vegetation that exists would remain unchanged. Therefore, there would be no impact to plants as a result of the No Action Alternative. No long-term, moderate, beneficial impacts would result from the replacement of non-native invasive plant species with appropriate native vegetation with the No Action Alternative. Non-native invasive species would remain an issue at the East Site.

Conclusion – Long-term, minor to moderate, adverse impacts to terrestrial vegetation are anticipated as a result of the South and West Site Alternatives. Forested (semi-deciduous) habitat, vegetated fields, and shrub habitat would be impacted due the MREC facilities, roads, and associated parking facilities for all alternatives. However, a long-term, moderate, beneficial impact would result from the replacement of non-native invasive plant species with appropriate native vegetation for the Preferred Alternative (East Site) as well as revegetating disturbed areas (i.e., mud flats, bare areas, areas dominated by African guinea grass) beyond the MREC footprint. The No Action Alternative would not impact terrestrial vegetation. None of the alternatives would cause impairment to park resources.

4.4.2 Birds

The proposed project would have minor adverse impacts to the birds at SARI, regardless of the alternative. Impacts to avian species are a direct result of impacts to and loss of their habitat. Habitats at SARI provide nesting, roosting and foraging for a wide variety of birds including year round residents, overwintering residents, and species that stop briefly at St. Croix during annual migrations. Loss of habitat due to vegetation removal, including mangroves, is the primary impact to birds. Mangrove habitat at SARI is important to birds as nesting habitat for resident species and foraging habitat for over wintering and migrant species. The results of the vegetation impact analysis were used to assess impacts to avian species. The removal of vegetation for construction of the MREC has the potential to disrupt or displace birds in the area. Vegetation would be removed from various areas including mangrove wetlands, forest (semi-deciduous), shrub, and vegetated field habitats. The mangroves of Salt River Bay provide nesting habitat for endangered white-crowned pigeons, cattle egrets, common egrets, and little blue herons. There would be a net loss of habitat for birds in the MREC footprint, the majority occurring at the South Site. The MREC footprints at both the East Site and the West Site are located in areas of exotic plant species. Therefore, the removal of these exotic species and the replacement with native plant species would have a long-term, positive impact on the avian species at these sites. The increase in human activity at the project site may also affect use of the available habitat by birds.

Preferred Alternative (East Site) – The Preferred Alternative (East Site) would have short-term, minor, adverse impacts to the birds at SARI through the loss of habitat. Nearby avian species (landbirds and shorebirds) that nest and forage in the vicinity of the proposed MREC area may be temporarily disrupted during the construction operations due to the unavoidable noise and human activity. The permanent loss of approximately 8.1 acres of avian habitat is a long-term, minor, adverse impact to avian species. Construction of the boat dock and wet lab would have a minor, permanent impact on mangrove wetlands (0.03 acres) and other wetlands/open water (1.04 acres) and would disturb avian species currently utilizing or nesting in mangroves. The species most likely to be impacted during construction are those species that may utilize mangrove habitat at the site and include cattle egrets, little blue herons, least bittern (Territorially endangered species), great blue heron, great egret, snowy egret, and black-crowned night heron. However, adjacent mangrove, shoreline, and wetland habitats for nesting and foraging are available adjacent to the East Site. The NPS *Director's Order #77-1 (Wetland Protection)* states that for new actions where impacts to wetlands cannot be avoided, proposals must include plans for compensatory mitigation that restore wetlands on NPS lands. An SOF for wetlands was completed, which includes appropriate mitigation measures for wetlands, including a mitigation plan for estuarine wetlands and mangroves (see Appendix D). In addition, approximately 62 acres of avian habitat at the East Site that is not proposed for MREC construction would still be available during the construction activities.

Implementation of the MREC may cause these species to temporarily relocate during the construction process. It is anticipated that these species would re-establish at the site after completion of the MREC. Following construction activities, approximately 60 (potentially more) acres of avian habitat would be available at the East Site. Since documented non-native invasive plant species occur at this site, replacement of these species with appropriate native vegetation is proposed. This would result in a minor, long-term, beneficial impact to avian species at the East Site.

South Site Alternative – The South Site Alternative would have long-term, minor adverse impacts to the birds at SARI through the loss of approximately 7 acres of avian habitat (forest, vegetated fields, and shrubs) as a result of the MREC. The South Site Alternative would have the greatest impact to forest habitat since the majority of proposed site of the MREC is located in an existing dry forest. Similar to the Preferred Alternative, the South Site Alternative would temporarily disrupt nearby avian species (landbirds and shorebirds) that nest and forage in the vicinity of the proposed MREC area during the construction operations. Construction of the boat dock would have a minor, permanent adverse impact on mangrove wetlands and would disturb avian species currently utilizing or nesting in mangroves.

West Site Alternative – The West Site Alternative would have long-term, minor adverse impacts to the birds at SARI through the loss of approximately 4 acres of avian habitat (forest, vegetated fields, and shrubs) as a result of the MREC. Cattle egrets and little blue herons currently nest in a rookery within a large patch of mangroves near the Salt River Marina. However, these avian species are already accustomed to the daily noise sources from the operating marina. The MREC construction noise sources should have a negligible affect on the avian community. Similar to the East Site Alternative, there are documented non-native invasive plant species at this site. The replacement of these species with appropriate native vegetation is proposed and would result in a minor, long-term, beneficial impact to avian species at the West Site.

No Action Alternative – The site would remain in its current state and wildlife habitat that exists would remain unchanged. Therefore, there would be no impact to birds found in the region, and they would continue to utilize the site as habitat.

Conclusion – The South and West Site Alternatives would have a long-term, minor, adverse impact on the avian species that utilize the area as a result of habitat loss from construction of the MREC. The South Site Alternative would have the greatest impact to forest since the majority of proposed site of the MREC is located in an existing dry forest. The East Site would have a short-term, minor, adverse impact on the avian species that utilize the area as a result of habitat loss from construction of the MREC. Both the East Site and the West Site would also have a long-term, minor, beneficial impact to avian species due to the replacement of non-native invasive plant species with appropriate native vegetation as well as the wetland mitigation plan for estuarine areas and mangroves for the East Site. The No Action Alternative would not impact birds, but the positive effects of replacing exotic plant species with native vegetation at both the East Site and the West Site would not occur. None of the alternatives would cause impairment to park resources.

4.4.3 Mammals

Project Site Alternatives – As with birds, impacts to mammals are a direct result of impacts to vegetation. Long-term, minor, adverse impacts to mammals through the loss of habitat due to vegetation removal and construction of the MREC is the primary impact to mammals. The removal of vegetation for the construction of the MREC has the potential to disrupt or displace mammals in the area. Vegetation would be removed from various areas including mangroves, forest (semi-deciduous), shrub, and vegetated field habitats. There would be a net loss of habitat for mammals in the MREC footprint. The increase in human activity at the site may also affect use of the available habitat by mammals. Nearby mammals

(i.e., Indian mongoose, white-tailed deer) that utilize the surrounding habitats within the vicinity of the MREC area may be temporarily disrupted during the construction operations due to the unavoidable noise and human activity. This may cause species to relocate during the construction process. It is anticipated that these species would re-establish at nearby available habitat after the completion of the MREC. The area of disturbance which might cause the relocation of the Indian mongoose may actually benefit the bird populations, as the mongoose has decimated local bird populations. As discussed in the previous section, the East Site would provide in the long term a beneficial impact to mammals due to the replacement of non-native invasive plant species with appropriate native vegetation which would attract mammals to the site.

No Action Alternative – The site would remain in its current state and wildlife habitat that exists would remain unchanged. Therefore, there would be no impact to mammals found in the region, and they would continue to utilize the site as habitat.

Conclusion – The South and West Site Alternatives would have a long-term, minor, adverse impact on the mammals in the area; however, the East Site would have a short-term, minor, adverse impact initially. In the long-term the East Site would provide a beneficial impact to mammals due to the proposed replacement of non-native invasive plant species with appropriate native vegetation. The No Action Alternative would not impact mammals. None of the alternatives would cause impairment to park resources.

4.5 AQUATIC RESOURCES

This section discusses the impacts of the Preferred Alternative (East Site), the South Site Alternative, the West Site Alternative, and the No Action Alternative on aquatic resources including coral reefs, seagrasses, and fish.

4.5.1 Reefs/Hardbottom

Project Site Alternatives – No impacts to reefs and hardbottom habitat due to the construction of the MREC or the boat dock and the wet lab are anticipated as a result of the three alternatives. The construction of these facilities has the potential to temporarily and locally increase turbidity in Salt River Bay, but these effects would not negatively impact the reefs or hardbottom habitats, which are located sufficiently far enough away from the construction activities. Erosion and sediment control BMPs would be employed during construction activities to minimize impacts to the bay.

No impacts to reefs and hardbottom habitat would occur as a result of maintenance dredging. Dredging has the potential to temporarily and locally increase turbidity in Salt River Bay, but these effects would not negatively impact the reefs or hardbottom habitats, which are located sufficiently far enough away from the dredging activities. All documents (including a CWA Section 404(B)(1) Evaluation, an EFH Evaluation and a CWA Section 401 Water Quality Certification) required to support a permit for dredging along with a dredging permit would be obtained prior to the initiation of dredging activities. All anticipated impacts associated with dredging would be evaluated in detail in these documents.

Minor, adverse, short-term impacts to the coral reefs and hardbottom substrate would occur from installation of the seawater supply pipeline. The final location of the seawater supply pipeline is unknown at this time and would be dependent on future hydrodynamic and water quality studies. The pipeline would probably be located in the open ocean away from the bay tidal plume and beyond the coastal high-energy region, which means that the pipeline would encounter reefs and hardbottom substrate. To avoid impacts to the coral reef the pipeline would be installed (i.e., horizontal directional drilling, trenching) below the reef habitat. The impacts would be primarily an increase in the turbidity in

the area of the pipeline installation. This effect would be temporary and would dissipate quickly after the installation ceases and suspended sediments resettle. Therefore, the installation of the seawater supply pipeline would have short-term minor impacts on the coral reef. Impacts to the hardbottom substrate would occur from the installation of the pipeline under the coral reef and from the tethering of the pipeline to this substrate. Alignment of the pipeline would be selected based on avoiding coral altogether, avoiding areas of high quality coral reefs, or routing the pipeline in areas with the least amount of coral to the maximum extent possible. There are many areas along the northern shore of the East Site where coral density is low due to past hurricane debris piling, several feet of coral cobble, and high surf conditions; this area also provides a relatively short distance to deeper water for the seawater supply line.

The intake for the seawater supply pipeline could potentially entrain coral gametes in the water column during the spawning season. This may result in some loss of gametes but no impact to the coral reef is expected.

No Action Alternative – SARI would remain in its current use and no action would be taken. There would be no need to install a seawater supply pipeline at SARI. The No Action Alternative does not result in environmental impacts to the coral reefs at SARI.

Conclusion – The installation of the seawater supply pipeline would have short-term, minor, adverse impacts on the reef/hardbottom habitat at SARI. Minor impacts to the hardbottom substrate would occur from the installation of the pipeline under the coral reef and from the tethering of the pipeline to this substrate. The No Action Alternative would not impact the coral reefs. None of the alternatives would cause impairment to park resources.

4.5.2 Seagrasses

Project Site Alternatives – No aquatic impacts to seagrasses due to the construction of the MREC and associated buildings are anticipated as a result of the three alternatives. Based upon interpolation from aerial photographs in 2000, the pilings to support the boat dock for the East and the South Sites are not currently located in areas that would impact seagrasses. However, a more detailed site-specific seagrass survey would be required to support necessary permit obligations for the proposed boat dock at both the East and the South Sites to ensure that seagrasses are not impacted by the project.

Seagrasses would be impacted (i.e., disturbed, removed) by the proposed seawater supply pipeline that would draw seawater from the ocean into the MREC facility for the South and West Site Alternatives. However, it is likely that the pipeline route for the East Site would be located on the inside of the coral reef on the extreme northeast side of the site since this is where coral density is low. This location would not impact the sea grass and algae matt area in the bay. Seawater would have to be piped in from outside the coral reef and across extensive sea grass and algal matt areas for both the South and West Sites. Underwater, the pipeline would be tethered to the bottom substrate (i.e., sediment, sand, rock) for installation in the lagoon, bay, and sea. Minor, adverse impacts to seagrasses are expected from the anchors of the tethered pipeline. All attempts to avoid areas of quality seagrasses that are preferred as forage material for turtles would be made during siting of the pipeline. Seagrasses would be retained and replanted after completion of the pipeline installation if applicable. Where this is not possible, it is likely that the seagrasses would on their own become re-established in the location of the proposed pipeline. To minimize unforeseeable impacts to turtles, sand may be used to cover the pipeline. Therefore, the installation of the seawater supply pipeline would have short-term, minor, adverse impacts to seagrasses.

Seagrasses could also be potentially impacted by maintenance dredging activities associated with all three alternatives. The areas directly south of the East Site and within the Mangrove Lagoon, directly east and northeast of the South Site, the existing channel within the bay and within the marina are the most likely

locations for maintenance dredging. Seagrasses are currently located to the south of the East Site and north of the South Site (see Figure 3-6). It is unlikely that seagrasses currently occur within the Mangrove Lagoon, existing channel, or the marina. If dredging is determined as necessary for this project, then a site-specific seagrass survey within the footprints of the areas proposed for dredging would occur. Additionally, if needed, appropriate seagrass mitigation would occur following the site-specific survey. The impacts to seagrasses would be from an increase in the turbidity in the area of dredging and the removal of seagrasses during the dredging activity. If seagrasses are found within the footprints of the areas proposed for dredging, then maintenance dredging would have long-term, minor, adverse impacts to the seagrasses.

No Action Alternative – The site would remain in its current state and the seagrasses would remain unchanged. Therefore, there would be no impact to the seagrasses found in the region.

Conclusion – Impacts to seagrasses include long-term, minor, adverse effects from maintenance dredging regardless of the alternative. Seagrasses would also be impacted (i.e., disturbed, removed) by the proposed seawater supply pipeline for the South and West Site Alternatives which would result in short-term, minor, adverse effects. The No Action Alternative would not impact seagrasses. None of the alternatives would cause impairment to park resources.

4.5.3 Fish

Project Site Alternatives – Short-term, minor, adverse effects to fish would occur during construction of boat docks and mooring facilities at SARI for the Preferred Alternative (East Site) and the South Site Alternative. Fish in the area would be disturbed by the construction equipment and activities needed for the installation of dock pilings and moorings. The fish would be expected to avoid, or leave these areas. These construction activities would have temporary, localized effects to fish.

No impacts to pelagic fish species are anticipated as a result of the seawater supply pipeline; minor, adverse, short-term impacts to demersal fish species could occur, but these species are expected to move from the area when the pipeline is being tethered to the substrate.

Fish would also be impacted from maintenance dredging activities. The fish would be expected to avoid, or leave these areas. Maintenance dredging would have minor, adverse, temporary, localized effects to fish.

No Action Alternative – The site would remain in its current state and fish habitat would remain unchanged. Therefore, there would be no impact to the fish found in the region, and they would continue to potentially utilize Salt River Bay as habitat.

Conclusion – Impacts to wildlife species include short-term, minor, adverse effects to fish within SARI. The species potentially impacted are expected to avoid or leave the areas being disturbed and the return at the conclusion of the construction/installation and maintenance dredging activities. The No Action Alternative would not impact wildlife. None of the alternatives would cause impairment to park resources.

4.5.4 Benthic Organisms

Project Site Alternatives – Long-term, minor, adverse effects to the benthic community would occur during construction of boat dock/mooring facilities at SARI for the Preferred Alternative (East Site) and the South Site Alternative. The benthic community in the area would be affected (i.e., crushed, damaged)

by the installation of dock pilings and moorings. These construction activities would have permanent, localized effects to the benthic community.

Impacts to the benthic community would result from the seawater supply pipeline for all three alternatives. The pipeline would be tethered to the bottom substrate; during this installation benthic organisms may be crushed or damaged. Minor, adverse, long-term impacts to the benthic community would occur as a result of the seawater supply pipeline installation.

The benthic community would also be impacted (i.e., crushed, removed, damaged) from maintenance dredging activities. Maintenance dredging would have minor, permanent, localized effects to the benthic community.

No Action Alternative – The site would remain in its current state and the aquatic habitat would remain unchanged. Therefore, there would be no impact to the benthic communities.

Conclusion – Impacts to aquatic species include long-term, minor, adverse effects to the benthic community within SARI. The No Action Alternative would not impact the benthic community. None of the alternatives would cause impairment to park resources.

4.6 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act defines the terminology used to assess impacts to listed species as follows:

No effect: When a proposed action would not affect a listed species or designated critical habitat.

May affect/not likely to adversely affect: Adverse effects on special status species are discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated) or are completely beneficial.

May affect/likely to adversely affect: When an adverse effect to a listed species may occur as a direct or indirect result of proposed actions and the effect either is not discountable or is completely beneficial.

Is likely to jeopardize proposed species/adversely modify proposed critical habitat (impairment): The appropriate conclusion when NPS or USFWS identifies situations in which the proposal could jeopardize the continued existence of a proposed species or adversely modify critical habitat to a species within or outside park boundaries.

In accordance with the Federal and Territorial requirements for threatened and endangered (T&E) species, ESA Section 7 Consultation was conducted with the USFWS Southeast Region, the NMFS Southeast Region Office, and the USVI DPNR. Information requested from these agencies included Federal and Territorial listed threatened and endangered species, designated or proposed critical habitat, and candidate taxa occurring in the project area. More details and correspondence between NPS and agencies consulted are supplied in Chapter 10 and Appendix B. NMFS has stated that four listed sea turtle species (green sea turtle, hawksbill sea turtle, leatherback sea turtle, and loggerhead sea turtle) have the potential to occur in the vicinity of SARI. Two Federally-listed species of coral (staghorn coral and elkhorn coral) also occur within the boundary of SARI and have been observed in Salt River Canyon (Kendall et al 2005). The spawning season for these species could range from July to September. In compliance with ESA Section 7 Consultation, information was requested on T&E species at SARI but, to date, no response has been received from the USFWS, the Commissioner of the USVI DPNR, or from contacts at the USVI DPNR/DEP or the USVI DPNR/DFW.

Also in accordance with the Federal and Territorial requirements for T&E species, ESA Section 7 Consultation would be required with USFWS, NMFS Southeast Region Office, and the USVI DPNR/DFW prior to construction and dredging activities. NMFS has already stated in the September 8, 2006 letter that a biological evaluation (BE) would be required as part of the planning and design stages for this project. The impacts analyzed in this section include impacts associated with the construction of the MREC and associated buildings, the construction of the boat dock and the wet lab, the impacts associated with dredging activities, and the impacts associated with a submerged seawater supply pipeline. This chapter does not analyze in detail secondary aquatic impacts associated with the additional marine research activities that may be conducted as a result of the MREC. These impacts would be analyzed in detail at an appropriate time in conjunction with the required BE and other required permits that may be obtained for this project at a later date in time. For the Preferred Alternative and the South Site Alternative, the proposed dredging activities would require further coordination with NMFS prior to construction to ensure compliance with Section 7 of the ESA. In addition, for all three alternatives, the seawater supply pipeline may require further coordination with NMFS prior to construction to ensure compliance with Section 7 of the ESA.

Preferred Alternative (East Site) – No impacts to the two Federally-listed coral species are anticipated as a result of the construction of the Preferred Alternative, since these species are located sufficiently far away from the project site. The east wall of Salt River Canyon, where the two coral species have been observed, is located approximately 0.12 nautical miles from the East Site. However, depending on the final location, operation of the seawater supply pipeline could cause a short-term, minor, adverse impact to coral species if intake occurs during coral spawning season. During the coral spawning season, it is a possibility that coral gametes may become entrained at the pipeline intake. Coral spawning occurs in the water column with the release of gametes and could range from July to September. If coral spawning was observed at SARI the MREC would temporary shut off the pipeline intake; however, only if the shutdown does not impact the internal Wet Lab system. In addition, TOY restrictions for construction may be in place to avoid short-term, minor, adverse impacts to coral gametes. Both the proposed dredging activities and the seawater supply pipeline would require further coordination with the USFWS and USACE prior to construction to ensure compliance with Section 7 of the ESA.

The construction of the MREC facilities would not adversely affect the federally listed sea turtles that have the potential to occur at SARI (leatherback sea turtle and loggerhead sea turtle) and the federally listed sea turtles that reside both inside and outside of the bay (green sea turtle and hawksbill sea turtle), as the majority of these construction activities would occur on land. However, short-term, minor, adverse impacts to listed species could potentially occur from in-water work, including construction of the boat dock and maintenance dredging for the East Site. Watercraft would be required for these construction activities, resulting in the potential to affect the listed sea turtles if contact with watercraft occurs. These activities would require coordination with the NMFS prior to construction for compliance with Section 7 of the ESA. Watercraft would be required for maintenance dredging activities and for the proposed seawater supply pipeline, resulting in the potential for short-term, minor, adverse impacts to the listed sea turtles if contact with watercraft occurs. Sea turtles are not expected to feed in the vicinity of the Preferred Alternative since it is unlikely that seagrasses currently occur within the Mangrove Lagoon, but sea turtles may feed in the vicinity of the seawater supply pipeline, depending on the exact location and depth of the pipeline. To minimize possible impacts to listed sea turtles, TOY restrictions for construction would be in place during turtle nesting seasons to avoid possible unanticipated adverse impacts to this species. If aquatic construction is avoided during the nesting time period from March until mid November, and personnel operating watercraft are vigilant during construction for foraging sea turtles, the four listed sea turtles should not be adversely affected by this project.

The Territorially listed endangered least tern has been observed nesting on the northwest side of the East Site. Least tern habitat is discussed in more detail in Section 4.7.1.

South Site Alternative – Impacts to listed species as a result of the South Site Alternative are similar to impacts discussed above for the Preferred Alternative (East Site). The east wall of Salt River Canyon, where the two coral species have been observed, is located approximately 0.37 nautical miles from the South Site. No known Least Tern nesting sites are located within the South Site Alternative. As stated above, short-term, minor, adverse impacts to aquatic species could occur from in-water work, including construction of the boat dock, maintenance dredging, and the seawater supply pipeline (depending on the exact location) for the South Site Alternative. But, as stated previously, TOY restrictions for construction would be in place during nesting seasons of sea turtles and coral gamete season to avoid possible unanticipated adverse impacts to listed species.

West Site Alternative – Portions of West Site Alternative in the vicinity of the Salt River Marina are currently developed. However, the surrounding habitats of the marina have the potential to support Federal and Territorial listed species. The habitats in the vicinity of the Visitor Contact Station also have the potential to support Federal and Territorial listed species. The waters adjacent to Sandy Point National Wildlife Refuge, located on the southwestern tip of St. Croix, over 15 miles southwest of the Columbus Landing Site, on the other side of the island, are designated critical habitat for the Federally-listed leatherback sea turtle. However, NMFS has stated that due to the distance of this area from the project site, it is unlikely that this habitat would be affected by the proposed construction (see Appendix B). *A. palmata* and *A. cervicornis* have been observed on both walls of Salt River canyon and along the coast line north and east of the East Site. The west wall of Salt River Canyon, where the two coral species have been observed, is located approximately 0.22 nautical miles from the West Site. Critical habitat is discussed in more detail in Section 4.7.1.

As stated above for the other alternatives, short-term, minor, adverse impacts to aquatic species could occur from in-water work, including maintenance dredging and the seawater supply pipeline (depending on the exact location). Watercraft would be required for the proposed maintenance dredging and seawater supply pipeline, resulting in the potential to affect the listed sea turtles if contact with watercraft occurs. But, as stated previously, TOY restrictions for construction would be in place during nesting seasons to avoid possible unanticipated adverse impacts to listed species.

No Action Alternative – Under the No Action Alternative, listed species would not be impacted. All uses of SARI would remain the same as in the current state.

Conclusion – No impacts to T&E species are anticipated as a result of the construction of the MREC, as the majority of these construction activities would occur on land. However, short-term, minor, adverse impacts to listed species could occur from in-water work, including construction of the boat dock and maintenance dredging regardless of the alternative. Watercraft would be required for these construction activities, resulting in the potential to affect the listed sea turtles if contact with watercraft occurs. These activities, along the proposed seawater supply pipeline, which may also have short-term, minor, adverse impacts to listed species for all three alternatives (depending on the exact location) would also require coordination with the NMFS prior to construction for compliance with Section 7 of the ESA. During the coral spawning season, it is a possibility that coral gametes may become entrained at the pipeline intake. However, TOY restrictions would be in place to avoid short-term, minor, adverse impacts to both listed coral species and sea turtle species. The leatherback turtle nesting beach at Sandy Point NWR, located on the southwestern tip of St. Croix would not be impacted as a result of any of the project alternatives. The No Action Alternative would not impact listed species. None of the alternatives would cause impairment to park resources.

4.7 UNIQUE NATURAL RESOURCES

As stated previously, the MREC facility would have minor, adverse impacts to some of the unique natural systems and designated natural areas. Minor, adverse impacts to mangrove wetlands from the boat dock and wet lab at the Preferred Alternative and the South Site Alternative are anticipated, although wetland mitigation would offset the majority of these impacts. For all three alternatives, minor, adverse, short-term impacts to the coral reefs would occur from installation of the seawater supply pipeline. Also, the intake for the seawater supply pipeline could potentially entrain coral gametes in the water column during the spawning season, which may result in some loss of gametes, but no impact to the coral reef is expected.

For all three site, the MREC facility would provide long-term, moderate, beneficial impacts to the unique natural systems at SARI, especially the coral reefs and mangrove habitat by fostering public awareness of the importance of coral reefs and other marine ecosystems from economic, aesthetic and global health standpoints through educational programs for students and the general public (JICMS 2005). The MREC would also foster the understanding and proper management of coral reef and other tropical and subtropical marine ecosystems by initiating a comprehensive long-term research and education program in the U. S. Virgin Islands (JICMS 2005). Lastly, the MREC would share information and research and form partnerships with other nations within the Caribbean and adjacent regions with common interests in and concerns for the marine environment (JICMS 2005). Overall, this project would not significantly alter the unique natural systems or designated natural areas that occur in the vicinity of Salt River Bay, which includes critical habitat, mangrove habitat, coral reef habitat, the submarine canyon, APCs, and ecological preserves. These resources are discussed in more detail in the following paragraphs.

4.7.1 Ecologically Critical Areas

Preferred Alternative (East Site) – The construction of the Preferred Alternative (East Site) is unlikely to adversely impact the designated critical habitat for the Federally-listed leatherback sea turtle (located in the waters adjacent to Sandy Point NWR, located on the southwestern tip of St. Croix) as stated by NMFS, due to the distance of this area from the project site (see Appendix B). The Territorially listed endangered least tern has been observed nesting on the northwest side of the East Site. However, the majority of the proposed MREC is located on the eastern side of the East Site, at a sufficient distance from the nesting site such that noises from construction activities are unlikely to impact the Least Tern, with the exception of the construction of the water-dependent structures, such as the boat dock and wet lab. Similar to current conditions, posted signs would indicate the Least Tern nesting locations during the appropriate seasons to deter visitors from utilizing these areas. In addition, TOY restrictions during construction of the water-dependent structures would be in place during both the Least Tern nesting seasons (which occurs, conservatively at a maximum from the middle of April until the middle of July) to avoid possible unanticipated adverse impacts to these species. With TOY restrictions in place, no adverse impacts to Least Tern nesting habitat are expected with the Preferred Alternative.

Minor, adverse, short-term impacts to the coral reefs may occur from installation of the seawater supply pipeline. To minimize these impacts, however, the location of the seawater supply line would be routed to avoid areas of high quality coral reefs. There are existing areas along the northern shore of the East Site where coral reef density is low due to impacts from hurricanes, areas of existing coral cobble, and high surf conditions; this area also provides a relatively short distance to deeper water for the seawater supply line. Also, the intake for the seawater supply pipeline could potentially entrain coral gametes in the water column during the spawning season, which may result in some loss of gametes, but no impact to the coral reef is expected. As stated previously in Section 4.3.4, minor, adverse impacts to mangrove wetlands from the boat dock and launch at the Preferred Alternative (East Site) are anticipated. Approximately 0.03 acres of mangrove wetlands would be permanently lost as a result of constructing the

boat dock and launch and the wet lab, located on the northern shoreline of the Mangrove Lagoon. As discussed in detail in Section 4.3.4 and in the SOF (Appendix D), mangrove mitigation measures are proposed to partially offset the loss of mangrove habitat. Dredging has the potential to temporarily and locally increase turbidity in Salt River Bay, potentially causing a short-term, minor, adverse impact to EFH and HAPC. An EFH Evaluation required to support a permit for dredging would be obtained prior to the initiation of dredging activities. All anticipated impacts associated with dredging would be evaluated in detail in this document.

As stated previously, the construction of the MREC facilities would not adversely affect the federally listed sea turtles that have the potential to occur at SARI (leatherback sea turtle and loggerhead sea turtle) and the federally listed sea turtles that reside both inside and outside of the bay (green sea turtle and hawksbill sea turtle), as the majority of these construction activities would occur on land. However, short-term, minor, adverse impacts to listed sea turtle species could potentially occur from in-water work and are discussed in more detail in Section 4.6.

Long-term, moderate, beneficial impacts are anticipated as a result of the MREC facility. The knowledge gained from research conducted at the MREC facility would benefit the unique natural systems at SARI, especially the coral reefs and mangrove habitat. The MREC would also share information and research and form partnerships with other nations within the Caribbean and adjacent regions with common interests in and concerns for the marine environment (JICMS 2005).

South Site Alternative – Impacts to critical habitat, including coral reefs, as a result of the South Site Alternative are similar to impacts discussed above for the Preferred Alternative, with the exception of the Least Tern. No known Least Tern nesting sites are located within the South Site Alternative. Approximately 0.04 acres of mangrove wetlands would be permanently lost as a result of constructing the boat dock and launch, located along the shoreline of Triton Bay. As discussed in detail above and in Section 4.3.4, mangrove mitigation measures would be required to partially offset the loss of mangrove habitat. Similar long-term, beneficial impacts associated with the MREC, as discussed above for the Preferred Alternative, are also expected with the South Site Alternative.

West Site Alternative – Impacts to critical habitat, including coral reefs, as a result of the West Site Alternative are similar to impacts discussed above for the South Site Alternative. However, mangroves would not be impacted by the West Site Alternative because a boat dock and launch would not be required. The West Site Alternative would make use of the existing, working marina (i.e., boat ramp) located along the shoreline of Sugar Bay. Because the designated critical habitat for the Federally-listed leatherback sea turtle (located in the waters adjacent to Sandy Point NWR), is located over 15 miles southwest of the Columbus Landing site, NMFS has determined that no impacts to this habitat would be anticipated (see Appendix B). Although leatherback sea turtles have been observed foraging in the bay and nesting (rarely) at the Columbus Landing Site, short-term, minor, adverse impacts to the leatherback sea turtle (and three other listed sea turtles) could potentially occur from in-water work and are discussed in more detail in Section 4.6. Similar long-term, beneficial impacts associated with the MREC, as discussed above for the Preferred Alternative, are also expected with the South Site Alternative.

No Action Alternative – Under the No Action Alternative, ecologically critical areas would not be impacted. All uses of SARI would remain the same as in the current state. No long-term beneficial impacts associated with the MREC facility would occur.

Conclusion – No impacts to designated critical habitat for the Federally-listed leatherback sea turtle are anticipated with the project alternatives. However, short-term, minor, adverse impacts to listed sea turtle species could potentially occur from in-water work and are discussed in more detail in Section 4.6. The least tern nesting habitat on the East Site would not be negatively impacted as a result of the Preferred

Alternative. Minor, adverse impacts to mangroves, identified as critical habitat, are anticipated as a result of the Preferred Alternative (East Site) and the South Site Alternative. However, mangrove mitigation measures through plantings at a specified ratio of 3:1 would be required to partially offset the loss of mangrove habitat associated with the construction of the MREC. Details concerning the location of the mitigation and the planting plan were determined through consultation with the NPS, the USACE, and the USDA NRCS and are described in detail in the SOF included as Appendix D. For all three alternatives, minor, adverse, short-term impacts to the coral reefs would occur from installation of the seawater supply pipeline and could potentially entrain coral gametes in the water column during the spawning season, although no impact to the coral reef is expected. The impacts to coral reefs would be minimized routing the seawater supply pipeline to avoid areas of high quality coral reefs.

As stated previously, the MREC facility would provide long-term, moderate, beneficial impacts to the unique natural systems at SARI, especially the coral reefs and mangrove habitat by fostering public awareness of the importance of coral reefs and other marine ecosystems from economic, aesthetic and global health standpoints through educational programs for students and the general public (JICMS 2005). Under the No Action Alternative, ecologically critical areas would not be impacted and no long-term beneficial impacts associated with the MREC facility would occur. None of the alternatives would cause impairment to park resources.

4.7.2 Designated Natural Areas

Due to the general nature of designated natural areas, the majority of Salt River Bay is included in a number of different designations for natural areas, including Salt River Bay Marine Reserve and Wildlife Sanctuary, Salt River Bay and Watershed Areas of Particular Concern, Salt River Bay National Historical Park and Ecological Preserve, and the St. Croix Coral Reef System Areas of Particular Concern. As stated above, the MREC facility would have a positive impact on the unique natural systems at SARI and would therefore allow these designated natural areas to continue to be preserved.

Preferred Alternative (East Site) – As stated above in Section 4.7.1 *Critical Habitat*, long-term, beneficial impacts are anticipated as a result of the MREC facility.

South Site Alternative – Potential impacts to avian species as a result of the South Site Alternative were discussed previously in Section 4.4.2 and determined to be minor. Long-term, beneficial impacts are anticipated as a result of the MREC facility.

West Site Alternative - Impacts associated with the West Site Alternative have long-term beneficial impacts and are similar to the discussion above for the Preferred Alternative.

No Action Alternative – Under the No Action Alternative, designated natural areas would not be impacted. All uses of SARI would remain the same as in the current state. No long-term beneficial impacts associated with the MREC facility would occur.

Conclusion – Long-term, beneficial impacts are anticipated as a result of the MREC facility and the Project Site Alternatives. No long-term, beneficial impacts are anticipated as a result of the No Action Alternative. None of the alternatives would cause impairment to park resources.

4.8 CULTURAL RESOURCES

4.8.1 Archaeological Sites

Of the three alternatives under consideration for the implementation of the MREC, only one of these locations, the Preferred Alternative (East Site), has received a comprehensive archaeological survey and is the location of known archaeological sites. There is also the potential for submerged resources (shipwrecks, etc.) in the bay itself for all three alternatives, which are discussed in the *Underwater Archaeology* subheading that follows the discussion of Project Site Alternatives.

Preferred Alternative (East Site) – Construction of the MREC on the East Site would have an affect on sites SARI-2.03 and SARI-2.06. The sites are located in the area of the MREC Administration and Education Center and the Maintenance Building and would be affected by the construction of these facilities. Further archaeological testing in accordance with Section 106 of the NHPA would be needed to determine if these sites represent two separate locations or should be considered as a single site, and if these sites are eligible for listing on the NRHP. The sites have already been disturbed by the construction of the Mangrove Lagoon, as well as by existing dirt roads, and hence there is limited potential for an adverse affect.

The potential effects on underwater archaeological resources would need to be considered for the construction of MREC in-water support facilities (i.e., boat dock, moorings) on the East Site, as outlined in the Section Underwater Archaeology, below.

Meredith Hardy (2005) also recommends either monitoring of any construction or earth disturbance in the immediate area (within 50 feet) of SARI-2.01 to make certain that this site is not impacted by MREC construction activities on the East Site or the installation of construction fencing to assure that the SARI-2.01 site boundary is protected.

South Site Alternative – No archaeological survey has been completed for the South Site. This property is located on a knoll and small projections in the upper reaches of the bay and should also be considered to have moderate to high site potential, with impacts where the existing structures are located. Construction of the MREC on the South Site would require a Phase I survey in accordance with Section 106 of the NHPA to identify archaeological resources on the property as well as a Phase II archaeological investigation to determine the NRHP eligibility of such sites if discovered. The results of this Phase I survey would need to be reviewed by the USVI SHPO. If eligible sites are identified, efforts to mitigate adverse effects would be required. Additionally, the potential effects on underwater archaeological resources would need to be considered for the construction of the MREC in-water support facilities on the South Site, as outlined in the Section Underwater Archaeology, below.

West Site Alternative - Construction of the MREC on the West Site would require a Phase I survey in accordance with Section 106 of the NHPA to identify archaeological resources on the Salt River Marina property as well as a Phase II archaeological investigation to determine the NRHP eligibility of such sites if discovered. If eligible sites are identified, efforts to mitigate adverse effects would be required. Additionally, the potential effects on underwater archaeological resources would need to be considered for the construction of the MREC in-water support facilities on the West Site, as outlined in the Section Underwater Archaeology, below.

Underwater Archaeology

Common to all Alternatives – The location chosen for the MREC would require a seawater intake pipeline extending from the site through the bay and into the Caribbean Sea that would bring salt water

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for use in the MREC labs. Construction of this line has the potential to affect submerged cultural resources in Salt River Bay and the Caribbean Sea. These waters are under the jurisdiction and management of the Government of the U.S. Virgin Islands.

The results of the underwater archaeological reconnaissance of Salt River Bay was conducted in 1989 by the IASD of the NPS indicated that there are near-shore, bay and off-shore archaeological resources in the project area (See Section 3.8.2). Construction of the MREC at any of the locations would require an underwater archaeological survey to determine the location of submerged cultural resources along the course of the seawater supply pipeline into the Caribbean Sea required for the MREC.

It is recommended that a remote-sensing survey using a magnetometer or side-scan sonar be conducted along the alignment of the seawater supply pipeline to determine if any submerged anomalies are present in this area. With the locations of anomalies mapped, efforts should be made to route the pipeline to avoid such submerged resources. If a pipeline route can be designed that avoids submerged resources, no further treatment for underwater archaeology would be needed. If it is not feasible to site the pipeline without crossing submerged anomalies, underwater archaeological survey should be completed to investigate and evaluate the resources identified by the remote-sensing survey. If NRHP-eligible shipwrecks or other submerged resources are identified, the project's affects on such resources would need to be determined and mitigation would be required for adverse effects.

No Action Alternative – Under the No Action Alternative, archeological sites would not be impacted. All uses of SARI would remain the same as in the current state.

Conclusion – Of the three alternatives under consideration for the implementation of the MREC, only a portion of East Site, has received comprehensive archaeological surveys and is the location of known archaeological sites. Regardless of the alternative, detailed archeological survey and investigation would likely be required. The Preferred Alternative (East Site) would potentially affect known archeological sites SARI-2.03 and SARI-2.06. Further archaeological testing in accordance with Section 106 of the NHPA would be required to determine if these sites are eligible for listing on the NRHP. Additionally, there is also the potential for submerged resources (shipwrecks, etc.) in the bay itself for all three Project Site Alternatives. Under the No Action Alternative, archeological sites would not be impacted. No impairment of SARI resources would result from any of the alternatives. None of the alternatives would cause impairment to park resources.

4.8.2 Historic Resources

Project Site Alternatives – None of the three Project Site Alternatives has the potential to affect SARI's historic resources.

No Action Alternative – Under the No Action Alternative, historic resources would not be impacted. All uses of SARI would remain the same as in the current state.

Conclusion – None of the three Project Site Alternatives or the No Action Alternative has the potential to affect historic resources.

4.8.3 Cultural Landscapes

Cultural landscape elements and issues associated with each of the sites are discussed below.

Preferred Alternative (East Site) – The East Site landscape has been significantly modified by construction activities associated with the 1960s development for the Virgin Grand Hotel. Landscape modifications that have occurred on this site include alterations to the shoreline, the dredging of a mangrove lagoon for the construction of a marina, the creation of a peninsula with dredge spoil on which the 26,000 square foot superstructure of the unfinished hotel sits, the excavation of roadways including roads cut into the adjacent hillside, and the clearing of native vegetation. Erosion and off-road vehicle traffic has also impacted the landscape. This site is adjacent to the Judith's Fancy residential development, which overlooks the site from the surrounding hillsides.

The proposed construction on this location would consist of wet labs and water tanks along the shore of the Mangrove Lagoon, and the Education Center, cafeteria, and dormitories on the southern and eastern edges of the hill found in this corner of SARI. The latter are planned as single story buildings constructed into the hillside to minimize their profiles as well as for energy efficiencies and hurricane resistance. These would further be masked by plantings of native vegetation. The view of these structures would be shielded from ocean approaches from the east, but would be visible from the west and from the Columbus Landing Site as well as from directly off shore from Salt River Bay. The MREC's design for this alternative intentionally hugs the hillside in this area, which partially, but not completely, mitigates its visual effect on the landscape. Furthermore, the regeneration of native vegetation on this site could help shield the view of these structures as well as return the East Site to the appearance of its historic landscape. Construction on this alternative could have an adverse effect on the SARI cultural landscape. The degree of effect is difficult to calculate without construction and landscape plans, but is estimated at minor.

South Site Alternative – The South Site is located on a knoll at the back of the bay. The proposed construction on this location consists of wet lab facilities and an education center on Triton Bay and placement of the MREC building, cafeteria, and dormitories behind the hill which dominates this point. Use of this alternative would have an adverse effect on SARI's cultural landscape, as it would clear a wooded hillside and construct a facility that would be visible from the mouth of Salt River Bay as well as from the Columbus Landing Site. While the distance of this alternative from the mouth of the bay in part moderates the visual effect, changing this hillside from wooded to developed would be a notable visual intrusion and the degree of adverse effect is judged to be moderate.

West Site Alternative – The West Site is located at the Salt River Marina and on a hill above Salt River Bay. Construction on the hill would introduce additional buildings overlooking the Columbus Landing Site and would have an adverse visual effect on SARI's cultural landscape. Given the proximity of this new construction to the mouth of the bay, it would represent a moderate adverse effect on the cultural landscape of SARI.

The Salt River Marina is tucked back into the southwest corner of the bay and is not visible from the ocean. Use of this site would not have an adverse affect on SARI's cultural landscape, as long as the new facilities' mass and scale were appropriate.

No Action Alternative – Under the No Action Alternative, cultural landscapes would not be impacted. All uses of SARI would remain the same as in the current state.

Conclusion – All three alternatives could potentially have an adverse visual effect on the cultural landscape of SARI. The effect would range from minor to moderate and would be long-term. Section 106 and Section 110 compliance are required and would be completed for this project. The proposed project was analyzed in detail and has minimized or avoided, when possible, adverse impacts to SARI's cultural landscape. Applicable concurrence and/or approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but

prior to the start of the construction of the MREC. The No Action Alternative would not impact the cultural landscape of SARI.

4.9 HUMAN ENVIRONMENT

4.9.1 Recreation

Preferred Action (East Site) – Construction of the MREC would cause minor, short-term, adverse impacts to land-based recreational activities (i.e., hiking). Navigation in the vicinity of the project would be impacted from maintenance dredging and construction activities needed for the installation of the boat dock and moorings preventing the use of portions of the Mangrove Lagoon and bay. An increase in turbidity and activity in the water may decrease the quality of kayaking, swimming, and snorkeling in the immediate area during dredging and construction. These impacts to recreation would be minor, temporary, and adverse. However, long-term moderate benefits to recreation would occur during the operational phase of the MREC. The MREC would attract more visitors to SARI and would become an integral component of the overall tourism experience for St. Croix and the Virgin Islands.

South Site Alternative – No land-based recreational activities (i.e., hiking) are currently available at the South Site since it is not public land. Navigation in the vicinity of the project would be impacted from maintenance dredging and construction activities needed for the installation of the boat dock and moorings preventing the use of portions of the bay. An increase in turbidity and activity in the water may decrease the quality of kayaking and swimming in the immediate area during dredging and construction. These impacts to recreation would be minor, adverse, and temporary. As stated above, long-term, moderate, benefits to recreation would occur during the operational phase of the MREC.

West Site Alternative – Construction of the MREC would cause minor, short-term impacts to the area surrounding the NPS Visitor Center since this is where most of the construction for the MREC buildings would occur. The Visitor Center is planning to continue to operate during construction of the MREC. Construction of the MREC would not affect scuba diving, snorkeling, swimming, and kayaking. There would be minor short-term impacts to recreation from the construction of the wet lab and maintenance buildings proposed to be located at the marina. The temporary impacts to recreation include SCUBA, kayaking, and boating during the MREC construction activities. These impacts to recreation would be minor, adverse, and temporary. As stated above, long-term, moderate benefits to recreation would occur during the operational phase of the MREC.

No Action Alternative – Under the No Action Alternative, recreational opportunities would remain the same at SARI. Current levels of visitor services would remain unchanged. No long-term benefits to recreation would occur since the MREC would not be built as part of the No Action Alternative.

Conclusion – There would be minor, short-term, adverse impacts to recreational resources in the vicinity of SARI regardless of the alternative during construction. The No Action Alternative would not result in impacts to SARI's recreational resources. For all Project Site Alternatives, long-term, moderate, benefits to recreation would occur from the MREC by attracting more visitors to SARI and by becoming an integral component of the overall tourism experience for the USVI. None of the alternatives would cause impairment to park resources.

4.9.2 Socioeconomic Conditions

Project Site Alternatives – Implementation of the MREC would improve the quality of life in the Salt River Bay region by providing additional opportunities for educational programs for students and the general public regardless of the alternative. Through the participating institutions of the MREC,
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scholarships and stipends to local students may occur. The MREC would also provide comprehensive long-term research programs. Additional opportunities for incentives for partnering with local governments, community groups, and individual citizens would be provided by the MREC; all of which would create a potential economic benefit to the community. As an individual entity, it is estimated that the MREC would contribute to the local economy by attracting more visitors to SARI. It also has the potential in the future to become an integral component of the overall tourism experience for the Virgin Islands.

In addition, the MREC would contribute directly to the local economy by hiring permanent and part-time employees and purchasing goods and services from local suppliers. The local economy would benefit from a short-term increase in employment during construction by the creation of new jobs. Regardless of the alternative, the local economy would benefit.

West Site Alternative – There is a potential that the project would have a negative impact on the current businesses at the marina, which would be from the reuse of some of the existing buildings at the site for the Wet Lab and Maintenance Building. Some of the current businesses at the marina may also be impacted during construction of these buildings. Additionally, there would be an impact on the use of the public boat slips at the marina, since the MREC would need to acquire the use of as much as ½ of the existing slips that are currently available to the boating community for regular use and in the event of a hurricane. The current private boats would lose their preferred slips in the marina, which would result in a long-term, moderate, adverse impact to some of the current boat slip users and a long-term, major, adverse long term impacts to the current business owners.

No Action Alternative – The No Action Alternative would not result in any impacts to the community. The benefit to the local economy from the hiring of permanent and part-time employees and the purchasing goods and services from local suppliers would not happen. The local economy would not benefit from a short-term increase in employment during construction by the creation of new jobs.

Conclusion – Implementation of the MREC would result in beneficial impacts to the local communities. The No Action Alternative would not result in impacts to the surrounding community. None of the alternatives would cause impairment to park resources.

4.9.3 Environmental Justice

Project Site Alternatives – The minority population and persons living below the level of poverty is similar for the communities adjacent to the East Site (45% minority, 37% below poverty level) and West Site (32 % minority, 40% below poverty level). However, for the communities adjacent to the South Site, the minority populations are 65 % and persons living below the level of poverty are 92 %. Even though there are disproportionate minority and low-income communities at the South Site as compared to the East and West Sites, the MREC would actually benefit all the local communities by providing jobs and additional educational opportunities.

No Action Alternative – The No Action Alternative would not result in any impacts to low-income or minority communities.

Conclusion – The project would result in beneficial impacts to the region's low-income and minority communities by providing additional jobs and educational opportunities. The No Action Alternative would not result in impacts to surrounding low-income or minority communities. None of the alternatives would cause impairment to park resources.

4.9.4 Aesthetics

Preferred Action (East Site) – Aesthetics would be altered from current conditions at the East Site; however, the MREC buildings would be constructed to blend in as much as possible with the natural surroundings. This would be accomplished by restricting building heights and using natural paint colors for the exterior of the buildings and roofs. Additionally, the view of the MREC structures would be shielded from ocean approaches from the east as the structures intentionally hug the hillside in this area and placement of the buildings was chosen to minimize impacts to adjacent residents as well as revegetation would partially screen the site from adjacent residents. A balance between maintaining important views and re-establishing native plants would be a priority. The Preferred Alternative would cause short-term, minor adverse disturbances during construction and long-term, moderate, adverse effects to the aesthetics at this site.

South Site Alternative – As with the Preferred Alternative aesthetics would be altered from current conditions; however, the MREC buildings would be constructed to blend in as much as possible with the natural surroundings by restricting building heights and using natural paint colors. The buildings would also be screened by topography and vegetation. This site would reuse some of the current structures on-site; the Education Center would be located in an existing building. This site would have the least visual impact on the Salt River Bay especially true for views looking from outside the bay by placement of the cafeteria and dormitories behind the hill which dominates the point. The South Site Alternative would cause short-term, minor, adverse disturbances during construction and long-term, minor, adverse effects to the aesthetics at this site.

West Site Alternative – As with the Preferred Alternative and the South Site aesthetics would be altered from current conditions. Most of the building program would be located on the Visitor Contact Station site which would include the main MREC building, a cafeteria building, and dormitories converted from the existing residential buildings. Developing on the ridge top at the Visitor Contact Station could create a visual impact, as both the Visitor Contact Center and MREC buildings would be visible from the bay and the ocean. However, most facilities would be located on the inland side of the ridge to reduce the visual impact from the ocean. Revegetating would also screen views of the development to the west and help frame other views. The proposed use of this site would increase the density of buildings on the ridge, but the entire Salt River Bay watershed is already dotted with homes. As with the other sites, building heights would be restricted and natural paint colors would be used for the exterior of the buildings and roofs.

At the marina would be located the maintenance building and wet labs, either constructed as new or located in an existing building. The Salt River Marina is tucked back into the southwest corner of the bay and is not visible from the ocean. Use of this site would not have an adverse affect on the aesthetics at the site and on SARI's cultural landscape.

The West Site Alternative would cause short-term, minor, adverse disturbances during construction and long-term, moderate, adverse effects to the aesthetics at this site.

No Action Alternative – The No Action Alternative would not result in changes to the aesthetic appearance of SARI. The surrounding viewshed would also remain relatively unchanged compared to the Preferred Alternative, and South Site and West Site alternatives.

Conclusion – All sites would have short-term, minor, adverse disturbances during construction and long-term, minor, adverse effects to the aesthetics at the South Site and long-term, moderate, adverse effects to the aesthetics at the East and West Sites. However, the MREC buildings and structures would be constructed to blend in as much as possible with the current surroundings and the surrounding viewshed

would be protected as much as possible. The No Action Alternative would not result in changes to the aesthetic appearance of SARI. None of the alternatives would cause impairment to park resources.

4.9.5 Public Health and Safety

Project Site Alternatives – The proposed project would include building and structure designs that would comply with fire safety, mechanical and electrical codes and regulations. Accessibility for visitors with disabilities would be implemented during the design process for the MREC. All structures, parking facilities, visitor circulation paths and vehicles used to transport visitors would meet the requirements of the Americans with Disabilities Act (ADA). Even though not mandatory, strict building standards to achieve increased wind and/or flooding resistance would be adhered to for coastal storm hazards. Mandatory safety requirements as well as non-mandatory precautions would benefit overall visitor experience, and would not result in an impairment to park resources.

No Action Alternative – Under the No Action Alternative, the site would remain unchanged and the MREC would not be implemented.

Conclusion – The proposed project would comply with fire safety, mechanical and electrical codes and regulations. All structures, parking facilities, visitor circulation paths and vehicles used to transport visitors would meet the requirements of the ADA. Under the No Action Alternative, the site would remain unchanged and the MREC would not be implemented. None of the alternatives would cause impairment to park resources.

4.9.6 Energy Requirements and Conservation

Project Site Alternatives – Energy is required for heating and cooling of constructed buildings and for vehicles operating on the site. NPS management policies require that all facilities be managed, operated, and maintained to minimize energy consumption. The policies also require that new energy-efficient technologies be used where appropriate and cost-effective. Energy consumption and natural resource requirements would minimally increase during all phases of construction and operation of the MREC regardless of the alternative. During the construction phase, energy requirements would be temporary. However, minor increases in energy consumption would occur to operate the many components of the MREC. These would primarily occur through electricity supplied from USVI WAPA and from fuel needed to operate generators, vehicles, and boats. Actions to promote sustainable development in the design, retrofit, and construction of facilities have associated energy conservation and air quality benefits.

The use of green development for the proposed MREC would include solar, wind, and recycled materials to be used whenever possible and that wastewater/sewage would be treated with the latest technologies resulting in the least amount of impact on the environment. The following energy conservation and sustainable resources would be included in the final design for MREC where practical and cost efficient: alternative power such as solar panels and windmills, solar hot water systems high-volume rainwater collecting cisterns, reverse-osmosis freshwater production system (produces about 3,000 gallons a day), composting toilets, and pervious pavers/substrate for parking lots and roads. Minor, long-term increases in energy and natural resource requirements would occur for the MREC regardless of the alternative. However, wherever possible, energy conservation would be applied and sustainable resources would be used.

