

TOWN OF JUPITER ISLAND

2 BRIDGE ROAD
HOBE SOUND, FLORIDA 33455

TELEPHONE
(772) 545-0100

FAX
(772) 545-0188

July 29, 2022

Mr. Michael Isaacson, Environmental Administrator
Beach Management Funding Assistance Program
Florida Department of Environmental Protection
2600 Blair Stone Road, MS#3601
Tallahassee, FL 32399-2400

RE: FY2023/24 Local Government Funding Request Application

Mr. Isaacson:

Please find enclosed the Town's Local Government Funding Request application for Fiscal Year 23/24. In addition to the enclosed form we are providing additional information with this letter in support of the application. The Town's application requests cost share for feasibility/design, construction, and monitoring efforts related to the beach restoration project and Blowing Rocks dune project. The Town's permitted beach project length is ~7 miles, extending between R-73 and R-117, as well as a dune only section between R-126 and R-127.4. Both sections are designated by the Department as Critically Eroded and are included in the Strategic Beach Management Plans (Central and Southeast Atlantic).

Under the FY23/24 application the Town is requesting cost share for contract engineering design and permitting support services relating to the renewal of the Federal JCP and accompanying modification of the State JCP to reflect anticipated design changes. Additionally, the Town will be re-constructing the Blowing Rocks dune project, following substantial erosion losses during a king tide winter storm in November 2021. Lastly, the Town is requesting cost share for contracted monitoring services (biological and physical), as well as, approval of force labor (Town employees) to conduct permit-required turtle monitoring. Specifically, the Town will utilize its own staff to perform sea turtle monitoring following the conditions set in the Town's Joint Coastal Permit (0186991-008-JC). In order to reduce the overall monitoring program cost the Town actively engaged and hired the permitted turtle monitor (Peter Quincy) and support staff (Ann McCaffrey, Kim Mohlenhoff, Matthew Rowan, Misti Scaggs, and Wendy Mathisen) as part-time Town employees. Whereas previously the Town contracted turtle monitoring services through an outside consultant (Gahagan & Bryant Associates), paying an average of \$65,000 annually prior to 2013 (equivalent to roughly \$82,550 in today's dollars), bringing the program in-house has significantly reduced the cost of the monitoring program. It should be noted that the annual contract cost does not reflect any additional monitoring required during construction.

The following information is provided in support of the force labor request, including a projection of the time and cost to be incurred by the Town for monitoring of marine sea turtles as required by beach nourishment permit conditions. As shown in the table below, the cost of the program (based on total salaries and benefits) is projected to be approximately \$78,618, which is a significant cost savings when compared to the average annual contract price being paid previously. In addition to salaries/benefits paid to turtle monitors, the Town has incurred significant costs to purchase and maintain three ATVs which are exclusively used for turtle monitoring. The Town is requesting approval to include the costs to purchase ATVs in this application as we have been required by FWC to operate two surveyors simultaneously in order to complete daily surveys.

<i>Position Title</i>	<i>Hourly Rate</i>	<i>Fringe Rate (%)*</i>	<i>Est. Hours</i>	<i>Projected Salary/Benefits to be Paid</i>
Quincy, Sr. Biologist	\$43.08	5%	1,000	\$45,229
McCaffrey, Biologist	\$32.32	5%	300	\$10,182
Mohlenhoff, Biologist	\$29.84	0%	250	\$7,461
Rowan, Biologist	\$27.28	0%	150	\$4,092
Scaggs, Biologist	\$28.79	0%	200	\$5,757
Mathisen, Biologist	\$19.66	0%	300	\$5,897

*Fringe rate reflective of part-time employment status with Quincy and McCaffrey participated in retirement plan with Town contribution match at 5%.

The following supplemental information is offered in support of the Town's FY23/24 application.

Project Design Analysis:

The Town's beach nourishment program was formally initiated in 1973 with the establishment of an Erosion Control Line (ECL) along roughly 37,400 feet of shoreline between R-75 and R-117. Beginning that same year the first nourishment of the Town's beaches occurred placing just over 3.7M cubic yards of sand along 26,000 feet. Since 1973, the Town has conducted 13 restoration projects, placing more than 19M cy of sand, as summarized in the table below. The magnitude of placement conducted by the Town is directly attributable to the presence of the St. Lucie Inlet to the north (refer to inlet mitigation discussion section).

Jupiter Island Nourishment History

Project Year	Fill Volume (cy)	Fill Length (ft)	Avg. Fill Density (cy/ft)
1973-1974	3,738,200	26,000	143.8
1977-1978	1,327,289	13,000	102.1
1983	1,000,000	9,000	111.1
1987	2,234,869	16,200	138.0
1990	585,308	9,600	61.0
1991	414,812	8,800	47.1
1993	203,736	4,200	48.5
1995-1996	1,741,134	26,000	67.0
2002-2003	1,519,561	30,500	49.8
2006-2007	1,708,068	27,000	63.3
2012	1,150,858	22,700	50.7
2015-2016	1,670,455	27,300	61.2
2018-2019	1,173,000	32,000	36.7
2020-2021	663,000	20,500	32.3
<u>SUMMARY</u>	<u>19,130,290</u>	<u>19,486</u>	<u>72.3</u>

Physical studies and engineering analyses of the Town's beach protection projects have been ongoing for decades resulting in design evolutions and improvements targeted at increase shoreline stability and enhanced project performance. The following is a list of engineering studies and reports relating to the Jupiter Island shoreline:

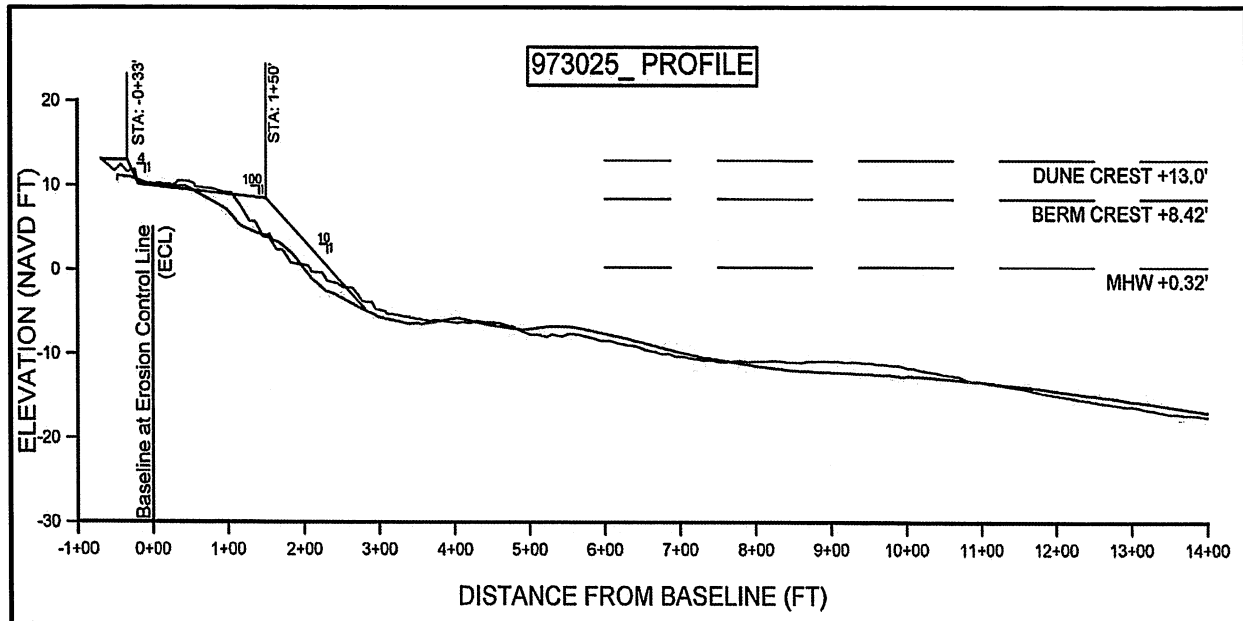
- Analysis of Shoreline Processes and Evaluation of Shore Protection Alternatives (Aubry Consulting 1995);
- Shoreline Hotspot Development due to Sand Mining Offshore, Jupiter Island (Applied Coastal Research and Engineering, ICCE 2006);
- Various studies and reports by Dr. Robert Dean (University of Florida);
- Various studies and reports by Dr. David Kriebel (United States Naval Academy);
- Annual Physical Monitoring Reports (Gahagan & Bryant Associated, Inc., 1995-2021);
- Strategic Beach Management Plan Central Atlantic Coast Region (Florida Department of Environmental Protection, 2021);
- Strategic Beach Management Plan Southeast Atlantic Coast Region (Florida Department of Environmental Protection, 2021);

The Town's design template does not follow that of the USACE design approach as there is no minimum design cross-section and advanced fill template. The management approach of the Town has been to maintain the shoreline position seaward of the ECL responding to gradual background erosion losses, as well as episodic events and losses due to significant storms. Over time, the design template has evolved, increasing in berm elevation and expanding in alongshore length and cross-shore width. In 2017, the northern section of the fill template was re-designed to provide increased protection to a section of the beach which experiences the highest rates of erosion. The fill template width was widened (by as much as 100 feet) and extended further north (roughly 1,800 feet from R-75 to R-73) with initial fill density increases of around 100 cubic yards per lineal foot beyond the previous design. A similar approach will be evaluated for the north end of the southern fill section as part of the upcoming USACE permit renewal proposed to begin this year. By extending and widening the beaches, repetitive loss properties are offered increased protection and the trigger for nourishment can be delayed (extending out the nourishment cycle from 4 years to 6 years). The design also acts as a feeder beach with southerly net transport serving to sustain the remainder of the Town's beaches.

