City of Fort Lauderdale
Habitat Conservation Plan for Special Events

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List of Acronyms and Abbreviations

°C	Celsius
°F	Fahrenheit
ac	Acre
BCSTCP	Broward County Sea Turtle Conservation Program
BID	Business Improvement District
cbm	Cubic Meter
CCL	Curved Carapace Length
CCCL	Coastal Construction Control Line
City	The City of Fort Lauderdale
cm	Centimeter
CRA	Community Redevelopment Agency
cy	Cubic Yard
DPS	Distinct population segment
EAI	Ecological Associates, Inc.
ESA	Endangered Species Act
FBHCP	Florida Beaches Habitat Conservation Plan
FDEP	Florida Department of Environmental Protection
FSD	Florida Shorebird Database
ft	Foot/Feet
ft^2	Square feet
FWC	Florida Fish and Wildlife Conservation Commission
ha	Hectare
HCP	Habitat Conservation Plan
in	Inch
ITP	Incidental Take Permit
IUCN	International Union for the Conservation of Nature
km	Kilometer
m	Meter
m^2	Square Meters
mi	Mile
mm	Millimeter
mtDNA	Mitochondrial DNA
NBMTP	Nesting Beach Marine Turtle Permit
NBMTPH	Nesting Beach Marine Turtle Permit Holder
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NSU	Nova Southeastern University
SCL	Straight Carapace Length
Service	U.S. Fish and Wildlife Service
SLR	Sea Level Rise
USACE	U.S. Army Corps of Engineers
yr	Year

EXECUTIVE SUMMARY

The City of Fort Lauderdale (City) Habitat Conservation Plan (HCP) for Special Events was developed as part of an application package to the U.S. Fish and Wildlife Service (Service) for an Incidental Take Permit (ITP) for take of federally listed sea turtles that may occur as a result of the permitting of special events on City beaches. The ITP and HCP will ensure that impacts to sea turtles from events taking place during the sea turtle nesting season (expanded under the HCP to include early and late nesting and hatching) are addressed through a comprehensive conservation strategy. City beaches serve as nesting habitat for three species of sea turtle, protected under the Endangered Species Act of 1973 (ESA): the loggerhead sea turtle (*Caretta caretta*), the green sea turtle (*Chelonia mydas*), and the leatherback sea turtle (*Dermochelys coriacea*). Two other species of sea turtle are also included in this HCP due to the potential for these species to either nest or strand (due to illness, or injury) on the beach: the Kemp's ridley sea turtle (*Lepidochelys kempii*) and the hawksbill sea turtle (*Eretmochelys imbricata*). The City is seeking an ITP for two reasons: 1) to ensure that any permitted special event is in compliance with the ESA; and 2) to streamline and improve the permitting process with the State and Federal government for special events the City wishes to endorse in support of their community growth and development.

In order to mitigate for impacts to sea turtles or their habitat, a mitigation program was designed to enhance the quality of the nesting habitat within the City. The City commits to implementing three main projects over the next 25 years to accomplish this goal. Projects include: (1) funding a staff position to support lighting code enforcement efforts for the City's coastal properties, (2) dune restoration and enhancement program to maintain the quality and quantity of healthy dune habitat within the City, and (3) assisting coastal residents and businesses with lighting compliance by hosting a grant program that will support the retrofitting of non-compliant beachfront lighting. In addition to the three main projects, the City will maintain an educational Sea Turtle website for species-related laws, regulations, and ordinances; sea turtle friendly lighting information; Fort Lauderdale sea turtle initiatives; lighting retrofit projects within the City; and City, County, and State contact information for reporting injured sea turtles. Funding for these programs and initiatives will be generated through the assessment of special event mitigation fees for all events held on the beach between February 15 and November 15. These fees will vary according to the level of impacts expected from the event.

The City will also dedicate funds and/or staff to an HCP Coordinator position that will serve as a liaison between departments and government agencies to ensure that the HCP is implemented according to the standards and protocols outlined in this document. The City commits to implementing this HCP and will provide all funds necessary for complete implementation, including, management of the HCP program, monitoring, and reporting.

For more information on the City HCP and Fort Lauderdale Sea Turtles, please visit:

- https://www.fortlauderdale.gov/departments/city-manager-s-office/habitat-conservation-plan
- https://www.fortlauderdale.gov/neighbors/fort-lauderdale-s-sea-turtles
- https://www.sunny.org/beaches-and-beyond/sea-turtles/

1.0 INTRODUCTION

1.1 OVERVIEW

Fort Lauderdale is a city located along the Atlantic Ocean in Broward County on the southeast coast of Florida (Figure 1-1). With a population estimated at 182,437 in 2019 (U.S. Census Bureau 2019), it is the largest of the County's 31 municipalities and the County seat. The City of Fort Lauderdale is among the ten largest municipalities in Florida. Throughout this document, Fort Lauderdale or "the City" shall mean the City of Fort Lauderdale.

The City is known for its beaches. Although Fort Lauderdale now supports a diverse range of industries, tourism remains a major economic driver with approximately 10 km (6.2 mi) of sandy beaches being a main tourist attraction. A large portion of the City's beaches is fronted by "The Strip," a promenade running along oceanside highway A1A lined with upscale outdoor restaurants, bars, boutiques, and luxury hotels. In the 1950s, it became a favorite spring break destination for college students. Today, Fort Lauderdale beaches are known as a hotspot for outdoor recreation and entertainment.

Fort Lauderdale's beaches also attract new businesses to the area and enrich the quality of life for the City's residents. To diversify beachfront experiences for residents and visitors alike, the City has promoted a series of special events along its coastline. These events include large-scale air shows, volleyball tournaments, music concerts, athletic events, and various smaller gatherings. Some events attract tens of thousands of spectators and may involve lighting, stages, and other equipment on the beach. Depending on event size, location, equipment involved, and time of year, these events have the potential to impact several species of sea turtles that utilize the City's beaches as nesting habitat.

Each summer, at least three species of sea turtles (loggerhead sea turtle, green sea turtle, and leatherback sea turtle) use the City's beaches as nesting habitat. In recent years (2015-2020), a maximum of 1,230 nests were recorded during 2016. All species of sea turtles nesting in Florida are protected by state and federal laws, and all are listed as either threatened or endangered. Section 9 of the ESA of 1973, as amended, prohibits activities that "harm" or "harass" federally listed species; thus, any impacts to sea turtles incidental to the City's special events would be a violation of the ESA. Harm is further defined as an act that results in significant habitat modification or degradation which actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Therefore, any activity or omission including disruption or modification of habitat occupied by listed species which significantly alters their behavior or creates the likelihood of injury or death may constitute a violation of Section 9 of the ESA. If a person is found guilty of violating Section 9 of the ESA, potential criminal penalties include fines of up to $200,000 and/or up to six months imprisonment per violation. However, the ESA anticipates occasional conflicts between federally protected species and traditional, lawful land uses; thus Section 10 defines a mechanism to avoid such conflicts through the permitting of "incidental take." Section 10 of the ESA establishes a process by which individuals or entities can apply for a permit that authorizes incidental take (take that occurs as a result of the carrying out of otherwise lawful activities) of species protected under the ESA. If issued, an Incidental Take Permit (ITP) authorizes the occurrence of certain types of impacts, provided a Habitat Conservation Plan (HCP) has been developed to minimize and mitigate those impacts to the "maximum extent practicable" and all conditions of the ITP are met.

This HCP describes how the City of Fort Lauderdale plans to address impacts to sea turtles associated with its special events program. For the Service to adequately evaluate whether an ITP can be issued for the requested activity, the HCP must outline specific elements to ensure issuance criteria are met. These criteria, outlined in Section 10 of the ESA, are the following:

- Taking will be incidental;
- The Applicant will, to the maximum extent practicable, avoid, minimize and mitigate the impacts of such taking;
- The Applicant will ensure adequate funding for the HCP and will provide procedures to deal with unforeseen circumstances;
- The taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild;
- The Applicant agrees to implement other measures that the Service requires as being necessary or appropriate for the purposes of the HCP; and
- The Service has received other assurances that the HCP will be implemented.

The remainder of this chapter will introduce key elements of the HCP including purpose and need, plan area, permit duration, regulatory framework and coordination, and alternatives considered.

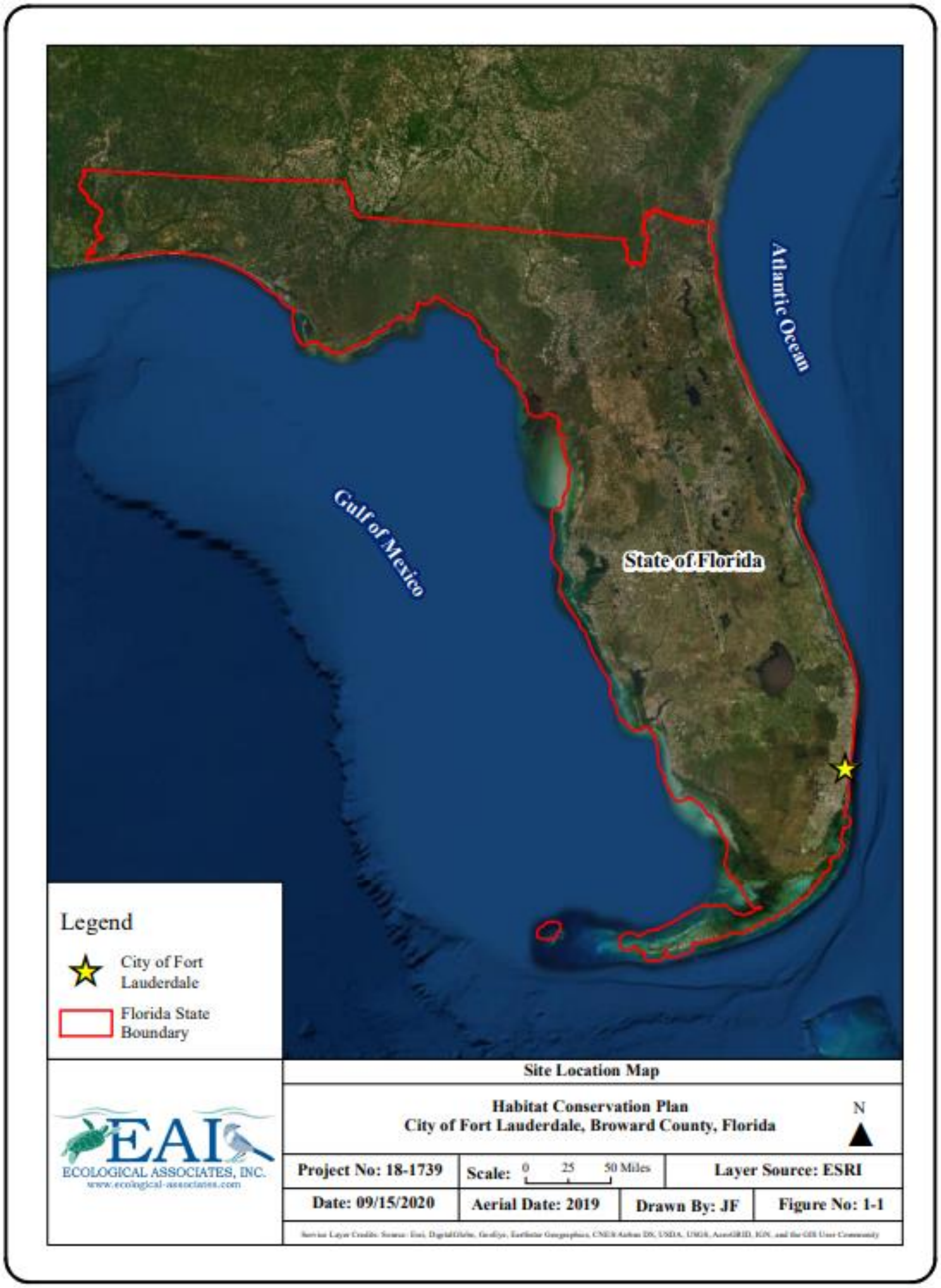

Figure 1-1. Site Location Map.

1.2 PURPOSE AND NEED

The ESA recognizes that endangered and threatened species "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people" (Service 2011, p. 1). Therefore, it provides a process whereby the ecosystems on which endangered species depend can be conserved and provides a mechanism for this conservation. This document was prepared by the City to support an ITP application under Section 10(a)(1)(B) of the ESA to the Service. This application is requesting federal authorization for impacts to sea turtles that are incidental to otherwise lawful special events permitted by the City of Fort Lauderdale, as described below. The purpose of this HCP is to ensure that special events produced on City beaches comply with state and federal laws protecting sea turtles and other wildlife while continuing to promote tourism and economic vitality.

Currently, the City permits special events on the beach and advises special event permit applicants that their event may require special monitoring and a permit from the Florida Department of Environmental Protection (FDEP). Special event permit applicants may be required to obtain a Coastal Construction Control Line (CCCL) permit from the FDEP, which requires review by the Florida Fish and Wildlife Conservation Commission (FWC) to evaluate impacts to sea turtles if the event takes place during the sea turtle nesting season. This process can be time consuming for larger events. Furthermore, even if the City and event applicants follow the conditions of their FDEP permits, they are still vulnerable to federal violations under the ESA and state violations under Florida Statute if impacts to sea turtles occur.

This HCP establishes standard conditions for special event permits issued by the City, agreed to in advance by the FWC and the Service, that will ensure events avoid and minimize impacts to sea turtles. These changes will reduce uncertainty and streamline the existing permitting process by minimizing the need for individual review of most event applications by the FWC and ensuring events are conducted in compliance with ESA, Florida Statute, and Florida Administrative Code requirements. This HCP will also help special event applicants understand what event-related factors impact sea turtles and their nesting habitat and will bring consistency to special event permit conditions. Event assessments and mitigation fees will be correlated with the level of biological threats associated with an event. This will allow event applicants to design their events in a way that minimizes impacts and thus reduces associated mitigation fees.

1.2.1 History of Special Events

In the mid-1980s, Fort Lauderdale experienced tremendous growth in the number of special events held within City limits. By 1990, there were over 80 events organized by various groups including community non-profit agencies, charitable organizations, the City's Parks and Recreation Department, and for-profit companies. These events were a significant economic driver and attracted hundreds of thousands of attendees. This growth led the City to re-evaluate its approach towards servicing event organizers and addressing complaints concerning traffic and street closings, event quality, event impacts on businesses and communities, and trash and sanitation. Many of the problems were the result of a lack of communication among all parties affected by the events, understanding of the City's policies and procedures, experience by event organizers, and event budgets that did not include adequate resources for proper implementation of State conditions and logistical support.

In response to the above, the Parks and Recreation Department formed a team to review the special event application process and event policies and procedures, with the goal of streamlining the application process, encouraging improvement in event quality, allowing more time for department staff to assist event organizers with planning and logistics, and ensuring that all required permits are secured. This resulted in changes proposed to the City Code of Ordinances, Article V, Chapter 15, entitled Outdoor Events, which were approved by the City Commission on December 17, 1991 and adopted on January 7, 1992. In 1991, the Parks and Recreation Department was authorized by the City Commission to establish an ad hoc Citizens Task Force to evaluate the impacts of special events on local businesses and communities. On November 5, 1992, the Citizens Task Force drafted and presented recommendations before the City Commission for consideration.

Today, the City of Fort Lauderdale hosts more than 200 special events annually, including concerts, festivals, athletic events, and fireworks displays. Although many events occur outside of the official sea turtle nesting season, which in Broward County runs from March 1 through October 31 (Florida Administrative Rule 62B-33.002), some sea turtle nests may still be present on the beach. These events, if improperly conducted and managed, can potentially impact sea turtle nests, disturb nesting females and hatchlings, and degrade the beach and dune habitat. Potential impacts to sea turtles from special event activities include encounters with special event structures and equipment, crushing of unmarked nests by heavy equipment, deterrence of emerging nesting females due to event crowds or structures, hatchling disorientation due to lighting and fireworks, and compaction of sand. Under the current permitting process, the FWC carefully reviews special event activities and issues targeted permit conditions for the protection of sea turtles aimed at reducing impacts. Measures addressing placement and construction criteria of structures and equipment, lighting specifications, use of heavy equipment, and sea turtle monitoring surveys to locate and mark nests help to minimize the potential for impacts. However, the potential for incidental take remains due to the possibility that the minimization measures recommended may not be sufficient to ensure the protection of nesting and hatchling sea turtles, particularly during large events that last multiple days.

Many of the larger events take place early during the nesting season and well before hatching season. According to the Broward County Sea Turtle Conservation Program (BCSTCP), there was only one larger event where a nest was located within the event area, and that nest was well protected with no known impacts resulting from event activities. Since 2016, there have been only two reports of known direct impacts to sea turtle adults, hatchlings, or nests causally related to special event activities, both of which occurred in May 2019. In one case, a loggerhead turtle encountered fencing associated with a special event while nesting but was able to successfully nest before returning to the ocean. Another loggerhead turtle encountered a tent pole and returned to the ocean without nesting. These incidents were reported to the FWC on standardized Marine Turtle Obstructed Nesting Attempt Report Forms by the BCSTCP. Overall, there have been minimal documented impacts resulting from special events thus far.

1.3 PLAN AREA

Fort Lauderdale is located in Broward County on the southeast coast of Florida between Miami-Dade and Palm Beach Counties (Figure 1-2). It has 10 km (6.2 mi) of continuous beachfront property uninterrupted by inlets or ocean passes. The City hosts special events directly on or adjacent to the beach. Therefore, the Plan Area is comprised of two elements:

1) Sea turtle nesting habitat: This portion of the Plan Area encompasses 48.2 ha (119 ac) of beach and dune habitat, bounded on the north side by Flamingo Avenue and on the south side by the Stranahan River/Port Everglades Inlet (Figure 1-3). The eastern and western limits of sea turtle nesting habitat are the mean high water line of the Atlantic Ocean and the landward edge of beach/dune habitat or solid/armoring structure (See also Figures A-1 through A-6 in Appendix A).

2) Beach-adjacent properties: This portion of the Plan Area encompasses approximately 10.1 ha (25 ac) of property at four specific locations immediately adjacent to the beach where the City hosts special events (Figure 1-4). Events held at these locations may involve the use of temporary artificial lighting that could potentially impact sea turtles and nesting habitat within the beach/dune portion of the Plan Area. Permanent lighting at these locations is not covered under the HCP and will be required to follow the standard state permitting process, including review and approval by the FWC. These locations (and typical events held at each) are:

- Las Olas Oceanside Park, 300 S Fort Lauderdale Beach Boulevard
    - Friday Night Sound Waves
- Fort Lauderdale Aquatic Complex, 501 Seabreeze Boulevard
    - Swimming meets/events
- Bahia Mar Yachting Center, 801 Seabreeze Boulevard
    - Fort Lauderdale International Boat Show
- DC Alexander Park, SE 5th and A1A
    - Private parties, food/music festivals

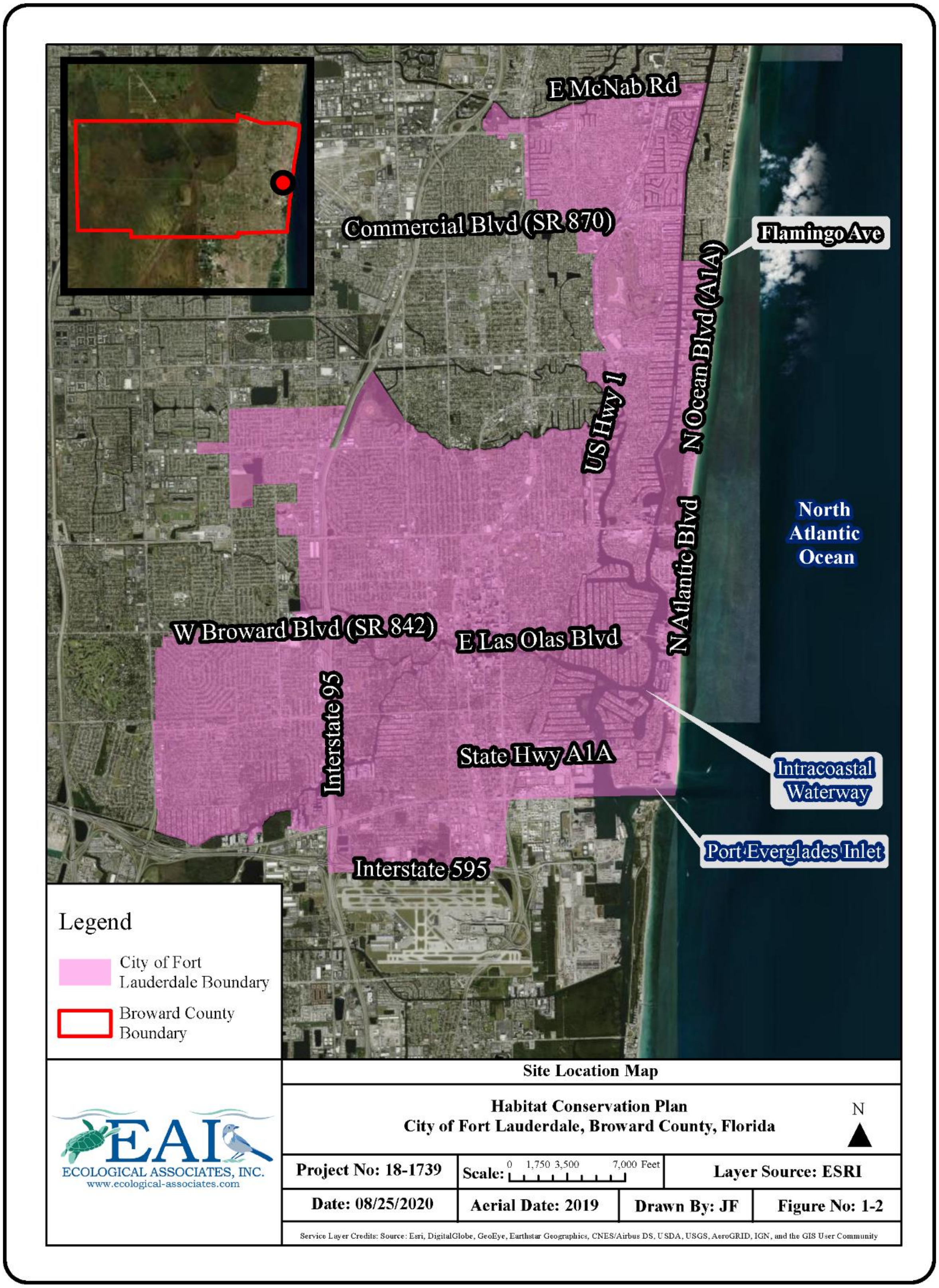

Figure 1-2. City of Fort Lauderdale boundary map.

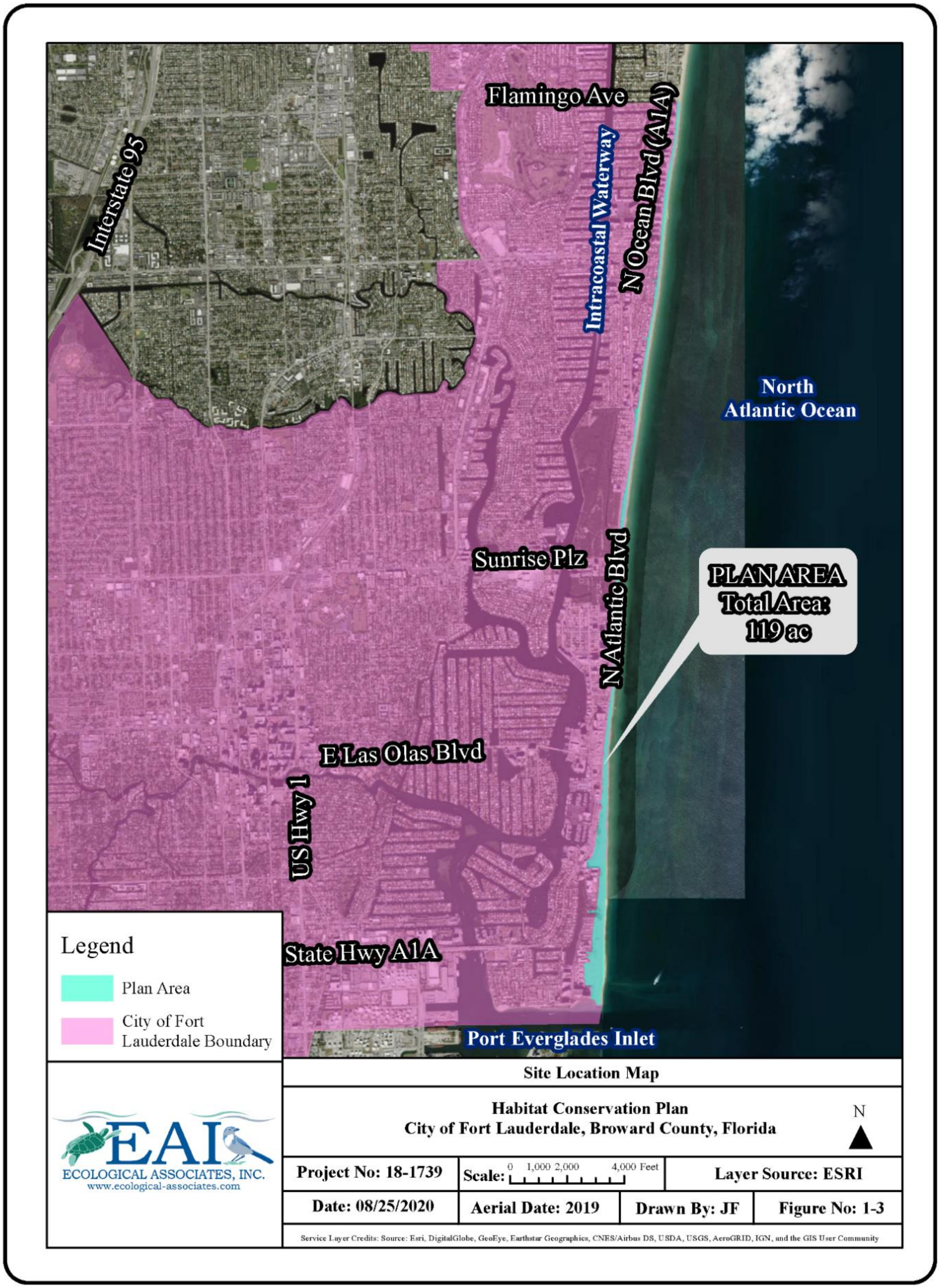

Figure 1-3. Nesting beach habitat within the Plan Area.

Figure 1-4. Locations of the four beach-adjacent properties included in the Plan Area.

1.4 PERMIT DURATION

The City is seeking an ITP for an initial term of 25 years. The first year of the ITP will involve a phased implementation of the FWC review process, described in greater detail in Chapter 6. During Years 1 and 2, the City will meet with the Service, FWC, and FDEP to address any immediate issues with HCP implementation or the conservation program. Annual reports will be submitted to the Service after each year of implementation, and a thorough review will be performed after Year 5 of Plan implementation. During this review, City staff will meet with the Service and FWC to perform an analysis of the HCP, discuss implementation challenges, assess the effectiveness of and compliance with minimization measures, assess the progress of mitigation measures and update performance metrics, and make any necessary adjustments to minimization measures, permit implementation, or mitigation fee calculations. Through adaptive management, the City will make any necessary adjustments to the HCP to improve its performance.

1.5 REGULATORY SETTING

A federal ITP is an authorization for “take” as defined by the ESA and may be issued to a non-federal entity that has the authority to permit or regulate the activity that is causing incidental take. In this HCP, the City of Fort Lauderdale is that entity, and the City’s Parks and Recreation Department is responsible for receiving, reviewing, and authorizing special event applications for events that occur within City limits. Applicants are required to fill out a special event application, submit a site plan and associated narrative, pay an application fee ($200 to $1000, depending on the number of days in advance of the event the application is received), and attend a meeting with the Parks and Recreation Department to discuss the event (Figure 1-5). The current process is primarily focused on managing the human health and safety elements of the event. A Special Events Guide drafted by the City (Appendix B) provides a “Green Checklist” to encourage event planners to consider the environmental impact of their event. The manual also provides information to the applicant about special requirements for events that occur during sea turtle nesting season. It is currently the responsibility of the applicant to comply with state and federal regulations concerning protected species and their habitats.

In Florida, applicants wishing to hold events on the beach must also obtain a CCCL permit from the FDEP, which has regulatory authority over the State’s beaches and dunes (very small events with no structures or lighting may not require a CCCL permit). Depending on the size and scope of the event, the FDEP may issue an Individual or Area-wide permit (these require a $500 application fee) or a field permit (no application fee). Each CCCL permit contains standard conditions with which the applicant must comply in order to prevent harm to the coastal system. The FDEP also has regulatory authority to manage impacts to sea turtles and their habitat, so, if the event occurs during nesting season, the FDEP will consult with the FWC for a review of the special event’s potential impacts to sea turtles. The FWC will recommend conditions specifically tailored to the event that serve to avoid take. However, if the impacts (take) cannot be avoided entirely, then an applicant will be liable for any take not authorized under an ITP. Florida Statute 379.2431(1) specifically requires the FDEP to recommend denial of an activity that could result in take unless the activity is covered for incidental take under the ESA.

The City is seeking an ITP for two reasons: 1) to ensure that any special event that is permitted is in compliance with the ESA; and 2) to align and improve the permitting process with the State and Federal government for special events that the City wishes to hold on its beaches. Under the current system, the City is not protected from take liability resulting from special events, and some of the larger events historically hosted on the City's beaches pose significant threats to sea turtles. Finding ways to allow the events to proceed in a manner that completely avoids impacts has been difficult. Thus, the Service and the FWC have recommended that the City obtain an ITP because of concerns of liability and minimization measures provided for events scheduled during nesting season may not be sufficient to ensure protections for sea turtles and completely avoid take.

Image courtesy of the City of Fort Lauderdale.

Figure 1-5. Special event application process flow map (pre-HCP).

While take could be managed on an individual event basis with separate ITPs issued to the event applicants, that scenario would be problematic from several standpoints. First, event sponsors would be responsible for preparing their own HCPs, a time-consuming process that requires expertise in the process and subject matter. There would be challenges in hosting events in a timely manner because the Service has limited capacity to process ITPs and these time lags could prevent events from occurring, which does not meet the desire of the City to support events. Second, the City would have reduced influence on the location, timing, crowd sizes, and other aspects of special events. Ultimately, this piece-meal approach to regulating special events would result in a less effective conservation strategy and more regulatory responsibility on individual applicants than a single comprehensive and City-wide approach encompassed by an HCP.

This HCP is intended to serve the City by streamlining the special event review and approval process and creating a uniform mitigation strategy. It establishes a standard set of conditions (minimization measures) by which event applicants must abide in order to carry out their events, ultimately reducing the time it takes for events to receive approval from state agencies (FDEP and FWC).

1.6 THE HCP PLANNING PROCESS

Since 2016, state and federal agencies expressed concerns to the City and special event applicants of impacts to nesting sea turtles during the nesting season. Review of event plans for the City and state was an intricate process and required significant participation by the FWC's Imperiled Species Management Section to evaluate impacts associated with each event and craft permit conditions that would avoid take altogether. Based on the events the applicants wanted to provide and the City wanted to host, ultimately it was not possible to completely avoid take of sea turtles. Thus, the City chose to move forward with pursuing an ITP and developing an HCP for special events on City beaches in coordination with the FWC's Division of Habitat and Species Conservation. The City received a Service Section 6 HCP Planning Grant, and Ecological Associates, Inc. (EAI) was contracted to prepare the HCP.

The first step in the HCP planning process was to kick off the project with a meeting between City representatives and EAI. This meeting identified project goals and objectives, defined data needs, and examined a project timeline. The kickoff meeting was held on May 17, 2019.

One of the City's primary concerns related to development of an HCP was the impact it could have on stakeholders. Therefore, one of the first steps undertaken in the planning process was to engage stakeholders to identify social, economic, environmental, and other key factors that should be considered during the HCP development. Two main affected groups were identified during the stakeholder engagement process; the regulated community (Economy Group), and those involved in protected species conservation (Resource Group). The Economy Group consisted of those entities that have historically applied for special event permits or beachfront businesses that derive economic benefit from special events. The Resource Group consisted of organizations involved in sea turtle or other biological monitoring on City beaches as well as those having a regulatory role or general interest in protected species conservation. On October 1, 2019, two stakeholder meetings were convened to address the individual concerns of these groups; a list of invitees is provided below.

List of invitees:

Economy Group (Attended Y/N)	Resource Group (Attended Y/N)
Beach Business Improvement District (BID) Advisory Committee (N)	Broward County Environmental Planning and Community Resilience Division (Y)
Beach property owners' associations (N)	Broward County Port Everglades (N)
City of Fort Lauderdale (Y)	City of Ft. Lauderdale (Y)
City of Ft. Lauderdale Beach Community Redevelopment Area (Y)	Broward County Sea Turtle Conservation Program (Y)
City of Fort Lauderdale Code Compliance (Y)	Sea Turtle Awareness Rescue Stranding (STARS) (Y)
City of Fort Lauderdale Parks and Recreation Dept. (Y)	Sea Turtle Oversight Protection (STOP) (Y)
City of Ft. Lauderdale Nighttime Economy Team (Y)	Sierra Club (Y)
Live Nation (Tortuga Music Festival) (N)	South Florida Audubon (Y)
Pride Fort Lauderdale (Y)	Broward County Sea Turtle Conservation Program (Y)
Rock The Ocean/Tortuga Music Festival (Y)	Sea Turtle Awareness Rescue Stranding (STARS) (Y)
Sustainability Advisory Board (formerly Coastal Coalition) (N)	Sea Turtle Oversight Protection (STOP) (Y)
Swatch (or other) volleyball tournaments (N)	
The Chappell Group (Y)	
The Ritz-Carlton (Y)	
TravelHost Media Group (Y)	

An agenda was prepared for each meeting and covered a variety of topics, including an introduction to habitat conservation planning, the need for a plan within the City, the regulatory requirements underlying the process, and factors that must be considered in developing the HCP, particularly minimization and mitigation. A sample agenda is provided below.

Economy Group Meeting Agenda:

Time	Topic	Presenter	Affiliation
9:00-9:05	Welcome and Introductions	Luisa Agathon	City of Fort Lauderdale
9:05-9:15	Review meeting agenda and ground rules	Staff	FWC
9:15-9:40	HCP process outline -What is an HCP? -What changes under an HCP?	Grace Botson	EAI
9:40-10:15	Current special event process -Review of City's permitting process -State/Federal issues -Why is an HCP needed?	Jimmy Sellers	EAI
10:15-10:30	BREAK		
10:30-11:15	Conceptual HCP components -Minimization: Current measures and potential measures -Mitigation: Potential projects/funding mechanisms	Niki Desjardin	EAI
11:15-12:00	Wrap up and next steps -Review meeting actions, decisions, and outstanding issues -Assign action items and due dates -Review HCP schedule and work plan -Clarify next steps	Staff	FWC
12:00	ADJOURN/Close meeting	Luisa Agathon	City of Fort Lauderdale

The FWC provided meeting facilitators to guide the discussion, helping to extract specific concerns and to rank them according to relative importance. The Service attended both meetings to assist in answering questions about the process and the resources. Feedback was gathered from all stakeholders on the types of historical permit conditions that were difficult to meet, where compliance issues typically arose, and the types of mitigation projects preferred by the community. Following the meetings, targeted feedback from specific stakeholders was sought, as needed, to clarify compliance issues associated with minimization measures.

Following the initial stakeholder meetings, the Service, the FWC, the City, and EAI met approximately every month to collaboratively develop the HCP. Meetings between EAI and the City were also held during planning stages to ensure the direction of the HCP was acceptable to departments within the City that would be charged with its implementation. A draft HCP was presented to the City on September 30, 2020. Comments were received and addressed, and a draft

HCP was submitted to the Service and the FWC on February 18, 2021, for subsequent review. Agency comments were received on May 5, 2021. A second round of stakeholder meetings were noticed on the City's social media pages and webpage, and direct emails were sent to the previous list of invitees. Two meetings were held virtually on May 12, 2021 to present the draft plan to the public; the meetings were open to all stakeholders and were not separated by Economy and Resource groups. Following these meetings, EAI and City staff met individually with stakeholders when requested and addressed the remaining agency comments. The final HCP was submitted to the Service in February 2022, followed by an application for the ITP.