No Action – The site would remain in its current use, and no action would be taken; therefore, there would be no changes to the energy requirements and conservation at the site.

Conclusion – Minor, long-term increases in energy and natural resource requirements would occur for the MREC regardless of the alternative. However, wherever possible, energy conservation would be applied and sustainable resources would be used. The No Action Alternative would result in the site remaining in its current use, and no action would be taken; therefore, there would be no changes to the energy requirements and conservation at the site. None of the alternatives would cause impairment to park resources.

4.9.7 Infrastructure

Utilities

Impacts resulting from proposed water use, energy use, and waste disposal would not differ among the three alternatives. Electricity is currently provided to the South and West Site Alternatives, but would need to be installed at the Preferred Alternative (East Site). However, utility development at the East Site may be a benefit for this alternative due to the lack of existing infrastructure. The lack of utility infrastructure at the East Site would provide the NPS with the opportunity to design the MREC infrastructure independent of existing territorial utilities. Benefits would include: not burdening the existing system, underground utilities providing eliminating overhead poles which would reduce the amount of utility service, reduce hurricane impacts, and provide for the lowest profile on the landscape.

Roads and Site Access

Preferred Alternative (East Site) - The circuitous and narrow character of the current access to the site through the private gated community of Estate Judith's Fancy, necessitates that a more direct road access be developed for the MREC. The Haul Road, proposed to be constructed for the abandoned hotel demolition, would be improved and converted into a low traffic public road for access to the east side of the park following demolition activities. Access to the MREC would be to the north along the proposed public access road from Route 79 (Bennie Benjamin Road).

South Site Alternative – Since this site is privately owned, the NPS would need to acquire this site to change the access to the site from a private road to a NPS road. Access to the South Site would be to the north from Route 75 (North Side Road) to Route 79 (see Figure 2-3).

West Site Alternative – Public road access to the Salt River Marina and the Visitor Contact Station would be from the south by way of public roads Route 80 (North Shore Road) and Route 801 (see Figure 2-3).

Traffic

Vehicle trips to SARI would increase slightly with the addition of the MREC; however, the operational phase of the MREC is not expected to generate a significant increase of traffic in the SARI area.

Preferred Alternative (East Site) – Minor, long-term, beneficial impacts to the Estate Judith's Fancy community would occur from vehicle traffic during the operational phase of the MREC. The proposed public access road (if built) planned for the east side of the park would allow public access to the MREC and would reduce the impact on the private Judith's Fancy community (see Figure 2-6). This would benefit the community by diverting all park traffic and beach access traffic from the private gated community to the proposed public access road.

South Site Alternative – Minor, short- and long-term, adverse impacts to the Estate Montpellier community would occur from increased vehicle traffic during the construction and operational phase of

the MREC. Vehicles would mainly access the MREC from the south by way of a public road Route 79 (Bennie Benjamin Road) (Figure 2-3).

West Site Alternative – Minor, short- and long-term, adverse impacts to the Estate Salt River and Estate Morningstar communities would occur from increased vehicle traffic during the construction and operational phase of the MREC. Vehicles would mainly access the MREC from the south by way of public roads (Routes 80 and 801) (see Figure 2-3).

No Action – The site would remain in its current use, and no action would be taken; therefore, there would be no changes to the traffic conditions in the vicinity of SARI.

Conclusion – Minor, short- and long-term, adverse impacts to local communities would occur from increased vehicle traffic during the operational phase of the MREC for the South and West Site Alternatives. However, minor, long-term, beneficial impacts would occur for the Estate Judith's Fancy community since park vehicle traffic would be diverted to a new route via the proposed public access road. The No action alternative would result in no changes to the traffic conditions in the vicinity of SARI. None of the alternatives would cause impairment to park resources.

4.10 VISITOR USE

Project Site Alternatives – Currently, SARI is utilized by the local residents and tourists, mainly for recreation. The visitor experience at SARI would be greatly enhanced from current conditions for all Project Site Alternatives through the addition of the MREC. The MREC would provide an Education Center which would promote the sustainable utilization and conservation of marine resources through educational programs. The MREC would include an interactive interpretation center with aquaria for public viewing of local species and ecosystems. Overall, moderate, long-term benefits would occur from the MREC by attracting more visitors to SARI and by becoming an integral component of the overall tourism experience for the USVI. Short-term, adverse, minor disturbances would occur during the construction period; however, in the long-term, visitor experience at SARI would benefit from the proposed center. Visitors would be aware of the additional sound and visual effects associated with the construction of the MREC, but adverse effects would be slight.

No Action Alternative – Under the No Action Alternative, the existing uses at SARI would continue to limit the experience of visitors to sustainable utilization and conservation of marine resources.

Conclusion – In summary, the MREC would have beneficial impacts on visitor experience regardless of the alternative. The No Action Alternative would limit the experience of visitors. None of the alternatives would cause impairment to park resources.

4.11 PARK OPERATIONS

Project Site Alternatives – Park maintenance and operations would be increased over current levels regardless of the alternative. Park operations would experience minor, short-term, impacts during construction and moderate, long-term, beneficial impacts during operation. Current activities at SARI (i.e., hiking, boating, snorkeling, and scuba diving) would be allowed to continue uninterrupted during the construction period. Following completion of construction, park operations and park staff would increase over the current levels for the operation phase of the MREC. Beneficial impacts would result from a full-time presence of park staff at SARI which would result in improved security.

No Action Alternative – Under the No Action Alternative, park operations would remain unchanged and there would be no impacts to SARI.

Conclusion – The proposed project would have minor, long-term, beneficial impacts during operation of the MREC due to a full-time presence of park staff at SARI which would result in improved security. The No Action Alternative would not result in impacts to park operations. None of the alternatives would cause impairment to park resources.

4.12 SUMMARY OF IMPACTS

Table 4-2 presents a summary of the potential environmental and socioeconomic impacts for each alternative for this project. Following comparisons of the Preferred Alternative (East Site Alternative), the South Site Alternative, and the West Site Alternative all three alternatives result in similar resource impacts.

Short-Term Impacts

The construction phase of the MREC, installation of the seawater supply pipeline, and maintenance dredging would have short-term, minor, adverse effects to the soils and sediments, air quality, noise, water quality, coral reef/hardbottom substrate, fish, recreation, aesthetics, and visitor use at the park regardless of the alternative. The project may result in potential sediment runoff into nearby waterways during the clearing of vegetation and construction and grading activities. Best management practices (BMPs) would be used to minimize potential soil erosion and minimize impacts to Salt River Bay. The use of semi-pervious surfaces (i.e., gravel and grass parking areas) would be used wherever possible to minimize the creation of new impervious surfaces areas. Construction of a boat dock and ramp at the Preferred Alternative (East Site Alternative) and the South Site Alternative would also result in short-term, minor adverse impacts to the soils and sediments, water quality, fish, and mangroves/wetlands at these alternative locations. As a result of the wetlands impacted by the proposed MREC, an SOF for wetlands was prepared which included a wetland mitigation plan which offsets the majority of proposed wetland impacts. As a result of the Federal (USACE) mangrove wetlands impacted by the proposed MREC and the proposed maintenance dredging, a Section 10/404 Permit would be required. The permit would be acquired prior to the initiation of construction and dredging activities.

All three alternatives are located within Tier 1 of the coastal zone resulting in short-term, minor adverse impacts from the MREC; however, the project is expected to be consistent, to the maximum extent practicable with the VICZMP.

Long-Term Impacts

In the long-term, implementation of the MREC would have minor, adverse effects to the hydrology, air quality, noise, water quality, and energy requirements at the park regardless of the alternative. Maintenance dredging proposed for all three alternatives would have long-term, minor, adverse impacts to the bathymetry, seagrasses, and the benthic community at the park. However, in the long term, water quality in the Mangrove Lagoon (Preferred Alternative - East Site) has the potential to improve from being dredged since it would provide for improved flushing of the lagoon which would ultimately improve the water quality in the lagoon as well as providing a benefit to the mangroves. Long-term, minor, adverse effects to the 100-year floodplain and CRBS areas would occur from the construction of structures (i.e., Wet Lab, boat dock) at all the action alternatives. However, these structures would be constructed on pilings so as to not impede the function of the floodplain and the CRBS areas. Non water dependent buildings associated with the MREC were purposely placed outside of the 100-year floodplain and CRBS areas to minimize impacts to these resources. Implementation of the MREC would have long-term, minor to moderate, adverse effects to the birds, mammals, and vegetation at the South and West Site Alternatives. Forested (semi-deciduous) habitat, vegetated fields, and shrub habitat would be impacted

due the MREC facilities, roads, and associated parking facilities. However, long-term, minor to moderate, beneficial impacts would result from the replacement of non-native invasive plant species with appropriate native vegetation and revegetating disturbed areas (i.e., mud flats, bare areas, areas dominated by African guinea grass) beyond the MREC footprint at the Preferred Alternative (East Site).

T & E Species, Designated Critical Habitat, and Unique Natural Systems

No impacts to threatened and endangered species (T&E) species are anticipated as a result of the construction of the MREC, as the majority of these construction activities would occur on land. However, short-term, minor, adverse impacts to listed species could occur from in-water work, including construction of the boat dock and maintenance dredging regardless of the alternative. These activities, along the proposed seawater supply pipeline, which may also have short-term, minor, adverse impacts to listed species for all three alternatives (depending on the exact location) would also require coordination with the NMFS prior to construction for compliance with Section 7 of the ESA. However, TOY restrictions would be in place to avoid short-term, minor, adverse impacts to both listed coral species and sea turtle species.

No impacts to designated critical habitat for the Federally-listed leatherback sea turtle are anticipated with the project alternatives. However, short-term, minor, adverse impacts to listed sea turtle species could potentially occur from in-water work. Minor, adverse impacts to mangroves, identified as critical habitat, are anticipated as a result of the Preferred Alternative (East Site) and the South Site Alternative. However, mangrove mitigation measures through plantings at a specified ratio of 3:1 would be required to partially offset the loss of mangrove habitat associated with the construction of the MREC. For all three alternatives, minor, adverse, short-term impacts to the coral reefs would occur from installation of the seawater supply pipeline, although no impact to the coral reef is expected. The impacts to coral reefs would be minimized by routing the seawater supply pipeline to avoid areas of high quality coral reefs.

For all three project site alternatives, the MREC facility would provide long-term, moderate, beneficial impacts to the unique natural systems at SARI, especially the coral reefs and mangrove habitat by fostering public awareness of the importance of coral reefs and other marine ecosystems from economic, aesthetic and global health standpoints through educational programs for students and the general public. The MREC would also foster the understanding and proper management of coral reef and other tropical and sub-tropical marine ecosystems by initiating a comprehensive long-term research and education program in the U. S. Virgin Islands.

Cultural Resources

Of the three alternatives under consideration for the implementation of the MREC, only a portion of East Site, has received comprehensive archaeological surveys and is the location of known archaeological sites. Regardless of the alternative, detailed archeological surveys would likely be required. The Preferred Alternative (East Site) would affect known archeological sites and further archaeological testing in accordance with Section 106 of the NHPA would be required to determine if these sites are eligible for listing on the NRHP. Additionally, there is also the potential for submerged resources (shipwrecks, etc.) in the bay itself for all three project site alternatives. None of the alternative has the potential to affect historic resources at the park. All three alternatives could potentially have a long-term, minor to moderate, adverse visual effect on the cultural landscape of SARI. Section 106 and Section 110 compliance are required and would be completed for this project. Applicable concurrence and/or approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but prior to the start of the construction of the MREC.

Recreation and Aesthetics

There would be minor, short-term, adverse impacts to recreational resources at the park regardless of the alternative during construction. However, for all alternatives, long-term, moderate, benefits to recreation would occur from the implementation of the MREC by attracting more visitors to SARI and by becoming an integral component of the overall tourism experience for the USVI. Impacts to the aesthetics at the park during construction would be short-term, minor, and adverse regardless of the alternative and in the long-term the impacts would range from minor to moderate. However, the MREC buildings and structures would be constructed to blend in as much as possible with the current surroundings and the surrounding viewshed would be protected as much as possible. Minor, long-term, adverse impacts to local communities would occur from increased vehicle traffic during the operational phase of the MREC for the South and West Site Alternatives. However, minor, long-term, beneficial impacts would occur for the Estate Judith's Fancy community since park vehicle traffic would be diverted to the new route through the Historic Service Road.

Socioeconomic Conditions

Implementation of the MREC would improve the quality of life in the Salt River Bay region by providing additional opportunities for educational programs for students and the general public regardless of the alternative. Additional opportunities for incentives for partnering with local governments, community groups, and individual citizens would also be provided by the MREC; all of which would create a potential economic benefit to the community. As an individual entity, it is estimated that the MREC would contribute to the local economy by attracting more visitors to SARI. In addition, the MREC would contribute directly to the local economy by hiring permanent and part-time employees and purchasing goods and services from local suppliers. The region's low-income and minority communities would also benefit from the additional jobs and educational opportunities provided by the MREC. However, for the West Site Alternative, there is a potential that the project would have a negative impact on the current businesses at the marina and on the use of the public boat slips, since the MREC would need to acquire the use of as much as ½ of the existing slips that are currently available to the boating community. This would result in a long-term, moderate, adverse impact to some of the current boat slip users and a long-term, major, adverse impact to the current business owners.

Visitor Experience and Park Operations

Implementation of the MREC would have long-term beneficial impacts on visitor experience regardless of the alternative. Park maintenance and operations would be increased over current levels for all alternatives. The proposed project would result in moderate, long-term, beneficial impacts during park operation due to the full-time presence of park staff at SARI which would result in improved park security.

No Action Alternative

Under the No Action Alternative, there would be no adverse impacts to the resources discussed previously. Many benefits to the park would never be realized under the No Action Alternative. The benefit to the local economy from the hiring of permanent and part-time employees and the purchasing goods and services from local suppliers would not happen. The local economy would also not benefit from a short-term increase in employment during construction by the creation of new jobs. No long-term benefits to recreation would occur. No long-term beneficial impacts associated with the MREC facility would occur including the experience of visitors to learn about sustainable utilization and conservation of

marine resources. The long-term beneficial impacts to the unique natural systems at SARI, especially the coral reefs and mangrove habitat would not occur.

Overall, none of the alternatives including the No Action would cause impairment to park resources.

TABLE 4-2. MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMICS IMPACTS BY ALTERNATIVES FOR THE PROPOSED MREC

Resource	No Action Alternative	Preferred Alternative (East Site) South Site Alternative West Site Alternative
Soils/ Sediments	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Localized short-term, minor, adverse effects from construction activities, including installation of seawater supply pipeline. Localized short-term, minor, adverse effects from maintenance dredging. Previous dredging has occurred at all locations. Preferred Alternative and South Site Alternative – Short-term, minor, adverse effects from construction of boat ramp/dock.
Bathymetry	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Localized, long-term, minor, impacts to water depths from maintenance dredging. Water depths are expected to increase.
Air Quality	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Minor, long-term, adverse impacts from mobile sources associated with the MREC facilities. Negligible, long-term, adverse impacts from stationary sources associated with the MREC. Short-term, minor, adverse impacts from construction activities.
Noise	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Localized, short-term, minor, adverse impacts from construction activities. Localized, long-term, minor, adverse effects from noise associated with the use of the MREC facilities (i.e., generators, additional vehicle traffic, and operation of boats). Short-term, minor, adverse effect from maintenance dredging activities.
Light	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Negligible long-term, adverse light effects to the surrounding local community. Nighttime lighting would be at low levels and would not include any bright intrusive lights.
Climate	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Implementing strict building standards to achieve increased wind and/or flooding resistance would minimize damage from coastal storms.
Seismicity	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> MREC facilities would not be placed on reclaimed land. Current building codes to construct earthquake-resistant structures would be implemented.
Water Quality	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Short-term, minor, adverse effect would occur due to the potential for erosion runoff from construction and grading activities. This may result in increases of sediment input and turbidity. Erosion and sediment BMPs would be employed during construction activities. Long-term, minor, adverse effect from increased impervious surfaces. Stormwater management techniques are expected to improve current surface water quality and control additional Stormwater runoff. Short-term, minor, adverse impacts during implementation of the seawater supply pipeline. Preferred Alternative and South Site Alternative - Short-term, minor, adverse impacts during construction of boat ramp/boat dock/moorings. Short-term, minor, adverse impacts from increased turbidity associated with dredging activities. Temporary localized minor impacts to seagrasses, fisheries, mangrove wetlands, and other aquatic life from increased turbidity. Preferred Alternative - Maintenance dredging in the Mangrove Lagoon would improve water quality in the lagoon thereby providing a long term benefit.
Hydrology	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Long-term, minor, adverse effects to the Salt River Bay watershed drainage would occur due to wetland and vegetation impacts from construction of the MREC by increasing impervious surfaces.

TABLE 4-2. MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMICS IMPACTS BY ALTERNATIVES FOR THE PROPOSED MREC

Resource	No Action Alternative	<p align="center">Preferred Alternative (East Site) South Site Alternative West Site Alternative</p>
Floodplains	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Long-term, minor, adverse impacts are anticipated to the 100-year floodplain.
Coastal Zone	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> All three sites are located within the Coastal Zone. Short-term, minor, adverse impacts are anticipated; however, the project is expected to be consistent, to the maximum extent practicable with the VICZMP.
Coastal Barrier Resources System Areas	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Long-term, minor, adverse effects from the construction of structures in CBRS Areas.
Wetlands/ Mangroves	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Preferred Alternative – Short-term, minor, adverse impacts to approximately 0.03 acres of mangroves and 1.04 acres of other wetlands/open water would be impacted (1.07 total acres). South Site Alternative – Short-term, minor, adverse impacts to approximately 0.04 total acres (includes Federally-defined wetlands) of mangrove wetlands would be impacted. West Site Alternative – No impact to mangroves or wetlands is anticipated. Preferred Alternative - Maintenance dredging in the Mangrove Lagoon would improve water quality in the lagoon thereby providing a long term benefit to mangroves.
Vegetation	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Preferred Alternative – Approximately 0.23 acres of forest (semi-deciduous) habitat, 4 acres of vegetated fields, and 3 acres of shrubs would be impacted due to the MREC facilities; short-term, minor, adverse impacts are anticipated. Preferred Alternative – Long-term, minor, beneficial impacts would result from the replacement of non-native invasive plant species with native vegetation. South Site Alternative – Approximately 7 acres of forest (semi-deciduous), 0.04 acres of shrubs, and 0.17 acres of vegetated fields would be impacted due to the MREC; impacts would be long-term, moderate, and adverse. West Site Alternative – Approximately 0.88 acres of forest, 0.71 acres of shrubs, and 2 acres of vegetated fields would be impacted due to MREC facilities, roads, and associated parking facilities. Impacts would be long-term, minor, and adverse.
Birds	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> South and West Site Alternatives - Long-term, minor, adverse impact to birds as a result of loss of habitat due to vegetation removal. Birds may be temporarily disrupted during the construction operations due to the unavoidable noise and human activity. Preferred Alternative - Short-term, minor, adverse impact to birds as a result of loss of habitat due to vegetation removal; long-term, minor, beneficial impact to avian species would result from the replacement of non-native vegetation with native vegetation.
Mammals	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> South and West Site Alternatives - Long-term, minor, adverse impact to mammals in the area due to the loss of habitat. Preferred Alternative – Long-term, minor, beneficial impact to mammals would result from the replacement of non-native vegetation with native vegetation.
Coral Reef/ Hardbottom Substrate	<ul style="list-style-type: none"> No additional beneficial or adverse impacts 	<ul style="list-style-type: none"> Minor, adverse, short-term impacts to the coral reefs would occur from the installation of the seawater supply pipeline due to an increase in the turbidity in the water. Minor, adverse, short-term impacts to the hardbottom substrate would occur from the installation of the seawater supply pipeline.

TABLE 4-2. MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMICS IMPACTS BY ALTERNATIVES FOR THE PROPOSED MREC

Resource	No Action Alternative	Preferred Alternative (East Site) South Site Alternative West Site Alternative
Seagrasses	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> No impacts to seagrasses due to the construction of the MREC facilities. South and West Site Alternatives -Short-term, minor, adverse impacts to seagrasses from the seawater supply pipeline installation. Long-term, minor, adverse impacts due to maintenance dredging.
Fish	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Short-term, minor, adverse effects to fish would occur during installation of seawater supply pipeline. Construction activities would have temporary, localized effects to fish. Preferred Alternative and South Site Alternative - Short-term, minor, adverse effects to fish would occur during construction of boat docks, boat ramps, and mooring facilities. Construction activities would have temporary, localized effects to fish. Short-term, minor, adverse impacts to fish due maintenance dredging activities.
Benthic Organisms	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Preferred Alternative and South Site Alternative -Long-term, minor adverse effects would occur during construction of boat dock/boat ramp and mooring facilities. Construction activities would have permanent, localized effects to the benthic community. Minor, adverse, long-term impacts to the benthic community would occur as a result of the seawater supply pipeline installation and maintenance dredging activities.
Threatened and Endangered Species	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> No impacts to T&E species are anticipated as a result of the construction of the MREC. Short-term, minor, adverse impacts to the four federally listed sea turtles if contact with watercraft occurs during construction of the boat dock and seawater supply pipeline. TOY restrictions for in-stream work would be required. Short-term, minor, adverse impacts to the four federally listed sea turtles if contact with watercraft occurs during maintenance dredging. TOY restrictions for in-stream work would be required.
Unique Natural Resources	<ul style="list-style-type: none"> No adverse impacts. No beneficial impacts of educational programs. 	<ul style="list-style-type: none"> Long-term, moderate, beneficial impact by fostering public awareness of marine ecosystems through educational programs. No impacts to designated critical habitat for the Federally listed leatherback sea turtle. Preferred Alternative and South Site Alternative – Minor, adverse impacts to mangroves identified as critical habitat would occur during the installation of boat dock and launch. Minor, adverse, short-term impacts to the coral reef would occur from installation of the seawater supply pipeline.
Cultural Resources	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Detailed archeological surveys would likely be required for all alternatives. No impact to historic resources. South and West Site Alternatives would have a long-term moderate adverse impact on the cultural landscape. East Site Alternative would have a long-term minor adverse impact on the cultural landscape. Preferred Alternative has the potential to provide the public with a beneficial educational opportunity.
Recreation	<ul style="list-style-type: none"> No adverse impacts. Level of recreational activities would remain the same. 	<ul style="list-style-type: none"> Short-term, minor, adverse impacts to recreational resources in the vicinity of SARI Long-term, moderate, beneficial impact would occur during operational phase. MREC would attract visitors to SARI. Preferred Alternative – Minor, short-term impacts to land-based recreational activities. Maintenance dredging and construction of boat docks and moorings, boat ramps, and seawater supply pipeline may cause short-term, minor impacts to in-stream recreation due to increased turbidity and navigation.

TABLE 4-2. MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMICS IMPACTS BY ALTERNATIVES FOR THE PROPOSED MREC

Resource	No Action Alternative	Preferred Alternative (East Site) South Site Alternative West Site Alternative
		<ul style="list-style-type: none"> • West Site Alternative – Short-term, minor impacts to area surrounding the NPS visitor center due to construction activities.
Socio-economic Conditions	<ul style="list-style-type: none"> • No additional beneficial from employment at the MREC. 	<ul style="list-style-type: none"> • Long-term, beneficial impact to the local community by providing additional educational programs, employment, and attracting more visitors. • Short-term beneficial impact to local economy by increasing employment during construction. • West Site - Long-term, major adverse impact to businesses at the marina if relocated. • West Site – Long-term, moderate, adverse impacts to public use of boat slips, MREC would use some of the public boat slips that are available to the public.
Environmental Justice	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Long-term, beneficial impacts to the region’s low-income and minority communities by providing jobs and additional educational opportunities.
Aesthetics	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, adverse, minor disturbances during construction. • Preferred Alternative and West Site Alternative - Long-term, moderate, adverse effects to the aesthetics from the MREC facilities. • South Site Alternative – Long-term, minor, adverse effects to the aesthetics from the MREC facilities.
Public Health and Safety	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • The MREC facilities would comply with fire safety, mechanical and electrical codes and regulations. All structures, parking facilities, visitor circulation paths, and vehicles used to transport visitors would meet ADA requirements.
Energy Requirements and Conservation	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Minor, long-term increases in energy and natural resource requirements would occur. Energy conservation would be applied and sustainable resources would be used.
Infrastructure	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • South Site Alternative and West Site Alternative –Minor, long-term, adverse impacts to local communities would occur from increased vehicle traffic during the operational phase of the MREC. • Preferred Alternative – Minor, long-term, beneficial impacts to Estate Judith’s Fancy community would occur from increased traffic during the operational phase due to the diverted park access through the community.
Visitor Use	<ul style="list-style-type: none"> • Loss of additional visitors to SARI. 	<ul style="list-style-type: none"> • Long-term, beneficial impacts on visitor experience. • Short-term, minor, adverse impacts would occur during construction period.
Park Operations	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Long-term, minor, beneficial impacts during operation of the MREC due to a full-time presence of park staff at SARI which would result in improved security.

5.0 ENVIRONMENTAL CONSEQUENCES OF THE ABANDONED HOTEL DEMOLITION

5.1 INTRODUCTION AND OVERVIEW

This section presents the environmental impacts of the Proposed Action and the No Action Alternative on physical resources, natural resources, human environment, visitor use and experience, and park operations. These analyses provide the basis for comparing the effects of the Proposed Action and the No Action Alternative. NPS policy also requires that “impairment” of resources be evaluated in all environmental documents. Chapter 5 describes and analyzes potential environmental effects on the physical, natural and human environment associated with the Proposed Action and the No Action Alternative. Cumulative impacts are discussed in Chapter 6.

Statutory Requirements

The primary laws and guidance documents that guided the development of this EA were previously discussed in Section 4.1.1.

Methods for Evaluating Environmental Effects

The general methods for evaluating environmental effects were previously discussed in Section 4.1.2.

Impact Categories and Definitions

The three impact categories (direct, indirect, and impairment) used in this analysis were defined previously in Section 4.1.2.1.

5.2 PHYSICAL FEATURES

This section discusses the impacts of the Proposed Action and the No Action alternative on the physical environment, including soils/sediments, bathymetry, air quality, noise, climate/seismicity, and water resources (water quality and hydrology).

5.2.1 Soils

Proposed Action - The Proposed Action would have short-term, minor, adverse effects to soils from the demolition of the abandoned hotel and construction of the Haul Road. However, these impacts to soils would be localized to the site. During the movement of soil through demolition and road improvement activities, the potential for erosion and sedimentation into nearby stormwater culverts and waterways exists. This potential would be minimized through the use of sediment and erosion control measures, detailed in an Erosion Control Plan. In addition, a SWPPP would be required and implemented prior to, during, and following ground-disturbing activities.

No Action Alternative - SARI would remain in its current use and no action would be taken. There would be no demolition or road improvements at SARI. The No Action Alternative does not result in any environmental impacts to the soils at SARI.

Conclusion - The implementation of the Proposed Action would result in minor impacts to soil. The demolition and road improvement impacts would be short-term in nature, lasting for the duration of the activity. The No Action Alternative would not impact the soil at SARI. Neither of the alternatives would cause impairment to park resources.

5.2.2 Bathymetry

The Proposed Action and the No Action Alternative would not impact the bathymetry at SARI.

5.2.3 Air Quality

Proposed Action - During the construction phase, the operation of demolition and road construction equipment would have a short-term, minor, adverse impact on air quality by generating some pollutants, including carbon monoxide, NO_x, and PM₁₀. However, these emissions would be minimal since the proposed demolition/road improvement activities are temporary and would occur during construction activities only. Short-term fugitive dust emissions would be generated primarily due to land-disturbing activities, during the demolition of the abandoned hotel, and from the Haul Road construction. The amount of PM₁₀ should not be expected to be high due to the short duration of the activities and could be mitigated by using control techniques such as wet suppression for demolition and road improvement activities. These impacts would be short-term in nature, lasting only for the duration of demolition and road construction activities.

No Action Alternative - Under the No Action Alternative, the site would remain in its current use and would not emit air pollutants.

Conclusion - Demolition of the abandoned hotel and Haul Road construction would have minor, short-term air quality impacts as a result of the additional emissions created during the demolition and road improvement construction activities. The No Action Alternative would not emit air pollutants. The Virgin Islands has insignificant regional air quality impacts and is in conformity with the NAAQS. It is also in attainment with USEPA for all six air quality criteria pollutants. Neither of the alternatives would cause impairment to park resources.

5.2.4 Noise

Proposed Action - Implementation of the Proposed Action is expected to create minor impacts during the road construction phase and moderate impacts during the demolition phase. These impacts would be short-term in nature, lasting for the duration of the road construction and demolition activities. These activities would temporarily disrupt the visitor experience at SARI and the surrounding communities. The sound created from the demolition activities would be more of a disruption to the nearby residents than the road construction activities. Even though the noise produced from the demolition activities would be a disruption, the impacts would be short-term and would in the long run be a beneficial improvement for SARI as well as the local community. By removing the abandoned hotel, the viability of the resources within SARI would be enhanced. The road construction and improvement activities would be less of a disruption and would be typical of ongoing development activities in areas surrounding the bay. Mitigation for the demolition activities would include restricting these activities to the daylight hours; no demolition would be scheduled for nighttime hours. Notification (i.e., postings) of the dates and times of the demolition activities would also occur.

No Action Alternative - Current noise sources in SARI would not change since the site would remain in its current use under the No Action Alternative. The current noise sources are predominantly the result of ongoing human activities (i.e., vehicles, boat operation at the marina, activities at the NPS Visitor Contact Station).

Conclusion - Implementation of the Proposed Action would produce short-term minor noise effects during the road construction phase and short-term moderate noise effects during the demolition phase. However, the Proposed Action would benefit SARI as well as the local community by enhancing the

viability of the resources within SARI. Mitigation for the Proposed Action would include restricting the hours of demolition to the daytime and notification of the dates and times of the scheduled demolition activities. No changes to current noise sources in SARI would occur under the No Action Alternative. Neither of the alternatives would cause impairment to park resources.

5.2.5 Climate/Seismicity

Proposed Action – Impacts from coastal storms to the proposed site are anticipated. Long-term, beneficial impacts would result by demolishing the hotel, since the abandoned hotel is located on filled (reclaimed land) land which is vulnerable to impacts from earthquakes.

No Action Alternative – Under the No Action Alternative, the park would remain in its current use and the hotel would not be demolished.

Conclusion – Impacts from coastal storms to the project site are anticipated. Long-term, beneficial impacts would result by demolishing the hotel, since the abandoned hotel is located on filled (reclaimed land) land which is vulnerable to impacts from earthquakes. Under the No Action Alternative, the hotel would not be demolished.

5.2.6 Water Resources

5.2.6.1 Water Quality

Proposed Action - The Proposed Action would have short-term, minor, adverse effects on the water quality at SARI. The potential for erosion runoff into the bay during demolition and road construction activities may result in minor increases in sediment input and turbidity in the bay. This potential would be minimized through the use of sediment and erosion control measures. Erosion and sediment BMPs would be employed during demolition and road construction activities to minimize impacts to Salt River Bay. An Erosion Control Plan, which requires a description of specific erosion and sediment control measures that would be prepared and implemented. Stormwater management techniques would be utilized, including creating pervious road surfaces and parking areas, to reduce the amount of stormwater runoff at the site and to protect the bay. Additionally, revegetating areas that are currently impervious surfaces (i.e., hotel structure, abandoned building materials – concrete slabs) would be a long-term benefit to the water quality in the bay by reducing the amount of imperious surface at the site, which would reduce stormwater runoff.

No Action Alternative - No demolition would occur under the No Action Alternative. Benefits to water quality from revegetating the impervious surfaces at the site would not occur under the No Action Alternative.

Conclusion - The Proposed Action is expected to create minor impacts to the water quality at SARI during the demolition and road construction activities. These impacts would be short-term in nature, lasting for the duration of the activity. However, there would be long-term, beneficial effects to the water quality from the Proposed Action by revegetating areas that are currently impervious surfaces. Also, as a mitigation technique, pervious road surfaces would be implemented as part of the Proposed Action to reduce the amount of stormwater runoff at the site. The No Action Alternative would not impact the water quality at SARI. Neither of the alternatives would cause impairment to park resources.

5.2.6.2 Hydrology

Proposed Action - The demolition and removal of the hotel and associated building materials (i.e., large concrete slabs) would require clearing of shrubs and vegetated field habitats. The clearing of vegetation and temporary increase in impervious areas would have a short-term, minor impact on hydrology. Salt River Bay is tidal, so flow coming from land would be flushed out daily. Long term, beneficial impacts to hydrology would occur from revegetating and rehabilitating the site at the end of the demolition period and reducing runoff from previously impervious building surfaces.

No Action Alternative - Under the No Action Alternative, the site would remain in its current use, which would not change or impact the hydrology and drainage at SARI.

Conclusion - Implementation of the Proposed Action would create minor short-term and long-term changes to the hydrology at SARI. The No Action Alternative would not impact the hydrology. Neither of the alternatives would cause impairment to park resources.

5.3 FLOODPLAINS, COASTAL ZONE, COASTAL BARRIER RESOURCES SYSTEM AREAS, AND WETLANDS

5.3.1 Floodplains

Proposed Action - The 100-year floodplain, as mapped by FEMA in 2007, is located within the site boundary (see Figure 4-1). NPS has adopted guidelines pursuant to Executive Order 11998 stating that it is NPS policy to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. Overall, long-term, moderate, beneficial impacts to the floodplain are expected as a result of the Proposed Action.

The main structure of the existing, abandoned hotel structure is not located within the 100-year floodplain. Therefore, the demolition of the hotel would not occur in the 100-yr floodplain. However, abandoned hotel debris including concrete slabs, metal rebar, and other miscellaneous building materials are located throughout the peninsula and within the 100-year floodplain. These materials are proposed to be removed from the site. Therefore, long-term positive impacts would be associated with removing these materials and restoring the site to a more natural setting, including restoring the floodplain from a partially impervious surface to a pervious surface. Additionally, the removal of the abandoned (and incompatible) hotel structure would result in a long-term, moderate, beneficial impact to the floodplain by restoring the existing hotel area to more natural setting resulting in an increase in pervious surfaces. Activities associated with the proposed action would cause minor long-term alterations to the 100-year floodplain through the planned roadway improvements around the lagoon and for the low impact parking area, but these activities would be built at grade. These areas are already so compacted by current visitor and vehicle use that creating pervious road and parking surfaces may improve the area and would minimize any impacts to the existing floodplain.

Construction of the Haul Road would not impact the 100-year floodplain. The Haul Road closely follows the park boundary avoiding encroachment into the floodplain. Appropriate stormwater management techniques, including approved BMPs, would be required to avoid any indirect impacts to the floodplain during demolition of the hotel and construction of the Haul Road.

No Action Alternative - Abandoned hotel building materials are located within the 100-year floodplain. No further development or alteration to the site would occur with the No Action Alternative and the site would remain in its current use. The incompatible abandoned building materials would not be removed

from the 100-yr floodplain, and would not result in a long-term, moderate, beneficial impact to the floodplain.

Conclusion - Short-term, minor, adverse impacts to floodplains would occur due to proposed activities relating to the roadway improvements around the lagoon, which are located in the 100-yr floodplain. However, long-term, moderate, beneficial impacts to the floodplain would occur because impervious surfaces, including the removal of the abandoned hotel materials and structure, would be replaced with pervious surfaces and the area would be naturally revegetated. These activities would ultimately improve the area and allow the disturbed areas to function as a floodplain. No further development or alteration to the site would occur with the No Action Alternative and the site would remain in its current use. Neither of the alternatives would cause impairment to park resources.

5.3.2 Coastal Barrier Resources System Areas

Proposed Action - The Proposed Action would be located the CBRS area (see Figure 4-1). Long-term, moderate, beneficial effects would occur at SARI from the removal of the hotel structure and associated building materials. The abandoned (and incompatible) hotel structure would be removed from the CBRS Area. Removing the impervious areas (hotel structure and associated building materials) and revegetating would return the site to a more natural setting which should improve the function of the CBRS area at SARI. The Proposed Action would not cause damage to fish or wildlife, or other natural resources associated with CBRS area.

No Action Alternative - Under the No Action Alternative, the shoreline at SARI would remain the same. The No Action Alternative would not additionally impact the CBRS area. However, the benefit of the removal of impervious surfaces within the CBRS area would not be realized. The abandoned hotel structure would not be removed from the CBRS area, and would not result in a long-term, moderate, beneficial impact to the CBRS area.

Conclusion - Long-term, moderate, beneficial effects would occur to CBRS areas at SARI from the removal of the hotel structure and associated building materials. Revegetating would return the site to a more natural setting which should improve the function of the CBRS area at SARI. Under the No Action Alternative, the shoreline at SARI and the CBRS area would remain the same. Neither of the alternatives would cause impairment to park resources.

5.3.3 Coastal Zone

Proposed Action - The Proposed Action is located within Tier 1 of the coastal zone, as defined by the VICZMP. Short-term, minor impacts to the coastal zone are anticipated during the construction activities. However, the abandoned hotel structure would be removed from the coastal zone, and would result in a long-term, moderate, beneficial impact to the coastal zone. Any activities proposed within the coastal zone by a Federal agency, such as the NPS, require a certification of consistency. A certification of consistency is supported by any necessary data and information that a proposed activity or development complies with the VICZMP and that such activity shall be conducted in a manner consistent with the program.

The NPS would be consistent to the extent practicable for the proposed project to be in compliance with the VICZMP. The NPS has determined that the project is in compliance with the VICZMP and requested concurrence from the VICZMP to ensure compliance between the Federal and Territorial coastal zone management programs. To comply with the VICZMP, the NPS was required to initiate preliminary consultation with the USVI DPNR/Division of Coastal Zone Management (DCZM) in the form of a preliminary meeting to discuss the proposed project. The preliminary meeting occurred on August 21, Salt River Bay National Historical Park and Ecological Preserve
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2006 and a list of attendees is presented in Appendix C. The NPS has prepared a consistency determination in the form of a letter stating that the project is consistent, to the maximum extent practicable with the VICZMP. This letter is included in Appendix E. The VICZMP will review the consistency determination and determine if the project is in compliance with the VICZMP. If the project is determined in compliance, a notice of agreement would be provided by the VICZMP, thus completing all relevant CZM requirements. Consultation and coordination with the VICZMP is ongoing.

No Action Alternative - Under the No Action Alternative, no impacts to the coastal zone would occur. However, the abandoned hotel structure would not be removed from the coastal zone, and would not result in a long-term, moderate, beneficial impact to the coastal zone.

Conclusion – As a result of the Proposed Action, the abandoned hotel structure would be removed from the coastal zone, and would result in a long-term, moderate, beneficial impact to the coastal zone. Short-term, minor impacts to the coastal zone are anticipated during the construction phases of this project. Therefore, a Coastal Zone Management Act Consistency Certification for the Proposed Action has been completed by the NPS. In addition, the submittal of any potential permits necessary for approval to the VICZMP and USACE will also be completed, if applicable. The Proposed Action would be consistent, to the extent practicable, with the VICZMP enforceable policies. Under the No Action Alternative, no additional impacts to the coastal zone would occur, but the abandoned hotel structure would not be removed from the coastal zone. Neither of the alternatives would cause impairment to park resources.

5.3.4 Wetlands/Mangroves

Section 404 of the CWA and a number of Territorial laws and provisions regulate activities in wetlands. The USVI DPNR/DEP has currently created a program designated to monitor and protect wetlands by creating a wetlands inventory and maps, by limiting construction or clearing of wetlands, by monitoring water quality as part of the WPC Program and by managing discharges into the near-shore and marine environment through the TPDES and NPS Programs. The USVI DPNR/DEP works closely with the USEPA, the USFWS and USVI DPNR/DFW, the University of Virgin Islands and other agencies to protect wetlands.

Proposed Action - The wetlands assessed at the site are located on and surround the eastern peninsula of SARI and are bounded by the Mangrove Lagoon, Salt River Bay, the Salt Pond, and the existing area defined as “mudflats.” Based upon the NPS definition of wetlands, specific activities of the proposed action (roadway improvement activities and removal of the debris on the peninsula) would have a minor, adverse impact on NPS-defined estuarine wetlands (Wetland W-4 and Wetland W-5). Based upon the USACE definition of wetlands, the proposed action would not impact any Federally-defined wetlands areas, such as mangrove wetlands. The mangrove wetland (Wetland W-1) located along the fringe of the Mangrove Lagoon in the vicinity of the hotel would not be adversely impacted from the hotel demolition or associated activities. This section discusses impacts to NPS-defined wetlands that would occur as a result of activities associated with the hotel demolition.

The actual demolition of the abandoned hotel would have no impacts to wetlands. Although the hotel is located immediately adjacent to the fringe forested mangrove wetland located along the shoreline of the Mangrove Lagoon (see Figure 4-2), no direct impacts to these mangrove wetlands would occur. If the hotel is demolished via mechanical methods versus using explosives, dust would not be an issue for the adjacent mangroves (USACE 2006). If explosives are used, dust may be an issue for the nearby mangroves and indirect, adverse impacts may occur, although proper mitigation techniques would be adhered to at all times. During the actual demolition process, any incidental impacts to the adjacent forested mangrove wetland would be avoided by placing upright sections of plywood between the mangroves and the demolition activities.

In addition, the removal of the debris on the peninsula and the proposed pervious, low impact parking area and pervious access road is on the peninsula, to the west of the existing forested mangrove wetlands along the Mangrove Lagoon (see Figure 2-2) would have minor, adverse impacts to approximately 2.84 acres of estuarine wetland areas, considered as estuarine wetlands by NPS standards. Due to these impacts, a SOF for wetlands was completed, which includes appropriate mitigation measures for wetlands (see Appendix D). Figure 8 included in the SOF shows the location of wetlands impacted as a result of the Proposed Action and is included in Appendix D. The SOF also includes a detailed estuarine wetland mitigation plan proposed to compensate for the impacts associated with the Hotel Demolition and associated activities. The paragraphs below summarize the proposed mitigation.

As part of the hotel demolition, the park is proposing to construct a Haul Road for the construction vehicles to get to and from the site, and to haul out materials produced from the demolition of the abandoned hotel structure. Following demolition activities, the Haul Road would be improved and would serve as the public access road to the park. A pond and a tidal gut potentially exist in the vicinity of the proposed Haul Road. As more detailed survey and site-specific information becomes available, potential impacts to existing wetlands from the Haul Road would be avoided and minimized whenever possible. The NPS will work closely with the USDA NRCS to ensure that the haul road design is consistent with Federal Executive Order 11990 – Protection of Wetlands and *Director's Order #77-1* (Wetland Protection). This would help avoid, to the extent possible, adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. Any additional, required mitigation for the Haul Road would be specifically stated in the SOF (Appendix D).

The compensation proposal for the 2.84 acres of estuarine wetland impacts as a result of the Hotel Demolition and associated activities is wetland mitigation through wetland vegetation plantings and site rehabilitation on the peninsula at the site at a 1:1 ratio. However, because the entire peninsula would be rehabilitated and is approximately 7 acres, a ratio above 1:1 may be achieved at this site. This mitigation site is envisioned as a rehabilitated peninsula with groupings of mature wetland shrubs (and some trees) that were flagged and avoided during construction activities, a shoreline stabilized with herbaceous wetland forbs and ground covers, and more interior (inland) areas of sparse wetland vegetation that would attract and support least tern nesting. Prior to the debris removal and hotel demolition on the peninsula, stands of existing wetland shrub species that are desirable and provide good habitat such as buttonwood, pink cedar, manchineel and potentially seaside mahoe would be flagged to be avoided during these activities by representatives from the NPS and the USDA NRCS. These flagged groupings of shrub (and some tree) species would not be removed or impacted during the Proposed Project. Following the debris removal and the hotel demolition in the non-flagged areas, the entire peninsula would be rehabilitated to a more natural setting. Because desirable and mature wetland shrub species would be avoided, a ratio of 1:1 is proposed for this mitigation site. By avoiding these mature wetland shrub specimens, the functional loss of wetlands at this site can be partially avoided. Based upon the mitigation strategy, impacts to the existing wetlands are expected to be short-term and have a long-term, beneficial effect through rehabilitating and revegetating the peninsula to a more natural setting. Appropriate stormwater management techniques, including approved and Erosion and Sediment Controls and BMPs would be required to avoid any indirect impacts to existing wetlands during construction of this access road. Figure 8 included in the SOF shows the location of wetland impacts as a result of the Proposed Action and is included in Appendix D.

No Action Alternative - Under the No Action Alternative, no additional impacts to wetlands would occur. However, the vegetation on the peninsula at the site would not be rehabilitated or revegetated with appropriate species.

Conclusion – Short-term, minor, adverse impacts to approximately 2.84 total acres of NPS-defined estuarine wetlands would occur through activities associated with the hotel demolition, including roadway improvement activities and the removal of debris on the peninsula. No impacts to mangrove wetlands would occur. Additionally, long-term, moderate, beneficial impacts would occur as a result of mitigation, which includes restoring the majority of the 2.84 acres of removed vegetation with native vegetation at a 1:1 ratio through the rehabilitation of the peninsula to a more natural setting. Details concerning the mitigation plan were determined through consultation with the NPS, the USACE, and the USDA NRCS and are described in detail in the SOF included as Appendix D. Under the No Action Alternative, no additional impacts to wetlands would occur. Neither of the alternatives would cause impairment to park resources.

5.4 TERRESTRIAL RESOURCES

This section discusses the impacts of the Proposed Action and the No Action alternative on terrestrial resources including vegetation, birds, and mammals.

5.4.1 Plants

Proposed Action - The hotel demolition, removal of the debris on the peninsula, and construction of the Haul Road would have short-term, minor, adverse impacts to non-wetland (upland) vegetation. Vegetation would be removed from various habitat types including forest, shrub, and vegetated field habitats. There would be a temporary net loss of existing habitat; however, approximately 7.10 acres of permanently improved habitat would be created as a result of the Proposed Action. This improvement in existing habitat would constitute a long-term, moderate, beneficial impact. The dominant upland vegetation that currently exists at the site and is planned for removal includes bread-and-cheese and casha. Other specimens of non-dominant upland plant species observed that would be removed by the proposed action include bay cedar (*Suriana maritima*), sea oxeye (*Borrchia aborescens*), torchwood (*Jacquinea arborea*), tan tan, and African guinea grass. Some specimens of exceptional plant species may be avoided during vegetation removal or transplanted to minimize impacts. The non-native invasive plant species would be targeted for removal. Improvement activities for the new pervious, low impact parking area would have minor, adverse impacts to existing upland vegetation. The dominant, upland vegetation that currently exists where the parking area are proposed includes bread-and-cheese and casha. These plant species do not provide exceptional habitat for terrestrial wildlife species. Along the Haul Road, existing vegetation would require clearing, as the old roadbed is overgrown. Terrestrial plant species typical of the region were observed along the potential Haul Road route, including the following in the highest numbers by a USDA NRCS botanist: boxleaf stopper (*Eugenia foetida*), white manjack (*Cordia dentata*), kenep (*Melicoccus bijugatus*), sweet lime (*Triphasia trifolia*), and pigeon berry (*Bourreria succulenta*). Other species observed along the potential Haul Road included the following: flamboyant (*Deloxia regia*), brisselet (*Erythroxylum brevipes*), black mampoo (*Gaupira fragrans*), inkberry (*Randia aculeata*), amazonvine (*Stigmaphyllon emarginatum*), West Indian mahogany (*Swietenia mahagoni*), turpentine tree (*Bursera simaruba*), Christmas bush (*Comocladia* sp.), beach grass (*Distichlis spicata*), pink cedar (*Tabebuia heterophylla*), casha, pigeon plumb (*Coccoloba diversifolia*), stink casha (*Acacia macracantha*), break bill (*Bumelia obovata*), ironwood (*Krugiodendron ferreum*), and bread-and-cheese. None of these vegetation species is a listed species. It is possible that mitigation strategies would be developed for some upland species, including avoiding or relocating exceptional species during debris removal, in coordination with the wetland mitigation plan and in consultation with the NPS and the USDA NRCS. Overall, impacts to the existing vegetation are expected to be short-term and have a long-term, beneficial effect through rehabilitating and revegetating the peninsula to a more natural setting.

No Action Alternative - Under the No Action Alternative, no additional impacts to vegetation would occur. However, the vegetation on the peninsula at the site would not be rehabilitated or revegetated with appropriate plant species.

Conclusion – Short-term, minor adverse impacts to terrestrial vegetation would occur and there would be a temporary net loss of existing habitat; however, approximately 7.10 acres of permanently improved habitat would be created as a result of the Proposed Action. Mitigation would include restoring the removed vegetation with native plant species in consultation with appropriate resource agencies, and rehabilitating the peninsula to a more natural setting. The existing, non-native invasive plant species such as African guinea grass and tan tan would be removed and replaced with native vegetation species. The replacement of non-native invasive species with native plant species would have a long-term, beneficial impact on the terrestrial wildlife species and other vegetation species that inhabit the area. Appropriate agency consultation concerning the revegetation and rehabilitation of the peninsula would occur following the completion of the EA and signing of the FONSI. Under the No Action Alternative, no additional impacts to terrestrial vegetation would occur. Neither of the alternatives would cause impairment to park resources.

5.4.2 Birds

Proposed Action - The proposed action would have short-term, minor adverse impacts, but would have an overall long-term, moderate, beneficial impact at SARI to avian species. Nearby avian species (landbirds and shorebirds) that nest and forage in the vicinity of the abandoned hotel may be temporarily disrupted during the demolition and road construction/improvement activities due to unavoidable noise and human activity. The noise from these activities could disturb avian species currently utilizing or nesting in the area, including birds that nest in the nearby mangrove forests. However, similar mangrove, shoreline, and wetland habitats for nesting and foraging are available adjacent to the site and within SARI. Implementation of the project may cause some avian species to temporarily relocate during the demolition and road construction process due to an increase in noise levels. It is anticipated that these species would become re-established at the site after demolition of the hotel occurs and road construction is complete. Mangrove habitat would not be directly impacted by the Proposed Action.

Vegetation would be removed from various habitat types including forest, shrub, and vegetated field habitats. There would be a temporary net loss of avian habitat; however, a permanent improvement in approximately 7.10 acres of existing habitat would be created as a result of the Proposed Action. As part of the Proposed Action, abandoned building materials and existing vegetation would be removed, but the area would be revegetated, rehabilitated, and restored with native species to attract wildlife, including avian species. This restoration would provide additional nesting and foraging habitat for both migratory and native resident birds. Overall, the Proposed Action would provide a beneficial impact to birds due to the increase of available, quality vegetated habitat for avian species.

No Action Alternative - The site would remain in its current state and wildlife habitat that exists would remain unchanged. No long-term, beneficial impacts as a result of the No Action Alternative would occur. Therefore, there would be no impacts to birds found in the region, and avian species would continue to utilize the site as habitat.

Conclusion - The proposed project would have a short-term, minor indirect impact on the avian species that currently utilize the habitat that would be affected or removed by the Proposed Action. However, a long-term, moderate, beneficial overall impact to avian species is expected as a result of the Proposed Action. There would be a temporary net loss of avian habitat; however, a permanent improvement in approximately 7.10 acres of existing habitat would be created as a result of the Proposed Action. It is expected that avian species would become re-established at the site after completion of the project. For

the No Action Alternative, the site would remain in its current state and wildlife habitat that exists would remain unchanged. Neither of the alternatives would cause impairment to park resources.

5.4.3 Mammals

Proposed Action - As with birds, impacts to mammals are a direct result of impacts to terrestrial vegetation. Minor, adverse impacts are expected in the short-term and moderate, beneficial impacts are expected in the long-term. Specifically, the velvety free-tailed bat (*Molossus molossus*) is currently living in the abandoned hotel and was observed in July 2007 (Fly by Night 2007). Although the velvety free-tailed bat is widely distributed in the Caribbean and is not on the list of Endangered Species for the Territory, it is one of only five extant native terrestrial mammal fauna in St. Croix (St. Croix Environmental Information Repository 2006). Therefore, a bat mitigation plan would be drafted prior to any demolition activities at the abandoned hotel to relocate the bats at the site and to outline time of year restrictions for demolition. Bat boxes would be placed at an appropriate location at the site to move the bats from the abandoned hotel prior to demolition. Chapter 7 discusses more details concerning bat mitigation.