The figure below depicts a typical beach template design section. Dune elevations are set to match existing dune elevations, varying from +10' North American Vertical Datum (NAVD) to +14' NAVD. Dune face slopes are constructed at 4H:1V – a slope value recommended by Florida Department of Environmental Protection and Florida Fish and Wildlife Conservation Commission as “turtle friendly”. Upper beach berm slopes are 100H:1V to limit potential negative sloping during equilibration. The width of the upper beach berm ranges between 50 feet and 200 feet (for design sections and not including tapered sections). The beach berm crest is set to +8.42' NAVD which then transitions to the seaward beach face which is constructed to 10H:1V. The constructed toe of the beach typically intersects the existing beach profile at elevations between -4' and -6' NAVD.

The triggers for initiating nourishment of the Town's beaches may occur when any one of the following conditions exists:

- Gradual erosion without episodic or extreme events reduces the design template to less than 30% capacity, on average, over a continuous shoreline length of greater than 5,000 feet.
- An extreme weather event/hurricane passage induces substantial erosion losses beyond 10 cubic yards per foot of shoreline.
- An erosion hot spot develops threatening upland structures or infrastructure.
- Erosion (gradual and episodic or extreme) results in the recession of the Mean High Water Line to a location landward of the Erosion Control Line over a continuous shoreline length greater than 2,000 feet.



Typical Design Template

Historical Erosion Rate:

The shoreline of Jupiter Island has been heavily eroded by the cutting of the St. Lucie Inlet in the late 1800's. As detailed in the studies by Dr. Bob Dean and Dr. James Houston, the inlet has induced severe shoreline losses of the northern portion of Jupiter Island which have migrated over time to have an effect which continues today within the limits of the Town. As a result of this 120+ year erosion wave, the normal background erosion rates are above those of other non-inlet influenced shorelines. A review of the stack plots of shoreline position archived with the State clearly shows this trend. While the most recent period of record used to establish the severity of erosion before nourishment in the past (-2.74 ft/yr) was based on digitized map data between 1946 and 1971, more than 47 years of further inlet influence has occurred. The larger scale processes (inlet-induced erosion, insufficient bypassing, sea level rise) which continue to place an erosion stress on the Town's shoreline are not reflected adequately by using this data. In fact, the Town of Jupiter Island began renourishing the beaches in the 1970's as a result of severe erosion and an interruption of the littoral transport at the inlet. To counter the inlet's effect, the Town has placed over 19 million cubic yards of sand since 1973 averaging around 400,000 cy/yr.

As documented by the Town's ongoing physical monitoring efforts performed for decades by Gahagan & Bryant Associates, Inc., within the limits of the restoration area of the Town's beachfront, approximately 250,000 cubic yards per year (since 1995) are lost to erosion after accounting for fill volumes placed over time. A review of shoreline changes between 2002 and 2019 shows that the shoreline recession rate when factoring out beach nourishment projects is roughly -9 ft/yr. Supplemental shoreline data is available as a compilation of reports by Gahagan & Bryant and Dr. Robert Dean (previously submitted).

Cost-Effectiveness:

The 2020/21 Project was a recovery project only (Hurricanes Irma/Dorian) and is therefore not considered for this criteria. Thirteen projects since 1973 equates to an average nourishment interval of 3.6 years. Nourishment interval average over the past 20 years has been every 4-5 years. With the construction of the feeder beach section in 2018/19 the anticipated nourishment interval (excluding the upcoming 2020/21 hurricane recovery project) is 6 years.

2018/19 Project was a combination recovery (Hurricanes Matthew/Irma), inlet bypass, and design expansion project. 2018/19 Project cost: \$18,462,500. 2018/19 Project volume: 1,173,000 cy. Project length: 7.1 miles (R-73 to R-115). Nourishment Interval: 4 years (6 years).

Cost per volume per mile per year. \$0.55/cy/mi/yr (\$0.37)

Enhanced Longevity:

The north end of the Town's permitted nourishment project experiences the heaviest shoreline losses due to the inlet's erosion wave which extends into this section of the design template. Over time, this has placed an increased erosion stress on the beach and dune system north of R-80. The historical stack plots of the island's shoreline position support this. The long-term effects of the inlet are evidenced as developed properties have not only had to armor to protect homes and North Beach Road (the only evacuation route off the island), it has also limited the ability of the existing dunes to naturally grow and has led to the permanent loss of platted properties which are now submerged. The frequency of the Town's renourishment projects is primarily driven by the higher erosion rates experienced in this area which results in more rapid exposure of homes and infrastructure to storm impacts. The extent of shoreline loss due to the inlet north of R-80 cannot be completely reversed but in order to improve protection and to extend out the renourishment interval, design modifications to the fill template were undertaken.

On average, the Town conducts nourishment on a 4-5 year cycle. The volumes of sand placed over the years using the original template, while significant, have been insufficient to extend out this cycle, again primarily due to the erosion triggers at the north end of the project. For this reason, the design template for the Jupiter Island beach nourishment project was re-evaluated and redesigned in 2017 and has been authorized under the renewed Joint Coastal Permit issued by the Department. The northern limits of the fill template (between R-75 and R-81) were expanded seaward by 100 feet on average beyond the previously designed and permitted fill template. Additionally, the northern terminus of fill was extended from R-75 further north to R-73. The combination of widening and lengthening the northern fill template will increase the nourishment interval of the project by increasing the buffer for the most exposed sections of structures and infrastructure in the Town. The net transport of sand south will also have the added benefit of the expansion section acting as a feeder beach extending the longevity of the Town's beaches to the south. Barring impacts from major storm events and predicated on the assumption that bypass from the St. Lucie Inlet to the south meets or exceeds objectives outlined in the adopted inlet management plan, expectations are that the nourishment cycle should extend to beyond 6 years with the design change.

Dune Addition/Enhancement:

The 2020/21 beach restoration project re-established eroded dune sections within a dune only fill template between R-84 and R-86. This section of beach is permitted as a dune only fill area because of the presence of nearshore hardbottom which converges close the shoreline – too close for in-water placement. While typically this section of beach does not require attention during renourishment projects, the impacts of Hurricane Dorian required this section of beach be reinforced with a dune enhancement feature, including not only sand placement but also planting of native dune plants species such as sea oats. In order to more rapidly re-establish a healthy and stable dune system, plant materials will be upsized from the typical 96 cell/liner sized starts. Instead, starter material will include a minimum of four plant starts per pot (for sea oats) and up to one gallon size plants will be installed as part of the project at a density of 3 plants per square yard. Approximately 15,000 plants were installed within the enhanced dune area. Previously constructed dune sections between R-84 and R-80 were similarly enhanced by infill planting. Additionally, the Blowing Rocks dune project maintains an enhanced dune as the primary protective measure against storm impacts to residences and the southern evaluation route from Jupiter Island (CR707). Unless the State changes the regulatory restrictions against installing new shoreline armoring,

this 1,100-foot length of critically eroded beach can only be enhanced through truck haul and placement of sand. Combined with re-vegetation, the Town conducts this project on an as-needed basis.

Regionalization:

The Town of Jupiter Island continues to coordinate with Martin County on planned inlet and beach projects. While this project does not incorporate inlet bypass, future projects will benefit from planned geographic coordination and sequencing of projects, similar to the previously constructed 2018/19 project completed by the Town and County under an interlocal agreement.

During the summer of 2018 the Corps of Engineers completed a project for maintenance dredging the inlet basin and channel. The approach utilized by the Corps was a regional sediment management approach whereby more than 450,000 cy of inlet maintenance material was transferred offshore to the Town's borrow site. According to Martin County's Capital Improvement Project schedule there another offshore placement project is planned for FY25/26. By following this approach, the Corps has the ability to fund the offshore transfer costs, which, in turn, eliminates a significant cost (projected at between \$5M to \$10M per event) to the County and State taxpayers. Under a separate cost-share agreement between the Town and County, approximately, 100,000 cy of the total placed in the borrow site was transferred onshore through the 2018/19 beach nourishment project. The remaining 350,000 cy +/- of inlet sand plus any additional sand transferred in the interim will be transferred from the offshore borrow site to the beach under a future joint agreement. Including the joint project completed in 2015/16, which saved an estimated \$8,690,000, the regional approach to sediment management has already resulted in mutual economic benefits to the County and State, estimated to be in excess of \$20,000,000.

This approach meets the requirement set in F.A.C. 62B-36.007, Section (3) for Project Cost Sharing which states, "*Cost savings which occur due to the planned geographic coordination or sequencing of two or more projects between local sponsors, may qualify for additional reimbursement.*"

Accessible Beach Area:

The accessible beach area is defined by the landward position of the ECL and the seaward position of the design template mean high water line, covering the shoreline span between R-73 and R-117. Based on these defined positions, the total accessible beach area within the limits of the Town's beach project is 3,199,014 square feet or 73.44 acres.

Recreational and Economic Benefit:

The Town's property zoning designations have been incorporated into the beach access maps provided with this application. Additionally, a table summarizing the lengths of recreational, open space, commercial and equivalent frontage is provided. The Town's restoration project helps maintain three public beaches available to the Hobe Sound Community (Nathaniel P. Reed Hobe Sound National Wildlife Refuge, Hobe Sound Public Beach, and Blowing Rocks Preserve). They are heavily used by the public and local fishermen. Thus, the restoration project is essential to long-term public access and beach utilization for the Refuge.

The Town's beach nourishment program has led to the stability of the beaches south of R-111 with the exception of a section of beach south of the Blowing Rocks headland feature (critically eroded beach designated between R-126 and R-127.4). The Blowing Rocks Preserve is publicly accessible providing beach access along 5,053 feet of preserve property which overlaps and abuts the critically eroded section south of R-126. Due to the presence of exposed hardbottom the Town conducts dune only projects in this segment to protect residences and the primary evacuation route south off the island.