1.7 ALTERNATIVES

The ESA requires that applicants for an ITP describe what alternative actions to the take of federally listed species were considered and the reasons why those alternatives were not selected. The following sections describe the various alternatives considered and why the Preferred Alternative was ultimately chosen.

1.7.1 Benefits of the Preferred Alternative

The proposed action described in Section 1.2 and conservation strategy described later in Chapter 6 represent the City's best effort to minimize and mitigate impacts on nesting sea turtles while maintaining and improving the recreational opportunities and economic activity associated with special events on or adjacent to the City's beaches. Under this preferred alternative, developing an HCP and applying for an ITP to cover take associated with the City's special events program, the following benefits are anticipated:

- Streamlining the event application process through the FDEP and FWC;
- Increased environmental oversight and monitoring for compliance with environmental conditions;
- Reduced permitting time;
- Increased flexibility with requested event activities;
- Increased education about sea turtles City-wide;
- Enhanced and restored dune systems; and
- Reduced coastal lighting and enhanced darkened beaches.

Under the current process, events scheduled to occur during the State's official sea turtle nesting season that meet certain criteria under FDEP's CCCL program must be reviewed by the FWC, which imposes measures intended to avoid impacts to sea turtles and their habitat. This review is often lengthy, requiring a significant investment in staff time by both the agencies and the event applicant, and may result in CCCL permit conditions. A major benefit of the City's ITP will be to reduce the need for FWC's routine review of special event applications, particularly for Minor and some Intermediate events. Although event applicants will still need to minimize impacts to sea turtles by complying with the City's special event permit conditions, the new federal take authorization will reduce uncertainty in the permitting process and provide greater flexibility in the timing and nature of proposed activities.

In accordance with the ESA, this section presents alternatives considered in the development of the proposed action that were not selected and the reasons those alternatives were not selected. Three alternatives to the proposed action are discussed in this analysis. None effectively resolve the conflict between current management of special event activities and compliance with the ESA. Alternatives to the proposed action would likely place substantial burdens on the City and special event applicants.

1.7.2 No Action Alternative

Under this alternative, the City would continue to issue special event permits under its existing rules, regulations, and policies without the benefit of protection for incidental take afforded under Section 10 of the ESA. The City does not seek an ITP, the HCP is not implemented, and current special events regulations remain the same. Continued issuance of permits for special events taking place during sea turtle nesting season in the absence of an ITP places the City at risk of penalty under Federal law, such as leaving the City vulnerable to third-party lawsuits and monetary fines, stemming from ESA violations. Although impacts to sea turtles are avoided to the maximum extent practicable via permit conditions issued by the FDEP in consultation with the FWC, incidental take may still occur for which the City may be held liable without an ITP. In addition, state agencies have indicated that certain Major events may not be issued FDEP permits in the future without an ITP in place. Under existing Florida Statutes, applications for FDEP permits resulting in take shall be recommended for denial. Loss of the larger special events during the “shoulder” season (the early or late portion of the nesting season when nesting and hatching activity is minimal) would result in a loss of revenue for the City, County, and local businesses. The Statutes do allow for the FDEP to issue permits if the take is authorized as incidental under the ESA. This request for an ITP for special events in the City of Fort Lauderdale will fulfill that requirement.

This alternative was not selected by the City because it does not alleviate potential penalty for violations of the ESA (i.e., fines, lawsuits). It may result in delays in event permitting and sometimes places conditions on when and how an event is conducted, and some events may not be permitted to occur. Thus, it would not meet the goal of the City to maintain and improve the recreational opportunities and economic activity associated with special events on or adjacent to the City’s beaches. This alternative also deprives sea turtles of the benefits they would otherwise be afforded under the minimization and mitigation programs contained in this HCP (Chapter 6).

1.7.3 Location Alternative

Under this alternative, the City would modify its existing special events programs and policies to exclude its beaches as locations for special events and thereby eliminate the potential for incidental take of sea turtles. This alternative was not selected because the City’s beaches are a prime location for special events and eliminating beach events diminishes the economic and social benefits the City’s tourism industry provides.

The Beach Business Improvement District (BID) Advisory Committee was created in 2007 by the City Commission, and its focus is to promote the beach as a premier tourist destination through sponsorship of special events. Its website (www.myfortlauderdalebeach.com) highlights beach businesses, hotels, restaurants, and upcoming special events (CRA 2020). The City of Fort Lauderdale Community Redevelopment Agency (CRA) was established to enhance the quality of life in three areas within the City, including Central Beach which lies within the Plan Area from Alhambra Street south to the Bahia Mar Beach Resort. The CRA develops and implements strategic community redevelopment plans to expand economic opportunities and foster dynamic commercial and residential environments. The BID and CRA co-sponsor several special events throughout the year, including The Great American Beach Party during Memorial Day weekend.

The largest special event currently taking place on the City's beaches is the multiday Rock The Ocean's Tortuga Music Festival, which was created to generate awareness and funds for ocean conservation, including focuses on sea turtle and shark conservation, coral reef degradation, overfishing, and marine pollution issues. One of the main draws of this event, whose economic impact is valued at $42 million (including hotel taxes, spending, local wages, and direct and secondary spending), is its location on the beach and its springtime date.

The business district along the beach includes shops, restaurants, sidewalk cafes, hotels, and entertainment venues. There are few other locations with infrastructure adequate for supporting larger events within the City due to limitations on attendance capacity of facilities, public parking, transportation, and sanitation considerations. In addition, alternative locations would likely be impacted by increased traffic and noise associated with special events. A possible alternative location is the Broward County Convention Center which is located within the City of Fort Lauderdale; however, it is a County-owned property over which the City has no control.

1.7.4 Timing Alternative

Under this alternative, to minimize the potential for incidental take of sea turtles, special events on the City's beaches would be restricted to the period outside of sea turtle nesting season, which officially begins on March 1 and ends on October 31 each year. This alternative was not selected because the City prefers the flexibility for special events to occur on the beach throughout the year. As previously mentioned, the City's thriving tourism industry is an important economic driver. Many of the events are centered around the summer holidays and limiting the timing during which events can occur would diminish their economic and social benefits.

Additionally, sea turtles are known to nest before March 1, and hatchlings are known to emerge from nests after October 31; occurrences that are becoming increasingly common due to climate change. Thus, limiting events to the period outside of the legal nesting season would likely not prevent all potential take.

A different aspect related to timing is to restrict special events to daylight hours only. While this would eliminate impacts from artificial lighting, other impacts such as compaction, equipment left on the beach overnight, etc. are still likely to occur. Although relatively infrequent, adult females have been observed to nest on the beach and hatchlings have been observed to emerge from nests during daylight hours. The City prefers to retain the flexibility for special events to occur both during the day and at night, thereby maximizing their economic and social benefits.

2.0 COVERED ACTIVITIES

The City of Fort Lauderdale hosts a variety of events on its coastline each year. Some draw tens of thousands of spectators while others are more intimate events, involving only a small group of people. The City's ordinance defines events by the number of attendees and the scope of event activities.

- *Minor events* are those events with a sustained attendance level under five hundred and one (501) persons with no road closures, no alcohol, and no music exemptions. These events require administrative approval and do not require city commission approval.

- *Intermediate events* are those events with a sustained attendance level under five hundred and one (501) persons with a road closure, and/or alcohol, and/or music exemption, or a sustained attendance level between five hundred and one (501) and five thousand (5,000) persons. These events require city commission approval.

- *Major events* are those events with a sustained attendance level over five thousand (5,000) persons. These events require city commission approval.

These events may take place directly on the beach or may be located immediately adjacent to the beach in a parking lot or roadway. Some events include activities that occur both on and off the beach. Other events permitted by the City occur in parks or facilities adjacent to the beach. The Covered Activities under this plan are all events permitted by the City that occur within the Plan Area (on City beaches or at the four beach-adjacent locations described in Section 1.3).

2.1 SUMMARY OF EVENT CHARACTERISTICS

2.1.1 Location

Special events held on the beach in the City of Fort Lauderdale are currently only permitted at Fort Lauderdale Beach Park (FDEP Coastal Range Monuments R-78 to R-80; Figure A-5 in Appendix A), with the exception of the Fort Lauderdale Air show, held on the beach adjacent to Hugh Taylor Birch State Park, between Sunrise Boulevard and 15th Court (R-66 to R-70; Figure A-3 in Appendix A). It is possible, however, that the City could permit a special event anywhere on the beach within City limits, and so the Plan Area includes all of the City's beaches. Events permitted by the City at locations adjacent to the beach include the Fort Lauderdale Boat Show held at the Bahia Mar Yachting Center, Friday Night Sound Waves held at Las Olas Oceanside Park, various events held at DC Alexander Park, and various events held at the Aquatic Complex (Figure 1-4). These four beach-adjacent locations are the only ones included in the Plan Area.

2.1.2 Timing and Frequency

The City currently hosts special events year-round and it is expected that, in the future, the City will continue to carry out special events with a timing and frequency similar to recent years. The 2019 event data was examined to determine the number of events held per month, with particular emphasis on the time of year when impacts to sea turtles are more likely (February 15 – November

15). This time frame was chosen to include months when there is the potential for sea turtle nesting or hatching activity on the beach. In the absence of an ITP, the City and event sponsors were encouraged to hold events during the times of year when there were fewer nesting and hatching turtles i.e., the early season (February) or the early "shoulder" season (March – April).

The City's special events range in number of attendees, area occupied, extent of nighttime lighting, vehicle access areas, overnight structure placement, and duration. The City permitted 47 special events on the beach or at the four beach-adjacent locations in 2019 (Table 2-1). Twenty-one (21) of these events took place on the beach seaward of Ft. Lauderdale Beach Park's parking lot and between R-78 and R-80; one event, the Air Show, took place on the beach between R-66 and R-70.

Table 2-1. Number of special events held within the Plan Area between February 15 and November 15 in the City of Fort Lauderdale during 2019.

Month	Number of Events on the Beach	Number of Events Adjacent to the Beach
February	2	1
March[1]	4	4
April	3	4
May	4	8
June	2	5
July	3	1
August	1	0
September	1	1
October[2]	1	1
November	1	0
Total	**22**	**25**

[1] Includes Tortuga Music Festival since set-up began during March although the rest of the event occurred in April.
[2] Includes the International Boat Show since the event began in October but continued into November.

2.1.3 Beachside Events

The 22 events held on the beach ranged in attendance from 100 to 30,000 people. When classified by attendance alone, these events were distributed as 11 Minor Events (less than 501 attendees), four Intermediate Events (501 – 5,000 attendees), and seven Major Events (greater than 5,000 attendees). Seventeen (17) of these events had a discernable footprint ranging from approximately 9 to 74,867 square meters (m^2; 0.002 to 18.5 ac) and associated structures covering approximately 61 to 11,570 m^2 (660 to 124,537 square feet (ft^2)). Vehicle or pedestrian access matting is typically only associated with the largest events to provide walkways or allow the placement of heavy structures such as stages, platforms or emergency vehicle access; two events had between 697 and 4,645 m^2 (7,500 and 50,000 ft^2) of access matting.

Most events occur between sunrise and sunset but may involve set up or break down that occurs beyond daylight time, and thus require lighting to ensure safety and visibility for event staff and participants. Lighting (defined as any illumination between sunset and sunrise) was associated with

41 events (including both on beach and beach-adjacent locations) permitted in 2019 and ranged in nighttime illumination periods from approximately 10 to 272 minutes. Lighting activity ranged across shoreline lengths of approximately 3 to 975 m (10 to 3,200 ft). Nearly all events are one or two days in duration, with the exceptions being the largest two events which require multiple days for setup and breakdown. In 2019, the event with the longest activity on the beach reached 23 days; the next longest event spanned seven days.

3.0 COVERED SPECIES

Of the seven extant species of sea turtles found in the world, five are known to inhabit Atlantic waters off the southeast coast of Florida:

- Loggerhead Sea Turtle (*Caretta caretta*);
- Green Sea Turtle (*Chelonia mydas*);
- Leatherback Sea Turtle (*Dermochelys coriacea*);
- Hawksbill Sea Turtle (*Eretmochelys imbricata*); and
- Kemp's Ridley Sea Turtle (*Lepidochelys kempii*).

Loggerhead, green, and leatherback sea turtles nest regularly on the City's beaches. Hawksbill and Kemp's ridley turtles are infrequent nesters on Florida's east coast but the hawksbill sea turtle has been recorded nesting in the Plan Area. These two rarer species have the potential to occur in nearshore waters, however. Thus, they may appear on City beaches as dead, sick, or injured strandings or as post-hatchlings that wash onto shore with strong easterly winds. These five species of sea turtles are the only federally or state listed species covered under this HCP.

Terrestrial critical habitat has been designated by the Service for the loggerhead, green, leatherback, and hawksbill sea turtle; however, the only species of sea turtle with critical habitat within the State of Florida is the loggerhead, and it does not overlap with the Plan Area. The final rule for loggerhead critical habitat, published on July 10, 2014 by the Service, included 45 units encompassing approximately 637 km (396 mi) of mapped shoreline along the coast of Florida (79 FR 39755). The Plan Area is located south of the nearest critical habitat designated for the Northwest Atlantic Ocean distinct population segment of the loggerhead, Unit LOGG-T-FL-14: Boca Raton Inlet – Hillsboro Inlet, Palm Beach and Broward Counties. Other nesting beaches in Broward County, including Fort Lauderdale, did not meet the critical habitat selection criteria.

3.1 LOGGERHEAD SEA TURTLE

3.1.1 Status and Distribution

Status

Internationally, the loggerhead sea turtle is listed as endangered by the World Conservation Union (MTSG 1996). In 1978, the ESA listed the loggerhead as threatened throughout its range (43 FR 32800). It is also designated as a threatened species by the state of Florida (FWC 2010a).

Geographic Range

The loggerhead sea turtle occurs throughout the tropical and temperate waters of the Atlantic, Pacific, and Indian Oceans (Dodd 1988) with the majority of nesting at the western rims of the Atlantic and Indian Oceans (Conant et al. 2009). Most nesting occurs between 19° and 36° latitude in each hemisphere (Witherington et al. 2006b).

The concept that loggerheads return to nest on the beaches they left as hatchlings (natal homing) has been supported by mitochondrial DNA analysis (Bowen et al. 1993, Encalada et al. 1998). Bowen et al. (1994) and Bowen (2003) found that, worldwide, the greatest genetic differences occur between loggerheads in the Atlantic-Mediterranean and those in the Indian-Pacific Ocean basins. NMFS and Service (2008) identified five recovery units within the Northwest Atlantic based on genetic differences and a combination of geographic distribution of nesting densities, geographic separation, and geopolitical boundaries. These recovery units are defined as follows: Northern Recovery Unit (Florida/Georgia border through southern Virginia), Peninsular Florida Recovery Unit (Florida/Georgia border through Pinellas County, Florida), Northern Gulf of Mexico Recovery Unit (Franklin County, Florida, through Texas), Greater Caribbean Recovery Unit (Mexico through French Guiana, The Bahamas, Lesser Antilles, and Greater Antilles), and Dry Tortugas Recovery Unit (islands located west of Key West, Florida). Recent genetic analyses of a large number of samples have confirmed the distinctiveness of the four recognized management units in the southeastern U.S. and suggest that within the Peninsular Florida Recovery Unit, three additional discrete units (central eastern, southern, and central western) may be present (Shamblin et al. 2011). Our understanding and geographic demarcation of discrete management units is likely to be refined as additional genetic, telemetry, and mark-recapture studies are undertaken. NMFS and Service (2008) state that, "Recovery units are not necessarily self-sustaining viable units on their own, but instead need to be collectively recovered to ensure recovery of the entire listed entity."

3.1.2 Habitat Characteristics and Use

Life History

Loggerhead turtles nest primarily at night on sandy beaches of mainland shores and barrier islands between 19° and 36° latitude in the Northern and Southern Hemispheres. Hatchlings leaving their nests disperse away from land toward the open ocean. Pelagic-stage loggerhead turtles have been found to utilize the sargassum (*Sargassum* spp.) community as epipelagic developmental habitat in the Atlantic Ocean and Gulf of Mexico (Witherington et al. 2012). In the Atlantic, loggerheads remain in oceanic waters for 6.5 to 11.5 years (Bjorndal et al. 2000). In the Northwest Atlantic, they swim from oceanic waters to shallower (less than 200 m; 656 ft deep) neritic waters from Cape Cod Bay south through Florida, The Bahamas, Cuba, and the Gulf of Mexico. Loggerheads are usually not seen in shallow coastal waters until they reach a SCL of 40 cm (16 in) or greater (Carr 1987, Musick and Limpus 1997, Hopkins-Murphy et al. 2003). Though relatively enclosed shallow-water estuarine habitats with limited ocean access are often used by neritic juveniles, they are used less frequently by adult loggerheads. For example, the Indian River Lagoon, which is regularly used by juveniles, is rarely used by adults, whereas estuarine areas with more open ocean access are used regularly by both adults and juveniles. Adult and juvenile loggerheads also utilize essentially all continental shelf waters along the Atlantic and Gulf of Mexico shorelines. Foraging habitats include coral reefs and other hardbottom, seagrass pastures, and shallow estuarine lagoons, sounds and bays. Post-nesting female loggerheads migrate directly to discreet foraging areas (Schroeder et al. 2003). Migratory routes may be confined to coastal waters or may involve crossing deep oceanic waters and may be relatively close to the nesting beach or at a great distance.

Reproduction

Though early growth models estimated age at sexual maturity to range from 10 to 30 years, more recent studies concluded that the age at sexual maturity is probably closer to 30 years, if not greater (Parham and Zug 1997, Bjorndal et al. 2000, Snover et al. 2006, Braun-McNeill et al. 2008, Vaughan 2009). As adults, loggerhead turtles commence breeding migrations between foraging grounds and nesting areas. In Florida, female loggerhead turtles nest on average every 2.7 years (Dodd 1988). Remigration intervals (years between successive nesting events) are not fixed within individual turtles and may vary from one nesting cycle to the next. During non-nesting years, adult females from U.S. beaches are distributed in waters off the eastern U.S. and throughout the Gulf of Mexico, Bahamas, Greater Antilles, and Yucatán.

Mating is assumed to occur several weeks prior to the beginning of the nesting season as the turtles are en route to their nesting beaches (Caldwell 1959, Limpus 1985). Henwood (1987) found the highest densities of male loggerheads off the coast of Cape Canaveral in April and May, immediately preceding peak nesting activity on area beaches (May through August). Frick et al. (2000) documented loggerhead courtship behavior during aerial surveys conducted from 1 December to 1 April along the coastal waters off southeastern Georgia and northeastern Florida. Courtship behavior was first observed on 16 March and continued through 31 March. The general nesting process for all species of sea turtles is stereotypical, with subtle variations (Miller 1997). Nesting involves a series of sequential behaviors: ascending the beach, making the body pit, digging the egg chamber, laying eggs, filling the egg chamber, covering the body pit, and returning to the surf (Hailman and Elowson 1992).

Nesting occurs almost exclusively at night. Female sea turtles emerge from the surf zone and ascend the beach in search of an appropriate place to construct their nests. If a suitable nesting site cannot be found, the female returns to the ocean and typically selects another site either later that night or the next night (Miller et al. 2003). Nest placement can be influenced by physical and chemical parameters of the beach (Stoneburner and Richardson 1981, Wood and Bjorndal 2000) and by anthropogenic factors such as artificial lighting (Salmon et al. 1995) and beach armoring (Mosier 1998, Bouchard et al. 1998).

Female sea turtles typically lay several clutches of eggs during each season that they nest (Ehrhart 1982). The average number of clutches per female ranges from 3.0 to 5.5 per season (NMFS and Service 2008; Tucker 2010). Re-nesting intervals are approximately two weeks (Hirth 1980, Ehrhart 1982), with individuals usually returning to the same general area to lay successive clutches (Carr 1967, Dodd 1988). Mean loggerhead clutch sizes ranged from 93.0 to 128.4 eggs for 19 widely distributed nesting beaches reviewed by Van Buskirk and Crowder (1994). Dodd (1988) gave an overall range of 23 to 198 eggs for loggerhead clutches from various locations around the world.

Van Buskirk and Crowder (1994) reported mean incubation periods of 50.7 to 65.5 days for loggerhead turtles at 11 nesting beaches around the world. The overall range in incubation periods reported by Dodd (1988) was 49 to 80 days. As in other species of sea turtles, incubation period is inversely correlated with nest temperature. Mrosovsky (1980) found that with constant incubation temperature, a change of 1° C (1.8 °F) increases or decreases the incubation period by approximately 5 days in loggerhead turtles.

The sex ratio of loggerhead turtles is determined by the temperature at which the eggs incubate. At warmer temperatures, more females are produced while at cooler temperatures, more males are produced. The temperature at which an equal number of males and females are produced is referred to as the pivotal temperature. In a review by Wibbels (2003), the estimated pivotal temperature for loggerhead turtles was reported to vary from 27.7°C (81.9°F) to approximately 30°C (86°F) depending on geographic location. In addition to variation among nesting beaches, Wibbels reported significant inter-clutch variation from the same beach.

Van Buskirk and Crowder (1994) reported mean egg survival for loggerhead nests at 12 beaches around the world at 10 to 80 percent. The National Research Council (1990) found that loggerhead turtle nests unaffected by predation, microbial infections, or unusual environmental conditions (e.g., inundated by high tides, washed out by storms, etc.) typically have hatching success of 80 percent or higher.

3.1.3 Site-Specific Occurrence

Distribution in Florida

Loggerhead turtles are the most common sea turtle nesting on Florida beaches (Meylan et al. 1995). Florida also hosts numerous foraging populations of immature loggerhead turtles in its coastal waters. Reproductive migration studies based on flipper tagging and satellite telemetry indicate that the majority of adult female loggerhead turtles nesting in Florida reside in nearshore foraging areas located in the Bahamas, Cuba, Mexico, Florida coastal waters, and the Gulf of Mexico (Schroeder et al. 2003, Girard et al. 2009).

Florida may have more nesting loggerheads than any other population (Witherington et al. 2006b). Nesting has been documented in all coastal counties except those in the Big Bend area of Florida between Wakulla and Pasco Counties (FWC-FWRI 2020). Peaks in nesting occur in southern Brevard County, St. Lucie County, Martin County, and southern Palm Beach County on the Atlantic coast and Sarasota County on the Gulf coast.

Loggerhead turtles occur throughout Florida's coastal waters, bays, and lagoons. They have been found year-round in the following areas: Port Canaveral and other ship channels; areas of hard bottom in the Atlantic and Gulf of Mexico; Mosquito and Indian River lagoons; and, reefs, hardbottom areas, channels, and seagrass pastures of Florida Bay, the Florida Keys, the Marquesas, and the Dry Tortugas (Ehrhart 1983, Schroeder et al. 1998, Hopkins-Murphy et al. 2003, Bresette and Herren 2003).

Florida Nesting Population

The FWC uses a system of index nesting beaches to characterize nesting trends in the State. These index beaches in peninsular Florida have been consistently monitored using standardized censusing protocols since 1989. The resultant data indicate that although there was a 5.92 percent decline in loggerhead nesting within Florida between 1989 and 2010, the overall trend was statistically stable (neither increasing nor decreasing; FWC 2010b). However, within the period of record, substantial swings in nest numbers have occurred. For example, between 1989 and 1998, data from index nesting beach sites showed an increase of 25.8 percent (FWC 2010b), but then nesting declined steeply (-43 percent) between 1998 and 2006 (Witherington et al. 2009). The upward trend observed in loggerhead nesting since 2008 continued through 2020, with peak numbers recorded in 2016 (FWC-FWRI 2021).

Based on a mean of about 75,000 nests per year between 1998 and 2002, Witherington et al. (2006b) estimated that the southern Florida peninsula nesting aggregation of loggerheads consisted of approximately 18,000 nesting females per year. NMFS and Service (2008) found that between 1989 and 2007, the Peninsula Florida Recovery Unit of loggerheads averaged 64,513 nests per year, which equates to about 15,500 nesting females per year. Witherington et al. (2006b) estimated there were an average of 250 females nesting per year in the Florida panhandle subpopulation between 1998 and 2002 and 50 females nesting per year in the Dry Tortugas subpopulation between 1997 and 2001.

Numbers of Nests within the Plan Area

Loggerhead nesting within the Plan Area from 2015 through 2020 ranged from 889 to 1,180 nests, with a 6-year mean of 994 nests per year (Table 3-1). Over the same period, loggerhead nesting in Broward County ranged from 2,733 to 3,400 nests, with a 6-year mean of 2,907 nests per year. Statewide, loggerhead nesting ranged from 89,295 to 122,707 nests, with a 6-year mean of 102,031 nests per year. Nesting in the Plan Area represented approximately 34 percent of the loggerhead turtle nesting in the County and approximately 1 percent of loggerhead nesting in Florida from 2015 – 2020. During this period, the highest nest counts occurred in 2016 within the Plan Area, County, and Statewide.

Seasonal Nesting Patterns in Florida

In Florida, loggerhead turtles begin nesting in substantial numbers by mid-May and reach their highest nesting frequency during June and July. Nesting then tapers off during August and is essentially completed by mid-September, although nesting has been documented in Florida as late as November (Table 3-2). On Fort Lauderdale beaches, loggerhead nesting typically begins mid- to late-April and concludes early- to mid-September (Figure 3-1).

Table 3-1. Loggerhead sea turtle nesting statistics within the Plan Area, County, and Statewide, 2015-2020. Crawls = nesting plus non-nesting (false crawl) emergences onto the beach. Nesting success = number of nests/total number of crawls X 100%. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Survey Length (km)	Average Crawls/Year	Average Nests/Year	Average Nests/km	Minimum Nests/Year	Maximum Nests/Year	Average Nesting Success	Minimum Nesting Success	Maximum Nesting Success
Ft. Lauderdale Beach	10.6	2,233.0	994.0	93.8	889	1,180	44.6%	42.8%	48.1%
Broward County	38.7	6,633.2	2,907.2	75.1	2,733	3,400	44.0%	40.0%	47.8%
Statewide	1,350.9	243,103.5	102,030.8	75.5	89,295	122,707	42.1%	40.0%	43.6%

Table 3-2. Dates of first and last nesting for loggerhead sea turtles within the Plan Area, County, and Statewide, 2015-2020. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Average Annual Number of Nests	Nest Dates	
		First	Last
Fort Lauderdale Beach	994.0	April 20	September 8
Broward County	2,907.2	April 13	September 8
Statewide	102,030.8	March 20	November 13

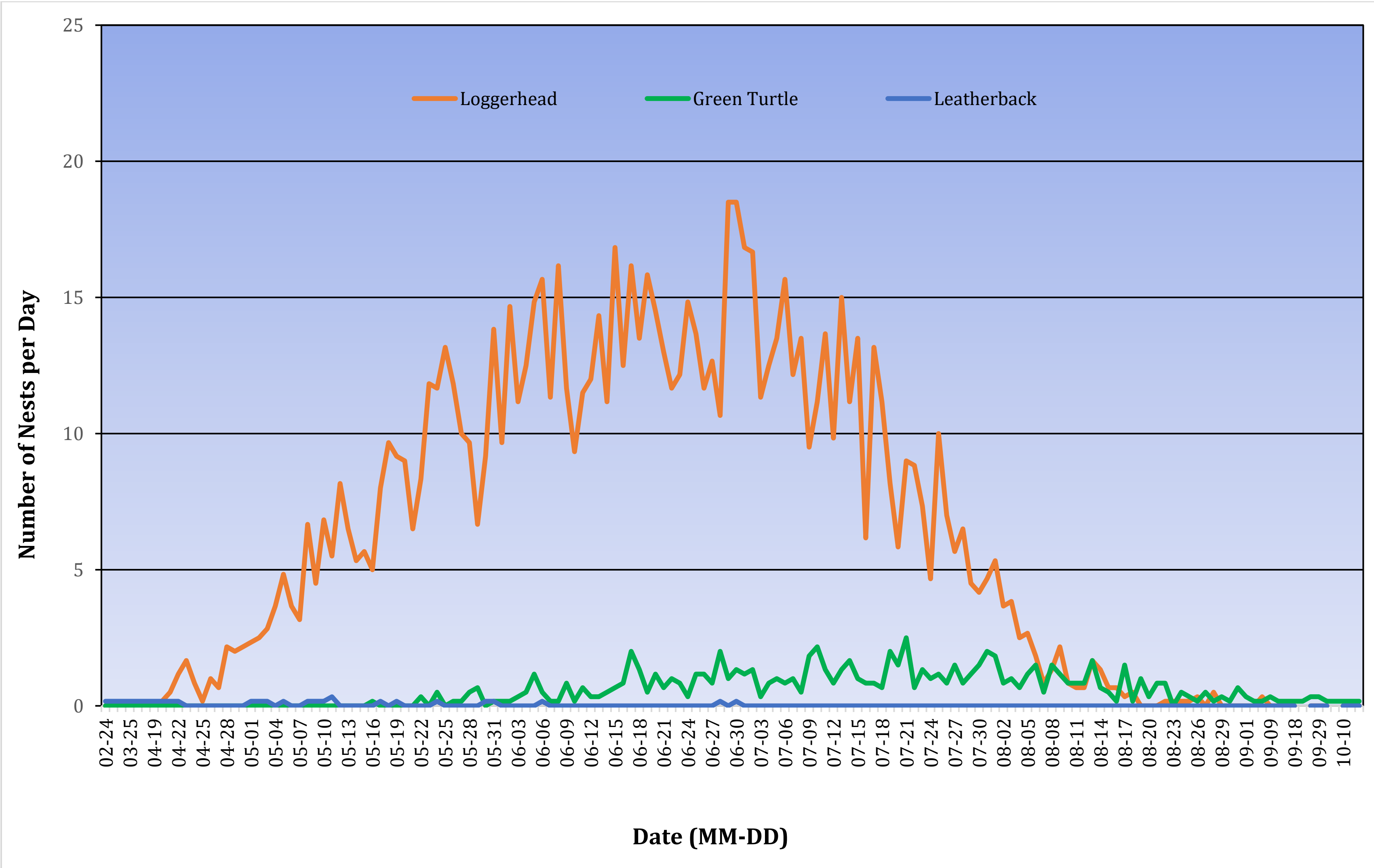

Figure 3-1. Average daily sea turtle nesting on Fort Lauderdale Beaches, 2015-2020. Source: BCSTCP.

3.2 GREEN SEA TURTLE

3.2.1 Status and Distribution

Listing Status

Internationally, the green turtle is listed as endangered by the World Conservation Union (Seminoff 2004). In 1978, breeding populations of the green turtle in Florida and on the Pacific Coast of Mexico were federally listed as endangered; all other populations were listed as threatened (Service 1978). In 2016, the NMFS and the Service finalized a rule listing 11 distinct population segments (DPSs) of the green turtle, superseding the existing ESA listings (Service and NOAA 2016). Based on best available data, three DPSs were listed as endangered and eight were listed as threatened, including the North Atlantic DPS which contains the Florida population.

Geographic Range

The green turtle is a circumglobal species occurring in tropical and subtropical waters. In the Pacific and Indian Oceans, the largest green turtle nesting rookeries occur in Indonesia, the Philippines, Malaysia, the northern Great Barrier Reef (Australia), and Oman (NMFS and Service 2007a). The major green turtle nesting beaches in the Atlantic Ocean are in Tortuguero, (Costa Rica), Bijagos Archipelago (Guinea-Bissau), Ascension Island, Florida, Isla Trindade (Brazil), and Galibi Reserve (Suriname; NMFS and Service 2007a, Witherington et al. 2006a).

The concept that green turtles return to nest on the beaches they left as hatchlings (natal homing) has been supported by mitochondrial DNA analysis (Meylan et al. 1990). Bowen et al. (1992) found a fundamental phylogenetic difference between green turtles in the Atlantic-Mediterranean and those in the Indian-Pacific Ocean basins. It appears that natal homing strongly influences genetic differences among nesting assemblages. In the wider Caribbean Sea, the most distinctive genetic difference is between two stocks in the northwestern region (Florida/Mexico and Costa Rica) and two in the southeastern region (Aves Island and Suriname; Bowen et al. 1992). Each of the four stocks has been determined to be genetically distinct (Lahanas et al. 1994).

3.2.2 Habitat Characteristics and Use

Life History

Green turtles nest primarily at night on sandy beaches of mainland shores, barrier islands, volcanic islands, and atolls between 30° N and 30° S latitude. When hatchlings leave these nests, they disperse away from land into the open ocean. Pelagic-stage green turtles have been found to utilize the sargassum community as epipelagic developmental habitat in the Atlantic Ocean and Gulf of Mexico (Witherington et al. 2012). It is estimated that green turtles spend about three to six years in the open ocean (pelagic) habitat before moving into coastal (neritic) foraging grounds (Limpus and Chaloupka 1997, Zug and Glor 1998, Balazs and Chaloupka 2004, Reich et al. 2007). Juvenile green turtles are typically about 25 to 35 cm (9.8 to 13.8 in) or larger in carapace length when they make this transition (Bjorndal and Bolten 1988, Limpus and Chaloupka 1997, Balazs and Chaloupka 2004). Coastal foraging habitats include pastures of sea grasses and/or algae in protected lagoons and open coastal areas, but small green turtles also forage over coral reefs, worm reefs, and rocky bottoms that support benthic macroalgae (Hirth 1997). Some coastal feeding grounds only support certain size classes of green turtles (i.e., the turtles move among these foraging areas during development) while others support a wide range of size classes. Coastal foraging grounds may be near natal beaches or at a great distance from them (Bass and Witzell 2000). As adults, both males and females seasonally migrate between foraging habitats and nesting beaches. Migration corridors may lie along coastlines and reefs and may span long distances across the open ocean.

Reproduction

Age at maturity of green turtles varies depending on the foraging ground in which development occurs and may be related to food availability at each site. In the Western Atlantic and Caribbean, estimates vary from 18 to 34 years (Ehrhardt and Witham 1992, Frazer and Ehrhart 1985, Frazer and Ladner 1986, Zug and Glor 1998). As adults, green turtles commence breeding migrations between foraging grounds and nesting areas; these migrations occur every few years (Plotkin 2003). Nesting may occur throughout the year within the tropics, but often peaks during the rainy season. Outside the tropics, nesting is typically restricted to the summer months. Only occasionally do females produce clutches in successive years. Usually, two or more years intervene between breeding seasons (NMFS and Service 1991). Mating occurs both directly off nesting beaches as well as at courtship areas far removed from nesting beaches. Interactions between green turtles suggest promiscuous breeding with some level of female choice and occasional aggressive competition between males (Booth and Peters 1972, Limpus 1993, Peare et al. 1994). In green turtles, copulation is often conspicuous due to their tendency to mate just offshore and to float at the surface for long periods of time.

Nesting green turtles emerge onto beaches at night to deposit eggs. This process takes approximately two hours, with about 40 percent of the time spent preparing the nest site, 13 percent of the time laying eggs, and 47 percent of the time covering and camouflaging the site (Hirth and Samson 1987). Sea turtles do not provide parental care to offspring beyond camouflaging their nests after egg deposition. Green turtles deposit multiple clutches of eggs within a single nesting season. Hirth (1997) reported an average clutch frequency among green turtle populations worldwide ranging from 2.0 to 5.5 nests per season with an internesting interval of 9 to 15 days. Bjorndal and Carr (1989) found that the average number of eggs per clutch is remarkably constant between years within a population. However, mean clutch size can be quite variable among populations. Mean clutch size ranged from 104 to 147 eggs for 13 widely separated beaches examined by Hirth (1980). In Florida, Witherington and Ehrhart (1989a) reported an average of 136 eggs for 130 clutches. The length of the incubation period is inversely correlated with nest temperature. On a relatively sunny temperate beach in Florida, nests incubated for approximately 52-56 days before producing hatchlings (Witherington 1986). In contrast, incubation periods for nests deposited late in the season, which incubated through rainy and cool periods, were longer.