Other nearby mammalian species that nest and forage in the vicinity of the abandoned hotel may be temporarily disrupted and may be relocated during the demolition and the road construction/improvement activities due to the unavoidable noise and human activity. However, similar terrestrial habitats are available adjacent to the site and within SARI for mammals to utilize. It is anticipated that these species would become re-established at the site after demolition of the hotel occurs and road construction is complete. Vegetation would be removed from various habitat types including forest, shrub, and vegetated field habitats. There would be a temporary net loss of habitat; however, a permanent improvement in approximately 7.10 acres of existing habitat would be created as a result of the Proposed Action. As part of the Proposed Action, abandoned building materials and existing vegetation would be removed, but the area would be revegetated and rehabilitated with native species to attract wildlife, including mammalian species. The area of disturbance which might cause the relocation of the Indian mongoose may actually benefit the bird populations, as the mongoose has decimated local bird populations. Overall, the Proposed Action would provide a beneficial impact to mammals due to the increase of available, quality vegetated habitat for these species.

No Action Alternative - The site would remain in its current state and wildlife habitat that exists would remain unchanged. Therefore, there would be no impact to mammals found in the region, and they would continue to utilize the site as habitat. No long-term, beneficial impacts as a result of the No Action Alternative would occur.

Conclusion - The proposed project would have a short-term, minor indirect impact on the mammalian species that currently utilize the habitat that would be affected or removed by the Proposed Action. However, a long-term, moderate, beneficial overall impact to mammalian species is expected as a result of the Proposed Action. There would be a temporary net loss of avian habitat; however, a permanent improvement in approximately 7.10 acres of existing habitat would be created as a result of the Proposed Action. Overall, the Proposed Action would provide a beneficial impact to mammals due to the increase of available, quality vegetated habitat for these species. For the No Action Alternative, the site would remain in its current state and wildlife habitat that exists would remain unchanged. Neither of the alternatives would cause impairment to park resources.

5.5 AQUATIC RESOURCES

5.5.1 Reefs/Hardbottom

Proposed Action – No adverse impacts to coral reefs due to the abandoned hotel demolition and road construction and improvement activities are anticipated as a result of the Proposed Action. The demolition and road construction activities have the potential to temporarily and locally increase turbidity in Salt River Bay, but these effects would not impact the reefs, which are located sufficiently far enough away from these activities (see Figure 3-5). Erosion and sediment control BMPs would be employed during demolition and road construction/improvement activities to minimize impacts to Salt River Bay.

No Action Alternative - The site would remain in its current state and the abandoned hotel would remain onsite. There would be no impact to the coral reefs found in the region from the No Action Alternative.

Conclusion – No impacts to coral reefs are anticipated as a result of the Proposed Action or the No Action Alternative. Neither of the alternatives would cause impairment to park resources.

5.5.2 Seagrasses

Proposed Action – Removing the impervious structures (hotel structure and associated building materials) and revegetating these areas would return the site to a more natural setting which would benefit the long-term water quality in the bay and ultimately benefit the seagrasses. The hotel demolition and road construction improvements have the potential to temporarily and locally increase turbidity in Salt River Bay, which may potentially cause a short-term, negligible, indirect adverse impact to seagrasses. Erosion and sediment controls, and BMPs would be employed during hotel demolition and road construction/improvement activities to minimize impacts to Salt River Bay.

No Action Alternative - The site would remain in its current state and the seagrasses would remain unchanged. Therefore, there would be no impact to the seagrasses found in SARI.

Conclusion – Long-term, minor beneficial impacts to seagrasses will occur as a result of the Proposed Action. Short-term, negligible, indirect adverse impacts to seagrasses may occur as a result of the Proposed Action. The No Action Alternative would not impact seagrasses. Neither of the alternatives would cause impairment to park resources.

5.5.3 Fish

Proposed Action – Short-term, minor, adverse (indirect) impacts to fish due to the proposed demolition and road construction/improvements are anticipated. Fish in the area may be disturbed by the temporary changes in water quality (increase in turbidity); however, the fish would be expected to avoid, or leave the affected areas.

No Action Alternative - The site would remain in its current state and the fish habitat would remain unchanged. Therefore, there would be no impact to the fish found in the region, and they would continue to potentially utilize SARI as habitat.

Conclusion – Short-term, minor, adverse (indirect) impacts to fish due to the Proposed Action are anticipated. The fish are expected to avoid or leave the areas being disturbed and return after the demolition activities have ended. The No Action Alternative would not impact the fish at SARI. Neither of the alternatives would cause impairment to park resources.

5.5.4 Benthic Organisms

The Proposed Action and the No Action Alternative would not impact the benthic organisms at SARI.

5.6 THREATENED AND ENDANGERED SPECIES

As discussed previously in Chapter 4, the Endangered Species Act uses the following terminology to assess impacts to listed species: no effect, may affect/not likely to adversely affect, may affect/likely to adversely affect, or is likely to jeopardize proposed species/adversely modify proposed critical habitat (impairment).

In accordance with the Federal and Territorial requirements for T&E species, ESA Section 7 Consultation was conducted with the USFWS Southeast Region, the NMFS Southeast Region Office, and the USVI DPNR. Information requested from these agencies included Federal and Territorial listed threatened and endangered species, designated or proposed critical habitat, and candidate taxa occurring in the project area. More details and correspondence between NPS and agencies consulted are supplied in Chapter 10 and Appendix C.

Proposed Action - Based upon the agency coordination discussed above, NMFS has stated that four listed sea turtle species (green sea turtle, hawksbill sea turtle, leatherback sea turtle, and loggerhead sea turtle) have the potential to occur in the vicinity of SARI. Two Federally-listed species of coral (staghorn coral and elkhorn coral) also occur within the boundary of SARI and have been observed in Salt River Canyon (Kendall et al 2005). All listed species expected to occur in the vicinity of SARI, are associated with aquatic habitats. Short-term, minor, adverse (indirect) impacts to adjacent aquatic habitat (Mangrove Lagoon and Salt River Bay) are expected as a result of the Proposed Action. However, appropriate erosion and sediment controls and stormwater management techniques would be in place during the construction of the Haul Road and improvements to the access road and parking lot. Therefore, no direct, adverse impacts to listed aquatic species are expected as a result of the hotel demolition activities and associated roadway construction and improvement activities.

Although not Federally listed, the Territorially listed endangered least tern has been observed nesting on sandy beaches at the northwest side of the peninsula. However, the Proposed Action is located on the eastern side of the peninsula, at a sufficient distance from the nesting site such that noise from construction activities is unlikely to impact the Least Tern. Similar to current conditions, posted signs would indicate the Least Tern nesting locations during the appropriate seasons to deter visitors from utilizing these areas. In addition, TOY restrictions for construction may be in place during Least Tern nesting season (which occurs, conservatively at a maximum from mid April until mid July) to avoid any possible unanticipated adverse impacts to this species.

The terrestrial habitats in the vicinity of the abandoned hotel structure could potentially support Federal and Territorial listed species, including plant species, bat species, or avian species. There is no documentation that endangered or threatened listed species have been observed at this location on the peninsula or along the Haul Route, but a site-specific survey in the vicinity of the abandoned hotel site and Haul Route has not been conducted. If listed species are observed on the terrestrial habitats during any phase of the proposed action, the appropriate resource agencies, including the USFWS and the USVI DPNR, would be contacted prior to any additional work that is completed in the area. Coordination with these agencies would be conducted to determine the appropriate action or mitigation at this time. All efforts would be made to avoid impacts to any potential terrestrial listed species during every phase of this project.

Long-term, minor, beneficial impacts to listed species, including the listed sea turtle species and listed avian species (specifically, the least tern), are expected as a result of this project. Undeveloped, shoreline beach areas without human influences are preferred habitats for many listed aquatic species. Through the rehabilitation of the peninsula, native vegetation would be planted and sea turtle and least tern beaches would eventually be created naturally (i.e., wave action, beach erosion) over time to attract these species to nest at this site. By creating additional, “natural” shoreline habitat that is not developed along the water for sea turtle and least tern nesting, a beneficial impact to listed species is anticipated.

No Action Alternative - The site would remain in its current state; there would be no impact to listed species that occur in the area.

Conclusion - All listed species expected to occur in the vicinity of SARI, are associated with aquatic habitats. Short-term, minor, adverse (indirect) impacts to adjacent aquatic habitat are expected as a result of the Proposed Action. However, appropriate erosion and sediment controls and stormwater management techniques would be in place during the construction of the Haul Road and improvements to the access road and parking lot. Therefore, no direct, adverse impacts to listed aquatic species are expected as a result of the hotel demolition activities and associated roadway construction and improvement activities. Additionally, long-term, moderate, beneficial impacts to listed species, including the listed sea turtle species and listed avian species (specifically, the least tern), are expected as a result of this project. Through the rehabilitation of the peninsula, native vegetation would be planted and sea turtle and least tern beaches would eventually be created naturally over time to attract these species to nest at this site. By creating additional, “natural” shoreline habitat that is not developed along the water for sea turtle and least tern nesting, a beneficial impact to listed species is anticipated. The No Action Alternative would not impact listed species at SARI. Neither of the alternatives would cause impairment to park resources.

5.7 UNIQUE NATURAL RESOURCES/ECOLOGICALLY CRITICAL AREAS

5.7.1 Ecologically Critical Areas

5.7.1.1 Designated Critical Habitat for Species

Proposed Action - No adverse impacts to critical habitat are anticipated as a result of the proposed action. However, as stated previously in Section 5.6, long-term, moderate, beneficial impacts to listed turtle species, including the Federally listed leatherback sea turtle are expected as a result of this project. Undeveloped, shoreline beach areas without human influences are preferred habitats for many listed aquatic species. Through the rehabilitation of the peninsula on the east side of the park, beaches would eventually be created to attract listed turtle species to nest at this site. By creating additional, “natural” shoreline habitat that is not developed along the water for turtle and least tern nesting, a significant, beneficial impact to listed species is anticipated.

No Action - No adverse impacts to critical habitat are anticipated as a result of the No Action Alternative. However, the beneficial impacts to listed turtle species, including Federally listed sea turtles that are expected as a result of the proposed action (through rehabilitation of the peninsula on the east side of the park), would not be realized with the no action alternative.

Conclusion - No adverse impacts to critical habitat are anticipated as a result of the Proposed Action or the No Action. However, long-term, moderate, beneficial impacts to Federally listed sea turtle species as a result of additional nesting areas are expected as a result of this project. Neither of the alternatives would cause impairment to park resources.

5.7.1.2 Essential Fish Habitat and Habitat Areas of Particular Concern

Proposed Action - The CFMC has identified coral reefs, hard and soft bottoms, sand/shell bottoms, pelagic, benthic algae, and seagrass as EFH within SARI (CFMC 2004). Mangroves are identified as essential fish habitat at SARI, which also is designated as estuarine essential fish habitat. SARI (and the entire estuary of Salt River Bay) has been designated as a habitat area of particular concern for reef fisheries because of the ecological importance, sensitivity to human-induced degradation, and undergoing development activities that stress the habitat (CFMC 2004). No impacts to EFH or HAPC are anticipated as a result of the hotel demolition. Short-term, minor, adverse (indirect) impacts to EFH and HAPC as a result of water quality (increased turbidity) are anticipated as a result of the roadway construction and improvement activities. However, appropriate erosion and sediment control and stormwater management techniques would be in place during these construction activities. Therefore, no long-term, adverse impacts to aquatic habitats, including mangroves, are anticipated as a result of the proposed action.

No Action - No adverse impacts to EFH or HAPC are anticipated as a result of the no action alternative.

Conclusion - No long-term, adverse impacts to EFH or HAPC are anticipated as a result of the hotel demolition. Short-term, minor, adverse (indirect) impacts to EFH and HAPC as a result of water quality (increased turbidity) are anticipated as a result of the roadway construction. No long-term adverse impacts to aquatic habitats, including mangroves, are anticipated as a result of the proposed action. No adverse impacts to EFH or HAPC are anticipated as a result of the No Action Alternative. Neither of the alternatives would cause impairment to park resources.

5.7.1.3 Other Critical Areas

Proposed Action - Overall, the proposed action would not alter the unique natural systems that occur at Salt River Bay, which includes the mangrove forests, coral reefs, seagrasses, and the submarine canyon. The mangroves would not be impacted by the demolition of the hotel and the removal of debris on the peninsula. As stated previously in Section 5.3.4, although the hotel is located immediately adjacent to the fringe forested mangrove wetland located along the shoreline of the Mangrove Lagoon, no impacts to these mangrove wetlands would occur. During the demolition process, any incidental impacts to the adjacent forested mangrove wetland would be avoided by placing upright sections of plywood between the mangroves and the demolition activities. Short-term, minor (indirect) impacts to water quality (increased turbidity) as a result of the roadway improvement and construction activities are anticipated. Mangroves are extremely sensitive to changes in the water quality. However, appropriate erosion and sediment control and stormwater management techniques would be in place during the improvements of the access road and parking area near the lagoon as well as for construction of the Haul Road. As a result, no long-term, adverse impacts to aquatic resources, such as corals, seagrasses, mangroves, or the submarine canyon are expected from the proposed action. TOY restrictions for construction would be in place during the Least Tern nesting season (which occurs conservatively at a maximum from mid April until mid July) to avoid any possible unanticipated adverse impacts to these species as a result of the Proposed Action.

No Action - No adverse impacts to other critical areas are anticipated as a result of the no action alternative.

Conclusion - Overall, the proposed action would not alter the unique natural systems that occur at Salt River Bay, which includes the mangrove forests, coral reefs, seagrasses, and the submarine canyon. Because TOY restrictions for the least tern would be in place, no adverse impacts to other critical habitat are anticipated as a result of the Proposed Action. No adverse impacts to other critical areas are

anticipated as a result of the No Action Alternative. Neither of the alternatives would cause impairment to park resources.

5.7.2 Designated Natural Areas

Proposed Action - No adverse impacts to MPAs, which also include areas designated at APCs are anticipated as a result of the proposed action. However, long-term beneficial impacts to SARI and Salt River Bay and Watershed APC are expected following the completion of the Proposed Action. As stated previously, beneficial impacts to the terrestrial habitat at SARI as a result of revegetation and rehabilitation of the site are anticipated, along with beneficial impacts to listed species such as sea turtles and avian species from the creation of additional undeveloped beach shoreline areas for nesting habitat. Beneficial impacts to the viewshed of SARI are expected due to the removal of the abandoned hotel and associated building materials and debris, which are unnatural structures/materials in an otherwise undeveloped parcel of land along the water in an ecological preserve.

No Action - No adverse impacts are anticipated to designated natural areas as a result of the No Action Alternative.

Conclusion - Long-term beneficial impacts to SARI and Salt River Bay and Watershed APC are expected following the completion of the Proposed Action. No adverse impacts are anticipated to designated natural areas as a result of the No Action Alternative. Neither of the alternatives would cause impairment to park resources.

5.8 CULTURAL RESOURCES

5.8.1 Archaeological Resources

Proposed Action - There are no known archaeological resources on the location of the abandoned hotel site. One-half to one-third of the landform on which this hotel rests is largely made land created with dredged spoil acquired from the Mangrove Lagoon located behind the hotel. This location has received significant disturbance from the hotel's construction, and demolition of the hotel has no potential to effect archaeological resources.

Construction of the Haul Road would have an affect on SARI-2.05. SARI-2.05 is located in the area of the proposed road and would be affected by the construction of the road. However, SARI-2.05 has already been disturbed by the construction of the Mangrove Lagoon, as well as by existing dirt roads, and hence there is limited potential for an adverse affect to SARI-2.05. In addition the Haul Road would pass near the reported location of the English Village Site (SARI-3).

As long as the existing road bed is followed with minimal intrusions into areas other than the existing road bed, especially upland above the existing road bed, no major impacts are anticipated. The exception would be for any additional areas needed, other than the existing road bed, for drainage for erosion and sediment control. Staging/construction areas would also be needed for the road construction. Existing lay down areas and "road intersections" would be utilized for these activities. If the exiting road bed, lay down areas, and "road intersections" are used for drainage and staging then there would likely be no need to do shovel testing in those areas which have already been disturbed. Given this, the proposed Haul Road has no potential to effect archaeological resources; however, if the road design requires construction in new undisturbed areas then Section 106 compliance, including monitoring of ground disturbing activities, would be required.

No Action - No adverse impacts are anticipated to archaeological resources as a result of the No Action Alternative.

Conclusion - No adverse impacts are anticipated to archaeological resources as a result of the two alternatives. However, if the Haul Road design requires construction in new undisturbed areas then Section 106 compliance, including monitoring of ground disturbing activities, would be required. Neither of the alternatives would cause impairment to park resources.

5.8.2 Historic Resources

Proposed Action - The abandoned hotel site was initially constructed in the mid 1960s. It is less than 50 years old and is therefore not eligible for considerations as a historic resource. No other historic resources are present on this property; therefore no impacts to historic resources are anticipated as a result of the Proposed Action.

The potential exists that the current road bed proposed for the location of the Haul Road is lying over the original location of an historic road, present on a 1647 Spanish map of St. Croix. However, because of shoreline erosion and erosion from the nearby hillsides, this historic road may either lie deep under erosional deposit or has been eroded away. As long as the existing ground surface remains stable, is not excavated or torn up from heavy equipment, then any potential impacts to the historic road should be avoided.

No Action - No adverse impacts are anticipated to historic resources as a result of the No Action Alternative.

Conclusion - No adverse impacts are anticipated to historic resources as a result of the two alternatives. Neither of the alternatives would cause impairment to park resources.

5.8.3 Cultural Landscape

Proposed Action - The abandoned hotel site is a visual intrusion on the cultural landscape of SARI. Demolition of the abandoned hotel would represent an enhancement to the cultural landscape; thus the Proposed Action would have a long-term, major, beneficial impact on the cultural landscape at SARI.

No Action – No additional adverse impacts are anticipated to the cultural landscape as a result of the No Action Alternative. However, under the No Action Alternative, the abandoned hotel would continue to be a visual intrusion on the cultural landscape of SARI. The long-term beneficial impacts associated with the Proposed Action would not be realized with the No Action Alternative.

Conclusion - The Proposed Action would have a long-term, major, beneficial impact on the cultural landscape at SARI. No additional adverse impacts are anticipated to the cultural landscape as a result of the No Action Alternative. Neither of the alternatives would cause impairment to park resources.

5.9 HUMAN ENVIRONMENT

5.9.1 Recreation

Proposed Action - The proposed project would cause short-term, minor adverse impacts to some of the recreational activities (i.e., hiking, kayaking, and swimming) at SARI; however other recreation including scuba diving and snorkeling should not be affected by the demolition and road construction activities. Impacts to recreation are expected to be short-term but have a long-term, beneficial effect through the

rehabilitation and revegetation of the peninsula to a more natural setting. Rehabilitating the site would allow visitors to enjoy a natural setting at SARI in place of the deteriorating hotel structure. Therefore, long-term beneficial impacts would occur to recreation at SARI as a result of the proposed action.

No Action Alternative - Under the No Action Alternative, recreational opportunities would remain the same at SARI. Current levels of visitor services would remain unchanged.

Conclusion - The proposed project would cause short-term, minor, adverse impacts to some of the recreational activities at SARI. However, through the rehabilitation and revegetation of the peninsula to a more natural setting, long-term beneficial impacts would occur at SARI. The No Action Alternative would not result in impacts to SARI's recreational resources. Neither of the alternatives would cause impairment to park resources.

5.9.2 Socioeconomic Conditions

Implementation of the proposed project would improve the quality of life in the Salt River Bay region by providing an opportunity for the public to experience the peninsula as a natural setting. Rehabilitation of this site would contribute to the local economy by attracting more visitors to SARI. In addition, the proposed project would contribute directly to the local economy from the short term hiring of temporary contractors and purchasing goods and services from local suppliers. The local economy would benefit from a short-term increase in employment during construction by the creation of new jobs.

No Action Alternative – The No Action Alternative would not result in any impacts to the community. The benefit to the local economy from the hiring of employees and the purchasing goods and services from local suppliers would not happen. The local economy would not benefit from a short-term increase in employment during construction of the project.

Conclusion – Implementation of the proposed project would result in beneficial impacts to the local communities. The No Action Alternative would not result in impacts to the surrounding community. None of the alternatives would cause impairment to park resources.

5.9.3 Environmental Justice

The Proposed Action and the No Action Alternative would not result in any impacts to low-income or minority communities. The alternatives would not cause impairment to SARI resources.

5.9.4 Aesthetics

Proposed Action - The Proposed Action would have a long-term, moderate, beneficial impact to the aesthetics at SARI. Aesthetics would be altered from current conditions; however, the un-finished remains of the abandoned hotel represent a visual intrusion on SARI's cultural landscape. Demolition of the hotel shell would be a visual improvement enhancing the viability of the resources within SARI as well as the viewshed to the surrounding communities.

No Action Alternative - The No Action Alternative would not result in changes to the aesthetic appearance of SARI. The surrounding viewshed would remain relatively unchanged compared to the Proposed Action.

Conclusion - The Proposed Action would be a long-term moderate beneficial impact to the aesthetics at SARI. The No Action Alternative would not result in changes to the aesthetic appearance of SARI. Neither of the alternatives would cause impairment to park resources.

5.9.5 Public Health and Safety

Proposed Action - The Proposed Action would remove the deteriorating abandoned hotel structure that poses a safety hazard for the public. Removing the hotel would have a long-term beneficial impact on visitor safety and would not result in an impairment to park resources. Active demolition areas would be restricted (i.e., fenced) from visitor use until the project is complete.

No Action Alternative - Under the No Action Alternative, the site would remain unchanged and the abandoned hotel would continue to pose a safety hazard to the public.

Conclusion - The Proposed Action would remove the deteriorating abandoned hotel structure that poses a safety hazard for the public. The site would remain unchanged and the abandoned hotel would continue to pose a safety hazard to the public under the No Action Alternative. Neither of the alternatives would cause impairment to park resources.

5.9.6 Energy Requirements and Conservation

Proposed Action - Energy consumption and natural resource requirements would minimally increase if the Proposed Action is implemented. The demolition of the abandoned hotel, removal of the debris, and the Haul Road construction would require the use of several types of equipment (i.e., crane, backhoe, front end loaders, trucks) which would require the use of fuel for operation. However, these energy requirements would be temporary. Debris materials (i.e., concrete slabs, crushed concrete after demolition, rebar) from the project site would be recycled. Only necessary debris (i.e., rotting roofing materials, unrecyclable concrete) would be disposed of (i.e., Anguilla Landfill).

No Action - The site would remain in its current use, and no action would be taken; therefore, there would be no energy requirements at the site.

Conclusion - Energy consumption and natural resource requirements would minimally increase in the short-term if the Proposed Action is implemented. The No Action Alternative would result in the site remaining in its current use, and no action would be taken; therefore, there would be no energy requirements at the site. Neither of the alternatives would cause impairment to park resources.

5.9.7 Infrastructure

Utilities

Public utilities would not be needed for the Proposed Action or the No Action Alternative.

Haul Route

The trucking route for the disposal of debris would be as follows from the site: Existing unimproved access road around the Mangrove Lagoon, Haul Road to where it exits park property at Route 79 (Bennie Benjamin Road), west and south on Route 75 (North Side Road), west on Route 70, and left on Route 64 to Anguilla Landfill (see Figure 2-6). Since it is unknown which local agencies or private companies may want to acquire the concrete from the site for reuse, those haul routes cannot be predicted or shown at this time.

Temporary minor adverse impacts to citizens working and living near the proposed haul route would occur during demolition of the abandoned hotel. After completion of the demolition the roads would

return to the level of service that existed before the truck traffic. Mitigation for the demolition activities would include restricting these activities to the daylight hours, no demolition would be scheduled for nighttime hours. Notification (i.e., postings) of the dates and times of the demolition activities would also occur. Haul vehicles would meet vehicle height and width requirements and would not exceed the maximum vehicle loading requirements established for St. Croix's highways. Truck traffic would increase and cause minor adverse impacts to local residents from noise and dust. All fully loaded trucks would be covered while traveling on public roads to the landfill to reduce dust.

Traffic

Proposed Action - There would be a minor increase in vehicle trips in the SARI area during the demolition of the abandoned hotel. Even though the increase in traffic produced from the demolition activities would be a disruption, the impacts would be short-term.

No Action – The site would remain in its current use, and no action would be taken; therefore, there would be no changes to the infrastructure at SARI.

Conclusion - Temporary minor adverse impacts to citizens working and living near the proposed haul route would occur during demolition of the abandoned hotel due to an increase in truck traffic during the demolition activities. The No Action Alternative would result in no changes to the infrastructure at SARI. Neither of the alternatives would cause impairment to park resources.

5.10 VISITOR USE

Proposed Action - Currently, the project site is utilized by the local residence, mainly for recreation (i.e., hiking, running). The visitor experience at SARI would be greatly enhanced from current conditions by the demolition of the abandoned hotel. Rehabilitating the site would allow visitors to enjoy a natural setting at SARI in place of the deteriorating hotel structure. In addition, creation of formal “gateway into the park” through the improvement of Haul Road as a park entrance road would be a benefit to park visitors. The new road access would afford the public a “welcoming access to the park”, increase public access to the park, and provide NPS property on the east side with a “park entrance”. Use of this road would also provide access to VI Government lands located along the road. Therefore, long-term beneficial impacts would occur to visitor use at SARI as a result of the proposed action. Visitors would be aware of the additional sound and visual effects associated with the demolition and road construction, but adverse effects would be slight.

No Action Alternative - Under the No Action Alternative, the existing conditions at the abandoned hotel site would continue to limit the experience of visitors to enhanced scenic surroundings.

Conclusion - In summary, the proposed project would have beneficial impacts on visitor experience. The No Action Alternative would limit the experience of visitors. Neither of the alternatives would cause impairment to park resources.

5.11 PARK OPERATIONS

Proposed Action - In the long-term there would be no increase in park maintenance or operations over current levels with the implementation of the Proposed Action. Whether the abandoned hotel is removed or not SARI would still have to maintain the site. However, park operations would experience minor, short-term impacts during demolition and road construction due to oversight of the Proposed Action. Current activities at SARI (i.e., hiking, boating, snorkeling, scuba diving) would be allowed to continue

uninterrupted during the demolition and construction period. However, active demolition areas would be restricted (i.e., fenced) from visitor use until the project is complete as a safety precaution.

No Action Alternative - Under the No Action Alternative, park operations would remain unchanged and there would be no benefits to SARI from the rehabilitation of the site.

Conclusion - The Proposed Action would have negligible impacts to park maintenance and operations; however, the demolition and road construction phase would have temporary minor impacts. The No Action Alternative would not result in impacts to park operations. Neither of the alternatives would cause impairment to park resources.

5.12 SUMMARY OF IMPACTS

The implementation of the Proposed Action would result in some short-term, adverse impacts to SARI's resources, but the long-term, beneficial impacts of the proposed action far outweigh the short-term, adverse impacts anticipated during demolition and road improvements of the proposed action. Table 5-1 presents a summary of the potential environmental and socioeconomic impacts for each alternative for this project.

Short-term impacts to soils, air quality, and noise quality during the demolition of the abandoned hotel and the road improvement activities would occur. These demolition and road improvement impacts would be short-term in nature, lasting only for the duration of the activity.

The Proposed Action is expected to create minor impacts to the water quality at SARI during the demolition and road improvement activities. These impacts would be short-term in nature, lasting only for the duration of the activity. The following resources may be indirectly affected in the short-term due to negligible increases in turbidity at Salt River Bay: seagrasses, aquatic species (fish species), critical habitat (mangroves), EFH, HAPC, or designated natural areas. However, there would be long-term beneficial impacts to all the above-mentioned resource due to improved water quality from the Proposed Action by implementing erosion and sediment control methodologies and stormwater management techniques, and through the rehabilitation and revegetation of areas that are currently impervious surfaces, such as the abandoned hotel and discarded construction debris.

Long-term, beneficial impacts to floodplains, CBRS areas, and Tier 1 of the coastal zone would occur because abandoned building materials would be removed, impervious surfaces (such as the hotel) would be replaced with pervious surfaces, and the peninsula would be rehabilitated and naturally revegetated. These activities would ultimately improve floodplain and coastal area function.

Minor, adverse impacts to approximately 2.84 total acres of NPS-defined estuarine wetlands would be affected by activities associated with the hotel demolition, including roadway improvement activities and the removal of debris on the peninsula. No direct impacts to mangrove wetlands are anticipated as a result of the proposed action. A detailed SOF has been completed to describe these impacts and the mitigation expected to offset the impacts to wetlands (Appendix D). Based upon the mitigation strategy included in the SOF (Appendix D), impacts to the existing wetlands are expected to be short-term and have a long-term, beneficial effect through rehabilitating the peninsula to a more natural setting. Existing, non-native invasive plant species such as African guinea grass and tan tan would be removed and replaced with native vegetation species. The replacement of non-native invasive species with native plant species would have a long-term, beneficial impact on the terrestrial wildlife species and other vegetation species that inhabit the area as well as the greater island of St. Croix. Non-native invasive species threaten the biodiversity of fragile island ecosystems such as St. Croix.

The proposed project would have a short-term, minor, adverse impact on the avian and wildlife species that currently utilize the habitat that would be affected or removed by the Proposed Action. There would be a temporary net loss of terrestrial habitat; however, a permanent increase of approximately 7.10 acres of habitat would be created as a result of the Proposed Action. It is expected that these species would become re-established at the site after completion of the project. The velvety free-tailed bats currently inhabiting the abandoned hotel would be relocated on another portion of the site prior to any demolition activities to avoid impacts to mammalian species. Overall, the Proposed Action would provide a beneficial impact to avian and wildlife species due to the increase of available, quality vegetated habitat for avian species.

The Proposed Action would have a long-term, beneficial impact to the aesthetics at SARI. Aesthetics would be altered from current conditions; however, the abandoned hotel represents a visual intrusion on SARI's cultural landscape. Demolition of the hotel would be a visual improvement enhancing the viability of the resources within SARI as well as the viewshed to the surrounding communities.

The human environment, including park operations and visitor experience would be subjected to minor, short-term, adverse impacts during demolition and road improvements. Current activities at SARI (i.e., hiking, boating, snorkeling, scuba diving) would be allowed to continue uninterrupted during the demolition period on the west side of park, but the active areas on east side of park would be restricted from visitor use until the project is complete as a safety precaution. The Proposed Action would remove the deteriorating abandoned hotel structure that poses a safety hazard for the public. Removing the hotel would have a long-term, beneficial impact on visitor safety and would not impair any park resources.

TABLE 5-1 MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMIC IMPACTS BY ALTERNATIVES FOR THE ABANDONED HOTEL DEMOLITION

Resource	No Action Alternative	Proposed Action
Soils	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor, adverse effects from the demolition of the abandoned hotel and road construction/improvements. Sediment and erosion control measures would be implemented.
Bathymetry	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • No impacts to bathymetry.
Air Quality	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor, adverse impacts from the additional emissions created during the demolition and road construction/improvement activities.
Noise	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor noise effects during road construction/improvement phase. • Short-term, moderate noise effects during the demolition phase. • Long-term benefit by enhancing the viability of the resources within SARI.
Climate/Seismicity	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Long-term, beneficial impact by demolishing hotel. Hotel is located on reclaimed land, which is vulnerable to impacts from earthquakes.
Water Quality	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor, adverse effects due to the potential for erosion runoff during demolition and road construction/improvement activities, which may increase sediment input and turbidity. • Long-term, beneficial effects by implementing Stormwater management techniques and revegetating areas that are currently impervious surfaces.
Hydrology	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor effects to the Salt River Bay watershed drainage would occur by clearing of vegetation and temporary increase in impervious areas. • Long-term, beneficial impacts to hydrology would occur from revegetating and rehabilitating the site to reduce runoff from previous impervious building surfaces.
Floodplains	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Long-term, beneficial impacts would be associated with restoring the floodplain from a partially impervious surface to a partially pervious surface. • Long-term, moderate, beneficial impacts would occur by removing the abandoned hotel building materials from the 100-yr floodplain.
Coastal Barrier Resources System Areas	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Long-term, moderate, beneficial effects would occur from the removal of the hotel structure and associated building materials. Revegetating would return the site to a more natural setting.

TABLE 5-1 MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMIC IMPACTS BY ALTERNATIVES FOR THE ABANDONED HOTEL DEMOLITION

Resource	No Action Alternative	Proposed Action
Coastal Zone	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Short-term, minor impacts are anticipated during construction activities. A Coastal Zone Management Act Consistency Certification would be completed. Long-term, moderate, beneficial impacts would be associated with removing the abandoned hotel structure from the coastal zone.
Wetlands/Mangroves	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Minor, adverse impacts to 2.84 acres of NPS-defined estuarine wetlands due to roadway improvement activities and removal of debris on the peninsula. No impact to Federally-defined mangrove wetlands. Long-term, moderate, beneficial impacts would occur as a result of mitigation and through rehabilitating the peninsula to a more natural setting.
Vegetation	<ul style="list-style-type: none"> No additional beneficial impacts. The site would not be revegetated 	<ul style="list-style-type: none"> Short-term, minor, adverse impact to vegetation removed due to the hotel demolition, removal of debris, and construction/improvements to the roadway. Long-term, moderate, beneficial impact from re-vegetating 7.10 acres of the project area with native vegetation.
Birds/Mammals	<ul style="list-style-type: none"> No additional beneficial impacts. Habitat for avian and mammal species would not be created 	<ul style="list-style-type: none"> Short-term, minor, adverse impacts to birds and mammals that currently utilize the habitat that would be affected or removed by the Proposed Action. Velvety free-tailed bats would be relocated from hotel prior to demolition activities. Long-term, moderate, beneficial impact from increasing available, quality vegetated habitat.
Reefs/Hardbottom	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> No impacts to coral reefs.
Seagrasses	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Short-term, negligible, adverse impacts may occur due to increases of turbidity from erosion runoff. Sediment and erosion control measures would be implemented. Long-term, beneficial impacts would result from removing impervious surfaces and revegetating these areas to a more natural setting.
Fish	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> Short-term, minor, adverse impact to fish due to temporary changes to water quality from increased turbidity.
Benthic Organisms	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> No impacts to benthic community at SARI.
Threatened and Endangered Species	<ul style="list-style-type: none"> No additional beneficial or adverse impacts. Habitat that may support Federally-listed species 	<ul style="list-style-type: none"> Short-term, minor, adverse impacts to adjacent aquatic habitat are anticipated. Sediment and erosion control measures would be implemented. Long-term beneficial impacts from rehabilitation of the peninsula that may potentially attract the Federally-listed sea turtle species and the least tern to nest at the site.

TABLE 5-1 MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMIC IMPACTS BY ALTERNATIVES FOR THE ABANDONED HOTEL DEMOLITION

Resource	No Action Alternative	Proposed Action
	would not be created.	
Unique Natural Resources	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • No adverse impacts to unique natural resources. • Long-term beneficial impacts from rehabilitation of the peninsula that may potentially attract the Federally-listed sea turtle species to nest at the site. • Short-term, minor, adverse impacts to EFH and HAPC would result due to temporary changes in water quality. • Long-term, beneficial impacts to SARI and Salt River Bay and Watershed APC are anticipated following the completion of the Proposed Action.
Cultural Resources	<ul style="list-style-type: none"> • No additional beneficial impacts. • Adverse impact of hotel to cultural landscape. 	<ul style="list-style-type: none"> • No impact to archaeological resources. • No impacts to historic resources. • Long-term, major, beneficial impact to the cultural landscape from the removal of the abandoned hotel.
Recreation	<ul style="list-style-type: none"> • No additional adverse or beneficial impacts. 	<ul style="list-style-type: none"> • Short-term, minor, adverse impacts to land-based recreational activities due to the demolition and road construction/improvement activities. • Long-term, beneficial impacts to recreation would occur at the completion of the Proposed Action
Socioeconomic Conditions	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • No impacts to the community.
Environmental Justice	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • No impacts to low-income or minority communities.
Aesthetics	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. • The surrounding viewshed would remain unchanged. 	<ul style="list-style-type: none"> • Long-term, beneficial impact to the aesthetics at SARI. Demolition of the hotel would be a visual improvement enhancing the viability of the resources within SARI.
Public Health and Safety	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. • The hotel structure would continue to pose a safety hazard to the public. 	<ul style="list-style-type: none"> • Long-term, beneficial impact would occur by removing the deteriorating abandoned hotel structure. The hotel structure currently poses a safety hazard for the public.
Energy Requirements and Conservation	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor impacts to energy from constructed related activities. These impacts would be temporary.

TABLE 5-1 MATRIX OF POTENTIAL ENVIRONMENTAL AND SOCIOECONOMIC IMPACTS BY ALTERNATIVES FOR THE ABANDONED HOTEL DEMOLITION

Resource	No Action Alternative	Proposed Action
Infrastructure	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor, adverse impacts to citizens working and living near the proposed haul route would occur during demolition of the abandoned hotel.
Visitor Use	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Long-term, beneficial impacts due to the rehabilitation of the site to a more natural condition.
Park Operations	<ul style="list-style-type: none"> • No additional beneficial or adverse impacts. 	<ul style="list-style-type: none"> • Short-term, minor impacts during demolition and road construction/improvement activities.

6.0 CUMULATIVE IMPACTS

The Council on Environmental Quality regulations, which implement the national Environmental Policy Act of 1969 (42 USC 4321 et seq.), require assessment of cumulative impacts in the decision-making process for Federal projects. Cumulative impacts are those combined effects on quality of the human environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what Federal or non-Federal agency or person undertakes such other actions [40 CFR 1508.7, 1508.25(a), and 1508.25(c)]. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time or taking place within a defined area or region, or from these minor impacts combined with major impacts. It is the combination of these effects, and any resulting environmental degradation, that should be the focus of cumulative impact analysis. Thus the cumulative impacts of an action can be viewed as the total effects on a resource, ecosystem, or human community of that action and all other activities affecting that resource. Cumulative impacts are considered for all alternatives including the No Action Alternative.

'Effects' include both direct effects and indirect effects, as defined in Section 5.2. Consistent with the CEQ regulations, effects and impacts are used synonymously (USEPA 1999). Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect would be beneficial (40 CFR 1508.8).

6.1 SOURCES OF CUMULATIVE IMPACTS

Cumulative impacts were determined by including the impacts of the two Proposed Actions (implementation of the MREC and demolition of the abandoned hotel) with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects within the Salt River Bay area and, if applicable, the surrounding region. Activities warranting greatest attention in the cumulative impacts subsection are those activities that in combination with the proposed actions would potentially magnify what are perceived by resource agency personnel and the public as the most significant impacts of the proposed work in the Salt River Bay area.

These activities meriting particular scrutiny include: 1) projects with direct impacts to the aquatic community, 2) projects with direct impacts to the terrestrial community, and 3) alterations to aesthetics and visual qualities of existing viewshed conditions. Other categories of environmental and socioeconomic impacts also warrant scrutiny for comprehensiveness as listed in the discussion of 'effects' presented above. To fairly assess and evaluate the cumulative impacts of anthropogenic influences in these categories, it is also appropriate to incorporate consideration of how ongoing pertinent natural processes interact with human activities.

Given this, the following projects were identified for the purpose of conducting the cumulative effects analysis:

6.1.1 Projects within the SARI Watershed

Past Projects

Virgin Grand Hotel – A partially completed, abandoned hotel structure exists on the peninsula of the East Site, immediately adjacent to the Mangrove Lagoon in Salt River Bay. The hotel structure was part of a development project started in the late 1960s that was never completed; the hotel structure was abandoned following partial completion in the 1970s (Versar 2000). During the original development of the hotel, approximately 14,500 cubic yards of land was excavated. The original hotel construction project included developing 74 acres of land as a multi-phase development project that included 288 hotel units, 300 condominium units, a 157-slip marina, and necessary support facilities (Sugar Bay Land Development, Ltd. 1986). The maximum building height of the hotel was set at four stories. The abandoned hotel structure was partially completed from building materials such as cinder blocks, concrete, piping, and rebar. The basement of the structure, at least two stories of the hotel, a tall steeple with a cross (potentially constructed as a viewing area), and an outdoor swimming pool was completed before the project was abandoned. Currently, the structure is deteriorating and presents a safety and environmental concern for SARI; a chain-link fence surrounds the abandoned hotel structure to discourage public access to the hotel site.

Mangrove Restoration at Sugar Bay - In 1989, Hurricane Hugo destroyed the red mangrove community in Sugar Bay. A decade after the hurricane, the mangrove community had not significantly regenerated (NPS 2006). Mangroves have important functions such as reducing the amount of sedimentation reaching the bay. Given the water quality functions of mangrove communities, the St. Croix Environmental Association proposed to restore the mangrove community and approximately 4,500 red mangroves were to be planted each summer from 1999–2001 (NPS 2006). Beginning in 1999, the St. Croix Environmental Association began the mangrove restoration project, and replanted 3.5 acres of the lost forest on the western side of Sugar Bay. The survival rate for restoration seedlings is estimated at 80%. Natural re-growth in SARI and has accounted for 2.2 acres of forest since 1992. More recent aerial photographs taken in 2000 indicate that naturally occurring and restoration mangroves now cover 29.7 acres or 54% of the 1988 forest.

Salt River Marina - Salt River Marina is located along the western shoreline of Salt River Bay. The site currently consist of a single plot of land totaling 14.19 acres and includes several buildings used for boat maintenance, boat painting, boat construction, office space, parking lots for marina guests, a restaurant, and a SCUBA diving shop. In 1973, bulk heads were constructed and the boat basin and channel dredging was completed and was leased to Columbia University and the University of Texas (1976-1978) to conduct shellfish mariculture research. Lica Holding Corporation later purchased the marina in 1979 and Gold Coast Yacht Consultants reopened the marina in 1980.

Residential Development - SARI is surrounded by residential development. Estate Judith's Fancy is located to the east of SARI, Estate St. John and Montpeller are located to the south, and Estate Morningstar and Salt River to the West. Previous development at the East Site and West Site has resulted in the loss of native vegetation and natural landscape at these sites.

Recently Completed Projects

Mon Bijou Flood Control Project - This project was recently completed in the summer of 2006 and has already relieved residents from experiencing substantial flooding during and after heavy

rains. The project is located in the Mon Bijou and Glynn residential areas which are located midway between the towns of Christiansted and Frederiksted. In the Mon Bijou/Glynn area there are 31 residential structures subject to flooding from a 2-year frequency flood. The project diverts the storm water runoff from Blue Mountain around the neighborhood, providing 100-year storm protection. Construction began upstream of Highway 73, where the channel crosses the highway, running through a cattle pasture and across Glynn Road to merge with the existing gut downstream of Glynn, which leads to Salt Run. Rainfall from Blue Mountain no longer passes through the existing gut; it is now diverted to a new, 6,500-foot, grass-lined channel with 38 gabion structures to control flow velocities and minimize erosion.

The project, funded through the Federal Highway Administration, is a joint effort of the U.S. Army Corps of Engineers (Michael Schultz, U.S. Army Corps of Engineers project manager) and the VI Government.

Future Projects

Mon Bijou Bridge Project - This is a \$4.6 million project to build two bridge crossings over the Mon Bijou gut areas. It is the second phase of the Mon Bijou project (discussed above) and is expected to be completed in early 2007. Two new bridges (HWY 73 and Glynn Road) would be built to span the channel constructed for the Mon Bijou project.

Residential Development – Long-term, on-going residential development would continue in the communities surrounding SARI (Estate Judith's Fancy, St. John, Montpeller, Morningstar and Salt River, and Greig Hill). The V.I. Government is responsible for issuing permits for residential development.

6.1.2 Projects Outside of the SARI Watershed

Future Projects

Gallows Bay Marina Project - The Gallows Bay Marina Project would include accommodations for up to 40 yachts (approximately 40 to 250 feet in length), a commercial center with retail and office space, totaling 140,400 sq. ft., and a seaside park. The Gallows Bay Marina Project would also provide integrated refueling, recharging and restocking station at each slip; and dockside "black water" removal system. It is suggested that local area businesses would be able to take advantage of new service business opportunities, potential for business expansion, and a state-of-the-art office park. Plans also call for the improvement of public infrastructure for area residents. The Gallows Bay Marina development would attract small cruise ships and luxury yachts to St. Croix.

Annaly Bay Development - The \$500 million Annaly Bay Development project includes the development of more than 2,500 acres on St. Croix's north shore, including the construction of three hotels with a combined total of nearly 1,000 new hotel rooms, residential villages and estate homes. The project is expected to generate construction jobs and permanent jobs upon completion. The Annaly Bay Development project is envisioned as a world-class master-planned resort and residential community designed in communion with nature and respectful of the cultural and historical fabric of St. Croix. The property would encompass at least 1,327 acres of which more than 70 percent would remain natural open spaces and would be developed in phases over a 12 to 15-year-period.

6.2 POTENTIAL IMPACTS OF THE CUMULATIVE PROJECTS

The following is an overview of the potential impacts associated with the two Proposed Actions (implementation of the MREC and demolition of the abandoned hotel) with other past, present, and reasonably foreseeable future actions.

6.2.1 Short-Term Impacts

This section discusses the short-term cumulative impacts of the Proposed Actions on the natural resources and the human environment. Following comparisons of the Preferred Alternative (East Site Alternative), the South Site Alternative, and the West Site Alternative as well as the Abandoned Hotel Demolition Alternative, all four alternatives result in similar short-term resource impacts. Under the No Action Alternative SARI would remain in its current use and no action would be taken. There would be no new construction at the park, therefore the local economy would not benefit from a short-term increase in employment during construction. The No Action Alternative does not result in environmental impacts to the park.

The construction phase of the MREC including the installation of the seawater supply pipeline and maintenance dredging, and the abandoned hotel demolition would have short-term, minor, adverse effects to the soils, air quality, noise, water quality, recreation, aesthetics, the coastal zone, and visitor use at the park regardless of the alternative. The Proposed Actions may result in potential sediment runoff into nearby waterways during the clearing of vegetation and construction and grading activities. However, best management practices (BMPs) would be used to minimize potential soil erosion and minimize impacts to Salt River Bay including the use of semi-pervious surfaces (i.e., gravel and grass parking areas).

Construction of a boat dock and ramp at the Preferred Alternative (East Site Alternative) and the South Site Alternative would also result in short-term, minor adverse impacts to the soils and sediments, water quality, coral reef/hardbottom substrate, fish, and mangroves/wetlands at these alternative locations.

Construction of ongoing residential development in the SARI watershed has the potential to negatively impact resources such as water quality. Development within SARI is governed by the Land Protection Plan, which calls for minimal development in sensitive areas. Considering the short-term cumulative impacts from the construction, installation, dredging, and demolition impacts at SARI from the Proposed Actions when added to other present and foreseeable future actions on resources such as water quality, the incremental cumulative adverse impacts to these resources would be minor and short-term in nature, lasting for the duration of the activity.

6.2.2 Long-Term Impacts

This section discusses the long-term cumulative impacts of the Proposed Actions on natural resources. Following comparisons of the Preferred Alternative (East Site Alternative), the South Site Alternative, and the West Site Alternative as well as the Abandoned Hotel Demolition Alternative, all four alternatives result in similar long-term resource impacts. Under the No Action Alternative SARI would remain in its current use and no action would be taken. The No Action Alternative does not result in long-term environmental impacts to the park. No long-term, beneficial impact from the replacement of non-native invasive plant species with appropriate native vegetation would occur under the No Action Alternative.

In the long-term, implementation of the MREC and demolition of the abandoned hotel would have minor, adverse effects to the hydrology, air quality, noise, and water quality at the park. Maintenance dredging proposed for the three MREC alternatives would have long-term, minor, adverse impacts to the bathymetry, seagrasses, and the benthic community in the bay. However, in the long term, water quality in the Mangrove Lagoon (Preferred Alternative - East Site) has the potential to improve from being dredged since it would provide for improved flushing of the lagoon which would ultimately improve the water quality in the lagoon as well as providing a benefit to the mangroves. Long-term, minor, adverse effects to the 100-year floodplain and the CBRS area would occur from the construction of structures (i.e., Wet Lab) at the Preferred Alternative (East Site) and the West Site Alternative. However, the Web Lab would be constructed on pilings so as to not impede the function of the floodplain and the CBRS area. Long-term positive impacts would be associated with the demolition of the abandoned hotel by restoring the site to a more natural setting, including restoring the floodplain from a partially impervious surface to a partially pervious surface. Additionally, the abandoned hotel building materials would be removed from the 100-yr floodplain, resulting in a long-term, moderate, beneficial impact to the floodplain. Another project, the Mon Bijou Flood Control Project would alter water transport and retention time in the areas affected by the project, potentially affecting water quality in the bay.

Implementation of the MREC would have long-term, minor to moderate, adverse effects to the birds, mammals, and vegetation at the South and West Site Alternatives. Forested (semi-deciduous) habitat, vegetated fields, and shrub habitat would be impacted due the MREC facilities, roads, and associated parking facilities. Long-term, minor to moderate, beneficial impacts would result from the replacement of non-native invasive plant species with appropriate native vegetation and revegetating disturbed areas (i.e., mud flats, bare areas, areas dominated by African guinea grass) at the Preferred Alternative (East Site). In addition, ongoing residential development in the SARI watershed has the potential to negatively impact the hydrology, water quality, and available wildlife habitat in the region.

Overall, it is anticipated that the incremental cumulative long-term adverse impacts of the Proposed Actions, are minor when added to other past, present, and foreseeable future actions. The long-term benefits of the abandoned hotel demolition by enhancing the viability of the resources within SARI and decreasing impervious areas through revegetation and rehabilitation would contribute to the mitigation of adverse effects on the natural resources from human activity and development at Salt River Bay.

6.2.3 T & E Species, Designated Critical Habitat, and Unique Natural Systems

This section discusses the cumulative impacts of the Proposed Actions on T & E species, designated critical habitat, and unique natural systems. Under the No Action Alternative SARI would remain in its current use and no action would be taken. There would be no new construction at the park to impact T & E species, designated critical habitat, or unique natural systems. However, the long-term beneficial impacts to the unique natural systems at SARI, especially the coral reefs and mangrove habitat would not occur.

No impacts to threatened and endangered species (T&E) species are anticipated as a result of the MREC alternatives (construction of the MREC) and demolition of the abandoned hotel, as these construction activities would occur on land. However, short-term, minor, adverse impacts to listed species could occur from in-water work, including construction of the boat dock (East and South Alternatives) and maintenance dredging (all MREC alternatives). These activities, along the proposed seawater supply pipeline (all MREC alternatives), may have short-term, minor,

adverse impacts to listed species. TOY restrictions would be in place to avoid short-term, minor, adverse impacts to both listed coral species and sea turtle species. Long-term, minor, beneficial impacts to listed species, including the listed sea turtle species and listed avian species (specifically, the least tern), are expected as a result of the demolition of the abandoned hotel. Undeveloped, shoreline beach areas without human influences are preferred habitats for many listed aquatic species. Through the rehabilitation of the peninsula for the abandoned hotel demolition alternative, native vegetation would be planted and sea turtle and least tern beaches would eventually be created naturally (i.e., wave action, beach erosion) over time to attract these species to nest at this site. By creating additional, “natural” shoreline habitat that is not developed along the water for sea turtle and least tern nesting, a beneficial impact to listed species is anticipated.

No impacts to designated critical habitat for the Federally-listed leatherback sea turtle are anticipated with the alternatives for the Proposed Actions. However, short-term, minor, adverse impacts to listed sea turtle species could potentially occur from in-water work for the MREC alternatives. Minor, adverse impacts to mangroves, identified as critical habitat, are anticipated as a result of the Preferred Alternative (East Site) and the South Site Alternative. However, mangrove mitigation measures through plantings at a specified ratio of 3:1 would be required to partially offset the loss of mangrove habitat associated with the construction of the MREC. The Proposed Actions and associated mitigation plans, in conjunction with past mangrove restoration efforts, such as the mangrove restoration at Sugar Bay, would provide a long-term, beneficial impact to the wetlands and mangroves of Salt River Bay. The Mon Bijou Flood Control Project would alter water transport and retention time in the areas affected by the project, potentially affecting mangrove wetlands in the affected area.

Impacts would be short-term, localized, and negligible in intensity when mitigation measures are implemented and all local, Territorial, and Federal requirements are met. All necessary consultation and regulatory permits from Federal and Territorial agencies would be completed prior to commencement of work. Cumulatively, these actions would have a negligible effect on T & E species, designated critical habitat, or unique natural systems when considered with other past, present, and reasonably foreseeable future actions.

6.2.4 Cultural Resources

This section discusses the cumulative impacts of the Proposed Actions on cultural resources. Under the No Action Alternative SARI would remain in its current use and no action would be taken. The No Action Alternative does not result in cultural resource impacts at the park.

None of the Proposed Action alternatives have the potential to affect historic resources at the park. All three MREC alternatives could potentially have a long-term, minor to moderate, adverse visual effect on the cultural landscape of SARI.

The demolition of the abandoned hotel would represent an improvement to SARI's cultural landscape, by removing the largest, most evident visual intrusion to Salt River Bay. This improvement would be diminished, to some degree, by the construction of the MREC itself, the extent of which would depend on the location chosen for the MREC and its mass and scale. Long-term, on-going, and continued development of St. Croix and specifically the construction of homes on the hills overlooking the Salt River Bay would also diminish the visual quality of this cultural landscape. Hence, a gradual loss of visual setting is anticipated whether or not the MREC is built.