Mitigation of Inlet Effects:

As a result of the establishment of the St. Lucie Inlet and subsequent extreme shoreline losses along the north end of Jupiter Island, the Town was forced to establish its own beach nourishment program to address longshore sediment supply interruption and shortfalls in inlet bypassing. The nourishment activities conducted by the Town since the 1970's meet the goals and objectives established in the Strategic Beach Management Plan, partially mitigating for those shortfalls. Additionally, the Town established a special tax district for the purposes of funding beach nourishment in 1982, taxing all properties located within the Town's corporate limits (passed by the State under HB 709).

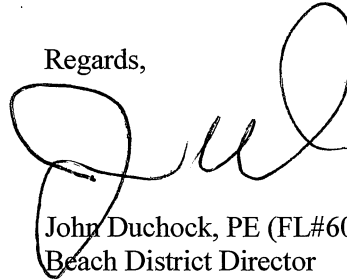
The St. Lucie Inlet is managed by the local sponsor (Martin County) under an inlet management plan originally adopted in 1995, then updated in 2016. Pursuant to Specific Condition No. 2 of the Joint Coastal Permit (No. 0269814-014-JM) the start date for determining the quantity of sand to be bypassed is September 24, 2014. Based on the Department's regulatory determination of September 24, 2014 as the start date for assessing bypass achievements, the following table represents the current bypass record for the St. Lucie Inlet.

St. Lucie Inlet Bypass Record (September 2014 to July 2022)

2022 Updated St. Lucie Inlet Bypass Record							
South on Jupiter Island (R53-R111)				North (R-34-R-40)			
Date Completed	Volume (cy) ¹	Location	Placement	Date Completed	Volume (cy) ¹	Location	Placement
2014 ²	0			2014 ²	0		
2015 ²	0			2015 ²	0		
2016 ²	500,000	R-75 to R-111	Beach	2016 ²	335,252	R34.3 to R40	Bathtub Beach/ Sailfish Point ⁴
2017	0			2017	75,460	R34.3 to R40	Bathtub Beach/ Sailfish Point ⁴
2018	483,000		offshore	2018	147,102	R34.3 to R40	Bathtub Beach/ Sailfish Point ⁴
2019	531,592	R-73 to R-115	Beach ³	2019		R-36 to R-40	Bathtub Beach/ Sailfish Point
2020	0			2020		R-36 to R-38	Bathtub Beach/ Sailfish Point ⁴
2021	0			2021	180,975	R-36 to R-38	Bathtub Beach/ Sailfish Point ⁴
2022	447,399	R-45 to R-51	Beach ⁵	2022	0	R-36 to R-38	Bathtub Beach/ Sailfish Point ⁴
Total Bypass volume	1,478,991			Total Bypass volume	738,789		
Years of IMP Bypass	9			Years of IMP Bypass	7		
Annual average bypass	164,332			Annual average bypass	105,541		
Bypass objective	161,000			Bypass objective	34,000		
Percentage of bypass objective	102.07%			Percentage of bypass objective	310.42%		
Budget Balance	121,991	Volume South		Budget Balance	500,789	Volume North	
¹ Beach placement volumes confirmed by pre-post placement surveys. Offshore placement volumes based on contractor pay quantities.							
² Start date of bypass record is September 2014 (refer to SC#2 JCP 0269814-014-JM). IMP objective for 2014 is pro-rated at 184,000 cy/yr for 3 months to be 46,000 cy south. IMP objective for 2015 is 184,000 cy south. No northerly bypass required 2014/2015. IMP update adopted January 2016 with updated bypass objective of 161,000 cy/yr south and 34,000 cy/yr north for 2016 and future years.							
³ 100,000 cy of inlet sand transferred from offshore borrow site to beach. Contractor issues with rock halted further transfer.							
⁴ Actual volume of sand bypassed from inlet north. Refer to FAC 62B-41 for definition of sand bypassing.							
⁵ North of nodal point at R-53 (transport direction north into the inlet).							

The Town greatly appreciates the support that has been provided by the State as a regulatory agency and a grant partner. We look forward to working alongside all local and regional stakeholders to advance and improve beach and inlet management programs with projects that best meet the needs of all and produce the most cost-effective solutions moving forward. I am available at your convenience to review the Town's requests and to offer further details if needed. As always, thank you for your time and consideration.

Regards,

A handwritten signature in black ink, appearing to read 'JD', is positioned above the printed name and title.

John Duchock, PE (FL#60457)
Beach District Director

Attachments: Draft Funding Resolution FY23/24; Summer 2021 Physical Monitoring Report; Public Access/Public Lands Maps; Department of Revenue Just Values Spreadsheet

cc: Tony Figueroa-Vivenez, FDEP
Michael Ventura, Town Manager

RESOLUTION NO. XXX

A RESOLUTION OF THE TOWN OF JUPITER ISLAND BEACH PROTECTION DISTRICT, MARTIN COUNTY, FLORIDA, REQUESTING THAT THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION ACCEPT THE DISTRICT'S APPLICATION FOR PROGRAM PARTICIPATION IN THE DEPARTMENT'S BUDGET PLAN AND TO APPROVE THE REQUEST FOR FUNDS FOR THE RESTORATION OF THE TOWN'S BEACHES AS AUTHORIZED UNDER PROVISIONS OF CHAPTER 161, FLORIDA STATUTES, FLORIDA BEACH MANAGEMENT PROGRAM FOR THE FISCAL YEAR 2023-24.

WHEREAS, the Jupiter Island Beach Protection District is a Special District authorized by the Laws of Florida, Chapter 82-331, House Bill No. 709, to protect the beach and lands within the Town of Jupiter Island; and

WHEREAS, the Town of Jupiter Island has suffered from continuing beach erosion, primarily due to its location south of the St. Lucie Inlet, the condition of which starves the beaches within the Town by intercepting the normal littoral drift sand moving along the coast; and

WHEREAS, the Florida Department of Environmental Protection has adopted the St. Lucie Inlet Management Plan which identifies the Town's shoreline as being impacted by the St. Lucie Inlet; and

WHEREAS, the Florida Department of Environmental Protection has listed the Town's beaches as critically eroding; and

WHEREAS, the Town of Jupiter Island Beach Protection District is committed to preserving the sandy beach for storm protection, marine turtle nesting habitat, and environmental and recreational purposes; and

WHEREAS, the Town of Jupiter Island Beach Protection District has levied local taxes to improve the health of the coastal system by mitigating erosion problems and is willing to serve as the local sponsor of the projects; and

WHEREAS, a project was permitted, designed, and constructed in 2020/21 placing 663,000 cubic yards within the Town's permitted beach template at a cost of \$13,117,000; and

WHEREAS, the beach restoration project will continue to be monitored as required by the permit authorizations granted and conditions required by the State and Federal government agencies; and

WHEREAS, the beach restoration project meets the Department's guidelines for prioritizing projects for which state financial assistance has been sought pursuant to Chapter 161.161, Florida Statutes; and

WHEREAS, the beach restoration project is consistent with the implementation plan for the St. Lucie Inlet, the Strategic Beach Management Plan, and is consistent with the Florida Department's objectives under Chapter 161, Florida Statutes; and

WHEREAS, the beach restoration project is an element of the Town's long-range beach erosion control plan and the Town supports the Department's beach and coastal management programs; and

WHEREAS, the long-range beach erosion control plan has been submitted in the application for participation in state financial assistance program pursuant to Sections 161.091, 161.101, and 161.161, Florida Statutes.

NOW, THEREFORE, BE IT RESOLVED, that the Jupiter Island Beach Protection District requests the acceptance of this resolution and application for maximum level of financial assistance by the Florida Department of Environmental Protection and inclusion in the Department's Local Government Funding Request for FY2023-24 for beach erosion control projects and requests that the Department enter into a reimbursement agreement with the Town.

PASSED AND ADOPTED THIS 12th DAY OF SEPTEMBER, 2022.

Mayor

Vice Mayor

Commissioner

Commissioner

Commissioner

ATTEST:

Kimberly Kogos, Town Clerk

***Town of Jupiter Island - FY22/23 LGFR Application Backup
Percentage of Commercial/Recreational Frontage***

Date: 7/23/2021

<u>Location</u>	<u>R-Monument range (approx.)</u>	<u>Measured Frontage (lf)</u>	
Nataniel P. Reed Hobe Sound National Wildlife Refuge	R-73 to R-77	3300	
Town Conservation Land	R-77	200	
Nataniel P. Reed Hobe Sound National Wildlife Refuge	R-77	200	
Nataniel P. Reed Hobe Sound National Wildlife Refuge	R-78	300	
Nataniel P. Reed Hobe Sound National Wildlife Refuge	R-79 to R-80	700	
Nataniel P. Reed Hobe Sound National Wildlife Refuge	R-81 to R-82	900	
Martin County Beach Park	R-86	315	
Jupiter Island Beach Club	R-93	610	
Town Conservation Land	R-110	300	
		6825	TOTAL FRONTAGE
		34152	PROJECT LENGTH
		19.98%	PERCENTAGE



FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

Memorandum

TO: CCCL Permit File # MI-596
FROM: Bob Brantly, Coastal Engineering & Geology Group
SUBJECT: Updated 30-year Erosion Projection
DATE: June 15, 2022

This memorandum provides an updated thirty-year erosion projection of the seasonal high-water line based upon additional information obtained by the Department staff.

The subject property is located within the non-federal Jupiter Island Beach Nourishment Project, which has been maintain with period placement of beach-compatible sand since the initial beach restoration was completed in 1971-73. An Erosion Control Line (ECL) was established in 1971. The procedure in *Rule 62B-33.024(2)(d), FAC*, is used for the projection in accordance with subparagraph (d)1.

(d) Beach nourishment or restoration projects shall be considered as follows:

1. Future beach nourishment or restoration projects shall be considered as existing if all funding arrangements have been made and all permits have been issued at the time the application is submitted.