Incubation temperature determines the sex ratio of green turtle hatchlings, with higher temperatures producing mostly females and lower temperatures producing mostly males. For green turtles, the pivotal temperature at which an equal ratio is produced is approximately 28.5 to 30.3° C (83.3° to 86.5°F; Spotila et al. 1987). Hatchling sea turtles usually emerge from nests onto the surface of the beach after dark, a process at least partially controlled by sand temperature gradients. By emerging at night, hatchlings can avoid both diurnal predators and hot sand surface temperatures which can be lethal (Hirth 1997).

Survivorship of eggs can be highly variable both within and among nesting beaches. Hatching success of undisturbed nests is typically high, but on some beaches, predators destroy many nests (Stancyk 1982). Nests can also be negatively affected by environmental factors such as tidal inundation and beach erosion. Witherington et al. (2006a) summarized rates of survivorship of eggs, hatchlings, juveniles, and adults in Florida, Australia, and Central America. Survival rates for the elusive post-hatchling and young juvenile stages, or "lost years", are poorly known. It is presumed that during this epipelagic phase, green turtles drift in ocean currents and gyres, and occupy convergence zones where prey and shelter are abundant (Hirth 1997). In general, survivorship tends to be lower for juveniles and subadults than for adults.

3.2.3 Site-Specific Occurrence

Distribution in Florida

Green turtles are the second most common sea turtle nesting on Florida beaches. Florida also hosts numerous foraging populations of green turtles in its coastal waters. Reproductive migration studies based on flipper tagging and satellite telemetry indicate that the majority of adult female green turtles nesting in Florida reside in nearshore foraging areas located throughout the Florida Keys and in the waters southwest of Cape Sable, Florida (NMFS and Service 2007a). Some post-nesting green turtles have also been found to reside in Bahamian waters.

Although the majority of green turtle populations are greatly diminished from historical levels, the species retains much of its historical geographic distribution (Witherington et al. 2006a). After Costa Rica, Florida likely ranks second or third in the annual number of green turtle nests deposited on beaches bordering the western Atlantic. Nesting has occurred in all coastal counties except those in the Big Bend area of Florida (Wakulla through Pasco Counties). However, the vast majority (approximately 99 percent) of green turtle nesting in Florida occurs on the east coast, with the greatest numbers recorded in Brevard through Broward Counties (Witherington et al. 2006a).

Along the east coast of Florida, several neritic habitats important for green turtle foraging have been identified, including the Mosquito and Indian River Lagoons (Ehrhart 1983, Bresette et al. 2002, Ehrhart et al. 2007), Port Canaveral (Redfoot and Ehrhart 2000, Kubis et al. 2009, Redfoot and Ehrhart 2013), the St. Lucie Inlet (Bresette et al. 2002), Lake Worth Lagoon (Gorham et al. 2016), and Biscayne Bay (Cantillo et al. 2000). Juvenile green turtles have been documented on nearshore Atlantic reefs from Brevard to Broward Counties (Guseman and Ehrhart 1990, Wershoven and Wershoven 1992, Bresette et al. 1998). Green turtles have also been documented on sea grass pastures along the shores of southwestern Florida in the Florida Keys (Witherington et al. 2006a), Florida Bay (Schroeder et al. 1998), the Marquesas (M. Bresette, Quantum Resources, Inc., personal communication 2007), the Dry Tortugas (Reardon and Mansfield 2002), and near the Ten Thousand Islands, western Everglades (Witzell and Schmid 2002). Along the Gulf coast of Florida, green turtles have been documented in the Everglades and St. Joseph Bay (Schmid 1998, McMichael et al. 2006). Because of their migratory nature, green turtles from the Florida nesting population move into foraging and developmental habitats both within the state and in coastal regions throughout the wider Caribbean (NMFS and Service 2007a).

Florida Nesting Population

Based on nesting data and trends from index beach sites throughout the state, green turtle nesting in Florida is increasing exponentially, having increased eightyfold since counts began in 1989 (FWC-FWRI 2021). Using clutch frequencies and annual statewide green turtle nest numbers, Witherington et al. (2006a) estimated that between 1999 and 2002, the number of reproductively active female green turtles in the population ranged from 2,200 to 2,600. This was based on annual nest numbers that varied from 479 to 9,201 and averaged 4,666 per year (FWC unpublished data). However, the authors cautioned that, due to methodological limitations, the true number could be as low as half that estimate. Based on more recent data collected from 2015 through 2020, annual green turtle nest numbers in Florida averaged 30,009 per year (Table 3-3) with a range of 4,545 to 53,102 per year. Thus, if the same methodology used by Witherington et al. (2006a) were applied to the more recent 6-year data set, it would result in a considerably higher estimate of nesting green turtles in Florida.

Numbers of Nests within the Plan Area

Green turtle nesting within the Plan Area from 2015 through 2020 ranged from 46 to 128 nests, with a 6-year mean of 90 nests per year (Table 3-3). Over the same period, green turtle nesting in Broward County ranged from 136 to 787 nests, with a 6-year mean of 411 nests per year. Statewide, green turtle nesting ranged from 4,545 to 53,102 nests, with a 6-year mean of 30,009 nests per year. Nesting in the Plan Area represented approximately 22 percent of the green turtle nesting in the County and less than 1 percent of green turtle nesting in Florida from 2015 – 2020. During this period, the highest nest counts occurred in 2017 for the Plan Area and Statewide and 2019 for the County.

Seasonal Nesting Patterns in Florida

In Florida, green turtles begin nesting in substantial numbers by late May and reach their highest nesting frequency during July. Nesting then tapers off during August and is essentially completed by the end of September, although nesting has been documented in Florida as late as December (Table 3-4). On Fort Lauderdale beaches, green turtle nesting typically begins mid-May and concludes late-October (Figure 3-1).

Table 3-3. Green sea turtle nesting statistics within the Plan Area, County, and Statewide, 2015-2020. Crawls = nesting plus non-nesting (false crawl) emergences onto the beach. Nesting success = number of nests/total number of crawls X 100%. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Survey Length (km)	Average Crawls/Year	Average Nests/Year	Average Nests/km	Minimum Nests/Year	Maximum Nests/Year	Average Nesting Success	Minimum Nesting Success	Maximum Nesting Success
Ft. Lauderdale Beach	10.6	184.5	89.7	8.5	46	128	49.6%	42.9%	62.2%
Broward County	38.7	770.8	411.2	10.6	136	787	52.1%	46.2%	55.7%
Statewide	1,350.9	76,887.8	30,008.7	22.2	4,545	53,102	39.5%	35.7%	43.9%

Table 3-4. Dates of first and last nesting for green sea turtles within the Plan Area, County, and Statewide, 2015-2020. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Average Annual Number of Nests	Nest Dates	
		First	Last
Fort Lauderdale Beach	89.7	May 16	October 24
Broward County	411.2	May 9	October 24
Statewide	30,008.7	April 1	December 7

3.3 LEATHERBACK SEA TURTLE

3.3.1 Status and Distribution

Listing Status

The leatherback sea turtle is listed internationally by the International Union for Conservation of Nature (IUCN) as critically endangered (IUCN 2011). In 1970, this species was listed as endangered throughout its range on the United States' List of Endangered Foreign Fish and Wildlife (Service 1970). This status was ratified in 1973 with the passage of the ESA. In Florida, the leatherback sea turtle is classified as endangered (FWC 2010a).

Geographic Range

The leatherback has a wider distribution than any other species of sea turtle. It nests on tropical and sub-tropical beaches in all major ocean basins and forages into higher-latitude waters. Reliable at-sea sightings confirm a range that extends from approximately 71° North (Carriol and Vader 2002) to 47° South (Eggleston 1971). In the Atlantic, it is found as far north as the waters of the North Sea, Norwegian Sea, Newfoundland, and Labrador (Threlfall 1978, Goff and Lien 1988, Carriol and Vader 2002, James et al. 2005a) and as far south as Argentina and the Cape of Good Hope (Marquez 1990; Hughes et al. 1998; Luschi et al. 2003, 2006). In the Pacific, this species ranges from the waters of British Columbia (McAlpine et al. 2004) and the Gulf of Alaska (Hodge and Wing 2000) to the waters of Chile and South Island, New Zealand (Marquez 1990, Gill 1997, Brito 1998). It also occurs throughout the Indian Ocean (Hamann et al. 2006) and in the Mediterranean Sea (Casale et al. 2003).

Although mitochondrial DNA (mtDNA) analysis indicate that leatherbacks return to nest on the beaches they left as hatchlings, they appear to be less precise in their natal homing behavior than other sea turtles (Dutton et al. 1999, 2003; Stewart and Johnson 2006). The most divergent mtDNA haplotypes were found to occur between the western Atlantic and eastern Pacific (Dutton et al. 1999). In the Atlantic, seven leatherback populations or groups of populations have been hypothesized: U.S. mainland (Florida), North Caribbean, West Caribbean, Southern Caribbean/Guianas, Brazil, West Africa and South Africa (TEWG 2007).

3.3.2 Habitat Characteristics and Use

Life History

Leatherback sea turtles nest primarily at night on subtropical and tropical beaches throughout the Atlantic, Pacific, and Indian Oceans (Marquez 1990). Nesting has been documented as far north as Cape Hatteras, North Carolina (approximately 35°N) in the Atlantic Ocean (Rabon et al. 2003) and as far south as KwaZulu-Natal, South Africa (approximately 28°S) in the Indian Ocean (Hughes 1996). Immediately after leaving the beach, leatherback hatchlings exhibit a period of almost continuous swimming during the first 24 hours in the water (Wyneken and Salmon 1992). Though specific destinations for leatherback hatchlings leaving their natal beaches have not been identified, limited stranding and sighting data indicate that hatchlings and juveniles less than 100 cm (39 in) curved carapace length are limited to ocean areas where water temperatures are above 26°C (Eckert 2002). The capture of juvenile leatherbacks near Sao Tome and Principe off west equatorial Africa may indicate that this is one juvenile feeding area (Fretey et al. 1999).

In the Atlantic Ocean, post-nesting leatherbacks have been found to move across the entire North Atlantic Ocean basin between 4.3°N and 52.0°N latitudes and 7.5°W and 75.5°W longitudes (Fossette et al. 2010a). In the South Atlantic, post-nesting leatherbacks from Gabon in west Africa primarily dispersed to three areas: 1) the equatorial Atlantic, 2) temperate habitats off South America, or 3) temperate habitats off southern Africa (Witt et al. 2011). No movements between the North and South Atlantic have been documented (Witt et al. 2011, Fossette et al. 2010b). Temporary residence areas have been identified throughout the North and South Atlantic in both neritic and oceanic habitats (Fossette et al. 2010b).

Reproduction

There is evidence that after migrating from distant foraging grounds, leatherbacks mate in the vicinity of nesting beaches (Godfrey and Barreto 1998, James et al. 2005b, Reina et al. 2005, but see Eckert and Eckert 1988). Mating behavior is described by Carr and Carr (1986). Preferred nesting beaches are in the tropics, have a deep-water approach, and are typically free of rocks, coral or other abrasive material that might injure the soft integument of this species (Pritchard and Trebbau 1984). Nesting is seasonal and normally occurs at night (Pritchard and Trebbau 1984). In the northwestern Atlantic, the nesting season generally extends from March through July though some nesting has been documented in February and August (Pritchard and Trebbau 1984, Meylan et al. 1995, Boulon et al. 1996, Troeng et al. 2007). Adult females do not typically nest every year. Average remigration intervals (years between successive nesting events) for leatherbacks in the northwestern Atlantic are usually between two and three years (van Buskirk and Crowder 1994, Boulon et al. 1996, Dutton et al. 2005, Stewart 2007).

Stereotypical nesting behavior was described in detail for the leatherback turtle by Carr and Ogren (1959) and Pritchard (1971). Non-nesting emergences onto the beach (false crawls) which are common in the other species of sea turtles occur less often for leatherbacks (Pritchard and Trebbau 1984).

Leatherbacks typically lay several clutches of eggs during each season with the average number of clutches per female ranging from 4.1 to 8.3 nests per season (van Buskirk and Crowder 1994, Boulon et al. 1996, Girondot et al. 2007, Hilterman and Goverse 2007, Santidrian Tomillo et al. 2007, Stewart 2007). It has been estimated that some individual leatherbacks have laid as many as 14 clutches of eggs in a single season (Reina et al. 2002, Girondot et al. 2007). Average internesting intervals are typically between 9 and 10 days (Boulon et al. 1996, Girondot et al. 2007, Hilterman and Goverse 2007, Sarti Martinez et al. 2007, Stewart 2007).

Mean leatherback clutch sizes from various locations around the world typically range between 60 and 90 eggs (van Buskirk and Crowder 1994, Boulon et al. 1996, Girondot et al. 2007, Hilterman and Goverse 2007, Santidrian Tomillo et al. 2007, Sarti Martinez et al. 2007, Stewart 2007), though van Buskirk and Crowder (1994) reported an average clutch size of 103.7 eggs for 59 nests in South Africa. When leatherbacks nest, they typically deposit a number of albumen-filled eggshells (sometimes referred to as yolkless eggs, spacers, or shelled albumen globs) toward the end of the egg-laying process. The average number of albumen-filled eggshells per nest ranged from 24.9 to 38.5 at several locations in the northwestern Atlantic and northeastern Pacific (Pritchard 1971, Boulon et al. 1996, Leslie et al. 1996, Reina et al. 2002, Stewart and Johnson 2006).

Worldwide mean leatherback egg incubation duration ranges from 56.0 to 67.3 days (van Buskirk and Crowder 1994, Boulon et al. 1996, Hilterman and Goverse 2007, Stewart and Johnson 2006). Boulon et al. (1996) recorded an overall range in incubation periods of 57 to 76 days with longer incubation periods occurring early in the season when sand temperatures were cooler. As in other species of sea turtles, incubation period is inversely correlated with nest temperature.

As with other species of sea turtles, the sex ratio of leatherback turtles is determined by the temperature at which the eggs incubate. At warmer temperatures, more females are produced while at cooler temperatures, more males are produced. The temperature at which an equal number of males and females are produced is referred to as the pivotal temperature. In most cases, sea turtle pivotal temperatures are within the range of 29.0 to 30.0°C (Wibbels 2003). Leatherback turtles in both Suriname and the Pacific coast of Costa Rica were found to have a pivotal temperature of 29.4°C (Godfrey 1997, Binkley et al. 1998). Wibbels (2003) reviewed predicted hatchling sex ratios of sea turtles from various locations. The hatchling sex ratios for leatherbacks varied from 44 percent female to 100 percent female. Sex ratios were found to vary depending on location and time of year. Some year-to-year variation was also indicated.

Van Buskirk and Crowder (1994) reported mean egg survival for leatherback nests at seven beaches around the world at 15 to 76 percent. Egg survival was defined as the proportion of individuals that survived from oviposition until the hatchlings reached the beach surface excluding data from clutches lost to predators associated with human development.

3.3.3 Site Specific Occurrence

Distribution in Florida

Leatherback sea turtles nest regularly in Florida (Meylan et al. 1995). Nesting has been documented along the east coast from Nassau through Miami-Dade Counties, in Monroe, Lee, and Sarasota Counties in southwest Florida, and in all panhandle counties (FWC-FWRI 2020). Highest nesting regularly occurs in Martin and Palm Beach Counties (FWC 2020).
Leatherbacks have also been observed regularly in waters off the east and west coasts of Florida (Fritts et al. 1983, Schroeder and Thompson 1987, NMFS 2001, Stewart et al. 2016).

Leatherbacks nesting on the east coast of Florida were tracked by satellite to determine their movements (Eckert et al. 2006). It appears that during the nesting season, females reside just to the east-southeast of Cape Canaveral and off their nesting beaches bounded to the east by the western edge of the Gulfstream. The same study found that at the end of the nesting season, all females initially traveled directly north. They then moved to Atlantic foraging areas on the continental shelf between 30° to 50°N latitudes (an offshore area centered at 42°N latitude and 65°W longitude) and off Africa in the Mauritania upwelling.

Results of aerial surveys from Cape Hatteras, North Carolina to Key West, Florida indicated that leatherbacks were present in continental shelf waters off east Florida during all seasons (Thompson and Huang 1993). Fritts et al. (1983) reported a concentration of leatherbacks off the Florida east coast west of the Gulfstream near Brevard County in August. Based on seasonal aerial surveys conducted from the western boundary of the Gulf Stream to coastal waters, Schroeder and Thompson (1987) found that leatherbacks in the Cape Canaveral area (27° to 30°N latitudes) were more abundant during the summer (July) and tended to concentrate in depths of 20-40 m (66-131 ft). NMFS (2001) suggested that observed concentrations of leatherbacks off the central east coast of Florida may indicate a concentration of resources in this area.

Florida Nesting Population

Stewart et al. (2011) modeled nest counts from 68 beaches in Florida over a 30-year period (1979-2008) to determine the rate of growth for leatherback nesting in Florida. They found that annual nest numbers had increased at all 68 beaches with trends ranging from 3.1 to 16.3 percent per year. Statewide, annual leatherback nest numbers increased exponentially at a rate of 10.2 percent per year.

Stewart (2007) calculated that an average of 71 leatherbacks nest annually at Juno Beach in Palm Beach County. She suggested that the total population size for Florida should be significantly greater since her Juno Beach study area only represented about ten percent of the total nesting habitat used regularly by leatherbacks in Florida.

Numbers of Nests within the Plan Area

Leatherback nesting within the Plan Area from 2015 through 2020 ranged from 1 to 11 nests, with a 6-year mean of 5 nests per year (Table 3-5). Over the same period, leatherback nesting in Broward County ranged from 12 to 43 nests, with a 6-year mean of 27 nests per year. Statewide, leatherback nesting ranged from 663 to 1,652 nests, with a 6-year mean of 1,153 nests per year. Nesting in the Plan Area represented approximately 16 percent of the leatherback nesting in the County and less than 1 percent of leatherback nesting in Florida from 2015 – 2020. During this period, the highest nest counts occurred in 2019 for the Plan Area and County and 2020 for Florida.

Seasonal Nesting Patterns in Florida

In Florida, leatherback turtles typically begin nesting in mid-February to early March and usually reach their highest nesting frequency from mid-April through mid-June. Nesting then tapers off and is essentially completed by early August, although nesting has been documented in early September. On Fort Lauderdale beaches, leatherback nesting begins late-February to early March and concludes late-June (Table 3-6; Figure 3-1).

Table 3-5. Leatherback sea turtle nesting statistics within the Plan Area, County, and Statewide, 2015-2020. Crawls = nesting plus non-nesting (false crawl) emergences onto the beach. Nesting success = number of nests/total number of crawls X 100%. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Survey Length (km)	Average Crawls/Year	Average Nests/Year	Average Nests/km	Minimum Nests/Year	Maximum Nests/Year	Average Nesting Success	Minimum Nesting Success	Maximum Nesting Success
Ft. Lauderdale Beach	10.6	4.8	4.5	0.4	1	11	95.3%	80.0%	100.0%
Broward County	38.7	29.5	27.3	0.7	12	43	93.2%	84.4%	100.0%
Statewide	1,350.9	1,369.8	1,152.7	0.9	663	1,652	84.4%	81.7%	87.1%

Table 3-6. Dates of first and last nesting for leatherback sea turtles within the Plan Area, County, and Statewide, 2015-2020. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Average Annual Number of Nests	Nest Dates	
		First	Last
Fort Lauderdale Beach	4.5	February 24	June 30
Broward County	27.3	February 24	June 30
Statewide	1,152.7	February 11	August 12

3.4 HAWKSBILL SEA TURTLE

3.4.1 Status and Distribution

Listing Status

The hawksbill turtle is internationally listed as critically endangered by the World Conservation Union (Mortimer and Donnelly 2008). It was listed as endangered throughout its range under United States law in 1970 (Service 1970). This status was ratified in 1973 with the passage of the ESA. The hawksbill is also classified as endangered by the State of Florida (FWC 2010a).

Geographic Range

The hawksbill turtle has a circumglobal distribution, occurring throughout tropical and, to a lesser extent, sub-tropical waters of the Atlantic, Indian, and Pacific Oceans (Mortimer and Donnelly 2008). They primarily range from 30°N to 30°S (Witzell 1983). Hawksbills are most common in the western Atlantic Ocean, Indian Ocean, and western Pacific Ocean, and it has been estimated that they inhabit coastal waters in more than 108 countries (Mortimer and Donnelly 2008).

NMFS and Service (2007b) estimated the numbers of nesting hawksbill turtles per season at rookeries within the three major ocean basins. In the Atlantic Ocean, the major rookeries (i.e., those with 200 or more nesting females per year) are found on the Yucatan Peninsula of Mexico, Doce Leguas Cays (Cuba), Barbados, Brazil, Mona Island (Puerto Rico), and Jamaica. In the Indian Ocean, major rookeries occur in Western Australia, Madagascar, Seychelles, Iran, Oman, Maldives, Yemen, Chagos Islands (British Indian Ocean Territory), and Sudan. In the Pacific Ocean, the major rookeries occur in Torres Strait-Northern Great Barrier Reef (Queensland, Australia), northeastern Arnhem Land (Northern Territory, Australia), Indonesia, Papua New Guinea, Philippines, Vanuatu, and Solomon Islands.

Results of mitochondrial DNA (mtDNA) analysis indicate that individual nesting colonies of hawksbills are genetically distinct, and that natal homing is a predominant feature of hawksbill behavior (Broderick et al. 1994, Bass et al. 1996, Bowen et al. 2007).

3.4.2 Habitat Characteristics and Use

Life History

Hawksbills nest on insular and mainland sandy beaches throughout the tropics and subtropics (Mortimer and Donnelly 2008). After entering the ocean as hatchlings, hawksbills go through an initial pelagic stage that may last as long as several years (Meylan and Redlow 2006). Pelagic-stage hawksbill turtles have been found to utilize the sargassum community as epipelagic developmental habitat in the Atlantic Ocean and Gulf of Mexico (Witherington et al. 2012). In the Caribbean, hawksbill turtles move from pelagic to neritic habitats and begin benthic foraging at a minimum straight carapace length of 8 to 10 in (20 to 25 cm; Meylan 1988, Boulon 1994, Leon and Diez 1999, Diez and van Dam 2002). Neritic hawksbills are most commonly found on coral reefs and other hardbottom habitats but are also observed in seagrass beds and algal meadows (Carr et al. 1966, Bjorndal and Bolten 1988, Marquez 1990, Diez and van Dam 2002, Diez et al. 2003, Limpus et al. 2008, Bjorndal and Bolten 2010). In some foraging grounds, hawksbills of all size classes (including adults) are found; in others, only immature hawksbills are observed (Limpus 1992, Leon and Diez 1999, Diez and van Dam 2002, Limpus et al. 2008). Meylan et al. (2011) found that hawksbills in the Caribbean and western Atlantic generally conformed to the developmental habitat hypothesis (i.e., immature-only foraging grounds), although the internesting habitat of adults sometimes overlapped developmental habitat.

While studies by Boulon (1994), van Dam and Diez (1998), and Limpus et al. (2008) have found that immature hawksbills showed considerable site fidelity for extended periods of time in foraging/developmental habitats, some juveniles have been documented making long-distance migrations possibly to other developmental habitats or to adult feeding grounds (Meylan 1999, Meylan et al. 2011).

Reproduction

There is evidence that hawksbill turtles mate off nesting beaches in the Caribbean (Van Dam et al. 2008). Hawksbills generally prefer to nest on small, isolated mainland and insular beaches throughout the tropics and subtropics (Witzell 1983, Mortimer and Donnelly 2008). This species tends to nest under thick vegetation, though nests may be placed in any zone on the beach (Meylan and Redlow 2006). Nesting takes place primarily at night, but occasional daytime nesting occurs in the Caribbean (Meylan and Redlow 2006). Carr et al. (1966) gives a detailed description of hawksbill nesting behavior. There is considerable variation in nesting season depending on geographic location (Witzell 1983). In the western central Atlantic, hawksbills nest during every month, with most nesting occurring from April through September (Witzell 1983). Richardson et al. (1999) found that the period from mid-June to mid-August encompassed nearly all nesting on a beach in Antigua. Hillis (1995) reported that the nesting season on a beach in the U.S. Virgin Islands began in early May and continued through December, with peak nesting occurring in July, August and September. The hawksbill nesting season in the Yucatan of Mexico extends from April through August (Garduno-Andrade 1999). In northern Bahia (Brazil), nesting occurs from October through March (Marcovaldi et al. 1999).

Like other species of sea turtles, hawksbills typically lay multiple clutches of eggs during a single nesting season. Though there is some variability from location to location, the average hawksbill typically lays three to five clutches at approximately two-week intervals during a single season (Witzell 1983, Richardson et al. 1999, Mortimer and Bresson 1999, Beggs et al. 2007). Hawksbills do not typically nest every year. The average remigration interval (years between successive nesting events) is typically between two and four years, with considerable variation among individuals and locations (Hirth 1980, Meylan 1984, Miller 1997, Richardson et al. 1999).

3.4.3 Site Specific Occurrence

Distribution in Florida

From 1979 through 2020, hawksbill nesting has been documented in the following Florida counties: Broward, Manatee, Martin, Miami-Dade, Monroe, Palm Beach, and Volusia (FWC-FWRI 2021). During that period, 56 nests were recorded in Florida with most occurring in Monroe (27) and Palm Beach (16) counties. Only one nest has been recorded on the west coast of Florida, on Longboat Key in 1980. The extent of hawksbill nesting in Florida is likely underestimated because of the incomplete surveillance of beaches known to be used by hawksbills, the reduced level of monitoring during fall when hawksbills may still be nesting, the similarity of hawksbill and loggerhead tracks, and the tendency of hawksbills to nest under vegetation on narrow beaches (Meylan and Redlow 2006).

In an attempt to evaluate the distribution and abundance of hawksbills in Florida, Meylan and Redlow (2006) summarized information from observations of live turtles at sea, in-water capture programs, incidental captures (commercial fisheries, recreational hook-and-line captures, and power plant entrapments), cold-stunning events, museum records, and stranding events. Based on this information, it was determined that hawksbills may occur throughout the state but are most frequently observed along the southeast coast, in the Florida Keys, and off the central Gulf Coast. Data derived from in-water captures and cold-stunning events indicate that occurrences of hawksbills are rare in the Florida Panhandle and along the Gulf Coast of the northern Florida peninsula. Mark-recapture studies indicate that they are also rare in central-western Florida Bay but more common in the Key West National Wildlife Refuge from Key West to just west of the Marquesas Keys. Hawksbills occur on the nearshore reefs off Broward County and are routinely sighted by SCUBA divers on the reefs off Palm Beach County. Thirty-nine hawksbills were captured at a power plant in St. Lucie County from 1976 to 2003 (Meylan and Redlow 2006). Records of hawksbills become increasingly rare moving north from Cape Canaveral along the east coast of Florida though strandings have been documented in every county on the east coast.

Florida Nesting Population

No data are available concerning the size of the hawksbill nesting population in Florida or trends in its abundance.

Numbers of Nests within the Plan Area

From 2015 through 2020, up to five hawksbill nests were recorded annually in Florida (Palm Beach and Monroe Counties; Table 3-7). No nests were documented in Broward County during that period. However, hawksbill nests have been recorded on Fort Lauderdale Beach in 1994 (one nest), 1997 (two nests), and 2005 (one nest).

Seasonal Nesting Patterns in Florida

In Florida, hawksbill turtle nesting has been documented as early as April 1 and as late as October 25 (FWC-FWRI 2021). From 2015 through 2020, the earliest nest was recorded on August 1 and the latest on September 27 (Table 3-8).

Table 3-7. Hawksbill sea turtle nesting statistics within the Plan Area, County, and Statewide, 2015-2020. Crawls = nesting plus non-nesting (false crawl) emergences onto the beach. Nesting success = number of nests/total number of crawls X 100%. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Survey Length (km)	Average Crawls/Year	Average Nests/Year	Average Nests/km	Minimum Nests/Year	Maximum Nests/Year	Average Nesting Success	Minimum Nesting Success	Maximum Nesting Success
Ft. Lauderdale Beach	10.6	0.0	0.0	0.0	0	0	N/A	N/A	N/A
Broward County	38.7	0.0	0.0	0.0	0	0	N/A	N/A	N/A
Statewide	1,350.9	1.7	1.2	0.0	0	5	57.1%	0.0%	100.0%

Table 3-8. Dates of first and last nesting for hawksbill sea turtles within the Plan Area, County, and Statewide, 2015-2020. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Average Annual Number of Nests	Nest Dates[1]	
		First	Last
Fort Lauderdale Beach	0.0	N/A	N/A
Broward County	0.0	N/A	N/A
Statewide	1.2	August 1	September 27

3.5 KEMP'S RIDLEY SEA TURTLE

3.5.1 Status and Distribution

Listing Status

The Kemp's ridley is the most endangered species of sea turtle in the world (Ross et al. 1989, Magnuson et al. 1990). It has received protection in Mexico since the 1960s and was listed as endangered throughout its range under United States law in 1970 (Service 1970). This status was ratified in 1973 with the passage of the ESA. Internationally, the Kemp's ridley is listed as critically endangered by the World Conservation Union (MTSG 1996), and commercial international trade in the species has been prohibited under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since July 1, 1975. In Florida, the Kemp's ridley is classified as endangered (FWC 2010a).

Geographic Range

The Kemp's ridley has one of the most restricted distributions of any sea turtle species (Morreale et al. 2007). Nesting occurs almost exclusively on the beaches of the western Gulf of Mexico, primarily in the Mexican state of Tamaulipas (NMFS and Service 2007c). The primary rookery is located at Rancho Nuevo, Tamaulipas. Regular nesting also occurs on the Gulf beaches of Texas, while infrequent nesting has been documented in several other southeastern states, including Florida. Adult turtles are thought to spend most of their time in the Gulf of Mexico, while juveniles and subadults also regularly occur in the northern Gulf and along the eastern seaboard of the United States as far north as Nova Scotia (Bleakney 1955) and Newfoundland (NMFS et al. 2010). Because of the collective efforts of Mexican and U.S. officials to protect the Kemp's ridley and restore nesting populations, a bi-national recovery plan has been developed (NMFS et al. 2010).

3.5.2 Habitat Characteristics and Use

Life History

The Kemp's ridley shares a general life history pattern similar to other sea turtles (Bolten 2003). After emerging from their nests, hatchlings crawl in a frenzied state to the ocean and swim offshore where they associate with boundary currents (Collard and Ogren 1990). Upon reaching the boundary currents, the post-hatchlings likely become passive migrants but are believed to be able to actively navigate for short distances as they are transported by pelagic currents within the open sea. Neonates from Mexican beaches are most likely carried into the northern Gulf of Mexico and then east and southward by the Loop Current (Collard and Ogren 1990). Some of these are entrained by the Florida current and eventually enter the Gulf Stream, while others remain in the Gulf. Some individuals within the Gulf Stream may be transported to the eastern Atlantic, including the Mediterranean Sea (Brongersma 1982, Bolten and Martins 1990). Recent studies suggest that nesting by Kemp's ridleys is highest on those beaches (e.g., Rancho Nuevo, Mexico) that facilitate successful migration of their offspring from the nesting beach to developmental habitats (Putnam et al. 2010).

Like pelagic-stage loggerhead and green sea turtles, Kemp's ridleys also utilize the sargassum community as epipelagic developmental habitat. Shaver (1991) found invertebrates typically associated with sargassum in the gut of small juvenile Kemp's ridleys stranded in south Texas. More recent studies in pelagic habitats in the Atlantic Ocean and Gulf of Mexico have confirmed this association (Witherington et al. 2012).

The small juvenile Kemp's ridleys spend one to four years or more (average of two years), depending on growth rates, in the pelagic phase before recruiting into nearshore waters within the Gulf of Mexico and U.S. Atlantic seaboard (Gregory and Schmid 2001, NMFS et al. 2010, Ogren 1989, TEWG 2000). Kemp's ridleys then transition into coastal-benthic juveniles in the neritic zone (Gregory and Schmid 2001, Snover et al. 2007). Juvenile and sub-adult Kemp's ridleys occupy a variety of benthic habitats including seagrass beds, sandy bottom, mud bottom, and live bottom (e.g., hard substrate colonized by sessile invertebrates; Gregory and Schmid 2001, NMFS et al. 2010). Kemp's ridleys forage in estuarine bays and nearshore hard bottom and sea grass habitats in the Gulf of Mexico from Texas along the Florida panhandle down the west coast of Florida to Florida Bay (Landry et al. 2005, Schmid and Barichivich 2006, Witzell and Schmid 2004). On the Atlantic coast, juvenile Kemp's ridleys occupy numerous large estuarine systems from New England to central Florida but are rare in southeast Florida (NMFS et al. 2010).

Kemp's ridleys migrate seasonally along Gulf of Mexico and Atlantic shorelines in response to temperature changes (Carr and Caldwell 1956; Schmid and Witzell 2006; Schwartz 1978). Juveniles often exhibit foraging site fidelity, returning to the same habitat for a number of years until maturing and moving to adult foraging grounds (Schmid et al. 2003, Schmid and Barichivich 2006; Schmid and Witzell 2006). Along the Atlantic seaboard, juveniles undergo an annual seasonal ritual, migrating southward to suitable habitat south of Cape Hatteras during the winter and then returning to more northern locations as water temperatures warm (NMFS et al. 2010). The east-central coast of Florida appears to be an important overwintering area for juvenile Kemp's ridleys (Henwood and Ogren, 1987, Schmid 1995, Morreale and Standora, 2005).

Kemp's ridleys mature upon reaching a straight carapace length of approximately 60 cm (24 in) at which time they recruit to adult foraging grounds in the Gulf of Mexico (NMFS et al. 2010). Individuals tagged along the U.S. eastern seaboard have been observed nesting at Rancho Nuevo and adjacent beaches (Schmid 1995, Chaloupka and Zug 1997, Schmid and Witzell 1997, TEWG 2000), indicating that neritic juveniles in the Atlantic return to the Gulf as adults. Shallow (< 37 m; 121 ft) coastal waters off the western and northern Yucatán Peninsula and in the northern Gulf from southern Texas to western Florida have been documented as important foraging areas where adult female residency is established seasonally (Byles 1989, Marquez 1990, Shaver 2005, Shaver and Rubio 2008). Limited tagging found that most adult males take up residency in nearshore waters near their nesting beaches (Shaver 2006, Shaver et al. 2005).

Reproduction

Approximately 75 percent of all documented Kemp's ridley nesting occurs along approximately 40 km (25 mi) of beach in and around Rancho Nuevo, Tamaulipas, Mexico, and virtually all of the remaining nesting by this species occurs elsewhere in the western Gulf of Mexico, from Texas, USA to Veracruz, Mexico (NMFS and Service 2007c). They nest singly or in large groupings called arribadas from April into July, and unlike most other sea turtles, nesting typically occurs in the daytime (Burchfield 2009; Service and NMFS 1992). The average period between arribadas is 25 days (Rostal et al. 1997), but the precise timing, periodicity, and duration are variable and unpredictable (Bernardo and Plotkin 2007). Some individuals may nest solitarily between arribadas, and thus may have shorter interesting intervals (Rostal 2007). On average, Kemp's ridleys lay about 100 eggs per clutch and lay an average of 2.5 clutches per nesting season (Miller 1997, TEWG 1998, 2000, NMFS et al. 2010). The renesting interval is between 14 and 28 days. Eggs typically take 45 to 58 days to hatch, depending on sand temperatures (Pritchard and Marquez 1973, Marquez 1994, Rostal 2007). Kemp's ridleys are thought to nest every two years, although intervals of one, three, and four years are not uncommon (Marquez et al. 1982, TEWG 2000).

3.5.3 Site Specific Occurrence

Distribution in Florida

Juvenile and subadult Kemp's ridleys occupy nearshore foraging grounds on both the west and east coasts of Florida, although capture records indicate that the distribution is discontinuous (Schmid and Barichivich 2006). They occur from Cape San Blas (Gulf County) in the Florida panhandle southward along the coast into Florida Bay and along the east coast from the St. Lucie Inlet (Martin County) northward to Duval County. While there are no published records of in-water captures or sightings of Kemp's ridleys between Martin County and the Atlantic side of the Florida Keys, stranding records document their occurrence in this area (Sea Turtle Stranding and Salvage Network, unpublished data). The main concentrations of juvenile Kemp's ridleys appear to be along the Panhandle coast through the Big Bend area of Florida. Concentrations of this species have also been documented farther south in Charlotte Harbor (Jeff Schmid, University of Florida, personal communication 2011) and in Gullivan Bay in the Ten Thousand Islands region of southwest Florida (Witzell and Schmid 2004). Post-nesting female Kemp's ridleys tagged outside of Florida have been documented foraging in waters offshore of western Florida (Shaver and Rubio 2008).