6.2.5 Socioeconomic Conditions

This section discusses the cumulative impacts of the Proposed Actions on the socioeconomic conditions in the Salt River Bay region. Following comparisons of the MREC action alternatives and the abandoned hotel demolition alternative, all four alternatives result in similar impacts. Under the No Action Alternative SARI would remain in its current use and no action would be taken. The benefit to the local economy from the hiring of permanent and part-time employees and the purchasing goods and services from local suppliers would not happen under the No Action Alternative.

Implementation of the MREC would improve the quality of life in the Salt River Bay region by providing additional opportunities for educational programs for students and the general public regardless of the alternative. Additional opportunities for incentives for partnering with local governments, community groups, and individual citizens would also be provided by the MREC; all of which would create a potential economic benefit to the community. As an individual entity, it is estimated that the proposed action alternatives would contribute to the local economy by attracting more visitors to SARI. In addition, the action alternatives would contribute directly to the local economy by hiring permanent and part-time employees and purchasing goods and services from local suppliers. Regardless of the action alternative, the local economy would benefit and the project would result in beneficial impacts to the region's low-income and minority communities by providing additional jobs and educational opportunities.

Other projects including the Gallows Bay Marina Project and the Annaly Bay Development project if implemented would contribute directly to the economy of St. Croix by hiring permanent and part-time employees and purchasing goods and services from local suppliers.

Considering these past, present, and reasonably foreseeable future actions, the beneficial effects of constructing the MREC facilities would have a cumulative benefit to the overall human environment at SARI and the surrounding community.

6.2.6 Visitor Experience and Park Operations

This section discusses the cumulative impacts of the Proposed Actions on visitor experience and park operations. Under the no action alternative SARI would remain in its current use and no action would be taken. No long-term beneficial impacts associated with the MREC facility would occur under the No Action Alternative including the experience of visitors to learn about sustainable utilization and conservation of marine resources.

Any construction activities have the potential to affect visitor use and experience. Construction activities would likely have an adverse effect on the visitor experience as a result of noise, dust, and unavailability to view the bay scenery. Projects such as road construction and improvements, building construction, demolition of the abandoned hotel, and in-water work could have an adverse effect on visitor use and experience because of the inconvenience of construction, noise, dust, and possible off-limit areas. Ultimately, these actions would have a beneficial effect on visitor use and experience due to the improved visual and natural environment of the Proposed Action (demo of abandoned hotel) by the rehabilitation of this site. Implementation of the MREC would provide additional opportunities for educational programs for students and the general public on the conservation of natural resources regardless of the alternative.

Under the Proposed Actions a minor change to visitor function is expected during construction. Cumulatively, visitor use and experience would benefit from the implementation of the Proposed Actions.

Any project that occurs within SARI has an effect on park operations; therefore, most of the actions within the Proposed Actions would have some degree of effect on employees and park operations. Park operations would increase over current levels, which would cumulatively have a minor impact to park operations when considered with other past, present, and reasonably foreseeable future actions.

7.0 MITIGATION MEASURES

This chapter provides a summary of the mitigation measures for the MREC Preferred Alternative (East Site) and the Abandoned Hotel Demolition Proposed Action by each applicable resource category. General categories of mitigation measures include:

- Avoiding certain impacts altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying impacts by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating impacts over time by preservation and maintenance operations during the life of the action; and/or
- Compensating for impacts by replacing or providing substitute resources or environments.

To the extent possible, potential impacts associated with the proposed projects were avoided through use of an interdisciplinary process (integrating comments and concerns from SARI and resource agencies, and comments from public scoping). While some impact to the environment cannot be avoided, the park has determined that the proposed projects have been mitigated to the best attempt possible to offer the least amount of impact to the human and natural environment.

The following mitigation measures have been developed to minimize the degree and/or severity of adverse effects, and would be implemented during construction/demolition of the proposed projects, as needed:

Soils:

- To minimize the amount of ground disturbance, staging and stockpiling areas would be located in previously disturbed sites, away from visitor use areas to the extent possible. No stockpiling of materials would occur in designated Federal wetland areas.
- Construction/demolition zones would be identified and fenced prior to any construction/demo activity. The fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction/demo specifications and workers would be instructed to avoid conducting activities beyond the construction/demo zone as defined by the construction zone fencing.
- If imported soil is required to provide substrate for new vegetation, the soil would be from an NPS-approved source and certified as weed and fire-ant free.

Air Quality:

- Fugitive dust generated by construction would be controlled by spraying water on the construction site, if necessary.
- To minimize trip generation of construction/demolition activities, full loads of materials would be encouraged while removing materials from the site for the abandoned hotel demolition and concrete recycling.

Noise Quality:

- To reduce noise only day-time construction would occur; no nighttime construction is currently anticipated.

Water Resources:

- Appropriate agencies (USACE and the USVI DPNR) would be notified and consulted on the proposed projects to ensure compliance with Federal Laws (Section 401 and 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act). Applicable permits (10/404 permit) associated with waters of the U.S. would be obtained from the USACE prior to the start of construction.
- Because disturbed soils are susceptible to erosion until revegetation takes place, standard sediment and erosion control measures, such as silt fences and/or sand bags, BMPs, and stormwater management techniques would be used to minimize any potential soil erosion. A SWPPP would be required and implemented prior to, during, and following ground-disturbing activities. Contractors would also be required to prepare an Erosion Control Plan that requires a description of specific erosion and sediment control measures that would be implemented
- Erosion-control measures would not be removed until the site is permanently stabilized in accordance with the specified plan.
- A floating boat dock system would be constructed for the MREC since it minimizes impacts to the sediments and aquatic resources; constructing the docks on site and floating them into their designated location would minimize effects on water quality.
- Permeable paved surfaces would be used for parking areas at the MREC and for the access road and parking lot at the abandoned hotel location to contribute to controlling stormwater runoff.
- For any impacts due to turbidity from maintenance dredging, a silt curtain would be in place during dredging activities.

Floodplain/Coastal Barrier Areas:

- The Wet Lab would be constructed on pilings and a floating boat dock system would be constructed for the MREC since it minimizes impacts to the floodplain and coastal barrier areas.

Wetlands:

- The mitigation strategies for both Proposed Actions include a two-fold mitigation plan: 1.) a mangrove wetland mitigation plan and 2.) an estuarine wetland mitigation plan (Appendix D).
- Based upon impacts to mangroves associated with the boat dock, mangrove mitigation strategies were developed in consultation with the USACE, the NPS, and the USDA NRCS and would include mangrove revegetation along the Mangrove Lagoon. Based upon positive results from past restoration efforts, mangrove revegetation would be a proposed mitigation strategy to partially offset the impacts associated with the East Site projects. An SOF for wetlands was completed for both projects, which includes appropriate mitigation measures for mangrove wetlands (Appendix D).
- Mitigation for estuarine wetland impacts would include wetland vegetation plantings and site rehabilitation on the peninsula at the East Site to restore and rehabilitate the peninsula

to a more natural setting. The mitigation site is envisioned as a rehabilitated peninsula with groupings of mature wetland shrubs (and some trees) that were avoided during construction activities, a shoreline stabilized with herbaceous wetland forbs and ground covers, and more interior (inland) areas of sparse wetland vegetation that would attract and support least tern nesting. An SOF for wetlands was completed for both projects, which includes appropriate mitigation measures for estuarine wetlands (Appendix D).

- Any applicable permits associated with wetlands would be acquired for the MREC, including a Section 404 Permit, prior to any construction activities.

Vegetation:

- Revegetation of disturbed areas would take place following construction of the MREC, and would be designed to minimize the visual intrusion of the MREC facilities.
- Revegetation efforts at the abandoned hotel site would strive to rehabilitate the site by reconstructing the natural spacing, abundance, and diversity of native plant species using native species.
- Mitigation of non-native vegetation would also include the removal of invasive species with the replacement of appropriate native vegetation.

Wildlife and Threatened and Endangered Species:

- The velvety free-tailed bats (native mammalian species) currently inhabiting the abandoned hotel would be relocated to bat houses prior to any demolition activities. This bat species is not listed as Endangered for the Territory, but a bat mitigation plan would be drafted by a bat specialist prior to demolition activities. TOY restrictions may be included in the bat mitigation plan to reduce impacts to bats during the maternity season.
- TOY restrictions would be in place for special status species. TOY restrictions would be developed in coordination with appropriate Federal and Territorial agencies, including NMFS, USFWS, and USVI DPNR. Construction activities would not be allowed to work during the TOY restrictions.
- In accordance with the Federal and Territorial requirements for threatened and endangered species, ESA Section 7 consultation would occur with USFWS, NMFS Southeast Region, USVI DPNR, and Division of Fish and Wildlife prior to the in-water construction and maintenance dredging activities. A Biological Evaluation (BE) would be completed as part of the planning and design stages for the proposed MREC project.
- Construction workers and supervisors would be informed about special status species. Contract provisions would require the cessation of construction activities if a species is discovered in the project area, until park staff re-evaluates the project. This would allow modification of the contract for any protection measure determined necessary to protect the discovery.

Visitor Use and Experience:

- Whenever possible, current activities at SARI (i.e., hiking, boating, snorkeling, and scuba diving) would be allowed to continue uninterrupted during the active construction periods of the proposed projects. However, active demolition areas would be restricted (i.e., fenced, posted restricted access, gated, roped off and signed) from visitor use until the project is complete, as a safety precaution.

Aesthetics:

- The MREC buildings would be designed to blend in as much as possible with the natural surroundings; this would be accomplished by building low rise structures and using natural paint colors for the exterior of the buildings and roofs.

Energy Conservation:

- The NPS would strive to construct the MREC facilities with sustainable designs and systems to minimize potential environmental impacts. To the extent possible, the design and management of facilities would emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. The NPS would also strive to reduce energy costs, eliminate waste, and conserve energy resources by using energy-efficient and cost-effective technology. Energy efficiency would be incorporated into the decision-making process during the design and acquisition of buildings, facilities, and transportation system that emphasize the use of renewable energy sources.
- The following energy conservation and sustainable resources would be included where practical and cost efficient: alternative power such as solar panels (e.g., solar hot water systems) and windmills, high-volume rainwater collecting cisterns, and a reverse-osmosis freshwater production system.
- Recycling debris materials (i.e., concrete slabs, crushed concrete after demolition, rebar) from the abandoned hotel project site would occur. Only necessary debris (i.e., rotting roofing materials, un-recyclable concrete) would be disposed of.

8.0 ENVIRONMENTAL COMMITMENTS

8.1 Unavoidable Adverse Effects

Unavoidable adverse effects are impacts that cannot be fully mitigated or avoided. The following unavoidable adverse effects would occur from the implementation of the proposed projects (MREC and hotel demolition):

- Construction/demolition within a coastal zone;
- Construction/demolition in CBRS areas;
- Construction in a 100-year floodplain (MREC);
- Minor long-term impacts to terrestrial resources (soil, vegetation, and wildlife);
- Minor short-term impacts to seagrasses, fish, and benthic organisms (MREC);
- Minor (MREC) and moderate (hotel demo) short-term impacts to noise;
- Minor short-term impacts to air quality;
- Minor short-term impacts to water quality;
- Long-term aesthetic impacts (MREC);
- Long-term impacts on the cultural landscape;
- Increases in truck traffic along haul route (hotel demo).

Minor permanent impacts to wetlands from the MREC would be fully mitigated as discussed previously in Section 4.3.3. Additionally, impacts to vegetation at the hotel demo site would be mitigated (see Section 5.4.1) as would impacts to vegetation from the MREC at the Preferred Alternative (East Site) (see Section 4.4.1).

The benefits to the quality of life in the Salt River Bay region and to the coral reef ecosystem from the implementation of the MREC extend beyond or mitigate for the minor short-term impacts of the above mentioned resources. Additionally, revegetating and rehabilitating the abandoned hotel site to a more natural condition should mitigate for most of the minor short-term impacts to this site.

8.2 Irreversible or Irretrievable Commitments of Resources

This section discusses irreversible and irretrievable commitments of resources. A resource commitment is considered irreversible when primary or secondary impacts from its use limit future options. Irreversible commitment applies primarily to nonrenewable resources, such as minerals or cultural resources, and to those resources that are only renewable over long time spans, such as soil productivity. A resource commitment is considered irretrievable when the use or consumption of the resource is neither renewable nor recoverable for use by future generations.

Irreversible – Irreversible commitments are those that cannot be reversed, except perhaps in the extreme long-term. Implementation of the MREC and demo of the abandoned hotel would involve the following irreversible environmental changes to natural resources:

- Commitment of energy (i.e., electricity) as a result of the construction, operation, and maintenance of the MREC facility.
- Use of fossil fuels to operate boats and vehicles as well as fixed and mobile construction and demolition equipment.

Irretrievable

An irretrievable commitment of resources refers to the effects to resources that, once gone, cannot be replaced. Vegetation removal and soil disturbance would occur if the proposed projects are implemented, which would cause minor impacts to natural resources that may not be retrieved in the long-term. However, the Preferred Alternative (East Site) and abandoned hotel site would be rehabilitated and revegetated with non-invasive plants, causing a long-term positive effect. Building MREC support facilities (boat dock, moorings, wet lab) in a floodplain, coastal zone, and the CBRS area would also be an irretrievable commitment of these resources. Removing the abandoned hotel structure and associated concrete debris and rehabilitating the site would reverse the irretrievable commitment of these resources by returning the site to a more natural condition. This action would allow the area to function unimpeded as a floodplain, coastal zone, and CBRS area.

9.0 COMPLIANCE WITH ENVIRONMENTAL REGULATIONS

9.1 Federal Regulations

Implementation of the MREC would involve impacting waters (including wetlands) of the U.S. A Section 404 Permit would be obtained from the USACE-Jacksonville District (which has jurisdiction over St. Croix) and the Antilles Regulatory Branch (located in Puerto Rico), prior to any MREC construction activities to ensure compliance with Section 404 of the CWA. Additionally, the Rivers and Harbors Act (RHA), Section 10 regulates any activity that affects the course location and capacity of a navigable waterway. A Section 10 permit would also be obtained from the USACE – Jacksonville District and the Antilles Regulatory Branch prior to any MREC construction activities to ensure compliance with Section 10 of the RHA.

To comply with Section 7 of the Endangered Species Act, initial consultation was conducted with the USFWS Southeast Region, the NMFS Southeast Region Office, and the USVI DPNR. Of the three agencies consulted on the project only NMFS responded. NMFS stated in a letter that the listed sea turtles and coral reefs would not be affected by the proposed construction of the MREC. NMFS recommended that a biological evaluation (BE) be prepared as part of the planning and design stages of the project. A BE would be completed prior to any construction activities for the MREC and would include background information regarding the presence of threatened and endangered species in the project area.

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Further archaeological testing in accordance with Section 106 would be needed to determine if there are sites at the Preferred Alternative that are eligible for listing on the NRHP. Applicable approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but prior to the start of the construction of the MREC. The proposed Haul Road has no potential to effect archaeological resources; however, if the road design requires construction in new undisturbed areas then Section 106 compliance, including monitoring of ground disturbing activities, would be required. Additionally, construction of in-water structures for the MREC would require an underwater archaeological survey to determine the location of submerged cultural resources. An underwater archaeological survey should be completed to determine if submerged resources are present, and to investigate and evaluate the resources so identified. The results of this underwater archaeological survey would need to be reviewed by the USVI SHPO and NPS. If NRHP-eligible shipwrecks or other submerged resources are identified, the project's effects on such resources would need to be determined and mitigation would be required for adverse effects.

9.2 U.S. Virgin Islands Regulations/Laws

The demolition of the abandoned hotel would be located within the coastal zone. To comply with the Virgin Islands Coastal Zone Management Act, Section 910 the NPS has prepared a Coastal Zone Management Consistency Certification in the form of a letter for the abandoned hotel demolition project stating that the project is consistent, to the maximum extent practicable with the VICZMP. This letter is included in Appendix D. The VICZMP would review the consistency determination and determine if the project is in compliance with the VICZMP. If the project is in compliance, a notice of concurrence would be provided by the VICZMP, thus completing all relevant CZM requirements.

A Coastal Zone Management Consistency Certification for the MREC project would be prepared following completion of this EA and the signing of the FONSI. CZM concurrence from VICZMP would be obtained prior to construction of the MREC.

To prevent violations of water quality standards, a 401 Water Quality Certification would be obtained for the MREC from DPNR, under the CWA Section 401 prior to construction.

10.0 CONSULTATION AND COORDINATION

10.1 PUBLIC SCOPING

External (public) scoping was conducted to inform various agencies and the public about the proposed actions to implement a MREC and to demolish an abandoned hotel structure at SARI. The public scoping was also conducted to generate input on the preparation of this EA. Scoping is the effort to involve agencies and the general public in determining the scope of issues to be addressed in the EA. Among other tasks, scoping determines important issues and eliminates issues determined to be not important; allocates assignments among the interdisciplinary team members and/or participating agencies; identifies related projects and associated documents; identifies other permits, surveys, consultations, etc. required by other agencies; and creates a schedule that allows adequate time to prepare and distribute the environmental document for public review and comment before a final decision is made. Scoping also includes consultation with any interested agency, or any agency with jurisdiction by law or expertise to obtain early input.

This effort was initiated with the distribution of a newsletter which was bulk-mailed to over 500 persons including residents in the Salt River Bay area, local businesses, local agencies, and local government representatives. A press release was sent to three local television stations (WSVI Channel 8, WTJX Channel 12, and TV2) and three local radio stations (WVIQ Sunny 99.5 FM, WJKC Island 95 FM, and WSTX AM/FM). Additionally, three newspapers (St. Croix Avis, Daily News, and VISource) posted the press release. With this press release, the public was notified of the proposed action, notified of the upcoming scoping meeting, and given 30 days to comment on the project. A copy of the newsletter, press release, and distribution list (the list in the appendix does not include names/addresses from newsletters that were returned) are included in Appendix F.

A public scoping meeting was held on August 22, 2006 from 5:30 p.m. – 8:00 p.m. at the Christiansted National Historic Site located at the Guinea Company Warehouse (old post office building) 2100 Church St., #100, Christiansted, VI. A list of attendees (24 people attended) from the public scoping meeting is included in Appendix F. Public comments were received during the meeting and through the mail and are summarized in Table 10-1 and included in Appendix F. The comments generally support the development of the MREC and the demolition of the abandoned hotel structure.

The EA will be distributed to individuals and agencies listed in Table 10-1 and Appendix F for public and agency review and comment for a period of 30 days. Comments received will be addressed in an errata sheet to be attached to the FONSI, assuming there are no issues that may lead to significant impacts from the Proposed Actions. Following the completion of the EA and response to comments, the FONSI will be signed and dated by the NPS Regional Director.

TABLE 10-1. PUBLIC COMMENTS ON THE PROPOSED MREC AND ABANDONED HOTEL DEMOLITION

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
<p>Marilyn Chakroff VI Dept of Agriculture/ Forest Stewardship Coordinator</p>	<p>The most likely site for the MREC is the south site. If the buildings are in good repair, this site already has infrastructure in place. Without more information on the condition of these structures, it is hard to say whether the best solution for MREC should be to build all new structures elsewhere or not.</p>	<p>Comment Noted.</p>
	<p>But the hotel needs to go! Plus all wrecked sailboats stuck in the mangroves.</p>	<p>Removing abandoned boats from within SARI is a General Management Plan (GMP) issue.</p>
<p>Ernest Chappelle Bechtel Eng. & Con./ Manager of Environ. Safety and Health</p>	<p>Please allow access for surfers to park their cars at the Salt River Surf Spot on the East Side of the bay, directly in front of the old boat wreck (iron barge).</p>	<p>Parking at the Salt River Surf Spot on the East Side of the bay is a GMP issue.</p>
	<p>The marine school can only benefit St. Croix immensely. It will bring investment, employment for Virgin Islanders and research to help maintain and save the reefs from deterioration.</p>	<p>Thanks for the positive comment.</p>
<p>Stephen K. Cohen St. Croix Central High School/Science Teacher</p>	<p>The sooner, the better. It has been too long that St. Croix has not been a center for Marine Research & Education. Hopefully this will all come to completion quickly and we can educate our youth before it is too late to do something to save and preserve the reef.</p>	<p>Thanks for the positive comment.</p>
<p>Olasee Davis University of the Virgin Islands/ Ecologist</p>	<p>I would suggest the MREC be placed in the former NOAA undersea Research Center. The facilities of the former Center are basically still intact. Also, a baseline research is already established in that site from NOAA.</p>	<p>Comment Noted.</p>
	<p>I also agree to demolish the abandoned hotel building and return the area to natural conditions as much as possible. Creating green space is important to make SARI more attractive naturally.</p>	<p>Thanks for the positive comment.</p>
	<p>Also, I would suggest creating trails, particularly on south side of SARI to learn more about the terrestrial environment at SARI.</p>	<p>The creation of trails is a GMP issue.</p>

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
Margarita Hutchinson and Dan Odell Birds of Paradise/ Co-owners	This is great to see (the environmental scoping newsletter). The pre-analysis makes sense, but how much will it cost? Who will perform the study? How long will it take? Are there historical artifacts under water there? Who will pay for the work? Keep up the good work!	Thanks for the positive comment on the newsletter; the preliminary cost for the MREC itself was 20 million; future studies and duration of studies is to be determined; an underwater survey will take place since there is a possibility that historic underwater resources exist; funding for the project is to be determined.
	Please add us to your mailing list and remove Megan Shoenfelt from your mailing list – she’s gone from SEA. Suggestion – provide postage for people.	You will be added to the MREC mailing list and M. Shoenfelt will be removed; comment noted on providing postage for future correspondence.
Gordon and Marie MacDonald Capt. CESN (Ret)	We are extremely happy to have SARI in this very important and historic area.	Thanks for the positive comment.
Thomas Nicolosi Executor of the Estate of Salvatore Nicolosi	I’m the owner of property in Salt River. I would like information on what the government is doing to the surrounding property.	GMP issue - other planned projects.
Michelle Pugh Dive Experience / President	Please make Salt River a No Take area!!	Government of the Virgin Islands (GVI) issue – No Take Areas. SARI is already a territorial marine reserve; GVI has to enforce existing regulations.
Frank Sluss Business World/ President	I live at 250 Judith’s Fancy, right next to the proposed site. How will development affect our property? How will you enter and leave the area?	Implementation of the MREC at the East Site should have minimal effects on your community. A Haul Road is proposed for the hotel demolition which will be improved to provide for public access to the east side of the park. This new park entrance would be used for the MREC to avoid your private community.
William Tobias	If the old hotel structure is structurally sound, it should be used as the sight for the MREC. If it is not structurally sound, as determined by an engineering structural survey, I would concur with the East Site location for MREC. The government (DPNR) should be provided with a copy of the engineering structural survey. The government (DPNR) should be provided with a map identifying all plots of reclaimed land.	Unfortunately, the hotel structure is not structurally sound, based upon the results of a survey by NPS engineers and architects (NPS 2001). Additionally the hotel is located in a Coastal Barrier Resources System Area; therefore, federal funds can not be used to support this structure for a federal facility except for marine related operations. If the GVI would like a copy of the NPS Survey (NPS 2001b), a request should be made from the GVI to NPS. Regarding the map of reclaimed land, the GVI has this information.

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
William Tobias (Continued)	The government (DPNR) should be an equal partner in the MREC and provided with sufficient space to base its marine-related programs.	The GVI is a partner in the MREC project. Space for DPNR marine-related programs will need to be coordinated with the Consortium through a Cooperative Agreement document.
	NPS needs to work with DPNR-DEE to enforce Salt River Marine Reserve & Wildlife Sanctuary regulations.	NPS fully endorses the SARI Marine Reserve & Wildlife Sanctuary. GVI is solely responsible for the management and protection of the waters within the designated park boundaries. (MR&WS has been signed by GVI but public comment on regulations pending). A Cooperative Agreement for management of SARI between the NPS & the GVI needs to be finalized and signed by GVI. The Cooperative Agreement calls for the GVI to seek concurrent jurisdiction through the legislature of the Virgin Islands. Once finalized the Governor will sign it into law and the NPS will gain concurrent jurisdiction with the GVI for enforcement of the Salt River Marine Reserve regulations.
Robert V. Vaughn St. Croix Landmarks, Society/ Trustee	Excellent presentation and graphics. Comments I heard from public were all positive. Personally, I hope the project materializes and pronto! There is no reason for our housing the world's priceless resources and not learning and documenting (and preserving) them for the whole world.	Thanks for the positive comments.
Bill Rohring DPNR Division of Coastal Zone Management Assistant Director	Continued involvement that was highlighted by NPS personnel being on the St. Croix East End Marine Park Advisory Committee, with local government actions and activities. Especially concerning scientific research, water quality monitoring and cross-training opportunities between the local government and NPS staff	The GVI is a partner in the MREC project.
Harold and Laura Denwood Retired	100% support of demolition of abandoned hotel structure. Strongly feel that once the hotel is demolished the site should be returned to natural state, which would include no major structures except as related to archaeological and ecologic observations. MREC seems a natural for the south site because of	Comment Noted

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
Harold and Laura Denwood Retired (cont)	good roads, existing buildings and the history of the research center. This would also allow water access to the East Site.	
Tracy Lynch Bholá and Emy Thomas President and Secretary of Estate Salt River Homeowner’s Association	Support the intent of establishing a MREC and demolition of the abandoned hotel site.	Comment Noted
	Concerns include: intensity of development, resulting traffic intensities and access, preservation of historic character, conformance to existing zoning requirements, and conformance to existing deed restrictions (both explicit and of good faith).	Development of the MREC will be limited to necessary facilities, traffic projections are low level, and the NPS will conform, to the extent practicable, to zoning requirements and deed restrictions.
	South site is preferred site.	Comment Noted
	East site is the next preferred site.	Commented noted; The East Site is the NPS Preferred Alternative.
	The West Site is the least preferred site.	Comment Noted
	The Salt River Homeowner’s Association (HOA) made special provisions to welcome SARI into our subdivision because we endorsed SARI’s mission to preserve and enhance the historical, archaeological, cultural, and ecological resources of the area and we amended our covenants to allow activity “consistent with SARI’s operation and buildings consistent with the definitions outlined of “park uses.” The MREC [at the West Site] does not fit those descriptions and it far exceeds the original intention of the HOA and the NPS to harmoniously blend a park into a single-family residential neighborhood.	Your concerns have been noted.
In summary, we believe the character of the existing West Site SARI Visitor’s Center and surrounding area should be maintained as a low intensity, visually unencumbered and ecologically preserved area devoid of the MREC development. The South Site and the East Site afford the best opportunities to meet the programmatic requirements of the MREC campus. We hope the NPS will take this information under serious consideration and we appreciate the opportunity to provide our perspective and remain available for further discussion with all interested parties.	Your concerns have been noted.	

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
Viridin Brown	Supports the establishment of a MREC in the vicinity of SARI based upon the information presented. Believes the MREC should be developed on the fringe boundary of SARI because of the significant historical, archaeological, and ecological resources and that it would be difficult to carry out a major development without disturbing or destroying important resources. This would mean acquiring suitable acreage outside of SARI.	It is not necessary to build the MREC outside of park property since this EA concludes that no impairment of park resources would result from the implementation of the Preferred Alternative. A Phase I archeological survey has been conducted at the East and West sites; results of the survey found that the proposed MREC would not impact archeological resources. Natural resource surveys will be conducted prior to construction for compliance with applicable federal laws and permits.
	The South Site is the only suitable site among the three suggested because of the existence of some infrastructure and the access to the bay.	Comment noted.
	Concerned that the present development plans are drifting away from the initial concept of using SARI as a mechanism for joint Virgin Island and Federal management, while providing training to VI government personnel to staff and manage a Territorial Park System.	The GVI is a partner in the MREC project. UVI is a partner in the Joint Institute for Caribbean Marine Studies. Through the cooperative agreement to co-manage the park, NPS will find opportunities to provide training for GVI staff at federal training facilities and training / development programs.
Amy Hamilton Home Owner in Judith's Fancy	How is the public going to have access to the MREC in Judith's Fancy? Through the private Judith's Fancy Roads means more traffic. With more people coming and going, theft might increase.	The public will access the MREC by way of the Haul Road which is proposed for the hotel demolition and will be improved to provide public access to the east side of the park. This new park entrance would be used for the MREC eliminating traffic through the Judith's Fancy community.
	I believe the MREC should be built on the West Side where public access is already commonplace.	Comment Noted.
Jessie Thomas Secretary SARI Advisory Commission	It appears that this project circumvents Public Law 102-247 due to no major development will be authorized without an approved GMP. This law does not provide for a third party co-manager, including NOAA, the JI for Caribbean Studies, or the USVI. A Cooperative Agreement between the NPS and the Government of the VI defining management responsibilities has not been mutually agreed upon. There is no draft, much less approved, GMP.	The Salt River Advisory Commission no longer exists as of February 2002. NPS concurs that development of a GMP would facilitate long-term planning at SARI. However, funding of a GMP is still years away and NPS is proceeding with initiatives that meet the mission of the park, as described in the enabling legislation. The enabling legislation for SARI cited "education and research" as within the mission of the park, making the proposed MREC consistent with the park's mission. The proposed MREC is consistent

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
		<p>with the Coral Reef Act of 1999 and the U.S. Ocean Action Plan of 2004. NOAA or the JICMS would not be considered co-manager of the park, but of a facility that would be located within the boundaries of the park on park property that would further support the park mission and goals for preservation, conservation and education.</p>
<p>Jessie Thomas (continued)</p>	<p>Although scientific study was listed in the “Management Objectives” approved on November 29, 1994, a complex as large as the MREC was not contemplated. The MREC proposal represents piecemeal development and damages the integrity of SARI.</p> <p>It would seem that Section 106 and 110 compliance are required due to the cumulative adverse affects on the integrity of SARI’s historic properties. The MREC complex will affect historic properties within the SARI boundaries, including the Columbus Landing National Historic Landmark, Cape of the Arrows, and the National Natural Landmark. Diminished integrity of these resources could lead to the declassification of their status.</p>	<p>The proposed MREC has been designed to minimize impact to the environment, including the natural, cultural, and visual resources. The Preferred Alternative makes use of disturbed lands and avoids impacts to natural and cultural resources. The location at SARI was selected because of its proximity to high quality seawater for research purposes, to an extraordinary marine environment for research, and because disturbance of valuable habitat was avoided or minimized.</p> <p>The development of the MREC does not damage the integrity of the park. Rather it helps to fulfill the mission of the park, protects important resources for future generations, and provides an opportunity for visitors to experience the park and learn about the important cultural and natural resources within SARI. Purchasing the Visitor Contact Station as well as a boundary expansion was not contemplated back in 1994. The Park moved ahead for the benefit of park resources.</p> <p>Yes, Section 106 and Section 110 compliance are required and will be completed for this project. Applicable approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but prior to the start of the construction of the MREC.</p>

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
<p>Jessie Thomas (Continued)</p>	<p>The Public Announcement (August 13-14, 2006) in the AVIS indicates that the NPS is seeking to re-establish a MREC on the island of St. Croix. Any proposed construction within the line of sight of the Columbus Landing National Historic Landmark would impact the vistas and landscapes (Section 104(b), P.L. 102-247). The size of the proposed complex will destroy the viewshed forever, and the visitor's experiences will be immeasurably diminished.</p>	<p>Section 106 and Section 110 compliance are required and will be completed for this project. Applicable approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but prior to the start of the construction of the MREC.</p>
	<p>There seems to be no balance between the protection of the cultural resources and natural resources. The MREC seems to indicate that natural resources are now given preference because of E.O. 13089. Degradation of the integrity of the Columbus Landing National Historical Landmark and the National Natural Landmark due to construction has been a NPS concern since 1986. This includes adverse impacts to vistas and landscapes.</p>	<p>The MREC project was analyzed in detail and has minimized or avoided, when possible, adverse impacts to the historic, cultural, and natural resources at SARI. Applicable approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but prior to the start of the construction of the MREC.</p>
	<p>I am of the opinion that the East side of Salt River Bay is not suitable for the MREC because of all the factors which I have mentioned, I do recommend that the shoreline, which has been disturbed by commercial development, be restored to its pre-1960 state. This would enhance interpretation and the visitor's understanding of the complex human history of the area.</p>	<p>Comment noted on the MREC. The peninsula at the East Site (which may also include the shoreline areas) will be returned to a more natural setting following the demolition of the abandoned hotel structure.</p>
	<p>The MREC complex will affect historic properties within the SARI boundaries including the Columbus Landing National Historic Monument, Cape of the Arrows, and National Natural Landmark.</p>	<p>Applicable approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but prior to the start of the construction of the MREC.</p>

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
<p>Jessie Thomas (Continued)</p>	<p>A possible alternative site for the MREC includes Government Plot 101=23, which is large enough and has access to Triton Bay. Roadway access would not be necessary and Cape of the Arrows would still have limited access.</p>	<p>Government Plot 101-23 has many site constraints. For one, a significant portion surrounding Triton Bay is within the Coastal Barrier Resources System Area. A portion directly east of the bay is within the 100-year floodplain. It may be possible to site at least a portion of the facilities outside of these areas, but any facility would be far removed from the bay, and the seawater access line would have the greatest impact to water resources from this location. Moreover, the park has indicated that they prefer that this site generally be returned to its natural state. That is one reason it was not considered as an alternative site before the project was submitted to the planning team.</p>
	<p>A second possible alternative site for the MREC includes the present marina at SARI. Also, an out of park alternative for the MREC is the University of VI-owned property at Estate Concordia Bay, Frederiksted, which has a good “drop off” for boat access.</p>	<p>The marina is an alternative, it is included in the West Site location. The paramount advantage identified in the CBA process was building the MREC on land owned by the NPS. This would provide for the long-term control and management of the facility. Also, the proximity to Salt River Bay is an important component of the research program, one that is not served by an MREC location in Frederiksted.</p>
<p>J.H. Isherwood</p>	<p>Clearly, the best place to build the NPS facility is at Trident Bay, the Southern Site, if this property becomes available.</p>	<p>Comment noted.</p>
	<p>Development at the Judith’s Fancy location would create a multitude of security issues and conflicts with the adjoining subdivision development. An unsightly and environmentally insensitive security fence will probably be required. The homeowners in this development already feel under assault from burglaries.</p>	<p>Security is expected to improve at the East Site due to the presence of MREC staff. Some MREC facilities may require fencing, but it will blend in with the natural surrounding.</p>
	<p>Opening the new access road into Judith’s Fancy through what is presently an undisturbed bird sanctuary and wildlife area will play havoc with the current balance and security. The association would probably be happy to cooperate with the NPS to improve security and restrict vehicle access to SARI’s</p>	<p>The existing road proposed to be improved for public access to the east side of the park is not located in the former Triton Bay Wildlife Sanctuary.</p>

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
J.H. Isherwood (Continued)	<p>property.</p> <p>While the old hotel site should be cleaned up and the debris removed, I am concerned that the actual demolition of buildings will create as many environ. problems as it solves. I would like to see the existing buildings/pool fixed up and used for park and research purposes with primary access for visitors being by water from the Salt River Marina. With low intensity dev. and limited road access, it might be possible to reach an agreement with the homeowner's association to avoid building a new access road and all the ecological and security problems this road will create for the subdivision and the NPS.</p>	<p>A detailed environmental analysis of the beneficial and adverse impacts of demolishing the abandoned hotel structure has been conducted. The long-term benefits of removing the hotel structure, including returning the site (and viewshed) to a more natural condition, far outweigh any short-term, temporary impacts associated with demolition and construction. The abandoned hotel structure is currently deteriorating and presents safety and environmental concerns.</p>
David Hayes Registered Professional Archaeologist	<p>I am fully in agreement with the removal of the remaining structures and other material from the failed hotel on the Judith's Fancy site. These need to be removed for safety and reduction of a blight on the viewshed.</p>	<p>Agreed. The abandoned hotel structure is currently deteriorating and presents a safety and environmental concern. Following the removal of the abandoned hotel structure, the site (and coastal viewshed) will be returned to a more natural condition.</p>
	<p>While any of the proposed locations for the MREC would Work, I think the best choice would be the East Side. The MREC must also contain a storage/archive area.</p>	<p>Agreed. The East Site is the Preferred Alternative, and we are also considering adding a storage /archive facility as part of the MREC.</p>
	<p>While acquiring the marina on the west side should remain the highest priority land acquisition for SARI, placing the MREC on the west side would seriously compete for attention with the historical and archaeological resources on that side. In my view, the western side of the estuary is an extraordinary treasure for historical and archaeological research and placing the MREC there would interfere with research into and interpretation of those resources. Also, would another Congressional action be required for the NPS to acquire land needed for that site that is outside the stated boundary of SARI?</p>	<p>Comment noted. Any land acquisition proposal by a Federal agency, including the NPS, would require National Environmental Policy Act compliance. Yes, Congress would have to expand the park boundary to include the proposed property. Once the property is inside the park boundary the superintendent would request funding through the Land & Water Conservation funds to purchase the property.</p>
	<p>Although the south side is the historic home of the NOAA base, it is limited by the terrain and lack of sheltered anchorages. I think this site has too many</p>	<p>Comment noted on the South Site. Any mangrove rehabilitation (or mitigation for wetland impacts) would most likely occur at the East Site, since this is</p>

Table 10-1. Public Comments on the Proposed MREC and Abandoned Hotel Demolition

NAME AND ORGANIZATION	COMMENTS / SUGGESTIONS	RESPONSE TO COMMENTS
	physical limitations to serve well, especially when the future expansion of the MREC is needed. This area is near mangroves and might serve well as support for their rehabilitation, should the NPS be able to acquire the old Faile complex.	the location of the Preferred Alternative.
David Hayes (Continued)	The east site, while requiring the reopening of an old road and limited by the presence of a pre-Columbian burial site and village, does not have the problems of the other two sites. I recall that in the 1960s, several cannons were underwater at the entrance of the dredged marina, which had been moved there by local divers.	Comment noted. The NPS will conduct an underwater survey before any work is done in the lagoon or bay.
	On the East Site, the new structures can be dispersed and landscaped so that they do not intrude into the viewshed. Up on the hill in the northeast corner, there is excellent space for the laboratories and storage/archival space. This area was disturbed many years ago so any new development will not impact cultural resources.	Agreed. Applicable approvals associated with construction of the MREC would be obtained from the VI SHPO following completion of the EA and signing of the FONSI but prior to the start of the construction of the MREC.

10.2 AGENCY CONSULTATION

In addition to the aforementioned public entities, Table 10-2 presents a list of the agencies that were sent letters on July 21, 2006 requesting consultation and comments regarding the Proposed Action at SARI. An Agency consultation meeting was held on August 21, 2006 at the Visitor Contact Station at SARI, #26 Estate Salt River, St. Croix, VI from 10:00 a.m. - 12:00 p.m. A list of attendees from the agency consultation meeting is included in Appendix B. A copy of an example agency letter sent to the agencies, and the agency response letter that was received is included in Appendix B.

Table 10-2. List of Agencies Consulted on the Proposed Projects

Name	Title/Agency	Address
Federal Agencies		
Lisamarie Carrubba	NOAA NMFS	P.O. Box 3323 Lajas, Puerto Rico 00667
Jim Casey	Virgin Islands Coordinator USEPA	Virgin Islands Field Office Tunick Building, Suite 102 1336 Beltjen Road St. Thomas, VI 00801
Mark Evans	USACE - Jacksonville District	701 San Marco Boulevard Jacksonville, FL 32201-0019
Dr. Joseph J. Kimmel	Supervisory Fishery Administrator NOAA NMFS	Southeast Regional Office 263 13 th Avenue, South St. Petersburg, FL 33701
Jennifer A. Moore	NR Specialist NOAA/NMFS Protected Resource Division	Southeast Regional Office 263 13 th Avenue, South St. Petersburg, FL 33701
Edwin Muniz	Field Supervisor U.S. Fish and Wildlife Service	Boqueron Ecological Services Field Office Carr 301, KM5.1, BO Corozo Boqueron, PR 00622
LT. Kevin Reed	U.S. Coast Guard	Resident Inspection Office 9B Print Street Christiansted, VI 00822
Carl-Axel Soderberg	Director U.S. USEPA - Caribbean Environmental Protection Division	Centro Europa Building 1492 Ponce Deleon Avenue, Suite 417 San Juan, PR 00907-4127
Pablo Vazquez	Resident Engineer USACE - Jacksonville District	400 Fernandez Juncos San Juan, PR 00901-3299
U.S. Virgin Island Agencies		
John Beagles	Chairman CZM Commission USVI DPNR CZM	45 Mars Hill Frederiksted, VI 00840
Aaron Hutchins	Department of Planning and Natural Resources Division of Environmental Protection	45 Mars Hill Frederiksted, VI 00840

Name	Title/Agency	Address
Mr. Myron Jackson	SHPO	17 Kongens Gade Charlotte Amalie St. Thomas, VI 00802
Dr. Barbara Kojis	Director USVI DPNR-Division of Fish & Wildlife	6291 Estate Nazareth 101 St. Thomas, VI 00802
Dean C. Plaskett, Esq.	Commissioner USVI DPNR	Cyril E. King Airport Terminal Building, 2 nd Floor St. Thomas, VI 00802
Victor Somme, III	Director USVI DPNR – CZM	45 Mars Hill Frederiksted, VI 00840

10.2.1 Section 7 of the Endangered Species Act Consultation

Section 7 of the Endangered Species Act (50 CFR 402) requires that a federal permitting action is “not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of the habitat of such species.” If a proposed action “may affect” federally listed species or critical habitat, consultation with the U.S. FWS and National Marine Fisheries Service (NMFS) is required.

Fifteen federal and local agencies (see Table 10-2 and Appendix C) including NMFS were sent letters on July 21, 2006 requesting consultation and comments regarding the Proposed Action at SARI. NMFS was the only agency that responded to the consultation letter. NPS has incorporated recommendations made by NMFS into the proposed actions to minimize effects to federally endangered or threatened species. The NPS is submitting a copy of this EA to USFWS and NMFS and requesting concurrence with the NPS determinations listed in Table 10-3.

Table 10-3. Section 7 Determination for Threatened and Endangered Species

Scientific Name	Common Name	Determination
<i>Dermochelys coriacea</i>	Leatherback sea turtle	No effect
<i>Eretmochelys imbricata</i>	Hawksbill sea turtle	No effect
<i>Caretta Caretta</i>	Loggerhead sea turtle	No effect
<i>Chelonia mydas</i>	Green sea turtle	No effect
<i>Acropora cervicornis</i>	Staghorn coral	No effect
<i>Acropora palmata</i>	Elkhorn coral	No effect

NMFS has designated critical habitat for the leatherback sea turtle in waters adjacent to Sandy Point on the southwest corner of St. Croix up to and including the waters from the hundred fathom curve shoreward. Due to the distance of the area from the project site, the designated critical habitat for the leatherback sea turtle would not be affected by the proposed construction of the MREC facilities.

NMFS recommended that NPS prepare a biological evaluation (BE) as part of the project planning and design stages. The BE would include background information regarding the presence of threatened and endangered species in the project area, including results of any surveys performed as part of the development of the proposed project, an effects analysis evaluating the potential adverse impacts to listed species and their habitat, a determination of the

effects of the action on threatened and endangered species, and a request for concurrence on potential project effects on threatened and endangered species under NMFS' purview. The BE will be submitted to NMFS initiating formal ESA Section 7 consultation prior to the initiation of any construction activities. Further consultation with NMFS will continue throughout the NEPA process.

10.2.2 Fish and Wildlife Coordination Act Consultation

The Fish and Wildlife Coordination Act requires consultation with the USFWS and the fish and wildlife agencies of the states/territories where "waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted... or otherwise controlled or modified: by any agency under a federal permit or license. Consultation is to be undertaken for the purpose of "preventing loss of and damage to wildlife resources."

The NPS initiated informal consultation (agency consultation letter, see Appendix C) with USFWS concerning the proposed action's impact on wildlife resources within SARI. The USFWS has not commented on the proposed project. Further consultation will continue with the USFWS throughout the NEPA process.

10.2.3 Section 106 of the National Historic Preservation Act Consultation

Agency consultation was conducted (agency consultation letter, see Appendix C) with the State Historic Preservation Office to comply with Section 106 of the NHPA. Section 106 of the NHPA (36 CFR, Part 800) requires federal agencies to take into account the effects of their undertakings on historic properties, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. If the proposed action meets the criteria for an "undertaking" or has the potential to cause effects to historic properties, consultation with the USVI SHPO is required.

The USVI SHPO has not commented on the proposed project. Further consultation will continue with the USVI SHPO throughout the NEPA process.

11.0 LIST OF PREPARERS

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

Steven Wright, NPS Southeast Regional Office, Project Manager
Joel A. Tutein, Superintendent
Zandy Hillis-Starr, Chief Resource Management
Meredith D. Hardy, Archeologist

HNTB Corporation

Michael Bayer, AICP, Project Manager
Craig Watson, RLA, Urban Design Principal
Darian Copiz, Landscape Architect
Jiang Qian, Landscape Architect
Kirk Bereuter, Landscape Architect

EA Engineering, Science, and Technology

Suzanne Boltz, Project Manager
Jeffrey Elseroad, Senior Scientist
Tracy Layfield, Environmental Scientist
Sarah Koser, Wetlands Specialist
Michelle Harden, Environmental Scientist
Keith Boegner, GIS Specialist

New South Associates

Joe Joseph, Ph.D, RPA, Archeologist

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APPENDIX A

CHOOSING BY ADVANTAGES PROCESS

1.0 FEASIBILITY OF POTENTIAL SITE LOCATIONS

On December 6 and 7, 2005, the project team met in Christiansted, Virgin Islands to review the conceptual site plans and complete the Choosing by Advantages (CBA) process, as well as a Value Analysis. In this analysis, the term “factor” describes a potential issue affecting the alternatives. For the purpose of this project, these factors were grouped under the four functions the MREC must serve in order to be feasible: Protecting Cultural and Natural Resources; Meeting the Needs of the Marine Research and Education Center; Providing for Visitor Enjoyment; and Providing Benefits to the Local Community.

During the site analysis phase of the project, the consultant team developed a set of potential factors for the MREC, analyzing each to determine whether the alternatives differed on them, for it is the difference among alternatives that the CBA process considers an “advantage.” Factors for which the alternatives were considered not to differ in any substantial manner have been noted in this report as “Factors Considered but Eliminated.” The project team considered these at the session at Christiansted and concurred that a difference among them could not be determined.

Elements of a “factor” are considered “attributes” in CBA parlance. For example, under the factor of “Minimizing Impacts to Water Resources,” the “attribute,” or measure, of the factor was determined to be the number of feet that the seawater intake line would need to traverse on the Bay floor to reach an acceptable intake point. The length of these lines would differ depending on where the MREC would be sited, and the advantage of an alternative is a shorter line, measured in feet.

At the CBA session, the project team identified the advantages of each factor and compared these advantages to one another, to determine which advantage was most important to this project, or “paramount.” (This “paramount advantage” receives a score of 100 in the CBA matrix.) The next step is to compare the other advantages to this “paramount advantage” to determine their importance relative to the paramount advantage and then to assign an appropriate score for each. After this exercise is completed, the scores of each alternative are calculated, and the alternative that scores the highest is considered the best alternative.

1.1 FACTORS USED IN CHOOSING BY ADVANTAGES PROCESS

The factors developed for the CBA process are described below, with the matrix of CBA scores in the next section.

1.1.1 Function: Protect Cultural/Natural Resources

Minimize Impacts to Mangroves/Wetlands: This factor refers to the impact of the MREC to the mangroves and wetlands located at SARI. It is estimated that Alternatives 1, 2 and 3 (East, South, and West Sites) would impact 0.31, 0.55, and 0.5 acres of mangroves/wetlands, respectively. *Advantage:* This factor’s attributes were measured as acres. The scores assigned to these advantages are shown in the matrix.

Minimize Impacts to Coastal Barriers: This factor refers to the impact of the MREC in designated coastal barriers. The Wet Lab, Maintenance Building, boat dock, and mooring facilities of Alternative 1 (East Site) and Alternative 3 (West Site) would be located in an area designated as a coastal barrier. The maintenance dredging required at Alternatives 1 and 2 would also occur in an area designated as a coastal barrier. The only structures located within an area

designated as a coastal barrier for Alternative 2 (South Site) would be the boat dock and mooring facilities.

Additionally, the underwater pipeline that would bring salt water from the sea to the MREC facility would impact the coastal barrier at all alternatives. **Advantage:** This factor's attributes were measured as impacts, on a high-medium-low scale, with low being the best. Alternative 2 (South Site) was considered to have the lowest impact.

Minimize Impacts to Floodplains: This factor refers to the impact of the MREC on the 100-year floodplain (as mapped by FEMA). Alternative 2 (South Site) is not located within a 100-year floodplain. The boat dock, boat launch, and moorings of Alternatives 1 and 3 (East and West Sites) are located in the 100-year floodplain. Negligible impacts are anticipated to the floodplain from these alternatives.

The underwater pipeline that would bring salt water from the sea to the MREC facility and Wet Lab would impact the 100-year floodplain at Alternative 1. There would be no impact to the 100-year floodplain from the pipeline at Alternatives 2 and 3. However, it is not possible to fully evaluate the impacts of the pipeline because site-specific water quality sampling would be needed to make this assessment. Based on available information, the impacts are not expected to be significant at any of the sites. **Advantage:** This factor's attributes were measured as impacts, with Alternative 2 (South Site) considered not having direct impacts.

Minimize Impacts to Water Resources: This factor refers to the impact of the seawater pipeline to resources located in the bay (i.e., underwater cultural resources, seagrasses, coral, fish, and benthos). An underwater archaeological survey would be needed for each alternative to determine if submerged resources are present, and to investigate and evaluate the impacts to these resources.

Because Alternative 1 (East Site) is the closest to the Caribbean Sea, it has a lower potential to affect submerged resources than either Alternative 2 (South Site) or Alternative 3 (West Site - Salt River Bay Marina), both of which are at the back of the bay. Seagrasses would be impacted by the pipeline at all alternatives; however, these impacts would pose a short-term temporary impact. Impacts from the pipeline to coral are unknown until site-specific water quality data is collected. Short-term minor adverse effects to fish and benthos would occur during installation of the pipeline. **Advantage:** This factor's attributes were measured as number of feet of pipeline, with the shorter lengths being considered advantages.

Protect the Cultural Landscape: This factor refers to the impact of the MREC to the cultural landscape at SARI. SARI is a cultural landscape, with the Salt River Bay being the only known US-owned location where Columbus landed as well as a focus of prehistoric and early historic settlement. Construction of the MREC thus has the potential to have an effect on this landscape.

Alternative 1 (East Site) would have an effect on the SARI cultural landscape, however, depending on the mass and scale of the MREC's facilities, this effect may not be adverse. The view of the MREC structures would be shielded from ocean approaches from the east but would be visible from the west as well as directly off shore from Salt River Bay. Demolition of the Virgin Grand Hotel shell, if completed in concert with construction of the MREC, could be considered as a mitigating factor for visual effect as the Virgin Grand structure is far more visually intrusive than the proposed MREC buildings. The visual effect (as well as potential effect on archaeological resources) could also be mitigated by moving the MREC building, visitors center, cafeteria and dormitories south of the wet lab and water tanks, further from the mouth of the bay.

Alternative 2 (South Site) is located on a knoll at the back of the bay. The proposed MREC facilities would be located behind a hill which dominates this point. Use of this alternative should not have an effect on SARI's cultural landscape, so long as the mass and scale of buildings did not significantly exceed the height of this hill.

For Alternative 3 (West Site), the Salt River Bay Marina is tucked back into the southwest corner of the bay and is not visible from the ocean. Use of this marina would not have an adverse effect on SARI's cultural landscape, as long as the new facilities' mass and scale were appropriate. The Visitor Contact Station sits on a hill above Salt River Bay, and while visible, does not detract from the cultural landscape of the bay as it is well elevated above the bay and the Columbus Landing site. Reuse of this building or new construction on the site of the Visitor Contact Station should not have an effect on Salt River Bay's cultural landscape, so long as the new construction does not substantially vary from the height of the Visitor Contact Station. Structures taller than three stories on this location could have an adverse effect. **Advantage:** This factor's attributes were measured as impacts, on a high-medium-low scale, with low being the best. Alternative 2 (South Site) was considered to create the least amount of disturbance.

Provide Improvements to Water Quality Where Possible: This factor refers to the potential impact of the MREC to the water quality (i.e., fecal coliform, runoff) at SARI. Water quality impacts are expected to be minor from all alternatives. Alternative 3 (West Site) would benefit the water quality at SARI by reducing/eliminating the Salt River Bay Marina water quality issues when the NPS has control over the marina operations. **Advantage:** This factor's attributes were measured as improvements to water quality, on an excellent-good-fair-poor scale, with qualitative assessments made by the team given their interpretation of the data. Alternative 3 (West Site) was considered to have the highest likelihood for significant improvements.

