National Park Service
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Boca Chita Key
Biscayne National Park

Biscayne National Park

Historic Structure Report and Cultural Landscape Inventory for Boca Chita Key Historic District



Cultural Resources
Southeast Region

Biscayne National Park

Historic Structure Report and Cultural Landscape Inventory for Boca Chita Key Historic District

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Under the direction of
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About the cover: Entrance into Boca Chita harbor circa 1940. Photo in Historical Museum of Southern Florida collection.

The report presented here exists in two formats. A printed version is available for study at the park, the Southeastern Regional Office of the National Park Service, and at a variety of other repositories. For more widespread access, this report also exists in a web-based format through ParkNet, the website of the National Park Service. Please visit www.nps.gov for more information.

Boca Chita Key
Biscayne National Park
Historic Structure Report

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Table of Contents

List of Figures vii
Foreword ix

Management Summary
Statement of Purpose and Project Goals 1
Project Team Members 1
Investigation Methodology 1
Report Organization 2
Statement of Significance 2
Physical Description 3
Treatment Recommendations 3
Recommendations for Further Research 3

Historic Structure Report
Historical Background and Context 5
Chronology of Development and Use 7
Physical Description 19
Architectural 19
Lighthouse 19
Chapel 27
Garage/Barn 31
Engine House 35
Pavilion 39
Structural 41
Lighthouse 41
Statement of Significance 49

Cultural Landscape Inventory
Inventory Unit Summary and Site Plan 51
Concurrence Status 53
Geographic Information and Location Map 53
Management Information 55
National Register Information 56
Chronology and Physical History 60
Analysis and Evaluation 75
Condition 90
Treatment 92
CLI Graphics 93

Treatment and Use
Requirements for Treatment and Use 135
Alternatives for Treatment and Use 136
Recommendations for Treatment and Use 137
Buildings 138
Landscape 141
Draft PMIS Statements 150

Bibliography

List of Figures

Management Summary

Historic Structure Report

Figure 1 Early 1930s aerial photograph showing the location of mangrove forests....8
Figure 2 Mark Honeywell circa 1938-40....8
Figure 3 The Committee of One Hundred annual party, 1940....8
Figure 4 Arched concrete footbridge over existing canal circa 1940s....9
Figure 5 Frame Structures, still photo from 1930s construction video....9
Figure 6 Frame building under construction, still photo from 1930s construction video....9
Figure 7 Aerial Photograph circa 1940....10
Figure 8 Walkway under construction and harbor poles, still photo from 1930s....10
Figure 9 Boca Chita Lighthouse with Venetian harbor poles circa 1940....10
Figure 10 Entrance into Boca Chita harbor circa 1940....10
Figure 11 Cannon being fired to welcome Committee of One Hundred members....11
Figure 12 Boca Chita Chapel 1940s....11
Figure 13 Picnic Pavilion 1940s....11
Figure 14 Aerial photograph showing historic circulation on the island 1940s....12
Figure 15 Wooden dock in Boca Chita harbor 1940s....12
Figure 16 Construction and Planting circa 1938....13
Figure 17 Mature Coconut Palms circa 1940....13
Figure 18 Entertaining guests on Boca Chita circa 1940....14
Figure 19 Mark and Eugenia Honeywell circa 1943....14
Figure 20 Cottage on Boca Chita....15
Figure 21 Picnic pavilion with screen and shed addition pre 1992....15
Figure 22 Restroom building pre 1992....16
Figure 23 Picnic pavilion with screen and shed addition pre 1992....16
Figure 24 Boca Chita before Hurricane Andrew pre 1992....16
Figure 25 Boca Chita after Hurricane Andrew circa 1992....16
Figure 26 Rebuilt bulkhead and boardwalk circa 2000....17
Figure 27 NPS Tree plantings circa 1995 after Hurricane Andrew....17
Figure 28 Paving stones and stone walls, looking west with cannon in background....19
Figure 29 Paving stones and stone walls, looking east. Note vegetation....20
Figure 30 Paving stones, detail. Again, note vegetation....20
Figure 31 Lighthouse, east and south elevations....20
Figure 32 Lighthouse, west elevation....21
Figure 33 Lighthouse, north elevation. Note crack at upper wall....21
Figure 34 Board-formed concrete walls at lantern level....21
Figure 35 Staining at observation deck lip....22
Figure 36 Pre-1992 photograph showing operable windows at dome....22
Figure 37 Drainage channel and drain with strainer holes....22
Figure 38 Scupper for internal drain at base of tower....22
Figure 39 Three-paned window at east elevation above entry door....23
Figure 40 Detail of circa 1940s tower....23
Figure 41 Cracked pane at south window....23
Figure 42 Ca. 1940s photo of tower....24
Figure 43 Observation deck exterior door handle....24
Figure 44 Door at base of tower....25
Figure 45 Door at observation deck....25

Figure 46 Lighthouse interior, showing stairs, concrete blocks, and underside of landing .26
Figure 47 Lighthouse interior, same view looking down 26
Figure 48 Honeywell period photo of chapel, showing rolled roofing 27
Figure 49 Ca. 1940s photo of chapel, showing rolled roofing 27
Figure 50 Ca. 1980s photo of chapel, showing rolled roofing 27
Figure 51 Chapel, south and west elevations 28
Figure 52 Chapel, east and north elevations 28
Figure 53 Holes at bottom of west wall.....28
Figure 54 Rounded rafter tail ends at roof.....28
Figure 55 Typical window 29
Figure 56 South door 29
Figure 57 South porch at chapel.....29
Figure 58 Chapel interior looking east 30
Figure 59 Chapel interior looking west 30
Figure 60 West wall parging, detail 30
Figure 61 Garage east and north elevations 31
Figure 62 Garage, west and south elevations 31
Figure 63 Garage, north elevation, garage doors and apron, detail, looking east 31
Figure 64 Rust-jacked corner at southwest corner.....32
Figure 65 Rust jacking at window and garage door lintels, detail 32
Figure 66 North person door.....33
Figure 67 Garage interior, looking west 33
Figure 68 Garage interior, looking east 33
Figure 69 Garage windows, detail 33
Figure 70 Engine house west and north elevations 35
Figure 71 Engine house, south and east elevations and cistern.....35
Figure 72 Typical historic window 36
Figure 73 West door.....36
Figure 74 Equipment platform at south elevation, looking northwest.....37
Figure 75 Cistern, looking southeast 37
Figure 76 Engine house interior, looking east.....37
Figure 77 Engine house interior, looking west.....37
Figure 78 Vertical beam with different size blocks to either side.....37
Figure 79 Exposed rebar and ghosting at east wall 38
Figure 80 Inappropriate replacement window 38
Figure 81 Honeywell period (ca. 1940s) photo of pavilion showing tile roof 39
Figure 82 Pavilion, looking northeast.....39
Figure 83 Pavilion, looking southwest.....39
Figure 84 Pavilion, interior looking south 40
Figure 85 Pavilion, roof structure and ties looking north 40
Figure 86 Schematic Plan of Lighthouse 41
Figure 87 Concrete brick used in lighthouse construction 41
Figure 88 Concrete block work with stone veneer at base of tower.....42
Figure 89 Form-work and re-steel for observation deck 42
Figure 90 Sheet piling and wood piles at lighthouse foundation 42
Figure 91 Sheet piling and wood piles at lighthouse foundation 42
Figure 92 Moderate vertical cracking at northwest exterior quadrant 43
Figure 93 Moderate vertical cracking between windows at northwest exterior quadrant .43
Figure 94 Apparant cracking below observation deck 44
Figure 95 Close-up just below upper window at northwest exterior quadrant.....44
Figure 96 Moderate re-cracking of previously pointed crack.....44
Figure 97 Close-up of re-cracking.....44
Figure 98 Minor honeycombing at underside of observation deck.....45

Figure 99 Minor re-cracking of previously pointed crack 45
Figure 100 Close-up of re-cracked pointed joint 45
Figure 101 Fine to moderate cracking at previously pointed joint 45
Figure 102 Moderate re-cracking of previously pointed joint 45
Figure 103 Previously repaired upper tread in good condition 45
Figure 104 Stone cracking at tread and door jamb 46
Figure 105 Fine vertical cracking just beneath stairs at northwest quadrant 46
Figure 106 East window head at level two shows minor hairline crack 47
Figure 107 East window at level two repairs appear to be sound 47
Figure 108 Fourth riser up from level two shows end cracking up and diagonally 47
Figure 109 Fourth riser up from level two also shows cracking along the front of the riser . 47
Figure 110 Sixth riser up from level 2 shows end cracking 47

Cultural Landscape Inventory

* Graphics for the Cultural Landscape Inventory are listed on pages 52, 53, 74, & 89.

Treatment and Use

Figure 111 Treatment - Circulation Illustration 143

Foreword

To be completed by National Park Service

Management Summary

Statement of Purpose and Project Goals

The purpose of this report is to a provide a developmental history, a landscape inventory and recommendations for the rehabilitation of the historic structures and landscape found at Boca Chita Key. This is accomplished in a hybrid document that contains a Historic Structure Report (HSR), a Cultural Landscape Inventory (CLI), and Treatment and Use Recommendations to guide future management decisions.

Boca Chita Key is a 32 acre island on Biscayne Bay south of Miami, Florida. The property was purchased by Mark C. Honeywell, the president of the Honeywell Heat Regulator Company, in 1937. During the next several years, Mr. Honeywell and his wife, Olive Lutz Honeywell, commissioned the construction of several structures on the property, including an ornamental lighthouse, chapel, barn, engine house, and pavilion, as well as a number of landscape features including stone walls and a stone footbridge. The Honeywells utilized Boca Chita as a retreat from their Miami vacation home and a gathering place for their friends. After the death of his first wife and his subsequent remarriage, Mark Honeywell sold the property in 1945. The National Park Service purchased the island in 1985 to be included within Biscayne National Park. In 1997, 11 acres of the island were listed on the National Register of Historic Places as The Boca Chita Key Historic District. The district contains the remaining historic structures and landscape features which survived numerous hurricanes since the Honeywell era.

Boca Chita Key remains a popular winter visitor destination, and Biscayne National Park would like to update visitor facilities and improve interpretation of this historic district. In addition, due to sustained damage from Hurricane Andrew in 1992, and the Park has requested condition assessments and treatment recommendations for these structures. The buildings addressed in the HSR are the lighthouse, the chapel, the garage/ barn, the engine house, and the pavilion. The CLI addresses the entire island while the Treatment and Use recommendations are focused on the cultural landscape and historic structures.

Project Team Members

The National Park Service contracted with a team of professionals to complete the this report. The team consists of:

The Jaeger Company, Athens, Georgia, serving as team leader, preparing the CLI, coordinating the Treatment and Use recommendations and providing landscape architectural services.

Quinn Evans Architects, Ann Arbor, Michigan, preparing the HSR and providing architectural services.

Fitzpatrick Structural Engineering, Ann Arbor, Michigan, providing structural engineering services.

Investigation Methodology

The task of documenting an historic site requires a disciplined approach to analyzing historical evidence, documenting physical conditions, and anticipating the future needs of the property. This is accomplished by utilizing a variety of investigative procedures. These include researching primary and secondary sources, performing detailed physical surveys of the structures and site, consulting with specialists in materials and construction methodology, and employing scientific technology. Historic research was conducted at the South Florida Collection Management Center in Everglades National Park, which contains a number of collections related to Boca Chita Key. Biscayne National Park provided a number of historic photographs and other historic materials, as well as oral interviews with maintenance staff who have worked on the island for many years. The Historical Museum of Southern Florida provided additional high quality historic images. Other regional archives were contacted, but few other materials were discovered.

The project team surveyed the property in October 2009 with a follow-up visit in February 2010. Observations were generally limited to those conditions readily visible without the use of destructive methods and were recorded by hand on survey sheets, field maps and supplemented with photographs. Architectural drawings were not included in the scope of work, so measurements were obtained for descriptive, structural and accessibility assessment purposes only.

The recommendations in this report are based on documentary evidence collected to date and visual inspection. The research process is not concluded with the completion of this report. Rather, it can be supplemented in the future by further information gathered through additional investigation, and by subsequent documents and information as they are discovered.

Report Organization

This report provides both a philosophical approach and practical recommendations for treatment of the property, supported by historic research and survey of existing conditions. The report is organized as follows:

Historic Structure Report

Historical Background and Context. Describes the people and events associated with the property that established its architectural and historic significance.

Chronology of Development and Use. Summarizes the original construction of the buildings and documents later modifications.

Physical Description. Provides a description of the features, materials, and spaces of the structures and provides observations of existing architectural and structural conditions.

Statement of Significance. States the significance of the property as determined by the National Register of Historic Places.

Cultural Landscape Inventory

CLI information presented in this report has been entered into the NPS CLI database. The Boca Chita Key CLI is provided in printed form here to provide baseline information about the cultural landscape. Inventory is based on the guidelines established by the National Register Historic Places. Significance, integrity, site boundaries, condition and contributing and non-contributing resources are some of the determinations that are made in the inventory. Information about the cultural landscape was used to inform future treatment and use recommendations for Boca Chita Key.

Treatment and Use

Requirements for Treatment and Use. Provides an outline of laws, regulations, and requirements that are relevant to the property and it's rehabilitation.

Alternatives for Treatment and Use. Discusses various preservation treatment alternatives to identify the appropriate approach for the site.

Recommendations for Treatment and Use. Presents recommendations for the rehabilitation of the buildings, structures and landscapes.

Draft Project Management Information System (PMIS) Statements. Proposed projects are described and prioritized with the intention that they will be entered into the NPS PMIS database for future funding consideration.

Bibliography

Presents sources used in the preparation of this report.

Statement of Significance

The Honeywell complex on Boca Chita Key is locally significant under National Register of Historic Places Criterion A, for its representation of the activities of the wealthy industrial class that emerged between the first and second World Wars, and as a significant example of a retreat constructed by Mark Honeywell, an influential member of this class. It is also significant under Criterion C as a representative example of the architectural styles and construction methods employed on weekend retreats in the Florida Keys during the 1930s.

The period of significance for Boca Chita Key is 1937-1945, representing the period during which Mark Honeywell owned and developed the property.

Physical Description

In general, the buildings of the Honeywell complex have been well maintained and exhibit no major deterioration beyond that expected for their age and climate. The chief problem is deterioration of the exterior stone, and cracking of the mortar joints of both the exterior stone blocks and the structural concrete blocks. Although the wood windows of the structures (except for the lighthouse) have been protected with plywood, they are generally in fair to poor condition, likely from years of weathering. The buildings retain most of their historic fabric, with the most significant change being the replacement of all the roofs as a consequence of Hurricane Andrew.

Tropical storms have impacted the island's vegetation and several of its landscape features. Since Hurricane Andrew destroyed the majority of the island's vegetation in the 1990s, replanting and natural regeneration have produced a landscape that is much like the one created by the Honeywell family. Loss and deterioration of original masonry features has also reduced the level of integrity of the Boca Chita Key landscape.

Treatment Recommendations

Given the generally good condition of the buildings, periodic maintenance and repair are the chief recommendations. Vegetation management is another area that is addressed with general recommendations. Two of the most problematic issues at Boca Chita Key are adding access and dealing with deterioration of the oolitic limestone. The difficulty of repairing or replacing limestone while still maintaining its historic integrity is a challenge. Similarly, implementing new accessible circulation routes and providing accessible entries to buildings can negatively impact resource integrity. A range of options are detailed for treating the stone and a plan to increase accessibility is described and mapped. Otherwise, treatment recommendations generally include the periodic repointing of the stone mortar joints, vegetation monitoring and maintenance, the restoration of the wood windows and doors, and the rehabilitation of the interiors for more optimal use by the Park.

Recommendations for Future Research

While much historic information has been uncovered by the staff of Biscayne National Park and through research for this report, some key questions still remain.

- What were the original roof materials on all the buildings?
- How did the lighthouse dome operable windows function? (e.g., were they always open?)
- What kind of garage and person doors did the garage have?
- What was the historic appearance of the cistern and how did it function?
- How was the cistern below the lighthouse used and accessed?
- What is the function of the space below the chapel floor accessed by the wood hatch door?
- What equipment was in the engine house and how did it function?
- What did the main house look like?
- The 1997 amendment that deleted National Register Criterion B and Mark Honeywell as a significant person should be revisited. We recommend studying Mark C. Honeywell's influence in the recreational development of Miami and Biscayne Bay since National Register criterion allows for multiple listings for a single individual if each property "represents a different aspect of the person's productive life."

The Park should continue to search out historic photographs, oral histories, and construction documents related to Boca Chita Key. The following collections and resources should be considered for future research.

- University of Miami Paul Buisson Architecture Library- potentially contains a collection of projects from the architectural firm of August Geiger

- Honeywell Center, Wabash, IN- archives containing family belongings including many reels of movies shot by Mark Honeywell (some at Boca Chita)

- Collect oral histories and photographs from family members of former owners, designers, contractors, caretakers and Committee of One Hundred members and family members who visited Boca Chita

- University of Florida Map and Imagery Collection- additional aerial photographs particularly from late 1940s until the present Honeywell (some at Boca Chita)

Historical Background and Context

Boca Chita Key Historic District was listed in the National Register of Historic Places on August 1, 1997. Boca Chita Key is a component of Biscayne National Park, which Congress established in 1968 as the Biscayne National Monument to preserve and protect the natural resources of the Biscayne Bay region. Congress and the National Park Service expanded the Monument in 1974. Congress expanded it again and designated it as a National Park in 1980. Today the park, which encompasses approximately 173,000 acres in Miami-Dade County, Florida, is primarily a marine park with 95 percent of its area submerged under Biscayne Bay and the Florida Straits. Biscayne National Park's land area includes 4,250 acres scattered across forty-two keys, including Boca Chita. The National Park Service acquired 32 acre Boca Chita Key and the surrounding submerged land, a total of 162 acres, for $2.875 million on March 1, 1985.

Because of the subtropical climate, hurricanes, and human actions, few historic structures survive in Biscayne National Park. However, the complex of limestone and concrete structures that Mark Honeywell built as a private resort between 1937 and 1940 has survived. The Honeywell complex includes three contributing buildings, eight contributing structures, and one contributing object. The complex is architecturally significant because it is characteristic of the growth and development of the Miami area during the 1930s. The structures comprise a significant example of a recreational retreat built by the wealthy elite of the Miami area and collectively form a locally significant historic district with integrity of location, design, setting, materials, feeling, and association.

The first certificate of ownership of Boca Chita Key is dated June 21, 1916, when Carl Fisher, F. A. Seiberling and associates purchased the island. Carl Fisher (1874-1939) is credited as one of the pioneers of the south Florida real estate boom of the early twentieth century. Fisher was a principal behind the Indianapolis Motor Speedway and promoter of early highways including the Lincoln Highway and the Dixie Highway, which reached Miami. F. A. (Franklin Augustus) Seiberling (1859-1955) was the founder of the Goodyear Tire and Rubber Company.

Seiberling initiated development of the island. Between 1916 and 1926, workers added five to thirteen feet of fill material on top of the existing limestone, bringing the island to its current configuration. The north end of the island has approximately thirteen feet of added fill material; the fill is shallower on the east and southeast portions of the island. Seiberling also built a wooden bulkhead and one or more frame buildings on the island. The hurricane of September 1926 destroyed these improvements as it passed over Boca Chita.

Soon after the 1926 hurricane, Sieberling and his associates sold the island to Sieberling's son-in-law Milton W. Harrison (1889-1949). Prior to 1934, Harrison had built a two-story frame house on the north end of the island, dredged the boat basin, and installed steel bulkheads on the island's coastline to replace the wooden ones destroyed in the hurricane. In 1937, Harrison sold the island to Mark C. Honeywell.

Mark C. Honeywell (1874- 1964) was the first president and later chairman of the board of the Minneapolis Honeywell Heat Regulator Company, which manufactures thermostats and automatic controls for heating systems. Mark C. Honeywell and his wife, Olive Lutz Honeywell, who maintained their primary residence in Wabash, Indiana, purchased Boca Chita as a retreat from their vacation home in Miami. The Honeywells were prominent members of the Miami Beach social scene in the 1930s and 1940s. They joined many of the most prestigious social clubs, including the Miami Beach Committee of One Hundred, for whom Mr. Honeywell served as president from 1936 to 1951.

Between 1937 and 1940, the Honeywells built several buildings on the north end of the island in the vicinity of the frame dwelling constructed during the Harrison ownership. The existing

structures on Boca Chita surviving from this construction period include the Lighthouse, Chapel, Picnic Pavilion, Garage, Engine House and Cistern, stone walls and stone retaining walls. Sections of concrete walkway, remnants of an arched concrete footbridge, and a cannon also survive from the Honeywell period.

The Honeywells hired August Geiger to design the Boca Chita lighthouse. Geiger was one of the most prominent architects in the Miami region during the first half of the twentieth century. The structures built during the Honeywell period which remain at Boca Chita were constructed from oolitic limestone, a popular building material in Miami during this period. The similarities in design character and materials suggest that one firm, Geiger's, may have designed all the structures on the island.

After the death of Olive Lutz Honeywell, Mark Honeywell remarried in 1942 to Eugenia Hubbard. He sold Boca Chita in 1945 to Florence Emmerman. Louis and Florence Emmerman hired contractor Albert Philpot to construct frame guest quarters on the island. Sailing Baruch purchased the island in 1950, selling it three years later to G. E. Carlson. Carlson sold the island three years later to a radio station company, whose president was E. D. River, governor of Georgia from 1936 to 1940.

The National Park Service (NPS) purchased the island in 1985. NPS improvements to the island included a restroom facility, boardwalks, and interpretive signage. Hurricane Andrew passed over the island in 1992, destroying most of the frame structures and badly damaging the stone buildings and stone walls. Since 1992 the NPS has added a new bulkhead to the island, installed a boat landing ramp, and replanted the island.

Chronology of Development and Use

Episode 1: Early Development (Prehistory to 1936)

Boca Chita Key is a part of the upper Florida Keys, located between Ragged Key Number 5 to the north and Sand Key to the south. The shallow coral reef that provides the foundation for Boca Chita was formed during the Pleistocene epoch. A subsequent glacial period lowered the water levels in this area, exposing the coral to air and direct sunlight, resulting in their death. Over time this dead coral metamorphosed into limestone rock.[1] One of the several kinds of limestone formed in this area is Miami oolitic limestone, which was a popular building material in the region during the early twentieth century and was used to build the historic structures on Boca Chita.

Miami, Florida rapidly developed upon the completion of Henry M. Flagler's Florida East Coast Railway in 1896, which provided the first convenient transportation link to the lower half of the state. The real estate boom in the first decades of the twentieth century resulted in a dramatic increase in the region's population. From 1915 to 1925, Miami's population grew from 15,000 to 71,000 inhabitants. The Dixie Highway opened in 1925, creating a direct vehicular link between south Florida and the rest of the country. [2]

Carl Fisher was instrumental in promoting and developing Miami. Fisher, founder of the Presto-o-lite Company and the Indianapolis Motor Speedway, purchased a vacation home in Miami in 1910. In 1913, Fisher built a bridge to the barrier reef across Biscayne Bay from Miami and used sand dredged from the Bay to fill the mangrove swamps on the island. Fisher renamed the former reef Miami Beach; he began selling lots in 1919 and it soon became popular with the wealthy Americans attracted to Miami's subtropical climate. Encouraged by the success of Miami Beach, Fisher began building artificial islands and enlarging existing keys by adding soil dredged from Biscayne Bay.[3]

One of the Biscayne Bay islands enlarged during this period was Boca Chita Key. Carl Fisher and several business associates, including Brainard T. Bell and F. A. Seiberling, purchased Boca Chita on June 21, 1916. F. A. (Franklin Augustus) Seiberling, the founder of the Goodyear Tire and Rubber Company, is thought to have initiated the development of Boca Chita between 1916 and 1926. During this period, workers deposited approximately 5 to 13 feet of dirt on top of the existing limestone, creating the current configuration of Boca Chita Key. Seiberling also constructed a wooden bulkhead and possibly a few frame buildings on the island. An unnamed Category 4 hurricane passed over the island in September 1926, destroying all of these improvements.[4]

Seiberling's son-in-law, Milton W. Harrison, purchased Boca Chita from Seiberling, Fisher and associates after the hurricane in 1926. Harrison built a two story frame house, referred to as the "Main House," on the man-made north end of the key where the fill dirt is up to thirteen feet deep.[5] According to Cullison and Yelen, Harrison had the boat harbor dredged and installed steel bulkheads in 1934 to replace the wooden ones destroyed in the hurricane.[6] Harrison is likely responsible for the construction of three canals which extend inland from the south end of the harbor and western edge of the island. The canals are visible in a historic aerial of the island from the 1930's (Figure 1). These canals were constructed to drain mangrove forest in the interior of the island. The

1. David Cullison and Jennifer Brown Leynes, Biscayne National Park Historic Resource Study, National Park Service, Southeast Regional Office, 1998, pp. 7-8.
2. David Cullison and Jennifer Brown Leynes, National Register of Historic Places Registration Form: Boca Chita Key Historic District, South Florida Collection Management Center, Everglades National Park, 1997, sec. 8, p. 5.
3. David Cullison, Biscayne National Park Historic Resource Study, p. 22.
4. Ibid., p. 26.
5. Beverly Yelen, Historical Information Relating to Boca Chita Cay, South Florida Collection Management Center, Everglades National Park, p.2.
6. David Cullison, Biscayne National Park Historic Resource Study, p. 26. Beverly Yelen, Historical Information Relating to Boca Chita Cay, p.1.



Figure 1: Early 1930s aerial photograph showing the location of mangrove forests and canals (Historical Museum of Southern Florida).



Figure 2: Mark Honeywell circa 1938-40 (Historical Museum of Southern Florida).

northern canal and northern most mangrove forest were later filled, creating the ornamental canal that is still visible in the landscape.

Episode 2: The Honeywell Era (1937-1945)

In 1937, Harrison sold Boca Chita Key to Mark C. Honeywell and his wife Olive Lutz Honeywell. Honeywell, a native of Wabash, Indiana, was the first president of the Minneapolis Honeywell Heat Regulator Company (now Honeywell Inc.) (Figure 2). Honeywell purchased a vacation home in Miami and subsequently purchased Boca Chita to be a private retreat and place to entertain friends. The Honeywells joined many of the most prestigious social clubs in Miami, including the Miami Beach Committee of One Hundred, for whom Honeywell served as president from 1936 to 1951.[7] The Committee of One Hundred was a social organization composed of many of the nation's leading industrialists and businessmen. The committee held their annual party on Boca Chita during Honeywell's ownership of the island (Figure 3).

The Honeywells kept the frame house built by Harrison to serve, according to Cullison, "as the primary residence" on the island and added several structures to support its use as a vacation retreat.[8] The period of development during the Honeywell ownership is likely between 1937, when Honeywell purchased the island, and 1939, when Mrs. Honeywell died and Mr. Honeywell's interest in the island waned. The Honeywell structures include a lighthouse, chapel, picnic pavilion, garage, and engine house. The Honeywells also built an arched concrete footbridge over an existing canal, a stone wall with gates and a gatehouse around the primary structures, and a stone retaining wall along the northwest shore of the island (Figure 4).



Figure 3: The Committee of One Hundred annual party, 1940 (South Florida Collection Management Center).

7. David Cullison, Biscayne National Park Historic Resource Study, p. 27.

8. Ibid, p. 27.



Figure 4: Arched concrete footbridge over existing canal circa 1940s (South Florida Collection Management Center).

Beverly Yelen's "Historical Information Relating to Boca Chita Cay" credits later owners of the islands, Louis and Florence Emerman, with building a collection of wooden frame structures on the island that existed into the 1990s.[9] However, historic photographs and a video showing construction on the island during the Honeywell period plainly show that at least two of the frame structures are contemporaneous with the lighthouse (Figure 5); the video also shows what is likely a third frame building under construction (Figure 6). (These structures appear to be those that later become known as "Grandma's Hut," "Clubroom," and "Honeymoon Hotel").



Figure 5: Frame Structures, still photo from 1930s construction video (Biscayne National Park Library).

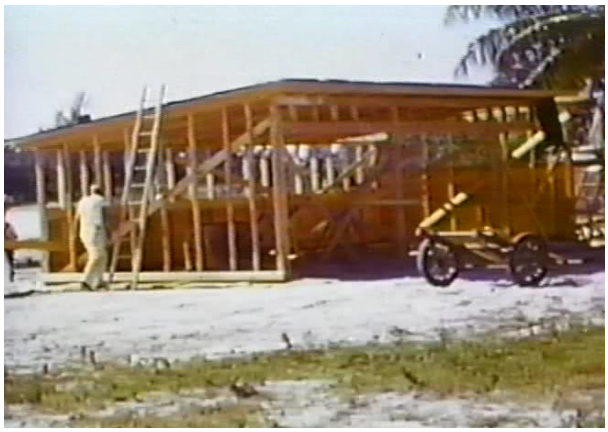


Figure 6: Frame building under construction, still photo from 1930s construction video (Biscayne National Park Library).

All of the existing historic structures on Boca Chita are located on the north end of the island and feature the same exterior material—Miami oolitic limestone. Historic aerials show that there were additional structures on the south half of the island, but none of these structures exist today (Figure 7). The architecture of the existing Honeywell structures reflect the Mediterranean and Classical styles characteristic of resort properties constructed in the Miami region during this period. Historic photographs and the construction video also capture images of other small landscape features that no longer exist but also reflect the Mediterranean-inspired resort architecture of this period, including limestone walkways, wooden docks, and striped Venetian poles around the harbor. The construction video shows that the harbor poles are vibrantly painted with spiraling stripes of orange, red, and black. Some of the poles are topped in finials and others feature lanterns (Figure 8).

It is known that the Honeywells hired the firm led by August Geiger, a prominent architect in the Miami area, to design the ornamental lighthouse located at the mouth of the Boca Chita harbor (Figure 9 and Figure 10). August Geiger was best known for introducing Spanish Colonial or Mediterranean Revival architecture into the Miami area.[10] Geiger's commissions include several municipal structures, including the Miami City Hospital, and private developments, including Carl Fisher's first hotel on Miami Beach. Geiger's firm was also popular with wealthy clients who built winter vacation homes in and around Miami

9. Beverly Yelen, Historical Information Relating to Boca Chita Cay, p. 3.

10. David Cullison, Biscayne National Park Historic Resource Study, p. 36.



Figure 7: Aerial Photograph circa 1940 (Historical Museum of Southern Florida).



Figure 8: Walkway under construction and harbor poles, still photo from 1930s construction video (Biscayne National Park Library).



Figure 9: Boca Chita Lighthouse with Venetian harbor poles circa 1940 (South Florida Collection Management Center).

Beach. According to Jim Church, who worked as a draftsman for the Geiger firm, Leon Angle Camp designed the lighthouse and Jack Hunt was the general contractor for its construction.[11] The similarity between the styles and construction materials of the different structures suggest that the Honeywells utilized the services of a single design firm or construction company for these limestone structures.[12]



Figure 10: Entrance into Boca Chita harbor circa 1940 (Historical Museum of Southern Florida).

11. David Cullison and Jennifer Brown Leynes, National Register of Historic Places Registration Form: Boca Chita Key Historic District, sec. 8, p. 11/
12. David Cullison, Biscayne National Park Historic Resource Study, p. 36.

The Honeywell structures are distributed across the north end of the island arching in an arc from the lighthouse to the west, to the garage in the east, back to the pavilion on the west side of the island. The Boca Chita Lighthouse (HS-1, IDLCS 90190) is a 65 feet tall tapering cylindrical tower located on a peninsula of land forming the north side of the harbor entrance on the Biscayne Bay (west) side of the island. Honeywell reportedly built the lighthouse to guide boaters into the harbor but, according to one story, the United States Coast Guard shut it down after its initial lighting in the late 1930s.[13] A cannon is mounted on a stone base below the Lighthouse, which Honeywell reportedly fired to greet visitors to the island (Figure 11). The Boca Chita Chapel (HS-2, IDLCS 90191) is located north east of the Lighthouse, on the same peninsula forming the north side of the harbor (Figure 12). The Chapel is a small, 12 feet by 20 feet, structure with a steeply pitched concave roof. The Boca Chita Picnic Pavilion (HS-3, IDLCS 90192) is across the entrance into the harbor from the Lighthouse and Chapel (Figure 13). This open sided structure sits on a 15 feet by 52 feet concrete foundation with ten squared limestone piers supporting a hipped roof. Historic photographs suggest that the floor of the pavilion was originally limestone pavers, which were covered by the existing concrete floor at a later, unknown date. Historic photographs also show the roof was tiled. The tiles shown piled at the side of the harbor in the construction video appear to be made of concrete. In a 1991 letter to Superintendent Sanders, James Haston, of the Dinner Key Cruising Club, reports removing "old cement tile" from the Pavilion.[14]

A 71 feet by 30 feet Garage (HS-4, IDLCS, 90193) is located on the east edge of the developed north end of the island. The north elevation of the Garage (also known as the Barn) features four garage-type door openings and a fifth standard-size door; the south elevation has five windows with transoms. Between the Garage and the harbor stands the Engine House and Cistern (HS-5, IDLCS 90194). The Engine House, also known as the Generator Building, is a 15 feet by 32 feet structure on a concrete slab foundation. An octagonal concrete cistern is attached to the east elevation of the building.



Figure 11: Cannon being fired to welcome Committee of One Hundred members to the island circa 1940 (South Florida Collection Management Center).



Figure 12: Boca Chita Chapel 1940s (South Florida Collection Management Center).

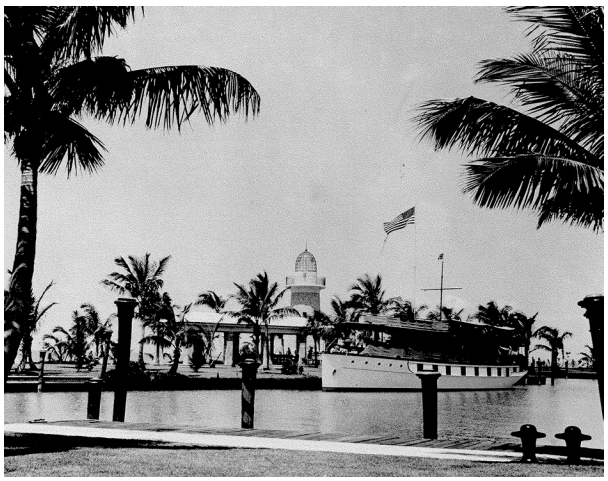


Figure 13: Picnic Pavilion 1940s (South Florida Collection Management Center).

13. Bill Chapman and University of Georgia Historic Preservation Students, Boca Chita Evaluation Draft. South Florida Collection Management Center, Everglades National Park, 1993, p. 51.
14. James R. Haston, Jr., "Correspondence dated 14 May 1991 regarding Dinner Key Cruising Club work on Boca Chita." South Florida Collection Management Center, Everglades National Park.

Smaller structures built by the Honeywells include an arched 14 feet long and 6 feet wide concrete footbridge (Bridge-HS-6, IDLCS 90195) over the narrow canal at the south end of the harbor. Originally the footbridge featured three feet high stone walls which flared out at the ends into low scroll forms. The canal, which predated the footbridge, extended about 45 feet south beyond the footbridge. The Canal (HS-8, IDLCS 91570), which was filled in the 1990s, has retaining walls composed of uncoursed limestone with green tinted concrete coping.

The Honeywells built 900 feet of Stone Wall (HS-7, IDLCS 90196) around their complex of buildings. The wall extended east from the west shore on the Biscayne Bay side of the island to just south of the engine house building. The wall featured a one room stone gatehouse and seven gateways.[15] There is also a stone retaining wall (IDLCS 91571), likely dating from this same period, on the north shore of the island that serves as a bulkhead. Several of the structures and the harbor area were connected with a pedestrian circulation system of tinted concrete walkways (HS-10, IDLCS 91616), informal dirt paths, as well as at least two sections of limestone walkway adjacent to the harbor (Figure 14). Concrete walkways led from the harbor to the main house and to the engine house; these walkways clearly correspond to the structures built during this period, though it is unclear when the walkways were constructed. Dirt roads and paths led from the developed area through the stone wall to the south and west ends of the island where there were several service structures.

Yelen's interview with Philpot records that in the 1940s there were three wooden docks in the Boca Chita Harbor on the north end, the south end, and near the Pavilion. These docks appear in Honeywell era photographs and in the construction video, so it is likely that Honeywell had the docks constructed (Figure 15)[16]. According to Philpot, these docks were painted green. In addition to the three docks in the harbor, the video provides evidence of a fourth dock located on the Biscayne Bay side of the island on the west shore of the peninsula in the vicinity of the picnic pavilion. Limestone walkways lined the harbor along the sides of at least two of the docks. One of these limestone walkways is shown under construction in the video. A construction worker is seen laying large, flat limestone pavers onto a bed of sand and pouring concrete to fill the joints. Construction documents from 1994 show an outline of an approximate 80 foot length of "oolitic limestone sidewalk" on the east side of the harbor and up to 200 feet of sidewalk on the west side.

The construction video also shows that Honeywell had improvements made to the island's bulkhead and had the harbor dredged. Also visible in the video is a large excavator digging sand at the shoreline and depositing it on the island. Workers then use a tractor to spread the sand on the island in the vicinity of what appears to be the current location of the stone wall. This indicates that the northern canal which drained the southern mangrove forest was filled and at the same time footers for the stone wall were constructed within the canals alignment. Historic photographs show



Figure 14: Aerial photograph showing historic circulation on the island 1940s (South Florida Collection Management Center).