Prior to 1990, only one Kemp's ridley nest had been documented in Florida on the west coast, along with four nesting attempts on the east coast (Bowen et al. 1994). The one nest was dismissed as "an anomaly" (Meylan et al. 1995). While nesting of Kemp's ridley sea turtles in Florida is still rare, the numbers and distribution of nests has increased in recent years. Subsequent to the reported west coast nest in 1989, Johnson et al. (1999) documented Kemp's ridleys nesting in Pinellas (1994) and Lee Counties (1996) and provided the first account of this species nesting on the east coast of Florida in Volusia County (two nests by the same turtle). More recently, nesting has been reported on the east coast in Brevard, Duval, Flagler, Martin, and St. John's Counties, on the west coast in Sarasota and Charlotte

Counties, and throughout the Florida panhandle (FWC-FWRI 2020). Unlike other sea turtle species, Kemp's ridleys usually nest during the day; therefore, in many cases, the nesting female is observed and reported.

Florida Nesting Population

No data are available concerning the size of the Kemp's ridley nesting population in Florida or trends in its abundance.

Numbers of Nests within the Plan Area

From 2015 through 2020, Kemp's ridley nesting in Florida ranged from 10 to 17 nests, with a 6-year mean of 12 nests per year (Table 3-9). No nests were documented in Broward County during that period.

Seasonal Nesting Patterns in Florida

In Florida, Kemp's ridley turtle nesting has been documented as early as April 16 and as late as July 21 (FWC-FWRI 2021). Within this range, nearly all nesting took place in May and June. The earliest nest encountered from 2015 through 2020 was on April 16 and the latest was recorded on June 25 (Table 3-10).

Table 3-9. Kemp's ridley sea turtle nesting statistics within the Plan Area, County, and Statewide, 2015-2020. Crawls = nesting plus non-nesting (false crawl) emergences onto the beach. Nesting success = number of nests/total number of crawls X 100%. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Survey Length (km)	Average Crawls/Year	Average Nests/Year	Average Nests/km	Minimum Nests/Year	Maximum Nests/Year	Average Nesting Success	Minimum Nesting Success	Maximum Nesting Success
Ft. Lauderdale Beach	10.6	0.0	0.0	0.0	0	0	N/A	N/A	N/A
Broward County	38.7	0.0	0.0	0.0	0	0	N/A	N/A	N/A
Statewide	1,350.9	14.7	12.3	0.0	10	17	85.9%	64.7%	100.0%

Table 3-10. Dates of first and last nesting for Kemp's ridley sea turtles within the Plan Area, County, and Statewide, 2015-2020. Source: FWC-FWRI Statewide Nesting Beach Survey Program Database as of 5 March 2021.

Survey Area	Average Annual Number of Nests	Nest Dates	
		First	Last
Fort Lauderdale Beach	0.0	N/A	N/A
Broward County	0.0	N/A	N/A
Statewide	12.3	April 16	June 25

3.6 THREATS TO SEA TURTLE SURVIVAL

3.6.1 Global Threats

The various natural factors affecting sea turtles worldwide throughout their life cycles were reviewed by Hirth (1997). Erosion and tidal inundation associated with storm events destroy sea turtle nests worldwide. Sea turtle nests and individuals of all life history stages are preyed upon by a wide variety of predators including mammals, reptiles, fishes, birds, and crustaceans (Carr and Meylan 1980, Stancyk 1982, Hirth 1997, Nellis and Henke 2000, Frick 2003, Stewart and Wyneken 2004, Santidrian Tomillo et al. 2010). Juvenile and adult turtles may also fall victim to parasites and diseases. Parasites include certain species of barnacles, marine leeches, and trematodes. One of the significant diseases afflicting sea turtles (primarily green turtles) is fibropapillomatosis, which produces growths on the skin and internal organs. Fibropapilloma tumors grow large enough to hamper swimming, vision, feeding, and escape from predators and are linked to debilitation and death of sea turtles (Herbst 1994). Incidental capture or entanglement and subsequent drowning of sea turtles have been well documented for several fisheries (NMFS and Service 1991, 1992a, 1992b, 1993 and 2008). Trawl, longline, and gill-net fisheries have been identified as the major threats to both juvenile and adult sea turtles in various locations throughout the world.

3.6.2 Site-specific Threats

3.6.2.1 Natural

Erosion, inundation, and accretion are major abiotic factors that may negatively affect incubating sea turtle egg clutches in Florida (Witherington 1986, Atencio 1994, Milton et al. 1994, Shaw et al. 1994, Martin 1996, Elliott et al. 2008). These conditions are typically associated with storms or seasonal high tides. During high water conditions, nests deposited closest to the water's edge may be completely washed out and destroyed. Nests incubating higher on the beach can be exposed during escarpment formation or inundated with seawater during unusually high tides. Exposed eggs or those just beneath the sand's surface on eroded beaches may experience extremes in temperature and are much more vulnerable to predators resulting in reduced reproductive success. Eggs saturated with seawater in inundated nests are particularly susceptible to embryonic mortality (Bustard and Greenham 1968, Milton et al. 1994, Martin 1996). Accretion of sand above, as well as incursion of ground water into incubating nests, may also result in egg and hatchling mortality.

Sea turtles have evolved reproductive strategies to offset episodic losses of nests and hatchlings by laying large numbers of eggs and distributing their nests in the beach both spatially and temporally (Milton et al. 1994). Chronic erosion exacerbated by human activities along the coastline can result in a permanent reduction in both the quantity and quality of available nesting habitat leading to long-term impacts to productivity (Milton et al. 1994). Lower berm elevations after a storm can reduce the amount of dry sand above the water table. Egg chambers constructed on these narrow, eroded berms often lie partially below the water table, resulting in partial or total mortality of the clutch (Robbin Trindell, FWC, personal communication 2009). Furthermore, loss of and/or damage to dunes and dune vegetation during storms may increase the visibility of upland lighting and result in an increase in adult and hatchling disorientation (Conti et al. 2008).

Depredation of sea turtle eggs and hatchlings by natural and introduced species occurs throughout Florida (Davis and Whiting 1977, Williams-Walls et al. 1983, Witherington 1986, LeBuff 1990, Wilmers et al. 1996, Nicholas et al. 1998, Foote et al. 2000, Mroziak et al. 2000, Engeman et al. 2003, Krahe et al. 2003, Lorna Patrick, Service, personal communication 2010). The most common predators are ghost crabs, red fire ants, raccoons, feral hogs, foxes, coyotes and armadillos. In addition, feral cats have been documented preying on hatchlings (LeBuff 1990, Ferriter et al. 2008, Lorna Patrick, Service, personal communication 2010) and feral dogs have been reported to depredate eggs (FWC-NPA hatchling production database, as cited in Witherington et al. 2006b). In Broward County, the most common predators are foxes and raccoons. Since 2005, the overall trend in percentage of nests depredated has been decreasing from >10 percent in 2005 to < 3 percent in 2020 (Burkholder and Slagle 2020).

Another source of mortality for developing embryos as well as hatchlings is the invasion of nests by roots from dune vegetation (especially sea oats, *Uniola paniculata*). The roots may penetrate the eggs and destroy the developing embryos or entrap hatchlings in the nest (Raymond 1984, Witherington 1986, LeBuff 1990).

Non-native vegetation has invaded many coastal areas in Florida. The invasion of less stabilizing vegetation can accelerate erosion and degrade suitable nesting habitat. The Australian pine (*Casuarina equisetifolia*) has been found to be especially harmful to sea turtles, limiting access to appropriate nesting habitat and entrapping nesting females (Austin 1978, Reardon and Mansfield 1997). Schmelz and Mezich (1988) also found that the shallow, but extensive root network of this tree can interfere with nest construction.

Cold stunning of turtles is a regular phenomenon in the Indian River/Mosquito Lagoon complex on the central east coast of Florida (Witherington and Ehrhart 1989b) and in St. Joseph Bay in northwest Florida (Foley et al., 2007). However, it also affects turtles, particularly small juveniles elsewhere in the State. For example, during January 2010 a widespread cold stunning event impacted thousands of turtles, primarily green turtles, throughout the state as the result of an unusually prolonged period of cold weather. Kemp's ridleys and loggerheads were also affected. Temperatures dropped too rapidly for the turtles to escape into deeper waters and many subsequently became lethargic and unable to swim. A massive rescue operation was undertaken by State and Federal wildlife agencies in response to this event. By comparison, juvenile turtles in nearshore Atlantic waters experience more stable water temperatures that likely reduce the potential for cold stunning and may moderate the temperature-driven movements documented for juvenile sea turtles in bays and coastal lagoons (Witherington et al. 2006a).

3.6.2.2 Anthropogenic

Recreation and General Beach Use

In their review of general threats to sandy beach ecosystems, Defeo et al. (2009) noted that growing coastal populations, coupled with more leisure time and improved mobility, have escalated the intensity and spatial extent of recreational activities on beaches over recent decades. As prime sites for human recreation, beaches support many coastal economies (Klein et al. 2004), and therefore, beach management typically focuses on maximizing the recreational experience of beach users. This often results in the need for human interventions, such as beach nourishment, beach cleaning, coastal armoring, construction of tourism infrastructure, and increased beachfront lighting, all of which can be ecologically harmful.

In addition to South Florida residents, millions of tourists visit Fort Lauderdale beaches each year. The presence of humans in general and the various activities they undertake while at the beach can have both direct and indirect effects on sea turtles. Principal effects of human presence on the beach include interference with sea turtles attempting to nest, disorientation of hatchlings, and degradation of nesting habitat.

Until a sea turtle begins laying eggs, human activity and lighting on the beach may cause her to abandon her nesting attempt and return to the ocean without nesting (McFarlane 1963). Once a turtle leaves the beach, she may return to the same location or select a new site later that night or the following night. However, repeated interruption of nesting may cause a turtle to place her nest in a sub-optimal incubation environment (Murphy 1985). Even after a turtle has begun laying eggs, her behavior may be affected by the presence of humans. Johnson et al. (1996) found that turtles spent less time camouflaging nests and altered their path to the ocean in the presence of people. The effects of nighttime beach use by humans on nest success, nest site fidelity, and clutch frequency remain unknown.

Deep holes dug on the beach may impede nesting turtles during their ascent onto beaches and trap hatchlings as they migrate from the nest to the ocean. Hatchlings trapped in holes are susceptible to predation or may perish from dehydration and overheating if they remain in the hole during the day.

It is unlawful for beach visitors to destroy native dune vegetation (F.S. 161.242) or sea turtle nests (F.S. 379.2431(1)), hatchlings, or adults. Nevertheless, uninformed beachgoers have reportedly dug into nests on Florida beaches in search of eggs and/or hatchlings, presumably out of curiosity. And on some Florida beaches, human poaching of turtle nests has been a problem (FWC unpublished data).

Impacts of beachgoers to sea turtles are often indirect. Human footprints on the beach can interfere with the ability of hatchlings to quickly reach the ocean (Hosier et al. 1981), and heavy pedestrian traffic may compact sand over unmarked nests. Visitors are generally sympathetic to hatchlings that are having difficulty crawling to the ocean and may pick them up and release them into the surf. The negative impacts of this activity may include some loss of imprinting to the beach (LeBuff 1990) and an inability to establish a seaward direction during the hatchlings' offshore migration (Lohmann and Lohmann 1994).

Beach Driving

In 1985, the Florida Legislature severely restricted vehicular driving on Florida's beaches, except that which is necessary for cleanup, repair, or public safety. Beach driving by public safety and beach maintenance (e.g., trash collection) vehicles can potentially impact sea turtles. Vehicles may run over adult, hatchling, and live stranded sea turtles, including post-hatchling washbacks, as well as unmarked nests. The weight of vehicles, particularly heavy trucks, may crush eggs in incubating nests, although to date, there is no documentation of this type of impact. Additionally, vehicle lights at night might deter nesting turtles from emerging from the ocean, disturb nesting females already on the beach, and/or disorient hatchlings during their crawl from the nest to the ocean. A secondary effect of vehicular traffic on the beach is the potential for compacting sediments under the weight of cars, trucks, and heavy equipment. Compaction is an important consideration for sea turtle conservation, because if sediments are too compact, a female turtle may have difficulty excavating an egg chamber of adequate depth or dimensions (Raymond 1984, Ryder 1990, Carthy 1994, Ernest and Martin 1999). She may also have to dig longer before finally constructing a suitable egg chamber, or she may abandon the nesting attempt altogether. Increased energy expenditures during nesting may place a higher reproductive cost on that individual. Additionally, if the chamber is poorly constructed, the fate of the eggs may be affected. For example, if the chamber is too shallow, eggs are more susceptible to erosion, predation, and disturbance from activities on the beach.

Vehicular ruts left in the sand create obstacles for hatchlings attempting to reach the ocean (Mann 1977, Hosier et al. 1981, Cox et al. 1994, Arianoutsou 1988, Lamont et al. 2002). Upon encountering a vehicle rut, hatchlings may be disoriented along the vehicle track, rather than cross over it to reach the water. Apparently, hatchlings become diverted, not because they cannot physically climb out of the rut, but because the track depression alters their perception of the open horizon and disrupts their sea-finding ability (Mann 1977). If hatchlings are trapped or detoured by vehicle ruts, they are at greater risk to predators, fatigue, and desiccation.

Beach Cleaning

Fort Lauderdale beaches are routinely cleaned to remove seaweed and trash. Beach cleaning, especially mechanical raking, may damage nests and hatchlings. Rakes, especially those with tongs longer than 10 cm (3.9 in), may injure pre-emergent hatchlings near the surface of the nest. Heavy equipment associated with mechanical raking can repeatedly pass over nests potentially compacting the sand above them. Mann (1977) suggested that the pressure from heavy beach cleaning equipment may increase egg mortality. As with other vehicles, beach cleaning equipment may leave ruts along the beach that hinder or trap hatchlings (Hosier et al. 1981). A study investigating the effects of mechanical beach cleaning on loggerhead and green turtle nesting, hatching, and emerging success on Broward County beaches found a significant impact from beach cleaning activities on nesting success, but not on hatching or emerging success (Earney 2017).

Fireworks and Bonfires

Fireworks and bonfires are disruptive to sea turtle nesting and may disorient hatchlings. Hatchling sea turtles may be drawn into the fires with fatal consequence (Mortimer 1979, NMFS and Service 1993).

Recreational Furniture and Equipment

Individual beachgoers, resorts, and commercial vendors utilize and store a variety of recreational equipment on Fort Lauderdale beaches. Items typically brought to the beach include tents, umbrellas, beach chairs of all types, sailboats, jet skis, and inflatable boats. When left on the beach, these items can act as barriers to deter female turtles from nesting and trap or impede hatchlings moving from their nest to the ocean. According to the Broward County Sea Turtle Conservation Program Obstructed Nesting Attempt Database, beach furniture interfered with 283 sea turtle nesting attempts on Fort Lauderdale beaches between 2016 and 2020. Statewide, there have also been reports of nesting females being trapped under heavy wooden lounge chairs and cabanas, eggs being destroyed by beach umbrella installation, and hatchlings being hindered from emerging due to placement of equipment on top of nests (FWC unpublished data).

Beach Refuse

Many beaches are littered with various types of human-produced debris, which may be hazardous to sea turtles. Hatchlings and nesting females may become entangled in fishing line, rope, and fishing nets (Balazs 1985, Plotkin and Amos 1988). This could hinder a female's ability to ascend the beach to nest and a hatchling's ability to move from the nest to the ocean. Similarly, building material, tires, pallets, and drums act as obstructions to female turtles ascending the beach to nest and hatchling sea turtles descending the beach to begin their offshore migrations. Such obstructions may cause females to return to the ocean without nesting and would slow a hatchling's movement to the ocean making it more susceptible to predation. Each year, Broward County participates in the International Coastal Cleanup organized by the Ocean Conservancy.

Coastal Development

Much of Florida's coastline is now built out, particularly in the Southeast region where sea turtle nesting is the highest in the State. Nevertheless, there are isolated parcels, and in some regions, large sections, of undeveloped private property adjacent to sea turtle nesting beaches. Improperly sited development can eliminate or degrade nesting habitat. Single- and multi-family residences, hotels, restaurants, and recreational attractions bring humans into close proximity with sea turtles, introduce artificial lighting into the nighttime environment, and introduce domesticated pets, which are potential predators of sea turtle eggs and hatchlings. The general effects of increased human recreation and general beach use are discussed above.

Along Florida's developed coastline, runoff of water from beachfront parking lots, building roofs, roads, decks, and draining swimming pools is frequently discharged directly to the beach and/or dune by sheet flow, via stormwater outfalls, or through small diameter pipes. These outfalls create erosion channels, prevent natural dune establishment, and wash out sea turtle nests (FWC unpublished data). Furthermore, oils, grease, antifreeze, gasoline, metals, pesticides, chlorine, and nutrients contained in stormwater may have a detrimental effect on sea turtle nests.

Public and private pedestrian dune crossovers constructed on the beach or dune can potentially impact sea turtles. If placed too far seaward on the beach, these types of structures create obstacles to nesting sea turtles and hatchlings attempting to reach the ocean. Dune walkover stairs and the extended ramps required for Americans with Disabilities Act-compliant structures pose obstacles to nesting turtles. Construction or installation of the structures during the nesting season could result in unmarked nests being disturbed or destroyed.

Artificial Beachfront Lighting

Coastal development is often accompanied by artificial lighting which can discourage females from emerging onto the beach to nest (Witherington 1992) and prevent emergent hatchlings from orienting properly to the sea (Witherington 1997). Salmon et al. (2000) demonstrated that artificial lighting can change spatial nesting patterns. On a beach in Boca Raton where a glow of artificial light was present behind the dune, loggerhead turtles preferred to nest in the darker areas silhouetted by tall buildings and dune vegetation (Salmon et al. 1995). Mattison et al. (1993) noted that emergences of nesting turtles in Broward County, Florida, were reduced in areas where lighted piers and roadways were near the beach. Hatchlings, unable to find the ocean or delayed in reaching it, are likely to incur high mortality from dehydration, exhaustion, or predation (Carr and Ogren 1960, Witherington and Ehrhart 1989b, Witherington and Martin 2003). Passing vehicles often crush hatchlings that are lured by streetlights into parking lots or onto roadways (McFarlane 1963, Witherington and Martin 2003). Witherington et al. (1996) indicated that approximately 20 percent of sea turtle nests statewide show signs of hatchling disorientation caused by lighting. This equates to approximately one million hatchling sea turtles being misdirected by artificial lighting (Witherington 1997), with hundreds of thousands of hatchling deaths each year in Florida. Salmon (2006) reviewed the effects of artificial lighting on sea turtles and various means for mitigating its harmful effects. He concluded that what is needed in Florida is a statewide policy for artificial light management.

Impacts from artificial lighting have been a significant conservation issue on Broward County beaches. The reduction of hatchling mortality due to artificial lighting is an ongoing conservation goal of the FWC, Broward County, and the BCSTCP. Management strategies have included mass nest relocation, nest caging, and the adoption of lighting ordinances in coastal municipalities (Wilson 2009). Adult and hatchling disorientation events by month on Fort Lauderdale Beaches from 2015 – 2020 are presented in Tables 3-10 and 3-11, respectively. During that period, adult disorientation events ranged from 6 to 28 events per year, with a 6-year mean of 14 events per year. Hatchling disorientation events ranged from

312 to 587 events per year, with a 6-year mean of 484 events per year. Adult disorientations were most frequent during June, while hatchlings disorientations peaked in July and August. Adult disorientation events typically involve a single individual while hatchling events may involve tens or hundreds of hatchlings. Temporary lighting associated with special events was not specifically identified as a cause of any of these disorientation events.

Table 3-10. Adult disorientation events on Fort Lauderdale Beaches, 2015-2020. Source: FWC Disorientation Database as of 8 October 2021.

Year	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2015	0	0	2	8	2	2	0	0	0	0	**14**
2016	0	0	4	18	6	0	0	0	0	0	**28**
2017	0	0	3	9	8	0	0	0	0	0	**20**
2018	0	0	1	5	1	1	0	0	0	0	**8**
2019	0	0	2	3	0	1	0	0	0	0	**6**
2020	0	0	5	0	0	1	0	0	0	0	**6**

Table 3-11. Hatchling disorientation events on Fort Lauderdale Beaches, 2015-2020. Source: FWC Disorientation Database as of 8 October 2021.

Year	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
2015	0	0	1	38	157	211	46	7	3	1	**464**
2016	0	0	0	17	203	208	117	6	0	0	**551**
2017	0	0	2	27	188	234	71	3	0	0	**525**
2018	0	0	0	9	198	274	96	10	0	0	**587**
2019	0	0	2	43	199	185	34	0	0	0	**463**
2020	0	0	0	4	98	174	36	0	0	0	**312**

Sand Fencing

Sand fencing and planting vegetation, most notably sea oats, are commonly used along Florida's coastline as a means of stabilizing the foredune. Sand fences have been known to trap hatchling turtles and act as barriers to nesting turtles (National Research Council 1990). The FDEP provides guidelines for installing sand fencing to minimize impacts to sea turtles (FDEP 2006).

Shoreline Armoring

Seawalls, rock revetments, and other types of armoring structures are constructed to prevent both landward retreat of the shoreline and inundation or loss of upland property by wave action or flooding (Kraus and McDougal 1996). Although these structures can be effective in protecting beachfront property during certain storm conditions, they do little to promote or maintain sandy beaches. Schroeder and Mosier (2000) reported that 22.7

percent of the east coast and 13.9 percent of the west coast of Florida was armored. Witherington et al. (2011a) conducted a survey of potential barriers to sea turtle nesting along 321.8 km (200 mi) of Florida's sandy beaches, 80.45 km (50 mi) in each of the state's four regions. Barriers included armoring structures, sand fences, beach access structures (e.g., dune crossovers), recreational equipment, and buildings. The researchers found that all barriers combined occupied 18.0 percent of the entire beach length surveyed, with the southeast region (Brevard through Miami-Dade County in their study) having the greatest extent of potential barriers (23.8 percent).

Beaches seaward of seawalls and other armoring structures are typically narrower than natural unarmored beaches (Pilkey and Wright 1988). On eroding shorelines, poorlydesigned and sited seawalls may increase swash velocity, duration and elevation, thereby accelerating erosion in front of the structure during storms (Pilkey and Wright 1988, Terchunian 1988, Plant and Griggs 1992). This can eventually lead to increased rates of erosion of adjacent beaches. Additionally, buried portions of a seawall may alter beach porosity, permeability, beach groundwater elevation, and beach slope variability. Collectively, these changes in beach characteristics can diminish the quality of beach nesting habitat for sea turtles.

Considerable anecdotal information exists to support this contention. However, few experimental studies have been designed specifically to assess the impacts of armoring structures on sea turtle nesting. Mosier (1998) and Mosier and Witherington (2002) recorded the behavior of nesting turtles in front of seawalls and adjacent unarmored sections of beach in Florida. Both studies reported that fewer sea turtles made nesting attempts on beaches fronted by seawalls than on adjacent beaches where armoring structures were absent. Of those turtles that did emerge in the presence of seawalls, proportionally fewer nested. More recently, Rizkalla and Savage (2011) obtained similar results while studying the effects of seawalls on loggerhead nesting in Indian River County, Florida. Mosier (1998) also found that turtles tended to wander greater distances on armored sections of beaches than turtles that emerged on adjacent natural beaches. It is unknown whether the additional energy expenditures associated with reduced nesting success (more crawls required to produce an equivalent number of nests) and increased wandering reduces annual reproductive output.

Mosier (1998) and Mosier and Witherington (2002) also indicate that armoring structures may create suboptimal nesting habitat for sea turtles by effectively eliminating a turtle's access to upper regions of the beach, thereby causing nests to be placed closer to the water (Witherington et al. 2008). Consequently, nests on armored beaches were generally found at lower elevations than those on non-walled beaches. Nests at lower elevations are at greater risk of repeated tidal inundation, erosion, and altered thermal regimes, an important factor in determining the sex ratio of hatchlings (Mrosovsky and Provancha 1989, Mrosovsky 1994, Ackerman 1997, Delpech and Foote 1998). On eroding sections of coastline, the quality of beach habitat seaward of armoring structures can be expected to diminish as the shoreline recedes, and thus the negative effects of the structures are likely to become more pronounced over time.

Witherington et al. (2011b) used a small portable wall to study the nesting behavior and nest-site selection of loggerhead turtles that emerged to nest in southern Brevard County, Florida. In contrast to the findings of Mosier (1998) and Mosier and Witherington (2002), Witherington et al. (2011b) found that the portable wall had no significant effect on nesting success. They suggested that the difference may have been due to the effects that real seawalls have on beach profile. It was also suggested that the appearance of the relatively low portable wall used in their study compared to the taller seawalls and accompanying buildings in the other studies might have accounted for the difference. Although the portable wall had no significant effect on nesting success, it did affect the placement of nests. When the wall was present, loggerhead turtles nested closer to the surf than when the wall was absent. This might be expected to result in reduced hatching success, as nests are at increased risk of tidal inundation and wave erosion. However, the high variation in the data and small sample sizes precluded detection of biologically significant differences between nests placed seaward of the wall and those placed higher on the beach.

Rizkalla and Savage (2011) found that seawalls in Indian River County increased the likelihood of loggerhead nests being washed away during storms but did not find any significant effects on hatching success of those nests that were not washed out. However, like Witherington et al. (2011b), the researchers cautioned that this may have been due to small sample size. Herren et al. (2007), also working in Indian River County, similarly found no significant difference in hatching success of loggerhead nests in front of seawalls compared to those on a natural beach.

Sea turtles may also be affected by the installation of armoring structures during the sea turtle nesting season. During construction, incubating eggs in unmarked or missed turtle nests may be crushed, smothered, unearthed, or otherwise damaged. Vibrations and water runoff from jetting operations during installation of structures can also damage nests. Eggs relocated from the construction area may suffer movement-induced mortality if not properly handled. Equipment and materials left on the beach overnight may obstruct or prevent nesting sea turtles from reaching suitable nesting habitat. Construction equipment, holes, ruts, and debris on the beach may entrap adult and hatchling sea turtles. Removal of temporary structures following an erosion event may induce impacts similar to those occurring during initial construction.

Buried geotextile tubes are an alternative to vertical seawalls. These long, sand-filled bags are arranged in pyramidal fashion within a shore-parallel trench constructed along the beach/dune system and then covered with sand. Florida Administrative Code Chapter 62B-56 provides rules and procedures for using sand-filled geotextile tubes as the core of a dune restoration project. The code requires that sand cover over the core structure be measured 30 days or less before the start of the sea turtle nesting season and that there must be a minimum of 3 ft (0.9 m) of sand cover over the structure. When there is insufficient sand cover over the bags, turtles cannot dig an egg chamber of appropriate depth, and the shallow placement of eggs exposes them to increased risk of washout and depredation. Incubation temperatures within the clutch may also be altered as the result of shallow egg placement. Completely exposed geotextile tubes pose the same type of obstacles to nesting and hatchling sea turtles as other types of armoring and eliminate more nesting habitat than vertical armoring structures because of their wide configuration on the beach.

Once a coastal armoring structure is in place, it can continue to cause problems for sea turtles. For example, hatchlings have been trapped in holes or crevices of exposed riprap and geotextile tubes. Nesting turtles and hatchlings have been entangled or entrapped in the debris of failed structures. There have also been reports of injuries to nesting turtles that have been able to climb onto a seawall via adjacent properties and have subsequently fallen off (FWC unpublished data).

As the extent of armoring along Florida's sea turtle nesting beaches increases, the probability of a nesting turtle encountering a structure or depositing a nest in sub-optimal habitat increases. Additionally, the displacement of nests from armored locations may increase the density of nests in a dwindling number of suitable nesting sites, thereby increasing the potential for density-dependent nest mortality (e.g., turtles digging up existing nests).

Beach Nourishment

Beach nourishment typically involves the dredging of sand from inlets or offshore borrow areas and placing it on an eroded section of coastline; inland sand sources may also be used. Regardless of the source, state rules (Florida Administrative Code Chapter 62B-41) require that the introduced material be of compatible and comparable physical nature to the native sand it replaces.

Although beach nourishment is generally viewed as a more environmentally benign solution to shoreline protection than armoring, it too has potential for impacting sea turtles. It can affect the sea turtle reproductive process in a variety of ways. Nourished beaches may provide a greater quantity of nesting habitat, but the quality of that habitat may be less suitable than pre-existing natural beaches. Sub-optimal nesting habitat on nourished beaches may decrease nesting, increase the energy burden on nesting females, result in abnormal nest construction, and reduce the survivorship of eggs and hatchlings. A thorough review of the processes associated with each of these potential effects was presented by Crain et al. (1995).

Most nourishment projects on high-density nesting beaches in Florida (e.g., southeastern counties) are constructed outside of the main portion of the nesting season to minimize incidental take of turtles. Adult turtles emerging to nest may be disturbed by construction lighting and/or prevented from reaching nesting habitat by pipes, equipment, and other obstacles on the beach. Nesting turtles may also avoid beaches due to the movement of equipment and personnel at night. Nests relocated out of construction areas may experience reduced reproductive success (Moody 1998). Unmarked nests (missed by surveyors during their morning surveys) may be crushed by construction equipment or buried during deposition of dredged materials on the beach.

Nourished beaches are typically wider, flatter, more compact, and consist of wetter sediments than natural beaches (Nelson et al. 1987, Ackerman et al. 1991, Ernest and Martin

1999). On severely eroded sections of beach, where little or no suitable nesting habitat previously existed, nourishment can result in increased nesting (Ernest and Martin, 1999). However, on most nourished beaches, nesting success typically declines for the first one- or two-years following construction, even though more habitat is available (Crain et al. 1995, Trindell et al. 1998, Brock et al. 2007). Reduced nesting success on nourished beaches has been attributed to increased compaction of sediments, scarping, and changes in beach profile (Nelson et al. 1987, Crain et al. 1995, Davis et al. 1994, Lutcavage et al. 1997, Steinitz et al. 1998, Ernest and Martin 1999). Compaction presumably inhibits nest construction, while scarps often cause female turtles to return to the ocean without nesting or deposit their nests seaward of the scarp where they are more susceptible to tidal inundation. Even in the absence of escarpments, nesting success tends to be reduced on nourished beaches (Trindell et al. 1998, Ernest and Martin 1999, Brock et al. 2007). The disproportionate placement of loggerhead nests along the seaward portion of constructed beach berms has been attributed to changes in beach profile (elevation, slope, width) resulting from nourishment projects. This seaward displacement makes those nests more susceptible to being washed out as the beach equilibrates to a more natural profile over time. In contrast, Brock et al. (2007) found that at one nourishment site, there was no similar displacement of green turtle nests, as the majority of nests continued to be placed on the foredune where they were not susceptible to washout. An increased berm elevation due to beach nourishment increases the exposure of hatchlings and nesting females to landward lights, resulting in a higher number of disorientation events (Brock et al. 2007).

Beach nourishment can affect the incubation environment of sea turtle nests by altering the moisture content, gas exchange, and temperature of sediments (Ackerman et al. 1991, Ackerman 1997, Parkinson and Magron 1998). The extent to which the incubation environment is altered is largely dependent on the similarity of the nourished sands and the natural sediments they replace. Consequently, results of studies assessing the effects of nourishment on reproductive success have varied widely among study sites (Brock et al. 2007).

Placement of sand on narrow beaches that front nearshore hardbottom or reef communities can result in the spatial and temporal loss of this important foraging habitat. Marine macroalgae on nearshore hardbottom are a primary food source for juvenile green sea turtles, with smaller animals found closer to the shoreline. Sand moving offshore from a nourished beach can cover nearshore reef habitat. Surveys of sea turtles in nearshore waters documented a decrease in numbers observed after sand placement relative to pre-project abundances for two east coast projects (Trindell et al. 2008).

Coastal Construction Activities

Other coastal construction activities that may be detrimental to sea turtles include construction, repair, and maintenance of upland structures and dune crossovers; installation of utility cables and pipelines; and installation, repair and maintenance of coastal highways, beach ramps, and other public infrastructure. Sea turtle eggs may be crushed, unearthed, or otherwise destroyed during construction activities (e.g., heavy equipment, excavation, pile driving, water jetting, etc.). Eggs in undetected and unmarked nests may be buried beneath sand placed on the beach, resulting in mortality of developing embryos. If large quantities of sand are placed over incubating nests, hatchlings may not be able to emerge from nests. Hatchlings may be trapped beneath equipment, supplies, and/or construction debris on the beach. Nesting females may be deterred from nesting and hatchling turtles may be misdirected by construction or security lights associated with coastal construction activities.

Climate Change

Climatic change in Florida could amplify current land management challenges involving habitat fragmentation, urbanization, invasive species, disease, parasites, and water management. Florida is one of the most vulnerable areas in the world to the consequences of climate change. One of the most serious threats to Florida's coasts comes from the combination of elevated sea levels and more frequent and intense hurricanes.

Florida has over 2,173 km (1,350 mi) of coastline, low-lying topography, and proximity to the hurricane-prone subtropical mid-Atlantic Ocean and Gulf of Mexico. As a result, barrier islands and other low-lying areas in Florida will be more susceptible to the effects of storm surge, and those effects will be exacerbated by elevated sea levels. Rising sea levels will also shift the mean high-water mark landward, causing beaches unrestricted by coastal structures to migrate slowly inland. The primary result, especially where development exists, is increased erosion rates. This could particularly impact areas with low-lying beaches where sand depth is a limiting factor (Daniels et al. 1993, Fish et al. 2005, Baker et al. 2006). These losses could be accelerated by a combination of other environmental and oceanographic changes such as an increase in the intensity and/or frequency of storms and changes in prevailing currents, all of which could lead to increased beach loss via erosion (Antonelis et al. 2006, Baker et al. 2006).

Special Events

Special event activities occurring on the beach during sea turtle nesting season can have adverse impacts on sea turtle nests, disturb nesting females and hatchlings, and degrade the beach and dune habitat. Impacts may include encounters between sea turtles and structures, equipment, and refuse/debris associated with special events, crushing of unmarked nests by heavy equipment, deterrence of emerging nesting females due to event crowds, lighting, and noise, adult and hatchling disorientation due to lighting and fireworks, and compaction of sand due to beach driving, beach cleaning, and heavy pedestrian traffic.

When evaluating impacts of special event activities on nests, the presence of unmarked nests must be considered. Unmarked nests can occur when a nest is missed by monitoring personnel or the barriers used to mark a nest are washed out by tides or vandalized. Sea turtle monitoring personnel conduct daily surveys of Fort Lauderdale beaches and all nests documented are clearly marked with a series of stakes connected by flagging tape. Surveys are initiated within 30 minutes of sunrise from March 1 through October 31 each year. Nests deposited before March 1 or after October 31 may not be reported and therefore may remain unprotected throughout their incubation periods. Though possible, such early and late nesting events are rare on Fort Lauderdale beaches (Figure 3-1).

A more likely scenario leading to an unmarked nest is the failure of monitoring personnel to detect a nest on the beach. The distinctive tracks left on the beach at night by turtles are interpreted the following morning to determine which species came ashore and whether or not it nested. However, sometimes these tracks are misinterpreted. In an assessment of data generated by permitted and trained sea turtle surveyors, FWC determined that seven percent of the crawls marked for study were incorrectly recorded as false crawls when they were, in fact, nests (Schroeder 1994). According to data provided by the Broward County Sea Turtle Conservation Program, 8 to 24 missed nests were discovered each year on Fort Lauderdale Beaches from 2015 – 2020, with 1 to 16 of those misidentified as false crawls.

Adverse weather conditions or human activity on the beach may also cause a nest to be missed. The greater the disturbance, the greater the likelihood that the crawl will be overlooked. Rain and wind obscure tracks, while wave wash can completely erase a track, particularly during storms or abnormally high tides. Humans on the beach can also obscure signs of nesting. Sometimes, tracks are intentionally obliterated, either maliciously or in misguided efforts to protect the nest from human tampering. Typically, however, heavy foot traffic is responsible, particularly at locations where crowds gather to watch a turtle nest. As a result of the various situations, some nests are likely to be missed, even by the most experienced observer.