Funding arrangements have been made by the Jupiter Island Beach Protection District, a special taxing district with the same boundaries as those of the Town of Jupiter Island with the Town Commission sitting as the governing body of the District, and with the authority to levy a special tax on properties within the District to protect the Town beaches.

Consolidated Joint Coastal Permit Number 0186991-008-JC was issued to the Town of Jupiter Island on June 20, 2018, authorizing period beach nourishment using sand from an offshore borrow area. The permit expiration date is June 20, 2033.

2. Existing beach nourishment or restoration projects shall be considered to be either a one-time beach construction event or a long-term series of related sand placement events along a given length of shoreline provided such projects have resulted in and will continue to result in the

June 15, 2022

presence of sand seaward of the ECL. The Department shall make a determination of remaining project life for such existing beach nourishment or restoration projects based on the project performance, the likelihood of continuing nourishments, the funding arrangements, and consistency with the Strategic Beach Management Plan adopted by the Department for managing the state's critically eroded shoreline and the related coastal system.

The project is considered a long-term series of related sand placement events that have resulted in the presence of sand seaward of the ECL. (reference DEP Mean High Water (MHW) Files)

A determination of the remaining project life of the beach nourishment project is based upon the following information pursuant to the criteria in subparagraph (d)2.

Project Performance: The longevity of sand placement from periodic beach nourishment events has been sufficient to economically and administratively maintain the beach and dune for the protection of upland development from the erosion of major storm events.

Likelihood of Continuing Nourishments: The Town has the administrative capability to continue beach nourishments through the statutorily created beach protection district that employs a beach district director, and retains professional engineers, surveyors and biologist. State and Federal environmental permits do not contain terms and conditions that would inhibit future beach nourishment. Given the established scope of the project and its past performance, the project is eligible for streamline permitting of future periodic beach nourishment. A permitted offshore sand source in State waters contains approximately 9 million cubic yards of sand sufficient for approximately 21 years of future beach nourishment based on the past 19 years of beach nourishment.

Funding Arrangements: As stated above, funding arrangements have been made by the Jupiter Island Beach Protection District, a special taxing district with the same boundaries as those of the Town with the authority to levy a special tax on properties within the District to protect the Town beaches. The District was established 40 years ago in 1982. Most recently, the District governing board approved a detailed 12 year Financial Plan allocating funds for specific project expenses.

Consistency with the Strategic Beach Management Plan (SBMP): The strategy for this area is to maintain the project through monitoring and nourishment; and continue inlet sand bypassing in accordance with the updated IMP. The beach and inlet management activities conducted by the Town and Martin County are consistent with the SBMP, and the inlet management component of the SBMP.

Discussion: The number of years of remaining life of the project is not constrained by the project performance or the likelihood of continuing beach nourishments. The project's compliance with environmental permitting criteria and the Strategic Beach

Management Plan, and the administrative capabilities of the Jupiter Island Beach Protection District, demonstrate the ability to continue the project open-endedly into the future.

The availability of a sand source is a critical factor in the ability to continue beach nourishment into the future and currently the project has a supply for 21 years. There are other potential sand sources offshore of Jupiter Island that can add to the supply, but have not yet been investigated.

The recently approved 12 year Financial Plan approved by the District does not imply a limit to the remaining project life, but is simply a planning document to manage expenditures. The funding arrangements are assured by the ability of the District to levy a special tax on property within the Town, and the generally known high value of properties within the Town. The 40-year history of beach management by the District and the financial capability of the community both support the continuation of the project open-endedly into the future.

Recommendation: A remaining project life of 21 years from the last beach nourishment in 2021 is recommended based upon the known supply of sand for future beach nourishments. The remaining project life could certainly be longer, perhaps 30 years or more, given the other factors used in determining remaining project life and the probability of additional sand supply offshore of Jupiter Island.

3. The pre-project SCR shall be calculated as set forth in subparagraphs 62B-33.024(2)(a)1. through 3., F.A.C., derived from historical shoreline data for the time period before the first restoration occurred. The Department will use the following stepwise procedure to determine the 30-YEP on a beach with a beach restoration or nourishment project. (see Figures 2 and 3):

62B-33.024(2)(a)1. through 3., F.A.C.,

1. The SCR shall be derived from historical shoreline data obtained from coastal topographic surveys and maps, controlled aerial photography, and similar sources approved by the Department. Data from periods of time that clearly do not represent current prevailing coastal processes acting on or likely to act on the site shall not be used.

2. The SCR shall include the zone spanned by three adjacent Department reference monuments on each side of the site. A lesser or greater number of reference monuments can be used as necessary to obtain a rate representative of the site, and a rationale for such use shall be provided.

3. In areas that the Department determines to be either stable or accreting, a minus one-foot per year SCR shall be applied as a conservative estimate.

The pre-project SCR is based on available historical data prior to the initial beach restoration and maintenance beach nourishment beginning in 1971-73. The St. Lucie

June 15, 2022

Inlet was originally opened in 1892 and continues to have the most significant effect on the Jupiter Island beaches. Between 1926 and 1929 the north jetty was constructed. The inlet is a partial barrier to littoral sediment transport to the adjacent beaches of Jupiter Island. Although a program of mechanical bypassing or transfer of sand from the inlet is conducted, the inlet continues to act as a partial barrier to littoral sediment transport; hence, the pre-project time periods represent current prevailing coastal processes.

The available historical data includes maps from coastal topographic surveys and controlled aerial photography depicting the mean high-water shoreline:

1928-1930 Survey Map Series United States Coast & Geodetic Survey

1942-1948 Survey Map Series United States Geodetic Survey

1966-1967 Survey Map Series United States Coast & Geodetic Survey

1971-1973 Survey Map Series National Ocean Survey

Also, the Army Corps of Engineers conducted surveys in 1946 and 1964. Comparative positions of the shoreline over this period are tabulated in table D-1 of appendix D of the Beach Erosion Control Study on Martin County, Fla., prepared by the Corps and dated September 16, 1968.

An unknown deviation between measured survey data and the actual position of the mean high-water shoreline is present in all surveys, more so for older topographic surveys and shorelines derived from controlled aerial photography. Of the two sources of historical data, the Corps survey profiles more reliably record the shoreline position changes.

The Corps' surveyed profiles designated as 22-S, 23-S, and 24-S are located in close proximity to DEP survey reference monuments R-104, R-106, and R-108, respectively. These three Corps' survey profiles approximate the zone spanned by three adjacent Department survey reference monuments on each side of the site of the subject property. The published shoreline change for the Corps surveyed profiles are 45 feet recession at 22-S, 80 feet recession at 23-S, and 40 feet recession at 24-S over the 18 year period between 1946 and 1964. The pre-project shoreline change rate for this segment of beach is 2.9 feet per year recession.

a. The Department shall determine the distance between the MHWL and the SHWL, using either a pre-project survey or current locations of these lines, as appropriate. That distance will be added landward to the location of either an established ECL or pre-project surveyed MHWL, as appropriate, to establish the pre-project SHWL (PSHWL).

The Department conducted a pre-project survey in 1971 at reference monuments R-103, R-106, R-107 and R-108. The average distance between the MHWL and SHWL using the

June 15, 2022

1971 survey is 28.9 feet. A comparison of the 1971, 2018 and 2020 survey profiles at each monument were examined. Due to the beach nourishments, the 1971 survey profiles depict more eroded beach conditions than the recent surveys, and hence, are more appropriate representations of the beach at the conclusion of the project life.

b. The difference between 30 years and the expected remaining life (in years) of the existing beach nourishment project will be multiplied by the pre-project SCR to determine the projected distance of erosion. The projected distance of erosion will be added landward to the location of the PSHWL calculated under subparagraphs 62B-33.024(2)(a)1. through 3., F.A.C., and will represent the 30-YEP.

30-YEP = -(SCR X (30 years - Credit)) + (pre-project SHWL to MHWL distance) feet landward of the ECL.

30-YEP = -{-2.9 ft/yr X (30 years - 20 years)} + 28.9 feet landward of the ECL.

30-YEP = 57.9 feet landward of the ECL (approximately 25.5 feet seaward of the 1972 Setback Line drawn on the survey).

4. If the Department is unable to scientifically determine a pre-project erosion rate due to a lack of pre-project data, the Department shall set the 30-YEP along an existing, reasonably continuous, and uniform line of construction that has been shown to be not unduly affected by erosion.

There is sufficient data to determine a pre-project erosion rate.