Figure 15: Wooden dock in Boca Chita harbor 1940s (South Florida Collection Management Center).

15. David Cullison, Biscayne National Park Historic Resource Study, p. 35.

16. Beverly Yelen, Historical Information Relating to Boca Chita Cay, p. 3.

a large white area east of the engine house and cistern which may be sand. This area corresponds to the area that was occupied by the northern mangrove forest in the 1930s aerial (Figure 1). The construction video also shows a white, linear feature in the landscape that corresponds with the location of one of the drainage canals. It appears to be the canal that drained into the harbor that was partially filled. The remaining section of canal was converted to an ornamental canal with an arched concrete footbridge.

Newspaper reports on Boca Chita record Honeywell clearing existing vegetation and making extensive additions. An article from the Miami News in April 1941 claims that "When the swamps were first cleared away many fine specimens of native flora were found," including "gumbo limbo, citharexyllum, and many others growing in abundance." The article quotes Honeywell: "The native things I didn't find here I brought in and planted….Now I have almost everything except the pigeon plum (*Coccolobis floridana*) and the satin leaf tree (*Chrysophyllum olivaeforme*)." The article discusses the various things Honeywell did to beautify the island, including planting trees, shrubs, and ground covers (Figure 16). Honeywell apparently experimented with different grass species, and "after trying various grasses, with small success, he found the St. Lucie, a long-bladed Bermuda variety, would stand against the salt spray better than most." The lawn on Boca Chita was, according to the reporter, "the thing that impresses most as you enter [the] harbor." The list of trees and shrubs Honeywell planted on Boca Chita included: "vitex, Carissa plum, Surinam [possibly Eugenia sp.], ligustrum, jatropha, almond trees [possibly *Terminalia* sp], melaleucas…oleander… sea grape [*Cocoloba* sp.] …purslane [possibly *Portulaca* sp.]… papayas and coconut palms."[17]

Historic photographs show that Honeywell made extensive changes to the vegetation. Large portions of the island appear to have been cleared to create open space and to open views to the ocean. Honeywell planted very large plant material. This is visible in photographs and described in a history of Honeywell, "Mark C. Honeywell: Citizen, Builder, Philanthropist of Wabash, Indiana," which states that nurseries sent "full-grown coconut palms,

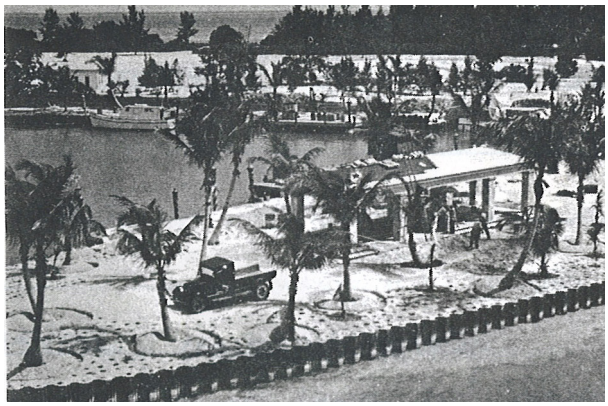


Figure 16: Construction and Planting circa 1938 (Biscayne National Park).



Figure 17: Mature Coconut Palms circa 1940 (Historical Museum of Southern Florida).

with huge amounts of earth covering their roots."[18] Historic photographs from the Honeywell period show a densely planted landscape. Mature coconut palms and Australian pine trees dominate the tree canopy on the north end of the island (Figure 17). The ends of the peninsulas at the mouth of the harbor were planted in Australian pines. The edge of the harbor was planted with a groundcover that draped over the seawall. A line of pines surrounded a distinct rectangular-shaped open area near the engine house. Another prominent open space extended east from the main house towards the Atlantic Ocean. An allee of palm trees led northeast from the main house to an ocean-side beach.

The Honeywells used Boca Chita as a retreat from their winter home in Miami and to entertain guests

17. Elisabet M. Stone, "Florida Island Becomes Garden Spot in Two Years." The Miami News, 27 April 1941, sec. D, p.8.

18. Mildred E. Hipskind, Mark C. Honeywell: Citizen, Builder, Philanthropist of Wabash, Indiana (Wabash: The Honeywell Foundation, 1970) p. 23.



Figure 18: Entertaining guests on Boca Chita circa 1940 (South Florida Collection Management Center).



Figure 19: Mark and Eugenia Honeywell circa 1943 (Historical Museum of Southern Florida).

(Figure 18). However, Olive Lutz Honeywell died in February 1939 from heart trouble according to her obituary. According to the Honeywell House museum in Wabash, Indiana, she is believed to have sustained injuries from a fall at Boca Chita that may have contributed to her death.[19] Mark Honeywell reportedly spent less time at the island and, after remarrying in 1942 to Eugenia Hubbard, sold Boca Chita to Louis and Florence Emerman in 1945 (Figure 19).

Episode 3: The Post-Honeywell Era (1946-1984)

The Emermans continued the Honeywell's tradition of holding lavish parties on the island, including perpetuating the use of the island for the Committee of One Hundred parties.

19. Richard Ford, "The Honeywell House," South Florida Collection Management Center, Everglades National Park.

According to Ellen Yelen, who interviewed Albert Philpot, a building contractor who worked for the Emermans, the Emermans built several small wood frame cottages and a galley on the island between 1945 and 1950.[20] These small structures were located in the open area south-east of the harbor (Figure 20). These cottages included the Mate's Nest or Captain's Roost (27 feet by 17 feet), the Honeymoon Hotel or Landlubber's Lodge (30 feet by 13 feet), and the Clubroom (42 feet by 14 feet with a 9 feet by 12 feet rear ell). As noted above, these structures appear in photographs and a video which can be dated to the Honeywell period. It is possible that Philpot remodeled Honeywell structures or built additional structures that are not presently identified. A masonry building behind the Clubroom appears in 1954 photos, but is not accounted for in other sources of information and is likely to be an Emerman addition to the property. The Emermans sold the property in 1950 to Sailing Baruch. Baruch wrote in a "Boca Chita Guest Book" that he stayed in the lighthouse during a hurricane in 1951.[21] There were ten named hurricanes in the Atlantic that season; none of which passed over Boca Chita. It is more likely to have been Hurricane King, a category 3 hurricane that passed over Boca Chita in 1950.

Baruch sold the island in 1953 to G. E. Carlson of Chicago, Illinois. Carlson had a caretaker, Jack Grimes, who lived on the island. Carlson sold Boca Chita to the STARS Corporation headed by the Rivers family in 1955. E. D. (Eurith Dickinson) Rivers was governor of Georgia from 1937 to 1941. After leaving politics he and his sons operated a company that owned radio stations across the southeastern United States. They began broadcasting in the Miami area in the 1960s with a radio station WEDR. According to a history of Boca Chita, compiled by members of the Dinner Key Cruising Club (DKCC), Dan Rivers (possibly E. D. Rivers Jr.) hired a caretaker named Zach Watson to maintain the facilities on the island. The main house on the island, dating from the Harrisons' ownership, burned down during Watson's employment. As a result, a DKCC Member Burt Probinsky, a friend of Mr. Rivers, suggested that the Club take over maintenance of the island. The DKCC continued maintenance

20. Beverly Yelen, Historical Information Relating to Boca Chita Cay, p.3.
21. Ibid, p. 3.



Figure 20: Cottage on Boca Chita (Joel Yale, Life Magazine, 1954)

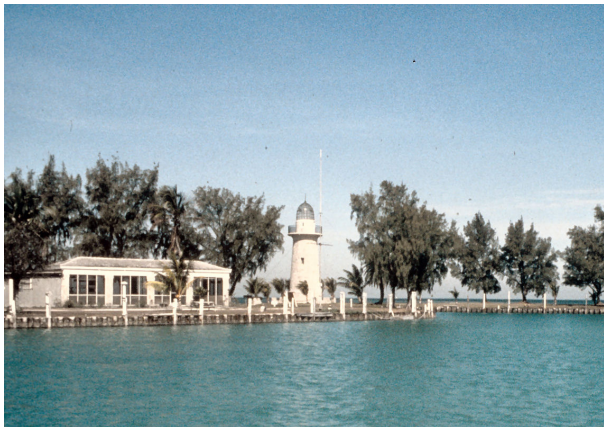


Figure 21: Picnic pavilion with screen and shed addition pre 1992 (National Park Service, Biscayne National Park).

of the island into the 1990s.[22] According to hand written notes of an interview with Dan Rivers, the Rivers installed the existing red-tinted concrete slab as part of a shower they added onto Grandma's Hut. Also during this period, the Rivers added screen to the Picnic Pavilion and are also likely responsible for the shed addition on the south elevation of the Picnic Pavilion (Figure 21).

Episode 4: The National Park Service Era (1985-present)

The National Park Service (NPS) purchased Boca Chita Key from the STARS Corporation on March 1, 1985 for $2.875 million. NPS initial efforts developing the island relate to improving the public facilities and visitor services. NPS added a solar powered restroom building on the island in the 1980s, located approximately 50 feet south east of the harbor and just north of the Engine House in a low lying area prone to flooding (Figure 22). Also in the 1980s, the NPS constructed new boardwalks at the harbor where visitors docked their boats. One section of new boardwalk partially covered an existing 70 feet by 6 feet section of existing limestone walkway that likely dated from the Honeywell period of development. The NPS also developed a camping area in open ground on the north east shore of the island, near the location of the Harrisons' main house that burned down in the 1960s. NPS installed picnic tables and charcoal grills and planted palm trees in the primitive camping area (Figure 23).

For the first decade, the NPS continued a relationship with the DKCC, who were designated "Volunteers in the Park" and continued to have regular work parties on the island. DKCC projects included litter pickup, repairing the screens on the Picnic Pavilion, installing charcoal grills at the camp ground, building boardwalks around the harbor, repairing the bulkhead, repairing roofs, installing regulatory signs, planting native trees, removing exotic trees, and repairing picnic tables. During their May work weekend, DKCC volunteers "Stripped old cement tile and felt from the Pavilion roof [and] utilized old cement tiles to reinforce the little lagoon bulkhead cap behind the stone bridge..."[23]

In August 1992, Hurricane Andrew passed over Boca Chita with winds recorded at 169 miles per hour at nearby Fowey Rocks Lighthouse (Figure 24). The historic limestone structures on the island withstood Andrew's force, but the frame structures, including the Honeywell and Emerman-era cottages, the 1980s restroom, and the 1980s boardwalks, were essentially obliterated.[24] Many of the trees across the island were uprooted in the storm; most of the ornamental plantings on the north end of the island and the mature mangroves on the south side of the island were destroyed. Of the historic structures, the footbridge over the canal and the eastern two thirds of the stone wall were most heavily damaged. The glass in the lighthouse lantern was shattered and the casement windows were also heavily damaged in the hurricane. Most of the roofs on the other historic structures were blown off. The screen and shed

22. Ibid, p. 4.

23. Haston, "Correspondence dated 14 May 1991."
24. Arnold Markowitz, "Popular little island is back in business," Miami Herald, 24 January 1997.



Figure 22: Restroom building pre 1992 (National Park Service, Biscayne National Park).



Figure 24: Boca Chita before Hurricane Andrew pre 1992 (National Park Service, Biscayne National Park).



Figure 23: Picnic and camping area pre 1992 (National Park Service, Biscayne National Park).



Figure 25: Boca Chita after Hurricane Andrew circa 1992 (National Park Service, Biscayne National Park).

addition on the Picnic Pavilion were completely removed by the hurricane (Figure 25).

After the storm, the NPS cleared the island of the debris and began repairing the remaining historic structures. In 1995, NPS replaced the 1934 steel bulkhead from the Harrison era, which was heavily corroded from prolonged exposure to sea water. NPS constructed a new steel bulkhead approximately one foot outside of the existing bulkhead, filling the gap with soil (Figure 26). The new bulkhead extends 50 feet beyond the old bulkhead on the north side of the island and also extends across the mouth of the canal leaving the channel dry. According to a NPS document, "the canal does not currently serve any function [and was] structurally destroyed by the hurricane."[25]

25. National Park Service, Biscayne National Park, "Assessment of Actions Having An Effect on Cultural Resources: Marina Repair Work (Bulkhead and Boardwalk)," South Florida Collection Management Center, Everglades National Park, 1994, p.1.

The dry canal was filled with dirt with the coping of the retaining walls visible at grade. During the bulkhead project, the NPS also constructed a boat landing ramp approximately 16 feet south of the stone wall marking the southwest corner of the historic district boundary. The NPS also constructed a new restroom facility on high ground south of the foundation of the main house.

All of the structures' roofs with the exception of the chapel (which had been replaced shortly before the hurricane) were replaced after Hurricane Andrew. The rear gable roof on the engine house was replaced with a hipped roof. New windows and modern "roll-down" garage doors were added to the garage. Structural engineers and architects inspected the lighthouse in 1999, 2001, and 2005; and the NPS has repeatedly repaired and maintained the structure in order to keep it safe and open to the public. NPS also replaced the boardwalks added in the 1980s (Figure 26). The



Figure 26: Rebuilt bulkhead and boardwalk circa 2000 (National Park Service, Biscayne National Park).



Figure 27: NPS Tree plantings circa 1995 after Hurricane Andrew (National Park Service, Technical Information Center).

new composite-wood walkways extend east from the harbor from two locations merging just south of the foundation of the 1930s Harrison house.

The NPS management and operational plan for Boca Chita is to maintain as near to natural conditions as possible while protecting the cultural resources on the island. The north end of the island, which is where the cultural resources are concentrated, was replanted in 1994 with coconut palms and native trees to reflect the appearance of the historic district during its period of significance (Figure 27). The area south of the stone wall was restored to a mangrove forest. A trail around the south end of the island was created by reducing the width of an existing access road. The island did not have any permanent interpretive displays prior to Hurricane Andrew but the NPS has installed displays and information kiosks interpreting the natural and cultural history of the island.

Physical Description

Architectural

Lighthouse

The lighthouse was built by Mark Honeywell to mark the entrance to the Boca Chita Harbor. According to the Historic Resource Study, there is a popular story that Honeywell intended for the lighthouse to be lit, but it was shut down by the Coast Guard after its first lighting because it was not a registered 'Aid to Navigation.' However, there is no physical evidence to suggest that a light was ever put in the tower, casting this story into doubt. Historic photos do show that during parties strings of nautical signal flags were anchored and larger flags were hung from the observation deck railing. Rare and fascinating 'home' movies from the Honeywell family show the construction of parts of the lighthouse, particularly the pouring of the concrete observation deck (Figures 85-89). Concrete mix was hauled to the base of the tower in wheelbarrows, then hauled up to the deck level by a pulley system, where it was poured into forms by workers. There are also glimpses of the dome being put into place and work on the foundation and door surrounds.

The lighthouse was very sturdily constructed and remains largely intact, even through extremes of climate and weather. The most significant event was the damaging of the dome during Hurricane Andrew, when most to all of the glass panes were destroyed. The dome was removed, sandblasted, reglazed, and repainted. During this process, four operable vent windows were not replaced, marking the most significant change to the tower's historic appearance. Unless otherwise noted, all of the materials are original to the construction of the tower during the Honeywell period.

Exterior

General Construction. The lighthouse is a 65 foot tall tapering cylindrical tower measuring around 60 feet in circumference or 19 feet in diameter at its base, 10 feet interior diameter from the base to the third level and tapers to 9 feet diameter at the third level. It is constructed of structural 4"(h) x 4"(w) x 8"(l) hollow-core concrete brick faced with Miami oolitic limestone on a poured concrete foundation. At the top of the tower walls is an observation deck and cylindrical lantern, both constructed of poured concrete. Atop the lantern is a dome constructed of a metal frame with glass panels. The interior contains a spiraling stair of concrete steps with metal railings.



Figure 28: Paving stones and stone walls, looking west with cannon in background (Quinn Evans Architects, 2009).

Site. The lighthouse is surrounded by limestone paving stones which drain away from the base of the tower (Figure 28). The stones are in good condition, with some vegetation in the stone cracks (Figure 30).

Stone walls/gates. The paved area is surrounded by four low curved stone walls with square piers at each end (Figure 29). The walls and piers are constructed of limestone topped with concrete parging as a coping treatment. The piers are 30 inches by 24 inches and approximately 37 inches in height. The intermediate wall is approximately 12 inches wide and 24 inches in height. On three sides, the walls are connected with thick metal chains, while on the fourth side it is open to allow access to the lighthouse. The walls and piers have been repointed within the past two years, but the joints have cracked again. There are also hairline cracks in the concrete tops. The stone is degraded on some of the pier corners and the concrete pier caps are broken at many of the corners. Vegetation is growing on the outside face of the southwest wall. The heavy metal



Figure 29: Paving stones and stone walls, looking east. Note vegetation growing in stones (Quinn Evans Architects, 2009).



Figure 30: Paving stones, detail. Again, note vegetation growing in cracks between stones (Quinn Evans Architects, 2009).

linked chains running between the stone piers are in good condition. They are painted black, which has faded from sun and weather exposure and most links show signs of surface rust where the paint has worn off. The anchorage into the stone peers is sound.

Foundation. The foundation is not visible. It is likely poured concrete, given the construction method of the remainder of the structure. It is known that there is a cistern under the lighthouse. The condition of the foundation was not observable; however, there is no visible evidence on the lighthouse that would indicate problems with the foundation system.

Walls. The exterior walls are constructed of blocks of oolitic limestone over structural concrete bricks (Figures 31-33) and vary in thickness from 54 inches at the base to 40 inches at the shaft. The walls are generally in good condition. Previous cracks have been re-pointed recently, although many have re-cracked and will need periodic re-pointing and monitoring. The cracking is caused by the thermal movement in the walls not being relieved through expansion joints. The walls of the lantern above the observation deck are constructed of poured concrete and are in very good condition. The form lines are still visible (Figure 34).

Observation Deck. The observation deck is constructed of poured concrete. The deck slopes away from the lantern room to a rolled edge that then curves down to the walls of the light tower. The underside of the deck is in generally good condition with areas of slight spalling of the face concrete, which could have occurred during the original construction. The leading edge of the deck is carbonated from water saturation (Figure 35). The concrete will carbonate if carbon dioxide from air or from water enters the concrete, causing the medium to dark grey staining on the face of the concrete. One area on the north side has a hairline crack on the face of the vertical lip that could lead, over time, to more spalling. The top side of the deck is in good condition, with more weathering of the concrete at the outer edges. A drain channel



Figure 31: Lighthouse, east and south elevations (Quinn Evans Architects, 2009).



Figure 32: Lighthouse, west elevation (Quinn Evans Architects, 2009).

runs along the outer edge of the deck, and has two copper drains with strainers at the north and south sides (see drainage). A 49 ¼" high iron railing with a 1 inch square top rail around the outer edge of the deck is in good condition but the 6 ½ inch spacing of the ¾ inch square balusters does not meet safety codes.

Dome. The lantern is topped with a steel framed dome with plexiglass panes. The dome was damaged during Hurricane Andrew, but was removed, repaired, reglazed, and then reinstalled. Historic photographs show that the dome originally had four operable windows, probably designed to vent the dome during the hot, humid weather characteristic of the area (Figure 36). These operable windows were not replaced during the post-hurricane reconstruction, and the resultant buildup of heat and humidity may be causing more accelerated deterioration of the existing panes. Some of the panes are currently missing or cracked, and the older panes have cracked and thinning glazing compound. The panes replaced most recently have been reglazed



Figure 33: Lighthouse, north elevation. Note crack at upper wall (Quinn Evans Architects, 2009).



Figure 34: Board-formed concrete walls at lantern level (Quinn Evans Architects, 2009).



Figure 35: Staining at observation deck lip. Also note white (unpainted) glazing at dome (Quinn Evans Architects, 2009).

but the glazing compound was not painted to match the black color of the steel frame, affecting the aesthetic quality of the dome (Figure 35). The steel of the dome needs painting in several areas.

Drainage. The tower has an internal drainage system that empties into a cistern below the tower. Water that collects on the observation deck runs into a channel in the outer ring of the observation deck which then drains into two holes fitted with strainers at the north and south sides of the deck (Figure 37). These lead into copper downspouts located within the wall cavity that angle toward the center of the tower beneath the floor slab, where a cistern is located. Two scupper holes at the base of the tower allow for drainage of any overflow from the cistern (Figure 38). The original purpose of collecting water within the cistern is unknown,



Figure 36: Pre-1992 photograph showing operable windows at dome (Biscayne National Park Archives, BISC-A-04-Boca Chita-18268).



Figure 37: Drainage channel and drain with strainer holes, north side of observation deck (Quinn Evans Architects, 2009).

and it was not possible to determine if the standing water in the cistern was causing any deterioration of the tower itself. It is also unknown if there was any drainage provided from the dome level into the cistern. There appears to be no evidence of any access into the cistern from either the exterior or the interior of the lighthouse.



Figure 38: Scupper for internal drain at base of tower (Quinn Evans Architects, 2009).

The north scupper opening is 6 ¾" high by 5" wide and sits 9 ½" from grade. The south scupper opening is 7 ½" high by 5" wide and sits 10" from grade. The parging at the exterior edge of the south scupper is broken off on the left side.

Windows. There are seven windows at the lower walls of the tower and three at the lantern level. They are all wood casements with wood frames and trim and appear to be original. The lower two windows on the east and west elevations have three panes, consisting of two smaller upper panes and an elongated lower pane (Figure 39). This configuration is due to the loss of the center vertical and lower horizontal muntins from the original 2 wide by 3 high pane configuration shown in a historical photo taken during the Honeywell era, from the Historical Museum of South Florida collection (Figure 40). The upper windows and those on the lantern level are all four-paned. The windows are all in good condition and many appear to have been recently reglazed. The upper left pane of the south window is cracked (Figure 41). Some of the older glazing is cracked and missing, and much of the newer glazing is unpainted. The 5-knuckle, button-tipped, steel-butt hinges, 2 per casement, are all rusted.

Doors. A historic photograph taken during the Honeywell era, from the Historical Museum of South Florida collection (Figure 42), indicates both



Figure 39 Three-paned window at east elevation above entry door (Quinn Evans Architects, 2009).



Figure 40: Detail of circa 1940s tower photo showing original 6-paned window in same location (Historical Museum of South Florida, 1998-229-12).



Figure 41: Cracked pane at south window (Quinn Evans Architects, 2009).



Figure 42: Ca. 1940s photo of tower; note screen doors at entry and observation deck levels (Historical Museum of South Florida 1998-229-12).

lower and upper doors had a two-paneled screen door, which opened outwards, in front of the main door. The frame of the observation deck door still has the strike plate and hinge screw locations visible confirming that this door has been removed (Figures 43 and 45). The lower door frame appears to have been replaced at the outer edge which would have shown where the door had occurred.

The lower door to the tower is a wood two-paneled door, measuring 3'-0"(w)x 6'-11"(h), with strips of wood forming "X's in the panels



Figure 43: Observation deck exterior door handle; also note strike plate from removed screen door (Quinn Evans Architects 2009).

(Figure 44) and is set in a wood frame; both door and frame appear to be original with a slight modification to the outer edge of the wood frame. It has ¾" plywood on its inside face, which does not appear to be original. The door is in good condition, but needs painting. The exterior molding has been primed white but not painted, indicating that it may have been replaced. The mortised lock set has been removed. There is a metal U-strap pull on the inside in good condition, while the exterior has a patinated bronze metal pull with a thumb latch in inoperable condition. Three painted, 5-knuckle, ball-tipped, steel-butt hinges hold the door in place. The door is secured with throw bolts at the top and bottom, closed with two padlocks. They are rusted but operable.

The upper door is also wood, set in a wood frame (Figure 45). It measures 76"(h) x 27 ½"(w) and has three panels, with a lexan vision panel set in the top one. The door is painted and is in good condition. The original hardware consists of three 5-knuckle, ball-tipped, steel-butt hinges and a bronze latchset and chrome deadbolt. The interior handle of the latchset is a round bronze knob while the exterior handle is a decorative bronze lever-style handle. The exterior handle is patinated but in good condition. Two rusted but operable flush-mounted throw-bolts are located at the interior on the top and bottom.



Figure 44: Door at base of tower (Quinn Evans Architects, 2009).



Figure 45: Door at observation deck (Quinn Evans Architects, 2009).

Steps. There are three risers leading from the stone plaza to the slab floor of the tower threshold. Their dimensions vary, with heights from 5.5" at the top to 6" at the bottom; widths 39" at the top to 57 ½" at the bottom; and depths 14 ½" at the top to 11 ½" at the bottom. They are in good condition.

Interior

The tower is open to visitors under supervision from Park personnel.

General conditions. The interior of the tower consists of a concrete and iron spiral stair with concrete landings.

Floor. The lower floor and the landing floors are all constructed of poured concrete (Figure 47). They are in very good condition, with only minor cracking and staining.

Walls. The lower tower walls are constructed of curved, exposed concrete bricks with poured concrete window lintels (Figure 46). The walls at the observation deck and lantern are constructed of poured concrete (the form markings are still visible). The walls are in very good condition, with only minor cracking and staining.

Ceiling. The floor of the lantern, or ceiling of the third level, is poured concrete. It is in good condition.

Windows. See exterior for general conditions. The windows are in good condition on the interior. They have decorative wood ogee moldings about 2 ¾" in width.

Doors. See exterior for general conditions. The doors have plain wood 2" casings and trim.

Stairs. The stairs consist of poured concrete risers spiraling around the outer wall, and an iron railing with decorative balusters (Figures 46-47). The railing heights are 36" on the landings and 41" on the stairs, with 7" spacing between the balusters. The railings curl in at their ends, and the balusters are secured to the risers with spade-shaped



Figure 46: Lighthouse interior, showing stairs, concrete blocks, and underside of landing (Quinn Evans Architects, 2009).

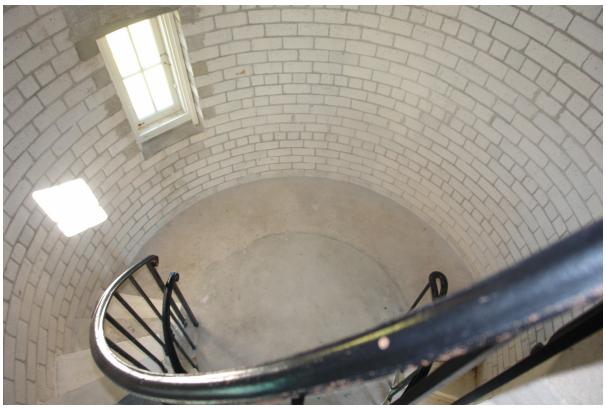


Figure 47: Lighthouse interior, same view looking down (Quinn Evans Architects, 2009).

fasteners. The risers measure 7” to 8” high, 23” wide, and 5 ½” deep. A number of the risers have been recently replaced, so they, and the remaining original risers, are in good condition. The railing is in good condition; it appears that the balusters were able to be unbolted from the removed risers and re-attached to the new ones, thus retaining the original railing.

Chapel

The chapel was built by Mark Honeywell during his occupation of the island. There is no evidence that it was ever used specifically as a chapel. A "Real Estate Broker's Guide," supposedly prepared for Mark Honeywell in the 1950s, called this building a "cathedral in the palms" that was "in reality a complete guest apartment." There was certainly a toilet in the southeast corner of the building at some point, as evidenced by ghosting of a structure on the walls and a hole for plumbing. The chapel materials and finishes mostly date from the period of significance. The exception is the roof. The original roofing material is unknown, although historic photographs taken during the Honeywell era, from the Biscayne National Park Ford Display (Figure 48) and Historical Museum of South Florida (Figure 49) indicates what appears to be asphalt rolled roofing. Photos from the 1980s also show asphalt rolled roofing (Figure 50). Just prior to Hurricane Andrew, the chapel roof was replaced with grey asphalt shingles. This roof was reportedly the only roof in the entire park to survive the Hurricane intact. Unless otherwise noted, all of the materials are original to the construction of the chapel during the Honeywell period.



Figure 48: Honeywell period photo of chapel, showing rolled roofing (Biscayne National Park Ford Display).

Exterior

General Construction. The chapel is a small, one story rectangular (12 x 20 foot) structure (Figures 51-52). The walls are 112" high and the height to the roof ridge is 220". It is constructed of structural 4"(h) x 8"(w) x 16"(l) concrete block faced with Miami oolitic limestone over a poured concrete foundation. It has a very steeply pitched, concave gabled roof with exposed rounded rafter tail ends, which constitutes its most decorative feature.



Figure 49: Ca. 1940s photo of chapel, showing rolled roofing (Historical Museum of South Florida 1998-229-10).

Site. The building is surrounded by grass. The grade slopes very slightly away from the building.

Foundation. The foundation was not visible. It is probably constructed of poured concrete. Its condition was not observable; however, there was no evidence visible on the building to indicate any problems with the foundation system.



Figure 50: Ca. 1980s photo of chapel, showing rolled roofing (Biscayne National Park Archives BISC-A-04-Boca Chita Key-23600).

Walls. The limestone walls are generally in good condition. There is some stone degradation at the eave line of the northeast corner. The mortar joints have some hairline cracks and there are minor fissures in the south elevation. There are bolts and holes in the west wall. Copper vents are located in the gables on the east and west walls. The east wall vent is in fair to good condition, but the west wall vent is damaged. At the bottom of the west wall there are two holes which contain what appears to be 3"–4" diameter metal pipes that terminate just



Figure 51: Chapel, south and west elevations (Quinn Evans Architects, 2009).



Figure 52: Chapel, east and north elevations (Quinn Evans Architects, 2009).

above grade, possibly for drainage or connected to whatever is under the floor at the west side of the building accessed by the wood hatch in the floor just inside the main door (Figure 53). One appears to angle up while the other angles down.

Roof. The gabled roof is steeply pitched and flares at the bottom. The rounded rafter tail ends are exposed (Figure 54). The rafters measure 1.5" x 8.5" and are spaced 16" on center and appear to be original and either eastern or southern pine (the only way to know is to have a sample tested in a lab). The roof sheathing appears to be 1 x 6 nominal sheathing boards of the same species as the rafters and for the most part original, although same replacement boards appear to have been added with the re-roofing. The roofing material was replaced just before Hurricane Andrew and was the only roof to survive the hurricane without loss of material. It is covered with grey asphalt shingles which are in generally good condition. One tab is missing at the southwest eave line. The metal ridge cap is rusty.



Figure 53: Holes at bottom of west wall (Quinn Evans Architects, 2009).



Figure 54: Rounded rafter tail ends at roof (Quinn Evans Architects, 2009).

Windows. The windows are four over four wood double-hung units (Figure 55). There are two on the north and west sides and one each on the south and east. All the windows are in good to fair condition, with weathering on both sides, especially the exterior. The windows appear to be stained and varnished rather than painted on the interior; the exterior was not accessible, and the glass on the east window is painted blue. The windows have sash pin locks and appear to be operable. All the windows are covered at the exterior with plywood panels.

Doors. There are door openings on the east and south walls. The east door, which looks and is constructed the same as the south door, has been removed and stored within the building and the opening boarded up. The south door is a solid wood door, composed of 5 vertical planks with wood battens at the joints and a small vision panel in the top center (Figure 56). It measures 2'-8"(w) x 6'-7"(h) x 1 5/8"(d). The battens measure 1"(w) x 72" (h) by 5"(d) and are spaced at 5" intervals. The door is heavily weathered on the exterior, with no finish remaining. The interior is in fair to good condition with some deterioration at the bottom edge. The original mortise lockset is in place; it is



Figure 55: Typical window (Quinn Evans Architects, 2009).



Figure 56: South door (Quinn Evans Architects, 2009).



Figure 57: South porch at chapel (Quinn Evans Architects, 2009).

in fair to poor condition and non-functioning. The door is secured with a newer deadbolt, keyed, in good condition and working. There is also a throw bolt, rusty but operable.

Stoops. There are stoops at each door. The east door has a one-riser stone stoop with a concrete top. It measures 9”(h) x 40”(w) x 29 ½”(d). It is in fair condition, with broken concrete at the outside corners and some stone and mortar joint degradation. There is some plant growth at the joint of the stoop adjacent to the east wall. The south stoop is also a one-riser stoop with a concrete top. It extends from the door opening to the corner of the west wall, where it butts up against a stone cheek wall with a curved top (Figure 57). It measures 9”(h) x 81”(w) x 29 ½”(d). The stoop is in fair condition, with surface cracks and a broken corner at the edge of the concrete top. There is some plant growth in the stone joints and some degradation of the stone at the face. The mortar joints are in fair condition.

Interior

The interior of the chapel is currently being used for storage of interpretation materials.

General conditions. The chapel interior consists of a single open room (Figures 58-59).

Floor. The floor is constructed of poured concrete. It is generally in good condition, with a minor crack running east-west at the north half of the room. There is a hole drilled on the east side, probably for plumbing for the toilet reportedly formerly in this space. There is a wood hatch measuring 24” x 18”on the west side, which could not be opened,



Figure 58: Chapel interior looking east (Quinn Evans Architects, 2009).



Figure 59: Chapel interior looking west (Quinn Evans Architects, 2009).

that suggests either a cistern or root cellar exists below the floor.

Walls. The walls are constructed of exposed concrete blocks with a poured concrete bond beam at the plate level. There is cracking along the bond beam. The walls are parged at the upper wall on the north and south sides and parged above the windows on the west wall (Figure 60). The walls are painted grey at the first two courses at the wall base and white above. Paint is flaking in areas and there are numerous holes from fasteners. Ghosting at the south east corner remains from the toilet room reported to be in this corner. There are 18”(w) x 20”(h) metal vents at the east and west gables.

Ceiling. The ceiling is an exposed vaulted roof with wood rafters. The rafters are sistered at the top and bottom to create the curve. It is in good condition, aside from some wasp nests.

Windows. See exterior for general conditions. The windows have plain square 2 1/2”casings.



Figure 60: West wall parging, detail (Quinn Evans Architects, 2009).

Doors. See exterior for general conditions. The doors have plain square 1 ¾” casings.

Garage/Barn

The garage (also called the barn) was built by Mark Honeywell during his occupation of the island. It is unknown specifically what the barn housed during the period of significance. A "Real Estate Broker's Guide," supposedly prepared for Mark Honeywell in the 1950s, called this building the "utilities" building and claimed it had a complete machine shop and its own auxiliary light plant, "as well as room to house the equipment necessary for maintenance of the property."

The garage materials mostly date from the period of significance. As with the chapel, the roofing material has been replaced and the original material is unknown. A pre-Hurricane Andrew picture shows the garage with corrugated metal roofing, but the roof was completely blown off, down to the steel trusses, during Hurricane Andrew, and replaced with a new roof structure covered with grey asphalt shingles. This building, perhaps because it has seen the most utilitarian use, has also lost some other historic features, including the garage doors and a number of the windows.

Exterior

General Construction. The garage is a rectangular structure measuring 71 feet by 31 feet and is 12-5" high. It is constructed of structural 4"(h) x 8"(w) x 16"(l) concrete block faced with Miami oolitic limestone over a poured concrete foundation. It has integral chimneys at each end and a gabled roof, but is stylistically plain (Figures 61-62).

Site. The grade slopes away from the building on all four sides. The concrete apron in front of the western three garage doors is in poor condition with cracks and surface erosion; the west end corner is gone (Figure 63). The eastern garage door has a gravel approach up to the top of the floor slab.

Foundation. The foundation is constructed of board-formed reinforced concrete. It is generally in good condition at visible areas; however, there was no evidence visible on the building to indicate any problems with the below ground foundation system. Both the southeast and southwest corners have cracked due to rust jacking of the corner vertical rebar (Figure 64).



Figure 61: Garage east and north elevations (Quinn Evans Architects, 2009).



Figure 62: Garage, west and south elevations (Quinn Evans Architects, 2009).



Figure 63: Garage, north elevation, garage doors and apron, detail, looking east (Quinn Evans Architects, 2009).

Walls. The limestone walls are generally in good condition. There are minimal hairline cracks at the mortar joints and the stone faces are weathered. Cracking has started at each window head on the south elevation from lintel rust jacking. The west wall has an almost horizontal crack in the stone at the north side window head to the rake edge.



Figure 64: Rust-jacked corner at southwest corner (Quinn Evans Architects, 2009).

Roof. The garage/barn lost its roof decking and covering during Hurricane Andrew. It is currently covered with grey asphalt shingles, which are in good condition. One small tab is missing at the eave line on the southeast corner. The galvanized metal flashing is starting to rust.

Windows. The windows were originally six-over-six double-hung wood units. The eight windows on the first story measure 61"(h) x 50"(w). There are two smaller windows in the gable end of the east elevation that measure 45"(h) x 30" (w). The window frames and sash are still in place but the glazing and muntins are mostly missing (figure 69). All of these windows are covered with plywood panels. Horizontal-paned three-lite transom windows measuring 22"(h) x 50"(w) are located over the garage doors and windows of the north and south elevations. The south elevation transoms are divided from the windows by concrete spandrels. At the south elevation, the transom sash either have been replaced or have missing muntins, and three of the transoms have PVC piping running through them. The transoms are covered with Plexiglass



Figure 65: Rust jacking at window and garage door lintels, detail (Quinn Evans Architects, 2009).

storm panels. The steel lintels over the window openings are rusting and jacking the masonry adjacent to the openings at the top (figure 65).