Nests missed during the morning surveys may later be identified by signs of hatchling emergences in areas where no nest was previously documented. However, signs of hatchling emergence are very easily obliterated by the same elements that interfere with detection of nests. Furthermore, some nests produce no hatchlings. Thus, it is likely that some nests missed or misidentified during the morning surveys go undetected. These nests are at greatest risk of impact from special events on the beach.

The loss of nest markers due to tides or vandalism is another means for a nest to be placed at risk of special event impacts. However, as described elsewhere in this HCP, the City has developed minimization measures to reduce this risk.

3.7 OTHER SPECIES OF CONCERN IN THE PLAN AREA

Conservation measures implemented under this HCP will benefit a wide variety of species beyond the five species of sea turtles. It is highly unlikely, however, that other federally or state listed species that have the potential to occur in the Plan Area would be found there due to habitat fragmentation. Southeastern beach mice (*Peromyscus polionotis niveivenrtris*), for example, historically occupied dune habitat in Broward County, but have since been extirpated in the southern portion of their range due to coastal development (Service 1999).

Although several species of shorebirds and seabirds are local residents and migratory visitors to Fort Lauderdale's beaches, nesting is uncommon. The Florida Shorebird Database (FSD) (https://public.myfwc.com/crossdoi/shorebirds/index.aspx) lists 20 "focal" species of seabirds and shorebirds that nest in Florida and are of conservation interest to the FWC. Thirteen (13) of these have been observed in the vicinity of Fort Lauderdale and include the black-necked stilt (*Himantopus mexicanus*), black skimmer (*Rynchops niger*), bridled tern (*Onychoprion anaethetus*), brown pelican (*Pelecanus occidentalis*), Caspian tern (*Hydroprogne caspia*), gull-billed tern (*Gelochelidon nilotica*), killdeer (*Charadrius* vociferous), laughing gull (*Leucophaeus atricilla*), least tern (*Sternula antillarum*), magnificent frigatebird (*Fregata magnificens*), royal tern (*Thalasseus maximus*), sandwich tern (*Thalasseus sandvicensis*), and willet (*Tringa semipalmata*). Sightings are rare or unreported for five focal species of non-breeding shorebirds in Florida; these are the American oystercatcher (*Haematopus palliates*), piping plover (*Charadrius melodus*), red knot (*Calidris canatus*), snowy plover (*Charadrius nivosus*), and Wilson's plover (*Charadrius wilsonia*). A summary of these FSD focal species sighted during visits by the public, available at www.ebird.org, as well as focal species identified during the annual FWC/ Service Winter Shorebird Count in 2020, is presented in Table 3-12.

Some nesting by the least tern, considered Threatened in the State of Florida, has been recorded in the last five years on Fort Lauderdale beaches. During two consecutive breeding seasons, 2017 and 2018, least terns nested on the beach adjacent to the Orleans Chateau and Villas at 2000 South Ocean Lane, at the extreme south end of the City's coastline and an area where the City does not permit events. A maximum number of 45 nests was recorded in 2017. Disturbances unrelated to special events at this site make it unsuitable for nesting and are the primary reason colonies do not return to nest here each year (Ricardo Zambrano, FWC, personal communication 2019). Since disturbances related to special events are temporary and nesting is unlikely within the Plan Area due to the busy, urban nature of the beach, this HCP will not cover state-listed shorebirds. As such, federally and state listed birds will be handled on a case-by-case basis with federal or state agencies independent of HCP requirements.

Since the FDEP does not have regulatory authority over nesting seabirds or shorebirds, the FWC does not routinely review CCCL permit applications for impacts to these species and therefore does not issue permit conditions to minimize impacts. Nesting by colonial or solitary seabirds or shorebirds is typically identified by members of the public, volunteers with the South Florida Shorebird Partnership (affiliated with the FWC), or other organizations like the Audubon Society. Reports of nesting are submitted to the FWC, which will then post the area with signage alerting beach goers to keep their distance from the nests. All nesting is reported to the County and City.

Table 3-12. Florida Shorebird Database focal shorebird and seabird species identified at locations in the vicinity of Fort Lauderdale.

	Lauderdale -By-The-Sea Fishing Pier	Vista Beach Park	Fort Lauderdale Beach – North End	Hugh Taylor Birch State Park	Bonnet House Gardens and Museum	Fort Lauderdale Beach Park	Harbor Beach	Port Everglades Inlet	FWC/Service Winter Shorebird Survey
	2013-2020	2004-2020	2015-2020	2015-2020	2016-2020	2012-2020	2017-2020	2016-2020	2020
American Oystercatcher									
Black Skimmer	x	x		x			x	x	
Black-necked Stilt		x	x	x		x		x	
Bridled Tern	x								
Brown Noddy									
Brown Pelican	x	x	x	x	x	x	x	x	
Caspian Tern	x	x	x	x		x	x	x	
Gull-billed Tern	x	x							
Killdeer		x		x		x			
Laughing Gull	x	x	x	x	x	x	x	x	x
Least Tern	x	x	x	x	x	x	x	x	
Magnificent Frigatebird	x	x	x	x		x	x	x	
Masked Booby									
Piping Plover[1]									x
Red Knot									
Roseate Tern									
Royal Tern	x	x	x	x	x	x	x		x
Sandwich Tern	x	x	x	x			x	x	
Snowy Plover									
Sooty Tern									
Willet	x	x	x	x		x		x	
Wilson's Plover									

[1] Piping plovers observed during the winter shorebird survey were seen between the Dania Beach pier and Hallandale Beach and within the Dr. Von D Mizell-Eula Johnson State Park.

4.0 ENVIRONMENTAL SETTING AND BIOLOGICAL RESOURCES

4.1 ENVIRONMENTAL SETTING

As described in Section 1.3, the Plan Area is comprised of 48.2 ha (119 ac) of beach and dune habitat within the City of Fort Lauderdale, as well as four beach-adjacent properties where special events are hosted (Figures 1-3 and 1-4). Fort Lauderdale's beaches are located entirely on a barrier island and stretch approximately 10 km (6.2 mi) from the northern limits at Flamingo Avenue to the southern limits at the Port Everglades entrance channel. There are about 3.3 ha (8.2 ac) of vegetated dunes under City management (Table 4-1). The City manages dunes only from R-59+308 to R-80 (Appendix C); the dunes at the northern and southern extents of the City's beaches are managed by private properties.

Table 4-1. City of Fort Lauderdale dune inventory, 2021.

FDEP MONUMENT	TOTAL DUNES GAIN 2012 TO 2021 (SQFT)	CHANGE FROM 2020 TO 2021 (SQFT)	ALL DUNES TOTAL AREA 2021 (SQFT)
R-59+308 TO R-59	4,968.94	-903.56	5,652.87
R-59 TO R-60	6,342.61	-1,695.92	24,532.58
R-60 TO R-61	21,646.95	1,283.00	31,311.76
R-61 TO R-62	16,726.34	2,690.37	26,864.34
R-62 TO T-63	18,661.42	-521.30	19,974.00
T-63 TO R-64	19,613.84	-2,272.46	25,745.53
R-64 TO R-65	15,782.43	-2,874.08	37,313.01
R-65 TO R-66	22,822.48	295.78	22,822.48
R-66 TO R-67	20,500.55	683.55	20,500.55
R-67 TO R-68	12,914.51	-2,715.59	26,282.56
R-68 TO T-69	1,690.05	-3,667.78	16,783.22
T-69 TO R-70	5,762.82	-388.15	15,609.58
R-70 TO R-71	12,473.05	-2,350.32	20,850.43
R-71 TO R-72	1,939.41	-42.76	2,290.03
R-72 TO R-73	-203.73	-1,069.36	192.46
R-73 TO R-74	1,457.68	442.30	1,457.68
R-74 TO R-75	1,063.62	207.66	2,755.05
R-75 TO R-76	-150.65	-10.55	182.32
R-76 TO R-77	1,199.49	-239.58	2,537.71
R-77 TO R-78	9,506.87	1,463.21	12,595.73
R-78 TO T-79	2,994.03	-312.25	5,115.14
T-79 TO R-80	29,027.70	-1,042.59	29,027.70
TOTAL	**226,740.42**	**-13,040.37**	**350,396.74**

4.1.1 Climate

South Florida has a humid, subtropical climate strongly influenced by tropical, oceanic conditions to the south. A humid, subtropical climate also has at least 8 months of average temperatures above 10 °C (50 °F). Peninsular Florida has a wet season typically stretching from May through October, while the dry season extends from November through April, with some variation from season-to-season. Fort Lauderdale wet season rainfall, about 120 cm (47 in) is often concentrated in the afternoons as moist air from over the ocean is drawn inland and upward as the drier air over the peninsula heats faster and rises. Afternoon storms that form inland typically move back toward the coastline as the evening progresses. Tropical systems disrupt this pattern and may result in extremely heavy rainfall over a few days. Dry season rainfall of 48 cm (19 in) is associated with irregular frontal systems moving down from northern temperate zones and colliding with moist, warm air over Florida. Fort Lauderdale average high temperatures peak at 32°C (90 °F) in July and August with an average low near 24 °C (75 °F), while the average high temperature is 24 °C (75 °F) in January with an average low of 14 °C (57 °F).

4.1.2 Beach Topography and Tidal Conditions

Geologically, Fort Lauderdale's beaches are atop a sedimentary Miami Limestone and Anastasia formation, and the sand is comprised of three sources: quartz sand, which was transported by rivers and migrated from the north; Pamlico Sand that covers much of southeast Florida; and skeletal carbonate sand from mollusk and calcareous reef flora and fauna (CBI 2015). The sand native to the City's beaches has been tested and characterized in terms of color, size, and content of silt carbonate and gravel. The sand is generally of silicate and carbonate content with little to no organic or silt content and is light yellow to gray in color (CBI 2015). Sand in the swash zone often develops into a cusp and embayment formation that either merges with or remains seaward of the berm (dry sandy beach platform) in summer as sand accretes. Scarps (vertical steps on the beach) may form naturally or due to storms when sand erosion lowers the beach level and the erosion progresses landward toward the dunes (typically fall through spring).

The City's beaches are highly managed and only have a subtle incline toward low dunes, where present, or urban infrastructure. Longshore currents on Florida's Atlantic coast are most pronounced in the windier fall through early spring seasons when northeast winds generate a net north to south movement of sand. Seasonal variability in maximum high tide line can expand or reduce beach area available for spectators at beach events and nesting habitat for sea turtles. South Florida's "king tides" associated with the fall (and less-commonly spring) equinox occur when the orbits and alignment of the earth, moon, and sun contribute to more extreme gravitational pulls. Low atmospheric pressure and sustained onshore winds, even without tropical storm development, can add height to already higher than usual tides. In nearby Miami Beach, the 8-year period of 2006–2013 saw an increase in tide-induced flooding events by over 400 percent compared to the previous 8 years (Wdowinski et al. 2016), so higher tides that reduce available beach space for events in Fort

Lauderdale may become more frequent. Event planners need to take predicted king tides into account while planning beach-front events.

4.1.3 Sea Level Rise

Sea Level Rise (SLR) is a potential concern for future beach events. The Key West tidal station (NOAA 8724580) has directly recorded mean sea level since 1913, and, due to its longevity, is used by the Southeast Florida Regional Climate Change Compact's Sea Level Rise Ad Hoc Work Group as the 2000 benchmark for sea level rise (Compact 2020). The 107-year record shows an average sea level rise of 2.47 +/-0.15 mm/yr (0.097 +/- 0.0059 in/yr). Sporadic sea level measurements at Key West dating back to 1846 report a sea level rise of 1.9 +/-0.1 mm/yr (0.074 +/- 0.0039 in/yr) prior to 1925, suggesting a slight increase in sea level rise (Maul & Martin 1993). The Virginia Key tidal station (NOAA 8723214) near Miami Beach shows a similar average SLR of 2.93+/-0.22 mm/yr (0.115 +/- 0.0087 in/yr) from 1931–2020, but short-term estimates in SLR for 2003–2013 have been reported to range from 5.9–7.4 mm/yr (0.232 – 0.291 in/yr) (Park & Sweet 2015) to 9 +/-4 mm/yr (0.354 +/- 0.157 in/yr) (Wdowinski et al. 2016). These increases in the rate of SLR (up to 60 percent of the increase since 2004) along the southeast coast of the U.S. may be due to the weakening of the Gulf Stream (Ezer et al. 2013; Park & Sweet 2015). Sections of Miami Beach are experiencing up to an additional 3 mm (0.118 in) of SLR per year due to subsidence of properties built on reclaimed wetlands (Fiaschi and Wdowinski 2020). The complex causes and widely varying estimates of SLR make future projections highly uncertain.

According to the Southeast Florida Regional Climate Change Compact's publication, projected increases in average sea level by 2040 over the 2000 benchmark are 254 mm (10 in) and 431.8 mm (17 in) using the Intergovernmental Panel on Climate Change Median and NOAA Intermediate High projections, respectively (Compact 2020). An estimate of 2040 SLR based on the 107-year Key West tidal station average sea level rise is 98.8 mm (3.9 in). Thus, over the term of the ITP, sea levels within the Plan Area may rise anywhere from 10 to 43 cm (4 to 17 in). The SLR Unified Sea Level Rise Projections have projections for 2070 and 2120, but due to the uncertainty in long-range predictions and frequent revisions in projections, it is prudent to revisit SLR upon the next permit renewal and incorporate newer information.

4.1.4 Beach Stability and Hurricane Impacts

As part of the State of Florida's beach management program, section 62B-36.002(5), Florida Administrative Code defines "critically eroded shoreline" as "a segment of shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland developments, recreational interests, wildlife habitat, or important cultural resources are threatened or lost." The FDEP tracks Florida's shorelines and periodically updates its "Critically Eroded Beaches in Florida" report. The last report was published in June 2019. Critically eroded beaches require periodic replacement of sand (nourishment) to protect beachfront infrastructure and maintain their economic and recreational value; these projects are eligible for state and federal cost-sharing.

In the report, the FDEP uses "coastal range monuments" to bound sections of shoreline deemed "critically eroded." Coastal range monuments are survey markers placed approximately 305 m (1,000 ft) apart along most of Florida's sandy coastline. The City of Fort Lauderdale's beaches extend approximately from Broward County range monuments R-54 (at the City's northernmost limit along the beach) to R-85 (at the northern edge of the Port Everglades entrance). The approximate northern two thirds of the City's beaches, from the northern City Limits to DC Alexander park (R-77), are designated as "critically eroded" and are part of a continuous 16.1 km (10.0 mi) stretch of beach south of the Hillsboro Inlet with the designation. The approximate southern third of the City's beaches, from DC Alexander Park to the Port Everglades entrance, are accretional, not defined as "critically eroded," and not included in beach nourishment projects.

The "critically eroded" designation for the northern two thirds of beach is due to erosion that threatens development and recreational interests, including State Road A1A. Numerous bulkheads and retaining walls exist in this area (FDEP 2019). The area is also part of Broward County's shoreline management zone known as "Segment II" and is included in a United States Army Corps of Engineers (USACE) Shore Protection Project, receiving federal support for periodic beach renourishments.

Although two large beach nourishment events occurred in 1970 and 1983 just north of the City's beaches, neither placed sand directly within the City's limits. In 2012, Hurricane Sandy caused significant erosion along the City's beaches and caused damage to State Road A1A within the City's limits. The damage occurred just north of Hugh Taylor Birch State Park, from R-65 to R-67 (FDEP 2018). This damage prompted both an emergency 15,291 cubic meter (CBM) (20,000 cubic yard; cy) beach fill project and construction of a seawall to protect the roadway's function as a hurricane evacuation route. The next beach nourishment project within the City began in 2016, placing nearly 420,505 CBM (550,000 cy) of sand from Commercial Boulevard (at R-51, just north of the City's limits) to just south of the Bonnet House (at R-72; FDEP 2018). The latest beach nourishment event, conducted by the USACE, was expected to occur during the 2020/21 winter months and place approximately 95,569 CBM (125,000 cy) of sand on the beach.

4.1.5 Land Uses

While not entirely within the Plan Area, the City's developed coastline and the dominant land use patterns are important in the context of this HCP (see Figures A7-A14 in Appendix A). It can be characterized as a highly urbanized beach which is almost completely built out. Working south from the northern City limits, a mixture of high, medium, and low-density residential developments occupies the upland areas just landward of the beach. This land use continues south for 4.2 km (2.6 mi) until Hugh Taylor Birch State Park's approximately 0.8 km (0.5 mi) of beach frontage. Just south of Hugh Taylor Birch State Park is the Sunrise Lane Area District, with about 152 m (500 ft) of beach frontage, then Bonnet House, with about 305 m (1,000 ft) of beach frontage. The uplands within Hugh Taylor Birch State Park and the Bonnet House property represent the upland areas adjacent to the Plan Area with mostly intact native habitat, although neither are completely undisturbed.

South of Bonnet House begins a more commercial 2.8 km (1.75 mi) section of the City's coastline, including the A1A Beachfront Area District, the Planned Resort Development District, and the South Beach Marina and Hotel Area District. Fort Lauderdale Beach Park is the sandy beach area seaward of the South Beach Marina and Hotel Area District. South from Fort Lauderdale Beach Park and continuing south approximately 1.6 km (1.0 mi) to the southern City limits, is again a mixture of high, medium, and low-density residential developments. The only undeveloped parcel along this stretch of beach is a private park area with 91 m (300 ft) of beach frontage, exclusive to the associated upland single-family development.

For those parcels adjacent to the sandy beach, existing land use designations are listed in decreasing order of beach frontage:

- 27% - Residential Multi-Family High Rise/High Density (RMH-60)
- 19% - Residential Single-Family/Low-Medium Density (RS-8)
- 18% - Parks Recreation and Open Space (P)
- 17% - A1A Beachfront Area District (ABA)
- 5% - Residential Multi-Family Mid Rise/Medium-High Density (RMM-25)
- 5% - Planned Resort Development District (PRD)
- 3% - Sunrise Lane Area District (SLA)
- 2% - Residential Single-Family/Low Density (RS-4.4)
- 2% - Residential Multi-Family Low Rise/Medium-High Density (RML-25)
- 2% - Planned Unit Development (PUD)

Public parks within the City that have beach frontage include Fort Lauderdale Beach Park, DC Alexander Park, Vista Park, and Hugh Taylor Birch State Park. These parks total approximately 1.5 km (0.93 mi) of beach frontage or just over 15 percent of the total City shoreline. Other parks considered by the City to be Beach Parks that are near or provide public access to the beach, but do not technically have beach frontage include Earl Lishfey Park, Canine Beach, and Willingham Park. Lands currently designated as Protected Natural Lands adjacent to the Plan Area include the Hugh Taylor Birch State Park and Bonnet Historical Mitigation Area.

The City's Comprehensive Plan includes a Future Land Use Element which is developed to serve as a guide for land development in an economically, environmentally, and socially acceptable manner. The Future Land Use designations within an area indicate land use changes that may occur from the current land use/zoning. The City's current Future Land Use Element was compared to existing land uses. Insofar as most of the land adjacent to the Plan Area is already developed, there are no significant differences between the current land use/zoning and the future land use.

4.2 BIOLOGICAL RESOURCES

4.2.1 Wildlife

Despite considerable development, Fort Lauderdale beaches still provide habitat for animals to forage, rest, transit, and reproduce. Animals that do use the beach typically follow a seasonal or zonal use pattern. The beach is a harsh environment, so few animals live permanently between the high tide line and the dune. The only permanent resident of the dry beach is the Atlantic ghost crab (*Ocypode quadrata*). Ghost crabs create burrows from the dune to the high tide line and forage on everything from seaweed wrack, washed up jellyfish or dead fish, bivalves, and crustaceans from the swash zone, to sea turtle eggs and hatchlings. The exposure to predators and the environment has selected for swiftness, sand-colored camouflaging, and eyes with a nearly 360-degree visual cone. Few animals live exclusively on the beach as the ghost crab does, but many forage on the beach.

Transient beach foragers include birds and mammals, but birds are the diurnal predators most often observed. Gulls (*Larus* spp.), terns (*Thalasseus* spp.), and brown pelicans typically forage in the surf and rest on the beach, but many shorebirds actively hunt in the swash zone. Willets, semipalmated plovers (*Charadrius semipalmatus*), and sanderlings (*Caladris alba*) are just a few of the small to medium sized shorebirds that hunt in the swash zone for Atlantic mole crabs (*Emerita talpoida*), coquina clams (*Donax* spp.), and other small invertebrates (i.e., worms, amphipods), etc.). Some shorebird species are year-round residents, but most are migrants that use Florida beaches as a resting and refueling stop. Most migratory shorebirds use the beach during winter, when beach use by humans is also at its peak. Blue herons (*Ardea herodias*) and snowy egrets (*Egretta thula*) are a few of the stalking daytime predators on fish and shrimp in the swash zone, while yellow-crowned night herons (*Nyctanassa violacea*) are active at night. The wrack line, made up of washed-up seaweed that hosts abundant beachhopper (*Talorchestia* spp.) amphipods, is hunted by the ruddy turnstone (*Arenaria interpres*). Grackles (*Quiscalas* spp.) and fish crows (*Corvus ossifragus*) are also native scavengers on the beach or dunes.

Birds are not the only scavengers on the beach. Raccoons (*Procyon lotor*) are common at Hugh Taylor Birch Park and on beaches statewide; however, less well known are the gray fox (*Urocyon cinereoargenteus*), which recolonized the Fort Lauderdale park in 2015, and secretive eastern spotted skunk (*Spilogale putoris*). These mammals join other urban wildlife such as the Virginia opossum (*Didelphis virginiana*) and feral cats (*Felis catus*) in preying on sea turtle hatchlings and scavenging dead fish along the beach. Threatened southeastern beach mice (*Peromyscus polinotus niveiventris*) historically ranged throughout Fort Lauderdale beach habitats but, due to habitat loss, have been extirpated and replaced by invasive house mice (*Mus musculus*) and rats (*Rattus* spp.) which thrive in urban environments. The black rat (*Rattus rattus*) is known to prey on sea turtle hatchlings (Gronwald et al. 2018).

Where dune vegetation remains, additional permanent residents of the beach and dune may be found. Small lizards, such as the native eastern six-lined racerunner (*Aspidoscelis sexlineatus sexlineata*) and green anoles (*Anolis carolinensis*), compete with invasive brown anoles (*Anolis sagrei*), northern curly-tailed lizards (*Leiocephalus carinatus*), and green iguanas (*Iguana iguana*). These small to medium sized lizards are prey for native southern black racers (*Columber constrictor*) and corn snakes (*Pantherophis guttatus*); both snakes tolerate disturbed habitats relatively well.

The species garnering the most attention on Fort Lauderdale beaches are undoubtably sea turtles. Loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and leatherback sea turtles (*Dermochelys coriacea*) nest at night on Fort Lauderdale beaches from March through October. For adults and hatchlings, artificial lighting, obstructions, predation by animals, and human poachers all reduce nesting success and hatchling survival.

4.2.2 Vegetation

Native barrier island vegetative communities between the landward woody upland and the seaward high tide line are shaped by the physical environment. The beach, seaward of the primary dune is salty, nutrient-poor, and alternates between very dry and inundated. Salt spray and seawater inundation from storms eliminates salt-intolerant plants. Salt spray also prunes the new growth of salt-tolerant plants like sea grape (*Coccoloba uvifera*) into angular wedge-shape foliage sloping upward from the seaward edge of the tree. Plants on the beach, adapted to constant exposure to the sun, must be tolerant of high irradiance, high temperatures, and desiccation, so they are typically grasses like sea oats (*Uniola paniculata*) and coastal panic grass (*Panicum amarum*), sedges like beachstar (*Cyperus pedunculatus*), or succulents such as seacoast marshelder (*Iva imbricata*) and sea purslane (*Sesuvium portulacastrum*). These foredune plants all have adaptations to reduce water loss and often contain reddish pigments (i.e., anthocyanins) to protect cells from excessive solar irradiation. Shifting sands seaward of the primary dune are low in nutrients. Some of the most ubiquitous plants on Florida beaches, sea oats and railroad vine (*Ipomoea pes-caprae*), partner with a diverse symbiotic fungal network in the dune soil to gather additional nutrients from nutrient-poor beach sand (Sylvia 1986). Baybean (*Canavalia rosea*) forms symbiotic relationships with both mycorrhizal fungi and bacteria, as its roots form rhizobia – little nodules in the roots of legumes that host nitrogen-fixing bacteria (Mendoza-González et al. 2014).

The primary dune crest is a transition zone for plants where the easing physical conditions allow a more diverse plant community to develop with increasing inland distance. Greater stability, less salt, increasing organic content in the soil, and cooler temperatures due to greater shading open up the habitat to many native and invasive plants. Native shrubs and trees found on or landward of the dune crest include sea grape, saw palmetto (*Serenoa repens*), inkberry (*Scaevola plumieri*), Hercules-club (*Zanthoxylum clava-herculis*), pigeon plum (*Coccoloba diversifolia*), gumbo limbo (*Bursera simaruba*), Florida fiddlewood (*Citharexylum spinosum*), Spanish bayonet (*Yucca aloifolia*), and coconut palm (*Cocos nucifera*). Many invasive plants have come to dominate back dune habitats: Australian pines (*Casuarina* spp., three species), beach naupaka (*Scaevola taccada*), *Agave* spp., snake plant (*Dracaena trifasciata*), chandelier plant (*Kalanchoe delagoensis*), and creeping oxeye (*Sphagneticola trilobata*).

The beaches of Fort Lauderdale are highly modified after many years of development and do not support the dune plant communities they once did. Efforts to plant sea oats to stabilize beachfront dunes are common in southeast Florida, including on Fort Lauderdale beaches, and some rare dune plants remain in Fort Lauderdale. At Hugh Taylor Birch Park, the endangered beach jacquemontia (*Jacquemontia reclinate),* a plant native to southeast Florida dune habitats, and the Biscayne prickly-ash (*Zanthoxylum spinosum*), a barrier island maritime hammock tree, are still present. Fort Lauderdale beaches are now primarily composed of low, scattered dunes or seawall edges vegetated by seacoast marshelder, railroad vine, baybean, east coast dune sunflower (*Helianthus debilis debilis*), saltgrass (*Distichlis spicata*), sand cordgrass (*Spartina bakeri*), sea oats, and many isolated coconut or cabbage palms (*Sabal palmetto*).

5.0 POTENTIAL BIOLOGICAL IMPACTS AND TAKE ASSESSMENT

5.1 DIRECT AND INDIRECT IMPACTS

Under the ESA, effects or impacts to threatened and endangered species caused by the proposed action (in this case, holding special events on the beach during sea turtle nesting season), can be either direct, indirect, or cumulative. Direct effects are those that are immediate and occur directly as a result of the action (e.g., event activities that cause harm to sea turtles, their nests, or nesting habitat, such as a vehicle running over a sea turtle adult, hatchling, or nest, or a structure placed on the sand that blocks nesting habitat). Indirect effects are those that are displaced geographically or take place later in time, but are reasonably certain to occur (e.g., repeated vehicle use during events that causes severe compaction of sand so that sea turtles are unable to dig a normal egg chamber). Cumulative impacts occur when the impacts from a permitted activity are combined over time with other private activities and thus increase risk to the protected species (e.g., impacts from special events may be magnified by increased urbanization of the coastal environment which could result in additional lighting installed near the beach and a higher number of people using the beach).

In the development of this HCP, including consultation with the Service and the FWC, the following five principal threats from special events, causing either direct, indirect, or cumulative impacts to sea turtles, were identified:

- Compaction
- Deterrence
- Disorientation
- Entrapment
- Exclusion

Special event activities within the Plan Area may contribute to the five threat factors in the following ways:

- *Compaction*: Compaction impacts result from heavy vehicular equipment, repeated light-weight vehicular equipment usage, or large crowds of people within the event area which cause compression of sediments such that sea turtles may have difficulty constructing an egg chamber, or hatchling sea turtles may have difficulty escaping a nest. Compaction may also include crushing of adults, hatchlings, or eggs.

- *Deterrence*: Deterrence impacts are caused by features of the special event such as structures, noise, lighting, or human presence which may cause adult turtles to avoid nesting in a particular area or abandon a nesting attempt either before or after they have crawled up the beach in an area where an event is taking place.

- *Disorientation*: Disorientation or misorientation impacts primarily affect hatchling turtles as they emerge from nests and become disrupted by artificial light cues. Artificial light affects a turtle's ability to orient towards the ocean. Adult turtles may also be impacted by lighting and lose the ability to find the ocean again after nesting. Event lighting, while not directly causing lethal harm, may contribute to exhaustion or increase susceptibility to predation while the turtle is on the beach. Under the HCP, only impacts from temporary lighting associated with special events are considered; other coastal lighting, which may cause take, is not considered a covered activity of the HCP. However, mitigation activities addressed in Chapter 6 do address other coastal lighting.

- *Entrapment*: Entrapment risks are caused by equipment or structures left on the beach in such a manner that they cause nesting or hatchling turtles to become tangled and unable to free themselves ultimately resulting in harm or death. This also includes adult or hatchling turtles trapped in depressions in the sand, such as vehicle ruts, which may result in turtles being unable to transit up or down the beach freely.

- *Exclusion*: This type of impact results from the placement of event structures immediately on top of suitable nesting habitat such that the habitat is not available for nesting turtles. Exclusion impacts can also be defined as structures that obstruct or prevent nesting turtles from reaching suitable nesting habitat or prevent hatchling sea turtles from reaching the ocean.

A sixth threat implicit in the production of any event where humans are present on the nesting beach at night is direct disturbance or harassment of turtles. This type of interference affects nesting or hatchling sea turtles that emerge into a crowd during an event. Adult or hatchling turtles may be physically harmed or harassed by event attendees, including touching or trampling of individuals resulting in injury. This type of take is considered purposeful, but incidental to the permitting of special events, and the likelihood of occurrence is difficult to calculate. Other factors that contribute to the threats named above, such as noise and vehicle ruts are also difficult to quantify. Under the HCP, minimization measures will be required by all special event permittees, and these are intended to reduce the likelihood of such impacts. Any impacts not avoided or minimized will be mitigated. These concepts are further discussed in Chapter 6.

5.2 ANTICIPATED TAKE OF COVERED SPECIES

The City is requesting an individual ITP to cover incidental take of the five species of sea turtles included as Covered Species, causally related to all special events permitted by the City and occurring on City beaches. The Plan Area roughly encompasses 48.2 ha (119 ac) of potential sea turtle nesting habitat (Figure 1-3). The City is also seeking take coverage for events that occur at four specific locations immediately adjacent to the beach that involve the use of temporary artificial lighting that may potentially impact sea turtles and nesting habitat within the Plan Area (Figure 1-4). Permanent lighting at these locations is not covered under the HCP and will be required to follow the standard state permitting process, including review and approval by the FWC.

It is anticipated that impacts, or take, from special events will vary annually depending on the number and type of special events permitted. In developing the conservation strategy for this plan, events during 2019 were considered to be a typical year in terms of the number and type of events held. This information served as a baseline for establishing the timing and seasonality of minimization measures and for determining the appropriate level of mitigation. This approach was deemed acceptable by the Service and the FWC during the HCP planning process. Any necessary adjustments to the City's scope of special events and permitting process over the term of the ITP will be addressed through monitoring, adaptive management, and consultation with the Service and the FWC.

5.3 ANTICIPATED IMPACTS OF THE TAKING

It is not anticipated that special events permitted by the City will have population or species level effects to any sea turtle species. Impacts from special events have the potential to affect nesting females, eggs, hatchlings, and stranded live turtles. Nesting by the three main species of sea turtles that occur on Fort Lauderdale beaches represents a small proportion of total nesting statewide (less than one percent).

Fort Lauderdale beaches are host to moderately dense nesting by loggerhead sea turtles, green sea turtles, and leatherback sea turtles (see Appendix D for nesting heat maps for Broward County, 2015-2020, showing nest density by FDEP R-monument). Based on data provided by the FWC-FWRI Statewide Nesting Beach Survey Program Database for 2015 – 2020, loggerhead nesting within the Plan Area represented approximately 34 percent of the loggerhead nesting in the County and approximately one percent of loggerhead nesting in Florida. Over the same time frame, green turtle nesting in the Plan Area represented approximately 22 percent of the green turtle nesting in the County and less than one percent of green turtle nesting statewide, while leatherback nesting in the Plan Area represented approximately 16 percent of the leatherback nesting in the County and less than one percent of leatherback nesting statewide.

An analysis of reproductive success data for the Plan Area from 2015 – 2020 collected by BCSTCP was performed for each species to estimate, on average, how many nests, eggs, and hatchlings could be impacted annually by special events (Table 5-1). The analysis considered the average number of nests, clutch size, and emerging success over the 6-year period. For loggerheads, an average of 994 nests, 103,972 eggs, and 74,735 hatchlings could potentially be impacted within the Plan Area. For green turtles, an average of 90 nests, 10,665 eggs, and 8,812 hatchlings could potentially be impacted. For leatherbacks, an average of 5 nests, 396 eggs, and 244 hatchlings could potentially be impacted. However, as discussed in Section 2.1.1: Location, special events on the beach are currently only permitted at two locations within the Plan Area (Fort Lauderdale Beach Park and adjacent to Hugh Taylor Birch State Park), and not throughout the Plan Area. Thus, these figures represent the maximum numbers of nests, eggs, and hatchlings that could be potentially impacted by special events, which is not likely to occur.

Table 5-1. Reproductive success analysis of sea turtle nests, eggs, and hatchlings potentially impacted within Plan Area, 2015 – 2020. Source: BCSTCP.

Average	Loggerhead	Green Turtle	Leatherback
Number of Nests	994.0	89.7	4.5
Clutch Size	104.6	118.9	88.0
Number of Eggs	103,972	10,665	396
Hatching Success	79.29%	87.77%	71.45%
Emerging Success	71.88%	82.62%	61.72%
Number of Hatchlings	74,735	8,812	244

Given the short-term nature of the activities, length of the sea turtle nesting season, and reproductive strategy of sea turtles, it is not expected that special events will have significant impacts to local sea turtle populations over the long-term. As discussed in Section 1.2.1: History of Special Events, there have been minimal documented impacts resulting from special events, with only two reported instances of nesting females encountering special event equipment or structures. Additionally, there have been no documented impacts to stranded live adult or juvenile turtles resulting from special event activities. With the requirement that all special event applicants adhere to the minimization measures attached to their permits, impacts will continue to be avoided or minimized.

6.0 CONSERVATION STRATEGY

6.1 BIOLOGICAL GOALS AND OBJECTIVES

The biological goals and objectives of an HCP are the guideposts for its conservation strategy. The goals must address local conservation needs, but with consideration for conservation in a broader context. The objectives must provide concrete steps to aid in goal achievement. In this HCP, the City sets a clear path toward efficient and effective action that will manage special events on the City's beaches in a way that promotes the preservation of sea turtles and their habitat.

GOALS:

1) To preserve and enhance important nesting habitat in the City for federally protected sea turtles; and

2) To support ongoing nesting of sea turtles within the City to contribute to population recovery.

OBJECTIVES:

1) Avoid and minimize impacts to sea turtles from special events permitted by the City through improved environmental special event permit conditions and related compliance monitoring (minimization measures);

2) Enhance the quality of sea turtle nesting habitat within the Plan Area by
    i. Reducing artificial lighting (mitigation funds will be used to hire additional lighting code enforcement staff and will be used to create a coastal lighting retrofit grant fund);
    ii. Restoring dune habitat (mitigation funds will be used to supplement dune restoration and enhancement within City limits with a focus on restoring damaged dunes, expanding existing dunes, and creating new dunes where needed); and

3) Promote broader awareness of sea turtle conservation issues to coastal residents through targeted outreach by lighting code enforcement staff.

The overarching goal of the HCP is to allow the City to permit and manage special events on its beaches in a manner that minimizes impacts to sea turtles and their nesting habitat. A set of avoidance, minimization, and mitigation measures will be implemented through the HCP that will adequately compensate for any unavoidable impacts that may occur as a result of special events.