Mitigate Impacts to Native Vegetation: This factor refers to the impact to native vegetation (other than mangroves and wetlands) from the MREC. Alternative 1 would impact approximately 0.35 acres of forest, 6.55 acres of vegetated fields, and 5.0 acres of shrubs due to the MREC facilities, roads, and associated parking facilities. However, most of the vegetation at this site is invasive. Impacts to native plants are expected to be minor. Alternative 2 would impact approximately 10.93 acres of forest, 0.09 acres of shrubs, and 0.34 acres of vegetated fields by the MREC. Impacts to native plants are expected to be moderate for this alternative. Alternative 3 would impact approximately 0.77 acres of forest, 0.49 acres of shrubs, and 2.73 acres of vegetated fields at the Visitor Contact Station and the marina. Most of the vegetation at the Visitor Contact Station is invasive; therefore impacts to native plants are expected to be minor. **Advantage:** This factor's attributes were measured as impacts, on a high-moderate-low-none scale, with Alternative 1 (East Site) considered to have low impact to native plants.

1.1.2 Function: Meet the Needs of the Marine Research and Education Center

Provide Direct Vehicular Access to the MREC via a Public Right of Way: This factor refers to the ability of MREC staff, students and visitors to access the facility. If the MREC is to serve the public, it requires roadway access via a public right of way for users and support vehicles providing service to the center. Alternative 3 (Visitor Contact Station and Salt River Bay Marina) have adequate public road access. Road access to Alternative 1 (East Site) and Alternative 2 (South Site) are restricted. Public road access would have to be negotiated for these sites or new roads provided. **Advantage:** This factor's attributes were measured as access, on an excellent-fair-good-poor scale, with Alternative 3 (West Site) having the best access and Alternative 1 (East Site) and Alternative 2 (South Site) requiring some road improvements.

Have Access to Seawater: This factor refers to the MREC's need for seawater for research to be undertaken in the Wet Lab and the MREC itself. To accomplish this, an intake pipe would be placed along the bottom of the bay to connect an intake point at an appropriate location to pumps and holding tanks adjacent to the Wet Lab. While it is believed that this intake line can be built and connected to the Wet Lab in each alternative, the length of the line will vary by alternative. It is estimated that this line would be at least 1,000 linear feet at Alternative 1 (East Site) and at least 1,600 linear feet from Alternative 2 (South Site) and Alternative 3 (West Site). The longer the line, the more it would cost to construct and maintain and the larger the impact it would have on water resources. *Advantage:* This factor's attributes are measured as linear feet of the seawater intake line, with shorter lengths being considered advantages.

Provide Adequate Space for Proposed and Existing MREC and NPS Programs: This factor relates to site capacity. Each site must have adequate developable area to support the MREC program and accessory facilities. In gross terms, Alternative 1 (East Site) is approximately 70 acres, Alternative 2 (South Site) is about 58 acres, and the combined area of Alternative 3 (West Site), which includes the Visitor Contact Station and Salt River Bay Marina, (including only the portion of the marina site proposed for use) is about 10 acres. Additional site analysis will be required to determine the actual developable area on each site. However, it is known that floodplains, cultural resources and other considerations including steep slopes would reduce the amount of developable land at each site. *Advantage:* This factor's attributes are measured as acres, with more acres being considered advantages.

Provide a Contiguous Site for All MREC Uses: This factor relates to the desire to create a unified MREC in a campus setting. Although it is not imperative that the MREC be contained on one site, the consortium has expressed a preference for this to be the case. *Advantage:* This factor's attributes are measured as whether an alternative has or does not have contiguousness, with continuousness being the advantage.

Construct the MREC on Available Land: This factor relates to the need for NPS to acquire properties for the MREC that it does not currently own if the MREC is to be constructed on those sites. The NPS owns the East Site and land at the Visitor Contact Station, but it does not own the South Site or land at the Salt River Bay Marina. *Advantage:* This factor's attributes as measured on the amount of land acquisition needed, with the East Site (Alternative 1) considered best because no acquisition would be needed.

Address Need for Dredging: This factor relates to the need for the NPS or other governmental body dredging the bay or an inlet to support the MREC and docking facility. *Advantage:* This factor's attributes are measured as the likelihood for dredging in the near term, on a high-medium-low scale, with low as the best, with Alternative 2 (South Site) as the highest since this alternative has a high probability for dredging in the foreseeable future and is located further back in the bay.

Improve Operational Efficiency and Sustainability: This factor relates to the potential for the MREC to improve the operational efficiency and sustainability of the Park Service's existing facility and services in the area. *Advantage:* This factor's attributes were measured as the likelihood of improved operations, on a high-medium-low scale, with high as the best. Alternative 3 (West Site) was considered the most likely to result in improved operations.

1.1.3 Function: Provide for Visitor Enjoyment

Provide a Quality Visitor Experience: This factor refers to the impact of the MREC on visitor experience at SARI. There are currently no visitor services authorized by NPS at SARI.

Regardless of the alternative, the visitor experience at SARI would be greatly enhanced from current conditions by the addition of the MREC facility. Additionally, Alternative 1 has the potential in the future to interpret archaeological sites and offer additional recreation at this site. Alternative 3 (West Site) has the potential in the future to interpret the Columbus Landing site.

Advantage: This factor's attributes are measured in the extent of improvement expected from each alternative, on a high-medium-low scale. Alternative 1 (East Site) was considered to have the most potential for improvement given the size of the site, the existing vista and cultural and historic resources available on the site.

1.1.4 Function: Provide Benefits to the Local Community

Support Compatibility with Adjacent Land Uses: This factor relates to the relationship of the MREC to adjacent land uses as well as the impact of adjacent land uses to the MREC. The use of the facility will generate traffic and noise on the site, and these impacts will be greater if and when the center becomes more heavily used. **Advantage:** This factor's attributes were measured as compatibility to and with adjacent land uses, on a high-medium-low scale, with high the best. Alternative 1 (East Site) was considered the most compatible because improvements at the site would result in more controlled use of the property.

Provide Socio-Economic Benefits to the Local Community: This factor refers to the impact of the MREC to benefit the socioeconomics of the local community. Constructing the MREC would provide opportunities for employment and educational programs, which would create an economic benefit to the community. In each alternative, the local economy would benefit from the construction of the facility; in areas where commercial uses would be allowed, there may be some indirect economic impacts as well. **Advantage:** This factor's attributes were measured as the potential for economic benefits, on a high-medium-low scale, with Alternative 3 (West Site) being considered the most likely to support economic uses, given the existing marina and the site's proximity to a heavily-traveled public road and the potential for additional uses supporting the ones already in place.

1.2 FACTORS CONSIDERED BUT ELIMINATED

The following factors were considered in the CBA process but were determined not to have significant differences among the alternatives:

Air Quality: Minor impacts to air quality may occur from stationary and mobile sources at the MREC regardless of the alternative.

RTE Species: The MREC would not adversely affect the federally listed species regardless of the alternative.

Seismic Activity: Mitigation for seismic activity would occur regardless of the alternative.

Noise: There would be minor impacts associated with the noise from the MREC regardless of the alternative.

Hydrology/Ground Water: No impacts to hydrology or groundwater are anticipated as a result of implementing the MREC facility.

Utilities: Access and use of utilities would be the same for each alternative.

Hurricanes: Mitigation (i.e., thicker roof designed to withstand 150 mph winds, insulated steel-enforced concrete walls, stronger windows and doors) for earthquakes at MREC would occur regardless of the alternative.

Land-Based Cultural Resources: An archaeological survey would be required for areas of new construction and such survey may identify archaeological resources requiring further investigation regardless of the alternative.

Wildlife: There would be short-term, minor impacts to the birds and mammals in the area regardless of the alternative.

1.3 CHOOSING BY ADVANTAGES MATRIX

The outcomes of the CBA process are shown on Figure 1-1.

1.4 CONCLUSIONS

The purpose of this study was to determine the feasibility of three alternatives for siting a proposed MREC at SARI. To determine the feasibility of the alternatives several steps were taken including describing the existing conditions of the sites under consideration and evaluating the environmental impacts of the alternatives. The alternatives (or sites) were examined in detail, given the information available on existing conditions, and preliminary site plans were developed for each alternative. Among the elements evaluated were floodplains, topography, susceptibility to hurricanes and earthquakes, cultural and historic resources, and environmental impacts. The individual site plans attempted to mitigate impacts to these elements and accommodate the building program in an environmentally responsible manner while providing the means to compare the advantages of each alternative.

The final steps in determining the feasibility of the alternatives involved a cost analysis and the Choosing by Advantages (CBA) process. A preliminary estimate of probable costs based on schematic designs was prepared for each of the alternatives, which resulted in similar costs among alternatives. The project team reviewed the conceptual site plans and completed the CBA process, as well as a Value Analysis. The factors or attributes developed for the CBA process were to protect cultural/natural resources, meet the needs of the MREC, provide for visitor enjoyment, and provide benefits to the local community. CBA scores for each alternative were calculated, and the alternatives were ranked based on total CBA scores. Alternative 1 (East Site) scored the highest, so it was considered the best alternative for the MREC.

FACTORS	ALTERNATIVES					
	East Site		South Site		West Site	
Function: Protect Cultural/Natural Resources						
Minimize Impacts to Mangroves/Wetlands						
Attributes	0.31 ac		0.55 ac		0.5 ac	
Advantages	0.24 ac	5			0.19 ac	10
Minimize Impacts to Coastal Barriers						
Attributes	Medium		Low		High	
Advantages	Some impact	5	Lowest impact	10		
Minimize Impacts to Floodplains						
Attributes	Medium Impact		No Impact		Low Impact	
Advantages			No direct impact	10	No direct impact	15
Minimize Impacts to Water Resources						
Attributes	950 feet		1600 feet		400 feet	
Advantages	1350 feet	30			1200 feet	25
Protect the Cultural Landscape						
Attributes	Medium		High		Low	
Advantages	Minor impacts	10	Least disturbed	20		
Provide Improvements to Water Quality Where Possible						
Attributes	Good		Fair		Excellent	
Advantages	Moderate	20			Significant improvements	40
Mitigate Impacts to Native Vegetation						
Attributes	Moderate		High		None	
Advantages	Some road impacts	5			Minor Impacts	10

Figure 1-1. Choosing by Advantages Process for the MREC

FACTORS	ALTERNATIVES					
	East Site		South Site		West Site	
Function: Meet the Needs of the Marine Research and Education Center						
Provide Direct Vehicular Access to the MREC via a Public Right of Way						
Attributes	Fair		Good		Excellent	
Advantages			Moderate road improvements needed	40	Direct Existing Access	60
Have Access to Seawater						
Attributes	1000 lf		1600 lf		1600 lf	
Advantages	600 fewer lf					
Provide Adequate Space for Proposed and Existing MREC and NPS Programs						
Attributes	70 acres		58 acres		10 acres	
Advantages	60 more acres		48 more acres		60	
Provide a Contiguous Site for All MREC Uses						
Attributes	Yes		Yes		No	
Advantages	Site is contiguous				80	
Construct the MREC on Available Land						
Attributes	Excellent		Poor		Fair	
Advantages	No acquisition needed				Some acquisition needed	
Address Need for Dredging						
Attributes	Medium		High		Low	
Advantages	Some dredging needed				Low probability of near-term dredging	
Improve Operational Efficiency and Sustainability of Facility						
Attributes	Medium		Medium		High	
Advantages					Improved operations	

Figure 1-1. Choosing by Advantages Process for the MREC

FACTORS	ALTERNATIVES					
	East Site		South Site		West Site	
Function: Provide for Visitor Enjoyment						
Provide a Quality Visitor Experience						
Attributes	High		Medium		Low	
Advantages	Greatly improved		60	Some improvement	30	
Function: Provide Benefits to the Local Community						
Support Compatibility with Adjacent Land Uses						
Attributes	High		Low		Medium	
Advantages	Most compatible		45		Compatible	35
Provide Socio-Economic Benefits to the Local Community						
Attributes	Low		Low		Medium	
Advantages					Some benefits	5
TOTAL IMPORTANCE OF ADVANTAGES	515		250		285	

Figure 1-1. Choosing by Advantages Process for the MREC

APPENDIX B
ECOLOGICAL APPENDIX

Table B-1. Typical Avian Species that Utilize Habitats at St. Croix and Potentially Utilize Habitats at SARI

Scientific Name	Common Name
<i>Wading Birds</i>	
<i>Ardea alba</i>	Great Egret
<i>Ardea herodias</i>	Great Blue Heron
<i>Bubulcus ibis</i>	Cattle Egret
<i>Butorides virescens</i>	Green Heron
<i>Egretta caerulea</i>	Little Blue Heron
<i>Egretta thula</i>	Snowy Egret
<i>Ixobrychus exilis</i>	Least Bittern
<i>Nycticorax nycticorax</i>	Black-Crowned Night Heron
<i>Nyctanassa violacea</i>	Yellow-Crowned Night Heron
<i>Shorebirds</i>	
<i>Catoptrophorus semipalmatus</i>	Willet
<i>Charadrius vociferus</i>	Killdeer
<i>Charadrius wilsonia</i>	Wilson's Plover
<i>Himantopus mexicanus</i>	Black-Necked Stilt
<i>Haematopus palliatus</i>	American Oystercatcher
<i>Marshbirds (may also breed on St. Croix)</i>	
<i>Fulica Americana</i>	American Coot
<i>Fulica caribaea</i>	Caribbean Coot
<i>Gallinula chloropus</i>	Common Moorhen
<i>Podilymbus podiceps</i>	Pied-Billed Grebe
<i>Tachybaptus dominicus</i>	Least Grebe
<i>Waterfowl</i>	
<i>Anas bahamensis</i>	White-Cheeked Pintail
<i>Anas discors</i>	Blue-Winged Teal
<i>Aythya affinis</i>	Lesser Scaup
<i>Aythya collaris</i>	Ring-Necked Duck
<i>Resident Landbirds</i>	
<i>Buteo jamaicensis</i>	Red-Tailed Hawk
<i>Chordeiles gundlachii</i>	Antillean Nighthawk
<i>Coccyzus minor</i>	Mangrove Cuckoo
<i>Coereba flaveola</i>	Bananaquit
<i>Columba livia</i>	Rock Pigeon
<i>Crotophaga ani</i>	Smooth-Billed Ani
<i>Dendroica petechia</i>	Yellow Warbler
<i>Elaenia martinica</i>	Caribbean Elaenia
<i>Eulampis holosericeus</i>	Green-Throated Carib
<i>Falco sparverius</i>	American Kestrel
<i>Geotrygon mystacea</i>	Bridled Quail-Dove

Scientific Name	Common Name
<i>Margarops fuscatus</i>	Pearly-Eyed Thrasher
<i>Mimus polyglottos</i>	Northern Mockingbird
<i>Orthorhyncus cristatus</i>	Antillean Crested Hummingbird
<i>Patagioenas leucocephala</i>	White-Crowned Pigeon
<i>Patagioenas squamosa</i>	Scaly-Naped Pigeon
<i>Progne subis</i>	Caribbean Martin
<i>Tiaris bicolor</i>	Black-Faced Grassquit
<i>Tyrannus dominicensis</i>	Gray Kingbird
<i>Zenaida aurita</i>	Zenaida Dove
<i>Migrating shorebirds</i>	
<i>Actitis macularia</i>	Spotted Sandpiper
<i>Arenaria interpres</i>	Ruddy Turnstone
<i>Calidris minutilla</i>	Least Sandpiper
<i>Charadrius semipalmatus</i>	Semi-Palmated Plover
<i>Pluvialis squatarola</i>	Black-Bellied Plover
<i>Tringa flavipes</i>	Lesser Yellowlegs
<i>Tringa melanoleuca</i>	Greater Yellowlegs
<i>Nearctic migrant passerine species</i>	
<i>Ammodramus savannarum</i>	Grasshopper Sparrow
<i>Dendroica discolor</i>	Prairie Warbler
<i>Hirundo rusitca</i>	Barn Swallow
<i>Mniotilta varia</i>	Black-And-White Warbler
<i>Parula americana</i>	Northern Parula
<i>Seiurus novebracensis</i>	Northern Waterthrush
<i>Setophaga ruticilla</i>	American Redstart

Source: USVI-DPNR 2005

Table B-2. Federally Listed Endangered or Threatened Species*

Scientific Name	Common Name	Federal Status
<i>Animals</i>		
<i>Ameiva polops</i>	St. Croix Ground Lizard	Endangered
<i>Chelonia mydas</i>	Green Turtle	Threatened
<i>Dermochelys coriacea</i>	Leatherback Turtle	Endangered
<i>Epicrates monensis granti</i>	Virgin Islands Tree Boa	Endangered
<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Endangered
<i>Falco peregrinus</i>	Peregrine Falcon	Endangered
<i>Pelecanus occidentalis</i>	Brown Pelican	Endangered
<i>Sterna dougallii</i>	Roseate Tern	Threatened
<i>Acropora palmata</i>	Elkhorn Coral	Threatened
<i>Acropora cervicornis</i>	Staghorn Coral	Threatened
<i>Plants</i>		
<i>Buxus vahlii</i>	Vahl's Boxwood	Endangered
<i>Zanthoxylum thomasianum</i>	Prickly Ash	Endangered

*Current statutory list of protected species under the USVI Endangered and Indigenous Species Act of 1990

Table B-3. Territorially Listed Endangered Species*

Scientific Name	Common Name
Reptiles	
<i>Mabuya mabouia</i>	Slipperyback Sink
Birds	
<i>Anas bahamensis</i>	Bahama Duck
<i>Anthracothorax dominicus</i>	Antilean Mango
<i>Aratinga pertinax</i>	Brown-throated Parakeet
<i>Ardea herodias</i>	Great Blue Heron
<i>Casmerodius albus</i>	Great (common) Egret
<i>Catoptrophorus semipalmatus</i>	Willet
<i>Charadrius alexandrinus</i>	Snowy Plover
<i>Chordeiles gundlachii</i>	West Indian Nighthawk
<i>Columba leucocephala</i>	White-crowned Pigeon
<i>Egretta thula</i>	Snowy Egret
<i>Fulica caribea</i>	Caribbean Coot
<i>Geotrygon mystacea</i>	Bridled Quail Dove
<i>Ixobrychus exilis</i>	Least Bittern
<i>Myiarchus stolidus</i>	Stolid Flycatcher
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron
<i>Otus nudipes newtoni</i>	VI Screech Owl
<i>Oxyura jamaicensis</i>	Ruddy Duck
<i>Phaethon lepturus</i>	White-tailed Tropicbird
<i>Podiceps dominicus</i>	Least Grebe
<i>Puffinus iherminieri</i>	Audobon Shearwater
<i>Rallus longirostris</i>	Clapper Rail
<i>Sterna antillarum</i>	Least Tern
Mammals	
<i>Brachyphylla cavernarum</i>	Cave Bat
<i>Noctilio leporinus</i>	Fisherman Bat
<i>Stenoderma rufum</i>	Red Fruit Bat
Fish	
<i>Epinephelus itajara</i>	Jewfish
Coral	
<i>Antipathes</i> sp.	Black Coral
Plants	
<i>Agave eggersiana</i>	Egger's Agave
<i>Brassavola cucullata</i>	Daddy Longlegs Orchid
<i>Brysonima</i> sp.	Brysonima species
<i>Callicarpa ampla</i>	Capa Rosa
<i>Calypttranthes thomasiana</i>	St. Thomas Lidflower
<i>Catesbea melanocarpa</i>	

Scientific Name	Common Name
<i>Coccoloba rugosa</i>	Ortegon
<i>Croton fishlockii</i>	Fishlocks Croton
<i>Epidendrum bifidum</i>	Olive Psychilis
<i>Epidendrum ciliare</i>	Christmas Orchid
<i>Epidendrum cochleatum</i>	Clamshell Orchid
<i>Erythrina eggersii</i>	Egger's Cockspur
<i>Eugenia</i> sp.	Stopper species
<i>Galactia eggersii</i>	Egger's Galactia
<i>Guaiacum officinale</i>	Lignum Vitae
<i>Habenaria alata</i>	Winged Bog Orchid
<i>Ilex sideroxyloides</i>	Central American Oak
<i>Ilex urbanii</i>	Urban's Holly
<i>Machaonia woodburyana</i>	Alfilerillo
<i>Malpighia infestissima</i>	Stinging Brush
<i>Malpighia linearis</i>	Bastard Cherry
<i>Malpighia</i> sp.	Malpighia species
<i>Malpighia woodburyana</i>	Cowage Cherry
<i>Mammillaria nivosa</i>	Wooly Nipple
<i>Manilkara bidentata</i>	Bulletwood
<i>Maytenus cymosa</i>	Caribbean Mayten
<i>Nashia inaguensis</i>	Mourjean Tea
<i>Oncidium prionochilum</i>	Yellow Dancing Lady Orchid
<i>Oncidium variegatum</i>	White Dancing Lady Orchid
<i>Operculina triquetra</i>	St. Thomas Lidpod
<i>Opuntia triacantha</i>	Sweet Spanish Lady
<i>Peperomia myrtifolia</i>	Myrtle-leaved Pepermonia
<i>Pilea richardii</i>	Richard's Clearwood
<i>Polystachya concreta</i>	Greater Yellow Spike Orchid
<i>Ponthieva racemosa</i>	Hairy Shadow Witch
<i>Prescottia oligantha</i>	Sparse-Blooming Prescottia
<i>Psidium amplexicaule</i>	Mountain Guava
<i>Psidium</i> sp.	Guava species
<i>Schoepfia schreberi</i>	Gulf Graytwig
<i>Sida eggersi</i>	Jost Van Dyke's Indian Mallow
<i>Solanum conocarpum</i>	Marron Bacoba
<i>Solanum mucronatum</i>	Pepino
<i>Spiranthes elata</i>	Tall Ladies' -Tresses
<i>Tetramicra canaliculata</i>	Serpentine Wallflower Orchid
<i>Tillandsia lineatispica</i>	Pinon
<i>Vanilla barbellata</i>	Vanilla Orchid

*Current statutory list of protected species under the USVI Endangered and Indigenous Species Act of 1990

APPENDIX C
AGENCY CONSULTATION

APPENDIX C-1

AGENCY MEETING SIGN IN SHEET



Marine Research and Education Center and Hotel Demolition – Environmental Assessment Agency Meeting Sign-in Sheet

Name/Organization	Address	Phone	Email
Aaron Hutchins, DPNR	45 Mars Hill, Fsted	773-1082	hutchins.aaron@vidpnr-dep.org
Claude Gerard DPNR/KZ	45 Mars Hill, Fsted	773-1082	cloude-gerard@viczmp.com
Wes Toller	" "	" "	Toller.Wes@VIDPNR-DEP.org
Alexis Dourant	#45 MARS HILL	773-1082	
William Tobias	" "	713-2415	williamtobias@vitek.com
Steven Wright	NPS/SEPO	dot-562-3124 ext 660	Steven.M.Wright@nps.gov
Suzanne Boetz	EA	410 329 5143	stoltz@caest.com
Michael Bayep	HNTB	202-654-1079	mlbayep@hntb.com
Tracy Layfield	EA	410-771-4950	tlayfield@caest.com
Joe Joseph	NEXI SOUTH ASSOC	770-498-4155	joseph@nexasouth.com
ZH Star	NPS CHRY/BUS/SA	773-1460	Zandy_hillis_star@nps.gov

APPENDIX C-2

EXAMPLE AGENCY LETTER



IN REPLY REFER TO:

United States Department of the Interior

National Park Service
Christiansted National Historic Site
Buck Island Reef National Monument
Salt River Bay Historical Park and Ecological Preserve
2100 Church Street #100
St. Croix, Virgin Islands 00820
(340) 773-1460



July 21, 2006

Jim Casey
Virgin Islands Coordinator
U.S. Environmental Protection Agency
Virgin Islands Field Office
Tunick Building, Suite 102
1336 Beltjen Road
St. Thomas, VI 00801

Re: Proposed Marine Research and Education Center and Abandoned Hotel Demolition at Salt River Bay National Historical Park and Ecological Preserve

Dear Mr. Casey,

The National Park Service is preparing an Environmental Assessment for the above referenced projects located at Salt River Bay National Historical Park and Ecological Preserve, St. Croix, U.S. Virgin Islands. The Environmental Assessment will be prepared in accordance with the U.S. Department of the Interior National Park Service National Environmental Policy Act guidance (Director's Order 12). The location of the park is shown in the attached Figure 1 and the project areas are shown in Figures 2 and 3.

The NPS will conduct an agency meeting associated with the upcoming Environmental Assessment for the proposed Marine Research and Education Center and Abandoned Hotel Demolition. The meeting will be held on Monday, August 21, 2006 from 10:00 a.m. - 12:00 p.m. at the Visitor Contact Station at Salt River Bay National Historical Park and Ecological Preserve, #26 Estate Salt River, St. Croix, VI.

Salt River Bay National Historical Park and Ecological Preserve (or SARI) was created in 1992 to preserve, protect, and interpret nationally significant natural, historical, and cultural resources (United States Congress 1992). The NPS and the Government of the Virgin Islands jointly manage and maintain the 1,015-acre park. SARI's natural resources include both sea and land resources, containing some of the largest remaining mangrove forests in the Virgin Islands, as well as coral reefs and a submarine canyon. NPS and the Virgin Islands government are working together to protect these resources.

St. Croix has been the host of over thirty years of world class marine research. Both Fairleigh Dickinson University's (FDU) West Indies Laboratory (WIL) in Teague Bay and NOAA National Undersea Research Program (NURP) facility and their manned undersea research habitats "Hydrolab" and "Aquarius" were located in the submarine canyon in Salt River Bay. These two facilities brought hundreds of students and researchers from our local communities and

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IN REPLY REFER TO:

United States Department of the Interior



National Park Service
Christiansted National Historic Site
Buck Island Reef National Monument
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2100 Church Street #100
St. Croix, Virgin Islands 00820
(340) 773-1460

from all over the world to study and work in and around the island's marine environment. Unfortunately both facilities were closed after hurricane Hugo. The loss of these facilities greatly impacted the educational opportunities our island resources offer and hindered on-going and future research.

In 1999, a consortium of universities including University of North Carolina at Wilmington, University of South Carolina, Rutgers/State University of New Jersey, and the University of the Virgin Islands established a Memorandum of Understanding with the Department of Interior (DOI)/National Park Service (NPS) and the Department of Commerce/ National Oceanographic & Atmospheric Administration (NOAA) forming the Joint Institute for Caribbean Marine Studies (JICMS). The goal of the consortium is to re-establish a Marine Research and Educational Center (MREC) on the island of St. Croix. Initially the former FDU West Indies Laboratory site was considered for the marine laboratory but was not feasible. In 2004 the JICMS Board of Directors in cooperation with DOI/NPS began working to determine the feasibility of locating the MREC in the park at SARI. SARI was selected as the ideal location for the MREC for the following reasons:

- a. The long-term conservation and education goal for NPS and the Government of the Virgin Islands who jointly manage and maintain the 1,015-acre park;
- b. Legacy of the former FDU/WIL and NOAA/NURP programs with years of baseline information on the marine community inside and outside the bay and into the depths of the submarine canyon;
- c. Need for scientific information for the Government of the Virgin Islands to restore and maintain St. Croix's last living and functioning mangrove, estuarine, and coral reef ecosystem;
- d. The close proximity to the target resources for education and research, and;
- e. Long-term security for the project through park ownership and management.

Three alternative locations within SARI are being considered for the MREC facility (Figure 2):

- East Site, west of Estate Judith's Fancy, where the Virgin Grand Hotel was planned and partially built;
- South Site, location of the former NOAA Undersea Research Center; and
- West Site, includes the NPS Visitor Contact Station and the Salt River Marina.

The MREC facilities would include several structures: main building (i.e., offices, classrooms, teaching labs, conference rooms, and library); education center (main hall, theater, lecture hall), dormitories, cafeteria, staff housing, maintenance building, wet laboratory, and marine operation facilities. The MREC facility design concept would be less than 4 acres, excluding roads.



IN REPLY REFER TO:

United States Department of the Interior



National Park Service
Christiansted National Historic Site
Buck Island Reef National Monument
Salt River Bay Historical Park and Ecological Preserve
2100 Church Street #100
St. Croix, Virgin Islands 00820
(340) 773-1460

In addition, the NPS is undertaking the demolition of the abandoned hotel structure located on the east side of Salt River Bay (Figure 3). This hotel structure was part of a development project started in the late 1960s that was never completed. The structure is deteriorating and presents safety and environmental concerns for the park. The park proposes to remove the entire structure, reuse and recycle as much of the materials as possible, and return the site to a more natural condition.

The purpose of this letter is to inform you of the proposed project, to request data or information you may have on resources potentially affected by the proposed project, and to request comments on the proposed action. In accordance with Section 7(c)(1) of the Endangered Species Act, we are requesting information on whether any proposed or listed species or their critical habitats are present within the project site.

Your response within 30 days from the date of receipt of this letter will be greatly appreciated. If you have any questions regarding this request, please contact me at 340-773-1460. Letters have also been sent to the agencies listed in Enclosure 1.

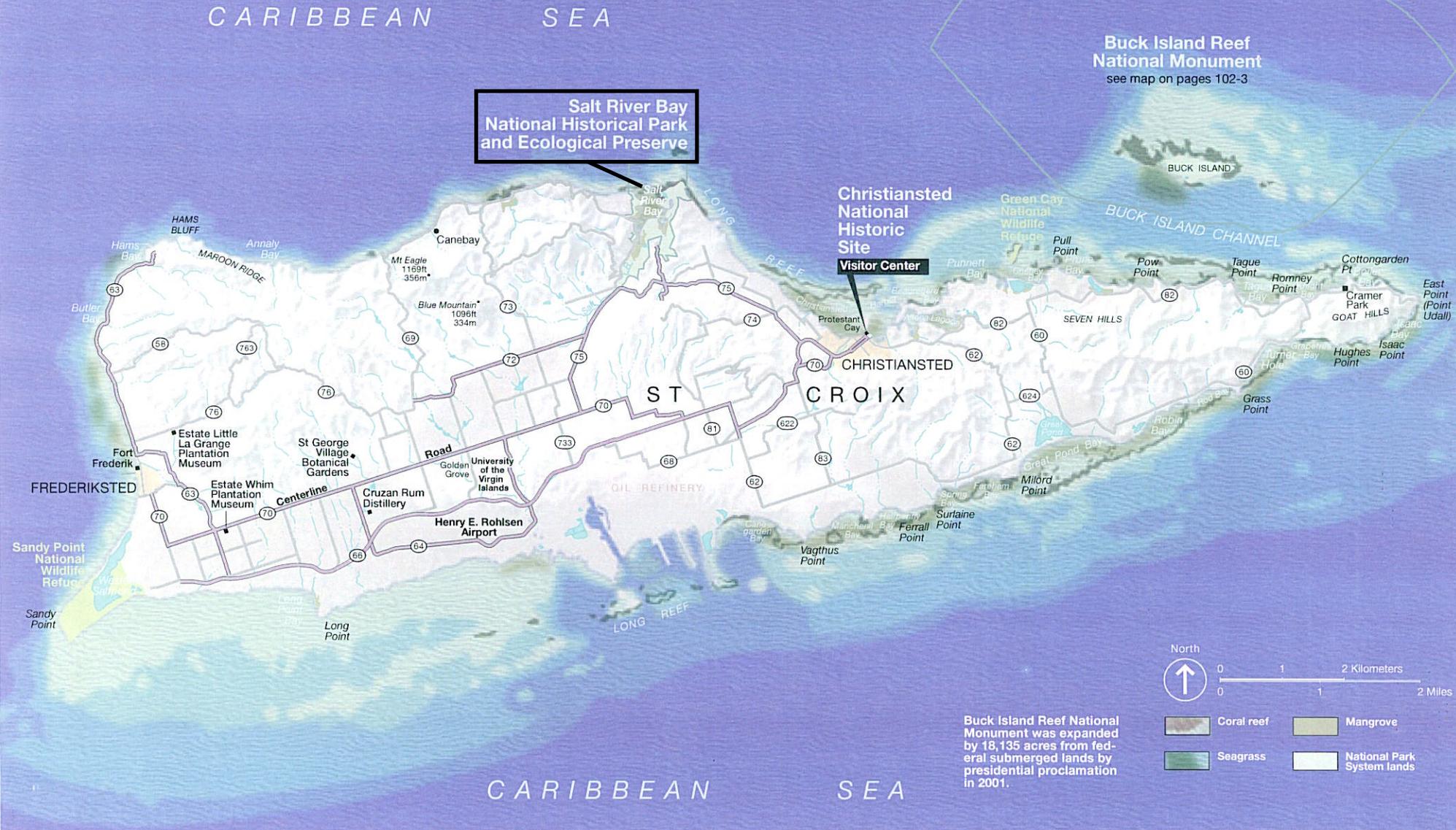
Sincerely,

Joel A. Tutein
Superintendent

Enclosures

cc: S. Wright, NPS
File 61790.04

St. Croix: Christiansted and Salt River Bay



Buck Island Reef National Monument was expanded by 18,135 acres from federal submerged lands by presidential proclamation in 2001.

Figure 1. Location Map of Salt River Bay National Historical Park and Ecological Preserve

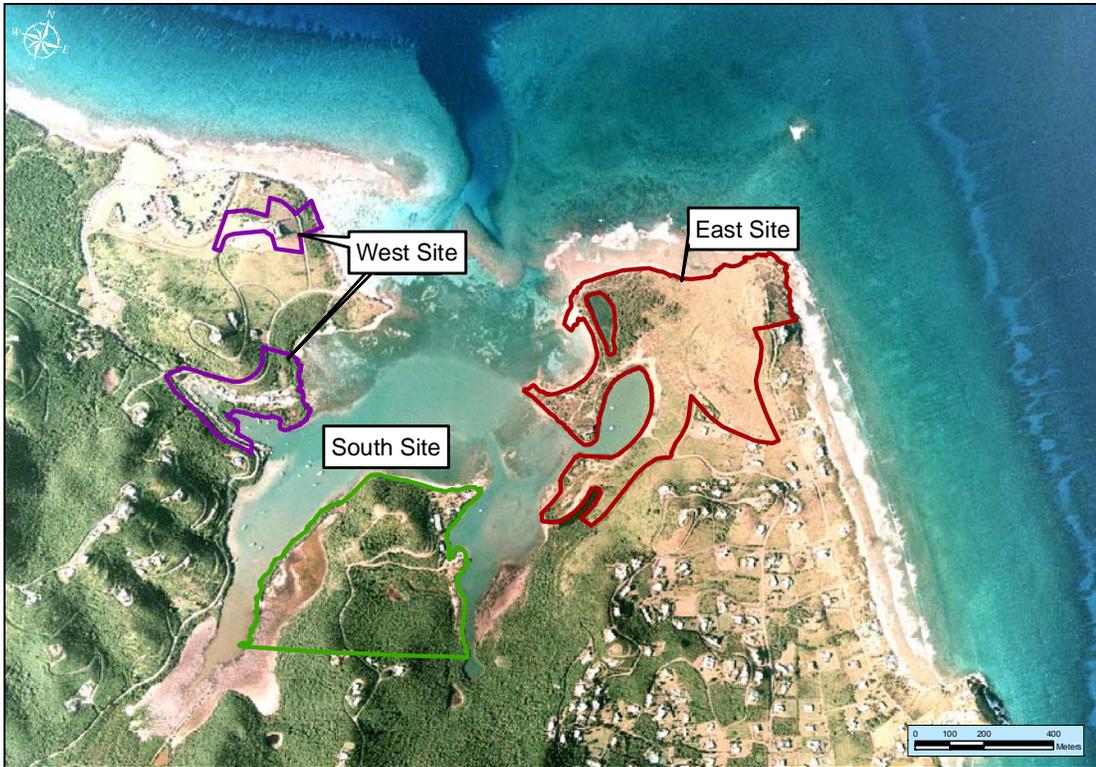


Figure 2. Alternative locations for the Proposed Marine Research and Education Center



Figure 3. Abandoned Hotel Structure

ENCLOSURE 1

**AGENCY DISTRIBUTION LIST
SALT RIVER BAY NATIONAL HISTORICAL PARK AND
ECOLOGICAL PRESERVE (SARI)**

FEDERAL AGENCIES

Edwin Muniz
Field Supervisor
U.S. Fish and Wildlife Service
Boqueron Ecological Services Field Office
Carr 301, KM 5.1, BO Corozo
Boqueron, PR 00622
Phone: 787-851-7297

Pablo Vazquez
Resident Engineer
U.S. Army Corps of Engineers
Jacksonville District
400 Fernandez Juncos
San Juan, PR 00901-3299
Ponce, PR 00731
Phone: 787-841-3181

Mark Evans
U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard
Jacksonville, FL 32207-0019
Phone: 904-232-2235

Dr. Joseph J. Kimmel
Supervisory Fishery Administrator
NOAA National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue, South
St. Petersburg, FL 33701
Phone: 727-824-5305

Jennifer A. Moore
NR Specialist
NOAA/NMFS Protected Resource Division
Southeast Regional Office
263 13th Avenue, South
St. Petersburg, FL 33701
Phone: 727-824-5312

FEDERAL AGENCIES (continued)

Lisamarie Carrubba
NOAA National Marine Fisheries Service
P.O. Box 3323
Lajas, Puerto Rico 00667
Phone: 787-851-3700

Carl-Axel Soderberg
Director
U.S. Environmental Protection Agency
Caribbean Environmental Protection Division
Centro Europa Building
1492 Ponce Deleon Avenue, Suite 417
San Juan, PR 00907-4127
Phone: 787-977-5801

Jim Casey
Virgin Island Coordinator
U.S. Environmental Protection Agency
Virgin Islands Field Office
Tunick Building, Suite 102
1336 Beltjen Road
St. Thomas, VI 00801
Phone: 340-714-2333

LT. Kevin Reed
U.S. Coast Guard
Resident Inspection Office
9B Print Street
Christiansted, VI 00822
Phone: 340-772-5557

USVI AGENCIES

Aaron Hutchins
Department of Planning and Natural Resources
Division of Environmental Protection
45 Mars Hill
Frederiksted, VI 00840
Phone: 340-773-1082 x2308

Dr. Barbara Kojis
Director
Department of Planning and Natural Resources
Division of Fish & Wildlife
6291 Estate Nazareth 101
St. Thomas, VI 00802
Phone: 340-775-6762

Dean C. Plaskett, Esq.
Commissioner
Department of Planning & Natural Resources
Cyril E. King Airport
Terminal Building - 2nd Floor
St. Thomas, VI 00802
Phone: 340-774-3320

Mr. Myron Jackson
State Historic Preservation Office
17 Kongens Gade
Charlotte Amalie
St. Thomas, VI 00802
Phone: 340-776-8605

Victor Somme, III
Director
Department of Planning and Natural Resources
Coastal Zone Management
45 Mars Hill
Frederiksted, VI 00840
Phone: 340-773-1082

John Beagles
Chairman Coastal Zone Management Commission
Department of Planning and Natural Resources
Coastal Zone Management
45 Mars Hill
Frederiksted, VI 00840

APPENDIX C-3

AGENCY RESPONSE LETTERS



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701
(727) 824-5312; FAX 824-5309
<http://sero.nmfs.noaa.gov>

SEP 8 2006

F/SER31: LC

Jul 9/12/06

Mr. Joel A. Tutein
Superintendent
National Park Service
2100 Church Street #100
St. Croix, VI 00820

Dear Mr. Tutein:

This responds to your letter dated July 21, 2006, regarding the proposed construction of a Marine Research and Educational Center within the Salt River Bay National Historical Park and Ecological Preserve (SARI), St. Croix, U.S. Virgin Islands. Your letter requests comments and information from the National Marine Fisheries Service (NMFS) regarding resources that may be affected by the proposed project in particular Endangered Species Act (ESA) proposed or listed species or their critical habitats.

The proposed project consists of the construction of a main building containing classrooms, offices, teaching laboratories, conference rooms, and a library; an education center containing a main hall, theater, and lecture hall; dormitories; cafeteria; staff housing; a maintenance building; a wet laboratory; and marine operation facilities. The buildings would encompass an area of 4 acres, not including roadways. Three alternative sites are being considered by the National Parks Service (NPS) for the construction of the research facility; the east site where the Virgin Grand Hotel was planned and partially built, the south site where the NOAA Undersea Research Center was located, and the west site where the SARI Visitor Contact Station and Salt River Marina are located. Regardless of whether the east site is selected as the location of the research facility, the hotel structure will be demolished due to its deteriorated condition.

NMFS has determined that the proposed project is located within the range of the following threatened and endangered species: hawksbill, leatherback, loggerhead, and green sea turtles, and elkhorn and staghorn corals. Hawksbill (*Eretmochelys imbricata*) and leatherback (*Dermochelys coriacea*) sea turtles are listed as endangered. Green (*Chelonia mydas*) and loggerhead (*Caretta caretta*) sea turtles are listed as threatened. Elkhorn (*Acropora palmata*) and staghorn (*A. cervicornis*) corals are listed as threatened. Depending upon the site location chosen and the extent of in-water construction, sea turtle refuge and foraging habitat and coral colonies may be affected by the proposed project. Sea turtles and corals may likely be affected by the operation of the facility depending upon the research activities to be realized. The waters adjacent to Sandy Point on the southwest corner of St. Croix up to and including the waters from the



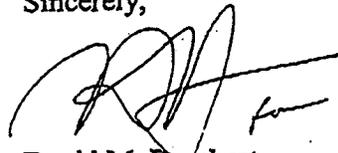
hundred fathom curve shoreward are designated critical habitat for the leatherback sea turtle (50 CFR 226.207). Due to the distance of this area from the project site, it is unlikely that designated critical habitat would be affected by the proposed construction of the research facilities. However, marine research realized through the facility could affect designated critical habitat.

Based on the information contained in your letter, NPS is preparing an Environmental Assessment (EA) for the proposed project. A biological evaluation (BE) should also be prepared as part of project planning and design stages either as an independent document or as part of the EA. The BE should include background information regarding the presence of threatened and endangered species in the project area, including the results of any surveys performed as part of the development of the proposed research facility project, an effects analysis evaluating the potential adverse impacts to listed species and their habitat, a determination of the effects of the action on threatened and endangered species, and a request for concurrence on potential project effects on threatened and endangered species under NMFS' purview. The BE should be submitted to NMFS initiating ESA Section 7 consultation (50.CER.402.13-14).

If formal consultation is necessary, Section 7 allows NMFS up to 90 days to conclude formal consultation with your agency and an additional 45 days to prepare our biological opinion (unless we mutually agree to an extension). Our anticipated biological opinion completion date is 135 days from the date of our receipt of the information requested in the BE. In addition, if formal consultation is initiated, the ESA requires that the federal action agency make no irreversible or irretrievable commitment of resources that limits future options. This practice ensures agency actions do not preclude the formulation and implementation of reasonable and prudent alternatives that avoid jeopardizing the continued existence of endangered or threatened species, or destroying or modifying their critical habitats. If the information we have requested from the NPS allows us to determine that the section 7 consultation can be accomplished informally, NMFS will respond within 30 calendar days, if possible.

If you have any questions regarding the ESA section 7 consultation process and how to prepare a biological evaluation, please contact Dr. Lisamarie Carrubba by e-mail at lisamarie.carrubba@noaa.gov or at (787) 851-3700. We look forward to collaborating with the NPS to further the conservation of threatened and endangered species.

Sincerely,



David M. Bernhart
Assistant Regional Administrator
for Protected Resources

Ref: T/SER/2006/04337
File: 1514-22 O.4.a

APPENDIX C-4
CONTACT RECORD



**EA Engineering, Science,
and Technology**

Date: September 14, 2006
Project: Salt River
Project Number: 6179004

COMMUNICATIONS RECORD FORM

Distribution: Salt River Correspondence File

Person Contacted: Mr. Sindulfo Castillo

Affiliation: USACE, Chief of Regulatory for the Antilles Office

Address: Puerto Rico

Type of Contact: Telephone (787) 289-7040 or (787) 729-6905 x 3054

Person Making Contact: Sarah Koser

Communications Summary:

I contacted Sindulfo Castillo to discuss applicable permits for the demolition of the hotel at Salt River. I described the project and the Federal mangrove wetlands that have been delineated at the site. He stated that *as long as no wetland impacts are anticipated, no permit is required*. However, if the hotel will be demolished by explosion, dust will be an issue for the adjacent mangrove wetlands. If the hotel will be demolished via mechanical methods, dust would not be an issue for the adjacent mangroves. He also recommended protecting the mangrove wetlands and any practices that could avoid incidental impacts to the mangroves. I stated that the National Guard would be demolishing the hotel and they have stated that plywood would be used to avoid any incidental impacts and Sindulfo agreed that would be an acceptable practice. He also stated that the DPNR and the CZM departments may require additional permits for this project.

I also asked Sindulfo about any other USACE projects in the area, but he did not know of any, including the stormwater project that was completed at St. Croix recently. He directed me to Pablo Vasquez, the construction manager at (787) 729-6874 or 6875 x 3001 and Jose Martinez at (787) 729-6875 x 3106.

Signature: _____

We also discussed the MREC and the impacts to mangrove wetlands that would occur. He stated that a Section 10 and 404 Permit would be required and that it would be sent to him for review along with the wetland delineation appended to the permit. He may or may not conduct a site visit, depending on money and resources (which may not be available). Wetland avoidance and minimization must occur and then mitigation would be discussed. He stated that a 2:1 or 3:1 ratio or potentially more, could be required for impacting mangroves and this would be determined at a later date. All mitigation must occur onsite. I suggested enhancing the existing mangroves, which were devastated in 1988 by hurricanes, and he agreed that enhancement would be a good mitigation strategy and that ratios would be determined at a later date. He also suggested giving as much time possible for permit review; 120 days is normally required, but a year in advance would be the best case scenario.

Send Permit to Sindulfo Castillo to review at:

400 Fernandez Juncos Avenue
Stop 7 1/2 Antilles Office
San Juan, Puerto Rico 00901

For permit applications (**from website**) in St. Croix, forward the application to:

Commissioner
Department of Planning and Natural Resources
6003 Anna's Hope
Christiansted, U.S. Virgin Islands 00820-4433
For additional information call (340) 773-3450
Contact: Damaris Delgado

Signature: _____

APPENDIX D

**STATEMENT OF FINDINGS: WETLANDS AND
FLOODPLAINS**

STATEMENT OF FINDINGS

FOR

EXECUTIVE ORDER 11990 (PROTECTION OF WETLANDS)

AND

EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)

**Proposed Marine Research and Education Center (MREC) and
Abandoned Hotel Demolition**

**Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands**

JUNE 2008

Recommended:

Superintendent,

Date

*Certification of
Technical Adequacy
and Servicewide Consistency:*

Chief, Water Resources Division

Date

Approved:

Regional Director

Date

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**STATEMENT OF FINDINGS
FOR
EXECUTIVE ORDER 11990 (PROTECTION OF WETLANDS) AND
EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)**

Proposed Marine Research and Education Center (MREC) and Abandoned Hotel Demolition

**Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands**

1. INTRODUCTION

1.1 Wetlands - Executive Order 11990: *Protection of Wetlands*, issued 24 May 1977, directs all federal agencies to avoid to the maximum extent possible the long- and short-term adverse impacts associated with the occupancy, destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the absence of such alternatives, parks must modify actions to preserve and enhance wetland values and minimize degradation.

To comply with EO 11990 within the context of the agency's mission, the National Park Service (NPS) has developed a set of policies and procedures found in *Director's Order #77-1: Wetland Protection* and *Procedural Manual #77-1: Wetland Protection*. These policies and procedures emphasize: 1) exploring all practical alternatives to building on, or otherwise adversely affecting, wetlands; 2) reducing impacts to wetlands whenever possible; and 3) providing direct compensation for any unavoidable wetland impacts by restoring degraded or destroyed wetlands on other NPS properties. If a proposed action will have adverse impacts on wetlands such as this project, a Statement of Findings (SOF) must be prepared that documents the above steps and presents the rationale for choosing an alternative that will have adverse impacts on wetlands and presents the compensation or mitigation proposed for offsetting these impacts.

1.2 Floodplains - Pursuant to Executive Order 11988 (Floodplain Management), and the National Park Service (NPS) Director's Order #77-2: *Floodplain Management*, the National Park Service has evaluated flooding hazards related to the proposed projects. This SOF describes the proposed projects, project site, floodplain determination, use of floodplain, investigation of alternatives, flood risks, and mitigation for the continued use of facilities within the floodplain.

2. PROPOSED PROJECTS

The proposed projects include the following: 1.) construct a proposed Marine Research and Education Center (MREC) at Salt River Bay National Historical Park and Ecological Preserve (SARI) in St. Croix, U.S. Virgin Islands (USVI) and 2.) demolish and remove the abandoned (existing) hotel structure at SARI to return the site to a more natural condition and allow roadway access to the site (Figure 1). Both the proposed MREC and existing, abandoned hotel structure are located on the East Site of SARI (Figure 2). The MREC Preferred Alternative (East Site Alternative) and the Proposed Action of demolishing the abandoned hotel structure both propose development and restoration within wetlands and the 100-year floodplain at this site. The two projects are described in detail in the following paragraphs.

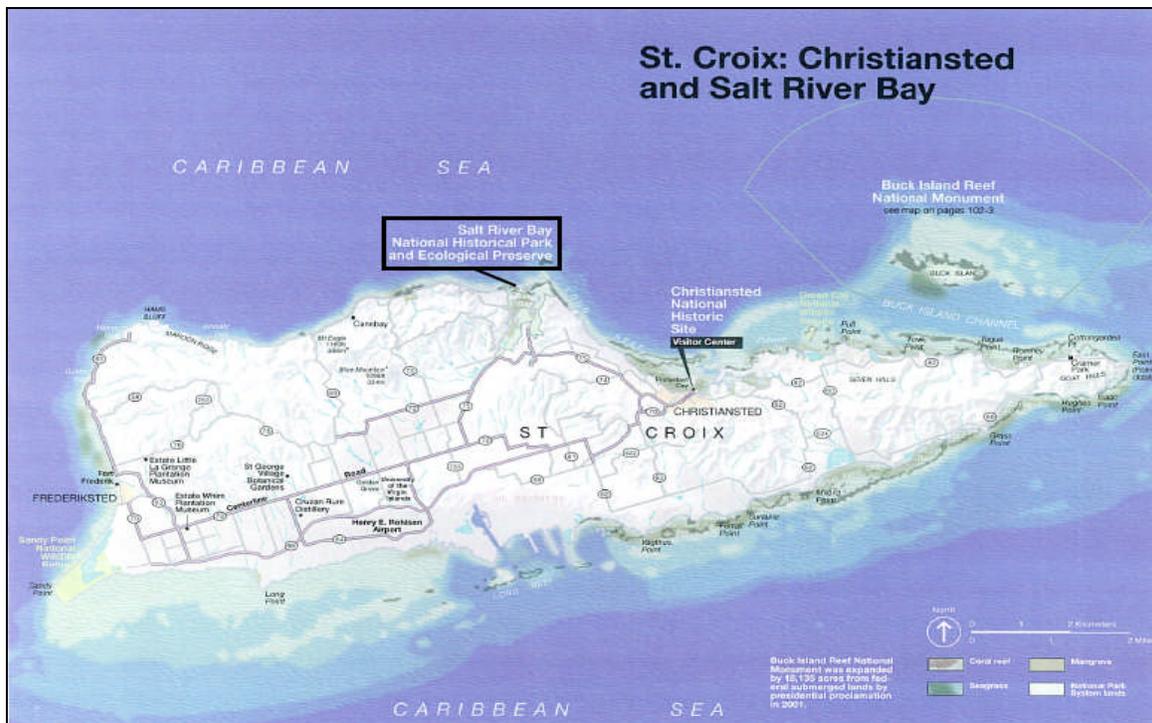


Figure 1. Location Map of Salt River Bay National Historical Park and Ecological Preserve.