Doors. The north elevation has four bays designed for overhead garage doors. None of the original doors are in place. The easternmost door has a newer modern metal rolling overhead door, chain-operated, in good condition. The other three openings have 2' x 4' stud framing with plywood panels on the exterior in very weathered condition (Figure 63). The door openings are approximately 9' wide by 8' high.

To the east of the garage doors on the north elevation is a person door measuring 2'-10"(w) x 6'-11"(h) x 1 ¼"(d). It is constructed of expanded diamond metal gate with a plywood panel attached to the exterior face (Figure 66) and no documentation exists to indicate whether or not it is original. It is in fair condition with rust on the surface, which needs painting. It is secured with a padlock. The west elevation has a door opening with the door missing. A plywood panel covers the opening and water and electrical conduit pipes penetrate at the bottom of the panel. The door frame is still in place and is in fair condition. There are no stoops at either door, and they are well above grade.

The steel lintels over the door openings are rusting and jacking the masonry adjacent to the openings at the top; they all need to be replaced with a non-steel lintel (Figure 65). The concrete block jambs in most of the door openings have been spalled out from the interior by rusting anchors. Some have been repaired, while others are in poor condition with missing or cracked faces.



Figure 66: North person door (Quinn Evans Architects, 2009).

Interior

The garage/barn is one large open space and is currently being used for park equipment and supply storage.

General conditions. The garage/barn consists of a single open room (Figures 67-68). It is lit by fluorescent strips at the east and west sides. There are two rainwater collection tanks at the west end with PVC collection pipes to feed them.

Floor

The floor is mostly gravel with concrete slabs in the east bay and the northwest corner of the west bay and appears to be fairly new. The concrete is in good condition aside from some minor cracking. There is no documentation to indicate what the original flooring might have been.

Walls. The walls are constructed of exposed concrete blocks with a concrete bond beam along the top plate of the north and south walls. There are concrete piers measuring 24”(w) x 7 ½”(d) on the north and south walls to support the steel roof structure. Concrete block chimneys, which appear to be original to the building and measuring 82”(w) x 22”(d), are located at the upper walls on the east and west walls. The walls are in fair condition overall. There are numerous holes and fasteners, and some cracking along the bond beams and at the window lintels.



Figure 67: Garage interior, looking west (Quinn Evans Architects, 2009).



Figure 68: Garage interior, looking east (Quinn Evans Architects, 2009).



Figure 69: Garage windows, detail (Quinn Evans Architects, 2009).

Ceiling. The roof is supported on a steel truss structure (Figure 69). Although the structure survived Hurricane Andrew, the roof itself was blown away. The existing exposed new wood

purlin and joist roof structure with plywood sheathing is in good condition.

Windows. See exterior for general conditions. The windows have plain wood 2 ¼" casings.

Doors. See exterior for general conditions. The doors have plain 1.5" wood and 2" steel casings.

Engine House

The engine house was built by Mark Honeywell during his occupation of the island. It was also known as the generator building, and as such it appeared to have provided power to the other structures on the key. It is not mentioned in the "Real Estate Broker's Guide." The cistern adjacent to the building also appears to date from the Honeywell period, although very little is known of its historic appearance and function.

The engine house materials mostly date from the period of significance. The original roof configuration was a simple gable roof and remains that today. As with the other buildings on site, its roofing material and some sheathing was severely damaged during Hurricane Andrew and it has been replaced with new sheathing boards and grey asphalt shingles. Its original material is not known; no known historical photographs are clear enough to determine what the material was. The Historic Resource Study Appendix A notes that the "rear [roof] was gabled, but is now hipped as a result of repairs undertaken after Hurricane Andrew." Current physical evidence of the roof structure and sheathing pattern, along with a 1997 photograph in the HRS Appendix A showing the rear (east) end gabled and circa 1992 post-hurricane photographs that show the roof intact, clearly does not support this statement. A shed porch was originally attached to the south side of the building, covering a (still extant) concrete and stone platform, which likely held some power equipment. The shed roof was destroyed in Hurricane Andrew and was not replaced. The building otherwise appears to be largely intact in terms of historic configuration and materials, albeit with all of its equipment removed.

Exterior

General Construction. The engine house is a one story rectangular structure measuring 15 ½ by 32 ½ feet (Figures 70-71). It is constructed of structural 4"(h) x 8"(w) x 16"(l) concrete block faced with Miami oolitic limestone over a poured concrete foundation. It has an integral chimney at the west end.

Site. The site generally slopes away from the building. The north wall has a swale against the bottom of wall.



Figure 70: Engine house west and north elevations (Quinn Evans Architects, 2009).



Figure 71: Engine house, south and east elevations and cistern (Quinn Evans Architects, 2009).

Foundation. The foundation is not visible and conditions were not observable. It is probably constructed of poured concrete; however, there was no evidence visible on the building to indicate any problems with the foundation system.

Walls. The limestone walls are generally in good condition, with minimal hairline cracks at the mortar joints and some degradation and weathering of the stone. The south wall has an open core for an electrical feed or pipe at the east end. There is an abandoned steel pipe penetration at the west end.

Roof. The gabled roofing material was lost or damaged during Hurricane Andrew. Currently it is covered with grey asphalt shingles in good condition. It has galvanized metal flashing and pre-finished aluminum gutters. There is a stone chimney at the southwest corner in good condition.

Windows. The windows were originally six-over-six double-hung wood units measuring



Figure 72: Typical historic window (Quinn Evans Architects, 2009).



Figure 73: West door (Quinn Evans Architects, 2009).

30”(w)x 42”(h), three each on the north and south elevations and one on the west (Figure 72). Three of the original windows are missing and have been replaced with single wood casements which are in good condition but are not complementary to the original windows (Figure 80). The windows appear to be in fair condition with some weathering; they are covered on the exterior with plywood, so exterior conditions could not be verified. There are sash pin locks in each side of the upper and lower sash. The west window on the south wall is missing all the muntins.

Doors. There is one wood door and frame on the west wall (Figure 73). It measures 2’-7½”(w) x 6’-8”(h) x 1 5/8”(d). The tongue-and-groove board door is heavily weathered, with no finish remaining. There are remnants of lettering on the door which likely said “keep out.” The inside is stained and varnished. There is a throw bolt on the inside and a painted steel padlock latch on the outside. There are 3 five-knuckle, button-tipped, steel-butt hinges in fair condition, unpainted with some rusting visible.

Steps. The west entrance has three-riser poured concrete steps (Figure 70). The steps are in good condition but the whole structure has settled and pulled away from the building. A stone and concrete equipment platform at the south side of the building is in very poor condition (Figure 74). It has deep cracks through the center and has heaved upward at the west end from the centerline. It is overgrown with weeds.

Cistern. There is a large octagonal cistern at the east end of the engine house (Figures 71 and 75). It is faced with limestone and has a concrete top. The limestone is in good to fair condition with some stone erosion at the face. The limestone is heavily vegetated along its face. The concrete top is in relatively good condition. It has seven grooves in the top, assumed to be related to drainage, radiating from the center. The grooves get deeper as they move toward the edge of the cistern, but drainage holes are no longer extant.



Figure 74: Equipment platform at south elevation, looking northwest (Quinn Evans Architects, 2009).



Figure 76: Engine house interior, looking east (Quinn Evans Architects, 2009).



Figure 75: Cistern, looking southeast (Quinn Evans Architects, 2009).



Figure 77: Engine house interior, looking west (Quinn Evans Architects, 2009).



Figure 78: Vertical beam with different size blocks to either side (Quinn Evans Architects, 2009).

Interior

The interior is currently being used for storage.

General conditions. The interior consists of a single open room (Figures 76-77). There is a non-original light fixture in the center of the room. Since there is no electrical service on the island, this is probably powered by a generator while the building is in use.

Floor. The floor is constructed of poured concrete. It is in good condition, with minor cracking. There are raised platforms in the center, east side, and southeast corner, probably for equipment, but there is no indication of specific use (Figure 76).

They measure 3.5”(h) x 26 1/2”(w) x 24 1/2”(l).

Walls. The walls are constructed of exposed concrete blocks with 12” deep poured concrete bond beams at plate level. The concrete blocks at the eastern end of the building (16” x 8”) are larger than the blocks at the rest of the building (16” x 4”); in fact, this larger size of block is not used on any other buildings on the site (Figure 78). The exterior, however, does not show any evidence of a break in the limestone veneer. The walls and the bond beam at this end are separated from the rest of the interior by poured concrete vertical flush columns on the north and south walls, which have four rebar fasteners at the top (Figure 78). Whether the change in materials is related to a different function at this end, or is the result of expansion at some point, is unknown. Some white paint remains on the walls. There is cracking at the bond beams, especially at the northeast corner. Rebar is exposed at the east wall. There is rectangular ghosting on the east wall horizontally at mid-height and three quarter height (Figure 79), suggesting something was formerly attached to the wall.

Ceiling. The ceiling is composed of the exposed roof rafters and board sheathing. The age, visible appearance, and condition of the rafters suggests that they are original. The majority of the 6” nominal board sheathing also appear to be original although several may have been replaced when the roofing materials were replaced, they appear to be newer and less weathered. The joist blocking at the east end (area of different wall construction) of the north and south walls are recent replacements. All rafters and sheathing boards are in good condition.

Windows. See exterior for general conditions. The windows are cased out with a 2½” flat wood casing, 1¾” ogee sash stops and 1¾” stool. The bond beam extends down to the top of the casing at the windows.

Doors. See exterior for general conditions. The door has plain 1¾” interior wood casing.

Chimney. There is a concrete block chimney measuring 21” (w) x 21” (d) at the southwest corner of the room. It has a hole for a stovepipe on the north side. It is in good condition.



Figure 79: Exposed rebar and ghosting at east wall (Quinn Evans Architects 2009).



Figure 80: Inappropriate replacement window (Quinn Evans Architects, 2009).

Pavilion

The pavilion was built by Mark Honeywell during his occupation of the island. It has always served as a picnic/gathering space for visitors to Boca Chita, whether it was Mark Honeywell's "Committee of One Hundred" guests or more recent overnight campers. The 1950s "Real Estate Guide" waxes poetic about the pavilion, calling it a "Grecian-type pergola" that "without much stretch of the imagination could be called the temple of the Gods, because this is the spot where many banquets, picnics, feasts, etc. have been enjoyed in the past." A historic photo from the Honeywell period shows the pavilion draped with red, white and blue bunting and with a sign atop it welcoming the Committee of One Hundred 1940. Deck chairs set out in the pavilion suggest it was also used as a sheltered sitting area.

The pavilion today appears much as it did during the Honeywell period, with later additions having been swept away by Hurricane Andrew. As with the other buildings on site, its roof was severely damaged during the hurricane and has been replaced with grey asphalt shingles. The 1940 historic photo shows the roof with light colored flat interlocking tile shingles with associated ridge and hip tiles (Figure 81). The tiles are believed to be cement based on a letter discussing their removal in May 1991. After the Honeywell period, the owners of the island enclosed the pavilion with screens and built a frame addition on the back. These were severely damaged by Hurricane Andrew and have been removed.



Figure 81: Honeywell period (ca. 1940s) photo of pavilion showing tile roof (Biscayne National Park Ford Display).

General Construction. The pavilion consists of ten squared oolitic limestone piers rising from a 15 foot by 52 foot poured concrete slab base (Figures 82-83). The piers are topped with wood capitals and support a wood cornice and frieze (Figure 84). The hipped wood roof structure is reinforced by decorative metal tie bars.



Figure 82: Pavilion, looking northeast (Quinn Evans Architects, 2009).



Figure 83: Pavilion, looking southwest (Quinn Evans Architects, 2009).

Site. The pavilion is surrounded with grass. The grade slopes very slightly away from structure.

Foundation/Floor. The foundation/floor is a poured concrete slab raised approximately 10" from the surrounding grade. An 18" wide step circumscribes the perimeter 5" above the adjacent grade with a 1" to 1½" bull nose edge and is tinted a blue-green color. The top of the floor slab also has a 24" border at the perimeter raised 5" above the step with a 1" to 1½" bull nose edge and is tinted a blue-green color. The remaining floor is a grey concrete color. The floor and steps are in good to fair condition with several areas of spalling, pitting, and cracks in both the floor and the step treads. There are several chunks out of the nosing on both the upper and lower levels. The northwest step tread is broken diagonally and there are several spalls from

old anchors.

Piers/Structure. The limestone supporting piers were recently rebuilt by the Historic Preservation Training Center and are in good condition. They measure 21”(w) x 96”(h) x 21” (d). There are some faint vertical lines marking where the screens were formerly fastened to the piers. The wood beams, trim, and wood column capitals are in good condition; these were also recently restored or replaced by the HPTC. The capitals are 5 ½” (h) x 25 ½”(w).

Roof/Ceiling. The roofing material was replaced after Hurricane Andrew. It currently is covered with grey asphalt shingles and is in good condition. The wood rafters measure 5”(h) x 4”(d) x 71”(l) and the decking widths vary from 5 ½” to 9 ½”. They appear to be original and are in fair to good condition. There are some insect infestation holes in several of the rafters. The metal tie bars are rusted but otherwise in good condition (Figure 5.58).



Figure 84: Pavilion, interior looking south (Quinn Evans Architects, 2009).



Figure 85: Pavilion, roof structure and ties looking north (Quinn Evans Architects, 2009).

Structural

Lighthouse

General. The lighthouse has 3 interior levels connected by spiral stairs including the ground or entry level, level 1, level 2, and the observation level 3. A steel ladder and access hatch accesses level 4 which is the dome space. There is no lens in the dome space. The floor to floor height is about 11'-11 5/8" or 3/8" shy of 12' from grade to landing 1, and 11'-11 ¼" from landing 1 to landing 2, or about 12'. The floor to floor height is about 11' -2 ½" between level 2 and level 3. The height from the top of level 3 and the bottom of level 4 is 6' -7 ½". Access was not gained to the dome space during the inspection and the thickness of the concrete floor is unknown.

The inside diameter remains constant at 10'-0" between the entry level and to about 8 feet above level 2, where it tapers inward yielding an approximately 9 foot inside diameter at the observation level 3. The walls are thick masonry and concrete. The outside diameter at the base of the lighthouse is estimated to be 19'-4", which gives a circumference of about 60 feet. This circumference is consistent with the circumference shown in the PMIS #137991, Emergency Repair Of The Boca Chita Lighthouse Interior Stairs & Associated Masonry Features, Biscayne National Park - Fy08, Historic Structures Record Of Treatment, by the Historic Preservation Training Center, of the National Park Service. A schematic plan of the lighthouse is shown in Figure 86 and is used for reference in this report.

The walls of the lower portion of the lighthouse are constructed with a concrete brick having a face dimension of 3 ½" vertical x 8" horizontal. The brick where accessed measured 3 ¾" thick. Figure 87 (taken from the construction video of the lighthouse) shows the brick used in the construction of the buildings on the Boca Chita Key. The block exterior is faced with a pocked Miami oolitic limestone of unknown thickness. The brick interior is generally common bond with header courses every 6th course. The nominal height of the brick coursing is 4" with mortar joint. The use of header coursing indicates that the brick is a structural element while the limestone is a veneer (Figure 88). The outward protruding stubs

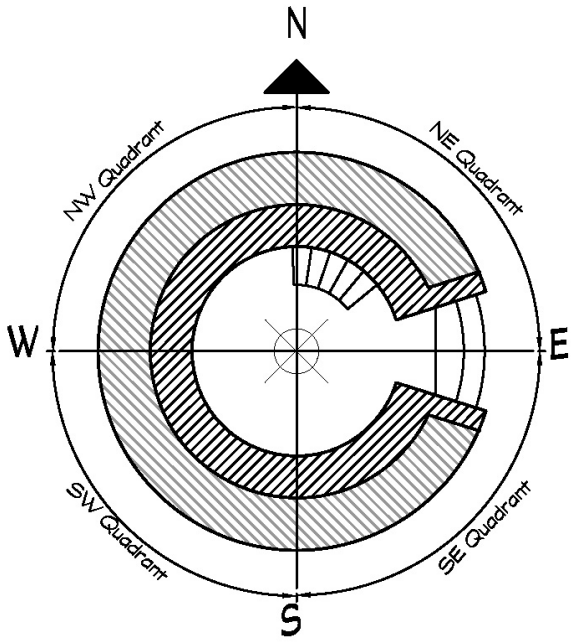


Figure 86: Schematic Plan of Lighthouse (Fitzpatrick Structural Engineering).



Figure 87: Concrete brick used in lighthouse construction (Biscayne National Park Archives, still photo from 1930s construction video).

from the concrete brick wall shown in the photo are presumably masonry ties for the stone veneer. Additionally, the brick should be several wythes thick. It is unclear if there is a monolithic concrete core at the interior of the walls. There is some evidence that the masonry walls may be reinforced with deformed steel. The total wall thickness is large at the base of the tower and may be as thick as 56" +/- at the ground level. The wall thickness steps back around 14 to 15" at the exterior at about 59" from the ground plaza level. It appears that the walls taper inward from that point up to the underside of the observation level (the outside diameter reduces).



Figure 88: Concrete block work with stone veneer at base of tower; block projections are apparently masonry ties for stone (Biscayne National Park Archives, still photo from 1930s construction video).



Figure 90: Sheet piling and wood piles at lighthouse foundation (Biscayne National Park Archives, still photo from 1930s construction video).



Figure 89: Form-work and re-steel for observation deck; vertical bars in foreground are apparently extension of wall reinforcing (Biscayne National Park Archives, still photo from 1930s construction video).



Figure 91: Sheet piling and wood piles at lighthouse foundation (Biscayne National Park Archives, still photo from 1930s construction video).

At about 8 feet (24 brick courses) from level 3 the interior wall construction changes from concrete brick to a monolithic concrete construction. The concrete walls taper inward to level 3 yielding a nominal 9 foot diameter interior dimension at level 3. The stone veneer continues at the exterior to the underside of the flared exterior observation deck platform of reinforced concrete. Figure 89 shows the reinforcing and formwork for the observation platform under construction. The walls above level 3 to the dome level are vertical and are exposed concrete. The vertical deformed reinforcing bars shown in that photo are presumably vertical reinforcing dowels for the concrete walls between level 3 and the dome level. It should be noted that the concrete brick walls are likely to be reinforced masonry as evidenced by the use of reinforcing in the concrete walls and exposed reinforcing at other buildings on the site, although that could not be physically verified.

Figures 90 and 91 show the foundation construction for the lighthouse. It appears that Z sheet piling was driven around the perimeter of the foundation to control water and provide a form for a 'pile cap' concrete foundation. Additionally, the photos show a pattern of driven piles inside the sheet piling coffer. These piles appear to be wooden. Essentially, this is a sturdy foundation for the light tower.

Exterior Northwest Quadrant. There is moderate vertical cracking of the stone masonry between the windows in this quadrant as shown in Figures 92 and 93. Some through stone cracking was noted as shown in Figure 95, but the majority of cracking follows the mortar joints. The darker



Figure 92: Moderate vertical cracking at northwest exterior quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 93: Moderate vertical cracking between windows at northwest exterior quadrant (Fitzpatrick Structural Engineering, 2009).

jointing shown in Figure 94 just below the observation deck concrete is an apparent cracking. It appears that this cracking may have been repaired some time in the past and has re-cracked as indicated in Figure 95. The darker colored jointing is likely a major re-pointing of previous cracking. The re-cracking is classified as fine to moderate crack width.

Exterior Northeast Quadrant. Figures 96 and 97 show an old crack that has previously been pointed as evidenced by the darker color of the pointing mortar. Fine to moderate re-cracking has occurred along the pointing line. No through stone cracking was seen. The original cracking was heavy to severe. Additionally, Figure 98 shows a honeycombing of the concrete at the bottom of the observation deck. This was due to insufficient consolidation of the concrete during the original construction and has probably been in that condition from that time.

Exterior Southeast Quadrant. This quadrant generally appeared in good condition except as shown in Figures 99 and 100. Limited minor fine cracking was noted along the re-pointed joint of an old crack. The mortar of the old pointed joint is slightly different in color and texture compared to the original mortar.

Exterior Southwest Quadrant. Figures 101 and 102 show fine to moderate cracking at previously pointed cracks. One crack does extend through the stone rather than following the mortar joint (Figure 101).

Exterior East Entry. Figure 103 shows the steps up to the entry door at the east side of the lighthouse. There are previously repaired stone treads at the top which show no new distress. However, the first tread down from the top sounded out hollow, indicating inadequate or loss of supporting substrate for this tread. Figure 104 shows stone cracking at the upper landing tread and the bottom of the jamb of the door opening.



Figure 94: Apparent cracking below observation deck near window at northwest exterior quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 96: Moderate re-cracking of previously pointed crack at northwest exterior quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 95: Close-up just below upper window at northwest exterior quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 97: Close-up of re-cracking (Fitzpatrick Structural Engineering, 2009).



Figure 98: Minor honeycombing at underside of observation deck at northwest exterior quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 101: Fine to moderate cracking at previously pointed joint at southwest quadrant; note thru-stone cracking (Fitzpatrick Structural Engineering, 2009).



Figure 99: Minor re-cracking of previously pointed crack near east side of southeast quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 102: Moderate re-cracking of previously pointed joint at southwest quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 100: Close-up of re-cracked pointed joint near east side of southeast quadrant (Fitzpatrick Structural Engineering, 2009).



Figure 103: Previously repaired upper tread in good condition at east entry; center middle tread sounds hollow when tapped with hammer (Fitzpatrick Structural Engineering, 2009).



Figure 104: Stone cracking at tread and door jamb at east entry (Fitzpatrick Structural Engineering, 2009).

Interior Concrete Brick Walls. In general the interior concrete brick walls are in very good condition with little cracking. Some fine to hairline cracking was noted at some window jamb brick. Figure 105 shows the only cracking in the field of the walls. This cracking is fine to hairline and occurs just below the stairs at the entry level. The cracking does extend through the brick unit rather than following the mortar joints. Figures 106 and 107 show conditions at the east window at level 2. There is a hairline crack at the head of this window and the window head shows indications of previous repairs. The conditions at this window are not a concern at this time but should be observed for change in the future.

Wall Crack Evaluation. It is important to note that there is no interior cracking that mirrors the old cracking or new re-cracking patterns found in the exterior stone. Nor is there any crack extensions at the exterior into the concrete observation deck structure. This indicates that exterior stone work is acting more or less independently of the interior brick construction and that the brick work and the concrete work above is the primary structure for the lighthouse. Given the severe wind forces generated by hurricanes, the masonry structure has performed quite well with no obvious distress due to those conditions. The main cause of the stone cracking is likely due to volumetric change caused by thermal expansion and contraction. However, it is important to prevent salt laden moisture from penetrating the masonry construction and causing corrosion of any steel elements (rebars). Such corrosion can create large jacking forces due to rust



Figure 105: Fine vertical cracking just beneath stairs at northwest quadrant; note thru-concrete brick cracks (Fitzpatrick Structural Engineering, 2009).

expansion and in turn cause distress to masonry and concrete.

Stair Tread Distress. Figures 108 and 109 show distress of the 4th stair riser up from level 2. Figure 110 shows crack distress of the 6th riser up from level 2. Figures 4.83 and 4.84 show both face cracking and horizontal cracking across the back of the riser for the 10th riser above level 2. This cracking should be repaired with epoxy injection or in a similar manner as has been done previously (see Historic Preservation Training Center report). Previously repaired risers appear in good condition.

Observation Deck Level 3. This level appears to be in good condition both inside and out. It appears that the exterior concrete walls may have been painted in the past with a paint that is incompatible with concrete or masonry. The paint appears to have worn off and is not a concern at this time.

Floor Structure Levels 1 through 3. Levels 1 and 2 are



Figure 106: East window head at level two shows minor hairline crack (Fitzpatrick Structural Engineering, 2009).



Figure 107: East window at level two repairs appear to be sound (Fitzpatrick Structural Engineering, 2009).

generally identical. They consist of a 4" concrete slab supported on walls and a concrete beam extended across between opposite walls. The beam measures 8" deep below the slab x 8" wide. The slab cantilevers over the beam to the stair opening (max. approx. 31" cantilever). Level 3 is also a 4" concrete slab, but has no beam. All levels are in good condition with no sign of distress.



Figure 108: Fourth riser up from level two shows end cracking up and diagonally across tread (Fitzpatrick Structural Engineering, 2009).



Figure 109: Fourth riser up from level two also shows cracking along the front of the riser (Fitzpatrick Structural Engineering, 2009).



Figure 110: Sixth riser up from level 2 shows end cracking (Fitzpatrick Structural Engineering, 2009).

Statement of Significance

The Boca Chita Key Historic District was listed on the National Register of Historic Places on August 1, 1997. The statement of significance at that time read:

> The Honeywell complex on Boca Chita Key, including the lighthouse, picnic pavilion, garage, engine house, chapel, bridge, canal, cannon, stone wall, retaining walls, and sidewalks, forms a locally significant historic district under National Register Criteria A, B, and C. These structures are significant because they are typical of the architectural styles employed on weekend retreats in the Florida Keys during the 1930s. As such, they suggest the growth and development of the Miami area during the early-to-mid-twentieth century. They also represent in a broader sense the activities of the wealthy industrial class that emerged between Worlds Wars I and II. Mark Honeywell was an important and influential member of this class, and the structures that he built on Boca Chita Key comprise a significant example of the retreats built by the wealthy elite of the burgeoning Miami area.

A supplementary listing record, also dated August 1 of 1997, deleted Criterion B and Mark C. Honeywell as a significant person, on the grounds that the main house at Boca Chita was no longer standing and that there was no other information about other extant properties located elsewhere associated with Honeywell. However, the NPS SERO believes that statement may be ill founded and recommends additional research, if necessary, and reconsideration of the applicability of Criterion B to this nomination.

The period of significance for the Honeywell complex in 1937-1945, representing the period that Mark Honeywell owned and developed the property.

CLI Outline Form

Inventory Unit Summary and Site Plan

Inventory Unit Name: Boca Chita *(First 8 items are already in the database.)*
Cultural Landscape Inventory Number: 550011
Parent Landscape: N/A
Property Level: Landscape
Park Name: Biscayne National Park
Park Alpha Code: BISC
Park Organization Code: 5250

CLI General Information: *(Boiler plate text that is automatically generated by the database.)*

Purpose and Goals of the CLI

The Cultural Landscapes Inventory (CLI), a comprehensive inventory of all cultural landscapes in the national park system, is one of the most ambitious initiatives of the National Park Service (NPS) Park Cultural Landscapes Program. The CLI is an evaluated inventory of all landscapes having historical significance that are listed on or eligible for listing on the National Register of Historic Places, or are otherwise managed as cultural resources through a public planning process and in which the NPS has or plans to acquire any legal interest. The CLI identifies and documents each landscape's location, size, physical development, condition, landscape characteristics, character-defining features, as well as other valuable information useful to park management. Cultural landscapes become approved CLIs when concurrence with the findings is obtained from the park superintendent and all required data fields are entered into a national database. In addition, for landscapes that are not currently listed on the National Register and/or do not have adequate documentation, concurrence is required from the State Historic Preservation Officer or the Keeper of the National Register.

The CLI, like the List of Classified Structures, assists the NPS in its efforts to fulfill the identification and management requirements associated with Section 110(a) of the National Historic Preservation Act, National Park Service Management Policies (2006), and Director's Order #28: Cultural Resource Management. Since launching the CLI nationwide, the NPS, in response to the Government Performance and Results Act (GPRA), is required to report information that respond to NPS strategic plan accomplishments. Two GPRA goals are associated with the CLI: bringing certified cultural landscapes into good condition (Goal 1a7) and increasing the number of CLI records that have complete, accurate, and reliable information (Goal 1b2B).

Scope of the CLI

The information contained within the CLI is gathered from existing secondary sources found in park libraries and archives and at NPS regional offices and centers, as well as through on-site reconnaissance of the existing landscape. The baseline information collected provides a comprehensive look at the historical development and significance of the landscape, placing it in context of the site's overall significance. Documentation and analysis of the existing landscape identifies character-defining characteristics and features, and allows for an evaluation of the landscape's overall integrity and an assessment of the landscape's overall condition. The CLI also provides an illustrative site plan that indicates major features within the inventory unit. Unlike cultural landscape reports, the CLI does not provide management recommendations or treatment guidelines for the cultural landscape.

Inventory Unit Description:
The Boca Chita Historic District is an 11 acre site on the north end of Boca Chita Key, an approximate 32 acre island at the northern end of the Florida Keys, southeast of Miami and part of Biscayne National Park. Its location and complex of historic structures is a unique example of recreational resort development that took place in this region during the 1920s and 30s, primarily by northern industrialists. The Boca Chita Historic District is significant under criteria A, B and C.

The period of significance is from 1937 to 1945, when Boca Chita Key was developed and actively used as a resort island by its owner at the time, Mark Honeywell, and other wealthy families that were active in the Miami social scene. The main historic structures in the district feature Miami oolitic limestone, are associated with the firm of prominent Miami architect August Geiger, and have maintained their integrity. Smaller historic structures are in varying condition. All of the historic structures were constructed during the Honeywell era. Although Hurricane Andrew destroyed the historic vegetation and wood frame structures, the setting and spatial character remain largely unchanged. Vegetation planted since Hurricane Andrew has helped to recreate the general landscape character that existed during the period of significance, primarily lawn and palm trees with views of the ocean, Biscayne Bay, and the island's historic lighthouse.

Ownership of Boca Chita Key changed hands several times until it was acquired by NPS in 1985. During this time it continued to serve primarily as a recreational site. The island is only accessible by boat and is still used for recreation, largely by weekend visitors from the Miami area. A small harbor constructed prior to the period of significance allows for overnight or short term docking, and many visitors will camp on the island.

A very limited amount of development and construction occurred south of the historic district during the period of significance. This area has always been less managed and maintained than the historic district. It is primarily native vegetation, dominated by mangroves and associated species.

This CLI updates information contained in the 1997 listing of Boca Chita Historic District on the National Register of Historic Places, including the chronology of development.

Size (Acres): Approximately 32 Acres

CLI Hierarchy Description:
Biscayne National Park has two identified cultural landscapes; Boca Chita Key and Porgy Key. Boca Chita is separate culturally and historically from the other barrier islands in Biscayne Bay and is therefore determined to be a unique landscape. No component landscapes have been identified at this time for Boca Chita Key.

CLI Hierarchy Description Graphic:
Graphic 1: CLI Hierarchy Description Graphic

Park Report Cover Image:
Graphic 2: Park Report Cover Image

Site Plan Graphic(s):
Graphic 3: Site Plan - Existing Conditions – Enlargement A
Graphic 4: Site Plan - Existing Conditions – Enlargement B

Concurrence Status *(Entire Section will be completed by NPS at a later date.)*

Inventory Status:

Completion Status Explanatory Narrative:

Park Superintendent Concurrence:
Park Superintendent Concurrence Date:

National Register Eligibility:
National Register Eligibility Date:

Concurrence Graphic Information:

Revisions:

Geographic Information and Location Map

Boundary Description:
The Boca Chita Key inventory unit includes the entirety of Boca Chita Key, a barrier island located near the center of Biscayne National Park between Sands Key and Ragged Keys.

Tract Number: 106-11

GIS File Name(s):

- **boca_chita_veg.shp** –provided by NPS South Florida / Caribbean Network; contact Judd Patterson, judd_patterson@nps.gov, (786) 249-0044
- **2005_BISC_BocaChita.jp2** – provided by NPS South Florida / Caribbean Network; contact Judd Patterson, judd_patterson@nps.gov; (786) 249-0044
- **BISC_Building_Polygon_Transfer_v1** – provided by NPS Southeastern Regional Office; contact Beth Wheeler, Beth_Wheeler@nps.gov, (404) 507-5793

GIS File Description:

- **boca_chita_veg.shp** – draft version of vegetation mapping currently underway; arcview shapefile and geodatabase; not in regional or park GIS at this time
- **2005_BISC_BocaChita.jp2** –5-band aerial imagery from 2005 with 30cm spatial resolution; not in regional or park GIS at this time
- **BISC_Building_Polygon_Transfer_v1** – polygon outline of the major buildings within the inventory unit; arcview shapefile; in regional GIS at this time; not in park GIS at this time

State and County:
State: Florida
County: Miami-Dade

Location Map:
Graphic 5 : Location Map

Boundary UTMS:

Northeastern:
USGS MAP 1:24,000
UTM TYPE: Area
Boundary UTM Datum : NAD27
Boundary UTM Zone : 17
Boundary UTM Easting : 583210
Boundary UTM Northing : 282319

Southeastern:
USGS MAP 1:24,000
UTM TYPE: Area
Boundary UTM Datum : NAD27
Boundary UTM Zone : 17
Boundary UTM Easting : 583203
Boundary UTM Northing : 2822580

Southwestern:
USGS MAP 1:24,000
UTM TYPE: Area
Boundary UTM Datum : NAD27
Boundary UTM Zone : 17
Boundary UTM Easting : 582538
Boundary UTM Northing : 2822587

Northwestern:
USGS MAP 1:24,000
UTM TYPE: Area
Boundary UTM Datum : NAD27
Boundary UTM Zone : 17
Boundary UTM Easting : 582545
Boundary UTM Northing : 2823188

Source: USGS Map 1:24,000

Type of Point: Area

Datum: NAD 27

Regional Context:

Type of Context:
Physiographic
Political
Cultural

Description:

Physiographic:

Boca Chita key is part of a chain of barrier islands that form the eastern boundary of Biscayne Bay, which is located along the southeastern coast of Florida. The island is bounded to the east by the Atlantic Ocean and to the west by the shallow, protected waters of Biscayne Bay. The entirety of Boca Chita Key is located within Biscayne National Park. Biscayne National Park consists of four primary ecosystems: mangrove forest along Florida's mainland, Biscayne Bay, the northernmost islands of the Florida Keys and a portion of the world's third largest coral reef. The entire area has been shaped over time by changes in sea level, ocean currents, hurricanes and other coastal processes.

Political:

Boca Chita Key is part of the city of Miami, Florida and is located in Miami-Dade County. Boca Chita lies within Florida's 18th Congressional District.

Cultural:

Throughout the island's history, Boca Chita has been used almost exclusively as a recreational property. The site is part of the overall tradition of wealthy northerners coming to the Miami area for winter vacations and building elaborate seasonal homes in the early 20th century. Recreational use of the property by the wealthy continues to this day, as the majority of visitors to the site arrive by privately owned boats from the Miami-Dade County area. The National Park Service provides ferry service to the island through a concession.

Management Information

Management Category: Must Be Preserved and Maintained

Management Category Date: *(NPS will enter the date later, when doc is approved.)*

Adjacent Lands Information

Do Adjacent Lands Contribute? No

Management Agreement:

Type of Agreement:

Agreements Known to Exist:

Concession Contract
Special Use Permit

Agreements that May Exist *(Consultant is not aware of any of these agreements being present on Boca Chita, however they may exist):*

Cooperative Agreement
Lease
Interagency Agreement
Memorandum of Agreement
Memorandum of Understanding
Other
None

Expiration Date: UK

Explanatory Narrative:
Concession Contract – The park concessionaire offers a ferry service from the mainland to the island for a fee.

Special Use Permit – The Boca Chita Key Pavilion is available for half-day rentals. A $100 rental fee covers a four-hour period of exclusive use; an additional $100 refundable deposit is required to reserve pavilion space.

NPS Legal Interest:
Type of Interest: Fee Simple

Public Access:
Type of Access: Unrestricted

Explanatory Narrative:
A boat is required to access the island, but the harbor and island are open to the public.

FMSS Asset: *(NPS will enter)*

National Register Information

Existing National Register Status
National Register Documentation:
Entered - Documented

Explanatory Narrative:
The Boca Chita Key Historic District was listed on the National Register of Historic Places on August 1, 1997. The original National Register Registration form records the opinion of the Florida Department of State Historic Preservation Official, JuDee Pettijohn, that Boca Chita meets National Register criteria. The nomination claims significance in the areas of Architecture, Entertainment/Recreation, and Social History. Additionally the property is associated, under criterion B, with Mark C. Honeywell and August Geiger. However, on August 11, 1997, a supplementary listing record was filed to amend the National Register listing, deleting criterion B and the association of the property with Mark Honeywell. The amendment states "Since the main house is no longer standing and there is no information about other properties associated with Honeywell that may still be standing, the property can no longer claim significance for association with him."

The Southeast Region Office of the National Park Service completed a Historic Resource Study of Biscayne National Park in January 1998. The authors of that report, David Cullison and Jennifer Brown Leynes, adequately document the cultural landscape features and characteristics on Boca Chita Key. As discussed in the Analysis and Evaluation section of this CLI, the non-vegetative cultural resources retain a high level of historic integrity, but the historic vegetation was essentially eliminated in 1992 by Hurricane Andrew. Today, NPS landscape management plan is to maintain as near natural conditions as possible while protecting the existing cultural resources.

Also noted in this CLI is the fact that the majority of existing structures and landscape features were constructed while Mark Honeywell owned the island. The main house, which is no longer standing, was constructed prior to Honeywell's purchase of the island. Therefore, the amendment to the National Register nomination, eliminating criterion B and the resources association with Honeywell, seems

erroneous. It is the opinion of this CLI that the Boca Chita cultural landscape should be associated with Mark Honeywell, a person of historic significance in the history of America and this region of Florida.