6.2 AVOIDANCE AND MINIMIZATION

The Service issues incidental take authorization through section 10(a)(1)(B) only when the take has been avoided and/or minimized to the maximum extent practicable. This means that the ITP applicant must attempt to reduce the amount of take occurring as a result of their proposed covered activity to the best of their ability, but without enduring undue social, logistical, or financial hardship. In this case, businesses within the City depend on the tourism revenue generated by special events held on City beaches, and thus, it would not be possible to discontinue the special events program and avoid take altogether (alternatives were discussed in Chapter 1). Instead, events will be planned to avoid impacts to sea turtles to the extent practicable and minimized when avoidance is not possible or practical. Accordingly, the conservation strategy adopted by the City through this HCP will include the following actions:

1. Supplement the City's special event permit application process to add focus to the factors that may have impacts to sea turtles, such as number of attendees, timing and duration of the event, and extent of structures, fences, vehicles, and lighting;
2. Implement measures to avoid and/or minimize impacts to sea turtles, as part of permit conditions that event applicants must agree to in order to receive a special event permit;
3. Improve coordination and communication between the special event permit applicant and the City to ensure event organizers understand the special conditions under which they must operate; and
4. Verify compliance during and immediately following events to ensure agreement with permit conditions.

6.2.1 Special Event Application Process

The City has a standard system for approving events on its beaches. A separate, but concurrent application process for a state CCCL permit must also occur for certain events, as shown in Figure 6-1. Within the City, special events are managed by the Parks and Recreation Department and applications are submitted online via the LauderBuild portal and in-person. Applicants are instructed to follow a process which includes:

1. Submit an application and associated fees;
2. Develop a site plan narrative;
3. Attend a meeting with the City's special events team;
4. Submit insurance documents; and
5. Attend a City Commission meeting for final approval.

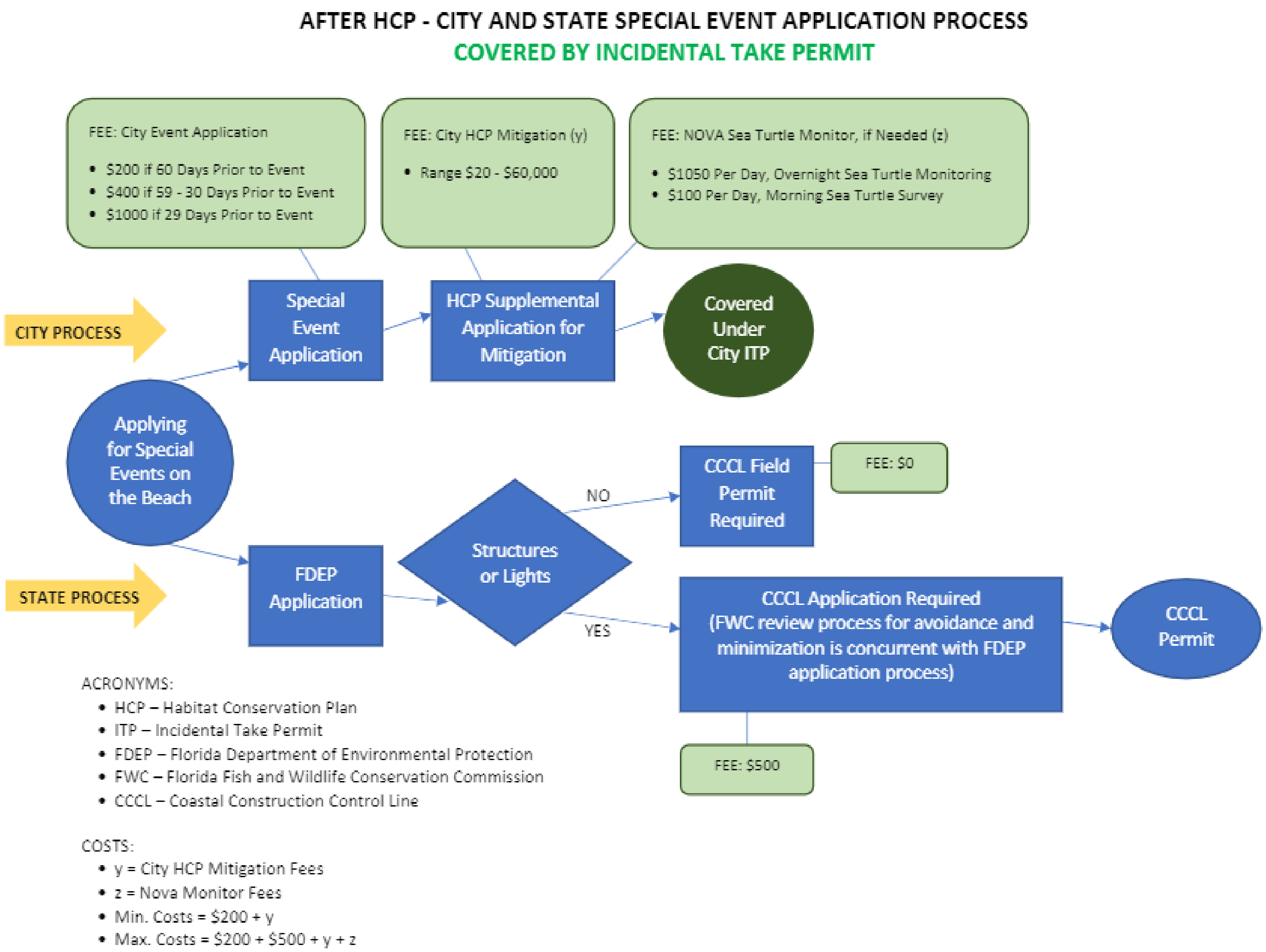

Figure 6-1: City and State special event application process and associated fees (note: fees are approximate and may change over time).

Under the HCP, certain elements of the City's special event application process will be amended to ensure adequate protection of sea turtles. The existing Special Events Guide, currently under revision, (2015; see Appendix B, p. 15) provides information concerning the protection of sea turtles for events during the nesting season. The language in this document is as follows:

> **Beach – Sea Turtle Nests**
> You will need to take special environmental concerns into account if you are hosting an event on the beach between March 1 through October 31. During this time, the FDEP may require a permit and the presence of a paid beach monitor to ensure the safety of the turtles and their eggs. Additional lighting restrictions will also be required if you plan on having your event at night. For

> more information on the permit and other related requirements, please contact the FDEP at (561) 313-9007.

The following additional language (or similar) will be added to the guide to inform the applicant about the City's HCP and its requirements:

> Special events on or adjacent to City of Fort Lauderdale beaches during certain times of the year have the potential to harm sea turtles, which are a federally protected species. Accordingly, the City developed a Habitat Conservation Plan (HCP) to obtain federal authorization for any impacts (otherwise known as "take") related to its permitted special events. The incidental take permit (ITP) issued by the U.S. Fish and Wildlife Service protects the City, and by extension event applicants, from violations of the ESA, provided they comply with measures developed to avoid, minimize, and mitigate impacts to the maximum extent practicable. Impacts may include:
>
> - Sand compaction resulting from operation of heavy equipment/vehicles, or dense crowds;
> - Deterrence of female sea turtles from nesting by event participants, staff, moving vehicles, noise, or lighting;
> - Disorientation of emergent sea turtle hatchlings or adult female turtles by event lighting and ruts within sand (changes their view of land);
> - Entrapment of adult and hatchling sea turtles by event materials, structures, vehicle ruts, or improperly disposed refuse;
> - Exclusion of nesting habitat by equipment and structures on the beach; and
> - Direct interference or disturbance of nesting or hatchling sea turtles on the beach during the event.
>
> Your application will be reviewed to identify elements of the proposed event that may require certain minimization measures to reduce potential impacts to sea turtles and ensure compliance with the HCP. All events taking place on the beach and at the four beach adjacent locations between February 15 and November 15 will be assessed a mitigation fee which will be scaled according to the expected level of impacts to sea turtles and their nesting habitat.

Under the HCP, all special event applicants must attend an initial meeting with Parks and Recreation staff prior to permit approval to review HCP minimization measures and mitigation fees. At the conclusion of this meeting, applicants must certify that they have received, fully understand, and will comply with all applicable special event permit conditions (minimization measures). All special events meeting criteria for issuance of an Individual or Area-wide permit under FDEP's CCCL program and occurring during sea turtle nesting season will still require, by Florida Statute, review by FWC. If the special event applicant submits a complete application to the FDEP, the FWC will issue a programmatic approval, which should result in application review that meets or concludes sooner than

FDEP's regulatory timeclock (90 days for Individual and Area-wide permits). Once the HCP is approved and an ITP issued, FWC expects to issue a programmatic letter concurring that if event applicants can meet the minimization measures outlined in the City's HCP, the need for detailed review and negotiation with the applicant will be limited, resulting in expediting the process considerably.

The City will direct the special event applicant to complete an application packet for submittal to FDEP, which should include:

- Statement by applicant that all HCP minimization measures will be implemented;
- Dimensioned site plan/map indicating the placement of all structures and fences; and
- Lighting plan indicating the quantity, wattage, wavelength, and placement of each light fixture that will be used and the specifications.

Event applicants who are unable to comply with HCP conditions will not be covered under the City's ITP. In those cases, the event application will need to go through the standard FDEP/FWC review process, the applicant will be required to abide by all measures for sea turtle take avoidance included as special conditions in the FDEP permit, and these events, if approved, may have more restrictive conditions than those imposed under the HCP. Alternatively, event applicants may choose to seek their own ITP.

For Intermediate and Major events, a second, pre-event meeting between the City and special event permit applicant will be held on site once FDEP and City permits have been issued. The intent of the meeting is to review event activities and verify permitted locations of structures and lighting. The applicant should arrange for the sea turtle monitor, also known as the Nesting Beach Marine Turtle Permit Holder (NBMTPH), to attend this meeting so all sea turtle monitoring activities can be effectively coordinated based on site conditions. Representatives from the FDEP, the FWC, and the Service will be invited to attend this meeting, but attendance is not required.

Following the completion of an Intermediate or Major event, the event applicant will be required to meet with the City within 10 days to review compliance with HCP minimization measures. If an event is fully compliant with all applicable minimization measures (i.e., no violations reported by sea turtle monitors or by City staff who perform compliance inspections), the City may choose to waive the meeting requirement for this event but shall complete a compliance report providing details of the City's evaluation and the event's documented compliance. Compliance reports for each event will be emailed to the the FWC (marineturtle@myfwc.com) and the Service (FW4_vero_beach_sffo@fws.gov) so that issues with any minimization measures can be quickly identified.

6.2.2 City Staff Training

City staff from the Parks and Recreation Department will be required to review all special event applications for events occurring between February 15 and November 15 and provide guidance on the HCP to permit applicants (should this responsibility fall within a different department at any time over the life of the ITP, this task will transfer accordingly). City staff will undergo initial training to understand the HCP, its minimization measures, and how to apply these conditions consistently to all applicable special events. The City may elect to assign a City employee(s) to coordinate implementation of the HCP or may hire a consultant familiar with HCPs and sea turtle conservation to serve in that capacity.

6.2.3 Minimization Measures

As previously described in Section 1.5: Regulatory Setting, all special events occurring on City beaches that require a CCCL permit from FDEP are required to comply with the Standard Field Permit Conditions. If the event occurs during nesting season (March 1 – October 31), the FDEP will issue Special Event Permit Conditions for Marine Turtle Protection that generally address impacts associated with the storage of equipment on or adjacent to the beach, vehicle use on the beach, and lighting. However, large-scale events involving structures or lighting receive a detailed agency review and are issued a specific set of conditions related to the type of activities defined in the event application. The minimization measures developed for this HCP (Appendix E) will ultimately replace those specific conditions issued by FWC; they were drawn largely from the various conditions already developed by the FWC as well as those developed for the FDEP under the draft Florida Beaches HCP (FBHCP), currently under review. The FBHCP is being developed to address impacts to the coastal environment statewide resulting from activities permitted under FDEP's CCCL program, including special events. Since the FBHCP has not yet been approved, the City of Fort Lauderdale has chosen to move forward with its own HCP to obtain take coverage for its special events. Every effort has been made to ensure that the minimization measures contained herein are in agreeance with those included in the FBHCP.

Certain events will require the event applicant contract an FWC-approved NBMTPH to perform additional monitoring for the event. Nova Southeastern University (NSU) has regularly been hired to perform all sea turtle monitoring for special events, including nighttime monitoring and nest protection. Should the Nesting Beach Marine Turtle Permit (NBMTP) be assigned to a different entity in the future, that entity, or a qualified consultant approved by FWC to conduct the required activities for the event, will be hired. A template agreement clearly outlining applicant and NBMTPH roles and responsibilities for performing monitoring services is provided in Appendix F to assist future special event applicants. The City will provide contact information for a NBMTPH contractor in the special event minimization measures and will provide this information to the special event applicant at the pre-event meeting.

The FWC operates under the authority and limitations of Florida Statute § 379.2431 (1) and Florida Administrative Code Rule 68E-1 as related to sea turtle permitting. Permitting authority for conducting research and conservation activities is granted to the FWC by the Service under a Cooperative Agreement consistent with the ESA such that no Service permit is required for conservation, research, or education work with marine turtles, their nests, hatchlings, or parts thereof in Florida. Individuals or entities meeting certain qualifications under Florida law may apply for a NBMTP. Individuals holding these permits must abide by

FWC's Marine Turtle Conservation Handbook and conduct activities only where authorized to do so on their marine turtle permit. Outside of standardized monitoring and reporting protocols set by FWC, they are responsible for all decisions concerning direct interactions with marine turtles including nesting beach surveys, marking and relocating nests, and educational displays and activities (FWC 2016). All data collected under FWC's Statewide Nesting Beach Survey or Index Nesting Beach Survey programs, as well as state-required monitoring for nourishment projects or statewide sea turtle stranding response programs, are considered public record and property of the FWC. Up to 25 individuals may perform activities as directed by the NBMTPH or the Qualified Individual as authorized by FWC. As used throughout this HCP, activities requiring the involvement or presence of a NBMTPH, including those listed as HCP minimization measures, may be fulfilled by qualified personnel as directed by the NBMTPH in accordance with FWC direction and not as directed by the special event applicant or City staff.

6.3 MEASURES TO MITIGATE THE UNAVOIDABLE TAKE

Since not all impacts to sea turtles from the City's special events can be avoided or minimized, the HCP has established an offset strategy through compensatory mitigation. During the development of this HCP, the types of special events that typically occur during a given year were evaluated, including the various threats these events pose to sea turtles and their nesting habitat. The primary threats, identified and discussed in Chapter 5, are as follows:

- Compaction
- Deterrence
- Disorientation
- Entrapment
- Exclusion

Even with compliance with this HCP's minimization measures, threats stemming from special event activities remain to sea turtles and their habitat. As an example, the impacts related to structures can be minimized by requiring structures be placed as far landward as possible. If structures are positioned anywhere on the beach, suitable sea turtle nesting habitat is being occupied. Likewise, lighting impacts may be minimized by requiring shields or imposing limits on the length of time lights are allowed after sunset but impacts from light still trespass onto the beach as long as lights are turned on after dark.

6.3.1 Developing a Formula to Calculate Impacts

As the quantity, frequency, magnitude, duration, and timing of special events held on the City's beaches change from year to year, the City's mitigation plan needs to be capable of addressing this variability. A baseline is needed for planning purposes that anticipates and provides for recurring events. Using 2019 event data and information gathered at stakeholder meetings, biological threats from event activities were identified by stakeholders as well as City, FWC, and Service staff. A standardized scoring system was developed as an objective method to assess individual event threats using measurements of the activities driving the biological threats. Each event receives a total score of "threat points" from the activities and the event's total threat points are used to determine the event's mitigation fee.

To develop a mitigation fee formula (i.e., a way to translate event impacts into a monetary fee paid by special event applicants), a "threat/activity" matrix was used to associate event activities with threats to yield quantifiable measurements for each activity. The threat categories were based on event data and then ranked according to the severity of the threat to sea turtles (based on expert opinion and best available science). The ranking is as follows (from greatest to least threat): 1 - Lighting, 2 - Structures, 3 - Attendees, and 4 – Vehicle/Pedestrian Access (in the form of mats laid flush on the beach surface).

As previously discussed in Chapter 5, the potential for direct disturbance to sea turtles is very difficult to predict or measure, and therefore was not included in the matrix as a separate threat. Similarly, impacts from activities that cause noise (Deterrence) and vehicle ruts (Entrapment) are also difficult to anticipate or quantify so they are not explicitly evaluated in the fee calculations. Impacts related to these factors are still expected to be avoided and minimized through minimization measures and covered by the mitigation program explained later in this chapter.

For consistency with the basis of the HCP, which is to address the biological threats (or take) to the covered species, it is important to organize the assessment of points by the threats. In this formula, each threat is scored and contains the activities contributing to that threat (Table 6-1).

- Compaction is scored by *Attendees* and *Vehicle/Pedestrian Access*
- Deterrence is scored by *Attendees* and *Lighting*
- Disorientation is scored by *Lighting*
- Entrapment is scored by *Structures*
- Exclusion is scored by *Structures* and *Vehicle/Pedestrian Access*

Table 6-1: Threat/Activity matrix used to associate event activities with impacts.

Threat	Activity			
	Nighttime Lighting (Shore Length X Minutes)	Structures (ft^2)	Number of Attendees	Vehicle/Pedestrian Access Mats (ft^2)
Compaction			X	X
Deterrence	X		X	
Disorientation	X			
Entrapment		X		
Exclusion		X		X

Utilizing this matrix, a threat scoring system based on quantifiable factors was formulated. Lighting points are generated by multiplying the number of minutes lights are turned on between sunset and sunrise by the length of shoreline illuminated. Structure points are assigned by calculating the square footage of temporary structures left on the beach overnight. Attendee points are determined by calculating the maximum number of attendees expected at the event each day/night. Vehicle/Pedestrian Access Mats points are generated by calculating the square footage of matting laid on the beach as walkways or vehicle access corridors for an event.

Additional event variables, including duration, extent of nighttime activities, and timing within the sea turtle nesting season, also had to be included in the formula to fairly account for all event impacts on sea turtles (Figure 6-2). Event duration and whether event impacts occurred at night (namely deterrence, disorientation, entrapment, and exclusion) were addressed by multiplying the tallied threat points by the number of nights the impact would occur. However, if an event can be conducted entirely during daylight hours (sunrise to sunset), including setup and cleanup, no additional points would be added to the total. Likewise, impacts occurring during the day (namely compaction) were addressed by multiplying the tallied threat points by the number of days the event will occur. Lastly, the timing of events within the sea turtle nesting season was addressed with a multiplier, whereby the points summed for an event's activities would be multiplied by 1 if held in the early or late seasons (February 15 – February 29 and November 1 – November 15), multiplied by 2 if held in the shoulder seasons (March 1 – April 30 and September 16 – October 31), and multiplied by 3 if held in the peak nesting/hatching season (May 1 – September 15).

The impacts associated with each of the four activities described above are not equal. Adjustments had to be applied to account for the relative risk of each activity. For example, impacts resulting from one minute of lighting were not considered equivalent to those associated with one square foot of structure, or one attendee, or one square foot of vehicle/pedestrian access mats. Points per activity were weighted to account for the perceived relative risk to sea turtles based on biology, observed records, and professional opinion. This adjustment also ensured each activity and threat, when assessed across an entire year's worth of event data, conformed to the threat ranking presented above.

Sea turtle experts familiar with special events on the City's beaches agreed that nighttime lighting is the threat of greatest concern, followed by structures on the beach, attendees, and lastly vehicle/pedestrian access mats (Service, personal communication March 5, 2020). Using activity data from 2019 events, weighted divisors were established to make the yearly cumulative scoring of each activity rank in the same order as the experts' opinions (Table 6-2).

Table 6-2: Equilibration divisors used to calculate points from the threat/activity matrix. Each box represents one threat point.

Minutes of Lighting	Square Feet of Structures	Attendee(s)	Square Feet of Vehicle/Pedestrian Access Mats
30	8	2	10

For illustration of this formula, a hypothetical event with the following attributes would be scored as described below:

- Lights on for two hours (120 minutes) after sunset with a footprint spanning 100 feet of shoreline,
- A 750 square foot stage left on the beach overnight,
- 500 attendees, and
- 250 square feet of vehicle access mats.

The following formulas, illustrated in Figure 6-2, are used for each activity:

Lighting:
$P_L = (M_L/W_L) * SL$
P_L = Points per Lighting Event
M_L = Minutes of Lighting
W_L = Weighted Divisor, Lighting
SL = Shoreline Length (ft.)

Structures:
$P_S = (A_S/W_S)$
P_S = Points per Structure Event
A_S = Area of Structure (sq. ft.)
W_S = Weighted Divisor, Structure

Attendees:
$P_A = (N_A/W_A)$
P_A = Points per Attendee
N_A = Number of Attendees
W_A = Weighted Divisor, Attendee

Vehicle/Pedestrian Access:
$P_V = (M_V/W_V)$
P_V = Points per Vehicle/Pedestrian Access
M_V = Amount of Beach Occupied by Mats (sq. ft.)
W_V = Weighted Divisor, Vehicle Access

Lighting is scored by first dividing the total number of minutes lights are on after sunset by the lighting weighted divisor and multiplying by the length of shoreline affected [(120/30)*100=400 threat points].

Structures is scored by dividing the square feet of beach occupied by the structure by the structure weighted divisor (750/8=93.75 threat points).

Attendees is scored by dividing the number of attendees by the attendees weighted divisor (500/2=250 threat points).

Vehicle/Pedestrian Access is scored by dividing the square feet of beach occupied by mats by the "Vehicle/Pedestrian Access" weighted divisor (250/10=25 threat points).

Threat	Scored By												
Compaction	# of Attendees During the Day ÷ Attendees Divisor	x	# of Days of Impact	+	Vehicle Access Mats During the Day (Sq. Ft.) ÷ Vehicle Access Divisor	x	# of Days of Impact	=	*Sub total*	x	Seasonal Multiplier	=	**Total Threat Points**
Deterrence	# of Attendees at Night ÷ Attendees Divisor	x	# of Nights of Impact	+	(Minutes of Lighting at Night x Shoreline Length) ÷ Lighting Divisor	x	# of Nights of Impact	=	*Sub total*	x	Seasonal Multiplier	=	**Total Threat Points**
Disorientation	(Minutes of Lighting at Night x Shoreline Length) ÷ Lighting Divisor	x	# of Nights of Impact					=	*Sub total*	x	Seasonal Multiplier	=	**Total Threat Points**
Entrap - ment	Structures at Night (Sq. Ft.) ÷ Structures Divisor	x	# of Nights of Impact					=	*Sub total*	x	Seasonal Multiplier	=	**Total Threat Points**
Exclusion	Structures at Night (Sq. Ft.) ÷ Structures Divisor	x	# of Nights of Impact	+	Vehicle Access Mats at Night (Sq. Ft.) ÷ Vehicle Access Divisor	x	# of Nights of Impact	=	*Sub total*	x	Seasonal Multiplier	=	**Total Threat Points**

Figure 6-2: Threat/Activity matrix used to calculate threat points for special events.

The sum of the example event threat points is shown in Table 6-3.

Table 6-3: Hypothetical event scoring example.

Threat	Activity				Total
	Lighting	Structures	Attendees	Vehicle/ Pedestrian Access	
Compaction			250	25	**275**
Deterrence	400		250		**650**
Disorientation	400				**400**
Entrapment		93.75			**93.75**
Exclusion		93.75		25	**118.75**
Total	**800**	**187.5**	**500**	**50**	**1,537.5**

If the above hypothetical event were to occur within two days and two nights (e.g., from Friday noon through Saturday night at 10:00 PM) in the shoulder season (e.g., March 15-16), its 1,537.5 base threat points would first be multiplied by the event duration of two days (1,537.5 X 2 days = 3,075 threat points) and then by two again, due to its occurrence within the shoulder season (3,075 threat points X 2 shoulder season = 6,150 total threat points).

6.3.2 Mitigation Fee Calculation

The City opted for a fee-based mitigation system where special event applicants will be required to pay a fee to support mitigation initiatives required under the HCP. Other funding sources for the HCP program were explored, but ultimately were not pursued.

The City will use the threat/activity scoring formula described above to arrive at a mitigation fee for each event. Initially, the City will establish a fee per point and each event will pay a fee equal to their event's total threat points multiplied by the fee per point. The City used 2019 data to model a year's worth of events, score points for those events, and divide the total annual mitigation costs by the total threat points for all events to arrive at a fee per point of $0.026 (this includes an adjustment for inflation that is expected prior to plan implementation; Appendix G). Using the 2019 event data and a fee per point of $0.026, the hypothetical event described above would be charged a mitigation fee of $159.90 (6,150 threat points X $0.026 = $159.90).

This threat point and mitigation fee system is designed to scale with the inevitable variance in quantity and magnitude of events year to year, as well as with inflation and changing costs of mitigation projects. The system will provide additional mitigation funds if the City permits events with threat points in excess of those calculated in 2019. Likewise, if the City permits fewer events there will be fewer impacts, and less mitigation and associated funds will be needed. The City also has the option to increase or decrease the fee per point as the HCP goes through periodic evaluations. These evaluations will include the Service's assessment of mitigation effectiveness and evaluation of costs associated with implementation of the mitigation projects. If it is determined the mitigation program needs more funding moving forward, the City can adjust the fee upward. If mitigation funds exceed mitigation needs, the City can adjust the fee downward.

This type of point assessment formula will make it easier for City staff to understand which event factors are contributing most to the mitigation fee and work with event applicants to structure event activities in a manner that reduces overall impacts to covered species and, appropriately, mitigation fees.

6.3.3 Proposed Mitigation Projects

To develop a viable mitigation plan, several options for mitigating take were brought to the City. These options were drawn from other HCPs in Florida and from suggestions gathered at stakeholder meetings. Each option was evaluated for its relevance to the City and this HCP, its anticipated effectiveness, and its anticipated cost.

Through several meetings with the City and the Service, the mitigation initiatives identified as the most feasible, relevant, and effective for this HCP are described below (Table 6-4) in priority order and with expected funding allotted to each. The primary mitigation project that will be implemented addresses the greatest threat to sea turtles identified in the hierarchy of threats (lighting).

Table 6-4. Mitigation project descriptions.

Project #1 Name	Lighting Ordinance Compliance Assistance
Expected Cost	$60,000.00/year
Mitigation Commitment	The City will provide one 1/2 Full Time Equivalent staff person for additional lighting ordinance compliance efforts.
Metrics for evaluating performance	1. Percentage of compliant lights. Based on data presented in Table 2, Appendix H, City compliance was at approximately 23% in 2020.
	2. Percentage of properties rated by Broward County as Bright/Brighter/Brightest. Based on 2020 data presented in Appendix I, 42 properties (18%) were rated as Bright, Brighter, or Brightest.
	3. Number of properties that receive targeted lighting presentations and outreach material (see Appendix J)
Goal	1. To increase the annual proportion of compliant properties by three percentage points per year for the first five years of the ITP (from ~23% to ~38%). *Since historical compliance has been highly variable, the City commits to recalibrating this goal at each five-year HCP review meeting.
	2. To decrease the proportion of Bright/Brighter/Brightest properties by at least one percentage point per year for the first five years of the ITP (from ~18% to ~13%) and targeting the Brightest properties first[1]. *Since historical compliance has been highly variable, the City commits to recalibrating this goal at each five-year HCP review meeting.
	3. To achieve 100% outreach to all ~42 coastal properties in the focus areas (with lights categorized as Bright/Brighter/Brightest). Based on an analysis of coastal lighting performed by Broward County, the areas of focus will be in the vicinity of the following FDEP Range monuments: R-53.5 to R-57.5, R-71 to R-72.5, 75.5, 76.7, and R-80.5 to R-85 (Appendix I).

[1]Between 2019 and 2020, a lighting retrofit project unrelated to the HCP helped the City reduce the percentage of bright lighting in the vicinity of Las Olas Boulevard. This resulted in a 20-percentage point decrease in bright lighting between those years, which is not typical of lighting improvements historically documented.

(Table 6-4 continued)

Project#2 Name	**Dune Restoration and Enhancement**
Expected Cost	$9,900.00/year
Mitigation Commitment	The City will purchase native plants, coordinate volunteer plantings, and provide dune protection measures yearly. The City will prioritize improving the health and protection of existing dune areas (including areas damaged by storms or other events). Secondarily, will work to expand existing dune areas, and lastly work to plant and protect larger, barren areas in need of dune vegetation. Additional areas may be identified in the future. The intent of this mitigation is to maintain a healthy dune system throughout the City's limits while allowing for adequate public access.
	A focus will be placed on enhancing dunes in higher nest density areas and in regions where disorientation events have been repeatedly documented.
Metrics for evaluating performance	Square feet of dune maintained/planted per year.
Goal	To enhance 627 m^2 (6,750 ft^2) of dune per year – an area estimated from planting 1,000 dune plants (at $3.00 each), 0.5 m (18 in) on-center, three times per year *includes ~$900.00 for posts and rope.

(Table 6-4 continued)

Project #3 Name	Coastal Lighting Retrofit Grant Program
Expected Cost	$6,800.00/year
Mitigation Commitment	The City will dedicate a portion of collected mitigation funds to a grants program, to be administered by a suitable City department. Small businesses or single-family homeowners will be able to apply for grants to retrofit light fixtures and lamps.
	• City Code Enforcement: staff will visit properties as part of their routine inspections and educational outreach. • City Public Works Sustainability Division: staff will administer and monitor the program and work with City Communication to develop a website for marketing and applications.
Metrics for evaluating performance	Number of lights retrofitted to be sea turtle-friendly.
Goal	To retrofit three properties (or 21 lamps/fixtures at an average of about $320.00 each) per year (the average number of lights per property based on 2020 data was 6.87; Appendix K, slide 15).

These proposed mitigation activities are expected to result in habitat improvements over nearly the entire 10 km (6.2 mi) Plan Area while the impacts from special events are expected to occur mostly within the 0.8 km (0.5 mi) of beach fronting Fort Lauderdale Beach Park. Also, special event impacts are temporary and intermittent while the mitigation activities will be permanent and continual. The 2019 event baseline included a total of 135 days and 70 nights where threat points would have been assessed, while the mitigation activities above, once implemented, will provide habitat improvements over the entire nesting season of approximately 274 days. In summary, the Mitigation Plan will cover a larger area and have a more lasting beneficial impact on the sea turtle habitat.

6.4 MONITORING

Monitoring under the HCP will include effectiveness monitoring to evaluate progress in meeting the biological goals and objectives of the HCP and compliance monitoring to determine whether the City is properly implementing the HCP and meeting all of the requirements of the ITP. In depth details on monitoring can be found in Section 6.6: Reporting.

6.4.1 Effectiveness Monitoring

Daily sea turtle nesting surveys within the City are currently performed during Florida's annual nesting season (March 1 – October 31) by staff from NSU, under contract to Broward County. NSU reports all nesting data to the FWC according to the requirements of their NBMTP, which includes standard reporting of all nests and false crawls, obstructed nesting attempts, adult or hatchling disorientation events, reproductive success of marked nests, predation events, wash outs/storm impacts, and human interference with nests. Data collected as part of these surveys will be used in analyzing nesting trends within the City and will be included in the HCP annual report.

Data on numbers of nests, nesting success (percent of total crawls that result in nests), disorientation events, and obstructed nesting attempts will be analyzed and used to determine the effectiveness of the HCP minimization measures and mitigation projects.

Each of the three mitigation projects will be monitored throughout the life of the ITP by City staff (this may be performed by the HCP Coordinator). The projects will be evaluated against the metrics identified in Table 6-4. If the mitigation projects are successful, then they will help to meet the goals of the HCP, which are to preserve and enhance nesting habitat and to support ongoing nesting by sea turtles in the City, thus contributing to population recovery. The City will track the number and types of events scheduled to be held over the course of the year to ensure take is not exceeding expected levels and mitigation efforts are sufficient to offset any impacts.

6.4.2 Compliance Monitoring

Compliance monitoring under the HCP involves the City's verification that event applicants are following all minimization measures issued for their events and verification that internal processes are ensuring the City remains in compliance with the requirements of the HCP.
To receive City permits to hold special events, special event applicants agree to comply with all HCP minimization measures applicable to their event, which will be attached as special conditions in the permit. The City will verify compliance during set up, while the event is in progress, and through the last day of breakdown. During these visits, City staff will identify any event activities that were not conducted properly and factors leading to non-compliance. Depending on the duration of the event, notice of non-compliance may be given immediately, or, for events lasting more than one day, notice may be given within 24 hours. Steps to remedy non-compliance issues may be addressed during the event but will always be addressed in the post-event meeting for Intermediate and Major events, or via letter to Minor event applicants.

A NBMTPH will be required to perform sea turtle monitoring prior to and throughout the duration of all special events included under this HCP, with possible exceptions being events held in February or November if there are no marked nests on the beach. The NBMTPH who has been contracted to conduct HCP-required activities will be required to use standardized HCP compliance forms, developed and provided by the City, to document non-compliance by special events on the beach. These forms will be submitted to the City upon completion of daily monitoring. The HCP Coordinator and/or designated City staff should be in regular contact with the NBMTPH to make sure they understand the City's requirements, especially in the early days of the HCP; and the HCP Coordinator should alert the NBMTPH of all forthcoming events occurring on the beach. As discussed earlier in this chapter, NSU currently holds the NBMTP for nesting beach monitoring within the City of Fort Lauderdale. NSU, or whichever entity assumes this permit in the future, will be contracted by the special event applicant to conduct event-specific monitoring, if required. Specific tasking, responsibilities, lines of communication, and authority will be set forth in a contract, signed by the NBMTPH and accepted by the event applicant. The City of Fort Lauderdale will also keep a copy of this contract on file.

The City will prepare a compliance report for each event based on site visits and reports from the public and/or sea turtle monitors. The report will list all non-compliance issues and steps taken to bring the event into compliance. A summary of compliance monitoring and actions taken will be presented in the HCP Annual Report.

6.5 ADAPTIVE MANAGEMENT

The Service's HCP 5-Point Policy (65 FR 3524) defines adaptive management during HCP implementation as "… a method for examining alternative strategies for meeting measurable biological goals and objectives, and then, if necessary, adjusting future conservation management actions according to what is learned." Adaptive management is intended to address uncertainty that potentially poses a significant risk to the covered species, rather than uncertainty regarding possible "changed circumstances" as described and addressed in Chapter 7.

This section outlines how the City of Fort Lauderdale will adjust its conservation strategy in response to feedback from monitoring programs. Through an adaptive management process, the City will address uncertainties identified during the planning process. Uncertainties include: (1) timing of the onset and conclusion of sea turtle nesting activities on City beaches, (2) effectiveness of the avoidance and minimization measures for special events, and (3) number of events that will seek special event permits from the City each year (and thus provide funds for the mitigation program). This list highlights the main issues that could have the biggest impact on the HCP's conservation strategy. The City anticipates coordinating with the Service on a case-by-case basis for any necessary adjustments to the conservation strategy related to issues not identified here.

One of the HCP's biological objectives is to minimize impacts to sea turtles through improved compliance monitoring and enforcement of environmental special event permit conditions (minimization measures). Through adaptive management, the City may be able to adjust these minimization measures. For example, the early and late nesting season dates used in this HCP may need to be redefined and revisited periodically due to climate change. Warming

temperatures may result in earlier or later onset or conclusion of nesting activities each year. Another example might be using feedback from special event applicants collected during pre- and post-event meetings to make improvements to the identified lines of communication or special event permitting process within the scope of the HCP.
In order to determine the need for implementation of adaptive management strategies, the City will use information gathered in effectiveness and compliance monitoring to:

- Assess temporal nesting trends every five years to determine whether the dates of the early and late nesting season (as defined by the HCP) need to be adjusted earlier or later.
- Review and evaluate feedback from event applicants, the NBMTPH, City staff, and agencies (FDEP, FWC, Service) to enhance special event permitting and production; incorporate beneficial adjustments into the special event permitting process.
- Assess effectiveness of minimization measures through the evaluation of impacts to sea turtles and the beach habitat during and after events; work with the FWC and the Service to refine minimization measures based on demonstrated conservation value and effectiveness.
- Track numbers/types of special events scheduled throughout the year and assess threat points monthly.