BB

PUBLIC ACCESS

HOBE SOUND NATIONAL WILDLIFE REFUGE
HSNWR PROPERTY AT R-81
HOBE SOUND COUNTY BEACH
BLOWING ROCKS PRESERVE

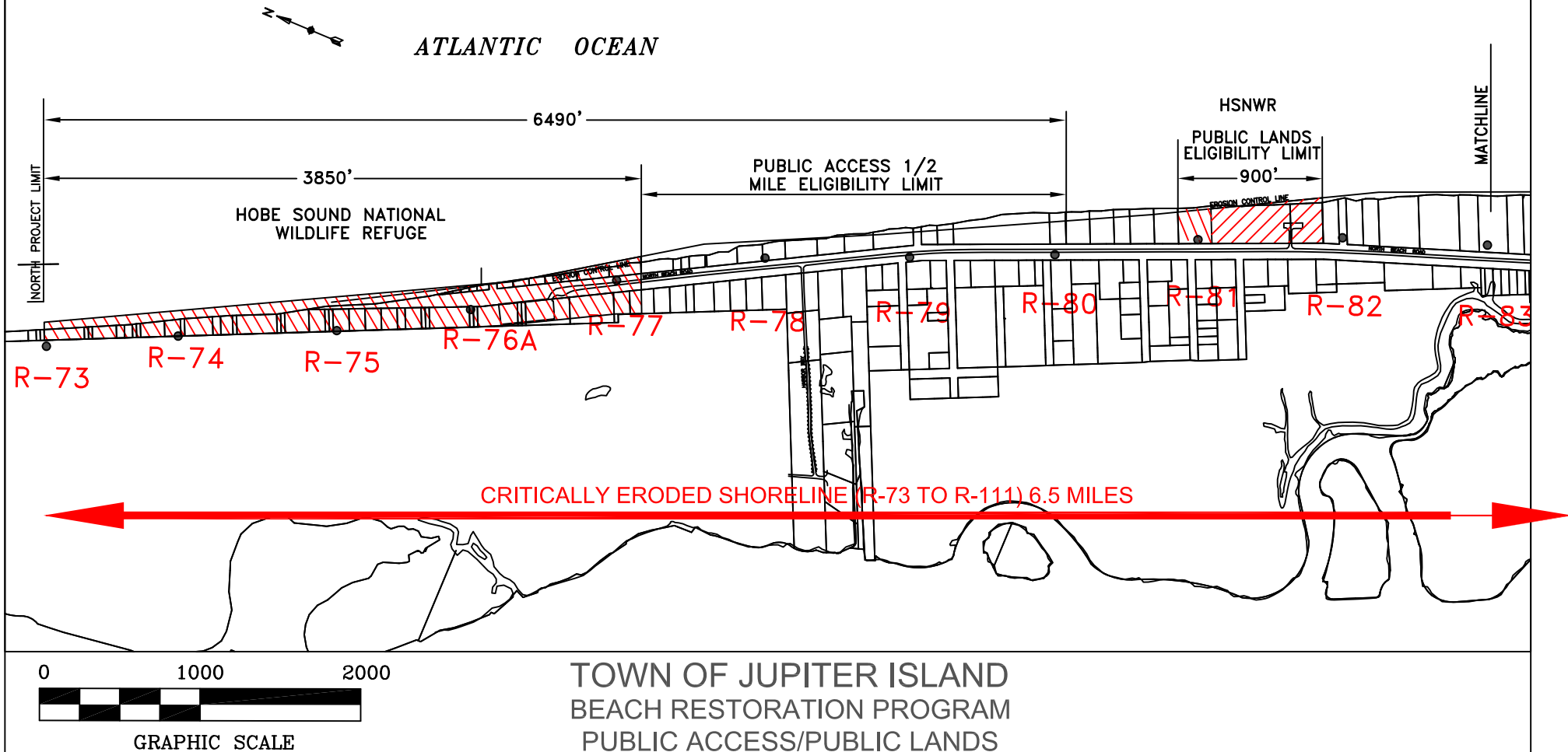
PARKING SPACES

100
0
100
30

AREAS DETERMINED TO BE PUBLICLY ACCESSIBLE:

R73 TO 150' SOUTH OF R77	6,490 FEET
115' NORTH OF R81 TO 120' NORTH OF R82	900 FEET
50' NORTH OF R86 TO 625' SOUTH OF R87	5,593 FEET

- * HSNWR contains 91 marked parking spaces. During peak season, parking is allowed on the shoulder and corner areas, resulting in a total parking capacity of 100+ vehicles.
- * Hobe Sound Public Beach contains 100 marked parking spaces.
- * Blowing Rocks Preserve contains 20 marked and 10 unmarked parking spaces.



PUBLIC ACCESS

HOBE SOUND NATIONAL WILDLIFE REFUGE
HSNWR PROPERTY AT R-81
HOBE SOUND COUNTY BEACH
BLOWING ROCKS PRESERVE

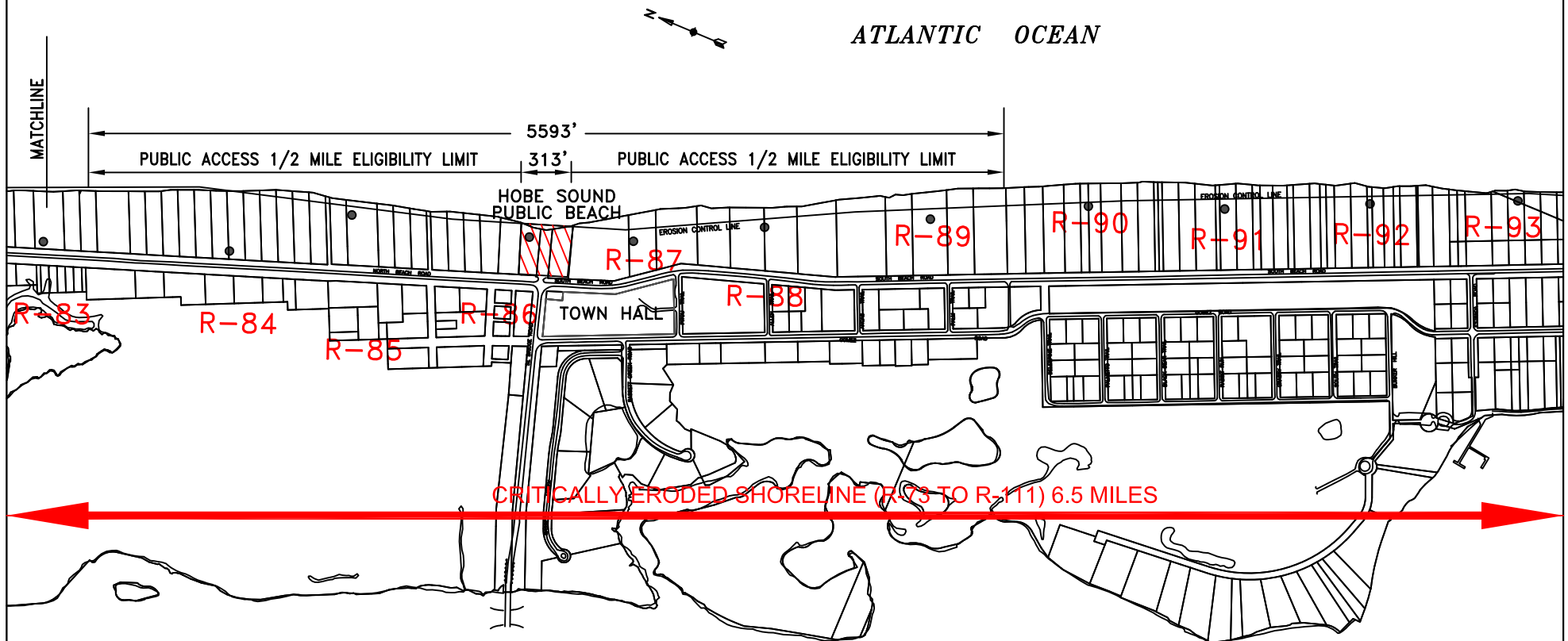
PARKING SPACES

100
0
100
30

AREAS DETERMINED TO BE PUBLICLY ACCESSIBLE:

R73 TO 150' SOUTH OF R77	6,490 FEET
115' NORTH OF R81 TO 120' NORTH OF R82	900 FEET
50' NORTH OF R86 TO 625' SOUTH OF R87	5,593 FEET

- * HSNWR contains 91 marked parking spaces. During peak season, parking is allowed on the shoulder and corner areas, resulting in a total parking capacity of 100+ vehicles.
- * Hobe Sound Public Beach contains 100 marked parking spaces.
- * Blowing Rocks Preserve contains 20 marked and 10 unmarked parking spaces.



0 1000 2000



GRAPHIC SCALE

TOWN OF JUPITER ISLAND
BEACH RESTORATION PROGRAM
PUBLIC ACCESS/PUBLIC LANDS



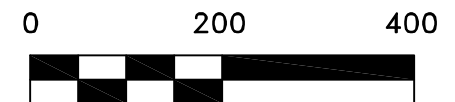
LEGEND:

-  FDEP MONUMENT
-  PROPERTY LINE
-  PUBLIC LANDS
-  PUBLIC ACCESS ELIGIBILITY LIMIT
-  PARKING AREAS

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS



SCALE: 1" = 200'



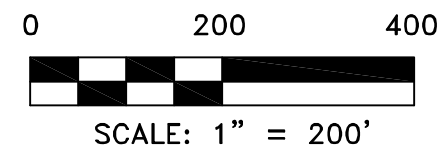
LEGEND:

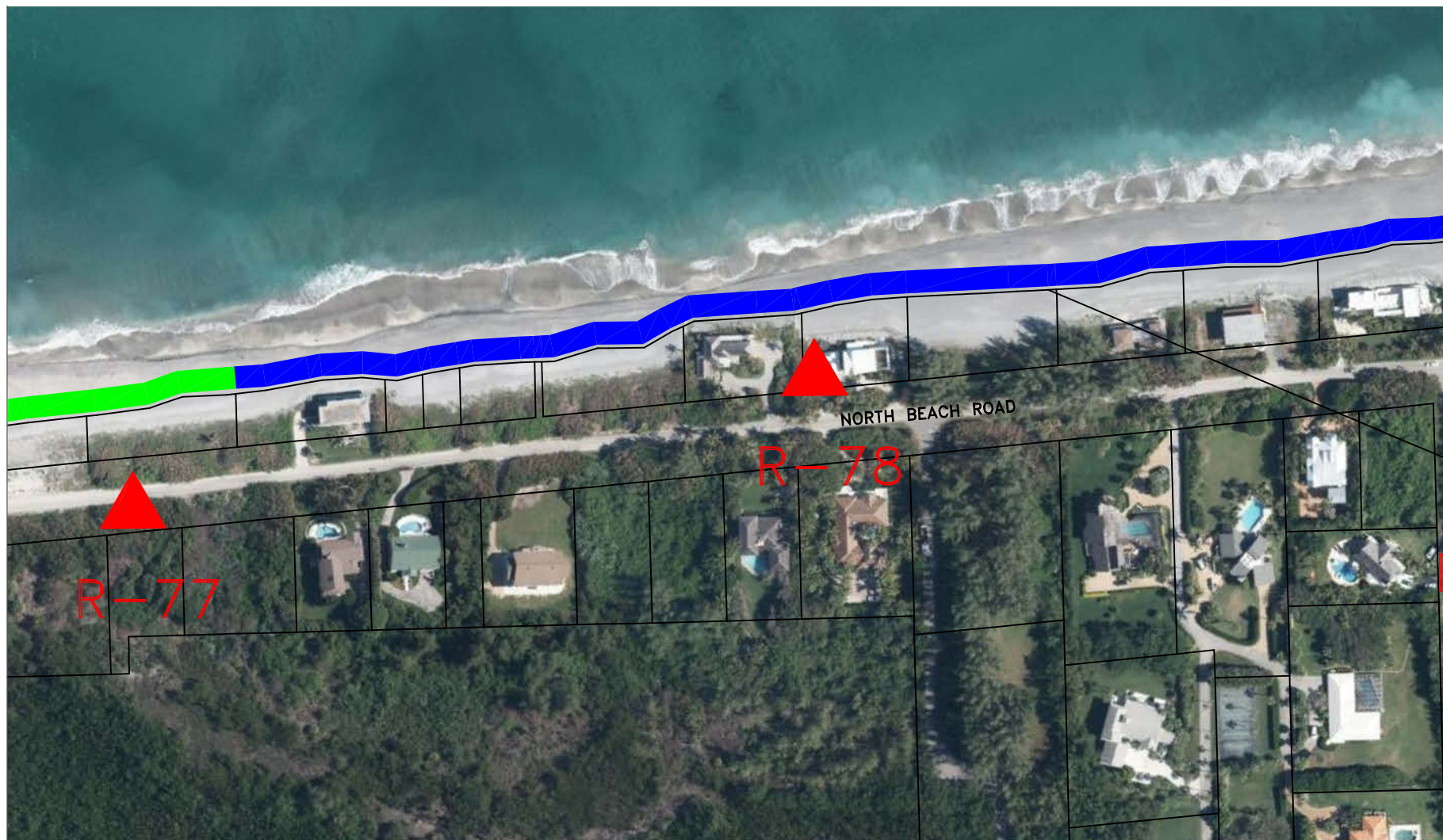
-  FDEP MONUMENT
-  PROPERTY LINE
-  PUBLIC LANDS
-  PUBLIC ACCESS ELIGIBILITY LIMIT
-  PARKING AREAS

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS





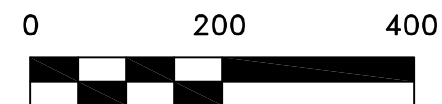
LEGEND:

-  FDEP MONUMENT
-  PROPERTY LINE
-  PUBLIC LANDS
-  PUBLIC ACCESS ELIGIBILITY LIMIT
-  PARKING AREAS

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS



SCALE: 1" = 200'



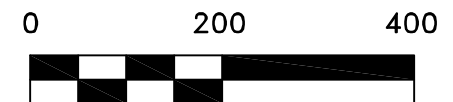
LEGEND:

-  FDEP MONUMENT
-  PROPERTY LINE
-  PUBLIC LANDS
-  PUBLIC ACCESS ELIGIBILITY LIMIT
-  PARKING AREAS

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS



SCALE: 1" = 200'



LEGEND:



FDEP MONUMENT



PROPERTY LINE



PUBLIC LANDS



PUBLIC ACCESS ELIGIBILITY LIMIT



PARKING AREAS

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS

0 200 400



SCALE: 1" = 200'



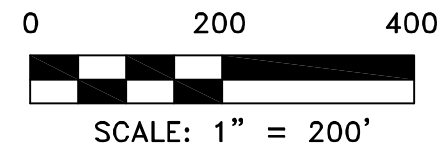
LEGEND:

-  FDEP MONUMENT
-  PROPERTY LINE
-  PUBLIC LANDS
-  PUBLIC ACCESS ELIGIBILITY LIMIT
-  PARKING AREAS

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS





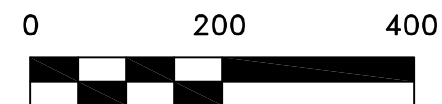
LEGEND:

-  FDEP MONUMENT
-  PROPERTY LINE
-  PUBLIC LANDS
-  PUBLIC ACCESS ELIGIBILITY LIMIT
-  PARKING AREAS

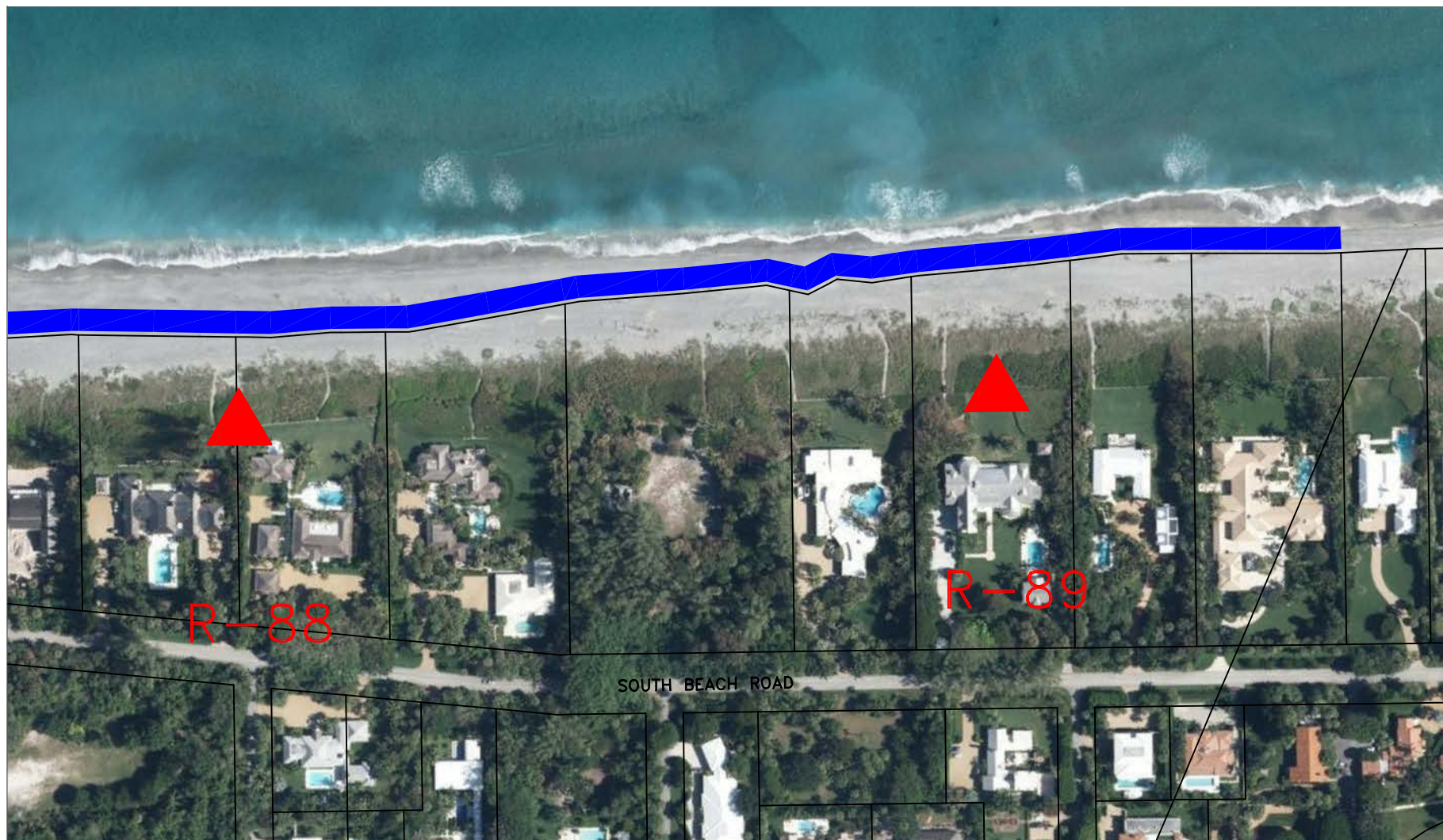
TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS



SCALE: 1" = 200'



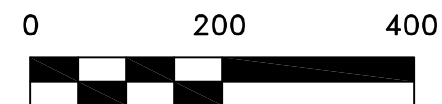
LEGEND:

-  FDEP MONUMENT
-  PROPERTY LINE
-  PUBLIC LANDS
-  PUBLIC ACCESS ELIGIBILITY LIMIT
-  PARKING AREAS

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

PUBLIC ACCESS/PUBLIC LANDS



SCALE: 1" = 200'



REV	REVISIONS	DATE	APP

LEGEND

FDEP R-MONUMENT

EROSION CONTROL LINE

1/4 MILE BUFFER

PROPERTY LINES

PUBLIC PARKING

RETAINING WALLS

LAND USE LEGEND

RESIDENTIAL

CONSERVATION

RECREATION

PUBLIC DISTRICT

GBA

ENGINEERS ★ SURVEYORS

GAHAGAN & BRYANT ASSOCIATES, INC.