The current Boca Chita Key Historic District encompasses approximately 11 acres, surrounding the complex of structures and landscape features on the north section of the 32 acre island. It should be noted that as part of this CLI, the entire island was investigated during site visits to determine the existence and conditions of historic features that may contribute to the significance of the property. There are no cultural landscape features outside of the current historic district boundaries that merit expanding the district boundary.

Existing NRIS Information:

NRIS Number:
97000795

Primary Certification Date:
08-01-1997

Name in National Register:
Boca Chita Key Historic District

Other Names:
None

National Register Eligibility: *(NPS will complete at a later date.)*
Date of Eligibility Determination: *(NPS will complete at a later date.)*

National Register Classification:
District

Significance Level:
Local

Contributing/individual:
Individual

Significance Criteria:
A -Associated with events significant to broad patterns of our history
B –Associated with persons significant in our past
C -Embodies distinctive construction, work of a master, or high artistic values

Criteria Considerations:
NA

Statement of Significance:
Mark C. Honeywell constructed a complex of buildings and structures on Boca Chita Key which together form a locally significant historic district under National Register Significance criteria A, B, and C. The historically significant and contributing structures and objects include the lighthouse, chapel, picnic pavilion, garage, engine house and cistern, arched concrete footbridge, canal, stone walls, retaining walls, walkways, and cannon. The complex is eligible under National Register criterion A because they reflect the activities of the wealthy industrial class that emerged in America between World Wars I and II and

specifically reflect the recreational development of Miami and Biscayne Bay in the period between 1896 and 1945.

The complex is eligible under National Register criterion B due to its association with Carl Fisher, Mark Honeywell, and August Geiger. Carl Fisher was a leading developer and promoter of the Miami area, which he helped transform into a tourist attraction and a place for wealthy Americans to build vacation retreats. As Miami and Miami Beach prospered in the first decades of the twentieth century, Fisher began to extend his development activities into Biscayne Bay, creating artificial islands and enhancing existing islands by adding fill material dredged from Biscayne Bay. One of the Biscayne Bay islands that Carl Fisher and associates developed during this period was Boca Chita Key.

Fisher and associates purchased Boca Chita Key in 1916. They oversaw the addition of fill material to create the present configuration of the island, constructed a wooden bulkhead, and constructed buildings to shelter visitors to the island. A hurricane destroyed these improvements in 1926, after which Milton Harrison purchased the island. Harrison added a two-story frame house, installed a steel bulkhead, and dredged a boat harbor.

Mark C. Honeywell and wife, Olive Lutz Honeywell, purchased the island in 1937. Honeywell, originally from Wabash, Indiana, was the founder, president, and chairman of the board for the Minneapolis Honeywell Heat Regulator Company. With multi-million dollar annual sales in the 1930's and 1940's, Mark C. Honeywell joined the class of wealthy industrialists building vacation homes in the Miami Beach area. Honeywell and wife belonged to many of the most prestigious social clubs in the area, including the Cocoloba Club and the Miami Beach Committee of One Hundred, for whom Mr. Honeywell served as president from 1936 to 1951.

Honeywell kept the existing frame house on the island and soon began constructing a complex of support structures and landscape features to create a private recreational retreat and place to entertain guests. Between his purchase of the island in 1937 and the death of his wife in 1939, Mark Honeywell constructed a lighthouse, chapel, picnic pavilion, engine house, garage, stonewalls, retaining walls, an arched concrete footbridge, and concrete walkways. Honeywell hired the architectural firm led by prominent Miami architect August Geiger to design the 65 foot lighthouse that marks the entrance into the island's harbor. The lighthouse and all of the other structures built during the Honeywell period are constructed of Miami oolitic limestone, a popular building material in the Miami region during this period. All of the structures also reflect elements of the Mediterranean Revival style which is characteristic of regional architecture in the Miami area during this period.

Additionally, these structures and objects are significant under criterion C because they embody the distinctive architectural styles employed on private, recreational retreats in the Florida Keys during the 1930's and are representative of the work of a locally significant architect August Geiger. The similarity of materials and architecture suggests that, in addition to designing the lighthouse, August Geiger's firm may be responsible for designing the other structures on the island. Geiger is best known for introducing to Miami the Spanish Colonial or Mediterranean Revival style of architecture, which became a characteristic style in local architecture during this period. Geiger is responsible for several architecturally significant structures, both municipal and private, including the Dade County Courthouse, the Miami Women's Club, and the Southside Elementary School, all of which are listed on the National Register of Historic Places.

The topography of the island generally conforms to the alterations made during the Fisher period, when fill dirt was added to the north end of the island. The outline of the harbor appears to conform to the alterations made during the Harrison period, when the boat harbor was dredged. Historic aerials show that Harrison installed three canals to drain the interior of the island. Two canals drain a mangrove forest on

the south end of the island. The northern of these two canals was filled during the Honeywell period. The route of this canal appears to correspond to the route of the stone wall constructed during the Honeywell period. The most southern canal was modified during the Honeywell period and is outside of the historic district. One canal drained a mangrove forest located on the north end of the island. This canal was partially filled during the Honeywell period. The remaining section was converted to an ornamental canal during the Honeywell period. There is no evidence of other cultural landscape features associated with the periods prior to the Honeywell period.

All of the buildings in the Honeywell complex retain integrity of location, design, setting, materials, workmanship, feeling, and association. The buildings are well designed and constructed, as evidenced by their ability to survive the devastating winds of hurricanes which have passed directly over the island. Although the buildings have been damaged by storms, time and weather, the structural integrity of the buildings is sufficient to illustrate the original design and function of the complex. With the exception of the loss of the frame "main" house, which burned in the 1960's, and a small number of frame buildings believed to be from this period, the overall historic setting and spatial organization remains essentially intact from the period of significance. The topography and views and vistas on Boca Chita are unchanged from the period of significance. The major changes to the cultural landscape is the extensive devastation of the historic vegetation in 1992 by Hurricane Andrew. Otherwise, the complex of landscape features continues to convey its specific association with the architecture and social history associated with recreational development of Miami and the Florida Keys in the early twentieth century.

Period of Significance:
Start Year: *1937AD*
End Year: *1945AD*

Historic Context Theme/Subtheme/Asset:
I. Peopling Places, H. Other (Migration into south Florida in the early Twentieth Century)
II. Expressing Cultural Values, N. Other (Miami's winter leisure class)
VII. Transforming the Environment, E. Other (Development of vacation properties on the keys)

Area of Significance: Architecture
Entertainment /Recreation
Social History
State Register Documentation:
No

National Historic Landmark Information
National Historic Landmark Status:
No

World Heritage Site Information
World Heritage Site Status:
No

Chronology and Physical History

Primary Historic Function
Major Category 08 Recreation/Culture
Category 08F Outdoor Recreation
Function 08FG Outdoor Recreation - Other

Primary Current Use
Major Category 08 Recreation/Culture
Category 08F Outdoor Recreation
Function 08FG Outdoor Recreation - Other

Ethnographic Study Conducted: No Survey Conducted

Cultural Landscape Type: Historic Designed Landscape
Current and Historic Names:
Name: Boca Chita
Type of Name: Both Current and Historic

Chronology

Start Year: 1916
End Year: 1916
Major Event: Purchased / Sold
Description: The first certificate of ownership of Boca Chita Key is dated June 21, 1916, when Carl Fisher, F. A. Seiberling, Brainard T. Bell and associates purchased the island.
Associated Name: Carl Fisher
Association: Owner
Associated Name: F. A. Seiberling
Association: Owner
Associated Name: Brainard T. Bell
Association: Owner

Start Year: 1916
End Year: 1926
Major Event: Developed
Description: F. A. Seiberling initiated development of the island. Workers added five to thirteen feet of fill material on top of the existing limestone, bringing the island to its current configuration. Seiberling also built a wooden bulkhead and one or more frame buildings on the island.
Associated Name: F. A. Seiberling
Association: Owner

Start Year: 1926
End Year: 1926
Major Event: Destroyed
Description: The hurricane of September 1926 destroyed the improvements developed by F. A. Seiberling as it passed over Boca Chita.
Associated Name: F. A. Seiberling
Association: Owner

Start Year: 1926
End Year: 1926
Major Event: Purchased / Sold
Description: F. A. Seiberling and his associates sold the island to Seiberling's son-in-law Milton W. Harrison.
Associated Name: F. A. Seiberling
Association: Owner
Associated Name: Milton W. Harrison
Association: Owner

Start Year: 1926
End Year: 1934
Major Event: Built
Description: Prior to 1934, Milton W. Harrison built a two-story frame house on the north end of the island, dredged the boat harbor, and installed steel bulkheads on the island's coastline to replace the wooden ones destroyed in the hurricane
Associated Name: Milton W. Harrison
Association: Owner

Start Year: 1937
End Year: 1937
Major Event: Purchased / Sold
Description: In 1937, Milton W. Harrison sold the island to Mark C. Honeywell.
Associated Name: Milton W. Harrison
Association: Owner
Associated Name: Mark C. Honeywell
Association: Owner

Start Year: 1937
End Year: 1940
Major Event: Built
Description: Between 1937 and 1940, Mark C. Honeywell had several structures on the north end of the island built in the vicinity of the frame dwelling constructed during the Harrison ownership. The structures include the Lighthouse, Chapel, Picnic Pavilion, Garage, Engine House and Cistern, stone walls, stone retaining walls and a cannon.
Associated Name: Mark C. Honeywell
Association: Owner
Associated Name: August Geiger
Association: Architect
Associated Name: Leon Angle Camp
Association: Other
Other Association: Designer; According to Jim Church, who worked as a draftsman for the Geiger firm, Leon Angle Camp designed the lighthouse.

Associated Name: Jim Church
Association: Other
Other Association: Draftsman; Jim Church worked as a draftsman for the Geiger firm during the construction of the lighthouse on Boca Chita Key.
Associated Name: Jack Hunt
Association: Other
Other Association: General Contractor; Jack Hunt worked as the general contractor for the construction of the lighthouse.

Start Year: 1937
End Year: 1940
Major Event: Built
Description: Frame structures are seen under construction in a film made during the construction building of the main structures, between 1937 and 1940.
Associated Name: Mark C. Honeywell
Association: Owner

Start Year: 1945
End Year: 1950
Major Event: Built
Description: According to contractor Albert Philpot, the Emermans constructed unspecified buildings on the island between 1945 and 1950.
Associated Name: Louis Emerman
Association: Owner
Associated Name: Florence Emerman
Association: Owner
Associated Name: Albert Philpot
Association: Other
Other Association: Contractor

Start Year: 1945
End Year: 1945
Major Event: Purchased / Sold
Description: In 1945, Mark C. Honeywell sold the island to Louis and Florence Emerman.
Associated Name: Mark C. Honeywell
Association: Owner
Associated Name: Louis Emerman
Association: Owner
Associated Name: Florence Emerman
Association: Owner

Start Year: 1945
End Year: 1950
Major Event: Built
Description: According to contractor Albert Philpot, the Emermans constructed unspecified buildings on the island between 1945 and 1950.
Associated Name: Louis Emerman
Association: Owner
Associated Name: Florence Emerman

Association: Owner
Associated Name: Albert Philpot
Association: Other
Other Association: Contractor

Start Year: 1950
End Year: 1950
Major Event: Purchased / Sold
Description: In 1950, The Emermans sold the island to Sailing Baruch.
Associated Name: Louis Emerman
Association: Owner
Associated Name: Florence Emerman
Association: Owner
Associated Name: Sailing Baruch
Association: Owner

Start Year: 1953
End Year: 1953
Major Event: Purchased / Sold
Description: In 1953, Sailing Baruch sold the island to G. E. Carlson.
Associated Name: Sailing Baruch
Association: Owner
Associated Name: G. E. Carlson
Association: Owner

Start Year: 1955
End Year: 1955
Major Event: Purchased / Sold
Description: In 1955, G. E. Carlson sold the island to the STARS Corporation headed by Eurith Dickinson Rivers.
Associated Name: G. E. Carlson
Association: Owner
Associated Name: Eurith Dickinson Rivers
Association: Owner

Start Year: 1955
End Year: 1970
Major Event: Destroyed
Description: The main house on the island, dating from the Harrisons' ownership, burned down.

Start Year: 1955
End Year: 1985
Major Event: Built
Description: The Rivers family installed a 12 feet by 6 feet shower house, called Grandma's Hut on the island.
Associated Name: Dan Rivers
Association: Owner

Start Year: 1955
End Year: 1985
Major Event: Altered
Description: The Rivers family added screen to the Picnic Pavilion and are also likely responsible for the shed addition on the south elevation of the Picnic Pavilion.
Associated Name: Dan Rivers
Association: Owner

Start Year: 1985
End Year: 1985
Major Event: Purchased / Sold
Description: The National Park Service purchased Boca Chita Key from the STARS Corporation on March 1, 1985 for $2.875 million.

Start Year: 1985
End Year: 1990
Major Event: Built
Description: The National Park Service added a solar powered restroom building to the island.

Start Year: 1985
End Year: 1990
Major Event: Built
Description: the National Park Service constructed new boardwalks at the harbor where visitors docked their boats.

Start Year: 1985
End Year: 1990
Major Event: Altered
Description: The National Park Service constructed a section of boardwalk that partially covered an existing 70 feet by 6 feet section of existing concrete walkway that likely dated from the Honeywell period of development.

Start Year: 1985
End Year: 1990
Major Event: Developed
Description: The National Park Service developed a camping area in open ground on the north east shore of the island.

Start Year: 1985
End Year: 1992
Major Event: Reconstructed
Description: The gabled roof on the chapel was replaced by the National Park Service before Hurricane Andrew.

Start Year: 1985
End Year: 2009
Major Event: Maintained
Description: Structural engineers and architects inspected the lighthouse in 1999, 2001 and 2005; and the National Park Service has repeatedly repaired and maintained the structure in order to keep it safe and open to the public.

Start Year: 1992
End Year: 1992
Major Event: Destroyed
Description: In August 1992, Hurricane Andrew passed over Boca Chita and destroyed the Honeywell and Emerman-era frame buildings, the restroom building, the 1980s boardwalks and the screen and shed addition to the Picnic Pavilion. The glass in the lighthouse lantern was also destroyed in the storm.

Start Year: 1992
End Year: 1992
Major Event: Damaged
Description: In August 1992, Hurricane Andrew passed over Boca Chita and damaged many of the structures on the island. Of the historic structures, the arched concrete footbridge over the canal and the eastern two thirds of the stone wall were the most heavily damaged. Most of the roofs on the historic structures were heavily damaged. The lighthouse casement windows were also damaged in the storm.

Start Year: 1994
End Year: 1997
Major Event: Built
Description: The National Park Service constructed a new steel bulkhead approximately one foot outside of the existing bulkhead, filling the gap with soil. A boat landing ramp was also constructed approximately 16 feet south of the stone wall marking the southwest corner of the historic district boundary.
Associated Name: J. Chalk
Association: Unknown
Associated Name: J. Nahodyl
Association: Unknown
Associated Name: B. Enlow
Association: Unknown

Start Year: 1994
End Year: 1997
Major Event: Altered
Description: During the National Park Service bulkhead construction project, additional bulkhead was extended across the mouth of the canal leaving the channel dry. The historic canal was then filled with dirt. The coping of the historic walls was left visible at grade.
Associated Name: J. Chalk
Association: Unknown
Associated Name: J. Nahodyl
Association: Unknown
Associated Name: B. Enlow
Association: Unknown

Start Year: 1994
End Year: 1997
Major Event: Altered
Description: A new roof, new windows and modern “roll-down” garage doors were added to the garage.

Start Year: 1994
End Year: 1997
Major Event: Altered
Description: The gabled rear roof of the engine house was replaced with a hipped roof.

Start Year: 1994
End Year: 1997
Major Event: Reconstructed
Description: The roof of the Pavilion was replaced after Hurricane Andrew by the National Park Service.

Start Year: 1994
End Year: 1997
Major Event: Built
Description: The National Park Service installed displays interpreting the natural and cultural history of the island after Hurricane Andrew.

Start Year: 1994
End Year: 1997
Major Event: Planted
Description: The north end of the island was planted with coconut palms and native trees to reflect the appearance of the historic district during its period of significance.
Associated Name: W. Davidson
Association: Unknown
Associated Name: A. Anderson
Association: Unknown
Associated Name: J. Nahodyl
Association: Unknown
Associated Name: B. Acre
Association: Unknown
Associated Name: T. Zinkle
Association: Unknown

Start Year: 1994
End Year: 1997
Major Event: Built
Description: The NPS constructed a restroom facility on high ground south of the foundation of the main house.
Associated Name: E. Carr
Association: Unknown
Associated Name: Leidecker
Association: Unknown
Associated Name: B. Bodnar
Association: Unknown
Associated Name: B. Enlow
Association: Unknown

Start Year: 1994
End Year: 1997
Major Event: Built

Description: The National Park Service replaced the boardwalks added in the 1980s. New concrete sidewalk was also constructed that extends east from the harbor from two locations merging just south of the foundation of the 1930s Harrison house.

Start Year: 1997
End Year: 1997
Major Event: Established
Description: Boca Chita Key Historic District was established and was listed on the National Register of Historic Places on August 1, 1997.
Associated Name: Mark C. Honeywell
Association: Owner
Associated Name: August Geiger
Association: Architect

Start Year: 1997
End Year: 2009
Major Event: Altered
Description: The previously altered hipped roof of the engine house was changed back to its original gabled roof configuration.

Start Year: 2005
End Year: 2009
Major Event: Reconstructed
Description: The limestone supporting piers of the Pavilion were recently rebuilt by the Historic Preservation Training Center.

History:
Physical History Time Period:
Episode 1: Early Development (Prehistory to 1936)
Episode 2: The Honeywell Era (1937-1945)
Episode 3: The Post-Honeywell Era (1946-1984)
Episode 4: The National Park Service Era (1985-present)

Physical History Narrative:
Episode 1: Early Development (Prehistory to 1936)
Boca Chita Key is a part of the upper Florida Keys, located between Ragged Key Number 5 to the north and Sand Key to the south. The shallow coral reef that provides the foundation for Boca Chita was formed during the Pleistocene epoch. A subsequent glacial period lowered the water levels in this area, exposing the coral to air and direct sunlight, resulting in their death. Over time this dead coral metamorphosed into limestone rock (Cullison, 1998). One of the several kinds of limestone formed in this area is Miami oolitic limestone, which was a popular building material in the region during the early twentieth century and was used to build the historic structures on Boca Chita.

Miami, Florida, rapidly developed upon the completion of Henry M. Flagler's Florida East Coast Railway in 1896, which provided the first convenient transportation link to the lower half of the state. The real estate boom in the first decades of the twentieth century resulted in a dramatic increase in the region's population. From 1915 to 1925, Miami's population grew from 15,000 to 71,000 inhabitants (Cullison, 1997). The Dixie Highway opened in 1925, creating a direct vehicular link between south Florida and the rest of the country.

Carl Fisher was instrumental in promoting and developing Miami. Fisher, founder of the Presto-o-lite Company and the Indianapolis Motor Speedway, purchased a vacation home in Miami in 1910. In 1913, Fisher built a bridge to the barrier reef across Biscayne Bay from Miami and used sand dredged from the Bay to fill the mangrove swamps on the island. Fisher renamed the former reef Miami Beach; he began selling lots in 1919 and it soon became popular with the wealthy Americans attracted to Miami's subtropical climate. Encouraged by the success of Miami Beach, Fisher began building artificial islands and enlarging existing keys by adding soil dredged from Biscayne Bay (Cullison, 1998).

One of the Biscayne Bay islands enlarged during this period was Boca Chita Key. Carl Fisher and several business associates, including Brainard T. Bell and F. A. Seiberling, purchased Boca Chita on June 21, 1916. F. A. (Franklin Augustus) Seiberling, the founder of the Goodyear Tire and Rubber Company, is thought to have initiated the development of Boca Chita between 1916 and 1926. During this period, workers deposited approximately 5 to 13 feet of dirt on top of the existing limestone, creating the current configuration of Boca Chita Key. Seiberling also constructed a wooden bulkhead and possibly a few frame buildings on the island. An unnamed Category 4 hurricane passed over the island in September 1926, destroying all of these improvements (Cullison, 1998).

Seiberling's son-in-law, Milton W. Harrison, purchased Boca Chita from Seiberling, Fisher and associates after the hurricane in 1926. Harrison built a two story frame house, referred to as the "Main House," on the man-made north end of the key where the fill dirt is up to thirteen feet deep (Yelen). According to Cullison and Yelen, Harrison had the boat harbor dredged and installed steel bulkheads in 1934 to replace the wooden ones destroyed in the hurricane (Cullison, 1998 and Yelen). Harrison is likely responsible for the construction of three canals which extend inland from the south end of the harbor and western edge of the island. The canals are visible in a historic aerial of the island from the 1930's (*Graphic 6*). These canals were constructed to drain mangrove forest in the interior of the island. The northern canal and northern most mangrove forest were later filled, creating the ornamental canal that is still visible in the landscape.

Episode 2: The Honeywell Era (1937-1945)

In 1937, Harrison sold Boca Chita Key to Mark C. Honeywell and his wife Olive Lutz Honeywell. Honeywell, a native of Wabash, Indiana, was the first president of the Minneapolis Honeywell Heat Regulator Company (now Honeywell Inc.) (*Graphic 7*). Honeywell purchased a vacation home in Miami and subsequently purchased Boca Chita to be a private retreat and place to entertain friends. The Honeywells joined many of the most prestigious social clubs in Miami, including the Miami Beach Committee of One Hundred, for whom Honeywell served as president from 1936 to 1951 (Cullison, 1998). The Committee of One Hundred was a social organization composed of many of the nation's leading industrialists and businessmen. The committee held their annual party on Boca Chita during Honeywell's ownership of the island (*Graphic 8*).

The Honeywells kept the frame house built by Harrison to serve, according to Cullison, "as the primary residence" on the island and added several structures to support its use as a vacation retreat (Cullison, 1998). The period of development during the Honeywell ownership is likely between 1937, when Honeywell purchased the island, and 1939, when Mrs. Honeywell died and Mr. Honeywell's interest in the island waned. The Honeywell structures include a lighthouse, chapel, picnic pavilion, garage, and engine house. The Honeywells also built an arched concrete footbridge over an existing canal, a stone wall with gates and a gatehouse around the primary structures, and a stone retaining wall along the northwest shore of the island (*Graphic 9*).

The National Register Nomination for Boca Chita, the Biscayne National Park Historic Resources Survey, and Beverly Yelen's "Historical Information Relating to Boca Chita Cay" credit later owners of the islands, Louis and Florence Emerman, with building a collection of wooden frame structures on the island that existed into the 1990's. However, historic photographs and a video showing construction on the island during the Honeywell period plainly show that at least two of the frame structures are contemporaneous with the lighthouse (*Graphic 10*); the video also shows what is likely a third frame building under construction (*Graphic 11*). (These structures appear to be those that later become known as "Grandma's Hut," "Clubroom," and "Honeymoon Hotel").

All of the existing historic structures on Boca Chita are located on the north end of the island and feature the same exterior material—Miami oolitic limestone. Historic aerials show that there were additional structures on the south half of the island, but none of these structures exist today (*Graphic 12*). The architecture of the existing Honeywell structures reflect the Mediterranean and Classical styles characteristic of resort properties constructed in the Miami region during this period. Historic photographs and the construction video also capture images of other small landscape features that no longer exist but also reflect the Mediterranean-inspired resort architecture of this period, including limestone walkways, wooden docks, and striped Venetian poles around the harbor. The construction video shows that the harbor poles are vibrantly painted with spiraling stripes of orange, red, and black. Some of the poles are topped in finials and others feature lanterns (*Graphic 13*).

It is known that the Honeywells hired the firm led by August Geiger, a prominent architect in the Miami area, to design the ornamental lighthouse located at the mouth of the Boca Chita harbor (*Graphic 14, Graphic 15*). August Geiger was best known for introducing Spanish Colonial or Mediterranean Revival architecture into the Miami area (Cullison, 1998). Geiger's commissions include several municipal structures, including the Miami City Hospital, and private developments, including Carl Fisher's first hotel on Miami Beach. Geiger's firm was also popular with wealthy clients who built winter vacation homes in and around Miami Beach. According to Jim Church, who worked as a draftsman for the Geiger firm, Leon Angle Camp designed the lighthouse and Jack Hunt was the general contractor for its construction (Cullison, 1997). The similarity between the styles and construction materials of the different structures suggest that the Honeywells utilized the services of a single design firm or construction company for these limestone structures (Cullison, 1998).

The Honeywell structures are distributed across the north end of the island arching in an arc from the lighthouse to the west, to the garage in the east, back to the pavilion on the west side of the island. The Boca Chita Lighthouse (HS-1, IDLCS 90190) is a 65 feet tall tapering cylindrical tower located on a peninsula of land forming the north side of the harbor entrance on the Biscayne Bay (west) side of the island. Honeywell reportedly built the lighthouse to guide boaters into the harbor but, according to one story, the United States Coast Guard shut it down after its initial lighting in the late 1930s (Chapman, 1993). A cannon is mounted on a stone base below the Lighthouse, which Honeywell reportedly fired to greet visitors to the island (*Graphic 16*). The Boca Chita Chapel (HS-2, IDLCS 90191) is located north east of the Lighthouse, on the same peninsula forming the north side of the harbor (*Graphic 17*). The Chapel is a small, 12 feet by 20 feet, structure with a steeply pitched concave roof. The Boca Chita Picnic Pavilion (HS-3, IDLCS 90192) is across the entrance into the harbor from the Lighthouse and Chapel (*Graphic 18*). This open sided structure sits on a 15 feet by 52 feet concrete foundation with ten squared limestone piers supporting a hipped roof. Historic photographs suggest that the floor of the pavilion was originally limestone pavers, which were covered by the existing concrete floor at a later, unknown date. Historic photographs also show the roof was tiled. The tiles shown piled at the side of the harbor in the construction video appear to be made of cement. In a 1991 letter to

Superintendent Sanders, James Haston, of the Dinner Key Cruising Club, reports removing "old cement tile" from the Pavilion (Halston, 1991). Based on this information and the era of construction, it is likely that the tiles were composed of cement-asbestos.

A 71 feet by 30 feet Garage (HS-4, IDLCS, 90193) is located on the east edge of the developed north end of the island. The north elevation of the Garage (also known as the Barn) features four garage-type door openings and a fifth standard-size door; the south elevation has five windows with transoms. Between the Garage and the harbor stands the Engine House and Cistern (HS-5, IDLCS 90194). The Engine House, also known as the Generator Building, is a 15 feet by 32 feet structure on a concrete slab foundation. An octagonal concrete cistern is attached to the east elevation of the building.

Smaller structures built by the Honeywells include an arched 14 feet long and 6 feet wide concrete footbridge (Bridge- HS-6, IDLCS 90195) over the narrow canal at the south end of the harbor. Originally the footbridge featured three feet high stone walls which flared out at the ends into low scroll forms. The canal, which predated the footbridge, extended about 45 feet south beyond the footbridge. The Canal (HS-8, IDLCS 91570), which was filled in the 1990s, has retaining walls composed of uncoursed limestone with green tinted concrete coping.

The Honeywells built 900 feet of Stone Wall (HS-7, IDLCS 90196) around their complex of buildings. The wall extended east from the west shore on the Biscayne Bay side of the island to just south of the engine house building. The wall featured a one room stone gatehouse and seven gateways (Cullison, 1998). There is also a stone retaining wall (IDLCS 91571), likely dating from this same period, on the north shore of the island that serves as a bulkhead. Several of the structures and the harbor area were connected with a pedestrian circulation system of tinted concrete walkways (HS-10, IDLCS 91616), informal dirt paths, as well as at least two sections of limestone walkway adjacent to the harbor (*Graphic 19*). Concrete walkways led from the harbor to the main house and to the engine house; these walkways clearly correspond to the structures built during this period, though it is unclear when the walkways were constructed. Dirt roads and paths led from the developed area through the stone wall to the south and west ends of the island where there were several service structures.

Yelen's interview with Philpot records that in the 1940s there were three wooden docks in the Boca Chita Harbor on the north end, the south end, and near the Pavilion. These docks appear in Honeywell era photographs and in the construction video, so it is likely that Honeywell had the docks constructed (*Graphic 20*). According to Philpot, these docks were painted green. In addition to the three docks in the harbor, the video provides evidence of a fourth dock located on the Biscayne Bay side of the island on the west shore of the peninsula in the vicinity of the picnic pavilion. Limestone walkways lined the harbor along the sides of at least two of the docks. One of these limestone walkways is shown under construction in the video. A construction worker is seen laying large, flat limestone pavers onto a bed of sand and pouring concrete to fill the joints. Construction documents from 1994 show an outline of an approximate 80 foot length of "oolitic limestone sidewalk" on the east side of the harbor and up to 200 feet of sidewalk on the west side.

The construction video also shows that Honeywell had improvements made to the island's bulkhead and had the harbor dredged. Also visible in the video is a large excavator digging sand at the shoreline and depositing it on the island. Workers then use a tractor to spread the sand on the island in the vicinity of what appears to be the current location of the stone wall. This indicates that the northern canal which drained the southern mangrove forest was filled and at the same time footers for the stone wall were constructed within the canals alignment. Historic

photographs show a large white area east of the engine house and cistern which may be sand. This area corresponds to the area that was occupied by the northern mangrove forest in the 1930s aerial (See Graphic 12). The construction video also shows a white, linear feature in the landscape that corresponds with the location of one of the drainage canals. It appears to be the canal that drained into the harbor that was partially filled. The remaining section of canal was converted to an ornamental canal with an arched concrete footbridge.

Newspaper reports on Boca Chita record Honeywell clearing existing vegetation and making extensive additions. An article from the Miami News in April 1941 claims that "When the swamps were first cleared away many fine specimens of native flora were found," including "gumbo limbo, citharexyllum, and many others growing in abundance." The article quotes Honeywell: "The native things I didn't find here I brought in and planted….Now I have almost everything except the pigeon plum (*Coccolobis floridana*) and the satin leaf tree (*Chrysophyllum olivaeforme*)." The article discusses the various things Honeywell did to beautify the island, including planting trees, shrubs, and ground covers (*Graphic 21*). Honeywell apparently experimented with different grass species, and "after trying various grasses, with small success, he found the St. Lucie, a long-bladed Bermuda variety, would stand against the salt spray better than most." The lawn on Boca Chita was, according to the reporter, "the thing that impresses most as you enter [the] harbor." The list of trees and shrubs Honeywell planted on Boca Chita included: "vitex, Carissa plum, Surinam [possibly *Eugenia* sp.], ligustrum, jatropha, almond trees [possibly *Terminalia* sp], melaleucas…oleander…sea grape [*Cocoloba* sp.] …purslane [possibly *Protulaca* sp.]… papayas and coconut palms."

Historic photographs show that Honeywell made extensive changes to the vegetation. Large portions of the island appear to have been cleared to create open space and to open views to the ocean. Honeywell planted very large plant material. This is visible in photographs and described in a history of Honeywell, "Mark C. Honeywell: Citizen, Builder, Philanthropist of Wabash, Indiana," which states that nurseries sent "full-grown coconut palms, with huge amounts of earth covering their roots" (23). Historic photographs from the Honeywell period show a densely planted landscape. The thick, tree canopy on the north end of the island was dominated by coconut palm and Australian pine trees (*Graphic 22*). The ends of the peninsulas at the mouth of the harbor were planted in Australian pines. The edge of the harbor was planted with a groundcover that draped over the seawall. A line of pines surrounded a distinct rectangular-shaped open area near the engine house. Another prominent open space extended east from the main house towards the Atlantic Ocean. An allée of palm trees led northeast from the main house to an ocean-side beach.

The Honeywells used Boca Chita as a retreat from their winter home in Miami and to entertain guests (*Graphic 23)*. Olive Lutz Honeywell died in February 1939 from heart trouble according to her obituary. According to the Honeywell House museum in Wabash, Indiana, she is believed to have sustained injuries from a fall at Boca Chita that may have contributed to her death (Ford, n/d). Mark Honeywell reportedly spent less time at the island and, after remarrying in 1942 to Eugenia Hubbard, sold Boca Chita to Louis and Florence Emerman in 1945(*Graphic 24)* .

Episode 3: The Post-Honeywell Era (1946-1984)

The Emermans continued the Honeywell's tradition of holding lavish parties on the island, including perpetuating the use of the island for the Committee of One Hundred parties. According to Ellen Yelen, who interviewed Albert Philpot, a building contractor who worked for the Emermans, the Emermans built several small wood frame cottages and a galley on the island between 1945 and 1950 (Yelen). These small structures were located in the open area south-east of the harbor (*Graphic 25*). These cottages included the Mate's Nest or Captain's Roost (27 feet

by 17 feet), the Honeymoon Hotel or Landlubber's Lodge (30 feet by 13 feet), and the Clubroom (42 feet by 14 feet with a 9 feet by 12 feet rear ell). As noted above, these structures appear in photographs and a video which can be dated to the Honeywell period. It is possible that Philpot remodeled Honeywell structures or built additional structures that are not presently identified. A masonry building behind the Clubroom appears in 1954 photos, but is not accounted for in other sources of information and is likely to be an Emerman addition to the property. The Emermans sold the property in 1950 to Sailing Baruch. Baruch wrote in a "Boca Chita Guest Book" that he stayed in the lighthouse during a hurricane in 1951 (Yelen, n/d). There were ten named hurricanes in the Atlantic that season; none of which passed over Boca Chita. It is more likely to have been Hurricane King, a category 3 hurricane that passed over Boca Chita in 1950.

Baruch sold the island in 1953 to G. E. Carlson of Chicago, Illinois. Carlson had a caretaker, Jack Grimes, who lived on the island. Carlson sold Boca Chita to the STARS Corporation headed by the Rivers family in 1955. E. D. (Eurith Dickinson) Rivers was governor of Georgia from 1937 to 1941. After leaving politics he and his sons operated a company that owned radio stations across the southeastern United States. They began broadcasting in the Miami area in the 1960s with a radio station WEDR. According to a history of Boca Chita, compiled by members of the Dinner Key Cruising Club (DKCC), Dan Rivers (possibly E. D. Rivers Jr.) hired a caretaker named Zach Watson to maintain the facilities on the island. The main house on the island, dating from the Harrisons' ownership, burned down during Watson's employment. As a result, a DKCC Member Burt Probinsky, a friend of Mr. Rivers, suggested that the Club take over maintenance of the island. The DKCC continued maintenance of the island into the 1990s (Yelen). According to hand written notes of an interview with Dan Rivers, the Rivers installed the existing red-tinted concrete slab as part of a shower they added onto Grandma's Hut. Also during this period, the Rivers added screen to the Picnic Pavilion and are also likely responsible for the shed addition on the south elevation of the Picnic Pavilion (*Graphic 26*).

Episode 4: The National Park Service Era (1985-present)

The National Park Service (NPS) purchased Boca Chita Key from the STARS Corporation on March 1, 1985 for $2.875 million. NPS initial efforts developing the island relate to improving the public facilities and visitor services. NPS added a solar powered restroom building on the island in the 1980s, located approximately 50 feet south east of the harbor and just north of the Engine House in a low lying area prone to flooding (*Graphic 27*). Also in the 1980s, the NPS constructed new boardwalks at the harbor where visitors docked their boats. One section of new boardwalk partially covered an existing 70 feet by 6 feet section of existing limestone walkway that likely dated from the Honeywell period of development. The NPS also developed a camping area in open ground on the north east shore of the island, near the location of the Harrisons' main house that burned down in the 1960s. NPS installed picnic tables and charcoal grills and planted palm trees in the primitive camping area (*Graphic 28*).

For the first decade, the NPS continued a relationship with the DKCC, who were designated "Volunteers in the Park" and continued to have regular work parties on the island. DKCC projects included litter pickup, repairing the screens on the Picnic Pavilion, installing charcoal grills at the camp ground, building boardwalks around the harbor, repairing the bulkhead, repairing roofs, installing regulatory signs, planting native trees, removing exotic trees, and repairing picnic tables. During their May work weekend, DKCC volunteers "Stripped old cement tile and felt from Pavilion roof [and] utilized old cement tiles to reinforce the little lagoon bulkhead cap behind the stone bridge..." (Haston,1991).

In August 1992, Hurricane Andrew passed over Boca Chita with winds recorded at 169 miles per hour at nearby Fowey Rocks Lighthouse (*Graphic 29*). The historic limestone structures on the

island withstood Andrew's force, but the frame structures, including the Honeywell and Emerman-era cottages, the 1980s restroom, and the 1980s boardwalks, were essentially obliterated (Markowitz, 1997). Many of the trees across the island were uprooted in the storm; most of the ornamental plantings on the north end of the island and the mature mangroves on the south side of the island were destroyed. Of the historic structures, the arched concrete footbridge over the canal and the eastern two thirds of the stone wall were most heavily damaged. The glass in the lighthouse lantern was shattered and the casement windows were also heavily damaged in the hurricane. Most of the roofs on the other historic structures were blown off. The screen and shed addition on the Picnic Pavilion were completely removed by the hurricane (*Graphic 30*).