Requests for modifications or adjustments to the minimization measures will be submitted to the Service in an Annual Report. FWC staff shall provide comments on the requested modifications and coordinate with the FDEP if the changes will result in the need for an additional state permit. If the adjustments are approved, an administrative change will be made to the HCP and all changes will result in version updates of the affected documents e.g., Version 2, 3, 4, etc. of minimization measures, forms, manuals, and other documents related to HCP implementation. The HCP will undergo formal review every five years.

6.6 REPORTING

The City of Fort Lauderdale will monitor the performance of the HCP in minimizing impacts to sea turtles causally related to special event activities and determine if the biological goals of the HCP are being met. HCP program evaluations will be provided to the Service through Annual Reports, formal reviews, and periodic communications, as described below. The goals of the Annual Report are:

- To provide an overview and data necessary for the City to demonstrate that the HCP is being implemented properly;
- To disclose any deficiencies with HCP implementation and the corrective measures planned or taken to address the identified problems;
- To identify administrative changes to HCP elements needed to enhance the success of conservation actions;
- To propose recommendations to the HCP or ITP to eliminate implementation inefficiencies or improve program performance through the adaptive management process or in response to changed circumstances.

The Annual Report, to be prepared by the City, will include at minimum the following elements:

- Summary of special events permitted each year under the purview of this HCP and associated mitigation fees collected;
- Documentation of any take that is observed;
- Summary of compliance monitoring performed and related enforcement actions taken;
- Summary of accumulated threat points and the annual mitigation implemented, including how it is meeting the metrics identified in Table 6-4;
- Summary of sea turtle nesting data including disorientation events, obstructed nesting attempts, and human interference with nests and/or adults and hatchlings;
- Records of funds and resources expended on HCP implementation;
- Program deficiencies and actions that will be taken to improve performance; and
- A description of changed circumstances, administrative changes to the HCP, and adaptive management actions taken.

At the end of each calendar year, an Annual Report will be prepared by the City and submitted to the Vero Beach office of the Service no later than February 1 of the following year for the term of the permit. Annual reports will require synthesis of data collected by the City, NBMTPHs, and HCP participants. A due date of February 1 will allow time for the data from the previous sea turtle nesting season to be collected, analyzed, and presented in a clear and concise format.

To the extent possible, this information will be provided in a tabular and graphic format along with brief interpretative text, as necessary, to clarify presented data. The intent of the Annual Report is to provide the Service with a broad assessment of the adequacy of HCP programs, procedures, and policies in achieving their intended biological goals. As applicable, recommendations will be made for improving HCP performance. Following review of the report, the City and the Service will discuss any issues requiring immediate attention.

6.6.1 Assessing HCP Performance

As noted above, the Annual Report will include an overall assessment of HCP performance, identification of program deficiencies, and recommendations for improvements, as applicable. During the first year of implementation, the FWC has agreed to a phased implementation where a sub-set of randomly selected events (two events in each category, Major, Intermediate, and Minor) will be reviewed to ensure the HCP minimization measures are adequately addressing avoidance and minimization of take. During this initial implementation year, the City will meet with the Service, the FWC, and the FDEP after six months to work through any challenges that have occurred and to adjust the program where needed. The City should arrange for a second meeting after one full year of implementation and submittal of the Year 1 Annual Report to the Service. This meeting should occur prior to March 1 of Year 2. At this meeting, it should be determined whether a six-month meeting is needed in Year 2. Following submission of the Year 2 Annual Report to the Service, the City, the City shall arrange a meeting with the Service, the FWC, and the FDEP to evaluate the program and identify areas for improvement. Following Years 1 and 2, no formal annual meetings will be required unless they are necessary to address critical issues or changed circumstances. However, the Service and City will communicate as needed throughout the term of the ITP to review and discuss issues critical to the success of the HCP. Additionally, the Service and the FDEP/FWC may make unannounced inspections of the Plan Area to ensure compliance with the ITP and FDEP permit, respectively.

The Service, the FWC, the FDEP, and the City shall meet formally every five years to review HCP performance and discuss any needed adjustments to policies, procedures, and/or mitigation in response to changes in the City's organizational structure, special event permitting activities, beach conditions, sea turtle nesting trends, and/or the level of special event-related take occurring on City beaches. However, at any time during the interval, the Service or the City may request a joint meeting to discuss HCP/ITP issues, if needed. An estimated schedule of HCP report deadlines and meetings is shown in Table 6-5.

Table 6-5. Schedule for HCP Reporting and Meetings for Years 1 through 5 of Implementation. The City is responsible for all reports and meeting scheduling.

Task	Deadline	Adjustments
Year 1 – Six-month troubleshooting meeting with City, Service, FWC, FDEP	Six months after issuance of ITP	May flex this date if it occurs during a time when the City has not yet permitted many special events
Year 1 – Annual Report submittal	February 1 of the year following initial implementation	
Year 1 – Annual Report review meeting with City, Service, FWC, FDEP	By March 1 of the year following initial implementation	
Year 2 – Six-month troubleshooting meeting with City, Service, FWC	Six months into Year 2	This meeting requirement may be waived if deemed unnecessary by the Service at the Year 1 Annual Report review meeting
Year 2 – Annual Report submittal	February 1 of the year following Year 2 of implementation	
Year 2 – Annual Report review meeting with City, Service, FWC	By March 1 of the year following Year 2 of implementation	This meeting requirement may be waived if deemed unnecessary by the Service after receipt of the Year 2 Annual Report
Year 3 – Annual Report submittal	February 1 of the year following Year 3 of implementation	
Year 4 – Annual Report submittal	February 1 of the year following Year 4 of implementation	
Year 5 – Formal HCP Review Meeting with City, Service, FWC, FDEP	By March 1 of the year following Year 5 of implementation	FDEP is an optional participant in this meeting

7.0 CHANGED AND UNFORESEEN CIRCUMSTANCES

With the receipt of a Section 10 ITP, the City of Fort Lauderdale will be protected by the federal No Surprises Assurances (50 CFR §§ 17.3, 17.22(b)(5), 17.32(b)(5), 222.307(g)) as long as the City is properly implementing the HCP and adheres to all conditions of the ITP for the term of the Permit. However, the City must also acknowledge in the HCP the possibility of changed and unforeseen circumstances that may affect successful implementation.

7.1 CHANGED CIRCUMSTANCES

Changed circumstances are those that would affect the geographic extent or species covered under the HCP and include the following:

- Unique, new and/or recurring events that may request City permits in the future;
- Significant increases in the amount of take of covered species occurring within the Plan Area during the life of the ITP as a result of permitted activities;
- The addition of other beach-adjacent properties to Plan Area;
- Changes in the protected status of covered species;
- New occurrences of federally threatened or endangered species within the Plan Area; and
- Other actions or conditions that may alter the basis of the Service's "no jeopardy" opinion leading to the renewal of the ITP.

Changed circumstances will be addressed through regular consultation with the Service as described in Section 6.6.

Reorganization and/or Reassignment of Responsibilities

The City Manager may periodically reassign responsibilities and/or personnel among City departments to ensure that HCP program management is properly integrated into the City's overall organizational structure and that available fiscal and personnel resources are most effectively utilized. The title of the position or government unit assigned responsibilities under this HCP will automatically transfer with such changes. Any changes to the names and/or titles of offices, divisions, staff positions, groups, agencies, and other entities with HCP implementation responsibilities identified in this HCP will be documented in the corresponding Annual Report.

Change of Authority

If the City of Fort Lauderdale delegates regulatory authority over all or a portion of City beaches to another governmental entity or if regulatory authority over the beaches is by any other means transferred or appropriated by law or agreement, the Service will be notified immediately. The ITP may be amended, suspended, or revoked by the Service depending on the specific circumstances, and a new Section 10 ITP application may be required.

7.2 UNFORESEEN CIRCUMSTANCES

Unforeseen circumstances are those that are completely unanticipated in the preparation of an HCP. Such events may include circumstances that would substantially adversely affect the City's ability to adequately implement or fund the HCP.
The following measures will be taken in the event unforeseen circumstances should arrive:

1. Within five business days of the event, the Florida Ecological Services Vero Beach Field Office will be contacted by the City via email (FW4FLESRegs@fws.gov), and a description of the event (including geographic extent and impacts/potential impacts on covered species) and immediate actions taken (if any) will be described in communications. Copies of the email or the communication will be distributed to the Office of the City Manager.
2. Within three days of the Service's receipt of the aforementioned written notification, the City will discuss the Unforeseen Circumstance(s) with Service personnel and other affected parties, as applicable. An appropriate response to the situation will be outlined and implemented upon Service approval. The City and the Service will determine the extent to which additional information is needed to document the merit and/or significance of the Unforeseen Circumstance(s) or assess its relative impact on covered species in the Plan Area. A mutually agreed to monitoring plan may be implemented. The plan will contain the following:
    - A description of the data and/or information to be collected;
    - Procedures and schedule for collecting the data/information;
    - Potential analyses required; and
    - Reporting requirements.
3. Upon obtaining all necessary information under the monitoring plan, the Service, the City, and other third-party individuals or agencies, as applicable, will meet to analyze and review the data and develop an action plan to successfully resolve issues associated with the Unforeseen Circumstance(s).

8.0 FUNDING

8.1 OVERVIEW

The City commits to fully implementing this HCP and funding the mitigation program, as outlined in Chapter 6. This chapter will describe the costs and budget associated with this effort as well as funding mechanisms and assurances.

8.2 COSTS AND BUDGET

8.2.1 Implementation Costs and Funding Sources

The City expects to primarily use existing staff within the Parks and Recreation department to administer the HCP and funds to support this effort will be included in the department's budget. However, the City has the authority to subcontract HCP Coordinator duties to an outside party if they decide not to cover those duties with in-house staff. The anticipated cost for this is approximately $50,000 - $60,000 annually, which will be sourced from an operational fund and/or funded through collected application fees for special events. Administration of the HCP will include processing special event applications, reviewing site plans for consistency with minimization measures, assessing projects for their potential impacts, coordinating pre- and post-event meetings as required, performing compliance inspections, collecting mitigation fees, implementing mitigation projects, monitoring the success of HCP implementation and mitigation project performance, and preparing all required reports.

8.2.2 Mitigation Costs and Funding Sources

Mitigation projects are estimated to cost, in total, approximately $80,000 per year, as shown in Table 8-1. Funds to execute these projects will be collected through mitigation fees applied to all special event applicants who wish to hold events between February 15 and November 15. The City will adjust the fee per point in the threat/activity scoring formula, on an as-needed basis to account for inflation over the term of the ITP, as well as to account for variation in the number of events held per year. The fee per point is initially set at $0.026. Had the HCP been in effect in 2019, special event applicants would have been assessed anywhere from less than $100 for small events having little or no impact to approximately $64,000 for a large, multi-day event posing considerable risk to sea turtles (Appendix G). In years where the number of events is low and funds collected through mitigation fees are insufficient to cover costs associated with the required mitigation projects, the City commits to funding the Lighting Ordinance Compliance Assistance mitigation component each year.

Collected mitigation fees will be isolated from the Parks and Recreation operational budget into a subsidiary account (Figure 8-1). Placing mitigation fees into a subsidiary account will restrict the uses of the fees to HCP implementation and mitigation costs. Fees will only be dispersed from the account if expenses are within the allowable scope of the HCP.

Table 8-1. Estimated costs for mitigation projects.

#1 Lighting Ordinance Compliance	**Unit Cost**	**Units**	**Total**	**Task Total**
1/2 FTE in Code Enforcement	$60,000	1	$60,000	
				$60,000
#2 Dune Enhancement and Protection	**Unit Cost**	**Units**	**Total**	
Dune Planting (1,000 plants X 3 events)	$3	3,000	$9,000	
Dune Protection (post and rope)	$300	3	$900	
				$9,900
#3 Lighting Retrofit Grant Program	**Unit Cost**	**Units**	**Total**	
Updating Light Fixtures	$6,800	1	$6,800	
				$6,800
	Annual Mitigation Costs:			***$76,700***

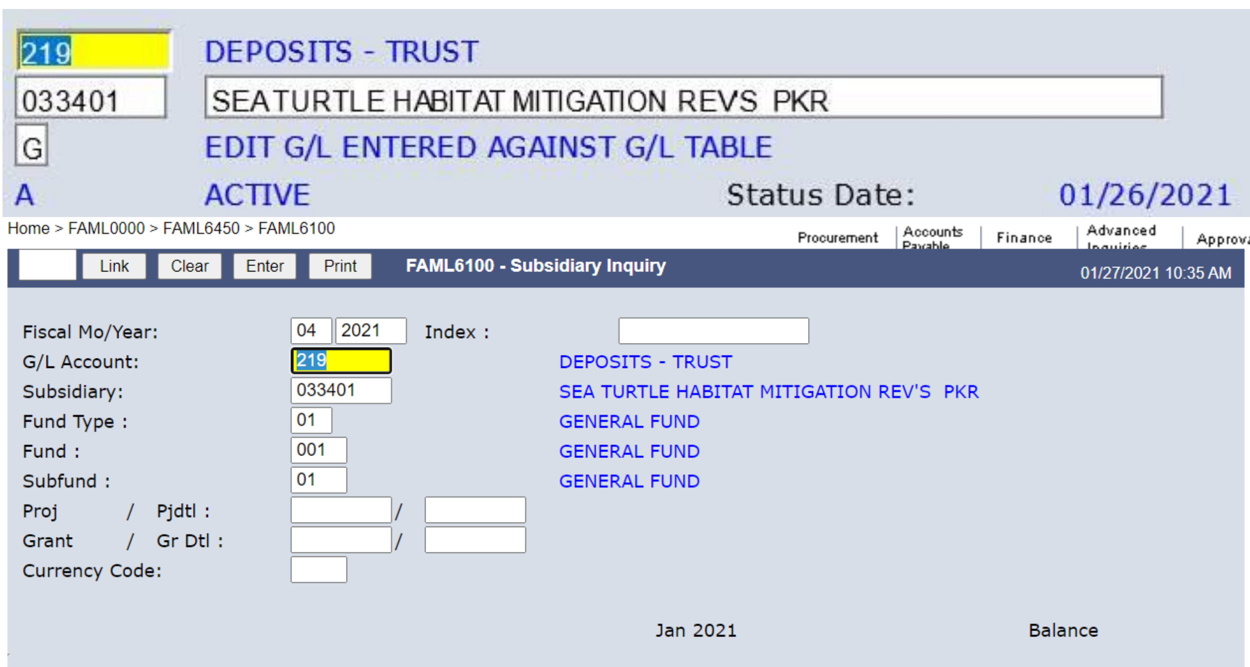

Figure 8-1. Demonstration of the City's subsidiary account which will hold mitigation fees in isolation from the Parks and Recreation Department operational funds.

8.2.3 Implementation Structure and Responsibilities

Successful implementation of the HCP will be achieved by augmenting existing roles and processes within the City's Parks and Recreation Department as well as creating new ones. The special event application process will be in alignment with the HCP.

Application Review

The existing special event application does not request sufficient detail to assess an event's impacts on sea turtles or accurately determine a mitigation fee. Therefore, the City has created a supplemental beach event application that will be required for all events occurring during the time of year when take covered by the ITP is possible (February 15 to November 15; Appendix L). City staff will be responsible for reviewing all special event applications to determine completeness of information and the number of threat points that will be assigned to the event so that a mitigation fee can be calculated.

Pre/Post Event Meetings

The City's current special event approval process for all applicants includes a mandatory pre-event meeting with City staff. Under the HCP, applicants who have obtained approval to host an Intermediate or Major event will be required to attend an additional pre-event meeting at the event site (on the beach) with City staff. Sea turtle monitoring personnel, FDEP, FWC, and Service staff will also be invited. It will be the responsibility of the City to set the date for these meetings and send invitations to the event applicant, agencies, and sea turtle monitors.

Within 10 days of the completion of Intermediate and Major events, a post-event meeting between the special event applicant and City staff will be held to discuss compliance with HCP minimization measures. Sea turtle monitoring personnel, FDEP, FWC, and Service staff will also be invited to the meeting. Any non-compliance will be reviewed, and the applicant's eligibility for receipt of future City permits will be assessed. This meeting will be arranged by the City and may be held either in person at a location preferred by the City or hosted virtually. A report documenting compliance for the event will be kept on file with the City and submitted to the FDEP, the FWC, and the Service. If an event is fully compliant with all applicable minimization measures, the City may choose to waive the event site meeting requirement for the compliant applicant, but shall complete a compliance report providing details of the City's evaluation and the event's documented compliance. The City will recognize all compliant events on social media to promote them as being supportive of the City's HCP and to thank them for helping to reduce impacts to sea turtles and their nesting habitat during their event. Non-compliance over two subsequent years may result in probation or denial of a special event permit, depending on the severity of the infraction and/or the level of impact that occurs.

Fee Collection

The City will be responsible for collecting all mitigation fees associated with each event. These fees will be placed into a subsidiary account within the Parks and Recreation department budget.

HCP Coordination

The HCP Coordinator role should be filled by a person (or people) possessing sufficient knowledge of the City's special events program and sea turtle nesting within the City. The HCP Coordinator will be able to use City resources to monitor and manage HCP implementation and should coordinate with the Parks and Recreation Department, the Office of the City Manager, and appropriate regulatory agencies in order to accomplish the goals of the HCP. Duties will include:

- Tracking special event applications received by the City for events that are scheduled during the period of February 15 through November 15 each year;
- Ensure that the appropriate minimization measures have been issued for each event;
- Calculating threat points for each event to determine applicable mitigation fees;
- Ensuring sea turtle monitoring is satisfactorily coordinated;
- Ensuring events are monitored for compliance with minimization measures;
- Cataloguing event compliance and non-compliance;
- Assisting in the coordination of mitigation projects and monitoring project performance;
- Assisting in the compilation of the Annual HCP Report to the Service; and
- Participating in meetings with the Service and other agencies as needed.

Mitigation Management

Mitigation activities will be determined annually by City staff and/or the HCP Coordinator, and funds will be allocated based on the anticipated event schedule. Certain mitigation projects (including staff positions) will require recurring annual funding and will receive allocated funds from the City each year, either from collected mitigation fees or from City funds. Mitigation projects will be conducted on an on-going basis, concurrent with covered activities.

Project success will be assessed using the management and monitoring actions identified in Chapter 6.

8.2.4 Funding Mechanisms

The City's Commitments

The main funding-related components of the HCP are the City's commitments, the applicants' mitigation fees, and the funding plan's management features. Specifics of each are summarized here. The City's commitments, by department, are shown in Figure 8-2.

Parks and Recreation

- **Special Events Coordinator ($) – Not covered by mitigation fees**
  - Special event application evaluation
  - Pre and post meetings
- **Habitat Conservation Plan Coordinator (*if subcontracted ~$50,000 to $60,000) – Not covered by mitigation fees**
  - Pre and post meetings
  - Supplemental application evaluation
  - Determine mitigation fees
  - Monitor mitigation revenues and expenditures
  - Perform event compliance inspections for adherence to minimization measures
  - Oversee mitigation project performance
  - Compile annual reports on HCP performance (including mitigation activities)
  - Coordinate with Nesting Beach Marine Turtle Permit Holder on post event compliance reports
- **Facilities Worker ($) – Not covered by mitigation fees**
  - *NOTE: Staff time not covered by mitigation fees. $9,900 covered by mitigation fees for dune planting materials*
  - Project planning and organizing for sea oat planting
  - Procure dune plants/seedlings
  - Identify areas of need
  - Organize staff or volunteers for planting

Code Enforcement

- **Part-Time Code Officer ($60,000) – Covered by mitigation fees**
  - *NOTE:* Funding of Mitigation Project #1, Lighting Ordinance Compliance Assistance, up to $60,000. If mitigation fees collected from events are insufficient, City will cover the difference
  - Citing non-compliant residents
  - Follow up on citations
  - Tracking citations
  - Provide outreach and education to coastal property owners

Development Services Department (formerly Department of Sustainable Development) or other suitable City department

- **Administrative Staff for Lighting Retrofit Grant Program ($) – Not covered by mitigation fees**
  - *NOTE: Staff time not covered by mitigation fees. $6,800 covered by mitigation fees for lighting materials*
  - Program planning and implementation (including website creation)
  - Program marketing
  - Application processing
  - Updated fixture tracking
  - Coordination with Code Enforcement

Figure 8-2. Breakdown of the City's commitments, by department, under the HCP.

The Applicants' Mitigation Fees

- To pay a fee for each occurrence of their event, as determined by the Mitigation Fee Calculation (Section 6.3.2) and designed to be proportional to the event's impacts on covered species' habitat.

The Funding Plan's Management Features

- The City may adjust the fee assessed per point (Section 6.3.2) in the Mitigation Fee Calculation so subsequent years' funding will appropriately cover all proposed mitigation.
- The City may adjust the Fee Formula (Section 6.3.1) to amend, simplify, or reapportion impact point scoring.

The example below (Table 8-2) provides an illustration of the HCP's overall budget including implementation and mitigation costs for the first six years after adoption. Some of the above-mentioned fluctuations in event occurrences are modeled to show how the HCP budget would respond.

In general, the mitigation fees collected each year will determine the level of mitigation that should be carried out (Mitigation Costs) in the following year. In years with fewer events, and thus fewer impacts, the City commits to funding at minimum, the "Lighting Ordinance Compliance Assistance" mitigation component. Upon initial implementation of the HCP (the start of Year 1), there will have been no mitigation fees collected. Therefore, the Year 1 mitigation will be fully funded by the City and will include only the "Lighting Ordinance Compliance Assistance" mitigation component. In Year 2, the Mitigation Costs will be funded by the fees collected in Year 1. In the illustration below, the number of events in Year 1 generated the fully expected amount so the City's obligation for Mitigation Costs was reduced to $0.

Modeling budget years when mitigation fee collections are both greater and less than the baseline year is important to understand how the plan is designed to work. Year 3 below is modeled with a decrease and Year 5 is modeled with an increase. The Year 3 and Year 5 budget variations were randomly chosen. The Year 3 variation could be illustrative of a year with significant hurricane impacts, which limit the number of special events on the beach, while the Year 5 variation could illustrate a new large event coming to the City's beaches.

Year 3 models a 30 percent decline in special events covered by the HCP and associated Applicant's Mitigation Fees. In this instance, the City's obligation to fund the minimum guaranteed mitigation is triggered again in Year 4. The City would need to fund the difference between the Year 3 Applicants' Mitigation Fees and the cost of the minimum guaranteed mitigation. As modeled, that amount would be $4,000, to supplement the $56,000 in Mitigation Fees collected to meet the $60,000 cost of the minimum guaranteed mitigation. Year 5 models a 15 percent increase in covered activities showing this scenario triggers a 15 percent increase in mitigation for Year 6.

The City may elect to employ one or both of the funding plan's management features described above to address sustained trends in the number of annual events and keep the funding proportions more aligned with the illustration presented below.

Table 8-2. Six-year budget illustration.

Year	Item	Total Amount	City's Obligation	Applicants' Mitigation Fees
2022	Implementation Costs	$60,000	$60,000	
	Mitigation Costs	$60,000	$60,000	$80,000
2023	Implementation Costs	$60,000	$60,000	
	Mitigation Costs	$80,000		$80,000
2024	Implementation Costs	$60,000	$60,000	
	Mitigation Costs	$80,000		$56,000
2025	Implementation Costs	$60,000	$60,000	
	Mitigation Costs	$60,000	$4,000	$80,000
2026	Implementation Costs	$60,000	$60,000	
	Mitigation Costs	$80,000		$92,000
2027	Implementation Costs	$60,000	$60,000	
	Mitigation Costs	$92,000		$80,000

8.2.5 Funding Assurances

Variation in the number of special events

With respect to the mitigation plan, the City is committing to a minimum level of mitigation performed each year regardless of the number and size of events held. That minimum level initially is to fund Project #1: Lighting Ordinance Compliance Assistance. The City intends to hire staff to fill this position prior to the first full sea turtle nesting season after the HCP is approved.

Year-to-year fluctuations in the quantity, timing, or magnitude of special events will affect the threat points amassed and thus the associated annual funding. The mitigation projects in Section 6.3.3 are listed in priority order and will be funded in that priority order. Lighting Ordinance Compliance Assistance will receive the first mitigation funds generated by the special events during any given year. Once this top-priority activity is fully funded, the City will use the next funds for Dune Enhancement, and so on until all proposed mitigation projects are funded. The primary reasons for this funding approach are that lighting is considered the most significant threat within the Plan Area and the success of that mitigation action calls for a consistently staffed position. Therefore, the mitigation funding plan is designed to keep this mitigation activity as the top priority, and in years with insufficient mitigation fees, funds will be provided by the City as its commitment to a minimum level of mitigation. As discussed in Section 6.3.2: Mitigation Fee Calculation, the City also has the option to increase or decrease the fee per point as the HCP goes through periodic evaluations.

Generated mitigation funds will vary year-to-year, and budgets for implementing larger scale mitigation projects may take time to generate. The threat points accumulated and mitigation will be evaluated periodically and adjusted as needed using the factors of "price per point" and "annual HCP budget" to ensure balance. The seasonal distribution of events within a given year must also be considered. As previously mentioned, the goal of this HCP is to permit special events with a timing and scale similar to the 2019 baseline year. Therefore, it will be necessary to monitor the types of event applications that are received and the seasonal timing of events to prevent excessive take from occurring during a short time period. The purpose of this evaluation is to ensure special events are not skewed toward peak nesting season when they would have the greatest impact on sea turtles.

Along with variance in the number of permitted events each year, there is some uncertainty in a constant proportion of funds allocated to each of the three mitigation initiatives over the course of the HCP. For example, while there is currently a need to fund dune restoration within the City, it is unclear if that need will remain constant. If dune restoration objectives are fully achieved within the term of the ITP, this conservation strategy may be adjusted so that the proportion of funding marked for dune restoration, if available, can be transferred to another mitigation initiative within the HCP.

There are several monitoring actions the City will take as the HCP is implemented. They include:

- Monitor funding expenditures on each of the three mitigation initiatives identified in this HCP and evaluate the need to adjust funding allocations based on percent of project completion.
- Evaluate special event applications within and between years for timing and scale to ensure seasonal take is not skewed toward peak nesting season.
- Assess the effectiveness of each mitigation project by monitoring success benchmarks described in 6.3.3.
- Ensure minimum levels of funding are obtained to ensure successful implementation of the Plan, including funding for staff positions and mitigation projects.
- Evaluate take and mitigation using factors of "price per point" and "annual HCP budget" annually.

Table 8-3 quantifies scenarios of threat point fluctuations and the actions the City will take given those fluctuations.

Table 8-3 Threat point fluctuation scenarios and resultant City actions.

Parameter	Action
Single year's points total is within 25% of 3.3M[1] (points are between 2.48M and 4.13M)	Continue HCP Implementation As-Is
Five consecutive years' points totals >25% of 3.3M (points exceed 4.13M each year for three years)	City *will* approach the Service to discuss revisions to HCP
Five consecutive years' points totals <25% of 3.3M (points are below 2.48M each year for three years)	City *may* approach the Service to discuss revisions to HCP
Single year's points total >33% of 3.3M (points exceed 4.13M in one year)	City *will* document the exceedance in the Annual Report and discuss the circumstances with the Service
Single year's points total <33% of 3.3M (points are below 2.2M in one year)	City *may* approach the Service for HCP Amendment

[1]Using 2019 event data as a proxy for future years, the number of total threat points accumulated by all events was 3.3 million.

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APPENDIX A: Land Maps

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Site Location Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

N

Project No: 18-1739	**Scale:** 0 200 400 800 Feet		**Layer Source: ESRI**
Date: 09/15/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-1**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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Project No: 18-1739	**Scale:** 0 200 400 800 Feet		**Layer Source: ESRI**
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City of Fort Lauderdale, Broward County, Florida

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Project No: 18-1739	**Scale:** 0 200 400 800 Feet	**Layer Source: ESRI**

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Site Location Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

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Project No: 18-1739	**Scale:** 0 220 440 880 Feet	**Layer Source: ESRI**

Date: 09/15/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-4**

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Site Location Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

Project No: 18-1739	**Scale:**		**Layer Source: ESRI**
Date: 09/15/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-5**

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Site Location Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

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Project No: 18-1739	**Scale:** 0 200 400 800 Feet		**Layer Source: ESRI**
Date: 09/15/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-6**

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Existing Land Use Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

N

Project No: 18-1739	**Scale:** 0 200 400 800 Feet		**Layer Source: CoFL**
Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-7**

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Existing Land Use Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

N

Project No: 18-1739	**Scale:** 0 200 400 800 Feet	**Layer Source: CoFL**

Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-8**

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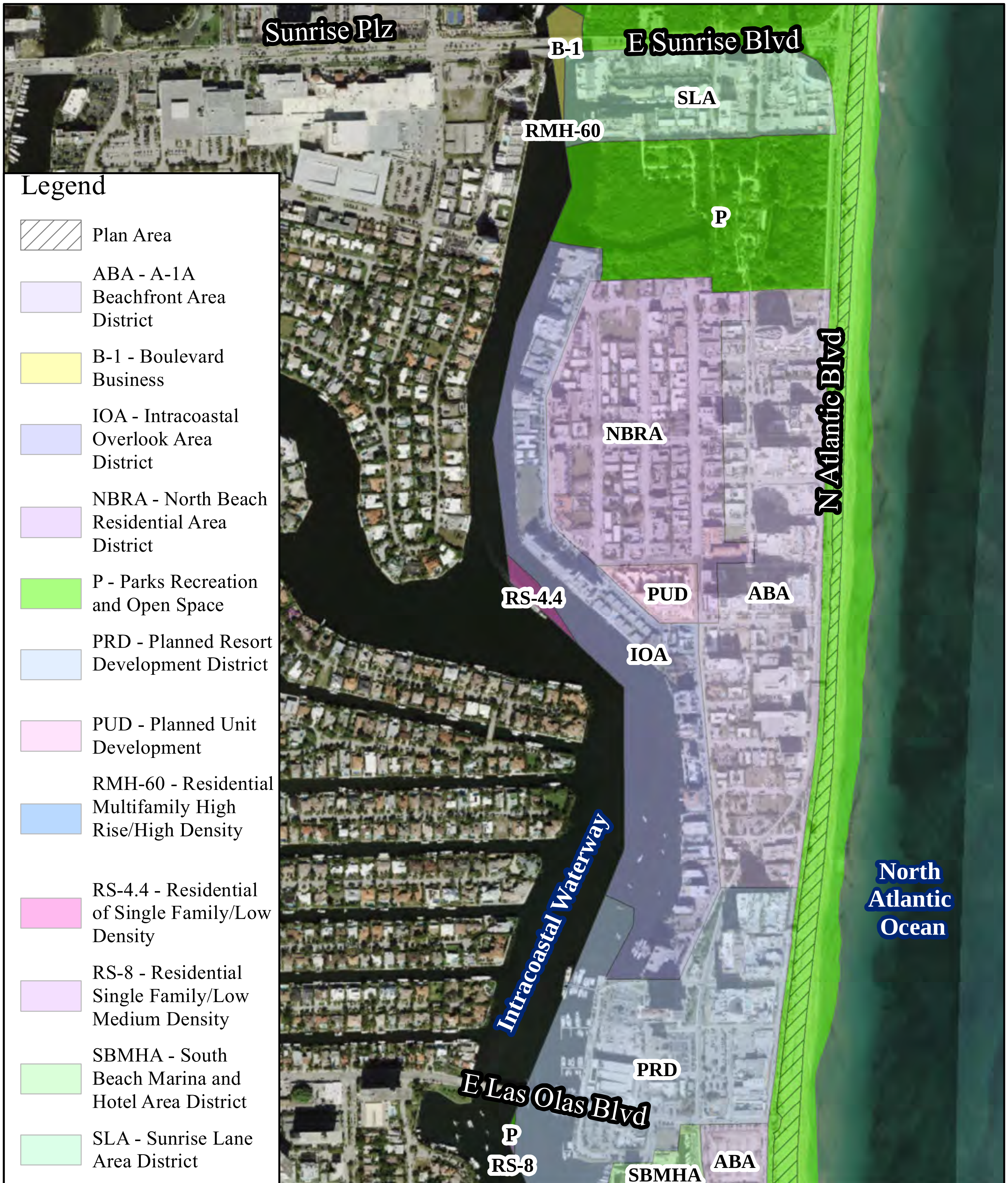
Existing Land Use Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

N

Project No: 18-1739	**Scale:** 0 200 400 800 Feet		**Layer Source: CoFL**
Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-9**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Existing Land Use Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

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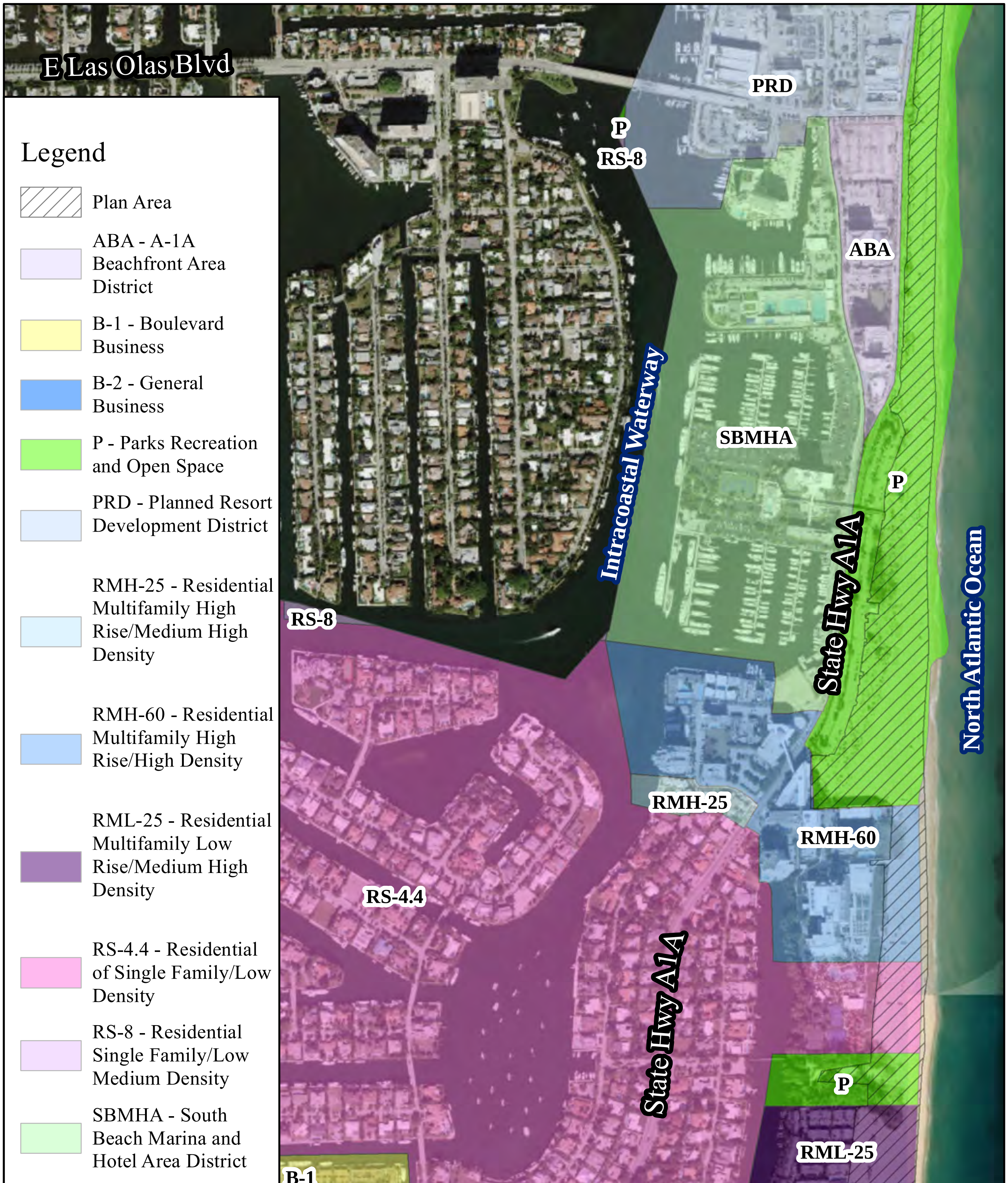
Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-10**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



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Existing Land Use Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