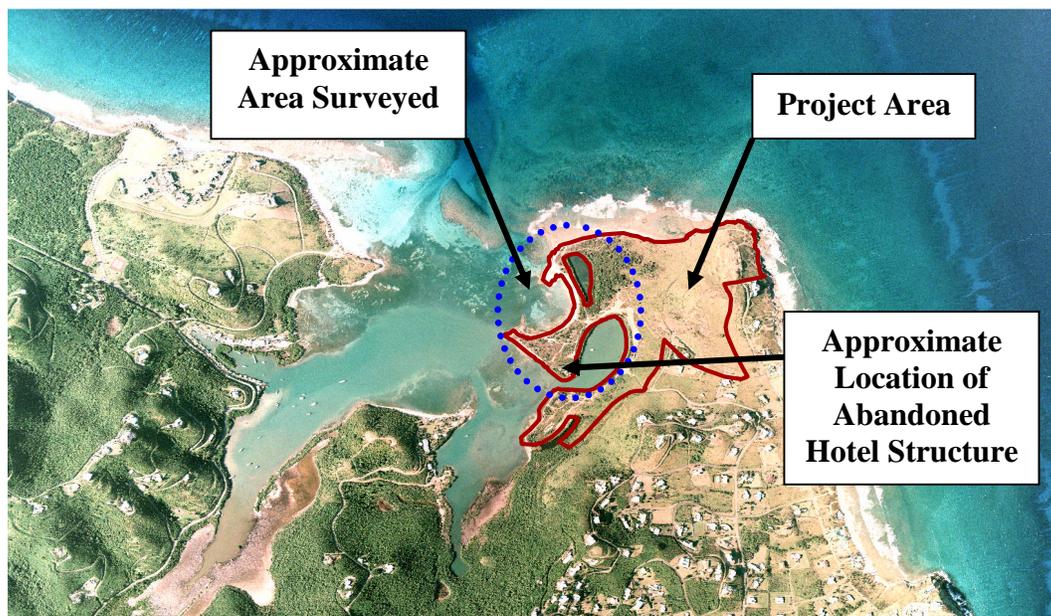


Figure 2. East Site of Salt River Bay National Historical Park and Ecological Preserve

Proposed Construction of a Marine Research and Education Center at SARI – St. Croix has been the host of over thirty years of world class marine research. Both Fairleigh Dickinson University’s (FDU) West Indies Laboratory (WIL) in Teague Bay and National Oceanic and Atmospheric Administration’s (NOAA) National Undersea Research Program (NURP) facility and their manned undersea research habitats “Hydrolab” and “Aquarius” were located in the submarine canyon in Salt River Bay. These two facilities brought hundreds of students and researchers from our local communities and from all over the world to study and work in and around the island’s marine environment annually. Unfortunately, both facilities were closed after hurricane

Hugo. The loss of these facilities greatly impacted the educational opportunities the island resources offer and hindered on-going and future research. There is a great need to reestablish an MREC on the island of St. Croix. SARI was selected as the ideal location for the MREC for the following reasons:

- Long-term conservation and education goal for the NPS and the Government of the USVI who jointly manage and maintain the 1,015-acre park;
- Legacy of the former FDU/WIL and NOAA/NURP programs with years of baseline information on the marine community inside and outside the bay and into the depths of the submarine canyon;
- Need for scientific information for the Government of the USVI to restore and maintain St. Croix's last living and functioning mangrove, estuarine, and coral reef ecosystem;
- Close proximity to the target resources for education and research, and;
- Long-term security for the project through park ownership and management.

The proposed MREC includes the following associated facilities:

- An Education Center along with an adjacent parking lot for public use;
- A wet lab and maintenance building;
- A boat dock, boat ramp, and marina;
- Bungalow-style dormitories and a cafeteria;
- Paved roads and parking facilities and sidewalks, where applicable; and
- A pipeline for the seawater intake system.

Also as part of the project, maintenance dredging would be required if future bathymetry studies reveal that the water depths are too shallow for research boats to reach the MREC boat dock. Impacts as a result of dredging in open water and placement of the dredged material would be addressed in future studies. Also, the exact location and dimensions of the seawater supply pipeline is unknown at this time, but would be sited to minimize impacts to mangroves, marine wetlands (seagrasses), and other wetlands to the maximum extent practicable. This SOF does not include impacts to open water due to dredging because the location and amount of dredging that would be required is unknown at the time. This SOF also does not include impacts associated with the seawater supply pipeline because the exact location is unknown at this time. An additional (or supplemental) Wetland SOF will be completed before the start of any activities (including dredging or disposing of dredge material) that would impact wetlands or waters (less than 2 meters in depth) that are not covered in this SOF. Any applicable permits (10/404 permit) associated with dredging/construction in waters of the U.S. would be obtained from the U.S. Army Corps of Engineers prior to the start of any regulated activities. The NPS is committed to adhering to all requirements of the Federal and Territorial government.

Proposed Demolition of Abandoned Hotel Structure at SARI – Currently, a partially completed, abandoned hotel structure (Figure 2) exists on the peninsula of the East Site, immediately adjacent to the Mangrove Lagoon in Salt River Bay. The hotel structure was part of a development project started in the late 1960s that was never completed; the hotel structure was abandoned following partial completion in the 1970s (Versar 2000). The abandoned hotel structure was partially completed from building materials such as cinder blocks, concrete, piping, and rebar. The basement of the structure, at least two stories of the hotel, a tall steeple with a cross (potentially constructed as a viewing area), and an outdoor swimming pool were completed before the project was abandoned. Currently, the structure is deteriorating and presents a safety and environmental concern for the park; a chain-link fence surrounds the abandoned hotel structure to discourage public access to the hotel site. The park proposes to remove the entire structure, reuse and recycle as much of the material as possible, and return the site to a more natural condition. In addition to these actions, the park is proposing to construct a haul road for the construction vehicles to get to and from the site, and to haul out materials produced from the demolition of the abandoned hotel structure. Following demolition activities, the haul road would be improved and would serve as the main access road to the park. The NPS, in consultation with appropriate resource agencies such as the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), the U.S. Fish and Wildlife Service (USFWS), and the Coastal Zone Management (CZM) would rehabilitate the

peninsula through revegetation of native plant species, including wetland species to return the area to a more natural condition.

Approximately 1,583 cubic yards of debris would be removed from the site, including the hotel and associated structures and all other abandoned building materials at the site and on the peninsula. Following demolition activities and debris removal, a small parking lot (10-15 vehicles) would be constructed on the peninsula mainly for park use and limited use by visitors (i.e., special use permit). From the parking lot a low traffic service road would continue north and end at the proposed footprint for the MREC. The parking lot and service road would be constructed with pervious materials that blend with the predominant landscape tones. Permeable paved surfaces allow limited percolation of precipitation while providing better wear than unpaved surfaces. Finally, as stated above, the NPS, in consultation with appropriate resource agencies, would rehabilitate the peninsula through revegetation of native plant species (including wetland species) to return the area to a more natural condition.

3. PROJECT SITE

SARI is located along the north/central coast of St. Croix along and including portions of Salt River Bay in the USVI (Figure 1). The NPS and the Government of the USVI jointly manage the 1,015-acre park. The park is five miles from Christiansted National Historic Site and can be reached by car via Rt. 75 from Christiansted, connecting to Rt. 80 (Figure 2). Within SARI and on the eastern side of Salt River Bay (Bay) are approximately 70 acres of land owned by the NPS, adjacent to the Estate Judith's Fancy residential community and referred to as the "East Site." The East Site has a Salt Pond and a 10-foot-deep manmade (historically dredged) lagoon (Mangrove Lagoon) that opens into Salt River Bay and is about 300 meters from the primary Bay inlet and the open ocean. A partially constructed abandoned hotel is located on the peninsula adjacent to the Mangrove Lagoon. One-half to one-third of the landform on which this hotel rests is largely made land created with dredge spoil from the Mangrove Lagoon behind the hotel. The East Site also features a large hill about 130 feet above sea level that provides a panoramic view of the ocean and the bay. The site is currently accessed by private paved roads that traverse a residential neighborhood to the south and east of the NPS-owned property.

It is important to note that normal circumstances do not exist at the East Site; portions of the peninsula are characterized as dredged material, as the natural shoreline has been altered from historic and natural conditions. The Soil Survey of the USVI (USDA 1998) maps the peninsula as Ustorthents (Us), or altered soil. In addition to the soil, numerous pieces of rubble and discarded concrete debris exist along the west spit shoreline site and on the entire peninsula. Concrete and debris were also placed along the shoreline of the western spit, possibly for erosion control. The site is therefore characterized as significantly disturbed. Dredge and fill activities have taken place at SARI since the 1960s in various locations around the Bay, which created new land and influenced soil characteristics and vegetation types.

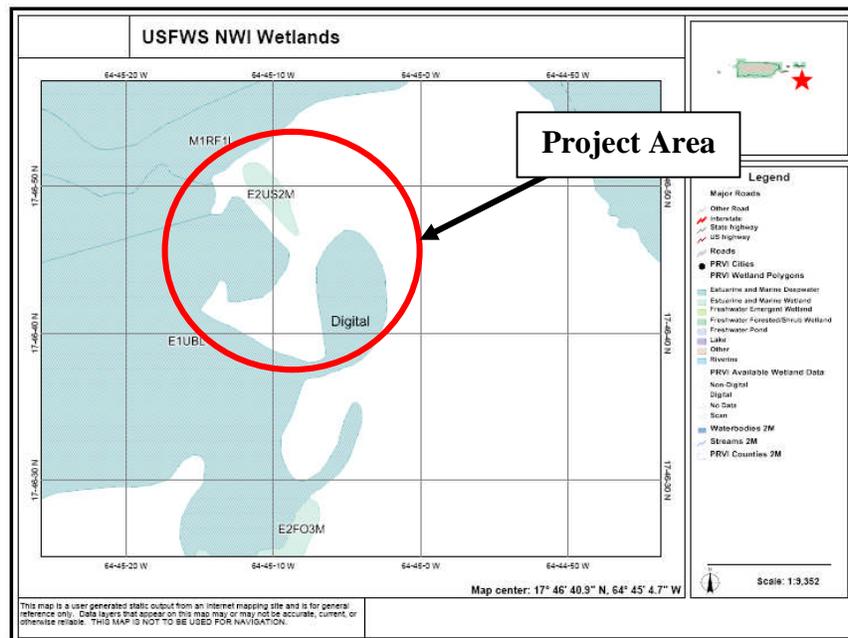
4. DESCRIPTION OF WETLANDS AND FLOODPLAINS IN PROJECT AREA

4.1 Wetlands

General Discussion – The NPS defines wetlands as vegetated areas that are flooded or saturated for a duration sufficient to allow development of at least one of the three wetland indicators described in USACE 1987. The wetland indicators described in USACE 1987 include wetland hydrology, hydric soil, or hydrophytic vegetation. This definition differs from that used by USACE to delineate jurisdictional wetlands. The USACE definition requires the presence of all three wetland indicators for an area to be classified as a wetland. This document presents wetlands as defined by the one-parameter approach adopted by the NPS. Wetlands provide a variety of beneficial functions from supplying habitat for a variety of wildlife, storage and attenuation of floodwaters, trapping silts and other sediments during floods, and biologically filtering contaminants from surface waters.

The National Wetlands Inventory (NWI) of the USFWS produces information on the characteristics, extent, and status of the nation's wetlands and deepwater habitats. The USFWS definition of wetlands is similar to the NPS definition of wetlands in that only one of the three parameters is required to characterize an area as a wetland,

based upon the *Cowardin Classification of Wetlands and Deepwater Habitats* (Cowardin et al. 1979). The USFWS's objective of mapping wetlands and deepwater habitats is to produce "reconnaissance-level information on the location, type and size of these resources" (USFWS 2005). Unfortunately, the NWI maps at the site do not show wetlands on the peninsula with the exception of the salt pond, located north of the peninsula. Figure 3 presents a general map of the wetlands as mapped by NWI. Note that the Mangrove Lagoon is mapped as an estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL) wetland. Wetlands on the peninsula were not mapped by NWI, most likely due to the results of the soil survey (USDA 1998), which characterized soils on the peninsula as Ustorthents (Us), or altered soil. In addition to the NWI map, the USDA NRCS has mapped hydric soils (one of the three wetland indicators) in the Caribbean (USDA 1998). Three soil series in the vicinity of SARI are characterized as hydric soils and include Redhook extremely stony sand, Salt flats, ponded, and Solitude gravelly fine sandy loam (USDA 1998). Table 1 below details the criteria that defines each of the three hydric soils present at SARI and Figure 4 depicts the hydric soils mapped at SARI.



Source: USFWS/NWI 2006.

Figure 3. National Wetland Inventory Wetlands at SARI

Table 1. Characteristics of Hydric Soils Present at SARI Project Site

Soil Series Map Unit Symbol*	Name of Soil Series	Hydric Criteria*	Permeability	Available Water Capacity	Slopes (%)	Flooding	Soil Constraints
RdB	Redhook extremely stony sand, rubbly	1, 3, and 4	Very rapid	Low	0-5	Rare	Moderate salinity and flooding
SaA	Salt flats, ponded	2B, 3, and 4	Slow	High	0-2	Frequent	Flooding, frequent ponding, and strong salinity
SoA	Solitude gravelly fine sandy loam	2B, 3, and 4	Slow	Medium	0-2	Frequent	Wetness, frequent flooding, and slight to strong salinity

Source: USDA, NRCS 2006.

*Explanation of hydric criteria codes (USDA, NRCS 2006):

1) All Histels except for Folistels, and Histosols except for Folists.

2B) Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group,

Histoturbels great group, Pachic subgroups, or Cumulic subgroups that are poorly drained or very poorly drained and have either: 1.) a water table at the surface (0.0 feet) during the growing season if textures are, coarse sand, sand, or fine sand in all layers within a depth of 20 inches, or 2.) a water table at a depth of 0.5 foot or less during the growing season if

- permeability is equal to or greater than 6.0 in/hr in all layers within a depth of 20 inches, or 3.) a water table at a depth of 1.0 foot or less during the growing season if permeability is less than 6.0 in/hr in any layer within a depth of 20 inches.
- 3) Soils that are frequently ponded for long or very long duration during the growing season.
 - 4) Soils that are frequently flooded for long or very long duration during the growing season.

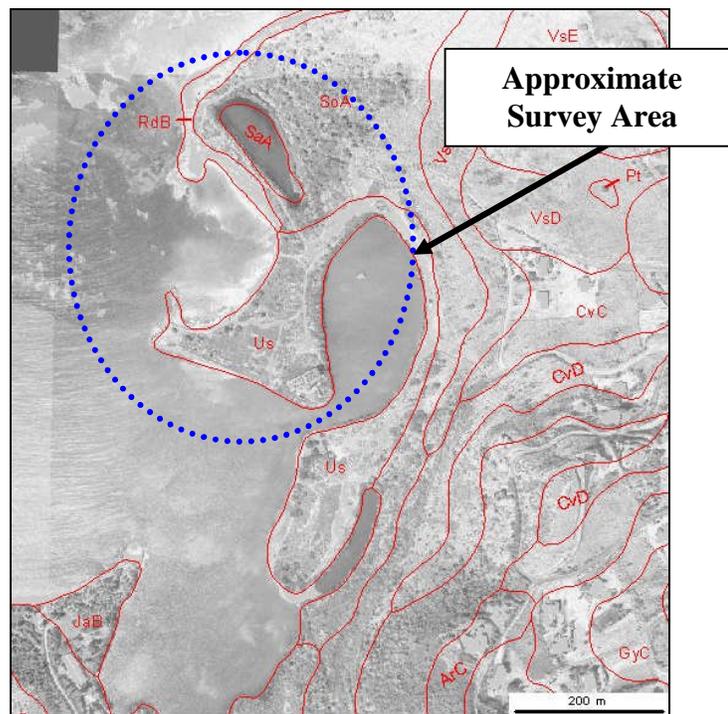


Figure 4. Hydric Soils Mapped at SARI (USDA 1998)

Site-Specific Field Survey – In May 2006, a wetland assessment (using the three-parameter approach of defining wetlands as provided by the USACE and using the one-parameter approach of defining wetlands as accepted by the USFWS and the NPS) was performed at portions of the East Site of SARI. In addition, this wetland assessment was completed to ground-truth wetlands as mapped by the NWI (as discussed above) and mangroves (at the East Site) as mapped in 2000 through digitized orthorectified aerial photography by NOAA (Kendall et. al. 2005) as well as map USACE-defined wetlands and NPS-defined wetlands in the vicinity of the SARI East Site. The wetland delineation survey included only those areas where the proposed projects are located.

The wetland delineation was conducted by Sarah T. Koser of EA Engineering, who received her undergraduate degree at Pennsylvania State University in Plant Biology and has 8 years of field experience mapping wetlands. Ms. Koser has completed the 38-Hour U.S. Army Corps of Engineers Wetland Delineation and Management Training Program as well as experience delineating wetlands for the NPS at the following locations: Tuskegee Airman National Historic Site, Fort Matanzas National Monument, the Chesapeake and Ohio Canal National Historic Park, and Fort Pulaski National Monument. Ms. Koser is currently seeking her Professional Wetland Scientist certification through the Society of Wetland Scientists.

Five wetlands (that constitute as wetland areas defined by the NPS) were observed at SARI within the proposed project area at SARI. Figure 5 presents the wetland areas delineated at the East Site of SARI. Wetland areas exist beyond the footprint of the proposed action at SARI, but were not delineated as part of this effort. The wetlands delineated at the site are located on and surround the eastern peninsula of SARI and are bounded by the Mangrove Lagoon, Salt River Bay, the Salt Pond, and existing “mudflats.” The following paragraphs describe the wetland areas assessed at SARI in May 2006.

In Vicinity of Existing Abandoned Hotel (Wetland W-1) – In the immediate vicinity of the existing hotel, the area is extremely disturbed. Piles of rocks, dirt, and debris were observed adjacent to the existing hotel structure and to the shoreline. Steep slopes from the hotel to the shoreline were also observed and the upland species casha (*Acacia tortuosa*) was observed as the dominant species in this location surrounding the hotel structure. A small stand of mother-in-law tongue (*Sansevieria trifasciata*) was observed growing in a concrete depression of the hotel structure. The shoreline at the hotel structure is very rocky and sandy, with two species of algae washed up on the shore that include disk alga (*Halimeda incrassata*) and soft fan weed (*Avrainvillea nigricans*).

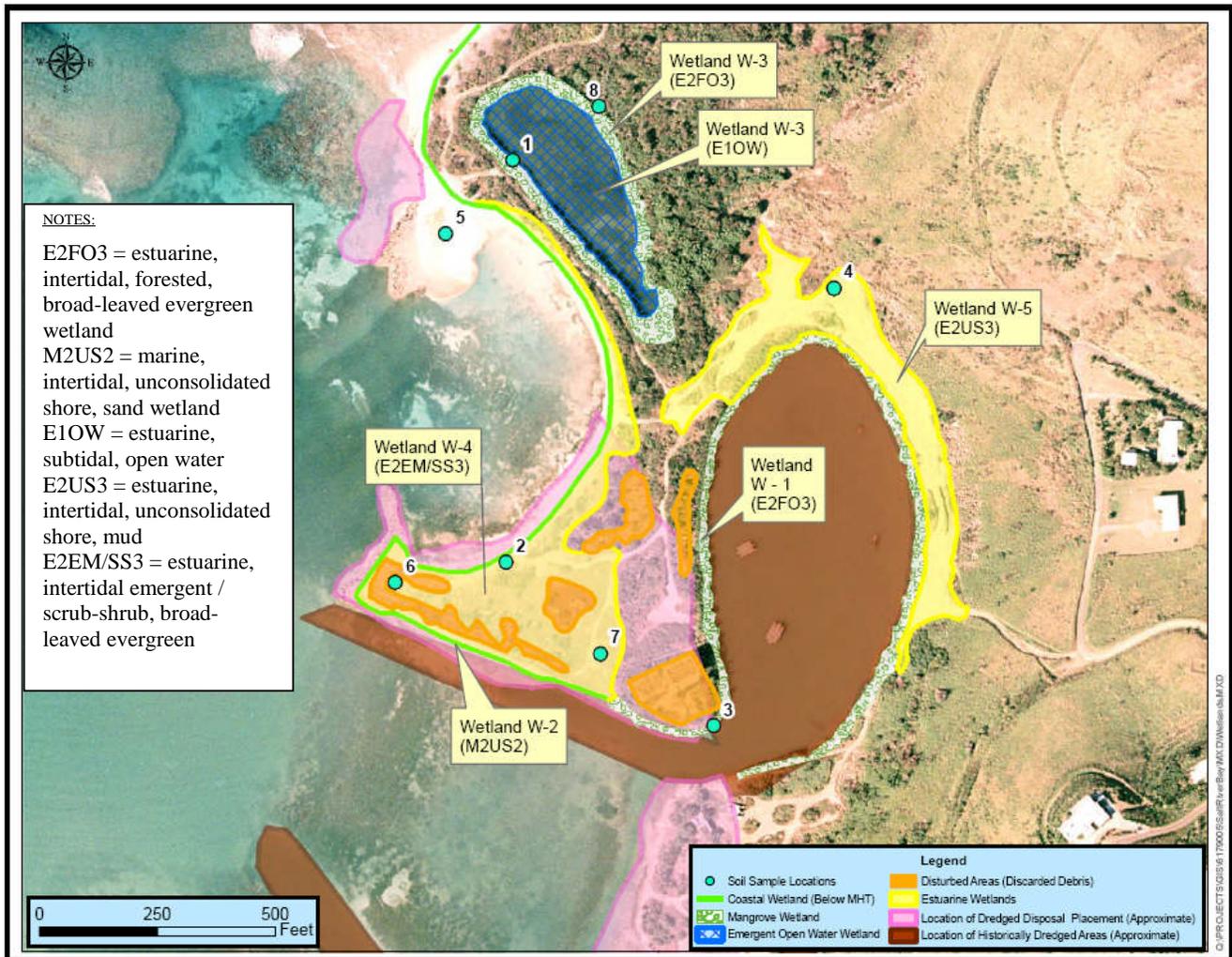


Figure 5. Location of Wetlands Areas at East Site of SARI

One wetland area (W-1) was located in the vicinity of the hotel structure. Immediately along the shoreline adjacent to the hotel a stand of red mangrove (*Rhizophora mangle*) exists and is characterized as Wetland W-1. This wetland is located on the southern tip of the peninsula and wraps around the entire Mangrove Lagoon. Wetland W-1 is a narrow fringe red mangrove shoreline wetland that is characterized as an estuarine, intertidal, forested, broad-leaved evergreen (E2FO3) that is approximately 10 to 15 feet (ft) wide (Cowardin et al. 1979). This wetland area is tidally influenced, regularly inundated, and has some rocky shoreline areas. Vegetation was dominated by red mangrove and was extremely thick in some areas and bare/rocky in the vicinity of the hotel structure. The primary hydrology indicators present at Wetland W-1 included inundation and saturation in the upper 12 inches of the soil. The dominant plant species observed included red mangrove and the subdominant plant species observed included black mangrove (*Avicennia germinans*) and sea purslane (*Sesuvium portulacastrum*). Exactly 100 percent of the dominant plant species observed at W-1 are characterized as hydrophytic. A soil sample (3) was collected from Wetland W-1 within the shoreline wetland

area in the vicinity of the hotel structure and was classified as hydric soils (Figure 5). The soils on the site were characterized as Ustorthents (Us), or altered soil. Wetland W-1 supports greater than 50 percent of hydric vegetation, hydric soils with a low matrix chroma (gleyed) were identified, and hydrology indicators such as saturation in the upper 12 inches were observed. Wetland W-1 is tidally influenced and therefore regularly inundated. Wetland W-1 satisfies all three wetland parameters.

Along Shoreline of Peninsula (Wetland W-2) – Wetland W-2 is marine, intertidal, unconsolidated shore, sand (M2US2) wetland located along the entire coastline of the peninsula from adjacent to the hotel (where the mangroves cease to exist), along the western spit and Crescent Beach, to the extent of the survey area at the northern beach (adjacent to the salt pond). This wetland area is characterized as marine because the extent of the wetland is the landward limit of tidal inundation (extreme high water of spring tides), including the splash zone from breaking waves (Cowardin et al. 1979); more specifically, below the mean high tide line. Along the entire shoreline within this wetland the tidal influences of waves were observed and evidence of the mean high tide line was observed by viewing deposited debris. This wetland was comprised of sandy soils only, very little vegetation was observed. However, because this shoreline area is located at and below the mean high tide line, it is considered a wetland by USACE standards. The sparse and sporadic vegetation that was observed along the shoreline included seaside mahoe (*Thespesia populnea*), crabgrass (*Sporobolus virginicus*), buttonwood (*Conocarpus erectus*), and seaside purslane. The primary hydrology indicators present at Wetland W-2 included regular tidal inundation, and sediment deposits / tidal drift lines. In addition, Wetland W-2 is located within the 100-year floodplain. A soil sample (2) was collected from above the mean high tide line, outside of Wetland W-2 on Crescent Beach near areas of rubble and discarded debris. The soil sample was classified as sand and considered “altered” land in the Soil Survey (USDA 1998) and was not characterized as hydric soil.

In vicinity of Salt Pond (Wetland W-3) – The perimeter of the salt pond was reconnoitered and two soil samples were collected in this area. Two wetland types were classified in the vicinity of the Salt pond and described as Wetland W-3. Two distinct wetland types exist at this site and includes a vegetated estuarine, intertidal, forested, broad-leaved evergreen wetland (E2FO3) that fringes the Salt Pond, and an estuarine, subtidal, open water wetland (E1OW) that constitutes the open water portion of the Salt Pond. The E2FO3 wetland is a narrow wetland approximately 5 to 10 feet wide dominated by a thick stand of red mangroves. Subdominant vegetation observed included white mangrove (*Laguncularia racemosa*), black mangrove, seaside mahoe, and buttonwood, all hydrophytic plant species (Table 2). Two USACE datasheets and soil samples were completed at this wetland, the first (1) located along the northwestern portion of the Salt Pond and the second (2) located along the eastern portion of the Salt Pond. Hydrology indicators present included inundation and saturation in the upper 12 inches of the soil. The first soil sample (1) collected was classified as hydric soil due to low chroma values; the soils at this location were also characterized by the USDA as hydric soils (Table 1). The second soil sample (2) collected was classified as hydric soil due to low chroma values; the soils at this location were also characterized by the USDA as hydric soils (Table 1). Approximately 5 to 10 feet of red mangroves exist along the edge of the pond and beyond the mangroves, another 10 feet of wetland dominated by seaside mahoe exists. Beyond this area, the topography changes rapidly to a steep upland area, dominated by the upland species, casha. It is obvious in the vicinity of this location (2) that normal circumstances do not exist and that the site has been significantly disturbed.

Western Portion of Peninsula (Wetland W-4) – The peninsula is the area defined as inland from the shoreline from the existing hotel structure and western spit to the southernmost portion of the salt pond. As stated previously, it is important to note that normal circumstances do not exist on the peninsula; the entire peninsula could potentially be characterized as dredged material, as the natural shoreline is potentially located far to the east of the peninsula. The Soil Survey of the USVI (August 1998) maps the peninsula as Ustorthents (Us), or altered soil. In addition to the soil, numerous pieces of rubble and discarded concrete debris exist along the west spit shoreline site and on the entire peninsula. A significant change in the topography from the shoreline to the inland areas was observed along with observations of an eroding western shoreline. Concrete and debris were also placed along the shoreline of the western spit, possibly for erosion control. The site is therefore characterized as significantly disturbed.

Three soil samples were collected on the peninsula (2, 6, and 7) to characterize the soil in this vicinity. Soil sample (2) was collected from above the mean high tide line, near areas of rubble and discarded debris and was not characterized as hydric soil. The sparse and sporadic vegetation that was observed along the shoreline included seaside mahoe, crabgrass, buttonwood, and seaside purslane. No hydrology was observed at soil sample 2 above the mean high tide line. Soil sample 6 was located at the western spit of the peninsula, in the vicinity of areas of rubble and discarded debris and was not characterized as hydric soil. Weak hydrology indicators were observed at soil sample 6 that included overtopping of the site during storm events due to proximity to shoreline and being located in the 100-year floodplain. However, the dominant vegetation observed at soil sample 6 was predominantly hydrophytic. Seaside mahoe, buttonwood, bread-and-cheese (*Pithecellobium unguis-cati*), crab grass, and casha were the dominant plant species observed. A third soil sample (7) was collected on the peninsula, northwest of the hotel site, along a “mudflat” area used for access to the existing hotel structure and was not characterized as hydric soil. Weak hydrology indicators were observed at soil sample 7, including potential standing water following storm events due to observations of algae. This may potentially be due to the peninsula’s dredged material source. The dominant vegetation observed at soil sample 7 was predominantly hydrophytic. Sea purslane, buttonwood, crabgrass, and casha were the dominant plant species observed. Based upon the hydrophytic vegetation observed, this area (Wetland W-4) is considered a wetland by NPS standards. Weak hydrology and hydric soils indicators were also observed, as discussed above. In addition, Wetland W-4 is located within the 100-year floodplain and within the Coastal Barrier. Using the Cowardin (1979) Classification, this wetland is characterized as an estuarine, intertidal emergent / scrub-shrub, broad-leaved evergreen (E2EM/SS3). Although ocean-topping most likely only occurs during storm events, due to the vegetation species that exist at the site, this wetland was considered estuarine. Existing vegetation species (not necessarily dominant species, but all specimens that were observed on the peninsula) within this area includes: pink cedar, torchwood (*Jacquinea arborea*), sea lavender (*Tournefortia gnaphalodes*), sea oxeye (*Borrchia aborescens*), casha, bread-and-cheese, seaside mahoe, cattle tongue (*Pluchea odorata*), and buttonwood.

In vicinity of Existing Mudflats/Roadways (Wetland W-5) – The area located along the Mangrove Lagoon, interior from the fringe of red mangroves is an area referred to as existing “mudflats” or Wetland W-5. Currently, the public utilizes this area by foot and vehicle to access the beach areas at Crescent Beach and other locations on the peninsula. This public access has impeded vegetation growing on the “mudflats.” The soil at the “mudflats” is exposed and water often pools following rain events. These soils were classified as hydric soils during a site visit. A soil sample (4) was collected from this area and determined as hydric based on expertise from Mr. Rudy O’Reilly at the St. Croix NRCS (O’Reilly 2006). The USVI Soil Survey (USDA 1988) classifies the soils in this location as Ustorthents (Us), or altered soil, most likely due to the materials that were dredged and discarded in this area from the adjacent, existing Mangrove Lagoon. Standing water at the “mudflats” is observed following rain events and persists for approximately 14 days, according to Mr. O’Reilly, which corresponds to hydrology characteristics. The “mudflats” are fringed on the east and the northeast by African guinea grass, an upland and exotic vegetation species. No dominant vegetation was observed on the “mudflats,” but some specimens of sea purslane and crabgrass were observed in a few spotty locations. This area is considered a wetland based upon NPS standards due to the hydric soils. The soil at this location was so compacted due to vehicular access, that no benthic (or dominant) species were observed during the site survey. Using the Cowardin (1979) Classification, this wetland is characterized as an estuarine, intertidal, unconsolidated shore, mud (E2US3). Although ocean-topping most likely only occurs during storm events, due to the potential salinity of the “mudflats” that exist at the site, this wetland was considered estuarine.

Marine Wetlands – Along the shoreline and off the coast of the East Site persist M1AB (marine, subtidal, aquatic bed) wetlands known as seagrass beds. Seagrasses are seed-producing, flowering marine plants that occur in shallow, nearshore, temperate, and tropical waters. In the year 2000, seagrasses were mapped by NOAA using a hierarchical classification scheme, using digitized orthorectified aerial photos to delineate areas of seagrass coverage in the Bay (Kendall et. al. 2005). The seagrass classification system included 10% to less than 50% cover, 50% to less than 90% cover, and 90% to 100% cover. Figure 6 shows the distribution of seagrasses in the vicinity of the East Site. Patchy and continuous seagrasses are located within the East Cove and in the Bay south of the abandoned hotel structure. It is unknown if seagrasses currently occur within the Mangrove Lagoon. The flushing rate of the Mangrove Lagoon is lower than that of Salt River Bay, due to the

narrow inlet that currently exists. Due to historic dredging activities that have occurred, the silt character of the material in the vicinity of the East Site, and the low flushing rate within the Mangrove Lagoon, seagrasses would not be expected to thrive in this type of habitat. A silt-laden bottom largely devoid of seagrass or algae dominates a large area in the center portion of the Bay, owing to past dredging, continued sediment loading, and low light penetration (NPS 1990). High water turbidities have been observed in the Mangrove Lagoon due to poor water exchanges, elevated nutrient input, and biological productivity (Sugar Bay Land Development 1986). In 1986, five transects in the Mangrove Lagoon were conducted for depth profiles and distribution of seagrasses; recovery at these transects yielded a majority of algae and some patchy areas of seagrasses (Sugar Bay Land Development 1986). The following algae species were identified in the Mangrove Lagoon: *Halimeda opuntia*, *Halimeda incrassata*, *Caulerpa mexicana*, *Penniculus capitatus*, *Hypnea musciformis*, *Caulerpa sertularoides*, *Caulerpa verticillata*, *Acanthopohora spicifera*, *Dictyota* species, *Thalassia* species, *Syringodium* species and *Ceramium* species. Only two true seagrasses were recovered. Turtle grass, was recovered at two shallow transects, located on the eastern and western shorelines of the Mangrove Lagoon and *Halodule wrightii* was recovered at one transect (Sugar Bay Land Development 1986). Turtle grass is the most common seagrass in the Caribbean Sea. During the May 2006 site visit, two species of algae, *Halimeda incrassata* and *Avrainvillea nigricans* were observed washed up on shore of the Mangrove Lagoon at the abandoned hotel site.

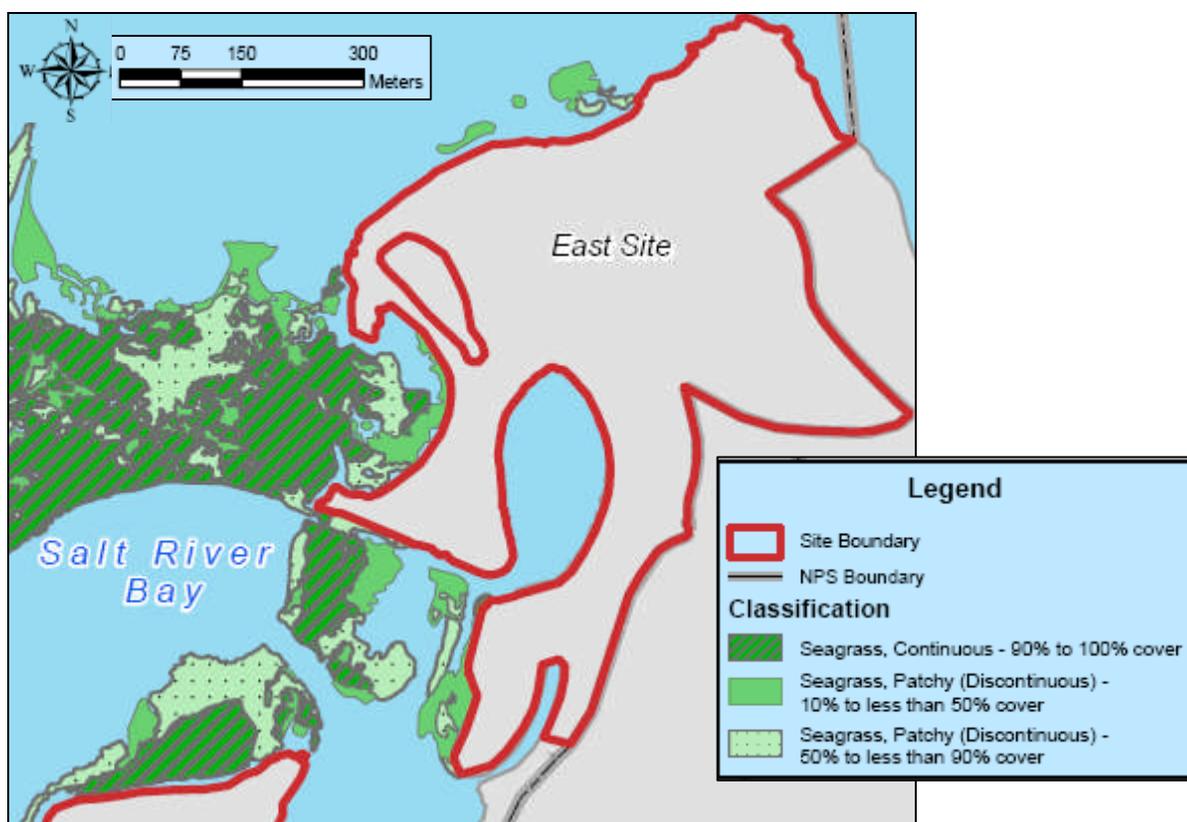


Figure 6. Location of Marine Wetland (MIAB) Areas Near the East Site of SARI

Wetland Functions and Values – Wetlands serve a wide range of ecological functions. They are valuable as holding areas for rising floodwaters. Wetland vegetation reduces floodwater velocity and depletes its destructive energy, thereby protecting mainland and upland areas. Wetland vegetation also forms buffers against erosion by absorbing current and storm energy, stabilizing substrates, and trapping sediments. Filtration of sediments, nutrients, pollutants, and toxic substances has the added advantage of improving water quality. Generally, wetlands provide the following functions and values: flood water storage, nursery areas for aquatic life, ground water recharge, water quality benefits, wildlife habitat, biological productivity, environmental education, and recreational opportunities.

Mangrove Wetland Function and Values – Like wetland values above, mangroves contribute many benefits to the SARI ecosystem. Mangroves stabilize coastal sediment, buffer harmful effects of terrestrial runoff, regulate water temperature on tidal flats, and provide habitat for a diverse assemblage of terrestrial and aquatic organisms. They also trap various organic materials, distributing important nutrients to nearby marine habitats.

Mangroves also serve as nursery grounds for commercially and recreationally important fishes in the USVI. The mangrove wetlands of the USVI have been impacted by natural and anthropogenic forces. Natural stressors include eustatic sea level rise and coastal erosion, hypersalinity, and hurricanes. Anthropogenic stressors include filling wetlands, drainage, or alteration for development. In addition, sewage and thermal effluent, oil pollution, fire, excessive harvesting, herbicides and pesticides, and sedimentations are also anthropogenic stressors that impact the mangrove wetlands.

At one time, the mangrove forests of SARI were considered the best in the USVI. However, the intense winds surrounding Hurricane Hugo aided in the destruction of old-growth mangrove forests in 1989. In 1992, aerial photographs showed that mangrove forests only covered 43% of their former spread. In 1999, the St. Croix Environmental Association began a mangrove restoration project, which replanted 3.5 acres of the lost forest on the western side of Sugar Bay. The survival rate for restoration seedlings is estimated at 80%. Natural re-growth in SARI and has accounted for 2.2 acres of forest since 1992. More recent aerial photographs taken in 2000 indicate that naturally occurring and restoration mangroves now cover 29.7 acres or 54% of the 1988 forest. Numerous bird species nest in the Salt River Bay mangroves, including the endangered white-crowned pigeon (*Columba leucocephala*), along with at least 25 of the 110 other bird species found in the area (IRF 1993).

Estuarine Wetland Areas Functions and Values – Wetland areas observed within the interior portions of the East Site of SARI and associated with the peninsula at the East Site located along the shoreline of Salt River Bay and the Caribbean Sea. These wetland areas are characterized as estuarine tidal vegetated and unconsolidated shore (or beach) habitats. The primary functions provided by these wetland areas are flood storage and protection, nutrient processing, providing wildlife habitat, and assisting in the natural shoreline erosion and accretion processes.

Marine Wetland Function and Values – Seagrasses are important resources that provide habitat and a source of food for a variety of small fishes and invertebrates such as shrimp and crabs as well as larger mammals and avian species. Seagrasses also trap sediment, which helps prevent erosion of the shallow sediments. Seagrasses are very sensitive to stress; natural stressors include tropical storms and hurricanes, and grazing by herbivores (natural exploitation of resource). Anthropogenic sources of stresses include dredging and filling, oil pollution, physical disturbance (i.e., boat propeller and anchor damage), chemical pollutants from industry, and non-point source pollution.

Salt Pond Functions and Values – Salt ponds are enclosed or mostly enclosed water bodies that occur within coastal mangrove wetlands. They are typically hypersaline, with water salinities typically in excess of 50 parts per thousand (ppt). Salt ponds and their surrounding mangrove forests, together known as "basin mangrove forests", are the predominant type of coastal wetland in the Caribbean. These wetlands provide important ecological services, including storm protection and flood mitigation, shoreline stabilization, erosion control, and retention of nutrients and sediments. They also provide critical habitat and food resources for resident and migratory birds in the Caribbean.

4.2 Floodplains - The 100-year floodplain as mapped by the Federal Emergency Management Agency (FEMA) in April 2007 is depicted in Figure 8. The majority of the East Site is located within the 100-year flood boundary (elevations 7, 8, and 9 ft). Other portions of the East Site which are located outside of the 100-year floodplain include the eastern boundary of the park and the abandoned hotel structure and immediately surrounding area.

5. USE OF THE WETLANDS AND FLOODPLAINS

5.1 Historical Use of the Park - SARI contains a combination of marine, estuarine, and terrestrial habitats including the largest remaining mangrove forest within the USVI, coral reefs, seagrass beds, and a submarine canyon. Every major period of human habitation in the USVI is represented at SARI including: South American Indian cultures, the 1493 encounter with Columbus, Spanish extermination of the Caribs, attempts at colonization by European nations, and enslaved West Africans and their descendants. SARI was created in 1992 to preserve, protect, and interpret nationally significant natural, historical, and cultural resources.

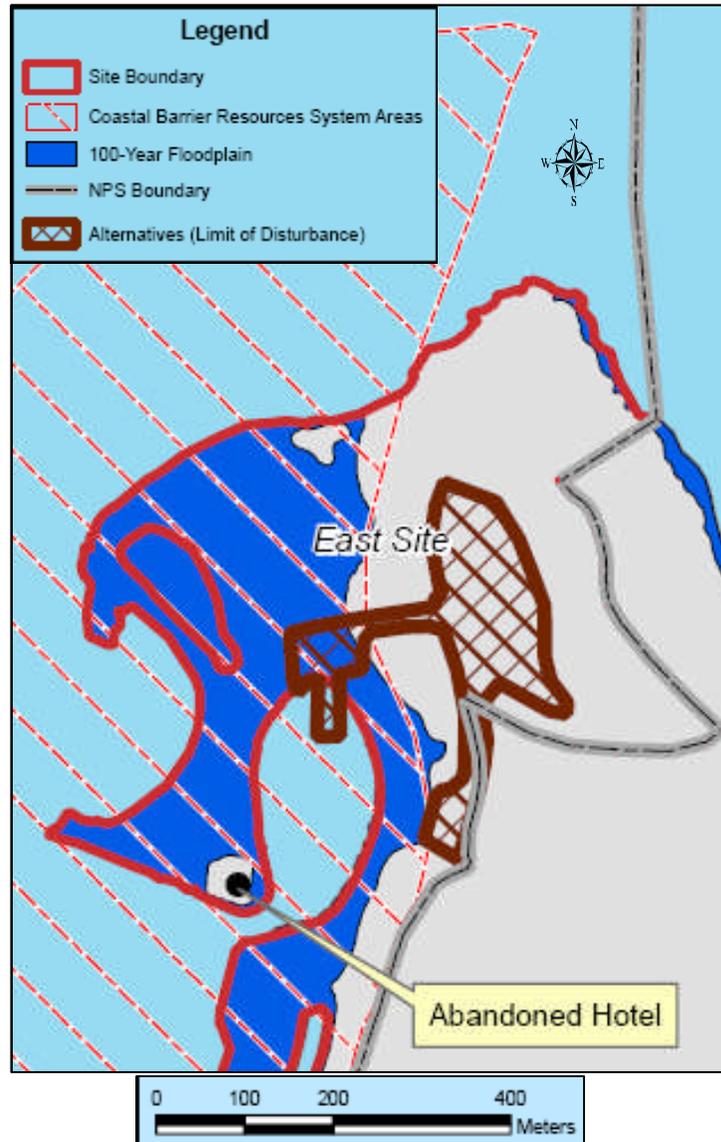


Figure 8. Mapped Floodplains and Coastal Barriers at the East Site of SARI (FEMA 2007)

5.2 Proposed Use of the Park - The NPS is proposing to construct a Marine Research and Education Center (MREC) and demolish the existing abandoned hotel at SARI. As stated above in detail in Section 2, there is a need to reestablish an MREC on the island of St. Croix. The purpose of demolishing and removing the abandoned hotel structure is to alleviate the safety and environmental concerns of the structure and to return the site to a more natural condition. With the construction of the Proposed MREC, visitor use of the park would change and be greatly enhanced. Currently, SARI is utilized by the local residences, mainly for recreation. The

MREC would provide a Visitor and Education Center which would promote the sustainable utilization and conservation of marine resources through educational programs. The current NPS property at the East Site is composed of approximately 70 acres. Of these 70 acres, approximately 9 acres (13 percent of the site) would be developed at the East Site for the MREC and associated uses. Therefore, through the MREC, access would be provided to the remaining 61 acres (87 percent of the site) for visitor education and experience on trails, tropical coastal areas, coral reef shorelines, mangroves, wetlands, and other areas. By building the proposed MREC, the NPS provides controlled use and access to sensitive areas and improves education through the Visitor Education Center and guided tours. The MREC would attract more visitors to the park and become an integral component of the overall tourism experience for the USVI. There are 100-year floodplain zones (as mapped by FEMA) and wetland areas located within the East Site boundary; the existing abandoned hotel structure located outside of a mapped 100-year floodplain and immediately adjacent to mangrove wetlands. In addition to these actions, the park is proposing to construct a haul road for the construction vehicles to get to and from the site, and to haul out materials produced from the demolition of the abandoned hotel structure. Following demolition activities, the haul road would be improved and would serve as the main access road to the park.

6. INVESTIGATION OF ALTERNATIVES

With few exceptions, the majority of SARI is located within the 100-year floodplain and is surrounded by mangrove wetlands. The reasonable alternative sites considered are discussed below.

Alternatives Associated with the Proposed Construction of the MREC – In addition to considering the No Action Alternative, the potential locations for the MREC included three alternatives (Project Site Alternatives): the East Site Alternative, located west of Estate Judith's Fancy; the South Site Alternative, the former NOAA Undersea Research Center; and the West Site Alternative, the NPS Visitor Contact Station and Salt River Marina. These sites were examined in detail, given the information available on existing conditions, and preliminary site plans were developed for each alternative. Additionally, each site was analyzed through a cost analysis and the Choosing by Advantages (CBA) process. CBA scores for each alternative were calculated, and the alternatives were ranked based on total CBA scores.

In addition to the three Project Site Alternatives, two alternatives were considered, but dismissed from further study. The first dismissed alternative included considering other islands in the Caribbean besides St. Croix as alternative locations for the MREC. St. Croix was selected due to its central location in the Caribbean and its proximity to many nations within the region. Additionally, the island has a rich coral reef research history and extensive research has already been conducted on the eastern end of the island and at the NOAA Undersea Research Center based at Salt River Bay. Logistical support in terms of transportation, labor, housing, etc., available on the island is paramount to successful operations of a research, educational and service center. The second dismissed alternative included considering other locations on St. Croix for the MREC. Due to the constraints of operating an MREC and land acquisition challenges, potential options for the location of the MREC were limited on the island of St. Croix. Some of the constraints included easy access from the MREC to estuarine and ocean ecosystems by boat and land, access to high quality clean sea water, and adequate docking and mooring for boats. Using the site of the Former West Indies Laboratory was considered as an alternative for the MREC. This site previously conducted extensive marine research and has adequate docking facilities for boats. However; this alternative was dismissed since the current owner of the site is unwilling to sell the property.

Alternatives Associated with the Demolition of Abandoned Hotel Structure – The No Action Alternative and the Proposed Action (Demolition of Abandoned Hotel Structure) were considered for detailed analysis. Under the No Action Alternative, the abandoned hotel would continue to deteriorate and would continue to present a safety and environmental concern for the park. In addition to the No Action Alternative and the Proposed Action, one alternative was considered, but dismissed from further study. This dismissed alternative included completing or finishing construction of the abandoned hotel structure or building a new structure on the footprint of the site. This alternative was considered in the initial stages of this project, but was dismissed due to significant, adverse impacts to the environment, including Tier 1 of the coastal zone, Coastal Barrier Resources System (CBRS) Areas, water quality in the Mangrove Lagoon and the Bay, the adjacent forested mangrove wetlands that fringe

the Mangrove Lagoon, and the aesthetic viewshed/landscape of the site that would occur as a result of building a new structure on the footprint of the site. Additionally, it was found that the building could not be re-used because the structure is currently deteriorating and presents a safety hazard. Therefore, due to safety issues and adverse environmental impacts, this alternative was considered in the initial planning stages, but was dismissed from further study.

7. WHY THE PROPOSED ACTION IS PREFERABLE

The Proposed Action includes the Preferred Alternative (East Site Alternative), or implementation of the MREC, and the demolition of the abandoned hotel structure. Although the Proposed Action impacts both floodplains and wetlands, it is considered the Preferred Alternative. Based upon the CBA scores, the East Site Alternative scored the highest (of the other two sites) and was considered the Preferred Alternative for the MREC. The East Site Alternative was also the Environmentally Preferred Alternative. This alternative would provide long-term beneficial impacts to the park and would foster public awareness of marine ecosystems through educational programs.

Additionally, the demolition of the abandoned hotel structure was determined as the environmentally preferred alternative due to the long-term beneficial impacts associated with the demolition of the abandoned hotel structure and associated rehabilitation of the peninsula. This alternative would have a long-term beneficial impact to the aesthetics at the park because the un-finished remains of the abandoned hotel represent a visual intrusion on SARI's cultural landscape. Demolition of the hotel shell would be a visual improvement enhancing the viability of the resources within the park as well as the viewshed to the surrounding communities.

The Proposed Action (MREC and Hotel Demolition) would meet park purposes and national environmental policy goals by creating new educational opportunities and by protecting important biological and cultural resources. Considering this, the Proposed Action would be providing protection to historic and archaeological resources for which the park was established, even though wetland and floodplain resources would be affected by the Proposed Action.

8. PROPOSED IMPACTS TO WETLANDS AND FLOOD RISK OF THE PROPOSED PROJECT AREA

8.1 Impacts to Wetlands - Construction of the MREC (East Site Alternative) – The wetlands at the East Site are located on and surround the eastern peninsula of SARI and are bounded by the Mangrove Lagoon, Salt River Bay, the Salt Pond, and the existing area defined as “mudflats.” Based upon the wetland assessment conducted for the East Site and the mangroves as mapped in 2000 through digitized orthorectified aerial photography by NOAA (Kendall et. al. 2005), approximately **0.03 acres of mangrove wetlands** (Wetland W-1) would be impacted as a result of constructing the boat dock and launch. This estimation is a conservative because the fringe of mangroves at the site is approximately 12 ft deep and the boat dock is estimated at a maximum of 50 ft wide. Approximately **0.66 acres of estuarine wetlands** (Wetland W-5) would be impacted by the MREC activities, located on the northern shoreline of the Mangrove Lagoon (Figure 7). A maximum of approximately **0.38 acres of open water** in the Mangrove Lagoon, mapped as an estuarine wetland by NWI would be impacted from the construction of the boat dock; this is a conservative estimate based upon the footprint from conceptual drawings, even though piers (which would decrease the footprint) will be used in the final design document for the boat dock. Therefore, approximately **1.07 total acres of NPS-defined wetlands would be impacted by the MREC** and associated structures, including the boat dock. This 1.07 acres of impacted wetlands represents a conservative estimate of approximately 12 percent of the total mapped NPS wetland areas within the terrestrial portion of the East Site (additional, unmapped wetland areas and the open water areas of Salt River Bay are not included in this calculation).

Wetland impacts at W-5 were reduced by placing the wet lab on piers to raise the structure above the NPS-defined wetland areas. This wetland currently is not vegetated due to unrestricted visitor access and is functioning poorly as a wetland. The soils at this wetland are characterized as Ustorthents, or “altered soil.” As stated above, the boat dock would also impact existing mangrove wetlands (W-1) located along the fringe of the

Mangrove Lagoon. Similar to the wet lab, the boat dock would be located on piers to reduce impacts to the mangrove wetland areas and the open water areas. The seawater supply pipeline would be sited in the same disturbance footprint as the boat dock in order to minimize impacts to mangroves and other wetlands to the maximum extent practicable.

Demolition of Abandoned Hotel Structure – The wetlands delineated at the site are located on and surround the eastern peninsula of SARI and are bounded by the Mangrove Lagoon, Salt River Bay, the Salt Pond, and the existing area defined as “mudflats.” The actual demolition of the abandoned hotel would have no impacts to wetlands. Although the hotel is located immediately adjacent to the mangrove wetland located along the shoreline of the Mangrove Lagoon, no impacts to these mangrove wetlands would occur. During the demolition process, any incidental impacts to the adjacent forested mangrove wetland would be avoided by placing upright sections of plywood between the mangroves and the demolition activities. These barriers will be placed all along the peninsula roadway, adjacent to hotel, and along bay side (south side) of peninsula where there are mangroves (adult plants, propagules, and rhizomes). This will protect mangroves from accidental impact from heavy machinery and prevent sediment from entering the lagoon during project in event of heavy rain. If the hotel will be demolished via mechanical methods versus using explosives, dust would not be an issue for the adjacent mangroves (USACE 2006). If explosives are used, dust may be an issue for the nearby mangroves. The NPS will have an observer on-site during demolition process to ensure that the barriers function to protect the mangroves. In addition to the hotel demolition, the park is proposing to construct a haul road for the construction vehicles to get to and from the site, and to haul out materials produced from the demolition of the abandoned hotel structure. Following demolition activities, the haul road would be improved and would serve as the main access road to the park. The exact route of the haul road is currently unknown. A pond and a tidal gut potentially exist in the vicinity of the proposed haul road. As more detailed survey and site-specific information becomes available, potential impacts to existing wetlands from the haul road will be avoided and minimized whenever possible. The NPS will work closely with the USDA NRCS to ensure that the haul road design is consistent with Federal Executive Order 11990 – Protection of Wetlands and *Director’s Order #77-1* (Wetland Protection). The removal of the debris on the peninsula and the proposed pervious, low impact parking area and pervious access road is on the peninsula, to the west of the existing forested mangrove wetlands along the Mangrove Lagoon (see Figure 2) would impact approximately **2.84 acres of estuarine wetland areas** (W-4 and W-5), considered as wetlands by NPS standards.