After the storm, the NPS cleared the island of the debris and began repairing the remaining historic structures. In 1995, NPS replaced the 1934 steel bulkhead from the Harrison era, which was heavily corroded from prolonged exposure to sea water. NPS constructed a new steel bulkhead approximately one foot outside of the existing bulkhead, filling the gap with soil. The new bulkhead extends 50 feet beyond the old bulkhead on the north side of the island and also extends across the mouth of the canal leaving the channel dry. According to a NPS document, "the canal does not currently serve any function [and was] structurally destroyed by the hurricane." The dry canal was filled with dirt with the coping of the retaining walls visible at grade. During the bulkhead project, the NPS also constructed a boat landing ramp approximately 16 feet south of the stone wall marking the southwest corner of the historic district boundary. The NPS also constructed a new restroom facility on high ground south of the foundation of the main house.

All of the structures' roofs with the exception of the chapel (which had been replaced shortly before the hurricane) were replaced after Hurricane Andrew. The rear gable roof on the engine house was replaced with a hipped roof. New windows and modern "roll-down" garage doors were added to the garage. Structural engineers and architects inspected the lighthouse in 1999, 2001, and 2005; and the NPS has repeatedly repaired and maintained the structure in order to keep it safe and open to the public. NPS also replaced the boardwalks added in the 1980s (*Graphic 31*). The new composite-wood walkways extend east from the harbor from two locations merging just south of the foundation of the 1930s Harrison house.

The NPS management and operational plan for Boca Chita is to maintain as near to natural conditions as possible while protecting the cultural resources on the island. The north end of the island, which is where the cultural resources are concentrated, was replanted in 1994 with coconut palms and native trees to reflect the appearance of the historic district during its period of significance (*Graphic 32 and 33)*. The area south of the stone wall was restored to a mangrove forest. A trail around the south end of the island was created by reducing the width of an existing access road. The island did not have any permanent interpretive displays prior to Hurricane Andrew but the NPS has installed displays and information kiosks interpreting the natural and cultural history of the island.

Graphic(s):

Episode 1: Early Development (Prehistory to 1936)

Graphic 6: Aerial photograph showing the location of canals on Boca Chita Key (South Florida Collection Management Center).

Episode 2: The Honeywell Era (1937-1945)

Graphic 7: Mark Honeywell circa 1938-40 (Historical Museum of Southern Florida).
Graphic 8: The Committee of One Hundred annual party (South Florida Collection Management Center).
Graphic 9: Arched concrete footbridge over existing canal (South Florida Collection Management Center).
Graphic 10: Frame Structures, still photo from 1930s construction video (Biscayne National Park Library).
Graphic 11: Frame building under construction, still photo from 1930s construction video (Biscayne National Park Library).
Graphic 12: Aerial Photograph circa 1940 (Historical Museum of Southern Florida).
Graphic 13: Walkway under construction and harbor poles, still photo from 1930s construction video (Biscayne National Park Library).
Graphic 14: Boca Chita Lighthouse with Venetian harbor poles (South Florida Collection Management Center).
Graphic 15: Entrance into Boca Chita harbor circa 1940 (Historical Museum of Southern Florida).
Graphic 16: Cannon being fired to welcome Committee of One Hundred members to the island (South Florida Collection Management Center).
Graphic 17: Boca Chita Chapel (South Florida Collection Management Center).
Graphic 18: Picnic Pavilion (South Florida Collection Management Center).
Graphic 19: Aerial photograph showing historic circulation on the island (South Florida Collection Management Center).
Graphic 20: Wooden dock in Boca Chita harbor (South Florida Collection Management Center).
Graphic 21: Construction and Planting circa 1938 (Biscayne National Park).
Graphic 22: Mature Coconut Palms circa 1940 (Historical Museum of Southern Florida).
Graphic 23: Entertaining guests on Boca Chita (South Florida Collection Management Center).
Graphic 24: Mark and Eugenia Honeywell (Historical Museum of Southern Florida).

Episode 3: The Post-Honeywell Era (1946-1984)

Graphic 25: Cottage on Boca Chita (Joel Yale, Life Magazine, 1954)

Episode 4: The National Park Service Era (1985-present)

Graphic 26: Picnic pavilion with screen and shed addition (National Park Service, Biscayne National Park).
Graphic 27: Restroom building (National Park Service, Biscayne National Park).
Graphic 28: Camping Area (National Park Service, Biscayne National Park).
Graphic 29: Boca Chita before Hurricane Andrew (National Park Service, Biscayne National Park).
Graphic 30: Boca Chita after Hurricane Andrew (National Park Service, Biscayne National Park).
Graphic 31: Rebuilt bulkhead and boardwalk (National Park Service, Biscayne National Park).

Graphic 32: NPS Tree plantings after Hurricane Andrew (National Park Service, Technical Information Center).
Graphic 33: 1994 Planting plan designed by W. Davidson (National Park Service, Technical Information Center).

Analysis and Evaluation

Analysis and Evaluation Summary:
The National Register of Historic Places identifies seven qualities that define historic integrity. These aspects of integrity include location, design, setting, materials, workmanship, feeling, and association. Measuring historic integrity is based on a thorough knowledge of the site's history and determining if existing landscape features convey the historic significance of the site.

As to be expected, Boca Chita's cultural landscape features have experienced changes due to natural forces and man-made activities that undermined aspects of its historic integrity. Vegetation was a historically significant landscape feature at Boca Chita that has dramatically changed since the period of significance. The existing plant material accurately recreates the historic plant palette and design intent of the historic landscape and is considered contributing features of the cultural landscape. Land use has also changed dramatically since the property was initially developed as a private resort and is today operated as a public park. Changes related to this new use have impacted a number of historic landscape features, including circulation, small scale features, and natural systems and features. These changes to the historic landscape result in a reduced level of integrity for these characteristics.

Today, Boca Chita Historic District retains a high degree of historic integrity in the following landscape characteristics: spatial organization, buildings and structures, views and vistas, constructed water features, and topography. Overall, the Boca Chita Historic District landscape generally retains its historic character and accurately conveys its historic significance as a recreational resort associated with the development of the Miami, Florida region in the early twentieth century.

Aspects of Integrity:
Location
Design
Setting
Materials
Workmanship
Feeling
Association
Landscape Characteristics: Natural Systems and Features
Spatial Organization
Land Use
Topography
Vegetation
Circulation
Buildings and Structures
Views and Vistas
Constructed Water Features
Small-Scale Features
Landscape Characteristic: Spatial Organization

Landscape Characteristic Narrative: The structures built by the Honeywells during the period of significance were located on the north end of the island in the vicinity of an existing, two-story frame dwelling constructed by Milton Harrison. The buildings are laid out in an arc around the harbor, beginning with the lighthouse and chapel north of the harbor, moving to the main house east of the harbor, to the engine house south of the harbor, and ending with the picnic pavilion west of the harbor. These buildings are generally oriented towards the harbor and are in close proximity of each other. Historically, the buildings were connected primarily by informal walking paths. The Honeywells did install concrete walkways connecting the main house and engine house to a limestone walkway on the east side of the harbor. There were also disconnected sections of walkways installed during the period of significance on the south and west sides of the harbor that, with the east section, serviced wooden boat docks. The lighthouse, which marked the entrance to the harbor, and the picnic pavilion, which served as the primary gathering place for visitors, are closest to the harbor. The engine house, which housed a generator that provided electricity to other structures, is centrally located on the island. The garage, which served a more utilitarian function during the period of significance, is isolated from the other buildings on the east side of the developed area. The north end of the island, where the structures were, was physically and visually separated from the rest of the island by a large stone wall. This wall demarks the southern boundary of the historic district.

Hurricane Andrew destroyed all of the frame buildings on the island, leaving behind only the limestone Honeywell era buildings. Hurricane Andrew also destroyed the eastern two-thirds of the stone wall. The main house burned down in the 1960's and was not reconstructed. NPS constructed additional walkways, providing a continuous walkway around the harbor and connecting the harbor with a new comfort station.

The spatial organization of remaining buildings and landscape features retains a fair amount of historic integrity. Buildings and features have been lost, but the majority of historic buildings and features remain from the period of significance. Photographic evidence shows that contrary to the findings of the Historic Resource Survey and National Register Nomination several buildings that were previously identified as constructed after the Period of Significance were in fact built by the Honeywells. The spatial context of the island is similar as during the period of significance, as the island is still located between Ragged Key number 5 to the north and Sand Key to the south. Views from Boca Chita northwest towards Miami has evolved as the skylines of Miami and Miami Beach have changed.

Landscape Characteristic: Circulation
Landscape Characteristic Narrative:
Transportation to Boca Chita Key is provided either by either by the National Park Service concession or private boats. A harbor on the north end of the island provides boat parking and access. All circulation on the island is limited to foot traffic. Primary circulation on the north end of the island is accomplished by a boardwalk surrounding the harbor and a rock salt finished concrete walkway which leads east from the east side of the harbor to the comfort station. Both the boardwalk and the concrete walkway are contemporary additions to the island installed by the NPS. According to original construction documents for the boardwalk, damaged sections of original oolitic limestone walks were left in place and covered by the new boardwalk. The construction of the Secondary circulation is provided by sections of remnant colored concrete walkways. These walkways date to the Honeywell era and run east from the harbor to the foundations of the Main House then turn south to connect with the engine house. All other circulation on the north end of the island is informal paths through lawn.

Outside of the historic district on the south end of the island, circulation is limited to a nature trail. The trail was constructed along a former roadbed by the NPS after purchasing the property. The trail begins at the stone wall on the west side of the property then loops around the southern tip of the island ending in the meadow west of the garage. The trail surface is earthen and is generally four feet wide. One wooden footbridge is located on the western portion of the trail where it crosses the only remaining drainage canal from the Honeywell Era.

Landscape Features: Composite lumber boardwalk *(Graphic 34)*
Type of Contribution: Non Contributing
Explanatory Narrative: A composite lumber boardwalk was installed by the National Park Service in 1994 as a part of a post Hurricane Andrew repair project. The boardwalk provides continuous circulation around the harbor and access to load and unload boats. Under the boardwalk, sections of the original limestone walks built in the Honeywell era remain. The limestone walks are noted as damaged in the 1994 plans and are currently inaccessible. Construction of the limestone walks is documented in a 1930s era Honeywell family video.

Landscape Features: Rock salt finished concrete walkway *(Graphic 35)*
Type of Contribution: Non Contributing
Explanatory Narrative: During the post Hurricane Andrew repair project, a new concrete walkway was added to the property. The sidewalk is 10 feet wide and finished with rock salt giving the final surface a pocked appearance much like the oolitic limestone used on the historic buildings.

Landscape Features: Historic concrete walkways *(Graphic 35)*
Type of Contribution: Contributing
LCS Number and name: (IDLCS 91616) (HS-10) Concrete walkways
Explanatory Narrative: These historic walkways are constructed with a top layer of integral red coloring. The walks are cracked and faded to a pale pink color. Condition of the sidewalks is consistent with their age and constant exposure to harsh conditions. Threats to the sidewalks include unnecessary stress caused by maintenance vehicles and mowers driving across them and accelerated disintegration caused by the accumulation of lawn thatch. The 1994 rock salt finished concrete walks cut through the historic concrete walks, removing two ten-foot sections of the historic concrete.

Landscape Features: Limestone walkways
Type of Contribution: Undetermined
Explanatory Narrative: Three segments of these Honeywell Era limestone walkways are currently covered by the harbors boardwalk. The walks were identified on 1994 construction plans for the boardwalk as “damaged oolitic limestone walks.” The plans do not indicate that they were removed during construction. Two of the walks are located on the western side of the harbor and the third is located in the center of the eastern side of the harbor. The walks were not observed as they are currently inaccessible.

Landscape Features: Nature trail *(Graphic 36)*
Type of Contribution: Non Contributing

Landscape Features: Nature trail footbridge *(Graphic 37)*
Type of Contribution: Non Contributing

Landscape Characteristic: Views and Vistas
Landscape Characteristic Narrative:
The view of the Boca Chita Lighthouse both from the island and from a boat in the bay is a primary view associated with Boca Chita Key. One of the major functions of the lighthouse is to provide a landmark and focal point at the entrance to the harbor. The 65 foot tall limestone building is very visible from the bay as boats approach and depart the island. While on the island views of the lighthouse are provided from all sides of the harbor, the pavilion, and chapel, as well as palm framed views from the canopied lawn surrounding the harbor. These views remain intact from the period of significance.

The 360 degree panorama view from the observation deck of the lighthouse is the other primary view at Boca Chita. Beside the role the lighthouse plays as a landmark on the island, it also serves as a point from which a viewer can survey the Boca Chita property, Biscayne Bay, surrounding keys, the Atlantic Ocean and Miami's skyline. The lighthouse was intended as a destination for visitors during the period of significance and remains a popular vantage today. The view from the deck has changed little since the lighthouse was constructed. The primary changes are to the distant mainland. Miami's skyline is visible on clear days, but is of little visual impact due to its distance from the island. While the skyline is a minor element in the viewshed, it was likely even less apparent during the period of significance. While the relationship to Miami is very important to the significance of the island, visually Miami is of minor importance in this view shed. Other intrusions in the viewshed include a sanitary landfill and the Turkey Point Nuclear Power Plant located south of Miami. As with the Miami skyline, these intrusions are of minimal impact due to their distance from the island.

Landscape Features: View of Boca Chita Lighthouse (*Graphic38)*
Type of Contribution: Contributing

Landscape Features: View from Boca Chita Lighthouse (*Graphic 39 and 40*)
Type of Contribution: Contributing

Landscape Characteristics: Buildings and Structures
Landscape Characteristic Narrative: Boca Chita Key historically included a complex of limestone and concrete structures constructed to serve as a private resort for Mark and Olive Honeywell. When the Honeywells purchased the island in 1937, there was one existing frame dwelling and existing structural steel bulkheads. Milton W. Harrison likely constructed these structures in the 1930's. A concrete foundation marks the location of the frame dwelling, which was destroyed by fire in the 1960's, and NPS added a new bulkhead in the 1990's but left the 1930's bulkhead in place.

A good collection of buildings and structures from the period of significance (1937-1945) still exist on the site, including a lighthouse, chapel, picnic pavilion, garage, engine house and cistern. These structures were largely constructed by the Honeywells between 1937 and 1940. During the same period, the Honeywells also had constructed smaller structures including a canal, arched concrete footbridge, stone walls, and stone retaining walls. All of the buildings are located in close proximity to one another on the north end of the island, clustered around the Harrison-era structure that served as the primary domestic dwelling during the Honeywell period. All of the Honeywell buildings and structures feature exterior surfaces of quarry-faced Miami oolite limestone. The buildings and structures reflect the Mediterranean- inspired architecture popular during this period with wealthy individuals constructing private resorts in this region. The architecture firm of August Geiger is credited with designing the lighthouse

and, because of the architectural similarity between all of the island's structures, may have designed the entire complex.

The visual continuity of the complex, achieved through a consistent use of material and architectural style, results in a significant historic district of buildings and structures. All of the buildings are in their original locations and changes to their materials and workmanship have been minimal. All of the buildings possess integrity of design, as do all of the structures except for the arched concrete footbridge. The structural integrity of these buildings and structures is sufficient to convey the form and function of their historic use as a private retreat during the period of significance. Therefore, all of the buildings and structures except for the footbridge retain integrity of location, design, setting, material, workmanship, feeling and association. While the arched concrete footbridge has collapsed, the feature contributes to the significance of the district.

Landscape Features: Boca Chita Lighthouse *(Graphic 41)*
Type of Contribution: Contributing
LCS Number and name: LCS 90190, (HS-1)
Explanatory Narrative: Mark Honeywell had the Boca Chita Lighthouse built to mark the entrance into the Boca Chita harbor. The 65 foot tapering tower is approximately 19 feet in diameter at its base and sits on a terrace-like poured-concrete foundation approximately 28 square feet. The foundation features stone paving and four low curved stone walls terminating in square end piers. Thick metal chains connect three of these walls. The foundation also reportedly contains a cistern which collects water that drains from the observation tower. The tapering cylinder is constructed of structural concrete bricks, laid in common bond, with an exterior surface of uncoursed oolitic limestone. A reinforced concrete observation deck with black-painted steel railings projects outward near the top of the tower. A dome shaped steel frame lantern, originally set with glass lights, rises from the observation deck. The lantern historically featured four operable windows which allowed Honeywell to vent hot air during warm weather. The interior features a spiraling stair case with concrete steps and metal railing. The tower features seven windows at the lower walls and three at the lantern level. An original wood door provides access to the interior of the tower.

Winds associated with Hurricane Andrew in 1992 destroyed the glass panes in the lantern and the four vent windows. The NPS removed and repaired the lantern: however, they replaced the glass with Plexiglass vision panels and did not reinstall the four vent windows in the lantern. Maintenance of the lighthouse also included repointing joints and filling cracks in the exterior walls. The NPS continues to periodically maintain and repair the lighthouse and presently provides public access. The lighthouse is in good condition and retains historic integrity.

Landscape Features: Boca Chita Chapel *(Graphic 42)*
Type of Contribution: Contributing
LCS Number and name: LCS 90191, (HS-2)
Explanatory Narrative: Boca Chita Chapel is a 12 feet by 20 feet concrete block building with an exterior surface of uncoursed oolitic limestone. The chapel has a distinct, steeply pitched concave roof. There are symmetrically arranged doors and windows. Honeywell's use of the building is unclear; there is evidence that the chapel was also used as guest quarters.
NPS repaired the roof prior to 1992, installing an asphalt shingled roof which survived Hurricane Andrew. NPS removed the door on the east elevation and covered this entrance

and the building's windows with plywood. NPS added a deadbolt to the original door on the south elevation. NPS uses the chapel for storage. The chapel is in good condition and retains historic integrity.

Landscape Features: Boca Chita Pavilion *(Graphic 43)*

Type of Contribution: Contributing
LCS Number and name: LCS 90192, (HS-3)
Explanatory Narrative: Boca Chita Picnic Pavilion was built by Honeywell and used as a picnic/gathering space for entertaining visitors to Boca Chita. The pavilion consists of ten oolitic limestone piers rising from a 15 feet by 52 feet poured concrete foundation. The piers support a wood cornice and freeze topped by a hipped roof. There are decorative metal tie bars visible from within the pavilion.

Sometime after the period of significance and prior to the NPS purchase of the island, owners of the island, likely the Rivers, added screen and a shed roof addition to the pavilion. These were destroyed during Hurricane Andrew in 1992. NPS repaired the roof, adding asphalt shingles. Participants with the Historic Preservation Training Center recently rebuilt the pavilion piers. NPS allows public use of the pavilion. The pavilion is in good condition and retains historic integrity.

Landscape Features: Boca Chita Garage *(Graphic 44)*

Type of Contribution: Contributing
LCS Number and name: LCS 90193, (HS-4)
Explanatory Narrative: Mark Honeywell constructed the Boca Chita Garage (90193) (HS-4) during the period of significance. According to a 1950's era "Real Estate Broker's Guide" to the property, the building housed a machine shop and maintenance equipment. The garage is 71 feet by 31 feet; it is constructed of concrete block with an exterior surface of oolitic limestone. The building has chimneys integrated into the endwalls and a gabled roof. There is a concrete apron leading to the north façade, which features four large, garage-door-type openings and one standard door opening. There are four transom windows on the north elevation, standard windows on the south, west, and east elevations, and additional doors on the west and east elevations.

At the time of Hurricane Andrew, the garage had a corrugated metal roof, which was completely blown off during the hurricane. NPS replaced the roof with asphalt shingle. NPS replaced one of the bay doors with a roll-up garage door, covered the other doors with plywood, replaced several of the windows, and covered the windows with Plexiglas storm windows. NPS uses the building to house maintenance equipment. Except for the modern additions to the building, the garage is largely in good condition and retains historic integrity.

Landscape Features: Boca Chita Engine House and Cistern *(Graphic 45)*

Type of Contribution: Contributing
LCS Number and name: LCS 90194, (HS-5)
Explanatory Narrative: Boca Chita Engine House with attached Cistern was built by Honeywell during the period of significance. The engine house, also known as the generator building, housed equipment to provide electrical power to the other buildings on the island. The one story structure measures 15 ½ feet by 32 ½ feet. It is constructed of concrete block with an exterior façade of oolitic limestone. The adjacent cistern, comprised of limestone with a concrete top, presumably was used to collect rainwater.

There was a small shed addition on the south elevation built on a concrete and stone platform.

Hurricane Andrew severely damaged the roof of the engine house. NPS repaired the main roof with asphalt shingles. The small shed addition does not exist except for a concrete foundation. NPS has replaced three of the original, double hung windows with modern single casement windows, and has covered the exterior of the windows with plywood. NPS presently uses the building as storage and seasonal housing for park volunteers. Except for the use of contemporary materials for recent maintenance of the building, the engine house and cistern are in good condition and retain historic integrity.

Landscape Features: Boca Chita arched concrete footbridge *(Graphic 46)*
Type of Contribution: Contributing
LCS Number and name: LCS 90195, (HS-6)
Explanatory Narrative: Honeywell constructed a simple arched concrete footbridge over a narrow canal that predates his purchase of the island. The footbridge is 14 feet long and 6 feet wide. It features 3 feet tall walls of uncoursed oolitic limestone. The walls originally flared out into low scroll forms.

Hurricane Andrew destroyed two-thirds of the south wall. In more recent years the concrete deck of the footbridge has collapsed and the original stone walls are no longer present at the bridge site. Damage to the footbridge is extensive. The condition of the footbridge is poor.

Landscape Features: Boca Chita stone walls *(Graphic 47 and 48)*
Type of Contribution: Contributing
LCS Number and name: LCS 90196
Explanatory Narrative: Honeywell constructed a stone wall around the primary buildings on the north end of Boca Chita. The wall features limestone on a concrete foundation with vertical steel reinforcing bars. The wall originally ran southeast from Biscayne Bay shore, south of the picnic pavilion, about 400 feet, curved east for 35 feet, extended west another 309 feet, before turning north for a final 155 feet. The wall terminated in the vicinity of the Engine House. Originally, the wall featured seven gateways and a small, one room stone gatehouse.

Hurricane Andrew destroyed the eastern half of the stone wall; this eastern section is in a ruinous state. Today, there are only three existing gateways through the wall. A limestone cap to one of the western gate piers has fallen off and is lying at the base of the pier. A second limestone cap has fallen from the central gate piers and is lying at the base of the pier. Buttonwood shrubs are growing under the foundation of the wall. NPS has repointed mortar on the western gate columns. The wall is in fair condition. Despite loss of material and design, historic integrity is retained.

Landscape Features: Boca Chita retaining walls *(Graphic 49)*
Type of Contribution: Contributing
LCS Number and name: LCS 91571, (HS-9)
Explanatory Narrative: Honeywell also had a low limestone retaining wall constructed on the north side of the island to serve as a bulkhead. NPS has periodically repaired the wall, but portions have collapsed and many stones have come loose from the mortar and fallen into the bay. The resource retains integrity, but requires repair. The condition of the retaining walls is fair.

Landscape Features: Foundation of Main House *(Graphic 50)*
Type of Contribution: Non Contributing
LCS Number and name: NA
Explanatory Narrative: When Mark Honeywell purchased Boca Chita in 1937 there was a two story, frame house built east of the island harbor. Honeywell used the building as his primary domestic dwelling while on the island. This structure burned in the 1960's when the Rivers family, owners of the island from 1955 to 1985, had a caretaker living on the island. The concrete foundation is all that remains from this structure. The resource does not retain historic integrity and is considered a non-contributing resource to the district.

Landscape Features: Shower House foundation *(Graphic 51)*
Type of Contribution: Non Contributing
LCS Number and name: NA
Explanatory Narrative: The Rivers Family constructed a 12 feet by 6 feet concrete block shower house on the backside of Grandma's Hut after the period of significance. The concrete slab of the shower house remains, but Grandma's Hut was destroyed by Hurricane Andrew. It is a non-contributing resource lacking historic integrity.

Landscape Characteristic: Constructed Water Features
Landscape Characteristic Narrative:
Constructed water features at Boca Chita Key consist of a boat harbor, an ornamental canal and a functioning drainage canal. The harbor was first constructed by F. A. Seiberling between 1916 and 1926. Seiberling built a wooden bulkhead to stabilize the harbor. In 1926 a hurricane destroyed the bulkhead. After the hurricane, Milton Harrison purchased the island. In 1934 Harrison dredged the harbor and installed a steel bulkhead (Cullison, 1998 and Yelen). It also appears that during his ownership, Harrison constructed three canals which functioned to drain the two mangrove swamps in the interior of the island. These swamps and canals are visible in a historic aerial of the island from the 1930's (*Graphic 6*). After Honeywell acquired the property in 1937, the northern swamp was filled. A section of the canal where it connected to the harbor was retained and converted into a limestone stone lined ornamental canal. This feature is still visible in the landscape, but was filled in 1994. The southern mangrove swamp was never filled and remains along with the southern most drainage canal. The southern canal is outside of boundary of the historic district. The steel bulkhead installed by Harrison remains in various states of decomposition. To correct damage after Hurricane Andrew, the NPS installed a new steel bulkhead in front of Harrison's bulkhead along the northern end of the island, within the harbor and along the western edge of the property stretching down to the limestone wall at the southern end of the historic district. A concrete cap along the new bulkhead obscures views of the old bulkhead in this area. South of the historic district along the western property border, Harrison's bulkhead is still visible. This bulkhead is badly corroded.

Landscape Features: Harrison's bulkhead (*Graphic 52)*
Type of Contribution: Non Contributing
LCS Number and name: NA, *referred to as Boca Chita Bulkhead in HRS*
Explanatory Narrative:
Within the historic district, Harrison's bulkhead is obscured by a new steel bulkhead and concrete cap built in 1994. The new bulkhead was constructed to repair damage to Harrison's bulkhead by Hurricane Andrew. South of the historic district, the original bulkhead is still defines the western edge of the island. The bulkhead does not retain sufficient historic integrity to be a contributing resource.

Landscape Features: NPS Era bulkhead (*Graphic 53)*
Type of Contribution: Noncontributing

Landscape Features: Ornamental canal *(Graphic 54)*
Type of Contribution: Contributing
LCS Number and name: LCS 91570, (HS-8) Boca Chita Canal
Explanatory Narrative: This canal originally connected a mangrove swamp to the south end of the island's harbor. After filling the mangrove swamp, Honeywell retained a 50 foot section of the canal nearest the harbor. The ornamental canal was finished with limestone walls topped with green tinted concrete coping. Honeywell also constructed an arched concrete footbridge, (IDLCS 90195) over this canal. The canal was filled in 1994 during the construction of the new bulkhead and concrete cap, but is still visible in the landscape. Despite being altered, the original function of the canals remains apparent and the resource is considered a contributing resource.

Landscape Feature: Drainage canal *(Graphic 55)*
Type of Contribution: Non Contributing
This drainage canal is visible from the nature trail just south of the historic district. A small portion of limestone wall associated with the original construction of the canal remains. The stone wall is leaning and appears to have recently been repaired. Due to a substantial loss of material this feature is considered a non-contributing resource.

Landscape Characteristic: Small-Scale Features
Many small-scale features exist at Boca Chita Key. A cannon that was fired to great guests of the island and two pairs of steel bollards remain from the period of significance. Contemporary features have been added to the landscape to facilitate current use of the island. These features include a flagpole, signs, campsite amenities, a kiosk and benches. Contemporary additions are in good condition and do not negatively impact the integrity of the landscape. Condition of the features from the period of significance is discussed below.

Landscape Feature: Boca Chita cannon (*Graphic 56)*
Type of Contribution: Contributing
LCS Number and name: NA, *this feature is referred to as the Boca Chita cannon in the HRS*
Explanatory Narrative: The cannon is located near the base of the lighthouse at the mouth of the harbor. An oolitic limestone base supports the cannon. The cannon is badly corroded, while the stone base is in good condition.

Landscape Feature: Steel bollards (*Graphic 57)*
Type of Contribution: Contributing
LCS Number and name: NA
Explanatory Narrative: A pair of bollards is located at the north end of the harbor at the terminus of the boardwalk. A second pair is located on the east side of the harbor along the boardwalk. Both pairs of steel bollards are located in the same positions that were recorded in the 1994 survey of the property but appear to have been reset in new concrete bases. The bollards are badly corroded.

Landscape Feature: Flagpole (*Graphic 58*)
Type of Contribution: Non Contributing

Explanatory Narrative: The flagpole is located north of the pavilion at the mouth of the harbor. Historic photos indicate that a flagpole was present in this general vicinity during the period of significance. Today as in the period of significance, the flagpole is used to fly the flag of the United States. During field investigations a concrete base that may have held the original flagpole was located near the base of the current flagpole.

Landscape Feature: Signs (*Graphics 59, 60, and 61*)
Type of Contribution: Non Contributing
Explanatory Narrative: Contemporary signs have been added by the NPS. These include a Park Sign at the mouth of the harbor, wayside exhibits at points of interest around the island and regulatory signs around the campsites and harbor. Regulatory signs and the park sign are constructed of standard NPS brown metal, while the waysides are made of ceramic porcelain. Waysides are used at views, along the nature trail and around the harbor. The waysides focus on both natural resources and cultural resources.

Landscape Feature: Campsites *(Graphic 62)*
Type of Contribution: Non Contributing
Explanatory Narrative: The campground located northeast of the harbor features amenities for camping. Each campsite is defined by a metal grill. Composite lumber and molded plastic picnic tables are also provided in this area. Additional picnic benches are located around the harbor, near the comfort station and in the pavilion.

Landscape Feature: Kiosk (*Graphic 63*)
Type of Contribution: Non Contributing
Explanatory Narrative: A wooden kiosk is located on the eastern side of the harbor. This feature is used by campers and overnight boat guests to self register and provides information about the island and the park. The kiosk consists of a shed roof with three wooden walls featuring maps and information. A fee collection box is located in the center of the kiosk.

Landscape Feature: Composite lumber benches (*Graphic 34*)
Type of Contribution: Non Contributing
Explanatory Narrative: Backless benches constructed of composite lumber are located around the harbor and near the comfort station.

Landscape Characteristic: Land Use
Landscape Characteristic Narrative:
Boca Chita Key is considered significant as a fine example of Miami area vacation properties developed during the early twentieth century by wealthy industrialists. This pleasure island was developed for recreation and entertainment and has maintained a similar use since the period of significance. During the Honeywell era of ownership, Boca Chita Key hosted parties for the wealthy elite, such as the annual Committee of One Hundred party. Buildings and structures were primarily constructed as follies in the landscape, facilitates to support parties or as maintenance structures.

Existing features from the period of significance include five buildings, four structures, one object and a system of concrete walkways. Buildings from this period are located within the Boca Chita Historic District and executed in oolitic limestone, which was common during this era in Miami. These features are generally located near the harbor, which served as the “front door” of the island. The iconic building from the period is the ornamental lighthouse at the

mouth of the harbor. Believed to have never functioned as a navigational aid, the lighthouse was primarily used to provide views of the tropical environment.

Photos from the Honeywell's parties depict double parked boats in the harbor, a large event tent between the garage and engine house, elephant rides, gaming stations set up for golfing, throwing darts and pitching horseshoes, and a saloon providing shots of alcohol. Party going guests would overnight aboard their boats in the harbor.

The island is far enough from Miami to provide the feeling of a remote locale while the journey to the island is a beautiful excursion through the blue waters of Biscayne Bay. The trip between the park headquarters near Homestead, Florida and the island currently takes 30 minutes. A journey from Miami to the island would have taken even longer during the period of significance. Today, the island continues to serve as a boating destination in the Miami area as well as a campground for Biscayne National Park. A concession of the park provides boat transportation to the island

Historic images of the island reveal several service buildings and paths surrounded by naturalized vegetation in the area south of the historic district. No buildings remain in this area, but mangrove plant communities continue to dominate the area. This area is now is bordered on the west, south and east by a nature trail. The area north of the stone wall was formerly managed as open lawn and is now being allowed to naturalize. The area between the garage and engine room that was maintained as lawn for event tents is now managed as seasonally mown meadow. Consistent with the original management of these areas, the camping area east of the harbor and the area immediately around the harbor are maintained as palm canopied lawns.

Landscape Characteristic: Natural Systems and Features
Landscape Characteristic Narrative:
Geology: Boca Chita Key is a constructed island composed of dredge material on a base of soft limestone. In an effort to increase island real estate in the Miami area during the early 1900s, material was dredged from Biscayne Bay and added to many of the stone keys located to the south and east of the city. The stone keys, also known as the Upper Keys, are located between Solider Key in the north and Big Pine Key to the south (Myers, 1991). The islands are composed of Key Largo limestone that was formed when shallow Pleistocene epoch coral reef was exposed to air (Cullison, 1998).

Ecology: Many species found within Biscayne National Park are listed as threatened, endangered or as species of concern by state and federal agencies. Biscayne National Park maintains a list of these species. The terrestrial portions of Boca Chita Key could potentially serve as habitat for the following species: red knot (*Calidris canutus*), loggerhead sea turtle (*Caretta caretta*), piping plover (*Charadrius melodus*), green sea turtle (*Chelonia mydas*), American crocodile (*Crocodylus acutus*), eastern indigo snake (*Drymarchon corais couperi*), Hawksbill sea turtle (*Eretmochelys imbricata*), beach jacquemontia (*Jacquemontia reclinata*), wood stork (*Mycteria americana*), least tern (*Sterna antillarum*), and roseate tern (*Sterna dougallii dougallii*). Current management of the island provides habitat for many of these species. While sea turtles have not been recorded to nest on the beaches of Boca Chita Key, it is not impossible that one could attempt to nest there in the future. Listed species known to utilize marine areas of south Florida, such as: staghorn coral (*Acropora cervicornis*), elkhorn coral (*Acropora palmata*), West Indian manatee (*Trichechus manatus*), smalltooth sawfish (*Pristis pectinata*) could possibly utilize the marine areas surrounding Boca Chita Key.

While the island provides suitable habitat for threatened and endangered species, it is also susceptible to invasion by problem exotic species. Biscayne National Park provides suitable habitat for three invasive exotic amphibian species, six reptiles, three birds, three mammals, and eight plant species.

Vegetation: Naturalized vegetation is generally located outside of the Boca Chita Key Historic District, primarily along the eastern edge of the property and on the southern end of the island. Various mangrove communities are the dominate plant communities in the naturalized areas. A draft vegetation study by the NPS South Florida/Caribbean Network was conducted for Biscayne National Park. GIS data from this project was used to create *Graphic 64*. The vegetation map identifies eight communities currently found on Boca Chita Key. Of the plant communities, most are dominated by one or more of the South Florida mangrove species and/or a mangrove associate called buttonwood (*Conocarpus erecta*). The "true" mangroves are black mangrove (*Avicennia germainas*), red mangrove (*Rhizophora mangle*), and white mangrove (*Laguncularia racemosa*). Buttonwood is referred to as a "mangrove associate" because it doesn't have root modifications for saturated, saline soils or viviparity of propagules that are found in mangroves (Myers, 1991). Other native plant species that were observed within the naturalized areas of the island during field work include Seagrape (*Coccoloba uvifera*), Bay Cedar (*Suriana maritime*), Geiger tree (*Cordia sebestena*), and Poisonwood (*Metopium toxiferum*).

Red, black and white mangroves are protected by the State of Florida's 1996 Mangrove Trimming and Preservation Act and require special permits for trimming. This may become an important issue in future vegetation management, as mangroves are currently overtaking the historic limestone wall at the southern end of the historic district. Buttonwood is not protected by the act.

Generally, the southern portion of the island has been maintained as a naturalized area since the Honeywells first established the limestone wall that now marks the southern boundary of the historic district. Some historic photos show paths within this area and even a couple of sheds, but largely the southern half of the island appears much as it does now. In the center of the island just south of the stone wall, a mangrove forest has been present since the earliest photographs. This area is identified in the Vegetation Inventory Map as Mixed Mangrove Forest. The earliest aerial photograph (*Graphic 6*) shows a second mangrove forest just north of the current mangrove forest, which appears to have been drained and filled during the Honeywell Era.

The naturalized areas of the island also contain exotic vegetation. Photographs from the Honeywell Era show a large number of Australian pine (*Casuarina equisetifolia*) on the island both within the historic district and on the southern end of the island. These trees were commonly planted in South Florida during this era and have become an established invasive exotic plant. In addition to Australian pine the following invasive exotic plants have been identified within Biscayne National Park, latherleaf (*Colubrina asiatica*), lygodium (*Lygodium japonicum* and *Lygodium microphyllum*), melaleuca (*Melaleuca quinquenervia*), beach naupaka (*Scaevola sericea*), Brazilian pepper (*Schinus terebinthifolius*), and Seaside mahoe (*Thespesia populnea.* A 1992 letter from Biscayne National Park Resource Management Coordinator identifies areas for exotic plant removal for the year. Along with the letter a map locates the areas for removal, as well as, previous removal project areas from 1987 through 1991. A second map accompanying the map identifies vegetation management zones and locations for replanting. Species used for replanting include buttonwood, wild tamarind (*Lysiloma latisiliqua*), seagrape, Geiger tree, gumbo limbo (*Bursera simaruba*). The letter goes on to

mention that previous replanting efforts and numerous volunteer plants have necessitated moving the burn pile. The plant species mentioned in this letter are still evident in this area of the island while Australian pine appears to have been successfully eradicated. *Plantings within the Historic District will be further discussed in the Vegetation section.*

Climate: The Upper Keys receive 40 to 45 inches of rainfall annually. Three quarters of the precipitation occurs in the wet season, June through September (Myers, 1991). Summers are warm and humid with an average temperature in the mid-80s. Afternoon thunderstorms are common during the summer months. Winter is generally mild with an average temperature in the mid-60s. Heavy rains, flooding and high winds from hurricane systems are common between June and November.