3802 WEST BAY TO BAY BLVD., STE. B-22

TAMPA, FLORIDA 33629-6826

TEL: 813.831.4408 FAX: 813.831.4216

WWW.GBA-INC.COM

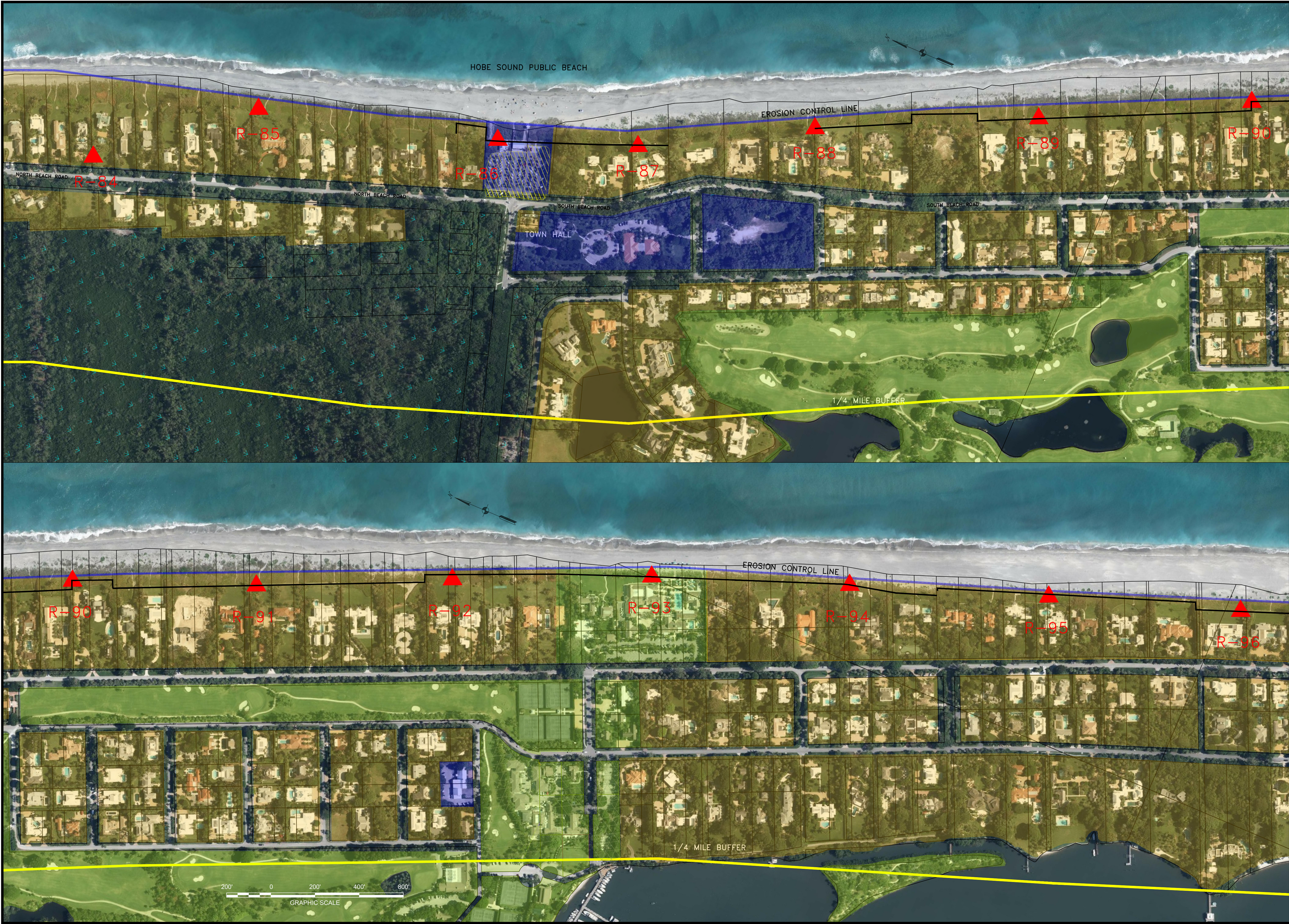
FLORIDA C.A. #2247

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

LAND USE DESIGNATION AND PROPERTY VALUES BUFFER

R-72 TO R-84	
DWG DATE:	22 JULY 2022
DWG NAME:	2022 FY FUNDING.DWG
DRAWN BY:	MGT
CHECKED BY:	CMB
ENGINEER:	CMB
SCALE:	AS SHOWN
SHEET NO.	1 OF 5
REVISION NO.	0



REV	REVISIONS	DATE	APP

LEGEND

FDEP R-MONUMENT

EROSION CONTROL LINE

1/4 MILE BUFFER

PROPERTY LINES

PUBLIC PARKING

RETAINING WALLS

LAND USE LEGEND

RESIDENTIAL

CONSERVATION

RECREATION

PUBLIC DISTRICT

ENGINEERS ★ SURVEYORS

GAHAGAN & BRYANT ASSOCIATES, INC.

3802 WEST BAY TO BAY BLVD., STE. B-22

TAMPA, FLORIDA 33629-6826

TEL: 813.831.4408 FAX: 813.831.4216

WWW.GBA-INC.COM

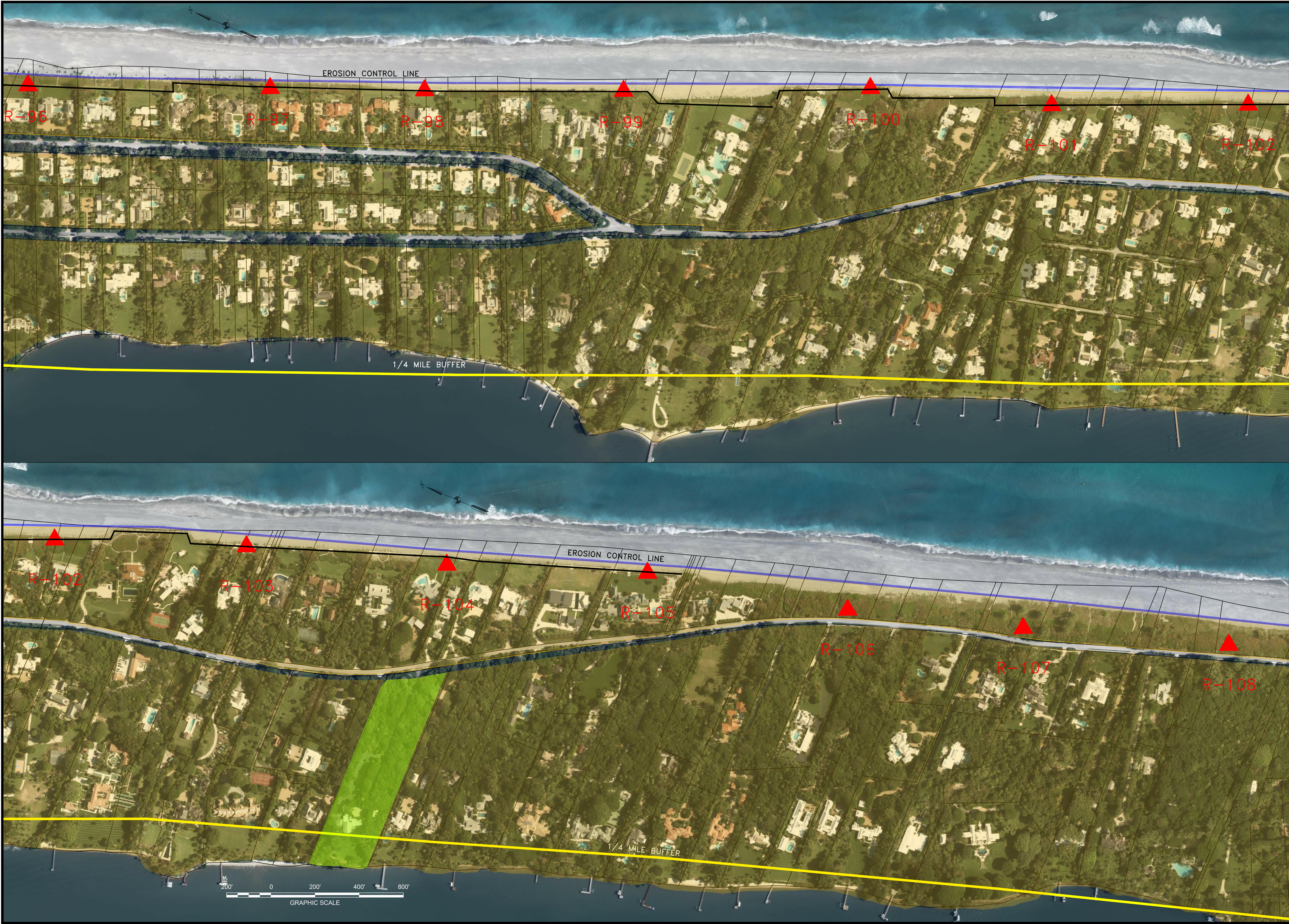
FLORIDA C.A. #2247

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

LAND USE DESIGNATION AND PROPERTY VALUES BUFFER

R-84 TO R-96	
DWG DATE:	22 JULY 2022
DWG NAME:	2022 FY FUNDING.DWG
DRAWN BY:	MGT
CHECKED BY:	CMB
ENGINEER:	CMB
SCALE:	AS SHOWN
SHEET NO.	2 OF 5
REVISION NO.	0



REV	REVISIONS	DATE	APP

LEGEND

FDEP R-MONUMENT

EROSION CONTROL LINE

1/4 MILE BUFFER

PROPERTY LINES

PUBLIC PARKING

RETAINING WALLS

LAND USE LEGEND

RESIDENTIAL

CONSERVATION

RECREATION

PUBLIC DISTRICT

ENGINEERS ★ SURVEYORS

GAHAGAN & BRYANT ASSOCIATES, INC.