Additionally, removing the impervious structures (hotel structure and associated building materials) and revegetating these areas would return the site to a more natural setting which would benefit the long-term water quality in the bay and ultimately benefit the marine wetlands characterized as seagrasses mapped in the vicinity of the East Site. The demolition and road construction improvements have the potential to temporarily and locally increase turbidity in Salt River Bay, which may potentially cause a short-term, negligible, indirect adverse impact to seagrasses. It is recognized that the potential for negligible impacts to seagrasses as a result of increased turbidity may occur, but significant impacts to marine wetlands, specifically seagrasses, are not anticipated as part of this project.

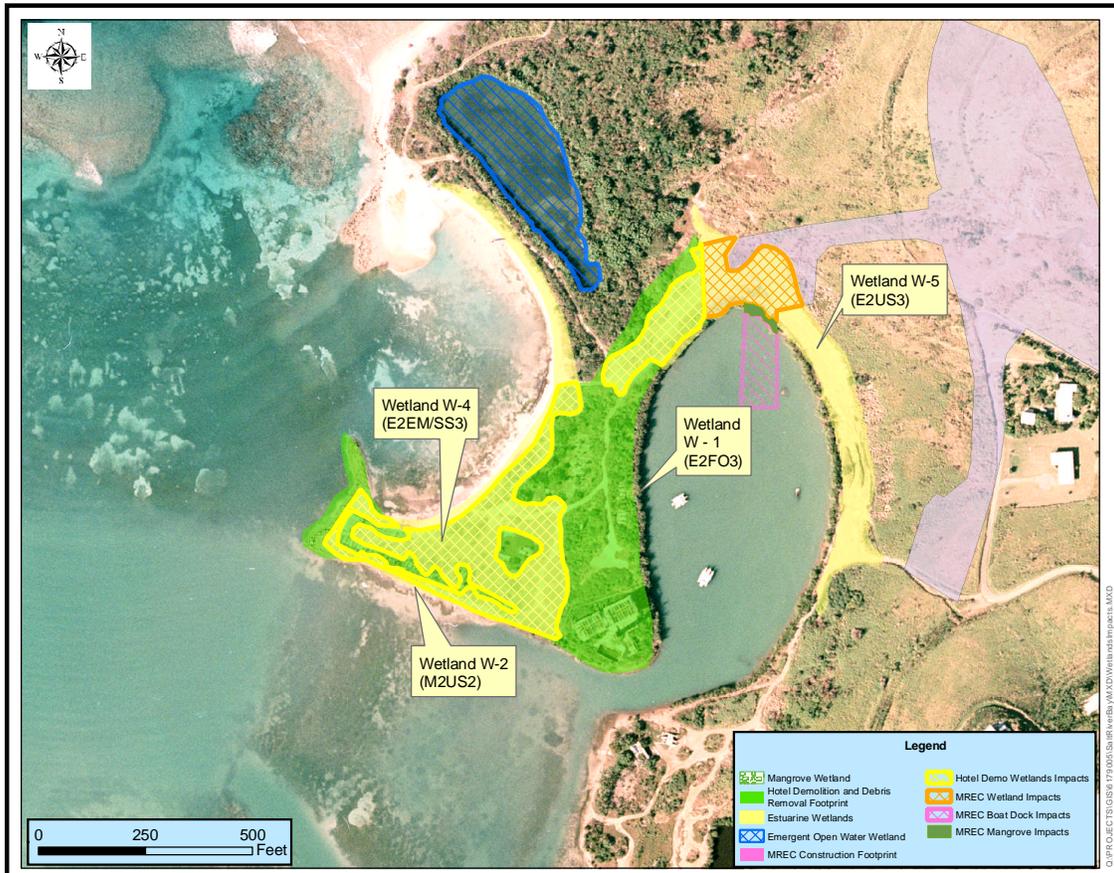


Figure 7. Wetland Impacts as a Result of the MREC at the East Site Alternative and as a result of the Demolition of the Abandoned Hotel Structure

No impacts to the shoreline areas below the ordinary low water tide level are expected. Although the peninsula is currently considered significantly disturbed due to historic uses of the area, wetland vegetation does exist in the areas proposed for debris removal and in some portions of the proposed access road. It is anticipated that a portion of the vegetation would be cleared on the peninsula to remove the existing debris. Desirable, mature wetland shrub species on the peninsula would be flagged and not removed during construction activities. Upon completion of debris removal, the soils of the peninsula would be re-graded for planting of native wetland vegetation. The peninsula would be returned to a more natural habitat, which is considered a long-term, moderate, beneficial impact of the project. Additionally, if the NPS controls and/or confines vehicular traffic onto the East Site via the new haul road, this would allow the restoration of approximately 2 acres of additional wetlands (referred to as mudflats) that are currently not functioning as wetlands. Appropriate stormwater management techniques, including approved and Erosion and Sediment Controls and BMPs would be required to avoid any indirect impacts to existing wetlands during construction of this access road. Based upon the mitigation strategy discussed in Section 9, impacts to the existing wetlands are expected to be short-term and have a long-term, beneficial effect through rehabilitating and revegetating the peninsula to a more natural setting. The table below depicts the total impacts to NPS-defined wetlands as a result of this project:

Project	Wetland Name	Wetland Type	Acres Impacted
MREC Construction (boat dock)	W-1, Estuarine Mangrove	E2FO3	0.03
MREC Construction	W-5, Estuarine Emergent	E2US3	0.66
MREC Construction (boat dock)	Mangrove Lagoon	E1UBL	0.38
Hotel Demolition Activities	W-4 & W-5, Estuarine Emergent	E2EM/SS3 & E2US3	2.84
TOTAL WETLAND ACRES IMPACTED			3.91

8.2 Flood Risk of the Proposed Project Area - Floodplain zones, as mapped by FEMA, are located within the SARI site boundary. NPS has adopted guidelines pursuant to Executive Order 11998 stating that it is NPS policy to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. As stated previously, portions of the Proposed Action is located in a 100-year floodplain as mapped by FEMA (2007). All Federal agencies are required to avoid building in a 100-year floodplain unless no other practical alternative exists. NPS has adopted guidelines pursuant to Executive Order 11998 stating that it is NPS policy to restore and preserve natural floodplain values and avoid environmental impacts associated with the occupation and modification of floodplains. It goes on to require that, where practicable alternatives exist, Class I actions be avoided within a 100-year floodplain.

The existing, abandoned hotel structure is **not** located in the 100-yr floodplain; therefore, demolition of the hotel would occur outside of the 100-yr floodplain. Long-term positive impacts would be associated with restoring the site to a more natural setting, including restoring the floodplain from a partially impervious surface to a partially pervious surface. Additionally, the abandoned (and incompatible) hotel structure would be removed from the site, resulting in a long-term, moderate, beneficial impact to the surrounding floodplains. Activities associated with the proposed action would cause minor alterations to the floodway through the haul road and the parking area, but these activities would be built at grade and would not affect the floodplain. For the Preferred Action (East Site Alternative), water-dependent structures including the boat ramp, boat dock, boat moorings, and Wet Lab would be located in the 100-year floodplain resulting in long-term alterations to the floodplain. **These water-dependent structures would impact approximately 1 acre of the 100-year floodplain, or approximately 3 percent of the floodplain mapped at the East Site.** Facilities that are water-dependent were placed in the floodplain because no other practical alternative was available. The seawater pipeline, which is water-dependent, would also be located within and impact the 100-year floodplain. Impacts to the floodplain would not be expected to be adversely significant as a result of the pipeline. The pipeline would not interfere with the function of the floodplain.

The *Director's Order #77-2: Floodplain Management* does not apply to historic or archeological structures, sites, or artifacts whose location is integral to their significance or to certain actions as specifically identified in *Procedural Manual #77-2: Floodplain Management*. Portions of the SARI may fall into this category; however, all components of the Proposed Action were considered when assessing impacts to the 100-year floodplain.

NOAA collects oceanographic and meteorological data (historical and real-time) from stations on major waterbodies throughout the country. NOAA has specifically collected historical (limited) high/low water level values at Christiansted Harbor (Station 9751364), in the vicinity of SARI. A data review of the minimum and maximum station elevations for the gauge from March 2006 through September 2006 provides water elevations occurring at the location (Table 2). A review of the extreme values for the year 2006 show that all maximum values occurred either in July or September and that all minimum values occurred either in May or June. The maximum elevation value (ft) at the Christiansted Harbor station was 28.39 in July of 2006 and the minimum elevation value (ft) was 26.51 in May of 2006; this represents a maximum total elevation change in elevation of 1.88 ft in at the Christiansted Harbor station in the year 2006.

Table 2. Highest and Lowest Monthly Extremes (Highest and Lowest Values) for Station (9751364) Elevations in Christiansted Harbor

Month	Highest Elevation	Date	Lowest Elevation	Date
March	28.04	3/26/06	26.89	3/9/06
April	28.05	4/1/06	26.75	4/19/06
May	28.02	5/30/06	26.51	5/15/06
June	28.25	6/28/06	26.54	6/13/06
July	28.39	7/10/06	26.95	7/10/06
August	28.12	8/10/06	26.87	8/7/06
September	28.29	9/7/06	27.06	9/1/06

Source: NOAA 2006; Station data only available from 2/24/06 to 9/30/06.

9. MITIGATION MEASURES

The MREC Preferred Alternative (East Site Alternative) and the Proposed Action of demolishing the abandoned hotel structure both propose development and restoration within wetlands and the 100-year floodplain. Appropriate agencies (USACE and the USVI DPNR) have been notified and consulted on the proposed project to ensure compliance with applicable regulations; any required permits (404 permit) will be obtained from the USACE prior to the start of construction. In addition, during the entire construction process standard sediment and erosion control measures (Erosion Control Plan), such as silt fences and/or sand bags, BMPs, and stormwater management techniques would be used to minimize any potential soil erosion and to comply with both *Procedural Manual #77-1: Wetland Protection* and *Procedural Manual #77-2: Floodplain Management*. A Stormwater Pollution Prevention Plan (SWPPP) would be required and implemented prior to, during, and following ground-disturbing activities that is consistent with the Territorial Pollutant Discharge Elimination System (TPDES). Permeable paved surfaces would be used for the parking areas at the MREC and for the access road and parking lot at the abandoned hotel location to contribute to reducing stormwater runoff. Additionally, for the demolition of the hotel structure, it is recognized that the potential for negligible impacts to seagrasses along the shoreline areas of the East Site as a result of increased turbidity may occur, but significant impacts to marine wetlands, specifically seagrasses, are not anticipated as part of this project. Erosion and sediment controls, and BMPs would be employed during demolition and road construction/improvement activities to minimize impacts to Salt River Bay.

A detailed, stand-alone document describing the project phasing plan and the mitigation plan to compensate for wetland impacts has been drafted for use during construction activities; the section below summarizes the major objectives from this document.

9.1 Wetland Compensation Proposal - For the purposes of implementing Executive Order 11990, the NPS has determined that any area classified as wetland habitat according to the Cowardin (1979) is subject to *Director's Order #77-1: Wetland Protection* and the implementation procedures outlined in the *Procedural Manual #77-1: Wetland Protection*. *Director's Order #77-1* states that for new actions where impacts to wetlands cannot be avoided, proposals must include plans for compensatory mitigation that restore wetlands on NPS lands, where possible at a minimum acreage ratio of 1:1. Both a wetland mitigation plan and a wetland permit would be required for wetlands affected by this project. The wetland mitigation plan was based on impacts calculated from a conceptual design (footprint) of the Proposed Action and is therefore, the best conservative estimation of wetland impacts at this time. The wetland permit application, however, will be completed after a more detailed design of the proposed action is completed and available for use in preparing the permit documents. The mitigation plan for this project is two-fold: 1.) a mangrove wetland mitigation plan and 2.) an estuarine wetland mitigation plan. The mitigation is proposed to compensate for the impacts associated with both the construction of the MREC and the Hotel Demolition projects. The funding source for the proposed wetland mitigation will be the NPS.

Mangrove Wetland Mitigation Plan – The mangroves in the vicinity of Salt River Bay and along the Mangrove Lagoon were decimated due to intense winds as a result of Hurricane Hugo in 1989, which depleted portions of the old-growth mangrove forests. Additionally, the old growth mangrove forest within Sugar Bay was destroyed when St. Croix sustained a direct hit by the hurricane. In 1999, the St. Croix Environmental Association began a mangrove restoration project, which replanted 3.5 acres of the lost forest on the western side of Sugar Bay. The survival rate for restoration seedlings is estimated at 80%. Recent aerial photographs taken in 2000 indicate that naturally occurring and restoration mangroves now cover 29.7 acres or 54% of the 1988 forest.

Based upon these positive results from past restoration efforts, mangrove revegetation/enhancement is proposed as the mitigation strategy to offset the 0.03 acres of mangrove wetland impacts associated with the East Site Alternative. This estimation is a conservative because the fringe of mangroves at the site is approximately 12 ft deep and the boat dock is estimated at a maximum of 50 ft wide. A site survey of the total number of mature mangrove trees to be removed as a result of the boat dock was conducted by the NPS in January 2007. A maximum of 5 adult mangrove trees per 10 linear ft along the Mangrove Lagoon were observed, corresponding to 25 adult mangrove trees impacted as a result of the 50 ft wide boat dock proposed. Mangrove mitigation strategies were discussed and developed in consultation with the NPS and the USDA NRCS and would include mangrove transplantation with propagules (seedlings) to suitable locations along the south side of the peninsula (Figure 9). Specific locations for transplanted propagules will be determined through consultation with the USDA NRCS, the CZM, and other local experts to ensure best results for this project.



Figure 9. SARI Estuarine Wetland Mitigation Site and Mangrove Wetland Mitigation Site (on peninsula at East Site)

The specific ratio of mangrove revegetation was discussed with the USACE and was determined to be a 3:1 ratio (see Appendix C of the Environmental Assessment for phone conversation with the USACE). For each mature mangrove plant removed (approximately 25) as a result of the boat dock, three mangrove seedlings will be planted as mitigation (approximately 75). Red mangrove seedlings for the revegetation/enhancement plantings will be harvested from on-site, if possible. Based on a site visit by the NPS in January 2007, there are healthy numbers of red mangrove propagules under the existing mangroves for harvest and/or salvage before construction clearing begins; approximately 15 to 20 propagules per square meter were estimated. If this is not possible, red mangrove seedlings will be harvested from a local population in St. Croix, potentially from Green Key Marina Lagoon, Altoona Lagoon, or Kraus Lagoon. Red mangrove seedlings have been previously harvested from Kraus Lagoon and planted at Salt River Bay with success. The mangrove seedlings would be planted in the late summer/early fall season in the months of August, September, or October.

The mangrove planting methodology to be used is called the Riley encased methodology (REM), which has proven successful at SARI in the past. This method of mangrove seedling planting was developed for the purpose of establishing mangroves along high-energy shorelines where natural recruitment no longer occurs and where conventional planting methods are ineffective (Riley et. al 1999). Using this methodology, the individual seedlings are protected from the external environment within tubular encasements of PVC pipes. The PVC pipes provide protection from debris, wind and wave activity, and unintentional damage from human interaction. Previous restoration projects in the USVI and Puerto Rico have also shown that the PVC protects the seedlings from predators like crabs, and from wave action. The roots anchor themselves strongly within the encasement in the first three months of planting the seedlings, and prop roots may sprout in 24 months after planting has occurred (Riley 1999). The seedlings would be monitored on a quarterly basis by the NPS to quantify the success of the plantings. Similar to the Salt River Bay Mangrove Restoration Project, this project may utilize volunteers to plant the seedlings, including individuals from different organizations as well as students from local schools, such as NPS SARI Summer Youth Conservation Corp Program high school students. Based upon the mitigation strategy, impacts to the mangrove wetlands at SARI are expected to be partially offset by this plan. The NPS will monitor the transplanted propagules on a monthly basis to determine the success rate in one year's time from the date of planting. A long-term positive effect of revegetating the historically decimated shoreline of the Mangrove Lagoon with mangroves is anticipated.

Estuarine Wetland Mitigation Plan – The compensation proposal for the impacted 3.88 acres of estuarine emergent / scrub shrub wetlands (excluding mangrove wetlands but including open water in the Mangrove Lagoon) as a result of the MREC construction and the Hotel Demolition is wetland mitigation through wetland vegetation plantings and site rehabilitation on the peninsula at the East Site, owned by the NPS (Figure 9). Following the construction activities, the peninsula at the East Site will be returned to a more natural setting through plantings by the NPS and the USDA NRCS.

Prior to the debris removal and hotel demolition on the peninsula, stands or “islands” of existing wetland shrub species on the peninsula that are desirable and provide good habitat such as buttonwood (*Conocarpus erectus*), white manjack (*Cordia alba*), pink cedar (*Tabebuia heterophylla*), and seaside mahoe (*Thespesia populnea*) will be flagged to be avoided during these activities by representatives from the NPS and the USDA NRCS. These flagged groupings of shrub (and some tree) species will not be removed or impacted during the proposed project, but may be transplanted after the project is complete. In areas where these specimens are among the debris and abandoned construction materials, NPS will trim and cut these specimens prior to debris removal to reduce the amount of damage to the plants while the debris is removed. This will leave the stems and roots to regenerate after debris removal. The NPS will work with a licensed arborist after removal to salvage any damaged plants and improve their chances for survival. Certain types of debris (slabs and pilings) will be marked to be lifted out of the site versus dragged out to better protect plant roots and ground cover. Flagging and spray paint will be used to mark the preferred direction for construction materials to be moved away from plants. The NPS will have a representative on-site during the hotel demolition to ensure that precautions are taken to preserve the marked plants on the peninsula.

Following the debris removal and the hotel demolition in the non-flagged areas, the entire peninsula will be rehabilitated to a more natural setting. After materials have been removed, the NPS will work with a licensed

arborist to prune trees to maximize regrowth. Because desirable and mature wetland shrub species will be avoided, a ratio of 1:1 is proposed for this mitigation site. By avoiding these mature wetland shrub specimens, the functional loss of wetlands at this site can be partially avoided. A typical minimum compensation ratio for replacing a loss of wetland functions with restoration of degraded wetlands is 1:1. The conservative wetland loss as a result of the proposed MREC and the Hotel Demolition is estimated at 3.88 acres. Therefore, at a 1:1 replacement ratio, a minimum of 3.88 acres of wetlands would need to be reestablished/rehabilitated. However, because the entire peninsula will be rehabilitated and is approximately 7 acres, a ratio above 1:1 will be achieved at this site. Additionally, if vehicular traffic onto the East Site via the new access road will be confined, this would allow the restoration of approximately 2 acres of additional wetlands (referred to as mudflats) that are currently not functioning as wetlands.

The wetland mitigation and rehabilitation of the peninsula includes planting native herbaceous wetland plant species that currently exist on-site. After consultation with personnel from the USDA NRCS that are familiar with the peninsula site, it has been determined that grading, but no soil amendments prior to wetland planting will be required (O'Reilly 2006). Once the debris and hotel demolition is completed and all non-natural materials are removed from the peninsula, no fill will be needed and the location is expected to support hydrophytes naturally. The native wetland herbaceous forb species to be planted include saltmeadow cordgrass (*Spartina patens*), crabgrass (*Sporobolus virginicus*), and potentially beachgrass (*Distichlis spicata*). The wetland ground cover species sea purslane (*Sesuvium portulacastrum*) will also be planted at this site as well. These wetland species have been observed on-site and will be harvested from existing locations at the East Site, through the splitting of groupings. The type of herbaceous propagules used will be plugs and the distance between plantings will be dependent on the amount of funding and available plant materials.

Generally, transplant grids are specified that will provide uniform vegetative cover within one full growing season. For most emergent herbaceous plant species (including smooth cordgrass), transplanting on a 2 ft grid will achieve cover in one growing season (MES 2006). However, planting in patches, which has been recommended by NMFS and USFWS in order to create open areas for edge habitat or channel development, may also be specified (MES 2006). Additionally, seeds collected from on-site wetland shrub species, buttonwood, will be spread in the more interior portions of the peninsula. Water buffalos (250 to 500 gallons) will be provided on-site to water the new plantings as well as utilizing clean backpack sprayers.

The wetland plantings will occur along the shoreline of the peninsula to assist with shoreline stabilization. The more interior portions of the peninsula will be conserved as open areas with sparse vegetation (crabgrass, sea purslane, and some buttonwood) to attract the avian species, least tern. Least tern nesting currently occurs at the East Site, on Crescent Beach. Creating additional least tern nesting habitat at the East Site is desired by the NPS and the USFWS to provide new safe least tern nesting area for seasonal migrants. To avoid impacts to the least terns that currently nest at the site, the construction, demolition, and planting activities will be avoided during the active nesting season of April through June. Demolition and debris removal will occur in the early summer and planting at the site will commence in the fall, during September and October. This time of year for planting will ensure that the newly transplanted species will initially endure a rainy season at the mitigation site. The mitigation site is envisioned as a rehabilitated peninsula with groupings of mature wetland shrubs (and some trees) that were avoided during construction activities, a shoreline stabilized with herbaceous wetland forbs and ground covers, and more interior (inland) areas of sparse wetland vegetation that will attract and support least tern nesting. The time frame for full wetland functioning at the site is estimated at approximately two full seasons of wet/rainy weather following the plantings. Monitoring at the site to document success and least tern nesting will be conducted on a quarterly basis through quadrat sampling at designated locations determined by the NPS.

In addition to the rehabilitation of the peninsula, the restriction of visitor vehicular access in the vicinity of Wetland Area W-5 (mudflats fringing the Mangrove Lagoon behind the existing mangrove vegetation) may be authorized to promote the natural re-growth of wetland vegetation in this area. The area referred to as the mudflat has been badly damaged from uncontrolled off-road vehicles (ORVs) and 4x4 vehicle traffic. The area would be graded to allow for recruitment of salt flat species into the previously damaged area; the soil would be broken up to reduce compaction and allow for seed recruitment and better drainage during heavy rains. The

NPS and USDA NRCS would mark off “islands” of salt grass to be protected during the grading process, which would serve as sources of ground cover for the restoration. NPS would install a gate at both access points to the area and control vehicular traffic. The area would be allowed to recolonize naturally, unless funding becomes available for additional restoration and non-native invasive plant control. The NPS would begin the process to control the non-native, invasive species that now dominates portions of the mudflat with assistance from the NPS Exotic Plant Management Team (pending funding). However, it is expected that if left fallow, both crabgrass and sea purslane would recolonize in this location; the area would then constitute 2 acres of additional wetlands enhanced at the site, potentially achieving above the minimum 1:1 ratio of mitigation.

9.2 Floodplain Mitigation - The design of structures within the floodplain would incorporate methods for minimizing flood damage, as contained in the National Flood Insurance Program “*Floodplain Management Criteria for Flood-Prone Areas*” (CFR 44, 60.3) and in accordance with any state or county requirements for flood-prone areas.

Activities associated with the Preferred Alternative (East Site Alternative), or implementation of the MREC, would cause minor alterations to the floodway through the roadway improvements and the parking area. Appropriate stormwater management techniques, including approved BMPs, would be required to avoid any indirect impacts to floodplains during construction of this access road. However, these areas are already so compacted by current visitor and vehicle use that creating a pervious surface may improve the area and would minimize any impacts to the existing floodplain. As mitigation, the MREC and all associated buildings were purposely placed outside of the 100-year floodplain to avoid impacts to the floodplain due to these facilities. Facilities that are water-dependent structures, including the boat dock and wet lab/scuba room, were placed in the floodplain because no other viable alternative was available. Water-dependent structures such as the wet lab have been placed on pilings to raise the structures above the floodplain to allow the areas to continue to function as floodplains. For the boat dock, a floating boat dock system would be constructed since it minimizes impacts to the floodplain. For the abandoned hotel demolition, restoring this site to a more natural setting, from an impervious surface to a pervious surface would improve the floodplain function surrounding this area.

10. SUMMARY

The purpose of this project is two-fold and includes: 1.) the implementation and reestablishment of a proposed MREC at SARI and 2.) demolishing and removing the abandoned hotel structure to alleviate the safety/environmental concerns and restore the peninsula through revegetation of native plant species to return the area to a more natural condition.

The total wetland acres impacted by the project will be 3.91 acres (0.03 mangrove acres and 3.88 acres of estuarine emergent). Mangrove revegetation/enhancement is proposed to offset 0.03 acre of mangrove wetland impacts. For each mature mangrove plant removed (approximately 25) as a result of the boat dock, three mangrove seedlings will be planted as mitigation (approximately 75). The compensation for the impacted 3.88 acres of estuarine emergent/scrub shrub wetlands (excluding mangrove wetlands but including open water in the Mangrove Lagoon) is the restoration of a maximum of 7 to 9 acres of wetland habitat on the peninsula.

Construction of the MREC - Preferred Alternative (East Site) — Minor impacts to floodplains would occur due to proposed activities associated with the Preferred Alternative (East Site) relating to the construction of water-dependent structures (i.e., boat dock, wet lab, sea water pipeline), which would be located in the 100-yr floodplain. Approximately 1 acre of the 100-year floodplain would be adversely affected by the MREC. Minor, adverse impacts to mangroves and NPS-defined wetlands are anticipated from the MREC. Approximately 1.07 total acres of NPS-defined wetlands (includes mangroves and open water from boat dock) would be impacted by activities associated with the MREC. As a result of the Federal (USACE) wetlands impacted by the proposed MREC and associated structures including a new boat dock, and maintenance dredging activities, a Section 404 Permit would be required, and therefore, a *Joint Application for Environmental Resource Permit/Authorization to use State Owned Submerged Lands/Federal Dredge and Fill Permit* would be completed and submitted to both USACE and the VIDPNR. The permit would be submitted prior to the initiation of any construction or dredging activities. The acreage of wetlands impacted and the mitigation plan proposed in this SOF for the loss

of Federal forested mangrove wetlands would be included in the joint application as a requirement of the Section 404 Permit. Because mangrove mitigation has been previously discussed with the USACE for this project, the mitigation included in the Federal (USACE) permit is expected to be the same as the mitigation proposed in this SOF.

Abandoned Hotel Demolition – No direct impacts would occur to floodplains related to the actual demolition of the abandoned hotel, as the hotel is located outside of the 100-year floodplain. However, minor, adverse impacts to floodplains would occur due to proposed activities associated with the demolition of the hotel, such as impacts from the roadway to be located around the Mangrove Lagoon, which is located in the 100-yr floodplain. Construction of the Haul Road would not impact the 100-year floodplain. The Haul Road closely follows the park boundary avoiding encroachment into the floodplain. Appropriate stormwater management techniques, including approved BMPs, would be required to avoid any indirect impacts to the floodplain during demolition of the hotel and construction of the Haul Road. Approximately 7.10 acres of the 100-year floodplain are proposed for the restoration of the peninsula on the East Site. Long-term, moderate positive impacts would occur because impervious surfaces, such as the abandoned hotel and concrete debris, would be removed and replaced with pervious surfaces and the area would be naturally revegetated. These activities would ultimately improve the area and allow the disturbed areas to function as a floodplain. Approximately 2.84 total acres of NPS-defined estuarine wetlands would be impacted by activities associated with the hotel demolition, including roadway improvement activities and the removal of debris on the peninsula. Mitigation would include restoring the removed vegetation with wetland vegetation at a minimum ratio of 1:1. Additionally, it is recognized that the potential for negligible impacts to seagrasses along the shoreline areas of the East Site as a result of increased turbidity may occur, but significant impacts to marine wetlands, specifically seagrasses, are not anticipated as part of this project. Erosion and sediment controls, and BMPs would be employed during demolition and road construction/improvement activities to minimize impacts to Salt River Bay.

Conclusion – The Proposed Action would occur within NPS-defined wetlands and within floodplains as defined by FEMA (2007). Approximately 3.91 total acres of wetlands would be impacted by the Preferred Alternative (East Site) and the Proposed Action (Hotel Demolition). However, because the entire peninsula will be restored, approximately 7 acres of wetlands will be restored/enhanced and the NPS will control vehicular traffic onto the East Site which will result in the restoration of approximately 2 acres of additional wetlands (referred to as mudflats) that are currently degraded. It is possible that a net gain of wetlands at the East Site, following all mitigation activities, could occur. In addition, other wetland areas in the vicinity of the MREC and peninsula such as the salt pond and surrounding mangroves, the shoreline wetland areas such as Crescent Beach, and the majority of the mangroves surrounding the Mangrove Lagoon will not be impacted by the proposed projects.

For the Proposed Action, the demolition of the abandoned hotel structure would result in a long-term, moderate, beneficial impact to the surrounding floodplain on the peninsula. For the Preferred Action (East Site Alternative), water-dependent structures including the boat ramp, boat dock, boat moorings, and wet lab would be located in the 100-year floodplain. These water-dependent structures would impact approximately 1 acre of the 100-year floodplain, or approximately 3 percent of the floodplain mapped at the East Site. Facilities that are water-dependent were placed in the floodplain because no other practical alternative was available.

These projects would not significantly alter wetland systems, would not significantly alter floodplain attributes, or increase potential flooding risks to human safety or property damage. The overall hydrology of Salt River Bay is not expected to change as a result of the proposed action. In addition, flood elevations are not expected to change as a result of the Proposed Action. The proposed action would, therefore, constitute a negligible impact to the floodplain. The NPS finds the Proposed Action to be acceptable under Executive Order 11988 for the protection of floodplains. In addition, the Proposed Action would not constitute a significant impact to wetlands and would be partially offset by the wetland compensation proposed. Based upon the mitigation strategy proposed, impacts to the existing wetlands are expected to be short-term and have a long-term positive effect through rehabilitating the peninsula to a more natural setting. The NPS therefore finds that the proposed action, as stipulated, is consistent with Executive Order 11990 and the policies and procedures found in *Director's Order #77-1* and *Procedural Manual #77-1*.

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APPENDIX E

**COASTAL ZONE CONSISTENCY
DETERMINATION**



IN REPLY REFER TO:

United States Department of the Interior



National Park Service
Christiansted National Historic Site
Buck Island Reef National Monument
Salt River Bay Historical Park and Ecological Preserve
2100 Church Street #100
St. Croix, Virgin Islands 00820
(340) 773-1460

June 4, 2008

Janice Hodge
Director
Coastal Zone Management
45 Mars Hill
Frederiksted, VI 00840

Subject: Federal Consistency Determination for Abandoned Hotel Demolition at Salt River Bay National Historical Park and Ecological Preserve

Dear Ms. Hodge,

As previously stated in an agency coordination letter dated July 2006, the National Park Service prepared an Environmental Assessment (EA) for the above referenced project located at Salt River Bay National Historical Park and Ecological Preserve (SARI), St. Croix, U.S. Virgin Islands. The EA was prepared in accordance with the U.S. Department of the Interior National Park Service National Environmental Policy Act guidance (Director's Order 12). The proposed action includes the demolition of an abandoned hotel structure located on the east side of Salt River Bay. This hotel structure was part of a development project started in the late 1960s that was never completed. The structure is deteriorating and presents safety and environmental concerns for the park. The park proposes to remove the entire structure, reuse and recycle as much of the materials as possible, and return the site to a more natural condition.

The Proposed Action is located in Tier 1 of the Coastal Zone and constitutes as a Federal Agency Activity, as defined in Section 902-2 in the VICZM Act. Therefore, this Federal Consistency Determination was completed, as required by Section 904-7 of the VICZM Act. In addition, to comply with the VICZMP, the NPS was required to initiate preliminary consultation with the USVI DPNR/Division of Coastal Zone Management (DCZM) in the form of a preliminary meeting to discuss the proposed project. The preliminary meeting occurred on August 21, 2006 and a list of attendees is presented in Appendix C of the EA. The NPS proposes that this project will be conducted in a manner consistent, to the maximum extent practicable, with the Virgin Islands Coastal Zone Management Program (VICZMP).

Details of the Proposed Action, Alternatives Analysis, Existing Conditions, Environmental Consequences, Cumulative Impacts, Mitigation, Environmental Commitments, Regulatory Compliance, and Agency and Public Consultation are included in detail in the attached EA for this project and sections are referenced throughout this letter. Although the EA includes two projects (construction of a Marine Research and Educational Center and the demolition of the abandoned hotel structure), the NPS is only applying for Federal Consistency with the VICZMP at this time for the demolition of the abandoned hotel structure and associated actions (Proposed





IN REPLY REFER TO:

United States Department of the Interior



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Action). This letter serves as the Consistency Determination for the NPS and includes the following, as required by Section 904-7(8) of the VICZM Act:

- (a) As part of the proposed action, the NPS proposes to demolish the existing partially constructed hotel structure and return the site to a more natural, vegetated setting. The EA provides more details and relevant technical data, including tables and figures applicable to the project. The Proposed Action includes the following projects:
- 1) Construct a haul-out road for equipment access and removal of debris.
 - 2) Mechanically demolish the abandoned hotel structure.
 - 3) Following demolition, all materials would be removed from the site (including areas on the peninsula adjacent to the hotel site) via the haul-out road. The NPS proposes to reuse and recycle as much of the material as possible.
 - 4) The haul-out road would be converted into a low traffic permeable surface service road and terminate at a small parking area for park use only.
 - 5) The site would be rehabilitated, revegetated, and returned to a more natural condition.
- (b) The project and its effects are consistent to the maximum extent possible with the goals of the VICZM Act [Section 903(b)]. Specifically, the following goals are applicable to this project:
- 1) The overall quality of the environment in the coastal zone at SARI will be restored through revegetation and habitat improvement on the peninsula on the east side of the park following the demolition of the abandoned hotel and removal of construction materials. Approximately 7.10 acres of permanently improved habitat would be created in the coastal zone as a result of the Proposed Action, and non-native invasive plant species would be targeted for removal. This improvement in existing habitat is a long-term, moderate, beneficial impact.
 - 2) Because the abandoned hotel structure is currently located in Tier 1 of the coastal zone, coastal-dependent development (in the form of demolition, removal of debris, and rehabilitation) associated with the Proposed Action in the coastal zone will occur.
 - 3) The orderly, balanced utilization and conservation of the resources of the coastal zone were considered as will the social and economic needs of the residents of the Virgin Islands (See Section 5.9.2 of the EA). The Proposed Action would remove the deteriorating abandoned hotel structure that poses a safety hazard for the public. See Section 5.9.6 Energy Requirements and Conservation in the EA for more details.
 - 4) As a result of the Proposed Action, SARI will continue to be preserved, protected, and maintained as parkland to promote the general welfare of the people of the Virgin Islands.



IN REPLY REFER TO:

United States Department of the Interior



National Park Service
Christiansted National Historic Site
Buck Island Reef National Monument
Salt River Bay Historical Park and Ecological Preserve
2100 Church Street #100
St. Croix, Virgin Islands 00820
(340) 773-1460

- 5) The Proposed Action will ensure that the public, individually and collectively, has and shall continue to have the right to use, and enjoy the shorelines of SARI, as appropriate, and to maximize public access to and along the shorelines consistent with the protected rights of private property owners.
 - 6) As a result of the Proposed Action, ecologically significant resource areas will continue to be conserved for their contribution to marine productivity and valuable wildlife habitats, and the function and integrity of reefs, marine meadows, salt ponds, mangroves and other significant natural areas will also continue to be preserved.
 - 7) The Proposed Action will maintain water quality through control of erosion and sedimentation run-off, improve/restore watershed drainage into the large salt pond on the east side of the park and Triton Bay, and control siltation during all construction activities. As stated in Section 5.2.1, an Erosion Control Plan and a stormwater pollution prevention plan (SWPPP) would be required and implemented prior to, during, and following ground-disturbing activities.
- (c) A detailed assessment of the probable effects of the proposed activity and its associated facilities on the VICZMP was analyzed in Section 5.3.3 of the EA. Short-term, minor adverse impacts to the coastal zone are anticipated during the construction activities. However, the abandoned hotel structure would be removed from the coastal zone, and would result in a long-term, moderate, beneficial impact to the coastal zone.
- (d) The proposed activity is consistent, to the maximum extent practicable, with the VICZMP and will be conducted in a manner consistent with such program.

Sincerely,

Joel A. Tutein
Superintendent

Enclosures

cc: S. Wright, NPS



APPENDIX F

PUBLIC INVOLVEMENT

APPENDIX F-1

**NEWSLETTER DISTRIBUTION LIST,
NEWSLETTER, AND NEWS RELEASE OF
PROPOSED PROJECTS**

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The Honorable Charles Turnbull		1105 King Street Gov't House Christiansted	St. Croix	VI	00820
Mr. Gregory Francis	Office of the Governor	1105 King Street Gov't House Christiansted	St. Croix	VI	00820
The Honorable Vargrave Richards		1105 King Street Gov't House Christiansted	St. Croix	VI	00820
Brinsley Burbidge	St. George Village Botanical Garden of St. Croix	127 Est St. George Frederiksted	St. Croix	VI	00840
The Honorable Gail Norton		1849 C Street, NW, MS 7229	Washington	DC	20240
Sinclair Williams	Housing, Parks & Recreation	3000 LBJ Gardens	Christiansted	VI	00820
Mr. Frank Fox	St. Croix Chamber of Commerce	3009 Orange Grove #12 Christiansted	St. Croix	VI	00820
Mr. Freddy Morales	U.S. District Court	3013 Golden Rock Christiansted	St. Croix	VI	00820
The Honorable George W. Cannon, Jr.	U.S. Magistrate Judge	3013 Golden Rock Christiansted	St. Croix	VI	00820
The Honorable Ramond Finch	U.S. District Court	3013 Golden Rock Christiansted	St. Croix	VI	00820
Richard Gideon	The Nature Conservancy	3052 Estate Princess, P.O. Box 1066 Christiansted	St. Croix	VI	00820
Stefanie Wear	The Nature Conservancy	3052 Estate Princess, P.O. Box 1066 Christiansted	St. Croix	VI	00820
Ferdinand Abraham	Ferdi's Forest	4008 Dolby Hill Rd Christiansted	St. Croix	VI	00820-5100
Major General Cleave A. McBean	Virgin Islands National Guard	4031 La Grande Princesse Christiansted	St. Croix	VI	00820-4353
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Peter Carbon	Anti Litter and Beautification Greenhouse Program	45 King Street Christiansted	St. Croix	VI	00820-4909

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Doug McNair	VI Department of Planning & Natural Resources Division of Fish & Wildlife	45 Mars Hill Frederiksted	St. Croix	VI	00846
Ursula Anlauf	VI Department of Planning & Natural Resources Coastal Zone Management	45 Mars Hill Frederiksted	St. Croix	VI	00846
Violeta Villanueva-Mayor	VI Department of Planning & Natural Resources Water Pollution Control Program-Ambient Monitoring	45 Mars Hill Frederiksted	St. Croix	VI	00846
William Coles	VI Department of Planning & Natural Resources Division of Fish & Wildlife	45 Mars Hill Frederiksted	St. Croix	VI	00846
Ms. Lenora Haynes	USDA Natural Resource Center	5030 Anchor Way, Suite 2 Christiansted	St. Croix	VI	00820
Mr. Rudy O'Reilly	USDA - Natural Resources Conservation Service	5030 Anchor Way, Suite 2 Gallows Bay, Christiansted	St. Croix	VI	00820-4692
Valimy Thomas	United Sporting Goods	6 AB West Lane Christiansted	St. Croix	VI	00820
Jan Allanach		60 Water Island St. Thomas, VI 00802	St. Thomas	VI	00802
Wayne Callwood	Dept of Public Works	6002 Est Annas Hope Christiansted	St. Croix	VI	00820
Barbara Kojis	VI Department of Planning & Natural Resources Division of Fish & Wildlife	6291 Estate Nazareth 101	St. Thomas	VI	00802
Judy Pierce	VI Department of Planning & Natural Resources Division of Fish & Wildlife	6291 Estate Nazareth 101	St. Thomas	VI	00802
Bruce Potter	Island Resources Foundation	6292 Estate Nazareth #100	St. Thomas	VI	00802
Ed Towle	Island Resources Foundation	6292 Estate Nazareth #100	St. Thomas	VI	00802
Carey Murcurio		6-3-113 Upper Carolina	St. John	VI	00830
Jackie Newberger	Bryan's Plants&Garden Supplies	7945 Estate Dorothea 3-C St. Thomas, VI 00802	St. Thomas	VI	00802
Mr. William Turner	St. Croix Environmental Association	Arawak Bld., Suite #3 Christiansted, VI 00820 Christiansted	St. Croix	VI	00820
Carol Cramer-Burke	St. Croix Environmental Association VI Releaf Project	Arawak Bldg, Suite 3 Gallows Bay	St. Croix	VI	00820
James Oland	DOI - U S Fish & Wildlife Service Ecological Services	Boqueron Field Office, P. O. Box 491	Boqueron	Puerto Rico	00622
Jorge york	DOI - U S Fish & Wildlife Service Ecological Services	Boqueron Field Office, P. O. Box 491	Boqueron	Puerto Rico	00622
Mr. Nicholas Drayton	The Ocean Conservancy Center for Marine Conservation	Box 667, Richmond Christiansted	St. Croix	VI	00821-00667
Ms. Claudette Lewis	St. Croix Historic Preservation Commission Department of Planning and Natural Resources	Cyril E. King Airport, Terminal Bld, 2nd Floor	St. Thomas	VI	00802
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Errol Chichester	VI Dept of Agriculture	Estate Lower Love	Kingshill	VI	00850
Stafford Crossman	VI Dept of Agriculture	Estate Lower Love	Kingshill	VI	00850
Mr. Don Ceiner	Christiansted Retail and Restaurant Association	P.O. 223013 Christiansted	St. Croix	VI	00820

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Mr. John Demo	Christiansted Retail and Restaurant Association	P.O. 223013 Christiansted	St. Croix	VI	00820
Mr. John Macy	Big Beard Adventure Tours	P.O. 4534 Christiansted	St. Croix	VI	00820
Marcia Taylor	University of the Virgin Islands Virgin Island Marine Advisory Service	P.O. Box 10,000	Kingshill	VI	00850
Mr. Robert Weery	Nature Conservancy, V.I. Program Eastern Caribbean Program Office	3052 Estate Little Princess Christiansted	St. Croix	VI	00820
Mr. Bruce E. Tilden	Fort Frederick Museum	P.O. Box 2082	Frederiksted	VI	00841
Mrs. Marianne Hazelwood	Hotel on the Cay	P.O. Box 223329 Christiansted	St. Croix	VI	00822
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Mr. Larry Angus	St. Croix Marine, Inc.	P.O. Box 24730, GBS Christiansted	St. Croix	VI	00824
Ms. Elizabeth Armstrong	The Buccaneer Hotel	P.O. Box 25200, GBS Christiansted	St. Croix	VI	00824
Mr. Carl Punzenberger	Dragon Fly	P.O. Box 25273, GBS Christiansted	St. Croix	VI	00824
Mr. Heinz Punzenberger	Teroro Charter	P.O. Box 25273, GBS Christiansted	St. Croix	VI	00824
Mr. Clyde Henry	Clyde Inc.	P.O. Box 25690, GBS Christiansted	St. Croix	VI	00824
Joel D Gumbs		P.O. Box 25932 Christiansted	St. Croix	VI	00824
Ms. Mary Mingus	Women's Coalition of St. Croix	P.O. Box 2734 Christiansted	St. Croix	VI	00822
Ms. Clema Lewis	Women's Coalition of St. Croix	P.O. Box 2734 Christiansted	St. Croix	VI	00822
Mr. Lwellyn Westerman	Charis	P.O. Box 2908 Christiansted	St. Croix	VI	00821
Mr. and Mrs. Edward P. York		P.O. Box 345 Christiansted	St. Croix	VI	00821
Michael Farrell		P.O. Box 3538 Christiansted	St. Croix	VI	00822
Michelle Pugh	Diverse VI Inc/ St. Croix Association of Dive Operators	P.O. Box 4254 Christiansted	St. Croix	VI	00822
Gary Briggs	Cruzan Gardens	P.O. Box 430 Christiansted	St. Croix	VI	00821-0430
Mr. Carlos Zennon	Zennon Construction	P.O. Box 5440	Sunny Isles	VI	00823
The Honorable Donna Christian-Christensen		P.O. Box 5980	Sunny Isles	VI	00823
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Mr. and Mrs. Arnold M. Golden		P.O. Box 6752	Sunny Isles	VI	00823
The Honorable Maria Cabret	Territorial Court of the Virgin Islands	P.O. Box 929 Christiansted	St. Croix	VI	00821-0929
Joe Samuel		PO Box 241	Frederiksted	VI	00841
	Shady Lane Nursery	PO Box 24656	St. Croix	VI	00824
Wendy Ramos	West Indies Landscaping	PO Box 2922	Frederiksted	VI	00841
Dennis A. Richardson		PO Box 6100	St. Thomas	VI	00803
Jeff Keularts	University of the Virgin Islands	RR#2, Box 10,000 Kingshill	St. Croix	VI	00850
Olassee Davis	University of the Virgin Islands Cooperative Extension Service	RR#2, Box 10,000 Kingshill	St. Croix	VI	00850
Mr. Roger Dewey	St. Croix Foundation	Suite 201, Chandler Wharf Gallows Bay		VI	00820

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Mr. Michael Evans	DOI - U S Fish & Wildlife Service Sandy Point NWR	U. S. Federal Building, 3013 Golden Rock	St. Croix	VI	00820-4355
Ricardo Simons	USDA - Plant Protection and Quarantine	USCustoms and Border Protection RR#2-9922 Henry Rohlsen Airport	Fredriksted	VI	00850-9702
Roy E. Adams	Salt River Advisory Commission	5024 Green Cay	Christiansted	VI	00820-4554
Jose Alvarez	High Intensity Drug Trafficking Areas Virgin Islands/Puerto Rico	P.O. Box 36-6264	San Juan	PR	00936-6264
Mr. David Atkinson	U.S. Department of Justice	1108 King Street, Suite 201	Christiansted	VI	00820-4951
Ms. Wanda Belaval	Eastern National	P.O. Box 9021848	Old San Juan	PR	00901
Mr. Jerris T. Browne	Department of Public Safety	Patrick Sweeney Headquarters, RR-02 Kingshill	St. Croix	VI	00850
James Casey	U.S. Environmental Protection Agency, Virgin Islands Coordinator's Office	The Tunick Building 1336 Beltjen Road, Suite 102	St. Thomas	VI	00802
Rev. Winston G. Chase	Friedensthal Moravian Church	P.O. Box 729	Christiansted	VI	00821
Mr. Carl Christensen	Small Business Administration	Sunny Isles Professional Bld. Ste 5 & 6	St. Croix	VI	00823
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Mr. Michael Clarke	Federal Bureau of Investigation	Al Cohen Plaza, #6 Rapune Hill, Bld. 1. Suite 104	St. Thomas	VI	00802
Mr. Pablo Cruz	U.S. Forest Service Forest Supervisor	HC-1, Box 13490	Rio Grande	PR	00745-9625
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Art Frederick	Virgin Islands National Park, Coral Reef National Monument	1300 Cruz Bay Creek	St. John	VI	00830
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Paul Hartwig	San Juan National Historic Site, Fort San Cristobal	Norzagaray Street 501	Old San Juan	PR	00901-2094
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Mr. Terrence Joseph	Salt River Advisory Commission	P.O. Box 4501	Christiansted	VI	00822-4501
Mr. John King	Virgin Islands National Park	1300 Cruz Bay Creek	St. John	VI	00831
Gerville Larsen	Salt River Advisory Commission	20A Queen Street	Christiansted	VI	00820
Claudia Lombard	USFWS	Federal Building 3013 Estate Golden Rock	St. Croix	VI	00822
Hon. Fran Mainella	National Park Service	1849 C Street NW	Washington	DC	20240

Name	Company	Address	City	State	Zip
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Ms. Judy Schaeffer	Virgin Islands National Park	1300 Cruz Bay Creek	St. John	VI	00831
Jessie K. Thomson	Salt River Advisory Commission	P.O. Box 456	Frederiksted, St. Croix	VI	00841
Keith William	U.S. Immigration	P.O. Box 1468	Kingshill	VI	00851
Maxwell D. Macintosh Esq.	Salt River Advisory Commission	P.O. Box 1613	Christiansted	VI	00821-1613
	LICA Holding Corp.	P.O. Box 1546	Kingshill	VI	00851
Thimas Nicolosi		526 Yetman Ave.	Staten Island	NY	10307
Joel Tutein	National Park Service	2100 Church St.	Christiansted	St. Croix	00820
Danuta and James Jurak		2804 Regal Road Suite 100	Planto	TX	75075
Steven and Nora Francis		5781 N. 78th Pl.	Scottsdale	AZ	85250
Charles Dexter		1501 Main St.	Concord	MA	01742
Daniel T. McKenna		757 S.E. 17th St. PMB	Ft. Lauderdale	FL	33316
Janet Fender		3735 Mill Creek Rd.	Hockessin	DE	19707
Mark Wiederkehr		200 Wesleyan Ave.	Albany	GA	31721
Norman Quinn & Barbara Kojis		P.O. Box 305874	St. Thomas	VI	00804
Tracy Lynch Bhola		P.O. Box 3587	Kingshill	VI	00851
Kirsten Olsen		13-A Algonquin Lane	Stratford	CT	06614
Mark & Wendy Turloff		4770 Bayview Dr. Apt. 209	Ft. Lauderdale	FL	33308-5328
Capt. & Mrs. Gordon MacDonald		Isla San Miguel 340 Harbour Dr. #73	Humacao	PR	00791
Christopher & Marie Arndt		P.O. Box 4325	San Clemente	CA	92674
Adele and John Burkhart		PMB 153, 4093 Diamond Ruby	Christiansted	VI	00820
Frances & David Hennessey		P.O. Box 1411	Gloucester	MA	01030
Paul & Nancy Silverberg		152 Linden Lane	Princeton	NJ	08540
	Guava Investments LLC	600 South Cherry St. Suite 920	Denver	CO	80246
Paul & Jean Lange		4588 Sunshine Canyon Dr.	Boulder	CO	80302
John & Anna Moore		11 St. Andrus Ct. Thornhill	Ontario	Canada	L3T2N3
Tom and Shirley Ziegler		250 Hops Hill Rd.	Glasgow	VA	24555
Kevin and Kelly Culp		9017 Salt River	Christiansted	VI	00820

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Dr. Daniel & Annie Johnston		PR#1 Box 6814	Kingshill	VI	00850
Emil Gundelach		P.O. Box 2564	Kingshill	VI	00851
David Wyrzykowski & Laurie L. Dunton		P.O. Box 5588	Christiansted	VI	00823
Jacqueline Bunn		188 Cherry Valley Rd.	Princeton	NJ	08540
Janet & Roger Rothwell		3993 Courthouse Rd.	Palmyna	VA	22963
Cathy & Gary Mares		9585 Estate Cottage	Christiansted	VI	00820
Emy Thomas		9003 Salt River	Christiansted	VI	00820
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Holly & Russel Herold		P.O. Box 24344	Christiansted	VI	00824
Christina Anderson		5018 Tipperary, Lot 45	Christiansted	VI	00820
Robert Armstrong	The Buccaneer Hotel	P.O. Box 25200, GBS	Christiansted	VI	00824
Julie Beberman	US District Courts	3010 Estate Golden Rock	St. Croix	VI	00822
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Alberto Bruno-Vega	Virgin Islands Water and Power Authority	P.O. Box 1450	St. Thomas	VI	804
Lt. Robert Campbell	RIO St. Croix, U.S. Coast Guard	P.O. Box 223026	Christiansted	VI	00822
Reuben Canton		P.O. Box 25775	Christiansted	VI	00824
Reuben Canton		PO Box 3253	St. Croix	VI	00822
Mr. Don Ciener	Christiansted Retail and Restaurant Assn.	P.O. 223013	Christiansted	VI	00822
Pamela Clausen	St. Croix Board of Realtors	3009 Orange Grove Shopping Center #13	St. Croix	VI	00820- 4313
Susan Curtis		45 Mars Hill	F'Sted	VI	00840
Douglas DeReu		P.O. Box 24380	Christiansted	VI	00824
Mr. Roger Dewey	St. Croix Foundation	Suite 201, Chandler Wharf	Gallows Bay	VI	00820
John Ellis		Box 24492	Christiansted	VI	00824
Emilio Estevez	Department of Homeland Security - Transportation Security Administration	Cyril E. King Airport 8100 Lindberg Bay, Second Floor	St. Thomas	VI	00802
Carlos Farchette		24651 GBS	Christiansted	VI	00824
Luis Flores		P.O. Box 772 Kingshill Post Office	St. Croix	USVI	00851
Robin Freeman		5029 Green Cay	Christiansted	VI	00820
Kwame Garcia	University of the Virgin Islands, Cooperative Extension Service	#2 John Brewers Bay, Charlotte Amalie	St. Thomas	VI	00802
John Graff		PO Box 5998	Christiansted, St. Croix	VI	00823
Nancy Graff		PO Box 5998	Christiansted, St. Croix	VI	00823
Hollis Griffin	Department of Planning & Natural Resources, Division of Environmental Protection	#45 Mars Hill	Frederiksted, St. Croix	VI	00840
Earl Haase		5024 Cotton Valley	Christiansted	VI	00820

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Janet Hagbloom		9556 Estate Cottage	C;sted	VI	00820
Ms. Gay Haines		P.O. Box 2119	Kingshill	VI	00851
Chris hanley		52 King Street	Christiansted	VI	00820
Elroy D. Harrison		102 Hermon Hill	St.Croix	VI	
Joe Hollins	Tip Top Construction	5064 Mount Welcome	Christiansted	VI	00820-4672
Mr. and Mrs. Troy Holloway		P.O. Box 1509	Christiansted	VI	00821
The Hon. G. Luz James		1105 King Street Gov't House	Christiansted	VI	00821
Mr. Orville Kean	University of the Virgin Islands	#2 John Brewers Bay, Charlotte Amalie	St. Thomas	VI	00802
Melissa Keys		1102 Strand Street	Christiansted	VI	
Conrad Knowles		P.O. Box 1059 45 Mars Hill	Frederiksted	VI	00841
Toni Lance		P.O. Box 755	Christiansted	VI	00821
David Mapp	Virgin Islands Port Authority	PO Box 1134	Christiansted, St. Croix	USVI	00821
Gerson N. Martinez		P.O. Box 5254	Kings Hill	VI	00851
Elleton Maynard		P.O. Box 7932	Sunny Isles, St. Croix	VI	00823
Mrs. Robert McAuliffe		P.O. Box 1599	Christiansted, St. Croix	VI	00821
Maj. Gen. Cleave A. McBean	Virgin Islands National Guard	4031 La Grande Princesse	Christiansted	VI	00820-4353
Karen McCoy		PO Box 222908	Christiansted, St. Croix	VI	00822
Mary Mingus	Women's Coalition of St. Croix	P.O. Box 2734	Christiansted	VI	00822
Mr. Wilfredo F. Morales	U.S. District Court	3013 Golden Rock	Christiansted, St. Croix	VI	00820
Walter Lee Morris		PO Box 513	Christiansted, St. Croix	VI	00820
Jim Nealon		P.O. Box 2477	Christiansted	VI	00824
Michelle Pagh		PO Box 4254	Christiansted, St. Croix	USVI	00824
Mr. and Mrs. Leif Petersen		6077 Queste Verde	Christiansted	VI	00820
Mr. and Mrs. Jeffrey Prosser		P.O. Box 1730	Christiansted	VI	00821
Hon. Jeffrey Resnick	U.S. District Court	3013 Golden Rock	Christiansted, St. Croix	VI	00820
Roger Richard		P.O. Box 25930	Christiansted	VI	00824
Lucia Roberts	DPNR, Environmental Enforcement Division	Cyril E. King Airport 2nd Floor, Terminal	St. Thomas	VI	00802
Miguel Rolon	Caribbean Fishery Management Council	268 Ave. Munoz Rivera, Suite 1108	San Juan	PR	00918-2577
Mrs. Anne S. Rymsha	Rotary of St. Croix	4018 Judith's Fancy	Christiansted	VI	00820
Chris Schreiber		9013 Estate hope	Christiansted	VI	00820
Margarita Hutchinson and Dan Odell	Birds of Paradise	4027 Hermon Hill	Christiansted	USVI	00820

Name	Company	Address	City	State	Zip
Mark A. Sperber		PO Box 223045	Christiansted, St. Croix	VI	00802
Karen Stanton	St. Corix Yacht Club	5100 Teague Bay	Christiansted, St. Croix	VI	00820
Richard Starr		P.O. Box 24907	St.Croix	VI	00824
Cpt. Jeremy Swan	Department of Public Safety	Patrick Sweeney Headquarters, RR-02 Kingshill	St. Croix	VI	00850
Sandra R. Tate	Island Resource Foundation	Estate Nazareth #100	St. Thomas	VI	802
Edwards E. Thomas	West Indian Company Limited	P.O. Box 7660	St. Thomas	VI	801
Toby Tobias		45 Mars Hill	Frederiksted	VI	00841
Hon. Charles Turnbull	Office of the Governor	1105 King Street Gov't House	Christiansted	VI	00820
Karen Ulrich		PO Box 24147	St. Croix	VI	00824
Bryant Updyke		4696 Kingshill	St. Croix	USVI	
Michael Ward		PO Box 26212	St.Croix	VI	00824
Dave Watterson		9301 Estate Blessing	Christiansted	VI	00820
Christian/Debra Webster		PO Box 1485	St.Croix	VI	00851
MichaelD. Westerman		P.O. Box 222903	St. Croix	VI	00822
Ingloré Westerman		PO Box 24742	St.Croix	VI	00824
JamesE. White		PO Box 24846	St.Croix	VI	00824
Ms. Barbara Wilhelm		16550 Sambrosa Place	San Diego	CA	92128
Greg Willock		P.O. Box 67	Christansted	VI	00820
Arnold Woodly		PO Box 7827	St.Croix	VI	00823
Kin Zehender		5072 Flamboyant Welcome	Christinasted, St. Croix	VI	00820
	Department of Housing, Parks and Recreation	LBJ Gardens	Christiansted	VI	00820
	Department of Planning & Natural Resources, CZMP	Cyril E. King Airport, 2nd Floor, Terminal	St. Thomas	VI	00802
	Hovensa	1 Estate Hope	Christiansted	VI	820
	National Park Conservation Association	1300 19th Street, N.W., Suite 300	Washington	DC	20036
	Seaborne Seaplane Adventures	34 Strand St.	St. Croix	VI	820
	St. Croix Hotel and Tourism Association	24238 P.O. Box	Gallows Bay, St. Croix	VI	00824
	St. Croix Marina	Gallows Bay	St. Croix	VI	820
	St. Croix Yacht Club	5100 Teague Bay	St. Croix	VI	820
The Honorable Pedro Encarnacion	Legislature of the Virgin Islands	#1 Lagoon Street Complex	Frederiksted	St. Croix	00840
The Honorable Juan Figueroa-Serville	Legislature of the Virgin Islands	#1 Lagoon Street Complex	Frederiksted	St. Croix	00840
The Honorable Neville A. James	Legislature of the Virgin Islands	#1 Lagoon Street Complex	Frederiksted	St. Croix	00840
The Honorable Norman Jn Baptiste	Legislature of the Virgin Islands	#1 Lagoon Street Complex	Frederiksted	St. Croix	00840
The Honorable Terrence Nelson	Legislature of the Virgin Islands	#1 Lagoon Street Complex	Frederiksted	St. Croix	00840
The Honorable Usie R. Richards	Legislature of the Virgin Islands	#1 Lagoon Street Complex	Frederiksted	St. Croix	00840
The Honorable Ronald E. Russell	Legislature of the Virgin Islands	#1 Lagoon Street Complex	Frederiksted	St. Croix	00840



Environmental Assessment Scoping Newsletter

Proposed Marine Research and Education Center, and Abandoned Hotel Demolition, Salt River Bay National Historical Park and Ecological Preserve

The National Park Service (NPS) and the Joint Institute for Caribbean Marine Studies (JICMS) are developing plans for a proposed Marine Research and Education Center (MREC) at Salt River Bay National Historical Park and Ecological Preserve (SARI), St. Croix, VI. The NPS is also planning to demolish and remove the abandoned hotel structure and return the hotel area to a more natural condition. Our plans are in the early stages of development. This newsletter is being distributed to our partners, neighbors, and stakeholders to inform them of the development of the Environmental Assessment (EA) for these projects.