Landscape Characteristic: Topography
Landscape Characteristic Narrative:
Topography at Boca Chita key is relatively flat and has changed little since the period of significance. When the island was first enlarged in the early 1900s, 5 to 13 feet of material dredged from Biscayne Bay was added to the limestone island to produce the current 32 acre property. A 1994 survey of the historic district provides the best topographic information for the island. According to these plans, the highest elevation is found east of the harbor at the comfort station. The elevation here is eight feet mean low water datum (mlw). During construction of the comfort station, grading of this area increased the elevation of this highpoint from just over seven feet mlw to its current eight and a half mlw level. The lowest elevation on the island is found south of the canal and measures just below two feet mlw. Topography plays a minor role in this landscape. Elevation change on the island is provided by the lighthouse and the views from it.

Landscape Characteristic: Vegetation
Landscape Characteristic Narrative:
Vegetation within the historic district is largely the product of a large scale planting after Hurricane Andrew destroyed much of the island's vegetation. Photos taken after the hurricane reveal a devastated landscape with very few trees remaining (*Graphic 30*). Construction drawings titled "Hurricane Damage Repair – Keys" were created in 1994 by the Denver Service Center *(Graphic 33)*. The plans called for extensive plantings within the historic district to reflect the lush tropical canopy that existed during the period of significance. To reestablish a landscape similar to the period of significance, a mixture of native trees and ornamental palms were planted. Specifically the plans featured: Trees- Gumbo limbo (*Bursera simaruba*), Buttonwood (*Concarpus erecta*), Coconut palm (*Cocos nucifera* var. Jamaican), Geiger-tree (*Cordia sebestena*), Cinnamon bark (*Canella winterana*), Milkbark (*Drypetes diversifolia*), Paradise tree (*Simarouba glauca*), Mahogany tree (*Swetenia mahagoni*), Tamarind (*Tarmarindus indica*), Shrubs- Nickerbean (*Caesalpinia bonduc*), Coco plum (*Chrysubalanus icaco* var. Icaco), Sea grape (*Coccoloba uvifera*), Groundcover- Spider lilies (*Hymenocallis latifolia*), and Bermuda grass seed to cover all disturbed areas.

From historic news accounts and photos, we know that Gumbo limbo, Coconut palm, Sea grape and Bermuda grass are consistent with plantings during the period of significance. Current vegetation is similar to that of the period of significance. Many of the species used in 1994 have no historic precedence, but over all do not greatly alter the historic landscape. This is due to the small number of non-historic trees that have survived and the abundance of Coconut palms and Bermuda lawn that dominate the historic district.

Over 450 trees were planted according to these plans. Nearly 300 of the trees planted were Coconut palms. This is consistent with historic photos which show the north end of the island with a dense canopy dominated by Coconut palms. Current canopy density is somewhat less than during the period of significance.

The landscape architect believed the specified Coconut palms to be native species as evidenced by the note on the planting plan which says, "Coconut palms shall be native "Jamaican" variety." In fact, this species of palm is a naturalized exotic species which now occurs throughout the Keys. While the tree is historically appropriate, it poses a potential threat to native populations of palms due to its susceptibility to lethal yellowing. At present there are no documented cases of the disease at Boca Chita or a lethal yellow monitoring program in place. Recommendations for monitoring the disease and future replacement of Coconut palms, if required, are presented in the Treatment and Use section of this document. Tamarind is another exotic species that was used in the 1994 planting plan, but is not known to present a threat to native species. All other material is native to the region.

While most all vegetation was destroyed during the hurricane, the survey conducted to inform the 1994 damage repairs project identified some remaining tree species. Predominantly, the survey noted Australian pines, coconut palms and buttonwood, as well as unidentified palms and deciduous trees. Australian pine was a remnant from original plantings by the Honeywells. This species has been removed from the island due to its invasive nature and the threat it poses to outperform native vegetation. Surviving vegetation of note within the historic district include a specimen Canary Island date palm (*Phoenix canariensis*) *(Graphic 65)* just north of the harbor, 10 Senegal date palms (*Phoenix reclinata*) *(Graphic 66)* south of the harbor, 18 coconut palms mostly located around the harbor, 3 Sea grapes and 5 buttonwood which are located along the edges of the island.

Canary Island date palms, Coconut palms and Sea grapes are clearly evident in photos from the period of significance or are mentioned in historic news accounts. Their general locations around the harbor and around buildings are also consistent with historic landscape conditions. While these trees predate the 1994 planting, it is unlikely that they date to the period of significance. Photos from the 1950s show the Coconut palms of a much larger size than the current size of the hurricane survivors. Post hurricane photos show the Canary Island Date palm as a small tree that is similar to the size of those noted in photos from the period of significance. Sea grape is visible in historic photos, but existing specimen do not appear to be of a size consistent with 70 years of growth. While none of the species are known to date to the period of significance, they are appropriately located, are species planted during the period of significance and are therefore considered contributing features. Buttonwood trees are likely to have existed during the period of significance. Historic photos are not conclusive as to their presence during the period of significance, indicating that they did not play a dominant role in the more visible portions of the landscape. Several large specimen buttonwoods are indicated on the 1994 planting plans; these plants persist today. While most are located outside of the historic district, several are located north of the chapel. The existing plants should be maintained, but there is no conclusive evidence that this species is appropriate for extensive use within the historic district. They are, however, appropriate in the naturalized areas of the island outside of the district.

Senegal date palms have not been identified in historic photos or in news accounts from the period of significance. They are possibly the result of purported plantings by the Dinner Key Cruising Club during their tenure as caretakers of the island. Senegal date palms are considered non contributing features in the historic district.

Naturalized vegetation is currently invading the southern boundary of the historic district. The Draft Vegetation Inventory Map (*Graphic 64*) identifies the communities that are invading this area as Freshwater Marsh and Salt Marsh. *Graphic 44* shows the view from within the Freshwater Prairie community looking northeast. This area was maintained as lawn during the period of significance. The Natural Systems and Features section covers the naturalized vegetation that occurs on the southern end of the island.

Landscape Feature: Canary Island date palm *(Graphic 65)*
Type of Contribution: Contributing

Landscape Feature 18- Coconut palms
Type of Contribution: Contributing

Landscape Feature 3- Sea Grape
Type of Contribution: Contributing

Landscape Feature 10- Senegal date palms *(Graphic 66)*
Type of Contribution: Non Contributing

Landscape Feature 5- Buttonwood
Type of Contribution: Undetermined

Landscape Characteristic Graphic:

Graphic 33: 1994 Planting plan designed by W. Davidson (National Park Service, Technical Information Center).
Graphic 34 : Composite boardwalk and benches (The Jaeger Company, 2009).
Graphic 35: Historic and new concrete walkways (The Jaeger Company, 2009).
Graphic 36: Nature trail (The Jaeger Company, 2009).
Graphic 37: Nature trail footbridge (The Jaeger Company, 2009).
Graphic 38: Lighthouse view from the harbor (The Jaeger Company, 2009).
Graphic 39: View from lighthouse looking northeast (The Jaeger Company, 2009).
Graphic 40: View from lighthouse looking southeast (The Jaeger Company, 2009).
Graphic 41: Lighthouse (The Jaeger Company, 2009).
Graphic 42: Chapel (Quinn Evans Architects, 2009).
Graphic 43: Pavilion (The Jaeger Company, 2009).
Graphic 44: Garage (The Jaeger Company, 2009).
Graphic 45: Engine house and cistern (The Jaeger Company, 2009).
Graphic 46: Collapsed footbridge (The Jaeger Company, 2009).
Graphic 47: Stone wall (The Jaeger Company, 2009).
Graphic 48: Map of stone wall configuration from Boca Chita Evaluation Draft (South Florida Collection Management Center, 1993).
Graphic 49: Retaining wall (The Jaeger Company, 2009).
Graphic 50: Main house foundation (The Jaeger Company, 2009).
Graphic 51: Shower house foundation (The Jaeger Company, 2009).
Graphic 52: Harrison's bulkhead (The Jaeger Company, 2009).
Graphic 53: NPS era Bulkhead (The Jaeger Company, 2009).
Graphic 54: Ornamental canal (The Jaeger Company, 2009).
Graphic 55: Canal Wall (The Jaeger Company, 2009).

Graphic 56: Cannon (The Jaeger Company, 2009).
Graphic 57: Steel bollards (The Jaeger Company, 2009).
Graphic 58: Flagpole (The Jaeger Company, 2009).
Graphic 59: Park sign (The Jaeger Company, 2009).
Graphic 60: Wayside (The Jaeger Company, 2009).
Graphic 61: Regulatory signage (The Jaeger Company, 2009).
Graphic 62: Typical campsite (The Jaeger Company, 2009).
Graphic 63: Kiosk (The Jaeger Company, 2009).
Graphic 64: Draft Vegetation Inventory Map (Produced by The Jaeger Company using GIS data supplied by The National Park Service, South Florida/Caribbean Network).
Graphic 65: Canary island date palm (The Jaeger Company, 2009).
Graphic 66: Senegal date palm (The Jaeger Company, 2009).

Condition

Stabilization Cost: *(will be completed by NPS at a later date)*

Condition Assessment: Fair
Condition Assessment Date: January 2010

Impacts to Inventory Unit: Deferred Maintenance
Internal/External: Internal
Impact Explanatory Narrative:
Limestone walls on south end of the historic district need to be cleared of vegetation. Roots from invading shrubs threaten to undermine the remaining wall's foundations. The storm-damaged eastern section of the wall has been overtaken by vegetation and is no longer visible or accessible. Two stones cap from the western and central gateway in the wall need to be reattached to the pier. The caps are currently resting at the base of the piers.

Impacts to Inventory Unit: Exposure to Elements
Internal/External: Internal
Impact Explanatory Narrative:
Exposure to the elements is one of the primary challenges on a barrier island. Due to its geographic location, the property is particularly susceptible to hurricane damage and accelerated corrosion. Hurricane Andrew destroyed much of the island's vegetation, removed all wooden framed buildings, damaged the harbor and roofs of many remaining buildings and destroyed half of the limestone wall. The cannon and bollards are in poor condition. These features are corroded and the outer layers of metal are exfoliating. Similarly, the chain which encloses the stone base of the lighthouse is beginning to corrode and is in fair condition. The retaining wall located on the north end of island is also in poor condition in part due to constant contact with saltwater. Much of the stone has eroded away showing much greater wear than that of the other oolitic limestone elements from the same period.

Impacts to Inventory Unit: Inappropriate Maintenance
Internal/External: Internal
Impact Explanatory Narrative:
Recent comfort station renovations and on-going lawn maintenance cause unnecessary impacts to the historic concrete walks. Vehicles and mowing equipment driving across these resources cause unnecessary wear to the surfaces and pressure that causes additional cracking of the walkways.

Additionally, thatch has been allowed to accumulate on the edges and along cracks of the historic concrete walks. This practice allows for accelerated deterioration of the resource.

Impacts to Inventory Unit: Pests/Disease
Internal/External: External
Impact Explanatory Narrative:
Lethal yellowing is a widespread palm disease in South Florida that is carried by a flying insect. The disease affects many species of ornamental palms as well as some native palm species. Coconut palms are highly susceptible to lethal yellow and have been greatly impacted by the disease in South Florida. While the disease has not been documented at Boca Chita, the potential threat is great to the large number of coconut palms located on the island. The Treatment and Use recommendations that were created in conjunction with this CLI contain direction on monitoring the disease at Boca Chita and recommendations for suitable substitute palm species should they be required.

Impacts to Inventory Unit: Planting Practices
Internal/External: Internal
Impact Explanatory Narrative:
Vegetation management and replanting efforts along the east coast of the historic district have successfully established mangrove communities. While this is an ecological success, dense vegetation along this stretch of coastline blocks views to the Atlantic. During the period of significance, the view was framed by overstory vegetation with open understory.

Impacts to Inventory Unit: Release to Succession
Internal/External: Internal
Impact Explanatory Narrative:
The southern portion of the historic district and eastern coast has been allowed to naturalize. The area immediately north of the limestone wall was maintained as open lawn with specimen trees, but is now occupied by meadow and marsh. Similarly, the field southwest of the barn was originally maintained as lawn, but now is maintained as meadow. The eastern coast line is now primarily composed of mangrove communities where it once was open to the ocean.

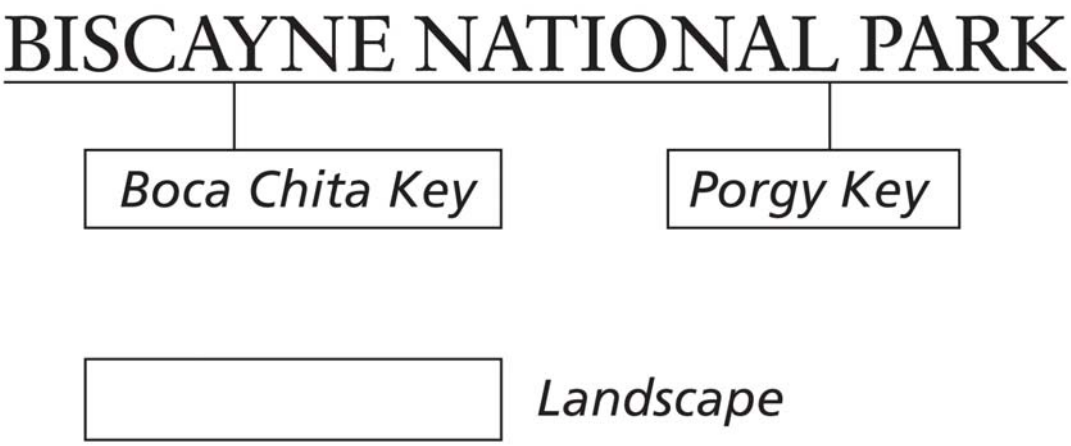
Impacts to Inventory Unit: Structural Deterioration
Internal/External: Internal
Impact Explanatory Narrative:
The arched concrete footbridge that crossed the ornamental canal has failed structurally. The project's structural engineer found that the footbridge is "badly deteriorated with no chance that any part of it could be re-used." Additionally, the steel cannon and bollards are badly corroded with the outer layer of metal exfoliating.

Impacts to Inventory Unit: Vegetation/Invasive Plants
Internal/External: Internal and External
Impact Explanatory Narrative:
Coconut palms are potentially a threat to native palm species on the island due to their susceptibility to lethal yellowing. This threat must be weighed against maintaining coconut palms within the historic district as is consistent with the period of significance. Invasive plants are an on-going threat to the island and park requiring diligence to prevent such species from establishing and overtaking the landscape.

Treatment

Approved Landscape Treatment: Undetermined *(probably undetermined at this time, and if true then leave the rest blank)*

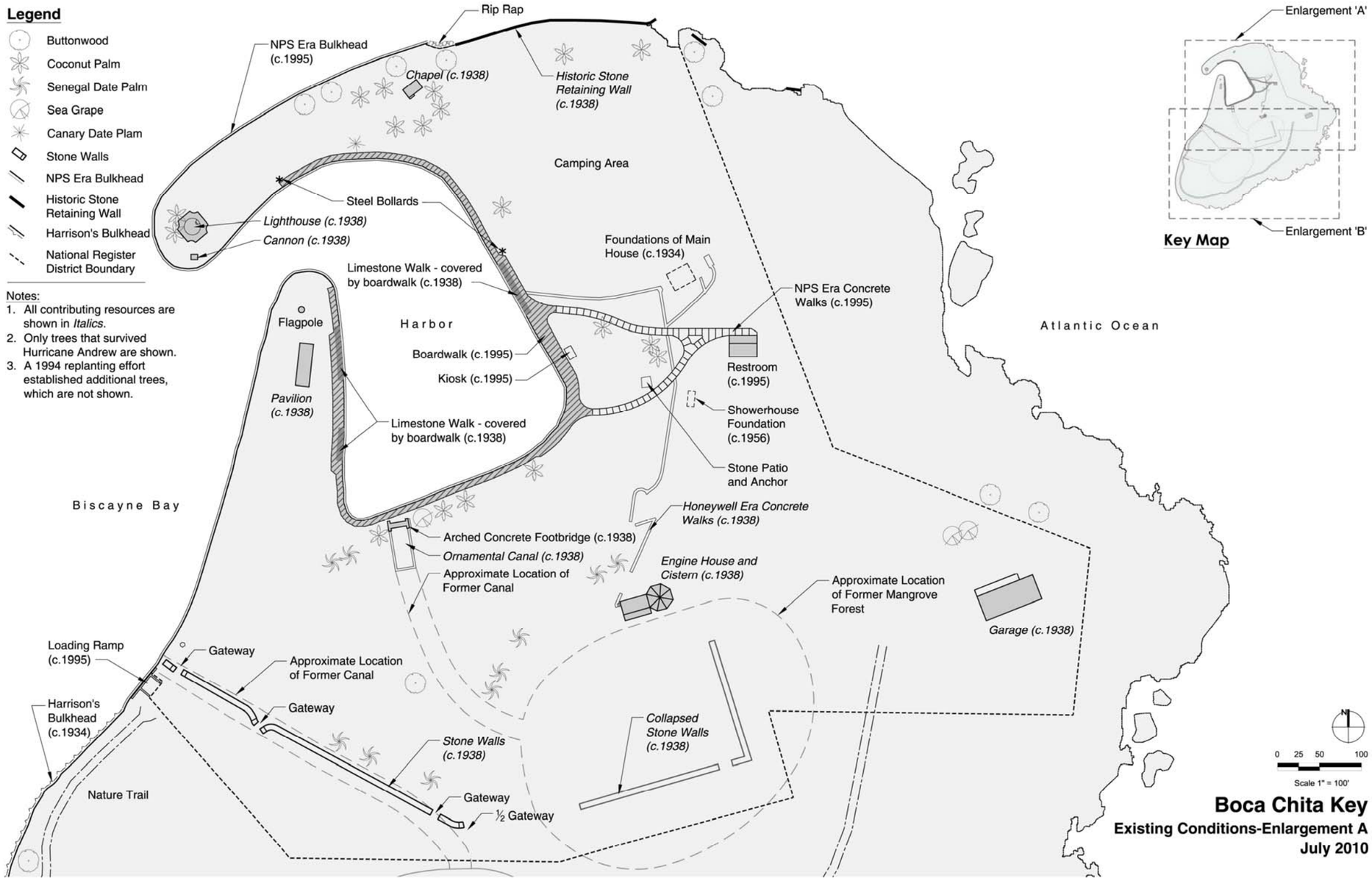
Approved Treatment Document:
Approved Landscape Treatment Document Date:
Approved Landscape Treatment Document Cost:
Approved Landscape Treatment Document Cost Date:
Level of Estimate:
Cost Estimator:
Approved Treatment Explanatory Narrative:
Approved Treatment Completed:
Approved Treatment Cost Explanatory Narrative:



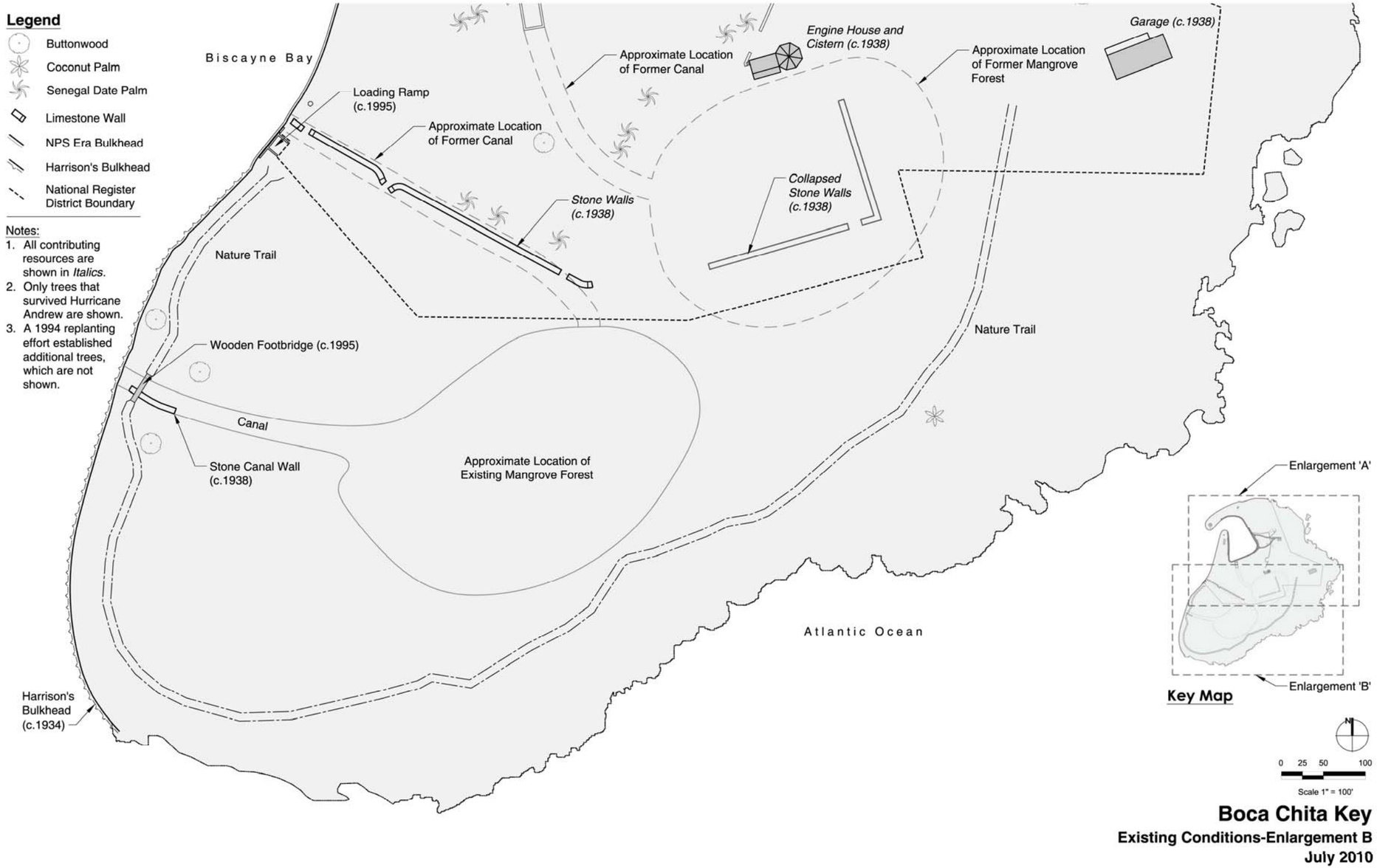
Graphic 1: CLI Hierarchy Description Graphic (The Jaeger Company, 2009).



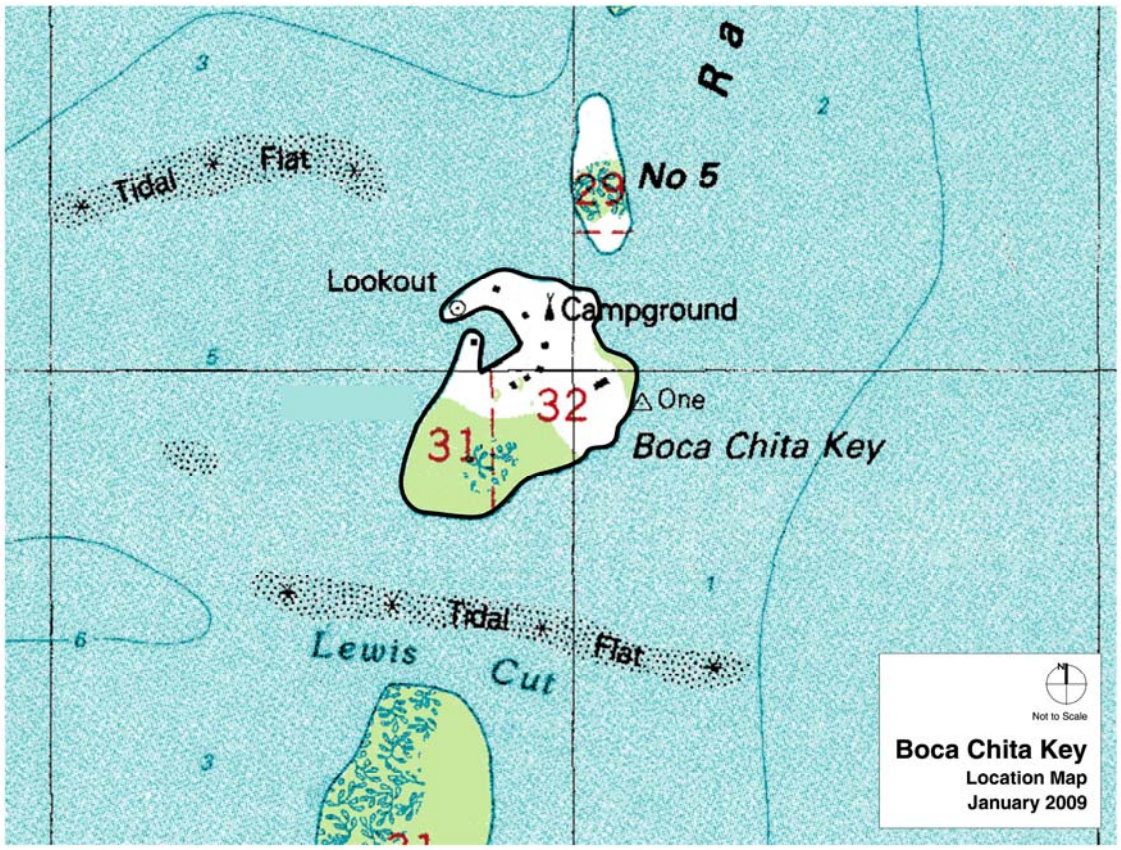
Graphic 2: Park Report Cover Image (The Jaeger Company, 2009).



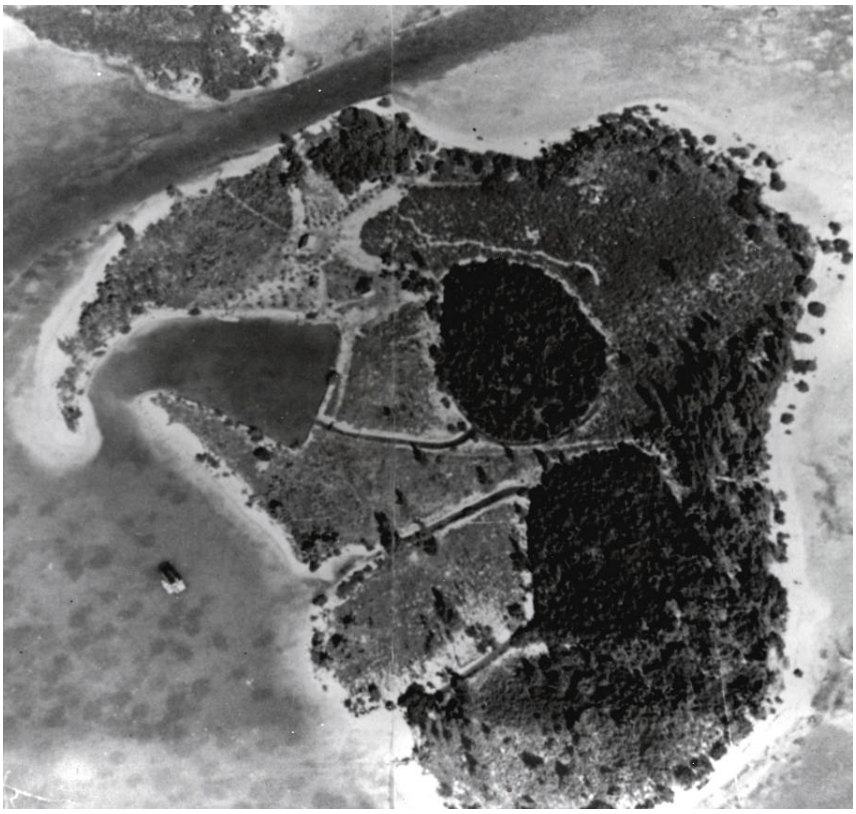
Graphic 3: Existing Conditions – Enlargement A (The Jaeger Company, 2009).



Graphic 4: Existing Conditions – Enlargement B (The Jaeger Company, 2009).



Graphic 5: Location Map (The Jaeger Company, 2009).



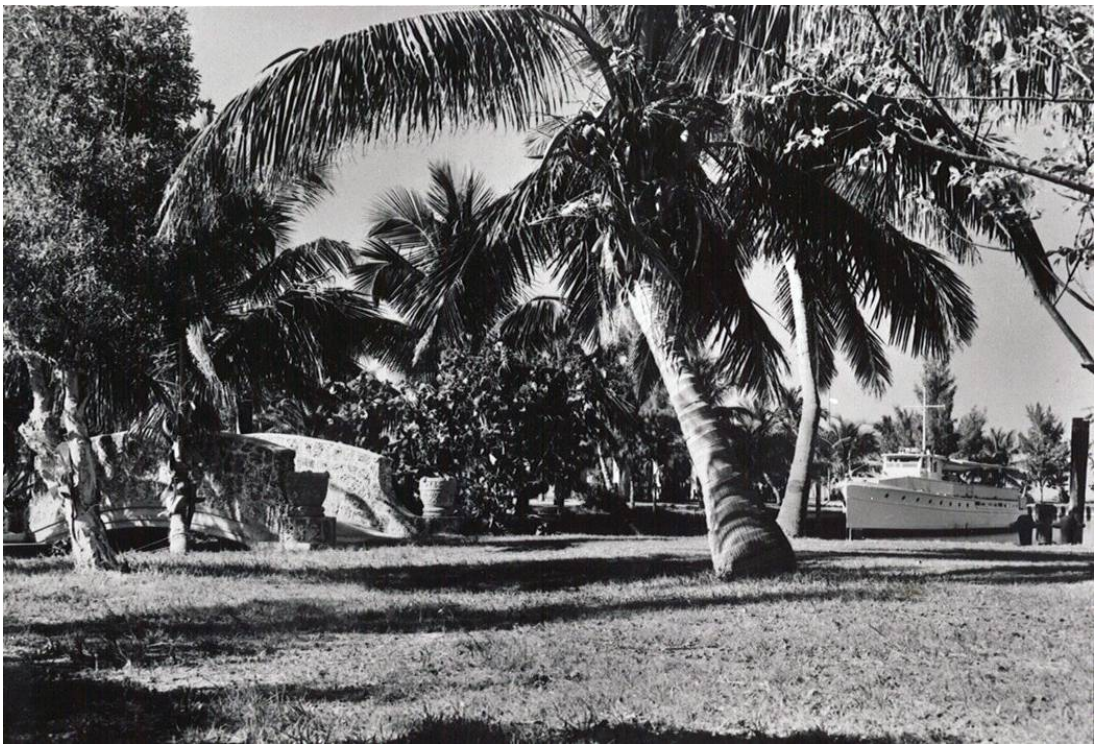
Graphic 6: Early 1930s aerial photograph showing the location of mangrove forests and canals (Historical Museum of Southern Florida).



Graphic 7: Mark Honeywell circa 1938-40 (Historical Museum of Southern Florida).



Graphic 8: The Committee of One Hundred annual party, 1940 (South Florida Collection Management Center).



Graphic 9: Arched concrete footbridge over existing canal circa 1940 (South Florida Collection Management Center).



Graphic 10: Frame Structures, still photo from 1930s construction video (Biscayne National Park Library).



Graphic 11: Frame building under construction, still photo from 1930s construction video (Biscayne National Park Library).



Graphic 12: Aerial Photograph circa 1940 (Historical Museum of Southern Florida).



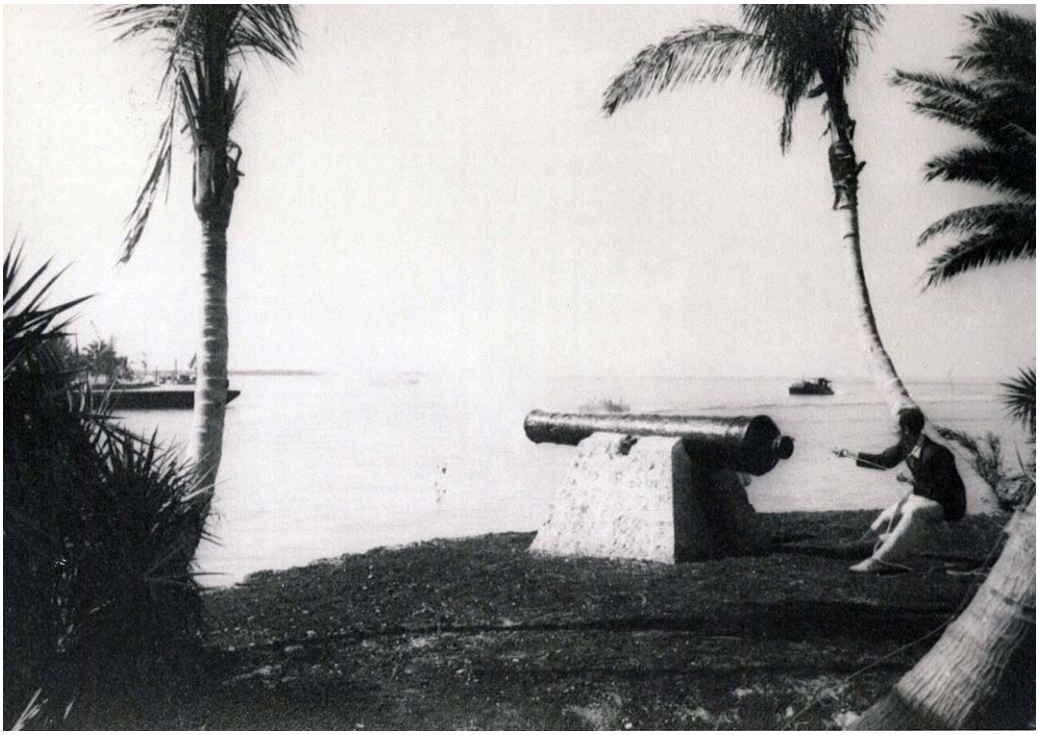
Graphic 13: Walkway under construction and harbor poles, still photo from 1930s construction video (Biscayne National Park Library).



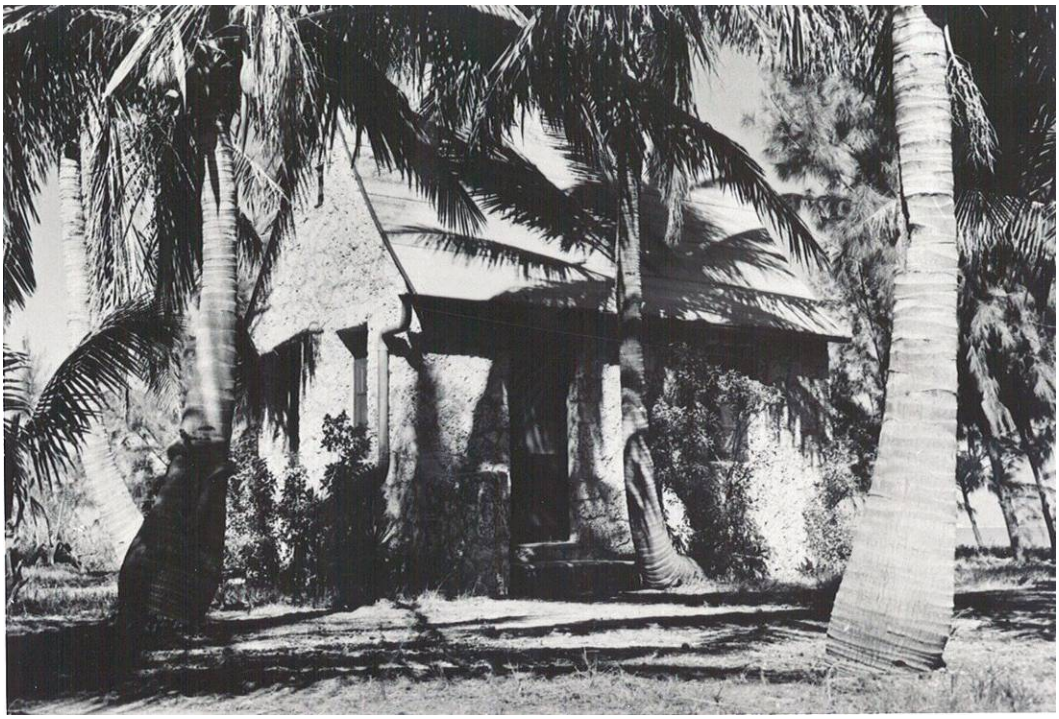
Graphic 14: Boca Chita Lighthouse with Venetian harbor poles circa 1940 (South Florida Collection Management Center).