3802 WEST BAY TO BAY BLVD., STE. B-22

TAMPA, FLORIDA 33629-6826

TEL: 813.831.4408 FAX: 813.831.4216

WWW.GBA-INC.COM

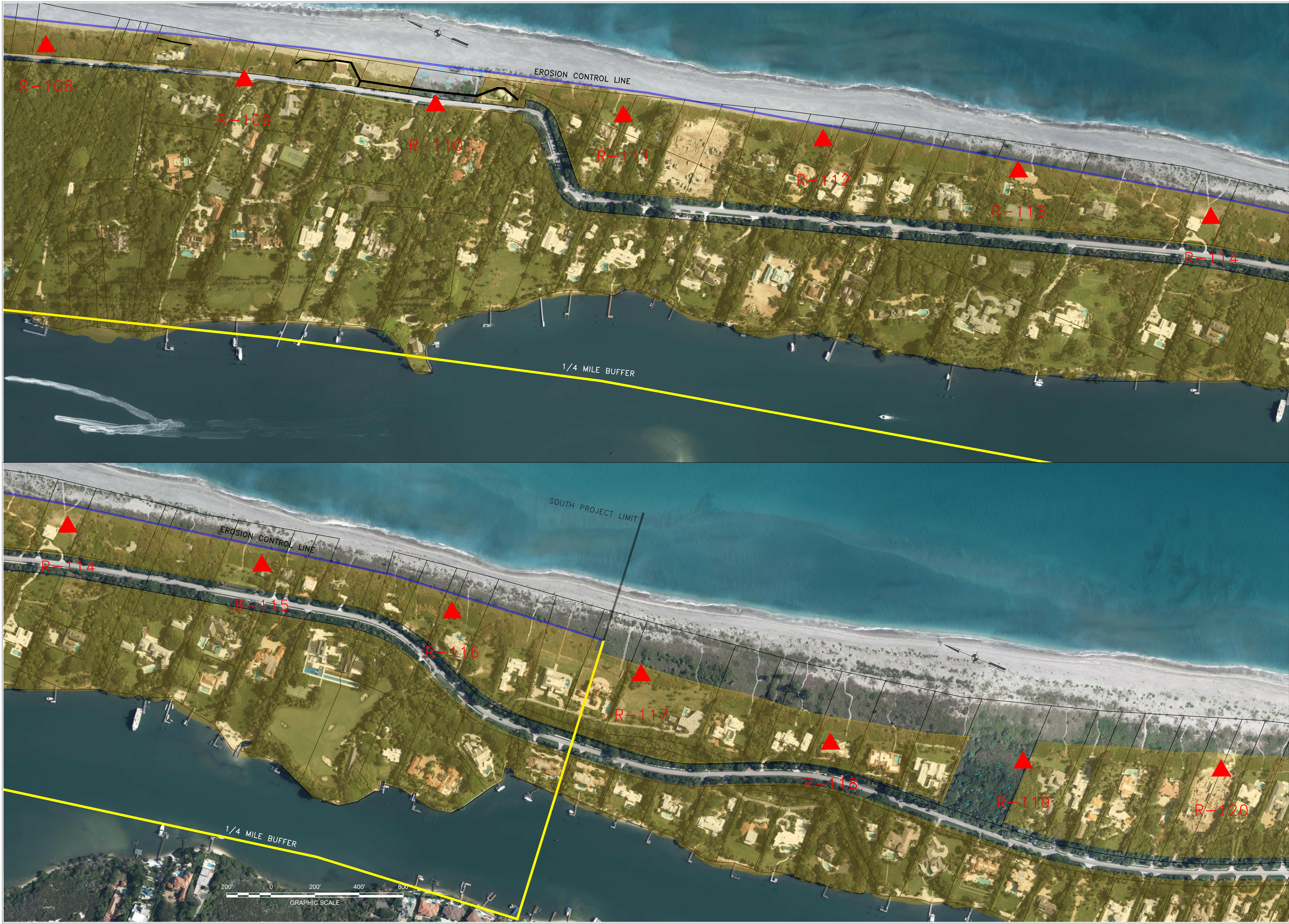
FLORIDA C.A. #2247

TOWN OF JUPITER ISLAND

BEACH RESTORATION PROGRAM

LAND USE DESIGNATION AND PROPERTY VALUES BUFFER

R-96 TO R-108	
DWG DATE:	22 JULY 2022
DWG NAME:	2022 FY FUNDING.DWG
DRAWN BY:	MGT
CHECKED BY:	CMB
ENGINEER:	CMB
SCALE:	AS SHOWN
SHEET NO.	3 OF 5
REVISION NO.	0



REV	REVISIONS	DATE	APP

LEGEND

FDEP R-MONUMENT

EROSION CONTROL LINE

1/4 MILE BUFFER

PROPERTY LINES

PUBLIC PARKING

RETAINING WALLS

LAND USE LEGEND

RESIDENTIAL

CONSERVATION

RECREATION

PUBLIC DISTRICT

ENGINEERS ★ SURVEYORS

GAHAGAN & BRYANT ASSOCIATES, INC.

3802 WEST BAY TO BAY BLVD., STE. B-22

TAMPA, FLORIDA 33629-6826

TEL: 813.831.4408 FAX: 813.831.4216

WWW.GBA-INC.COM

FLORIDA C.A. #2247

TOWN OF JUPITER

ISLAND

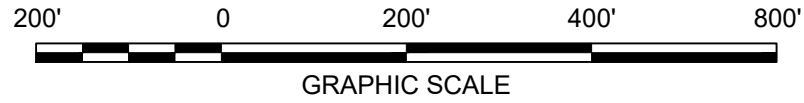
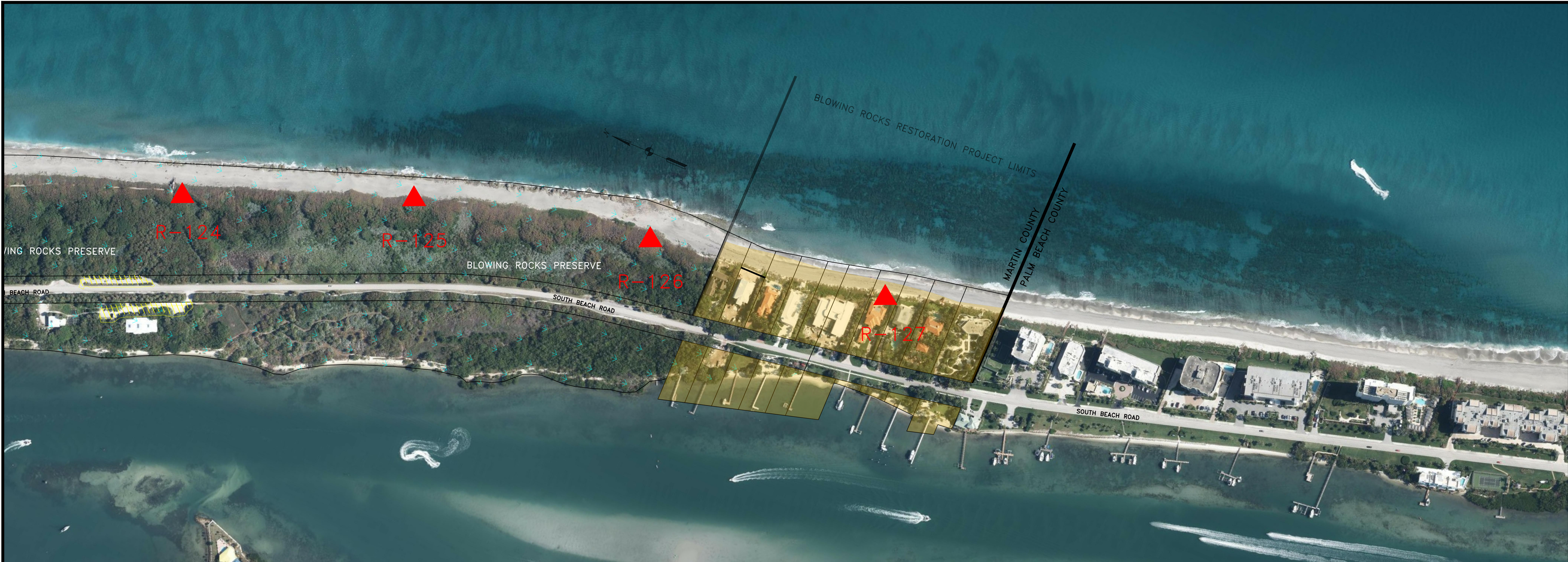
BEACH RESTORATION

PROGRAM

LAND USE DESIGNATION AND

PROPERTY VALUES BUFFER

R-108 TO R-120	
DWG DATE:	22 JULY 2022
DWG NAME:	2022 FY FUNDING.DWG
DRAWN BY:	MGT
CHECKED BY:	CMB
ENGINEER:	CMB
SCALE:	AS SHOWN
SHEET NO.	4 OF 5
REVISION NO.	0



REV	REVISIONS	DATE	APP

LEGEND

FDEP R-MONUMENT

EROSION CONTROL LINE

1/4 MILE BUFFER

PROPERTY LINES

PUBLIC PARKING

RETAINING WALLS

LAND USE LEGEND

RESIDENTIAL

CONSERVATION

RECREATION

PUBLIC DISTRICT

ENGINEERS ★ SURVEYORS

GAHAGAN & BRYANT ASSOCIATES, INC.

3802 WEST BAY TO BAY BLVD., STE. B-22

TAMPA, FLORIDA 33629-6826

TEL: 813.831.4408 FAX: 813.831.4216

WWW.GBA-INC.COM

FLORIDA C.A. #2247

TOWN OF JUPITER

ISLAND

BEACH RESTORATION

PROGRAM

LAND USE DESIGNATION AND

PROPERTY VALUES BUFFER

R-124 TO R-127

DWG DATE:

22 JULY 2022

DWG NAME:

2022 FY FUNDING.DWG

DRAWN BY:

MGT

CHECKED BY:

CMB

ENGINEER:

CMB

SCALE:

AS SHOWN

SHEET NO.

5 OF 5

REVISION NO.

0