Salt River Bay a Living Museum

Salt River Bay contains prehistoric and colonial-era archeological sites and ruins that are found in a dynamic, tropical ecosystem that supports threatened and endangered species. In 1992 Congress created Salt River Bay National Historical Park and Ecological Preserve as part of the National Park System.

Salt River Bay contains one of the most important and complex archaeological sites in the U.S. Virgin Islands. This area has witnessed thousands of years of human endeavor. Every major period of human habitation in the Virgin Islands is represented including South American



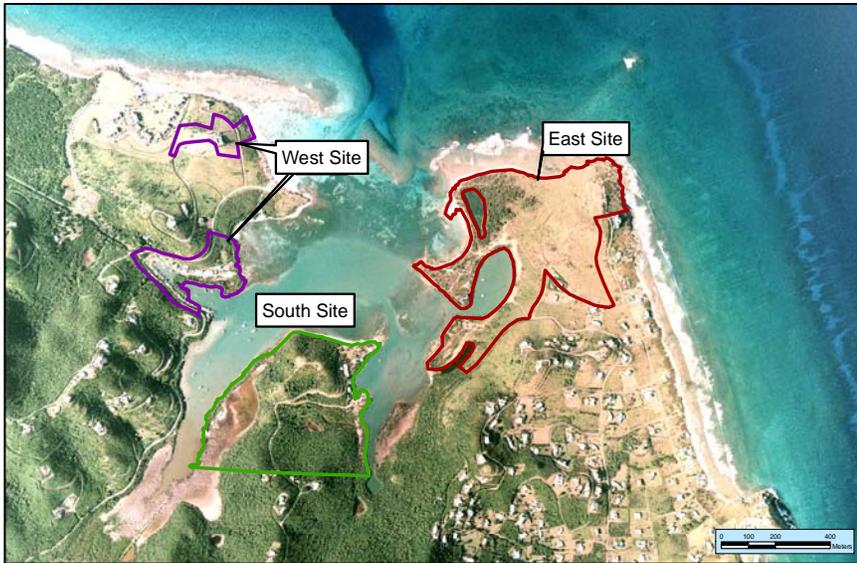
Indian cultures, an encounter with Columbus, Spanish extermination of the Caribs, attempts at colonization by a succession of European nations, and enslaved West Africans and their descendents.

Perhaps nowhere else in the Caribbean does a protected natural area exhibit so many of this region's important ecological relationships in so small an area. Here an upland watershed feeds into a bay fringed with mangroves and coral reefs. The mouth of the bay, with its undersea canyon and coral covered walls, opens to the sea, which falls away into the deep Virgin Islands Trough. The water acreage of the park was also designated as a National Natural Landmark (1980) that is home to 27 species that have

been listed as rare, threatened, or endangered.

Mangrove Forests - Salt River Bay is fringed by mangrove forests, creating a habitat that plays a critical role where land and sea meet. Mangroves in Triton and Sugar bays are still recovering from Hurricane Hugo (1989). Restoration is underway for red mangroves in Salt River Bay, which held (before Hugo) the last major natural mangrove stand set in an estuary in the Virgin Islands.

Terrestrial Uplands to Estuarine Bay - Salt River Bay includes an estuary, where fresh and salt waters mix. The diverse terrestrial environment is dominated by shrub land and much of the flora is adapted to dry conditions. This dynamic relationship between land and bay is ecologically important.



Proposed alternative locations for the Marine Research and Education Center.

The survival of the local fishery, for example, may depend on preserving healthy natural conditions both inside and outside Salt River Bay. Endangered hawksbill turtles feed and sleep along the coral canyon walls. Snappers and grunts hide among coral reefs by day and feed at night in seagrass beds. Threatened green sea turtles and queen conch thrive on turtle grasses.

Coral Reef - Coral Reefs have built up in the Caribbean over the past 13,000 years. Coral reefs are in decline in most parts of the world, so their well-being is of paramount concern not only locally but regionally and globally.

More than 400 species of reef fish are known in near-shore waters. Coral reefs, may support one-third of all fish species globally and possibly a total of a half-million animal species.

Park Activities

Currently there are limited commercial visitor services authorized by the NPS at SARI. The park is still in the developmental stage. The Visitor Contact Station opened

for operation in January 2006 and is currently open Monday, Wednesday, and Friday from 9 to 4 pm. It offers a bookstore and interpretative talks. Food, lodging, and other services are available in Christiansted, Frederiksted, and at other island locations. The park is five miles from Christiansted National Historic Site and can be reached by car via Rt. 75 from Christiansted, connecting to Rt. 80.

Project Description

This project consists of two components: a proposed Marine Research and Education Center (MREC) and the demolition of an abandoned hotel structure. Three alternative locations for the MREC have been proposed:

- East Site, located west of Estate Judith's Fancy;
- South Site, location of the former NOAA Undersea Research Center; and
- West Site, includes the NPS Visitor Contact Station and the Salt River Marina.

The MREC would include several structures: main building (i.e., offices, classrooms, teaching labs, conference rooms, and library) education center

(main hall, theater, lecture hall), dormitories, cafeteria, staff housing, maintenance building, wet laboratory, and marine operations facilities. The MREC facilities would affect less than 4 acres of land at the park, excluding roads.

This project also proposes the demolition of the abandoned hotel structure located on the east side of Salt River Bay. The hotel structure was part of a development project started in the late 1960s that was never completed. Currently the structure is deteriorating and presents a safety and environmental concern for the park. The park proposes to remove the entire structure, reuse and recycle as much of the material as possible, and return the site to a more natural condition.



Abandoned hotel structure

Purpose of the Project

At one time the park's reef and hard bottom habitats in the canyon were among the most extensively studied and characterized coral structures in the world. However, since the closing of the National Oceanic and Atmospheric Administration's (NOAA) Undersea Research Center in Salt River Bay, this is no longer the case. Reefs that fall within the boundaries of the park but are outside of the canyon itself are currently monitored by the University of Virgin Islands (UVI) Seagrass Program and the V.I. Department of Planning and



Natural Resources (DPNR); however, with limited funds and resources. The seagrass and algae communities which were also studied by the NOAA facility researchers receive limited monitoring by DPNR Division of Fish and Wildlife (DFW) and Division of Environmental Protection (DEP). These communities are of increasing concern due to water quality issues in the bay.

There are concerns for the future of coral reef ecosystems in the Caribbean region. Although there are over 4.2 million acres of coral reef submerged lands under U. S. jurisdiction, few have been properly studied to assess their overall health, and evidence is overwhelming that coral reefs and associated ecosystems are deteriorating at a rapid rate throughout the world.

Additionally, the island has a rich coral reef research history. Extensive research was conducted from 1970-1989 at the former West Indies Laboratory on the eastern end of the island and at the NOAA Undersea Research Center based at Salt River Bay. Presently, NOAA-CREWS meteorological and oceanographic monitoring



platform has been moored at Salt River Bay since 2002 and is collecting physical and biological data as part of NOAA's International Coral Health and Monitoring Program.

SARI is considered the ideal location for the MREC. The 1,015-acre park is jointly managed by the NPS and the Government of the Virgin Islands whose goal is to preserve the area and promote the study of the unique resources associated with the park. SARI provides a diverse ecosystem for study by representing the "Ridge to Reef" concept. Its location facilitates the MREC operation logistics providing easy access to the nearby resources.

NEPA Process

The NPS must follow the National Environmental Policy Act (NEPA) of 1969 to assure consideration of important environmental issues. The proposed MREC and hotel demolition that are being considered at SARI will be analyzed through the NEPA process.

As part of the NEPA process, the proposed MREC and hotel demolition will be evaluated in an Environmental Assessment, which will analyze the potential environmental effects of the

proposed MREC and hotel demolition. This analysis will consider impacts to topics such as mangroves; floodplains; wetlands; seagrasses; rare, threatened, and endangered species; air and water quality; and cultural resources.

Public Meeting and Comments

There will be a public meeting held on Tuesday, August 22, 2006 from 5:30 p.m. – 8:00 p.m. at the Christiansted National Historic Site located at the Guinea Company Warehouse (old post office building) 2100 Church St., #100, Christiansted, VI. The public meeting is open to everyone and will provide opportunities to learn more about the project.

Please tell us what you think. Use the enclosed response card to provide us with your comments. Simply fold and staple or tape the completed card and drop it in the mailbox. We would appreciate your comments by September 20, 2006 to be considered in this phase of the planning process. You will have additional opportunities to comment on the alternatives as we continue the planning process. The EA will be made available to the public for review.

Photo Source: NPS



National Park Service
U.S. Department of the Interior



Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

Salt River Bay National Historical Park and Ecological Preserve News Release

Release Date 08/01/06

For Immediate Release

Joel A. Tutein, Superintendent

340-773-1460

Public Meeting Environmental Assessment

The National Park Service will conduct a Public Meeting associated with the upcoming Environmental Assessment for a proposed Marine Research and Education Center, and for the demolition of an abandoned hotel at Salt River Bay National Historical Park and Ecological Preserve, St. Croix, VI. The purpose of the project is to develop a Marine Research and Education Center within the park boundaries, and to demolish and remove an abandoned hotel structure that poses a safety and environmental concern to the park. The two proposed actions, development of a Marine Research and Education Center and restoration of the abandoned hotel site will benefit the island community for years to come by providing additional educational and job opportunities, and by providing a better understanding of our natural and cultural resources.

Concerns about the state of coral reef ecosystems in the Caribbean and elsewhere in the world has led to the formation of a partnership between the U.S. Department of Interior, through the National Park Service and the Office of Insular Affairs, and the Joint Institute for Caribbean Marine Studies (JICMS). JICMS is a university-based organization consisting of four initial university members. The goal of this team is to re-establish a Marine Research and Educational Center on the island of St. Croix. We encourage all interested citizens to come to the meeting and share their views with the team. The meeting will be held on Tuesday, August 22, 2006 from 5:30 p.m. - 8:00 p.m. at the Christiansted National Historic Site located at the Guinea Company Warehouse (old post office building) 2100 Church Street, #100, Christiansted, VI. The public meeting is open to everyone and will provide opportunities to learn more about the project, ask questions, and interact with the project team.

Written comments and other information relevant to the proposed project may be submitted at the meeting, or by mail to:

Joel A. Tutein, Superintendent
Christiansted National Historic Site
2100 Church Street, #100
Christiansted, VI 00820-4611

-NPS-

EXPERIENCE YOUR AMERICA

The National Park Service cares for special places saved by the American people so that all may experience our heritage.

APPENDIX F-2

**LIST OF ATTENDEES FROM THE PUBLIC
SCOPING MEETING AND PUBLIC COMMENTS**



Marine Research and Education Center and Hotel Demolition – Environmental Assessment Public Meeting Sign-in Sheet

Name/Organization	Address	Phone	Email
BRUCE TILDEN SHAD	199 STRAND, FISTER	772-2021	brucetildend@yahoo.com
CONRAD E. KNOWLES	BOX 1059 KINGS HILL STX	773-1082 X2204	CONRAD.KNOWLES@VICZM.P.COM
Emily Thomas	9003 Salt River ^{LISTED 00F20}	778-1952	emyl@viacross.net
Russ & Holly Herold	9025 SALT RIVER 2	773-8214	RUSSE@inspectorherold.com
S.H. ISHERWOOD	134 JUDITH'S FANCY	773-3400	ISHERWOOD@ISHERWOODLAW.COM
Stephen K. Cohen	5092 TIDE VILLAGE	773-9334	stephenkcohen@hotmail.com
DAVID HAYES	P.O. BOX 2762 KINGS HILL	773-9597	DAVID_HAYES_STX@YAHOO.COM
ERNEST CHAPPELLE	4003 ^{LISTED 00820} JUDITH'S FANCY	773-9607	echappelle@islands.vi
Kelly Culp	9017 Salt River	514-3620	llgreer@gx.net
KEVIN CULP	"	514-5418	KCULP@GX.NET
Mrs EUGENE A. CAPEGATA	4031 La Grande Princesse Lot 1B ^{listed}	712-7771	eugene.capegata@si.ngh.org.vi

-NPS-



Marine Research and Education Center and Hotel Demolition – Environmental Assessment Public Meeting Sign-in Sheet

Name/Organization	Address	Phone	Email
ROBERT VAUGHAN	BOX 1122, C'ST	778-8465	ROBERTVAUGHANSTX@GMAIL.COM
Brenda Esherwood	1138 King St. #209	773-8570	isherwood@vititle.com
CHRISTIA	P.O. Box 2508 KH 00851	778-3270	N/A
Michelle Fug	P.O. Box 4254 C'ST 01	773-3307	liveexp@vaccess.net
Laverne Kayston	UVE #2 John Brunson STT	643-1000	l-kayst@uvi.edu
TRACY LYNCH BHOLO	P.O. Box 3587 00851	773-2129	Salt River HAA
JOHN FARCHETTE	26574 Gallows Bay 00824	713-1369	jfarchetteiii@yahoo.com
Betsy Farchette	26574 C'Sted, VI 00851	713-1369	efarchette@yahoo.com
Mr + Mrs Donna Christensen	Delegate to Congress		

-NPS-

National Park Service
U.S. Department of the Interior

Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands



Marine Research and Education Center and Hotel Demolition – Environmental Assessment Public Meeting Sign-in Sheet

Name/Organization	Address	Phone	Email
<i>Clifford E. Crooke</i> VI Guard		712-7722	<i>clifford.e.crooke@</i> <i>U.S. MGB. Army. mil</i>
<i>Marcelle E. Heywood</i>		712-7757	<i>marcelle.heywood@vi.ngb.</i> <i>army.mil</i>
<i>James Thomas</i>		772-0263	<i>thomasj@persnsworld.</i> <i>mil</i>
MICHAEL A. EVANS - USFWS	FED. BLDG. C STD	773-4554	<i>michael.evans@fws.gov</i>

-NPS-

EXPERIENCE YOUR AMERICA

The National Park Service cares for special places saved by the American people so that all may experience our heritage.

Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands



Public Scoping Newsletter – July 2006

Name (Please Print): Bill Rohring

Title: Assistant Director

Company/Organization: DPNR-CZM

Address: CE King Airport Terminal Bldg, Fl. 2, St. Thomas, VI 00802

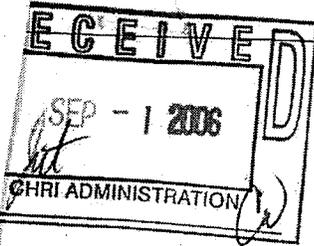
Telephone Number: 340.774.3320 X5107 Fax Number: 340.714.9524

E-mail Address: bill.rohring@viczmp.com

Comments/Suggestions: Continued involvement, that was highlighted by NPS personnel being on the St. Croix East End Marine Park Advisory Committee, with local government actions and activities. Especially concerning scientific research, water quality monitoring and ~~the~~ cross-training opportunities between the local government & NPS staff.

Please check box if you would like to receive a copy of the Draft Environmental Assessment

Please return comment cards by September 20, 2006



PUBLIC COMMENT FORM

Public Scoping Meeting for Salt River Bay National Historical Park and Ecological Preserve Environmental Assessment Proposed Marine Research and Education Center and Abandoned Hotel Demolition August 22, 2006

Name (Please Print): J. H. Isherwood
 Title: _____
 Company/Organization: _____
 Address: 1138 King Street, Christiansted, VI 00820
 Telephone Number: 340-773-3900 E-mail Address: _____
 Comments/Suggestions: _____

Clearly the best place to build the National Park Service facility is at Trident Bay which is the proposed southern location if this property becomes available.

This property has excellent road access and because it is located on a point it has naturally good security because of this location. It is also bordered on both sides by mangrove and ecologically significant wetlands.

The acquisition of this property and sensitive development by the Park service would be a keystone of the Salt River Park development.

Development of the service facility at the Judith's Fancy location creates a multitude of security issues and conflicts with the adjoining subdivision development.

An unsightly and environmentally insensitive security fence similar to the Berlin Wall will probably be required to divide what is naturally a single peninsula of land with a meandering boundary line into two parts.

The homeowners in this development already feel under assault from burglaries and occasionally physically abusive home invasions. These incidents increase dramatically with how close the houses are to access points outside the association's perimeter. For example, after land was cleared along a road which runs parallel to the association's boundary in Estate St. John virtually every house adjoining that perimeter was broken into and robbed.

Opening the new access road into Judith's Fancy through what is presently an undisturbed bird sanctuary and wildlife area will play havoc with the current balance and security.

The association would probably be happy to cooperate with the Park service to improve security and restrict vehicle access to the Parks property with low intensive security measures if this property is not developed by the Park service.

While the old hotel site should be cleaned up and the debris removed I am concerned that actual demolition of the buildings will create as many environmental problems as it solves.

What I would like to see is the majority of the existing buildings and pool fixed up and used for park and research purposes with primary access for any contemplated visitors being by water from the Salt River Marina. With a commitment to low intensity development and limited road access it might be possible to reach an agreement with the homeowners association to avoid the necessity building a new access road and all the ecological and security problems this road will create for the subdivision and the Park Service.

September 19, 2006

Subject : COMMENTS re: "Newsletter" and August 22, 2006 Scoping Meeting—
"Proposed Plan and Environmental Assessment for a Marine Research and Educational
Center and Demolition of Old Hotel Within the Boundaries of Salt River Bay National
Historical Park and Ecological Preserve, St. Croix." (P.L.102-247—February 24, 1992)

STATUTES, POLICIES AND REGULATIONS

The 2006 National Park Service Management Policy, Section 2.2, states that "Park managers and regional directors are responsible for ensuring that planning is properly conducted within the planning framework.....However many parks may lack one or more of these planning elements. In the interim, management will be guided by the park's foundation document, strategic plan, and other currently approved plans. No major new development, or other major commitment of park land or natural or cultural resources, will be authorized without an approved general management plan." It would therefore appear that P.L.102-247 is being circumvented. That law does not provide for a third party "co-manager" including NOAA, the Joint Institute for Caribbean Studies, or the University of the Virgin Islands. A Cooperative Agreement between NPS and the Government of the Virgin Islands defining management responsibilities has not been mutually agreed upon. There is also no draft, much less approved, General Management Plan. Although scientific study was listed in the "Management Objectives" approved on November 29, 1994, a complex as large as MREC was not contemplated. The MREC proposal represents piece meal development and damages the INTEGRITY of the park.

Some time ago the National Park Service endorsed the Advisory Council on Historic Preservation's policy statement on balancing cultural and natural values on Federal lands. This policy encouraged Federal land managers to recognize that cultural and natural values should be considered in an integrated manner to ensure that cultural values are afforded equal consideration. It would seem that Section 106 and 110 compliance are required due to the cumulative adverse affects on the INTEGRITY of SARI's historic properties. The MREC complex will affect historic properties within the SARI boundaries including the Columbus Landing National Historic Landmark, Cape of the Arrows (which is eligible for listing on the National Register and inclusion in an expanded National Historic Landmark designation) and the National Natural Landmark. Diminished INTEGRITY of these resources could lead to the declassification of their status.

VISUAL INTRUSIONS

The NOAA monitoring station was the first interagency intrusion at SARI and constitutes a violation of Section 106 of the National Historic Preservation Act. This station was rejected by resource managers at V.I. National Park as a "visual intrusion." It is insensitive and does not meld with the history of the internationally-significant Columbus Landing Site and Cape of the Arrows. It is visible from the observation deck of the Visitors Contact Station. Your Public Announcement dated August 13-14, 2006 in THE

AVIS indicates that DOI, through the National Park Service, Office of Insular Affairs and the Joint Institute for Caribbean Studies, is seeking to re-establish a Marine Research and Educational Center on the island of St. Croix. I hope that this does not indicate that SARI will become the "recipient" of other scientific projects rejected by V.I. National Park management.

Any proposed construction within line of sight of the Columbus Landing National Historic Landmark would impact the vistas and landscapes (Section 104(b), P.L.102-247). Inconsistent statutory enforcement degrades the INTEGRITY of the cultural and natural (including marine) resources. The Ceremonial Ball Court, village sites, and burial grounds are sensitive and sacred religious areas. Visitors cannot be inspired if they are disturbed by a background of cluttered vistas and landscapes. The size of the proposed complex will destroy the viewshed forever, and the visitors' experiences will be immeasurably diminished.

LIVING MUSEUM

The phrase "living museum" is taken from the approved November 1994 "Management Objectives." As mentioned previously, there seems to be no balance between the protection of the cultural resources and natural resources. MREC seems to indicate that natural resources are now given preference because of E.O. 13089.

In recent years, the 1493-1520 importance of SARI, which could qualify the park for UNESCO World Heritage consideration, has been forgotten or ignored, specifically the Columbian skirmish, the 1508 slaving raid by Diego de Nicuesa followed by the 1511 Real Cedula by Ferdinand of Spain calling for the extermination of the Caribs of Santa Cruz. The expansion of the National Historic Landmark boundaries at SARI to reflect a more comprehensive understanding of events, on land and in the water, has languished in Washington for many years. Degradation of the INTEGRITY of the Columbus Landing National Historic Landmark and the National Natural Landmark due to construction has been a National Park Service concern since 1986. This includes adverse impacts to vistas and landscapes.

DEMOLITION

Any demolition, dredging or construction within the boundaries of SARI must comply with the NEPA, CZMA, Clean Water Act, etc. I mention this because of the concerns expressed by the Corp of Engineers and CZMC when they attached stringent criteria to the 1986-90 Allen Williams construction permits. Stringent criteria should also apply to the Federal government and the V.I. Government. I am sure that the CZM permit and the letters from the Corp of Engineers will "surface" during deliberation concerning the MREC's location within SARI. In 1988, Archaeologist John Ehrenhard (NPS/SEAC) said, "In summary the Salt River Bay is at its final crossroads. Present urban development is the first serious threat to the ecosystem and its precious cultural cargo. It is also the last threat because if the juggernaut of development cannot be allowed there

will be no second chance—a bulldozer can destroy in 5 minutes what it takes mankind 500 years to produce.”

While I am of the opinion that the East side of Salt River Bay is not suitable for MREC because of all of the factors which I have mentioned, I do recommend that the shoreline, which has been disturbed by commercial development, be restored to its pre-1960 state. This would enhance interpretation and the visitor's understanding of the complex human history of the area. The above represents basic sustainable tourism development that could be an economic boost for St. Croix. It is a world class site and should be treated as such. The Visitor Contact Station is the informational focus for visitors – “the heart of the park,” according to the park superintendent. Needless to say, any encroachment on the landscape and viewshed would harm the INTEGRITY of the Park and would not be acceptable.

ALTERNATIVE SITES

There are two possible alternative sites for MREC within the park boundaries. V.I. Government Plot 101-23 is large enough and has access to Triton “Bay. Roadway access would not be necessary and Cape of the Arrows would still have limited access. The donation of Plot 101-26 to NPS by The Nature Conservancy as a bird sanctuary precluded the use of any part of it for a road to facilitate commercial development. Allen-Williams was denied access across this property by The Nature Conservancy as early as 1987. Continuation of that agreement would not violate that intent and the endangered species in the area would remain undisturbed. The second site is the present marina at SARI, which could be used by both NPS and MREC, and disturbance to the natural resources could be minimized. An out of park alternative for MREC is University of the Virgin Islands' owned property at Estate Concordia Bay, Frederiksted. This has a good “drop-off” for boat access.

Jessie K. Thomson, Secretary, SARI Advisory Commission, 1993-2002
P. O. Box 456, Frederiksted, VI 00841-0456
E-Mail: thomsonj@pennswoods.net – Telephone (340) 772-0263

CC: V.I. Delegate to Congress, Director-NPS-SERO, Michael Bayer, Urban Planner,
HNTB

Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands



Public Scoping Newsletter - July 2006

Name (Please Print): Harold + Laura Denwood

Title: Retired

Company/Organization: _____

Address: Judith's Fancy #97 30 yrs 4080 Judith's Fancy mail

Telephone Number: 773 3382 Fax Number: _____ 00820

E-mail Address: briseis1@hotmail.com

Comments/Suggestions: _____

#1 Demolition of Abandoned
Hotel Structure 100%
approval from us

#2 Location of MREC strongly
feel once hotel is demolished - site
should be returned to natural state
No major structures except as related
to archeologic & ecologic observations.

MREC seems a natural
for south site - Good road -
existing buildings - history of
research center. Would also
allow water access to East site.

Please check box if you would like to receive a copy of the Draft Environmental Assessment

Please return comment cards by September 20, 2006

D A V I D K. H A Y E S

P.O. BOX 2762 KINGSHILL ST. CROIX U.S. VIRGIN ISLANDS 00851-2762

Registered Professional Archaeologist

340-277-4072

David_Hayes_stx@yahoo.com

25 August 2006

Comments on National Park Service plans for Salt River presented at meeting on 22 August 2006.

I am fully in agreement with the removal of the remaining structures and other material from the failed hotel on the Judith's Fancy site of the Salt River estuary. These need to be removed for safety and reduction of a blight on the viewshed.

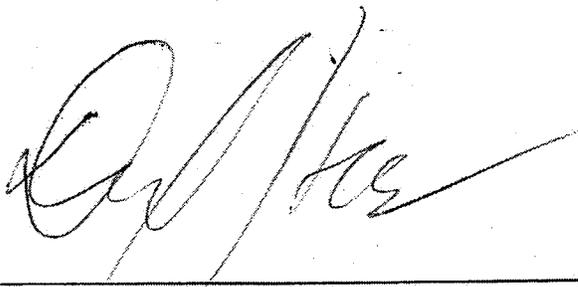
While any one of the proposed locations for the Marine Research and Education Center (MREC) would work I think the best choice would be the east site, in Judith's Fancy. The MERC must also contain a storage/archive area.

While acquiring the marina on the west side should remain the highest priority land acquisition for the Salt River Bay National Historical Park and Ecological Preserve (SARI), placing the MREC on the west side would seriously compete for attention with the historical and archaeological resources on that side. In my view the western side of the estuary is an extraordinary treasure for historical and archaeological research and placing the MERC there would interfere with research into and interpretation of those resources. From the rendering I noted that some of the land needed for that site is outside the stated boundary of SARI. Would the NPS acquiring of this land require another Congressional action?

The south side, while it is the historic home of the NOAA base, is limited by the terrain and lack of sheltered anchorages. I think this site has too many physical limitations to serve well, especially when the future expansion of the MERC is needed. This area is near the mangroves and might serve well as a support for their rehabilitation, should the NPS be able to acquire the old Faile complex.

The east site, while requiring the reopening of an old road and limited by the presence of a pre-Columbian burial site and village, does not have the problems of the other two sites. Excellent, protected boat servicing areas are available. When clearing the channel into the dredged marina please note that I recall in the 1960s several cannon being underwater at the entrance. These had been moved here by local divers. J. Isherwood or Lee Morris might have further information on these cannon.

Here the new structures can be dispersed and landscaped so that they do not intrude into the viewshed. Up on the hill in the north east corner there is excellent space for the laboratories and storage/archival space. This area was disturbed many years ago so any new development will not impact cultural resources. This complex will be dedicated to the marine world and not have competition for other interpretative needs.



Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands



Public Scoping Newsletter – July 2006

Name (Please Print): Tracy Lynch Bhola & Emy Thomas

Title: President & Secretary

Company/Organization: Estate Salt River Homeowners' Association

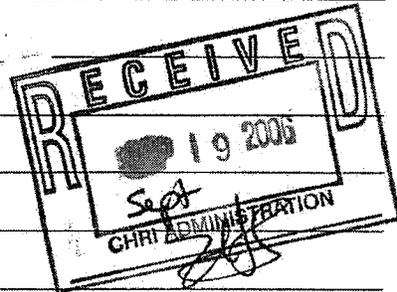
Address: 9003 Salt River, Christiansted, VI 00820

Telephone Number: 340-778-1952 Fax Number: 340-778-1952

E-mail Address: emy@viaccess.net

Comments/Suggestions: _____

Please see attached letter (four pages)



Please check box if you would like to receive a copy of the Draft Environmental Assessment

x

Please return comment cards by September 20, 2006

Estate Salt River Homeowners' Association
9003 Salt River
Christiansted, VI 00820-5598

September 19, 2006

National Park Service
Christiansted National Historic Site
2100 Church Street #100
Christiansted, VI 00820-4611

Att: Joel A. Tutein, Superintendent
Re: Public Comments on the SARI EA

Dear Mr. Tutein:

As officers of the Estate Salt River Homeowners' Association, we are appreciative of the opportunity to register our comments regarding the proposed Marine Research and Education Center site options. We support the intent of establishing a Marine Research and Education Center as well as the proposed demolition of the abandoned hotel site.

Our concerns and comments regarding the three sites are based on the following factors:

- Intensity of development
- Resulting traffic intensities and access
- Preservation of historic character
- Compromises of existing residential character
- Conformance to existing zoning requirements
- Conformance to existing deed restrictions, both explicit and of good faith

From our perspective, the South Site is the preferred site:

- The site provides no or minimal conflict with any existing residential areas.
- The site provides more than adequate contiguous acreage to accommodate all aspects of the MREC facility. This dovetails well with the R1 Zone Conditional Provisions for this type of proposed use.
- There is no compromise to the historic or ecological resources of the Columbus Landing site and its environs.
- The site is reasonably accessed at the end of an existing road that does not impact any residential area.
- In keeping with the LEED principles of Sustainable Design, the priorities of

recycling and reusing previously developed / underutilized sites and buildings is implemented with the assimilation of the former NOAA Undersea Research Center. (We would hope that the MREC development would fully embrace all sustainable initiatives including this one.)

Access to the water and shelter of Triton Bay for the center's research functions is easily accommodated.

Note: Based on the U.S. Geological Survey of 1982 (latest edition), all three sites encompass topographic features up to elevation 100' above mean sea level. The Storm Surge Group of the National Hurricane Center, NOAA, has determined in their Storm Surge Atlas for the American Virgin Islands that a Category 5 storm from the north (worst case) will result in a predicted storm surge of approximately 4.7 feet for the Salt River area. Therefore, all three sites would appear to have sufficient elevation within them to adequately avoid storm surge and accommodate the proposed facility. (The exception is the isolated Columbus Cove Marina parcel on the west site).

We rank the East Site as the next preferred site:

- The site is readily available from within the National Park Service's existing real estate portfolio.

- Like the South Site, this site provides more than adequate contiguous acreage to accommodate all aspects of the MREC facility. Again, this dovetails well with the R1 Zone Conditional Provisions for this type of proposed use.

- The area in question is not amidst or surrounded by residential development. It is at the end of a clearly defined boundary that is beyond the existing development within Judith's Fancy.

- By virtue of the proposed new access road extending from the historic access road, the residents of Judith's Fancy will not be adversely impacted by traffic coming to the MREC.

- There is minimal compromise to the historic character and environmentally-preserved ambience of the Columbus Landing site and its environs.

- Access to the water is via the well-protected shelter of the man-made lagoon behind the existing derelict hotel.

We rank the West Site as the least preferred / least desirable / least viable / and most conflicted site:

- The site imposes the maximum conflict with an existing residential area, as it sits surrounded on all sides by active residential use.

- This site results in an unacceptably dense development by trying to combine the NPS Visitor Center functions with the MREC facility on an extremely

tight site footprint. This intensifies all the negative aspects of the development (i.e. traffic, noise, paving, visual impact, etc.) more than it would on either of the other sites. And again, all of this is proposed for placement directly amidst a residential context.

- Incoming traffic for both the MREC and the NPS Visitor Center would be imposed on the only road serving the bulk of the residential area. This would be exacerbated and intensified by back and forth traffic between the marina portion of the MREC and the main body of the site. This begs a fundamental question as to how well the ecological character of the area would be served while accommodating the increased traffic.

- The 8.5-acre parcel owned by the NPS does not meet the Conditional Requirements for this campus type of development (accommodating 50-100 students) within the R1 zone. A minimum of 10 contiguous acres is required. In this subdivision, a 50-foot setback is required from a road and a 20-foot setback is required from adjacent residential properties. That further shrinks the usable area. It is not clear how one would fit the buildings, parking, access roads, and other improvements and meet the 30% coverage requirements.

- The plan is contingent upon utilizing a portion of the marina site for the MREC facilities, yet we understand that the marina owner is in negotiations with another buyer.

- Regardless of the MREC, visitors will still be coming to the West Site for access to the Columbus Landing Beach and the Visitor's Center. The Estate Salt River Homeowners' Association understood that NPS stewardship of the site would rigorously and judiciously preserve the natural, ecological, and historic character of the area much as Christopher Columbus experienced it in 1493. That would also be consistent with the mandate of the NPS 1994 Land Protection Plan for the site, to "allow park visitors and the general public a sensory and emotional understanding of the cultural continuum". The Homeowners' Association understood the original purpose in acquiring this property was to give visitors an overview of the entire SARI park and a bird's eye view of Columbus Landing-- the historical, archaeological, and cultural centerpiece of the park. The proposed development at this site compromises that. To compound matters, the proposed plan places the SARI visitors' center at the bottom of the hill where visitors can't see much of the surrounding area. Although this placement conveniently separates visitor traffic from continuing into the MREC facility, this location diminishes the importance of the park, demoting it to the status of a stepchild or an afterthought.

- Via both good faith and specific language within its covenants, the Salt River Homeowners' Association made special provisions to welcome SARI into our subdivision because we endorsed the Park's mission to preserve and enhance the historical, archaeological, cultural and ecological resources of the area. We amended our covenants to allow activity "consistent with the park's

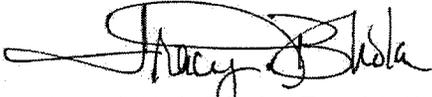
operation" and buildings consistent with the definitions outlined of "park uses". The MREC does not fit those descriptions and it far exceeds the original intention of the HOA and NPS to harmoniously blend a park into a single-family residential neighborhood.

In summary, we believe:

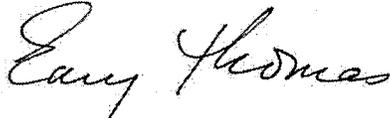
- The character of the existing West Site SARI Visitor's Center and surrounding area should be maintained as a low intensity, visually unencumbered and ecologically preserved area, devoid of the MREC development.
- That the South Site and East Site afford the best opportunities to meet the programmatic requirements of the MREC campus while still providing the basic elements for a technically viable, contextually balanced, and ecologically harmonious result.
- The MREC facilities should be physically separated from the main facility of the park so as to preserve the SARI visitor experience.

We hope the NPS and representatives of MREC will take this information under serious consideration. Again, we appreciate the opportunity to provide our perspective and remain available for further discussion with all interested parties.

Respectfully,



Tracy Lynch Bhola, President



Emy Thomas, Secretary

Board members who wish to be included but are not available to sign:

Jackie Bunn, Vice President

John Burkhart, Treasurer

Paul Silverberg



PUBLIC COMMENT FORM

Public Scoping Meeting for
Salt River Bay National Historical Park and Ecological Preserve
Environmental Assessment
Proposed Marine Research and Education Center
and Abandoned Hotel Demolition
August 22, 2006

Name (Please Print): VIRDIN BROWN

Title: INDIVIDUAL

Company/Organization: N/A

Address: P.O. BOX 7809 CHRISTIANSTED, V.I. 00823

Telephone Number: (340) 773-2803 E-mail Address: _____

Comments/Suggestions: I have no objections to the establishment of a Marine Research and Education Center in the vicinity of the Salt River Historical Park and Ecological Preserve, based on the limited information that has been presented. However, I believe the MREC should be developed on the fringe boundary of SARI, because the park contains so many significant historical ^{archaeological} ~~ecologically~~ significant sites that it would be difficult to carry out a major development without disturbing or destroying important resources. This would mean the acquisition of suitable acreage outside SARI. The only site ~~with~~ ^{among} those suggested that is suitable is the former NOAA Undersea Research Center - The South Site - because of the existence of some infrastructure and access to the bay.

I am concerned that the present development plans are drifting away from the initial concept of using this Park as a mechanism for joint V.I. and Federal management while

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producing training to V.I. Government personnel to



PUBLIC COMMENT FORM

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Environmental Assessment
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and Abandoned Hotel Demolition
August 22, 2006

Name (Please Print): VIRGIN BROWN

Title: INDIVIDUAL

Company/Organization: N/A

Address: _____

Telephone Number: (340) 773-2803 E-mail Address: _____

Comments/Suggestions: Staff and manage a Territorial park system. Research is important - but so is the true realization of a ^{real} Territorial park system. New emphasis should also be placed on this aspect of Territorial/Federal comanagement of SARI. It should be forgotten - nor should it be emphasized - that the 600 acres of water within the bounds of the park are the property of the V.I. Government. The V.I. G. should be fully a part of the development and utilization of the SARI. It should be understood development of a visitors center and SARI Interpretive Center are equally important to maintain public interest and contact with the park.

Virgin Brown

Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands



Public Scoping Newsletter – July 2006

Name (Please Print): Amy Hamilton

Title: home owner in Judith's Fancy

Company/Organization: _____

Address: Box 4060 Judith's Fancy #247 Judith's Fancy

Telephone Number: ^{H#} 773-5057 Fax Number: ^{H#} 773-7888

E-mail Address: hotheadstx@hotmail.com

Comments/Suggestions: I just wanted to know how the public was going to have access to the MREC in Judith's Fancy. Through the private Judith's Fancy roads? That means more traffic in the neighborhood which wouldn't be good for the community. With more people coming and going through the neighborhood, theft might increase. I believe the MREC with the dormitories, cafeteria etc. should be built on the West Site, where public access is already commonplace.
Thank you.

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and Abandoned Hotel Demolition
August 22, 2006

Name (Please Print): ERNEST CHAPPELLE
Title: MANAGER OF ENVIRONMENTAL SAFETY & HEALTH
Company/Organization: BECHTEL ENGINEERING & CONSTRUCTION
Address: 4003 JUDITH'S FANCY PLOT #191, C'STED 00820
Telephone Number: 773-9607 E-mail Address: echappe@islands.vi

Comments/Suggestions:
PLEASE ALLOW ACCESS FOR SURFERS
TO PARK THEIR CARS AT THE
SALT RIVER SURF SPOT ON THE
EAST SIDE OF THE AND DIRECTLY IN
FRONT OF THE OLD BOAT WRECK (IRON
BARGE)

THE MARINE SCHOOL CAN ONLY BENEFIT
ST. CROIX IMMENSELY. IT WILL BRING
INVESTMENT, AUXILIARY EMPLOYMENT
FOR VIRGIN ISLANDER AND RESEARCH
TO HELP MAINTAIN AND SAVE
THE REEF FROM DETEIORATION

Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

Public Scoping Newsletter - July 2006



Name (Please Print): Michelle Pugh

Title: PRESIDENT DIVE EXPERIENCE + DIVERSE VIRGIN

Company/Organization: _____

Address: PO Box 4254 CISTEL ST CROIX USVI 00822

Telephone Number: 773-3307 Fax Number: _____

E-mail Address: DIVERXP@VIACCESS.NET

Comments/Suggestions: _____

Please make Salt River a NO TAKE
area !!

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PUBLIC COMMENT FORM



Public Scoping Meeting for
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Environmental Assessment
Proposed Marine Research and Education Center
and Abandoned Hotel Demolition
August 22, 2006

Name (Please Print): ROBERT V. VAUGHAN, E.D.D.

Title: TRUSTEE

Company/Organization: ST CROIX LANDMARKS SOCIETY

Address: P.O. BOX 1122, CHRISTIANSTED, VI 00821

Telephone Number: 340-778-8465 E-mail Address: ^{lower case} ROBERTVAUGHNSTX@GMAIL.COM

Comments/Suggestions:

Excellent presentation and graphics
Comments I heard from public were
all positive. Personally, I hope the
project materializes and pronto!
There is no reason for our having the
world's preles resources and not
learning and documenting (and
preserving) them for the whole
world.

Buena Suerte y mil Gracias

Robert V. Vaughan, E.D.D.

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Aug 22, 2006



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and Abandoned Hotel Demolition
August 22, 2006

Name (Please Print): Stephen K. Cohen
Title: Science Teacher at St. Croix Central High School
Company/Organization: _____

Address: 5092 TIDE VILLAGE, P.O. Box 1, VI 00820

Telephone Number: 773-9334 E-mail Address: stephenkcohen@hotmail.com

Comments/Suggestions: The sooner, the better. It has been too long that St. Croix has not been a center for Marine Research & Education.

Hopefully this will all come to completion quickly and we can educate our youth before it is too late to do something to save & preserve the reef.

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Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

Public Scoping Newsletter - July 2006



Name (Please Print): GORDON + MARIE MACDONALD

Title: CAPT. USN (RET)

Company/Organization: _____

Address: 340 HARBOUR DRIVE, #73, HUMACAO, PR 00791

Telephone Number: 787 850-6728 Fax Number: _____

E-mail Address: mandm@libertypr.net

Comments/Suggestions: _____

We are extremely happy to have the
Park in this very important and historic
area.

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Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

Public Scoping Newsletter - July 2006



Name (Please Print): William Tobias

Title: _____

Company/Organization: _____

Address: Box 3025, Kingshill, St. Croix, USVI 00851

Telephone Number: 773-4512 Fax Number: 772-5859

E-mail Address: _____

Comments/Suggestions: _____

1. If the old hotel structure is structurally sound, it should be used as the site for the Marine Research and Education Center (MREC). If it is not structurally sound, as determined by an engineering structural survey, I would concur with the east site location for MREC. The government (DPNR) should be provided with a copy of the engineering structural survey.
2. The government (DPNR) should be provided with a map identifying all plots of ~~reclaimed~~ reclaimed land.
3. The government (DPNR) should be an equal partner in the MREC and provided with sufficient space to base its marine-related programs.
4. NPS needs to work with DPNR-DEE to enforce Salt River Marine Reserve + Wildlife Sanctuary regulations.

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Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

Public Scoping Newsletter - July 2006



Name (Please Print): Marilyn Chakroff
Title: FOREST STEWARDSHIP COORDINATOR
Company/Organization: VI Department of Agriculture
Address: RR #1, Estate Lower Love, Kingshill, VI 00850 (P.O. Box 10345)
Telephone Number: 340-778-0997x256 Fax Number: 340-778-7977
E-mail Address: Marilynchakroff@hotmail.com

Comments/Suggestions: The most likely site for the MREC is the south site, location of the former NOAA Undersea Research Center. If the buildings are in good repair, this site already has infrastructure in place - a road, parking area, housing, maybe even a laboratory and conference room. Without more information on the condition of these structures, it is hard to say whether the best solution for MREC should be to build all new structures elsewhere or not. But the hotel needs to go! Plus all wrecked sailboats stuck in the mangroves.

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Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands



Frank Sluss
President

Opening Newsletter - July 2006

Cell: 340-690-0992
email: fsluss@businessworldvi.com

Name (Please Print): FRANK SLUSS
 Title: President
 Company/Organization: Business World
 Address: 4040 LA Grande Princesse
 Telephone Number: 340-773-7480 Fax Number: 340-773-3400
 E-mail Address: fsluss@businessworldvi.com

Call
340
690-0992

Comments/Suggestions:
I live a 250 Jtbs fancy right next to
the proposed site.
How will development affect our property?
How will you enter & leave area?

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Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands



Public Scoping Newsletter - July 2006

Name (Please Print): THOMAS NICOLOSI

Title: EXECUTOR OF THE ESTATE OF SALVATORE NICOLOSI

Company/Organization: _____

Address: 526 YETMAN AVE

Phone Number: 917-577-9501 Fax Number: 718-317-5816

E-mail Address: molosi@aol.com

Comments/Suggestions: IM THE OWNER OF PROPERTY IN
SALT RIVER. I WOULD LIKE INFORMATION ON
WHAT THE GOVERNMENT IS DOING TO THE SURROUNDING
PROPERTY.

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Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

Public Scoping Newsletter - July 2006



Name (Please Print): Margarita Hutchison and Dan Delella

Title: Co-owners

Company/Organization: Birds of Paradise St. Croix

Address: 4027 Hermon Hillsted 00820

Telephone Number: 773-1364 Fax Number: _____

E-mail Address: Margarita@surf.vi.com

Comments/Suggestions:

Hi Joel,
This is great to see! (the Env. Scoping
Newsletter). The pre-analysis makes sense,
but how much will it cost? Who will
perform the study? How long will it
take? Are there historical artifacts under
water there? Who will pay for the work.

Keep up the good work! - Will try to
see you on the 23rd.

Mary Hatcher,
Margarita and Dan

P.S. Please add us to your mailing list

P.S. Please remove Megan Shoenfelt from
your mailing list - she's gone from SEA, but we
got her copy

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Suggestor - provide postage for people!

Salt River Bay National Historical Park and Ecological Preserve
St. Croix, U.S. Virgin Islands

Public Scoping Newsletter – July 2006



Name (Please Print): Olasee Davis

Title: ecologist

Company/Organization: University of the Virgin Islands

Address: RR#2, Box 10,000, St. Croix, USVI 00850

Telephone Number: 692-4053 Fax Number: 692-4045

E-mail Address: odavis@uvi.edu

Comments/Suggestions: I would suggest the new Marine Research & Education Center be placed in the former NOAA Undersea Research Center. The facilities of the former undersea research center are basically still intact. Also, a baseline research is already established in that site from NOAA. I also agree to demolish the abandoned hotel building and return the area to^a natural conditions as much as possible. Creating green space is important to make the park more attractive naturally. Also, I would suggest to create trails particular on the south side of the park to learn more about the terrestrial environment of the park.

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