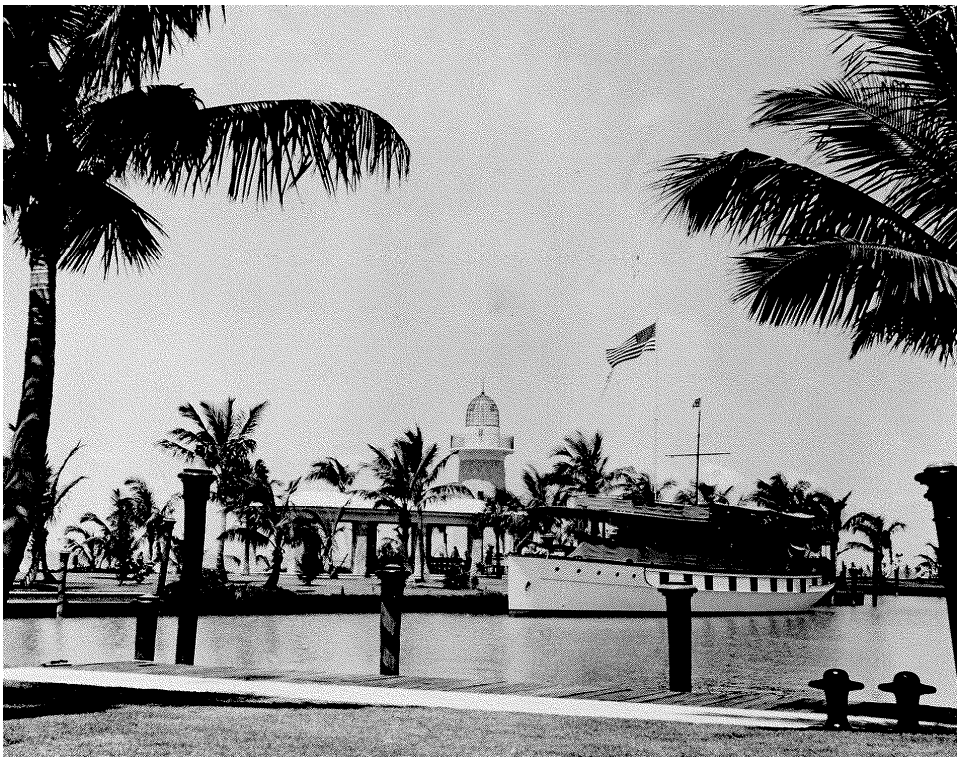
Graphic 15: Entrance into Boca Chita harbor circa 1940 (Historical Museum of Southern Florida).



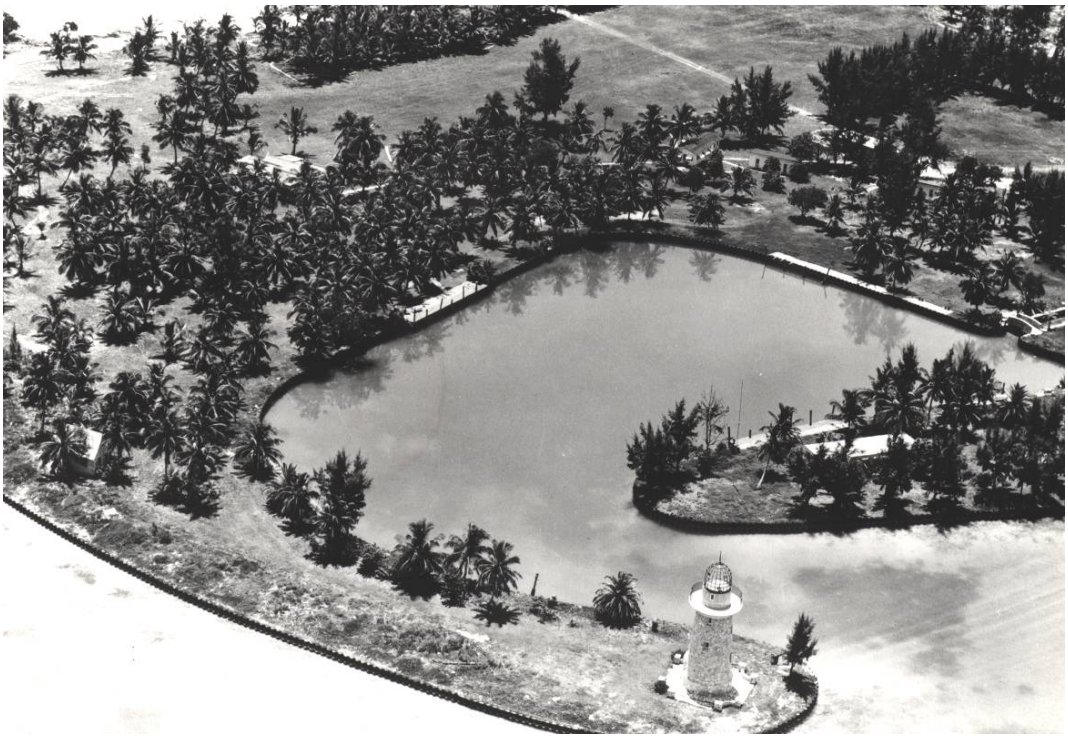
Graphic 16: Cannon being fired to welcome Committee of One Hundred members to the island circa 1940 (South Florida Collection Management Center).



Graphic 17: Boca Chita Chapel circa 1940 (South Florida Collection Management Center).



Graphic 18: Picnic Pavilion circa 1940 (South Florida Collection Management Center).



Graphic 19: Aerial photograph showing historic circulation on the island circa 1940's (Historical Museum of Southern Florida).



Graphic 20: Wooden dock in Boca Chita harbor 1940's (South Florida Collection Management Center).



Graphic 21: Construction and Planting circa 1938 (Biscayne National Park).



Graphic 22: Mature Coconut Palms circa 1940 (Historical Museum of Southern Florida).



Graphic 23: Entertaining guests on Boca Chita circa 1940 (South Florida Collection Management Center).



Graphic 24: Mark and Eugenia Honeywell circa 1943 (Historical Museum of Southern Florida).



Graphic 25: Cottage on Boca Chita (Yale Joel, Life Magazine, 1954).



Graphic 26: Picnic pavilion with screen and shed addition pre 1992 (National Park Service, Biscayne National Park).



Graphic 27: Comfort Station pre 1992 (National Park Service, Biscayne National Park).



Graphic 28: Camping Area (National Park Service, Biscayne National Park).



Graphic 29: Boca Chita before Hurricane Andrew pre 1992 (National Park Service, Biscayne National Park).



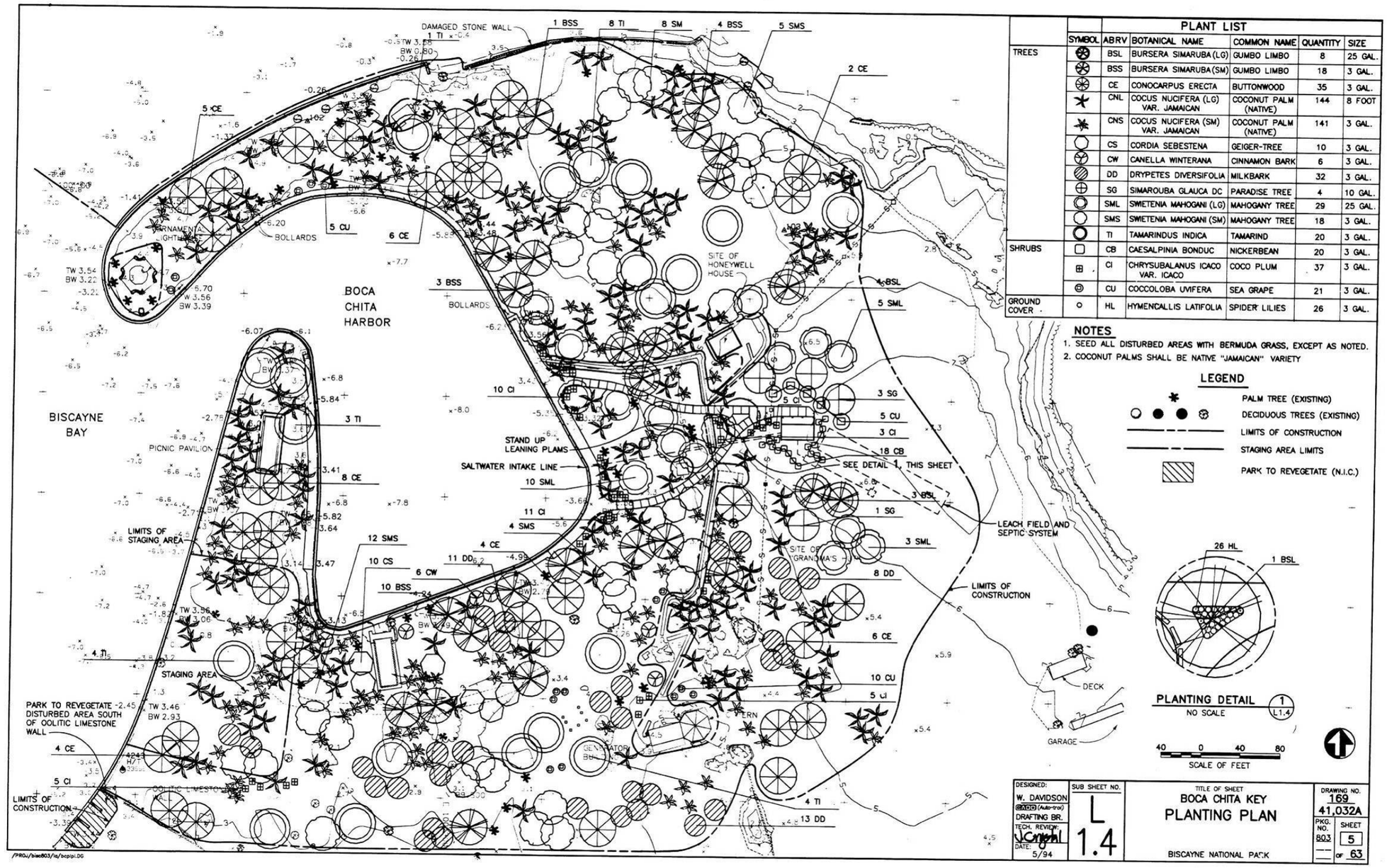
Graphic 30: Boca Chita after Hurricane Andrew circa 1992 (National Park Service, Biscayne National Park).



Graphic 31: Rebuilt bulkhead and boardwalk circa 2000 (National Park Service, Biscayne National Park).



Graphic 32: NPS Tree plantings circa 1995 after Hurricane Andrew (National Park Service, Technical Information Center).



	SYMBOL	ABRV	BOTANICAL NAME	COMMON NAME	QUANTITY	SIZE
TREES		BSL	BURSERA SIMARUBA (LG)	GUMBO LIMBO	8	25 GAL.
		BSS	BURSERA SIMARUBA (SM)	GUMBO LIMBO	18	3 GAL.
		CE	CONOCARPUS ERECTA	BUTTONWOOD	35	3 GAL.
		CNL	COCUS NUCIFERA (LG) VAR. JAMAICAN	COCONUT PALM (NATIVE)	144	8 FOOT
		CNS	COCUS NUCIFERA (SM) VAR. JAMAICAN	COCONUT PALM (NATIVE)	141	3 GAL.
		CS	CORDIA SEBESTENA	GEIGER-TREE	10	3 GAL.
		CW	CANELLA WINTERANA	CINNAMON BARK	6	3 GAL.
		DD	DRYPETES DIVERSIFOLIA	MILKBARK	32	3 GAL.
		SG	SIMAROUBA GLAUCA DC	PARADISE TREE	4	10 GAL.
		SML	SWIETENIA MAHOGANI (LG)	MAHOGANY TREE	29	25 GAL.
		SMS	SWIETENIA MAHOGANI (SM)	MAHOGANY TREE	18	3 GAL.
		TI	TAMARINDUS INDICA	TAMARIND	20	3 GAL.
SHRUBS		CB	CAESALPINIA BONDUC	NICKERBEAN	20	3 GAL.
		CI	CHRYSUBALANUS ICACO VAR. ICACO	COCO PLUM	37	3 GAL.
		CU	COCCOLOBA UVIFERA	SEA GRAPE	21	3 GAL.
GROUND COVER		HL	HYMENCALLIS LATIFOLIA	SPIDER LILIES	26	3 GAL.

NOTES

1. SEED ALL DISTURBED AREAS WITH BERMUDA GRASS, EXCEPT AS NOTED.
2. COCONUT PALMS SHALL BE NATIVE "JAMAICAN" VARIETY

LEGEND

- PALM TREE (EXISTING)
- DECIDUOUS TREES (EXISTING)
- LIMITS OF CONSTRUCTION
- STAGING AREA LIMITS
- PARK TO REVEGETATE (N.I.C.)

PLANTING DETAIL 1 L1.4
NO SCALE

40 0 40 80
SCALE OF FEET

DESIGNED: W. DAVIDSON; DRAFTING BR.; TECH. REVIEW: JCM; DATE: 5/94	SUB SHEET NO. L 1.4	TITLE OF SHEET: BOCA CHITA KEY PLANTING PLAN; BISCAYNE NATIONAL PARK	DRAWING NO. 169 41,032A; PKG. NO. 803; SHEET 5 OF 63	

Graphic 33: 1994 Planting plan designed by W. Davidson (National Park Service, Technical Information Center).



Graphic 34: Composite boardwalk and benches (The Jaeger Company, 2009).



Graphic 35: Historic and new concrete walkways (The Jaeger Company, 2009).



Graphic 36: Nature trail (The Jaeger Company, 2009).



Graphic 37: Nature trail footbridge (The Jaeger Company, 2009).



Graphic 38: Lighthouse view from the harbor (The Jaeger Company, 2009).



Graphic 39: View from lighthouse looking northeast (The Jaeger Company, 2009).



Graphic 40: View from lighthouse looking southeast (The Jaeger Company, 2009).



Graphic 41: Lighthouse (The Jaeger Company, 2009).



Graphic 42: Boca Chita chapel (Quinn Evans Architects, 2009).



Graphic 43: Boca Chita pavilion (The Jaeger Company, 2009).



Graphic 44: Boca Chita garage (The Jaeger Company, 2009).



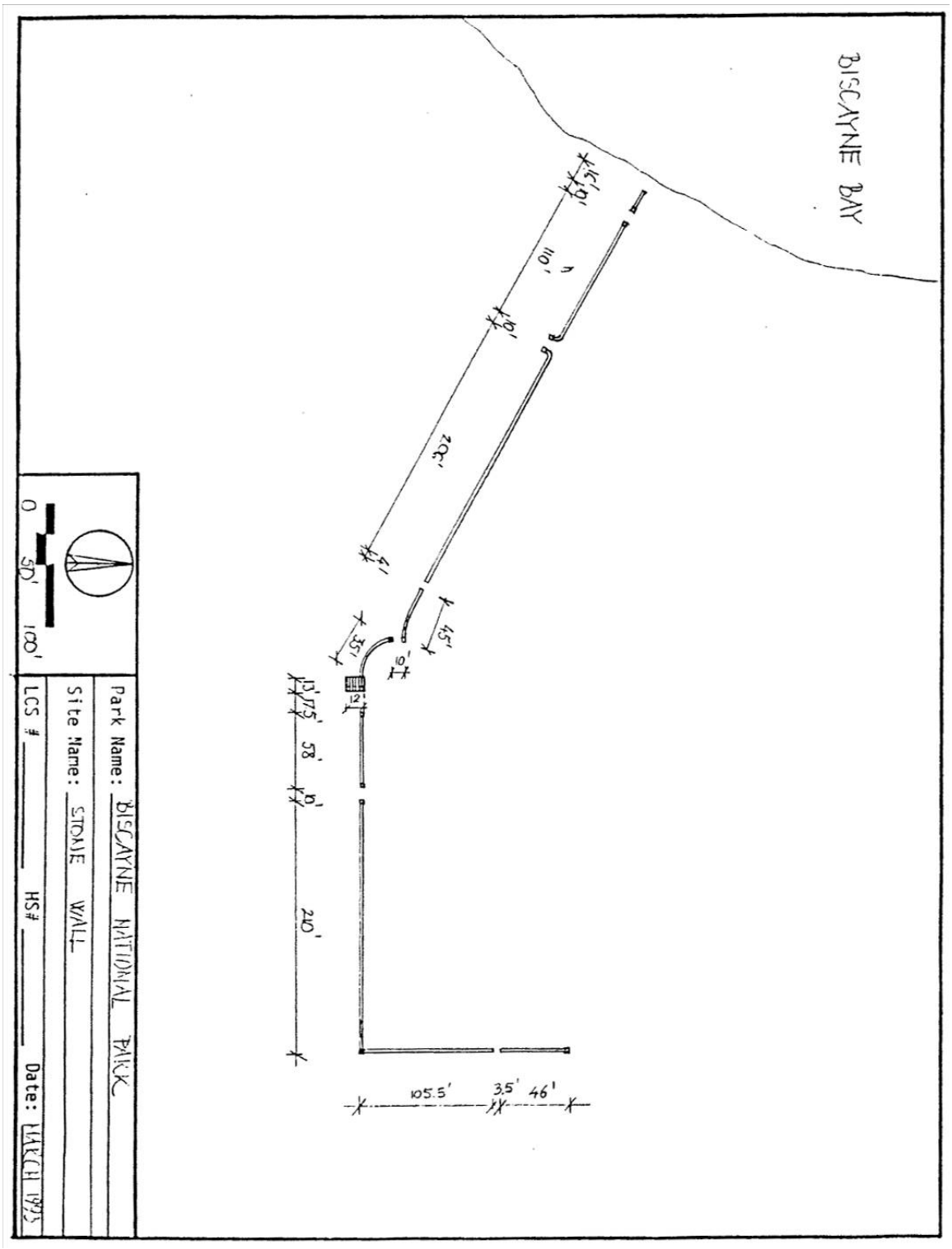
Graphic 45: Boca Chita engine house and cistern (The Jaeger Company, 2009).



Graphic 46: Collapsed concrete footbridge (The Jaeger Company, 2009).



Graphic 47: Stone wall (The Jaeger Company, 2009).



Graphic 48: Map of stone wall configuration from Boca Chita Evaluation Draft (South Florida Collection Management Center).



Graphic 49: Retaining wall (The Jaeger Company, 2009).



Graphic 50: Main House foundation (The Jaeger Company, 2009).



Graphic 51: Shower House foundation (The Jaeger Company, 2009).



Graphic 52: Harrison's bulkhead (The Jaeger Company, 2009).



Graphic 53: NPS Era bulkhead (The Jaeger Company, 2009).



Graphic 54: Ornamental canal (The Jaeger Company, 2009).



Graphic 55: Drainage canal wall (The Jaeger Company, 2009).



Graphic 56: Cannon (The Jaeger Company, 2009).



Graphic 57: Steel bollards (The Jaeger Company, 2009).



Graphic 58: Flagpole (The Jaeger Company, 2009).



Graphic 59: Park sign (The Jaeger Company, 2009).



Graphic 60: Wayside (The Jaeger Company, 2009).



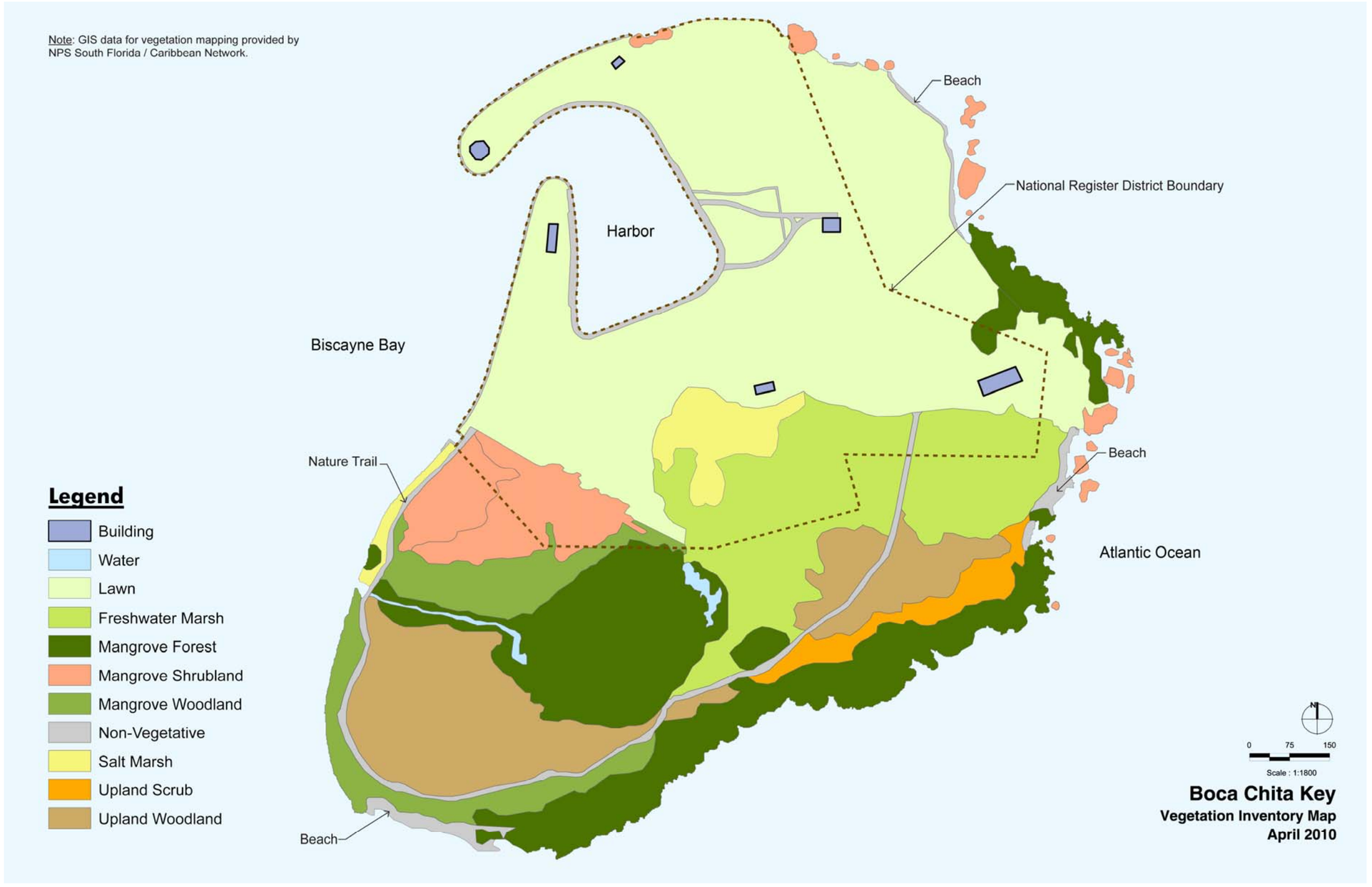
Graphic 61: Regulatory signage (The Jaeger Company, 2009).



Graphic 62: Typical campsite (The Jaeger Company, 2009).



Graphic 63: Kiosk (The Jaeger Company, 2009).



Graphic 64: Draft Vegetation Inventory Map (Produced by The Jaeger Company using GIS data supplied by The National Park Service, South Florida/Caribbean Network).



Graphic 65: Canary island date palm (The Jaeger Company, 2009).



Graphic 66: Senegal date palm (The Jaeger Company, 2009).

Treatment and Use

Biscayne National Park has designated Boca Chita Key as a visitor destination. The island is very popular with park visitors, particularly local Miami residents. The objectives for the site are to preserve the historic structures and cultural landscape, provide a semi-primitive camping experience with the additional comfort of a restroom facility, and provide more opportunities for visitors to learn about the history of the site.

The recommended treatment approach for the buildings discussed in Historic Structure Report (HSR) for Boca Chita Key is Rehabilitation. Rehabilitation is also the appropriate approach for Boca Chita's landscape. Rehabilitation is defined by the Secretary of the Interior's Standards as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values." The interiors of some structures (the chapel, the engine house, the garage) will be rehabilitated for staff use and storage, while others (the lighthouse, the pavilion) will essentially be maintained as they are, with some minor modifications for visitor use.

Rehabilitation is an appropriate treatment for the site because it allows for increased visitor use and interpretation, while maintaining the significant historic character of the structures and landscape. The addition of missing historic vegetation and taking steps to protect the remaining site features will help to accomplish these goals.

Any work undertaken at Boca Chita must have as its first priority the protection of remaining historic fabric where feasible, and the maintenance of the historic character of the site. New features that may be added for code or utility compliance should be complementary to the overall character of the site and, where possible, not detract from or damage significant character-defining features.

Requirements for Treatment and Use

Treatment and use of the historic structures and landscape of Boca Chita Key are affected by federal laws and regulations that address life safety, accessibility, and the protection of cultural resources. These include:

Building Codes

National Park Service policy is guided by the International Building Code, which is applicable to both historic and non-historic buildings. However, the code does include the following provision regarding historic buildings:

3406.1 Historic Buildings. The provisions of this code related to the construction, repair, alteration, addition, restoration, and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard.

National Parks have a responsibility to maintain public health and safety. However, alternatives to full code compliance may be sought when that compliance would compromise the historic resource's integrity.

NFPA Code 914

National Fire Protection Association (NFPA) Codes for historic buildings apply to Boca Chita Key, including NFPA 914, "Code for Fire Protection of Historic Structures." Due to the remoteness of the site and the lack of utilities such as electricity and running water at each structure, measures should be taken to prevent fires. These should include keeping excess plant growth away from the exterior of the buildings and storing flammable materials away from historic structures. Smoking should be prohibited in and around the structures, and fire-fighting equipment, such as hand-held fire extinguishers, should be easily available, particularly during site work.

Americans with Disabilities Act of 1990

The 1990 Americans with Disabilities Act (ADA) established standards for providing full and unaided access to public buildings and places of employment for Americans with impaired mobility and other disabilities. As with other federal codes, full compliance with ADA regulations may significantly impact the integrity of historic resources. In such cases, alternative methods of access may be negotiated to provide reasonable access while still maintaining the character-defining features of the historic resource.

National Historic Preservation Act

The National Historic Preservation Act of 1966 as amended (NHPA) mandates federal protection of significant cultural resources. As Boca Chita Key is listed on the National Register of Historic Places, major work undertaken at the site is required to undergo review under Section 106 of the NHPA, which requires federal agencies to "take into account the effect" of any undertaking affecting properties listed on or eligible for listing on the National Register of Historic Places. This process may require consultation with local governments, State and Tribal Historic Preservation Offices, and the Advisory Council on Historic Preservation.

DOI and NPS Policies and Regulations

Treatment and use of the historic structures and landscape of Boca Chita Key are also affected by certain policies and regulations of the Department of the Interior and the National Park Service.

Secretary of the Interior's Standards

The Secretary of the Interior's *Standards for the Treatment of Historic Properties* have established standards and guidelines for the use and treatment of historic structures, and the *Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* have established standards and guidelines for the use and treatment of historic cultural landscapes. This report has been prepared in accordance with both documents, and recommended treatments conform to the Standards.

General Management Policies

This document and the treatments recommended herein also comply with the policies set forth in NPS *General Management Policies* (2006), the service-wide policy document of the National Park Service. The introduction to Section 5: "Cultural Resource Management" states that

> *The National Park Service will protect, preserve, and foster appreciation of the cultural resources in its custody and demonstrate its respect for the peoples traditionally associated with those resources through appropriate programs of research, planning, and stewardship.*

These goals are achieved through research and documentation of cultural resources, application of integrative and collaborative planning procedures, and appropriate treatment and stewardship to make cultural resources available for public understanding and enjoyment. Section 5 also explicitly states that preservation of cultural resources in their existing conditions should receive priority and that alternatives should be considered before undertaking treatments of greater intervention.

State of Florida Regulations

The State of Florida's 1996 Mangrove Trimming and Preservation Act requires special permits for trimming red, black and white mangroves. As a matter of NPS policy, the park may seek these permits for future vegetation management activities to prevent mangroves from negatively impacting historic features, but these permits are not required under Federal law. Buttonwood is not protected by the act.

Alternatives for Treatment and Use

Use

The island's remote location and limited available resources provide little opportunity for use of the site for park housing or offices. This use would also compromise the integrity of the buildings and add a non-historic use to the island. Limited resources also restrict the potential to provide a lodging concession on the island that might more

accurately convey the experience of visitors during the period of significance.

Continued use of Boca Chita Key as a visitor destination with emphasis on interpretation of historic resources and providing basic visitor amenities both for day use and semi-primitive camping is recommended. This visitor experience is in keeping with the experience of guests of the island during the period of significance.

Treatment

The recommendations that follow this section are primarily focused on rehabilitation of the historic site. This treatment allows for improvements to the infrastructure to aid in maintaining and improving public access. The treatment also provides for basic visitor amenities and the conversion of existing buildings for storage and interpretive purposes Due to the harsh maritime environment and a period of deferred maintenance, replacement of elements that are lost or damaged is needed to protect public safety and to preserve other remaining historic elements.

Preservation is an appropriate treatment for some of the better maintained site elements, but in many cases, greater intervention is required. Elements whose condition are compounded by deferred maintenance, like the concrete footbridge, require greater intervention to ensure safety and to arrest further degradation.

Restoration might be appropriate for some site features, but not the entire historic district. This treatment throughout the district would necessitate the removal of contemporary elements like the harbor bulkhead, new walkways and restrooms in the historic district, further discouraging use of the site by visitors. Additionally, original plans and other forms of detailed documentation have not been identified which would support accurate restoration work.

Reconstruction is a possibility for the main house and concrete footbridge, but is not recommended. These elements are not integral to the interpretation of the site and existing documentation would not allow for an accurate reconstruction of the features. Reconstruction is used sparingly and only when other means of interpretation are not options or when the resource is crucial to the site.

Recommendations for Treatment and Use

The remaining buildings and structures on Boca Chita Key are very well constructed, as evidence by their survival of periodic hurricanes over the past 70 years. With that said, the structures are subject to aging and weathering, and exhibit typical deterioration related to those influences. The structures have been relatively well maintained over the years by the National Park Service, but they will continue to need maintenance and periodic repair.

One of the most difficult issues facing the structures is the deterioration of the Miami oolitic limestone. When pieces of this stone erode or break off, it may be difficult to replace them if there is no ready supply of replacement stone. If replacement stones are not available, one alternative is to consider consolidating the remaining stone with a stone consolidant, such as those manufactured by Prosoco. While this is a more aggressive treatment, in the long term it would strengthen the stone by rebinding the stone molecules, while also helping the stone to shed water, extending its life. The downside of the treatment is that the stone appearance would darken slightly, but if the treatment was applied to all the stone, there would be no contrast with untreated stone.

A full mortar analysis should be performed to determine the characteristics and color of the historic mortar. Future mortar repairs should match these characteristics and color.

Another issue generally affecting the entire site is accessibility. None of the structures were originally designed to be universally accessible and, aside from the garage and pavilion, none could be easily made accessible without compromising the historic integrity of the building.

Biscayne National Park has expressed interest in providing electrical service to some or all of the buildings to support interpretation and maintenance work. Since there is no electrical service to the island, this would require using

solar power or generators. Generators would detract from the natural soundscape and visitor experience, and/or interfere with wildlife, while solar power could affect the design integrity of the structures or cultural landscape. A few suggestions for the least intrusive methods of providing power are provided.

Buildings

General guidance for treatment of the buildings' exteriors can be found in Preservation Brief 47: Maintaining the Exterior of Small and Medium Size Historic Buildings by the NPS Technical Preservation Services.

Lighthouse

The lighthouse will be maintained as a visitor destination. The National Park Service will continue to allow visitors to climb the lighthouse, under NPS supervision, to ensure that all safety regulations are observed. There does not appear to be any need to provide electrical service to the lighthouse at this time.

Exterior Foundation. Since there is no visible indication of failure, no work is known to be required.

Walls. Monitor and inspect the walls regularly. Periodically re-point the mortar joints as required with mortar matching the original.

Observation Deck. Repair the hairline crack on the vertical lip with an epoxy injection. Maintain the clear flowing of the drains. Clear the carbonation with a concrete cleaner. Even though the railing does not meet current safety codes, Section 3406.1 of the International Building Code states that "the provisions of this code. . .shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard."

Dome. Replace the missing/cracked panes and re-glaze them where needed, being careful to keep the glazing neat. Paint the steel and glazing black and repaint every two to three years.

The lack of ventilation is contributing to deterioration of the glazing and metal. Reconstruct the operable vent windows to restore the historic appearance of the dome and to allow for ventilation of the dome. Install a transfer grill in the access panel between the dome and the observation deck level to allow the whole tower to be ventilated.

Drainage. Keep the drainage system clear.

Windows. Replace the broken pane on south window. Replace cracked and missing glazing and paint all glazing. Reconstruct the missing muntins in the sash of the lower two windows on the east and west elevation and re-glaze. Clean and repaint the metal hinges. Paint windows, frames, and trim every two to three years.

Doors. Repair the hole in the main entrance door with Abatron wood epoxy. Paint the doors and trim. Retain and maintain hardware on the observation deck. Replace non-functioning hardware on the main entrance door with a new entrance lockset with deadbolt that looks similar to the existing handle on the exterior of the door. Top and bottom throw bolts can be retained for extra security. Using historic photographs, reconstruct and reinstall the two screen doors to provide ventilation during hours of operation.

Porch. Monitor the steps for cracking.

Interior Floor. Monitor the floor for cracking.

Walls. Monitor the walls for cracking. Periodically re-point as needed.

Ceiling. Monitor the ceiling for cracking and repair as needed.

Windows. Monitor the windows for damage. Repaint the windows and trim periodically as needed.

Doors. Monitor the doors for damage. Repaint the doors and trim periodically as needed.

Stairs. Monitor the stairs for damage.

Structural Exterior Wall Cracking. Cracking in the exterior stone walls should be pointed to prevent salt laden moisture penetration to the interior. Use Type 'N' mortar for pointing. While this type of mortar is not as durable and strong as Type 'S' or 'M', it has more desirable characteristics that are

compatible with the limestone. Type 'N' has lower compression strength compared to the stone and has nearly the same moisture breathability as the stone. That will mitigate entrapped moisture in the wall.

East Entry. The hollow sounding entry stair tread may be left as is and monitored for the near future. Eventually it should be removed so that the substrate can be restored, then replaced. The cracked stone work should be re-set using a latex modified mortar. Care should be taken to match the color and texture of the original mortar as closely as possible.

Stair Treads. The cracked stair treads above level 2 should be repaired using an epoxy injection. This will involve installing injection ports at the cracks and applying a capping material over the crack to confine the injected epoxy. The capping material and ports should be removed after injection and the stone should be cleaned.

Chapel

Continue to maintain the chapel for interpretive use. The building would serve well as a small "visitor contact station" with historic information about the site, perhaps staffed by Park Service staff or volunteers during high volume visitor use. It can also continue to be used to store interpretation materials; although storage of these materials elsewhere, such as the garage/barn, might allow the building to be left unlocked and accessible to visitors most of the time.

Exterior Walls. Repair the west wall gable vent. Repair stone at eave line of northeast corner either through replacement or consolidation as discussed above. Re-point cracked mortar joints, and monitor and periodically re-point joints as needed to match the original mortar. Fill in the holes with mortar blended to match the stone.

Roof. Replace the missing shingle tab. Clean and paint the ridge cap grey to match the shingles.

Windows. Remove the plywood panels and restore the wood windows and frames. Strip the blue paint from the glass on the east window. If a panel is needed for storm protection or to deter vandalism, consider the addition of an acrylic storm panel. This treatment will return the original appearance of the facades while providing protection and light to the interior. *Preservation Brief 9: The Repair of Historic Wooden Windows,* NPS Technical Preservation Services

Doors. Repair, refinish, and reinstall the east door. Refinish the south door and repair door frame. Repair the existing lockset and deadbolt if possible. If replacement is necessary, install a new lockset on both doors with working deadbolt with an appearance similar to the existing: oval knobs with an oil-rubbed bronze finish.

Stoops. Repair the concrete and re-point the mortar joints on both stoops to match the original mortar. Keep vegetation away from the stone and concrete.

Interior Floor. Visually monitor the crack in the floor to ensure it does not get larger. Patch the hole on the east side.

Walls. Remove some of the parging along the bond beams to determine if it is covering cracks in the beams. If so, remove the parging. Repair any cracks by injecting them with concrete-compatible epoxy. Make sure to remove the capping material afterwards and restore the original appearance.

Ceiling. Monitor the current roofing for deterioration.

Garage/Barn

The garage has always been a utilitarian facility, and retaining it as storage and work space for NPS staff is an appropriate continuation of that use. The south face of the barn roof is the preferred location for a bank of solar panels. This southern face is the least visible roof area on the site. It faces toward the Atlantic Ocean, which is not visible to most visitors arriving by water; and it faces southeast, the most efficient direction for collecting solar energy. It might be possible to run underground electrical service to the other buildings from this solar array, although this is not usually a particularly efficient method.

Exterior Foundation. In order to repair the rust-jacked corners, first remove the existing cracked and patched mortar material. Clean the exposed rebar of rust, using either a wire brush or sandblasting. Apply a migrating corrosion inhibitor to the exposed rebar. Apply an epoxy bonding agent and reconstruct

the corner with a quicksetting mortar, one that is preferably non-shrink and non-staining. New materials should match the existing fabric in color, texture, and other visual qualities. Workers should follow the manufacturer's instructions for each product.

Walls. Re-point the mortar joints to match the original mortar and monitor for periodic re-pointing when needed. Once the steel lintels have been repaired (see below), repair the cracking at the window heads and the west wall stone crack with concrete epoxy.

Roof. Replace the missing tab at the southeast corner. Clean the flashing and repaint with a galvanized paint grey to match the shingles.

Windows. Restore the wood windows where possible, or recreate to match the existing where the windows are deteriorated beyond repair. Replace the missing transom windows/muntins at the south elevation. Eliminate the piping through the transom windows, and core through the masonry walls for the rain water capture piping in lieu of routing them through the windows. Expose the steel lintels and clean them with wire brushing and sanding. Recoat with a rust inhibiting paint. If the lintels are too damaged to repair them with this treatment, replace them with painted stainless steel lintels.

Doors. There does not appear to be enough historic information to reconstruct the original garage doors. To maintain the desired functionality of the building, install new overhead rolling metal doors to match the existing door in the easternmost bay. Construct a tongue-and-groove false door at the missing west elevation door to match other doors on the site. Repair the steel lintels as above or replace with stainless steel lintels. Repair concrete block jambs with concrete block to match the existing.

Interior Floor. Maintain the floor as it is and monitor it for deterioration.

Walls. Re-point cracked mortar joints to match the original mortar and repair any stone cracks with epoxy. Periodically re-point the mortar joints.

Ceiling. Maintain the roofing as it is and monitor it for deterioration.

Engine House

The engine house is currently used as storage space. Potential uses for the engine house include a venue for interpretive programs, or conversion back to its original function as the power generation facility for the island. Putting generator equipment inside the engine house may mitigate the noise effect on local wildlife, and it would have the advantage of continuing the engine house in its historic function.

Exterior Walls. Re-point cracked mortar joints to match the original mortar. Periodically monitor and re-point mortar joints.

Roof. Monitor the roof and maintain as necessary.

Windows. Restore the historic wood windows. Construct replacement windows for the missing historic windows with units to match the historic wood windows. Add acrylic storm panels to protect the windows from storms and vandalism. If plywood inserts are retained, consider painting them a dark brown color that will recede and draw less attention to the covered window openings.

Doors. Refinish the existing exterior door. Clean and paint the hardware. Preserve and repaint "Keep Out" sign on door.

Steps. Provide a more stable foundation for the concrete steps and re-set them in place. Rebuild the platform on the south side.

Cistern. Not enough information is known about the historic configuration of the cistern in order to restore it. Keep vegetation away from the stone face and repair areas along the face that have been damaged.

Interior. Rehabilitate the interior for interpretive programs or as a power generation facility.

Floor. Monitor the floor for deterioration.

Walls. Repair the cracks at the bond beams with concrete epoxy. Repair the walls where the rebar has been exposed. Repaint with a compatible paint.

Ceiling. Monitor the ceiling for deterioration.

Windows. See exterior recommendations.

Doors. See exterior recommendations.

Chimney. Monitor the chimney for deterioration.

Pavilion

Continue to maintain the pavilion as a picnic/gathering space, which has been its historic use. Providing power for the pavilion would be problematic, given its distance from the rest of the structures on the site and its openness. A generator would be visibly intrusive, and there is no hidden area to put solar panels. Interpretive programs in the pavilion should be limited to those which do not require electricity.

Foundation/Floor. To repair the spalled and cracked areas at the step treads and nosings, cut out around the damaged area so at least 1" around the area is not feathered. Use epoxy-modified colored mortar to repair the area; the mortar should match the existing and be of a compatible strength. To repair the cracked step tread, try to inject it with a flexible material like polyurethane. Any ports and capping material should be removed after injection.

Piers/Structure. Monitor the piers and re-point the mortar as needed.

Roof/Ceiling. Monitor the roof and exposed wood structure and maintain as needed. Consult with a qualified exterminator to find out what is causing the insect infestation at the rafters and if it is still an active infestation. If it is, use a boric acid material such as Boracare. It should be non-toxic and environmentally friendly. Use a spray-on or paint-on application to penetrate the wood. It may require a periodic reapplication.

Protect the iron tie rods by removing rust, then repainting with a black rust-inhibiting paint. Investigate the use of naval jelly or other de-rusting agents in order to minimize damage to the collars at the center of each rod.

A letter previously described in the HSR and Cultural Landscape Inventory (CLI) indicates that the original roofing material was removed in the early 1990s by volunteers from the Dinner Key Cruising Club. The letter goes on to say that the cement tiles were used along with bags of cement mix to repair the "little lagoon bulkhead" [ornamental canal]. The ornamental canal should be investigated to locate original roofing material. This material should be matched or, if found to contain asbestos, replaced with a similar cement tile system with interlocking shingles and ridge and hip pieces that follow the look indicated in the historic photographs from the Honeywell period.

Landscape

Landscape treatment recommendations are based on information gathered during the preparation of a CLI for Boca Chita Key. The primary goals of the recommendations are preservation of remaining historic materials and character and improved visitor experience.

Accessibility

Presently, accessibility at Boca Chita Key is limited to the boardwalk surrounding the harbor and the concrete walkways that lead to the comfort station. The current concessionaire operates a tour boat that is fitted with a ramp that can accommodate non-motorized wheelchairs in most conditions.[1] There is currently no reserved space in the harbor for the concessionaire's boat. When the harbor is full, the concessionaire docks outside of the harbor near the loading ramp on the western edge of the island. There is no accessible path from the loading dock to the harbor. A reserved space for the concessionaire's boat should be provided, preferably within the harbor. If necessary, the boardwalk should be extended to connect the reserved space to the rest of the boardwalk. General guidance for providing accessibility can be found in the following NPS Technical Preservation Services bulletin, *Preservation Brief 32: Making Historic Properties Accessible*.

The addition of an accessible path system that connects the existing accessible walks with the various site features in the historic district and the nature trail should be constructed. Figure 111 illustrates a proposed route for the accessible path system. The "Proposed Accessible Path" connects the harbor to the lighthouse, chapel, restroom, pavilion, camping area, and nature trail.

1 In an April 2010 phone conversation with the current concessionaire, the operator explained that during low tide it is difficult to unload a wheelchair from their boat. Additionally, the additional weight of motorized wheelchairs can not be supported by the boat ramp.

Legend

- Existing Accessible Path
- Proposed Accessible Path
- Optional Accessible Path
- Restored Allée with Accessible Path

Chapel

Camping Area

Proposed Accessible Camp Site

Existing Accessible Path, Typical.

Lighthouse

Harbor

Pavilion

Atlantic Ocean

Kiosk

Restroom

Earthen Ramp to Pavilion

Proposed Accessible Path, Typical.

Biscayne Bay

Optional Accessible Path, Typical.

Arched Concrete Footbridge

Ornamental Canal

Engine House and Cistern

Garage

Collapsed Stone Walls

Stone Walls

Potential to Convert Existing Nature Trail to Accessible Path

Potential to Convert Existing Nature Trail to Accessible Path

N

0 25 50 100

Scale 1" = 100'

Boca Chita Key

Treatment-Circulation

July 2010

Figure 111

A secondary path, the "Optional Accessible Path," connects the proposed path with the beach on the northeast side of the island, the engine house, garage, and the stone walls on the south end of the historic district. A path system constructed of soil cement or soil stabilizer should be used. This will provide and accessible surface that looks much like the existing nature trail and blends into the historic landscape because it is constructed with the native soil. CLI Graphic 36 shows the character of the current nature trail. The nature trail could also be "paved" with this same material to provide an accessible loop around the entire island.

The following section discusses the issues and opportunities for providing accessibility to the site's historic buildings.

Lighthouse. It is not possible to make the tower accessible without significantly altering the historic character of the tower, which would include building a ramp to the door, widening the door, and providing some sort of lift to the observation deck, which at any rate would not provide enough room for a wheelchair to maneuver. Consider an alternate method of accessibility, such as a remote camera that provides a similar view as that from the tower. The best opportunity for increased access to the lighthouse would be to extend a new path from the boardwalk to the base of the lighthouse.

Chapel. Providing accessibility to the interior of the chapel would require a fairly intrusive ramp to bridge the risers at either exterior door. In this case, the east door would be the least intrusive option of the two. Neither door is 36" inches wide, the minimum required for accessibility, so the door would have to be widened, resulting in significant loss of historic fabric. Finally, the interior of the chapel is quite small, and to provide for minimum clearance, the interior would have to be kept nearly empty. Therefore, it is not recommended to make the chapel accessible. The entire interior space is easily viewed from the exterior, which could be viewed from the proposed accessible path system.

Garage/Barn. Because the garage is already roughly at grade and has always had sloped aprons at the doors, it would be the easiest to adapt for accessibility. To achieve accessibility, the person door at the north elevation would be adapted for assisted opening and the apron at this door would be graded to meet slope requirements for accessibility. The largest obstacle for providing access to the barn is constructing an accessible path from the harbor to the barn. The optional accessible path proposed in Figure 111 could be installed to provide barn access.

Engine House. Providing accessibility to the interior of the engine house would require a large and intrusive ramp to bring visitors to the door level, as it is quite high off the ground. This would also require the removal or covering of the existing steps, as there is only one door opening. Finally, the door opening is less than 36" wide, the minimum required, so the opening would have to be widened, resulting in a significant loss of historic fabric and appearance. Therefore, it is not recommended to make the engine house accessible, but rather to bring visitor closer to the building via the optional accessible path.

Pavilion. Because it sees significant visitor use and is located near the existing accessible harbor boardwalk, the pavilion is a recommended location for increased accessibility. Due to ample approach distance and the low rise of the floor, access can be provided easily and with little impact to the historic landscape and building. There are two options for ramping up the pavilion floor elevation: a constructed ramp or raising the surrounding grade to provide an at-grade entrance. Either can be executed in a manner that is reversible. The south side of the pavilion would be the most desirable location for this addition as it is not visible from the harbor entrance or the lighthouse observation deck. This site is also convenient to the harbor boardwalk and proposed accessible path.

Palm allée to beach. The following section will outline a recommendation to reestablish an original palm allée between the remnant foundation of the main house and the beach located on the eastern side of the island. Figure 111 illustrates the approximate location of the path. An accessible stabilized soil or soil cement path should be constructed through the center of the allée to match the historic condition. The path could be made accessible by tying into the proposed accessible path system. Historic photos should be used to inform installation of this feature.

Vegetation

Density of tree canopy of north end of district. One of the primary changes in the landscape of the historic district since the period of significance is a thinner tree canopy on the northern end of the district surrounding the harbor. This is largely due to the destruction caused by Hurricane Andrew in 1992. Despite an attempt by the NPS to reestablish the canopy with a 1995 replanting effort, the canopy has not developed the density characteristic of the period of significance. Historic photos indicate that the canopy was dominated by coconut palms, which is consistent with current canopy composition. Increasing the density of the canopy should be a priority. Historic photos provided in the CLI offer the best documentation to help replicate a future condition that is more like the historic condition.

Coconut palm. Coconut palms are the dominant palm species growing at Boca Chita Key. This is typical of the landscape condition during the period of significance. Due to their high susceptibility to Lethal Yellow, the palms at Boca Chita could become infected with this fatal disease. Because the coconut palm is a character defining feature of the historic landscape that persists, efforts to retain these trees should be made. The first step to be taken is the development of an Integrated Pest Management plan for the coconut palm at Boca Chita. This will inform monitoring efforts to identify pests and strategies to effectively treat pests. Replacement of coconut palms should be a last resort that is pursued only if maintaining the trees in the long term is not feasible.

If an outbreak of Lethal Yellow is encountered, two options have been identified: 1) treat the infected trees with antibiotic injections to prevent spread of the disease and to suppress the disease in the infected tree, or 2) remove and replace the tree. Cultivars of coconut palm such as 'Maypan' and 'Gold Malay' have been marketed as Lethal Yellow resistant. In recent years these palms have been found to be quite susceptible to the disease, but exhibit the symptoms differently than the species. Therefore, replacement using one of the "resistant" cultivars is not suggested.

If coconut palms are found to not be a sustainable option at Boca Chita due to Lethal Yellow, a mixture of several resistant palm species of a similar height, texture and character should be planted as replacements. Replacements should be a regionally native species or at minimum, noninvasive species. This approach would alter the historic character of a single palm species landscape, but it would create a more sustainable landscape over the long-term by preventing a monoculture of palms that are susceptible to a single pest. It could also facilitate the creation of a denser canopy, which was a characteristic of the historic setting. Recommended replacements include Florida royal palm (*Roystonea elata*), cliff date (*Phoenix rupicola*) and sabal palm (*Sabal palmetto*). None of these are the visual equivalent of the coconut palm, but share some similar characteristics.

In the absence of a Lethal Yellow outbreak at Boca Chita, trials of these potential replacement species could be conducted to evaluate their performance. If this is undertaken, it would best be accomplished in a less visible area of the island. Any new plant material brought to the island should be certified to not contain Lethal Yellow as the disease is often transmitted in the soil of newly installed plant material.

Australian pine in the landscape. Historic photos illustrate the role played by Australian pine in the Honeywell era landscape. Plantings at the mouth of the harbor included many of the pines, which provided a soft texture and a columnar silhouette. The tree was also used to frame a square lawn located north of the stone wall and south of the engine house. This species has since been recognized as a prolific invasive exotic pest in south Florida. By the 1980s Australian pine had overtaken the island both within the historic district and to the south within the naturalized area. A combination of destruction from Hurricane Andrew and removal efforts by the NPS has eradicated this plant at Boca Chita. While reestablishing Australian pine is not advisable, a suitable replacement with a similar form, texture and size should be considered for use within the historic district. Any replacement species chosen should preferably be a species native to the region or at minimum be a well established ornamental in the region that is known to not be invasive. Potential substitutions for Australian pine are sand pine (*Pinus clausa)* and South Florida slash pine (*Pinus ellioti var. densa)*.

Purslane groundcover. Historic photos and historic news accounts of Honeywell's plantings at Boca Chita indicate that purslane (likely *Portulaca oleracea*) was used as a ground cover along the edges of the harbor. The groundcover cascaded over the bulkhead softening the metal structure. Reestablishing this species around the harbor, particularly around the mouth of the harbor would be appropriate.

Palm allée to beach. Photos show a coconut palm allée that connected the main house to the beach located east of the house. The allée appears in photos from both the Harrison and Honeywell eras. Reestablishing this planting would serve to return an original landscape feature and help to interpret the remaining foundation of the main house. If reestablished, the allée should be composed of a single species, preferably the coconut palm.

Since the period of significance, the eastern edge of the island has naturalized with mangrove vegetation. The beach area that is proposed to connect to the main house via a palm allée should be maintained in its current state. Pruning will likely be necessary to keep this area open.

Seasonal mowing of meadow. The meadow south of the barn was historically maintained as a lawn that was often used for tents. The current mowing regime is appropriate as it maintains this area as open. However, mowing the meadow several additional times during the year is encouraged to maintain an open character that is more in keeping with the original lawn condition.

Plantings at the mouth of the harbor. Replanting the entrance to the harbor with palms, pines and ground covers is recommended. Using historic photos for guidance, these areas could be replanted to look as they did during the period of significance. This area has lost most of its original vegetation. As this is both the entrance and exit for visitors to the island, reestablishing these plantings would provide a highly visible interpretive opportunity. Not only would the historic character of the landscape be reestablished, these plantings would afford an opportunity to discuss the land values of the property owners during the period of significance. Substitutions for invasive and disease prone plant material from the period of significance is desirable.

Structures

Preservation Brief 2: Repointing Mortar Joints in Historic Masonry Buildings by the NPS Technical Preservation Services may be used to provide guidance in re-pointing the mortar joints of various masonry structures in the island.

Lighthouse stone walls/gates. Re-point cracked mortar joints, which will require periodic re-pointing. Repair the concrete corner caps matching the existing concrete. Replace or consolidate the damaged limestone as described above. Remove vegetation that is encroaching on the wall, and keep it away from the walls in the future. Wire brush the heavy chain to bare metal to remove the rust, prime with a rust inhibiting primer, and repaint with black paint every two to three years. Chemical cleaners may also be used to remove rust from the chain, as long as the cleaners are gentle enough to not damage the stone.

Stone walls/gates at south end of district. Clear and maintain vegetation in a six foot swath on each side of the stone walls along intact and collapsed sections of the wall. As discussed previously in this chapter, red, black, and white mangroves are protected by the State of Florida's 1996 Mangrove Trimming and Preservation Act. NPS is not required by Federal law to follow this state act, but as a matter of NPS policy, may acquire special permits in accordance with the act before trimming mangroves. To maintain the recommended swath around the stone walls, trimming mangroves will likely be needed. Buttonwood was the primary species encroaching upon the wall. Buttonwood is not protected by the act. In areas where the wall is collapsed, vegetation should be kept out of the ruins of the wall. Re-point mortar joints as needed. Restore two gate pier caps to their intended locations. (The caps are currently located at the base of the piers.)

Stone retaining wall. Maintain the retaining wall acting as a bulkhead on the north end of the island in its current location. The wall will likely continue to degrade due to its direct exposure to salt water. In the event the wall fails and needs to be replaced, replace it with a contemporary steel pile and concrete cap bulkhead.

Remnant foundations. Remnant foundation of the main house and shower house at grandma's hut should be maintained. Remove thatch from the concrete foundations. Use foundations to interpret

the locations of these missing buildings.

Missing frame buildings. Within the historic district, four frame buildings from the period of significance have been completely lost with no remaining indication of the original footprint. Available photo documentation should guide an archeological exploration to accurately locate the missing structures. For these missing buildings where the foundation is no longer intact, construction of an interpretive or "ghost" foundation to interpret the original building's footprint is appropriate. This would provide for the interpretation of the original spatial relationships on the island during the period of significance.

Harrison's bulkhead. The remaining exposed portions of Harrison's bulkhead are located outside of the historic district along the western side of the property. The current poor condition of this section of the bulkhead indicates that it will require treatment in the near future. A treatment similar to that of the harbor and northern bulkhead would be an appropriate application for this section of bulkhead as well. The original bulkhead should be kept in place, while a new sheet pile with a concrete cap is added in front of it.

Camping area. Retain the camping area on the island in the current location and with its current informal layout. This allows for minimal intrusion within the historic district, while providing camping amenities near the harbor. Construct and designate an accessible camp site on the eastern edge of the camping area along the proposed accessible path. Designation of all sites with traditional tent pads is unnecessary and would create an additional intrusion in the lawn of the historic landscape. Moving the camping area out of the historic district is not recommended as it would require campers to transport their gear long distances from the drop off point in the harbor, require additional accessible paths to connect to an accessible site, and locate campers further from the restroom. Current camping activity does not appear to have a negative effect on the historic district.

Circulation and Hardscape

Historic concrete walkways. Remnant historic concrete walkways located east of the harbor should be preserved in their current condition. In an effort to retain these original pieces of circulation, vehicles or machinery, including riding lawn mowers, should be prohibited from rolling across the walkways. Additionally, accumulated thatch should be removed from the edges of the walkways and weeds should be removed from cracks in the walks. *Preservation Brief 15: Preservation of Historic Concrete* by the NPS Technical Preservation Services may be helpful to guide the preservation of the historic concrete walks at Boca Chita.

Oolitic limestone walkways. It may be desirable to remove a section of the existing boardwalk to uncover and explore one of the remaining limestone walkways. The walkway located on the eastern side of the harbor was not noted as damaged in the 1994 construction documents for the harbor and boardwalk. Exploration may uncover suitable sections that could be made visible to the public. If condition is found to be suitable, a glass or acrylic viewing panel could be added to the boardwalk to allow interpretation of the original walkways that are now covered.

Lighthouse base. Maintain the original oolitic limestone paving stones around the base of the lighthouse tower. Remove vegetation from the stones and keep them clean. Herbicide or manual removal is acceptable for removing weeds. If using herbicide, verify that the material is safe for use on stone and has a short half-life like a glyphosate.

Barn apron. The existing concrete apron at the barn appears to be a contemporary addition to the site. The condition of the apron is poor and in need of replacement. Replace the existing concrete apron with a new concrete apron that spans all four bays of the building.

Arched concrete footbridge. An evaluation of the collapsed concrete footbridge by the project team's structural engineer found "the bridge is badly deteriorated and there is no chance that any part of it could be reused. If a bridge is desired at that location it should be entirely rebuilt. It may be difficult to replicate the bridge as it originally stood in the absence of original construction documents." Based on this evaluation and additional investigation by the project team, preservation is not recommended as this treatment will not slow the deterioration of the resource. Restoration is not recommended due to the feature

not being "essential to public understanding of the park's cultural associations" and lack of "sufficient data about that structure's earlier appearance." Reconstruction of the feature is not recommended in accordance with NPS Management Policy 5.3.5.4.4- Reconstruction of Missing Structures, which states that reconstruction should be carried out only when "there is no alternative that would accomplish the park's interpretive mission" and "sufficient data exists to enable its accurate reconstruction based on the duplication of historic features substantiated by documentary or physical evidence rather than on conjectural designs or features from other structures. Reconstruction must be approved by the NPS Director." This feature is not critical to accomplishing the park's mission and historic plans and/or high-quality photographs are currently not available to inform an accurate reconstruction. It is possible that additional documentation could be located in the future that would be sufficient to serve as a basis for reconstruction.

The recommended treatment for the concrete footbridge is stabilization and interpretation of the feature as a ruin in accordance with NPS Management Policy 5.3.5.4.10- Historic and Prehistoric Ruins. *Preservation Brief 15: Preservation of Historic Concrete* gives specific guidance on preservation of such resources. Additionally, the following actions are recommended to stabilize and slow the deterioration of the ruin.

- Establish the baseline condition for the ruin with a thorough assessment of the current condition - the assessment should include extensive photo documentation
- Conduct routine inspections of the ruin to identify potential condition issues before they develop
- Remove vegetation from the ruin and prevent vegetation from becoming established in the structure
- Insure positive drainage on and around the structure
- Remove and store any loose pieces of material- e.g. large pieces of concrete
- Protect the exposed reinforcing steel in the arched concrete beams from the elements- clean, prime, and paint with a corrosion inhibiting coating
- Conduct research to locate original plans and/or detailed photos of the structure- this may reveal information about the original design and construction of the structure, and potentially give insight into why the structure failed
- In the absence of plans, assess the existing collapsed structure to uncover information about the original design, construction and structural failure- on going monitoring of the structure may reveal additional information
- Consider use of a consolidant to help bond the remaining portions of the structure together- this is an irreversible treatment that may cause discoloration of the concrete and may actually accelerate deterioration by creating a consolidated exterior surface that may separate from portions of the structure that area not penetrated by the consolidant

Ornamental canal. As mentioned in the Building section, the original cement tiles for the pavilion were used to repair the bulkhead of the ornamental canal. An investigation to recover pieces of the original roofing material is encouraged. After this investigation is complete, the concrete bulkhead cap should be repaired as needed. The same process recommended for the pavilion floor and steps should be used to repair the cap. Riding lawn mowers, vehicles and heavy machinery should be kept off of the bulkhead cap. It is not recommended to restore water to the canal. The value of restoring this feature is limited. Rather, the canal should remain filled with earth. It's use as a swimming lagoon and earlier as a portion of a canal to drain the northern mangrove forest should be interpreted.

Small-scale Features

Cannon. A conservator who is experienced with metal items from marine environments should be consulted to assess the condition of the cannon and formulate an appropriate treatment for this feature.

Steel bollards. Wire brush the surface to bare metal to remove the rust, prime with a rust inhibiting primer, and repaint with black paint every two to three years to protect the surface from additional rust.

Draft PMIS Statements

The following projects have been proposed to help combine recommended treatments found in the previous section of this document, Recommendations for Treatment and Use, with similar projects. The intention is that the following project titles, descriptions and preliminary cost estimates will be useful to Biscayne National Park staff in developing projects for entry in the Project Management Information System (PMIS). The projects are arranged by priority.

Title: Stabilize Boca Chita Arched Concrete Footbridge Ruin and add Interpretive Signs

Description: This project will assess and thoroughly document the existing condition of this classified structure. Assessment and documentation should be conducted by a preservation professional who is experienced with structures in maritime environments. Recommendations from this assessment will guide stabilization of the ruin. Stabilization will include, but is not limited to the following activities: removal of encroaching vegetation, enhancing drainage on and around the ruin, protecting reinforcing steel. Additionally, research to locate original plans and detailed photos of the structure should be conducted. Resources uncovered during this effort should be used to interpret the ruin. An interpretive panel should be developed to convey the history of the bridge and ornamental canal.

Cost Estimate: Assessment and documentation: $5,000; Minor stabilization as outlined above and in treatment recommendations: $10,000 (additional work may be recommended by assessment); Research original plans and development of interpretive panel narrative: $8,000; Design, fabrication and installation of interpretive panel: $4,500

Total Cost: $27,500

Title: Development of Integrated Pest Management Plan and Monitoring Program for Lethal Yellowing of the Palms at Boca Chita

Description: This project is primarily centered on developing an integrated pest management plan

for the susceptible coconut palms at Boca Chita. These trees are character-defining features of the Boca Chita Historic District and should be preserved, if at all possible. A professional arborist who is experienced in identifying and treating this disease will be contracted to assess the palms at Boca Chita, develop a plan for identifying and monitoring for the disease and training Boca Chita staff to continue monitoring efforts at the site. A second portion of this project is to plant trials of three proposed disease resistant palm species. These palms will be planted outside of the historic district to evaluate their performance as potential coconut palm replacements, if the need for replacement arises.

Cost Estimate: Development of IPM plan and training staff to monitor: $9,000; Plant nine palms as trial: $14,400

Total Cost: $23,400

Title: Development of Conservation Plan for Boca Chita Cannon and Steel Bollards
Description: A conservator who is experienced in the preservation of maritime and marine metal objects will be contracted to assess and propose a treatment plan for the cannon and steel bollards. Both items are identified as contributing landscape features of the historic district that are in poor condition. Immediate action is needed to arrest the decomposition of these features. Recommendations in the treatment plan will address both immediate actions to stabilize the features and on-going maintenance required to preserve the features.

Cost Estimate/Total Cost: Development of Conservation Plan: $6,000 (additional funds will be required to implement the treatment plan)

Title: Repair Boca Chita Lighthouse

Description: This project will remove carbonation from the concrete observation deck, reconstruct operable vents in the lighthouse dome in accordance with the original condition, add a transfer grill between the observation deck level and the dome, reconstruct and install screen doors on both lighthouse doorways in accordance with the original condition, replace cracked and missing glass dome panes, repaint dome glazing and steel structure, and re-point exterior cracks in the masonry. These repairs will improve ventilation of the entire structure and aid in the preservation of the building.

Cost Estimate: Remove carbonation from deck: $2,200; Reconstruct operable vents in dome, replace cracked and missing panes, reglaze and repaint dome: $35,000; Reconstruct and install screen doors: $5,500; Install transfer grill at dome: $2,000; Re-point masonry: $6,000

Total Cost: $50,700

Title: Boca Chita Chapel Repairs and Window Restoration

Description: This project will make needed repairs to this classified structure and restore the original windows and doors of the building. Repairs include replacement of missing roofing shingles, painting the roof ridge cap to match the shingles, repair of the west wall gable vent, replacement of stone at eave line on northwest corner, re-pointing cracked mortar joints, repair of the concrete stoops, and investigation of wall beams for cracking (repair may be needed). Restoration of the building's windows and doors will include removal of plywood currently covering the windows, restoration of the original wooden windows and potentially the addition of acrylic storm panels, repair and refinishing of the original wooden doors, installation of the original east door, and repair of the original locksets.

Cost Estimate: Replace missing roof tab and repaint ridge cap: $1,000; Repair west gable vent: $500; Replace stone at eave line: $2,500; Re-point cracked mortar joints: $2,500; Repair concrete stoop: $500; Investigation of wall beams: $2,000 (investigations may uncover a need for additional repairs); Restoration of building windows and doors $10,000; Acrylic storm panels installed: $3,000; Repair of locksets and deadbolt: $2,000

Total Cost: $23,500

Title: Repair Boca Chita Stone Walls

Description: This project will remove encroaching vegetation from this classified structure. Encroaching vegetation will be removed from collapsed sections of the wall and a six foot wide swath along each side of the entire length of the wall will be cleared of vegetation. The wall will also be re-pointed as needed and two pier caps, which are currently located on the ground adjacent to wall piers, will be reset.

Cost Estimate: Vegetation removal: $3,400; Re-pointing and reset caps: $8,000

Total Cost: $11,400

Title: Improve Accessibility at Boca Chita

Description: This project will increase accessibility at Boca Chita by providing universally accessible pathways to each of the landscape features of the historic district, constructing an accessible camp site, creating access into the Garage and Pavilion, and dedicating a reserved space in the harbor for the park's concessionaire's boat ensuring access to the existing and proposed accessible pathways. The reserved harbor space will be clearly marked with signs and the harbor bulkhead may be painted to further identify the space. The existing accessible boardwalk will be extended west towards the lighthouse to accommodate the reserved space. A five foot wide accessible pathway will be constructed of soil stabilizer or soil cement to connect the existing accessible path to all site features within the historic district and upgrade the existing nature trail to be universally accessible (see Figure 111 of the HSR for the proposed pathway routes). The north elevation person door at Garage/Barn will be replaced to provide an accessible entry complete with an accessible new concrete apron and an assisted door opener. The landscape around the Pavilion will be rehabilitated to include an earthen ramp at the south end of the building that brings access to the finished floor level. Additionally, an accessible campsite will be constructed and designated on the northeast side of the historic district.

Cost Estimate: Designation of Concessionaire boat space and boardwalk extension: $4,000; Engineering and construction observation for accessible pathways: $75,000; Construction of accessible pathways: $300,000 (31,580 SF x $9.50 per/SF); Accessible door with assist at Garage: $3,500; Earthen ramp at Pavilion: $11,000; Accessible campsite: $3,500

Total Cost: $397,000

Project Title: Repair and Reroof Boca Chita Pavilion

Description: This project will focus on making needed repairs to the Pavilion to advance preservation of the building, as well as researching and reroofing the building with a concrete shingle roof. Repairs to the building include: repair of cracked concrete stairs and flooring, assessment and potentially treatment of insect damaged wooden roof beams, and repair of the building's decorative iron tie rods. Additionally, research will be conducted to confirm the original roofing material, locate a contemporary roof shingle that is in keeping with the original concrete tile shingle and reroofing the building. See page 141 of the Historic Structure Report for background on the removal and disposal of the original shingles.

Cost Estimate: Repair cracked concrete: $6,000; Assess and potentially treat wooden roof beams: $2,500; Repair iron tie rods: $8,000; Research original roofing material and select appropriate replacement roofing: $5,000; Reroof building with concrete tiles: $12,000 (depending on material selected)

Total Cost: $33,500

Project Title: Boca Chita Garage/Barn Repairs and Window Restoration

Description: This project will repair, restore and reconstruct elements of the classified structure known as the Boca Chita Garage/Barn. Repairs include: repair of rust-jacked corners, re-pointing mortar joints, replacement of missing shingle tabs and painting roof flashing, and repair and/or replacement of rusted steel lintels at the window and door openings. Restoration of the original wooden windows will involve: removal of plywood window covers, restoration of windows that can be saved, reconstruction of missing and deteriorated windows, installation of acrylic storm panels for

protection, and relocating rainwater piping. Other projects to be accomplished at the Garage/Barn include: installation of new overhead rolling metal doors to match the easternmost door and reconstruction of a tongue-and-groove false door on west façade. These improvements will serve to restore original building elements, add functionality for current use and make repairs that are needed to preserve the building.

Cost Estimate: Repair rust jacked corners, repair and replace steel lintels and re-point mortar: $23,000; Replace shingle tab and paint flashing: $2,200; Restoration and reconstruction of original windows: $22,500; Acrylic storm panels installed: $7,500; Relocate pipe: $1,200; New rolling metal doors: $12,000; Reconstruct west false door: $3,000

Total Cost: $71,400

Title: Boca Chita Engine House Repairs and Window Restoration

Description: This project will make repairs and restore original elements of the classified structure known as the Boca Chita Engine House. Restoration of the four historic windows, one door and a wooden "Keep Out" sign will be undertaken. Reconstruction of three missing original windows will occur as well. Acrylic storm panels will then be added to cover and protect all windows. A concrete equipment platform on south side will be rebuilt and cracks in the masonry walls will be repaired.

Cost Estimate: Restore windows, door and sign: $5,000; Reconstruct and install missing windows: $6,000; Acrylic storm panels installed: $3,500; Rebuild platform: $4,500; Repair masonry walls: $1,500

Total Cost: $20,500

Title: Reestablish Historic Plantings in Boca Chita Historic District

Description: This project will replant areas of the Boca Chita Historic District to reestablish vegetative elements that have been lost over time. Using historic photographs for guidance, palm, shrub and groundcover plantings will be planted at the mouth of Boca Chita harbor. This planting will help to restore the "gateway" to the property to its condition during the period of significance. Additionally, a palm allée that once stretched from the Main House east to the Atlantic will be replanted. Depending on the effect of IPM efforts at Boca Chita, either the original allée trees, coconut palms, will be replanted or a replacement species will be planted. A third planting effort involves increasing the canopy on the north end of the historic district to a density more like that of the period of significance. The outcome of efforts to prevent Lethal Yellowing from infecting the palms at Boca Chita and trials of potential replacement palms will help to determine if this planting will consist of predominantly coconut palms or a mixture of replacement species.

Cost Estimate: Harbor planting: $32,500; Allée planting: $8,000; Increase canopy on north end of district: $60,000

Total Cost: $104,500

Title: Interpret Missing Boca Chita Frame Buildings

Description: This project will include archeological services to locate the footprints of four missing frame buildings. Based on this information, architectural design services will provide four interpretive foundations or shade structures that recreate the massing and silhouette of the missing buildings, construction of four interpretive structures and the design and installation of four interpretive wayside panels. Execution of this project will enhance the visitors understanding of the landscape during the period of significance by adding interpretive elements to help represent missing buildings and the spatial relationship they created.

Cost Estimate: Archeological investigation: $20,000; Architectural design: $20,000; Foundation or shade structure construction: $45,000; Wayside panel design, fabrication and installation: $14,000

Total Cost: $99,000

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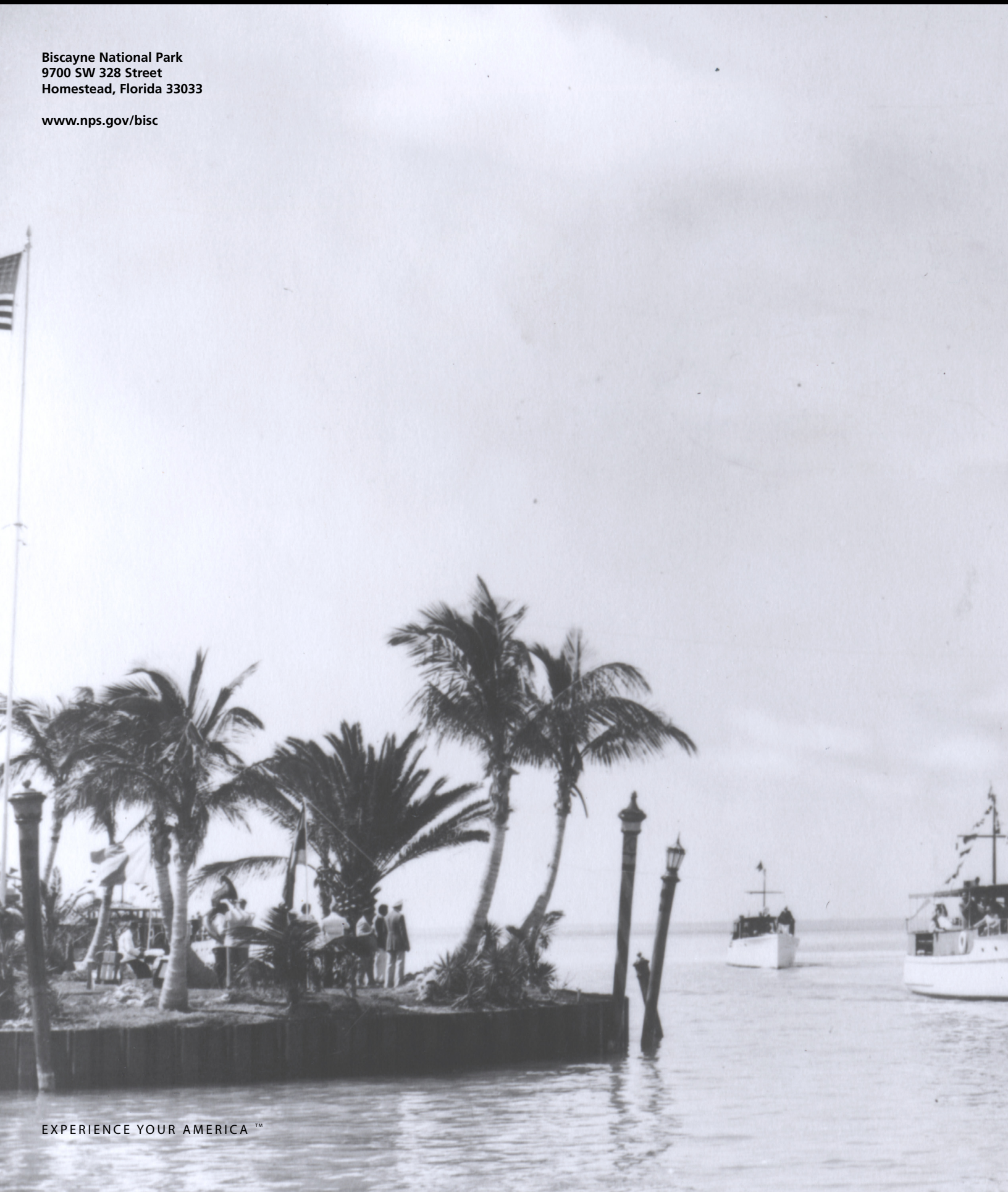
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