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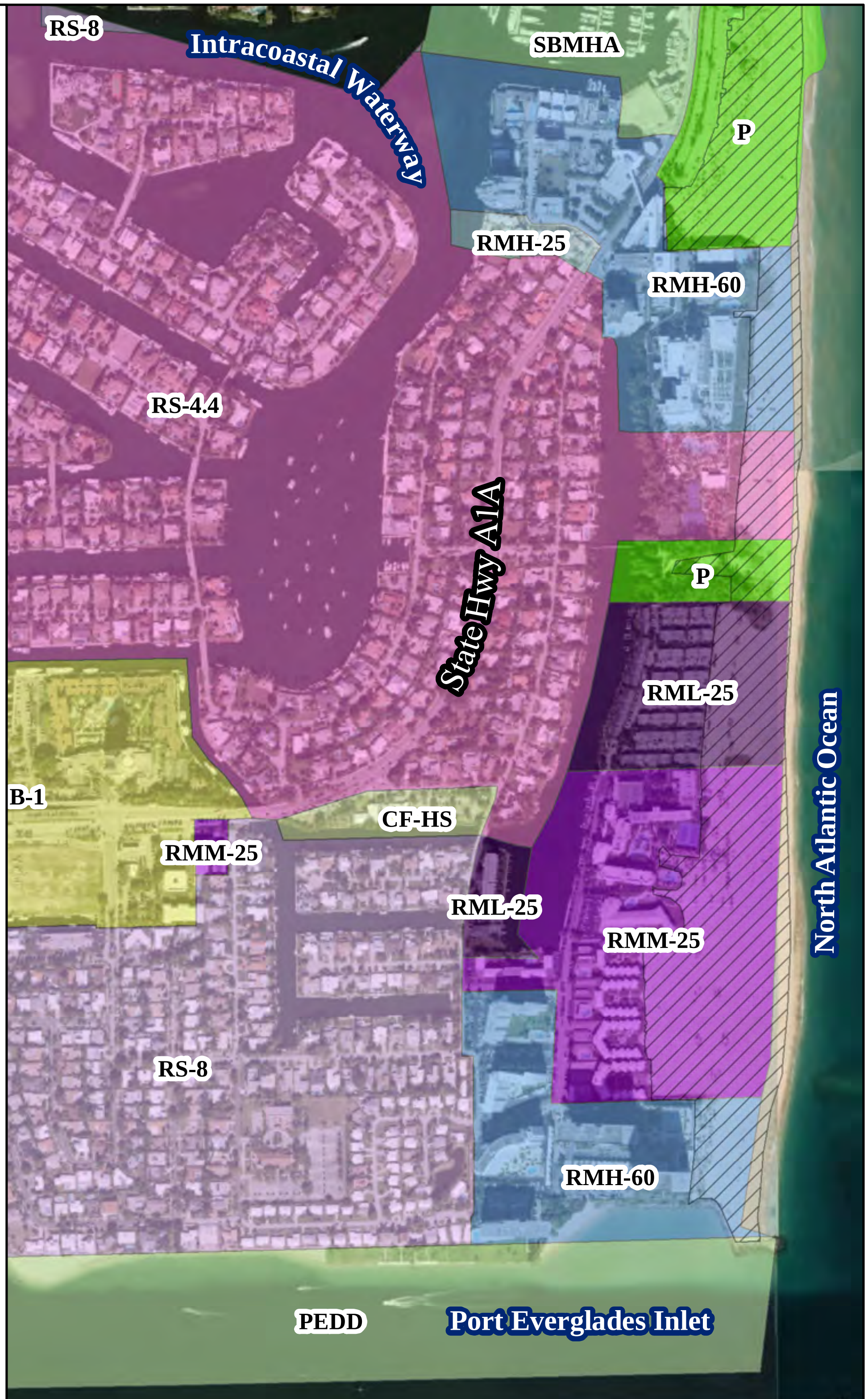
Project No: 18-1739	**Scale:** 0 200 400 800 Feet	**Layer Source: CoFL**
Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-11**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Plan Area
- B-1 - Boulevard Business
- B-2 - General Business
- CF-HS - Community Facility/House of Worship and School
- P - Parks Recreation and Open Space
- PEDD - Port Everglades Development District
- RMH-25 - Residential Multifamily High Rise/Medium High Density
- RMH-60 - Residential Multifamily High Rise/High Density
- RML-25 - Residential Multifamily Low Rise/Medium High Density
- RMM-25 - Residential Multifamily Mid Rise/ Medium High Density
- RS-4.4 - Residential of Single Family/Low Density
- RS-8 - Residential Single Family/Low Medium Density
- SBMHA - South Beach Marina and Hotel Area District



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Existing Land Use Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

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Project No: 18-1739	**Scale:** 0 200 400 800 Feet	**Layer Source: CoFL**

Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-12**

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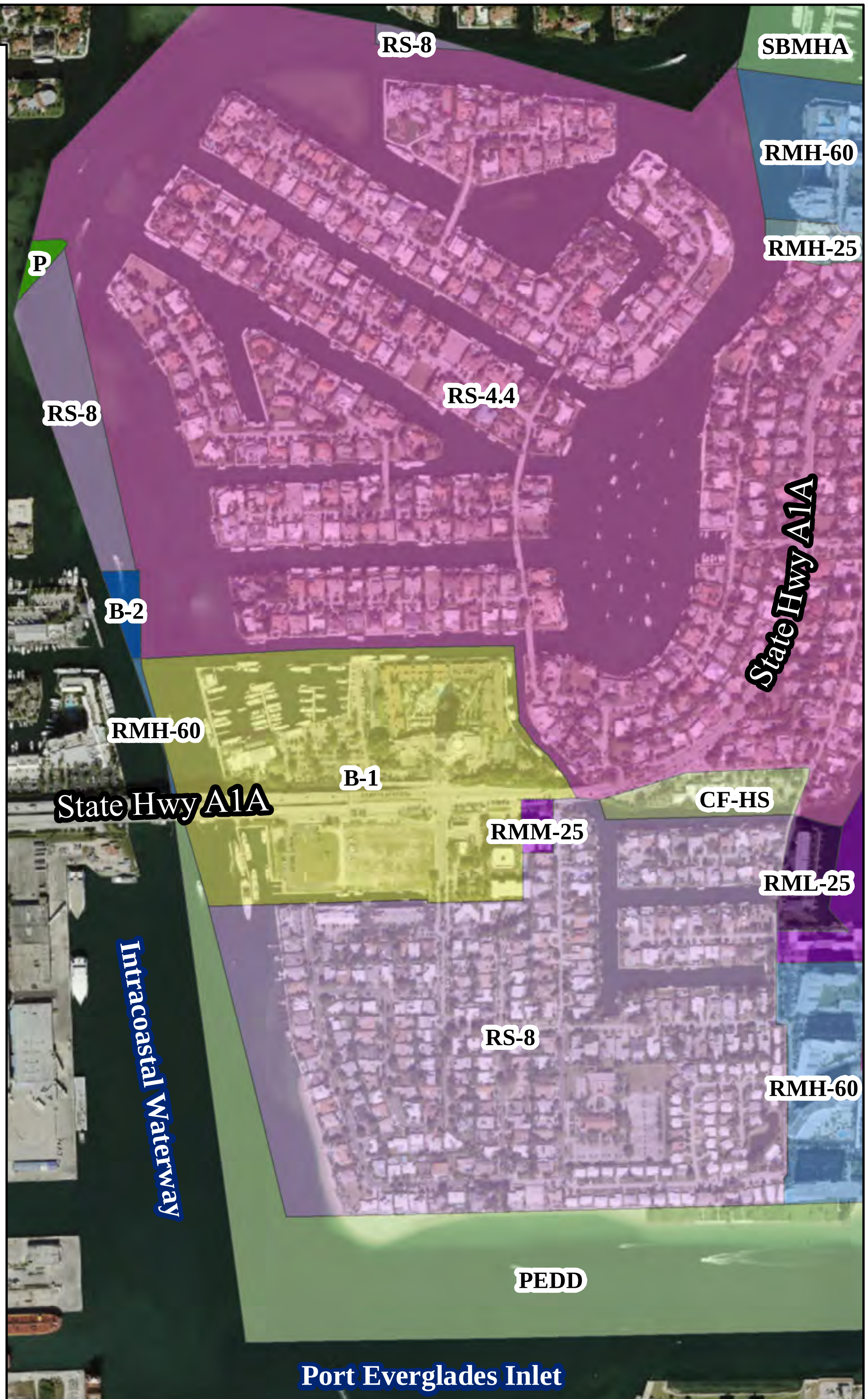

Legend

- B-1 - Boulevard Business
- B-2 - General Business
- CF-HS - Community Facility/House of Worship and School
- P - Parks Recreation and Open Space
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Existing Land Use Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

N

Project No: 18-1739	**Scale:** 0 210 420 840 Feet		**Layer Source: CoFL**
Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-13**

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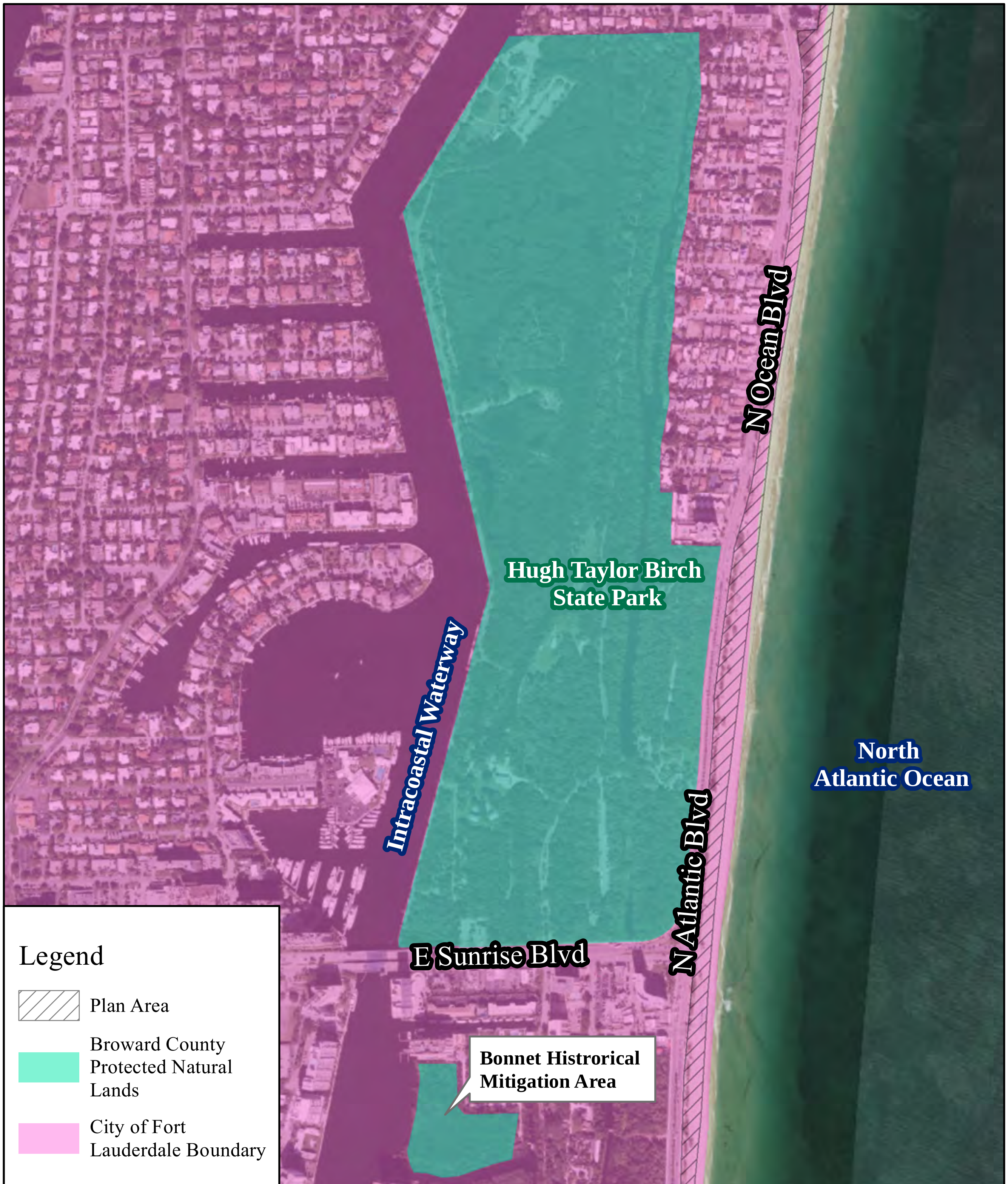

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Protected Lands Map

Habitat Conservation Plan
City of Fort Lauderdale, Broward County, Florida

N

Project No: 18-1739	**Scale:** 0 200 400 800 Feet	**Layer Source: ESRI**

Date: 08/24/2020	**Aerial Date: 2019**	**Drawn By: JF**	**Figure No: A-14**

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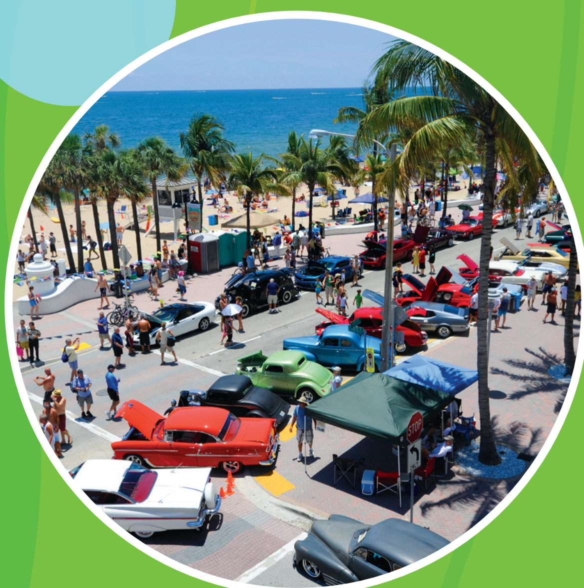
APPENDIX B: Special Events Manual

*NOTE: Special Events Manual Will Be Updated Accordingly



CITY OF FORT LAUDERDALE

SPECIAL EVENTS GUIDE

AUGUST 2015

THE EVENT PLANNING PROCESS

60 DAYS BEFORE EVENT

At least 60 days before the intended event day, complete and submit all appropriate applications. All events need the Special Events Application, a Site Plan, a Site Plan Narrative and the $200 application fee. Closing streets requires a Maintenance of Traffic plan. Some event activities that will require a permit include serving alcohol or food, having certain structures, using a generator, parking, and using the beach.

ATTEND SPECIAL EVENTS MEETING

Attend the assigned Wednesday morning Special Events meeting at the Parks and Recreation Building at 1350 W Broward Blvd. Be prepared to discuss the submitted event documents, required permits and fees with the special events team.

30 DAYS BEFORE EVENT

At least 30 days prior to the intended event day, provide certificates of Insurance to City's Risk Manager for approval and have all your permits and inspections scheduled.

Resolve any issues with permits. Attend assigned City Commission Meeting to obtain event approval. An event organizer or promoter must be present to answer any questions or concerns.

7 DAYS BEFORE EVENT

At least 7 business days prior to the event, submit all appropriate documents and permits from the City of Fort Lauderdale, State of Florida, Department of Sustainable Development and Fire-Rescue to Outdoor Events Coordinator and special events area team member.

HAVE YOUR EVENT!

You may be contacted by a member of the Special Events Team for a post-event meeting.

CONTENTS

SPECIAL EVENTS OVERVIEW

What is a Special or Outdoor event?

A Special or Outdoor event is any event that takes place on public property and includes, but is not limited to a festival, race, parade, concert or other related recreational activity. City Charter Section 15.181 provides you with the complete language.

Special events are coordinated through the City's Parks and Recreation Department and require a Special Events Application. This manual and the application will help you anticipate costs and timelines for most events with less than a thousand people. Larger events may require a longer timeline, additional permits and agreements. Some small events are exempt from the application and fee.

We want you to have successful, fun and safe events in the City. To help you, a Special Events Task Checklist in the appendix has been created to help you during the process, but we are always here to help when you have questions. If you are unsure how soon you should apply or if you should use the application for your event call the Special Events Coordinator at (954) 828-6075.

To host a Special Event anywhere within the City limits, you will need to submit a Special Events Application available online here, or in the appendix, with a non-refundable application fee of $200. The form should be submitted a minimum of 60 days prior to the intended day of an event along with a Site Plan and a Site Plan Narrative. For larger events you will also need a Maintenance of Traffic Plan. This deadline ensures that the City can dedicate sufficient resources necessary for a quality event.

If you submit the Special Events Application less than 60 days before your event, submit an administration fee of $400. Event applications submitted less than 30 days prior to the intended event day will be denied. If you are applying to host an event during the months of July or August you must submit by May 1st. The City Commission takes a summer recess between those months and adequate time is needed for approval.

DAY OF SUBMITTED APPLICATION	FEE
60 days or more before event day	$200
59-30 days before event day	$400
Less than 30 days before event day	Application denial

All event applicants seeking to hold an event in the City of Fort Lauderdale need to be registered with the Florida Department of State - Division of Corporations whether a non-profit or a for profit entity. All events that are hosted by a for profit will be subject to a fee equal to 20% of their gross profits from the event within 30 days of the conclusion of the event.

Following staff review, the Special Events Coordinator will contact you to present at the weekly special events meeting held on Wednesdays in the Parks and Recreation Department Conference Room (1350 W. Broward Blvd., Fort Lauderdale, FL 33312). You will be asked questions regarding food/beverage, site plans, sustainability efforts, parking and other aspects to the event. Each department at the table will provide its cost estimate and make recommendations about required permits and procedures. A signed cost estimate will be provided to you at the end of the meeting. If a department has further questions and/or concerns, a subsequent meeting may be scheduled.

As an event organizer, begin applying for any liability insurance and permits as soon as possible to allow time for processing.

Once all administrative paperwork has been completed and submitted to the satisfaction of the Special Events Coordinator, it will be routed to the City Attorney's Office to be reviewed. With the approval of the Attorney's Office, an agreement will be drafted for you to sign. It will then be placed on the City Commission agenda for a vote. You or a representative of the organization hosting the event should attend the scheduled City Commission meeting and be prepared to answer any questions.

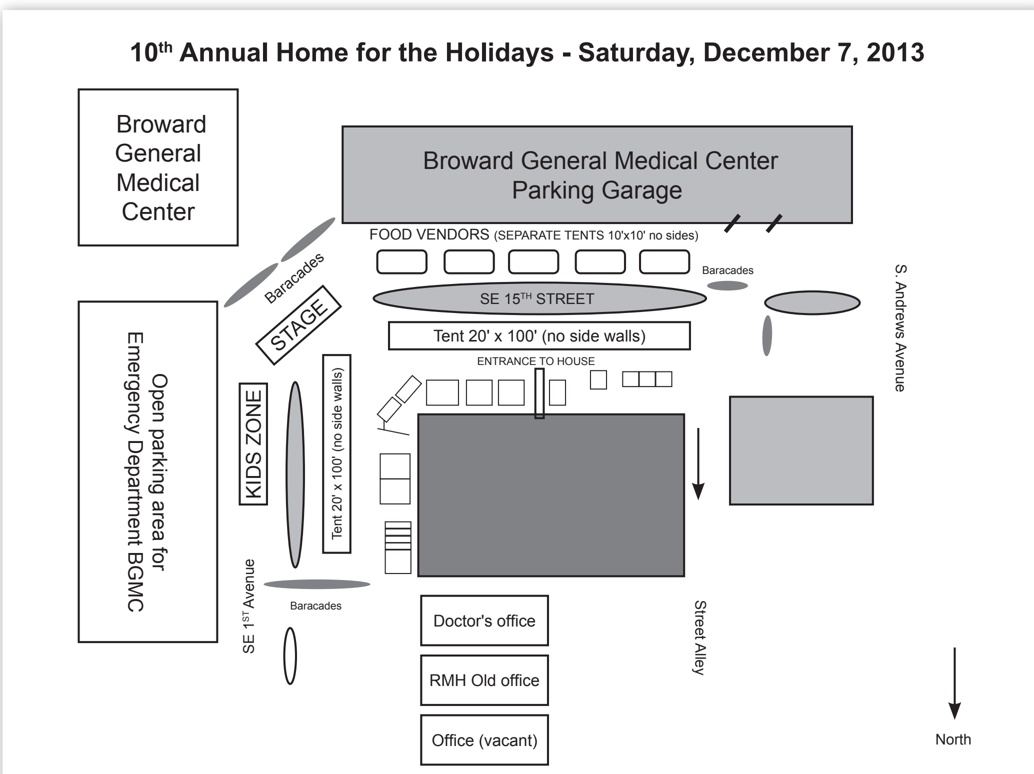
The event agreement will not be considered approved until a majority of the City Commission votes to approve it at the public meeting.

SITE PLAN & NARRATIVE

Every Special Event Application needs to include a site plan. The complexity of the site plan depends on the type of the event. If you are hosting a large event, you may be required to submit a Computer-Aided Design (CAD) site plan with an accompanying detailed narrative. Smaller events may only require a printed map with hand drawn details. Site plans are reviewed by the Special Events Team at your event review meeting to determine security and emergency services for the event. It may also be used to help City staff determine required permits and Maintenance of Traffic requirements. If the site plan and narrative are not sufficient, the team will request one with more detail, which could delay your application. An inspection will be conducted by the City immediately prior to the event to ensure that the location of all tents, booths, sanitary facilities and stages are in accordance with the City-approved site plan and code regulations.

Information that should be included in the site plan and narrative includes:

- Locations of tents, bathroom facilities, recycling and trash receptacles, parking, stages, booths, concessions, alcoholic beverage and dispensers, the borders of the event site, and the times when borders, fences and/or facilities will be constructed, operated and dismantled;
- A description of all activities and events to occur at the event site and event impact areas with their associated times;
- Your contact information, or contact information of the event lead/organizer who will available the day of event.



Site Plan Example

INSURANCE

Event insurance needs to include general liability insurance for one million dollars ($1,000,000) combined single limit coverage naming the City of Fort Lauderdale as an additional insured.

Liquor Liability

If there will be alcohol beverages dispensed, served, distributed, or sold at the event, you need to provide liquor liability insurance for five hundred thousand dollars ($500,000).

Environmental Liability Insurance

If your event has a substantial environmental impact, you will be required to provide a certificate of environmental liability insurance. The Public Works - Sustainability Division staff will work with you to determine how to reduce environmental risks, as well as provide other tips on how to make your event more environmentally friendly.

Liability Exemptions

Minor events do not require a certificate of insurance. An event could be considered minor by the Parks and Recreation Director and the Risk Manager if it satisfies these conditions described in the City Charter:

(1) Not anticipated to exceed the capacity of the facility or other property proposed to be used;

(2) Limited or no closing of streets/limited impact on traffic;

(3) Limited parking and noise in surrounding neighborhood(s);

(4) absence of activities having an inherent risk or which increase exposure to either bodily injury or property damage; and

(5) Limited size and scope of event; limited use of facility outside of normal use; no activities involving third party vendors.

Events which fall into one or more of these may qualify as a minor event. The full outdoor event ordinance regarding certificate of insurance is available for review online and in the Appendix.

SUSTAINABILITY

The City of Fort Lauderdale supports events that promote and practice sustainability. To help you make your event sustainable, we have put a 'Green Checklist' in the Appendix. Creating a sustainability plan based on historical data and previous experiences will assist in establishing realistic strategies and goals. It will ensure a better experience for attendees, save time and money, create positive changes beyond the boundaries of the event and position you as a leader. For more details about sustainability, you can visit our City's Green your Routine website.

Here are a few guidelines to get you started:

- Develop a list of initiatives taken in previous events such as how recycling was implemented and how alternative transportation was encouraged.
- Summarize your results so others can learn from your efforts.
- Outline specific strategies for achieving each goal.
- Keep records of attendance, waste generation and collected recyclables.
- Encourage Vendors to become sustainable by doing these things:
  - Use the Green Checklist in the appendix.
  - Use paper and other recyclable materials instead of Styrofoam.
  - Install temporary water filling stations for event attendees.
  - Donate untouched food to social service agencies in the appendix.

SECURITY & EMERGENCY SERVICES

The City of Fort Lauderdale Police and Fire-Rescue staff work hard to keep special events enjoyable and safe for event attendees and the affected neighbors. Depending on the type of event, you may need to budget for Police and Fire-Rescue services even if you use private security companies. Using the Special Events Application, Site Plan, Site Plan Narrative, and the Maintenance of Traffic Plan, the Police and Fire Rescue Departments provide their staffing and equipment recommendations during the required special events meeting.

The Police Department personnel provide security detail for event attendees and organizers, direct traffic and approve road closure requests. Fire-Rescue can provide the emergency response and medical staff and equipment necessary for safety and rapid response for attendees in case of injury, illness, or other emergencies

There are many factors besides the number of expected attendees that may increase the number of staff and/or vehicles required to have an enjoyable and safe event including but not limited to:

- Types of required insurance;
- Total hours and or days expected;
- Location;
- Time of day or night;
- Time of year;
- Alcoholic beverages; how they are stored and served;
- Amusement rides or athletic activities;
- Presence of fireworks, gas burners or open fires;
- Age of participants;
- Weather conditions; and
- Other factors.

Private Security

Event safety is a primary concern of the City and our officers are trained to handle the wide range of issue that can impact event safety. Depending on your event it may be possible to supplement some of the City Police services with a private third-party security company if their security plan is approved by the City's Police Department. To use a private security company, you or the security company needs to present the proposed security plan along with the businesses business license and contact information with the events application. The Police Department will review the plan and determine if it will meet City requirements.

Police

If you need the City Police officers for your event there are two methods of staffing. You may hire an officer to work off-duty for your event at approximately $40 per hour, or the officer may work the event with overtime fees. The number of officers for each event varies based upon the type of event and the number of expected attendees.

Please note that if you request a police officer or officers to be present at a special event, you will need to hire each officer for a minimum of three hours per the department's collective bargaining agreement. Payments need to be made via check to every individual officer the day of the event. Any cancelations need to be made by phone at least 24 hours before an event is expected to begin.

Fire Rescue

If Fire Rescue's services are needed for your special event you will need to pay for permits before the event and services after the event. Some of the permits they handle are for canopies, generators and cooking equipment. By correctly filling out your Special Events Application and attending the Special Events meeting, you will find out which permits are needed and how to apply for them.

For any required Fire Prevention permits, an organizer needs to pay 50% of the permit fee at the time of application and 50% at the time of pick up. Most permits will require an onsite inspection. If an organizer fails the inspection, the permit fees will not be refunded and the success of the event could be in jeopardy. Most Fire Rescue related permits are applied for using the Building Permit form at Department of Sustainable Development (DSD). Any cancelations need to be made by phone at least 24 hours before an event is expected to begin or you will be charged for at least four (4) hours.

Emergency Medical Services

The Fire Rescue Department has paramedic staff trained in emergency medical services and posted at special events in case of emergencies. Most outdoor events are required to have Emergency Medical Services (EMS) on site. You may be required to have additional staff and apparatus based on your estimated event attendance and other factors such as alcohol, time or day, location, event type or weather. An abbreviated Emergency Services Personnel Matrix below describes some of the staffing that might be required for a special event. A more comprehensive list of possible services and their associated fees are in the Appendix. These are only estimates and may change based on the unique factors of your event. Any event cancelations need to be made by phone at least 24 hours before an event is expected to begin to avoid being billed.

Fees for required Fire-Rescue staff and units provided during an event will be billed to your organization or coordinator after the event concludes. A deposit may be required for organizations that have no financial history with the City or if there is an outstanding balance.

FIRE-RESCUE EMERGENCY SERVICES PERSONNEL MATRIX	
Estimated Attendance	**Minimum Emergency Services Personnel**
500- 5,000	1 rescue unit/cart
5,000 – 10,000	2 rescue units and 1 command personnel /carts
Per additional 5,000	1 additional rescue unit/cart

Ocean Safety

The Fort Lauderdale Beach is a popular venue for special events and may require special permits. One of the fees might be for Ocean Rescue services. At the Special Events meeting, the Ocean Rescue Chief will assess the need and inform you of the fees for these services. The Chief will request the services from the Department on your behalf, and provide you with a letter confirming that the services are secured for the event day. Depending on the types of services needed, a deposit may be necessary. Otherwise, the event organizer will be billed after the event concludes.

- You need to provide a forty-eight (48) notice to the Ocean Rescue Chief for any cancellations or changes to your event or you may be responsible for any fees.
- The Ocean Rescue Chief has the discretion to cancel a beach event the day of in case of rough beach conditions.

Protests and Demonstrations

The City respects and upholds the rights in the First Amendment, including the right to assembly and the right of free speech. The City also recognizes the public's right to a safe environment. If you are planning to host a protest or demonstration, you should inform the Special Events Coordinator so he or she may notify the Fort Lauderdale Police Department to remain on standby. If it appears that a protest or demonstration is going to be disruptive or lead to any physical violence, law enforcement officials will ask organizers to stop the event. Contact Fort Lauderdale Police's non-emergency number at (954) 764-4357 for further information.

PERMITS & FEES

Most Special Events require permits so that the appropriate department can dedicate the correct type of resources towards making it a success. Many of the permits are controlled though the City using the Department of Sustainable Developments, Building Permits form found in the appendix, but if you want to have special attractions such as carnival rides or close State roads, you will need to work with outside agencies. It can be a challenge to get all the permits in place in time. With this manual, our staff and an early start, you will be able to meet all the deadlines and have a great event. If you already know what you are looking for, please reference the table of contents and jump straight to what you need.

In addition to permits, all events that are hosted by a for profit organization will need to pay a business tax and an event fee equal to 20% of the gross profits from the event within 30 days of the conclusion of the event.

Alcoholic Beverages License

The City of Fort Lauderdale requires you to maintain a controlled system for identifying legal age drinkers and identifying excessive consumption. You and your organization will be responsible for underage drinking, altercations, drunk driving and other alcohol-related offenses that are a result of your event.

If you plan to distribute, serve, or sell alcoholic beverages, you will need to present the proper license from the State of Florida and liquor liability insurance for $500,000 to the Risk Manager at least 30 days before the event. If you already have a license or you will be using a licensed company, please provide this information at your special event meeting. You will still need to secure the liquor liability insurance.

The State of Florida Division of Alcoholic Beverage and Tobacco website is here. If you are seeking a temporary alcohol serving permit, you need to complete and return Form DBPR ABT 6003. If you have previously held a liquor license and need an extension, you can apply for an extension of premise license by completing and submitting Form DBPR ABT-6029.

Banners

Banners are a great way to increase attendance and reward your sponsors. Some of the requirements are listed below and a comprehensive list is detailed here. The application is available at the Urban Design and Planning counter in the Department of Sustainable Development (DSD) office at 700 N.W. 19th Avenue or online.

If the banners are on state roads, you will also need to get permission from the Florida Department of Transportation (FDOT). Information for the agency is available at the DSD counter.

All banners need to be removed within 72 hours after an event.

A completed City of Fort Lauderdale and FDOT approved package needs to be submitted to Urban Design & Planning, including a non-refundable fee of $10 per banner sign as well as a refundable deposit before you hang your banners.

NUMBER OF BANNERS	AMOUNT OF DEPOSIT
1 – 10	$100.00
11 – 25	$300.00
26 – 35	$500.00
36 – 50	$700.00
More than 50	$900.00

In order to obtain a refund after the event, you need to complete a refund request form. The zoning inspector will visit the sites to ensure that everything has been removed within 72 hours of the end of the event. If all banners have been removed and no damage has been done to City property, the you will receive the full refund.

The application submitted for display of a banner sign needs to include a drawing indicating the utility poles or highway trusses proposed to be used for displaying banners. A letter or letters of permission from the owner or owners of the poles or highway trusses is also required. You may not display banners on any other structure. For any banners proposed for utility poles not owned by the State of Florida, the letter granting permission will indemnify and hold harmless the City for any damage or injury that occurs as a result of such display. You may not place any banners in medians unless there are no utility poles abutting the homeowner's property. If you want to put banners in median areas, they will be placed on utility poles and a site plan will be reviewed and approved by Urban Planning & Design prior to display. You may not display a roadway banner on the roadway over a railroad crossing or on an Intracoastal bridge. Banners are prohibited from display in medians or swales.

Display space is allocated on a first-come first-serve basis. A maximum of two banners may be displayed on highway trusses. You can only display one banner on a highway truss. You may hang banner signs for a maximum of 14 days. If you want to hang the banner for events lasting longer than 14 days, you will need to receive City Commission approval.

When a banner sign is to be placed on a highway truss, display is limited to one sign per side at any one location and size is limited to three feet by 30 feet. The minimum height clearance of the sign is 16 feet. Banners not displayed on highway trusses are limited to a maximum size of eight feet by three feet, need to be 15 feet above a roadway, and be suspended lengthwise from a utility pole and attached to the pole at each end.

The text of a banner needs to include the name of the special event, the date or dates of the event and the name or logo of the City and the name or logo of the association or organization co-sponsoring the event. If lettering is used to identify the City, the lettering should be uniform and should be no smaller than four (4) inches in height.

The City of Fort Lauderdale logo shall be no smaller than six (6) inches and no more than eight (8) inches in height. The text of the banner should not contain product or company logos. The name of a company or product sponsoring such an event may be included in the text of the banner only if it is a part of the name of the event. Non-compliance with banner regulations may result in banner removal.

Allowed Banner Locations

Display of banners is limited to the commercially zoned areas of the following roadway corridors below:

- Cypress Creek Rd. from corporate limit east to Federal Highway
- Commercial Boulevard from corporate limit east to Intracoastal Waterway
- Oakland Park Boulevard from corporate limit east to Intracoastal Waterway
- Sunrise Boulevard from corporate limit east to State Road A-1-A
- Broward Boulevard from corporate limit east to Federal Highway
- Las Olas Boulevard from S.W. 7th Avenue to Intracoastal Waterway
- 17th Street from Federal Highway to Intracoastal Waterway
- Davie Boulevard from corporate limit east to Federal Highway
- Andrews Avenue from 6th Street on the South to 6th Street on the North
- Federal Highway from State Road 84 north to N.E. 6th Street
- State Road A-1-A from Oakland Park Boulevard to south Holiday Drive
- Powerline Road
- State Road 7
- State Road 84
- Sistrunk Boulevard from Andrews Avenue west to the corporate limit
- S.W. /N.W. 7th Avenue from Las Olas Boulevard north to Sunrise Boulevard
- S.E. /N.E. 3rd Avenue from 17th Street north to Flagler Drive
- N.E. 4th Avenue from Sunrise Boulevard north to corporate limit
- S.W. /N.W. 27th Avenue from Davie Boulevard north to Sunrise Boulevard

Sustainable Banners

In its pursuit of being a more sustainable community, the City encourages you to consider the environment when you are advertising for your event. Whenever possible, consider displaying recyclable paper or advertising an event in another creative, environmentally friendly manner, and reuse or recycle the banner if possible.

Beaches

The Fort Lauderdale Beach is a popular spot for neighbors, tourists, and Special Events. To help ensure that it is maintained for everyone to enjoy, certain fees exist based upon the type of event and the number of attendees expected.

Beach Usage Fees

A comprehensive Site Plan & Narrative showing your intended use of the beach is a critical piece of the application process that will allow the special events team to help you determine estimated costs. The most common costs are listed below but each event is unique and may require additional fees for each hour or day you are intending to use the space. Make sure to include setting up and breaking down time on your application so we can accurately calculate your fee. Contact the Special Events Coordinator with any questions.

SPACE	COST
Volleyball Court(s)	\$15 (resident) \$20 (non-resident) per court per hour
Open Space Fee	\$500 per day + 20% of all gross revenue minimum
Weddings	Location Dependent – Go to our Website

Beach - Sea Turtle Nests

You will need to take special environmental concerns into account if you are hosting an event on the beach between March 1st through October 31st. During this time, the Florida Department of Environmental Protection (FDEP) may require a permit and the presence of a paid beach monitor to ensure the safety of the turtles and their eggs. Additional lighting restrictions will also be required if you plan on having your event at night. For more information on the permit and other related requirements, please contact the FDEP at (561) 313-9007.

Business Tax

The business tax is \$367.50 to host an event. This is in addition to the event fee equal to 20% of your total gross profits. Non-profit organizations or associations are exempt from the business tax and event fee with the necessary documentation such as an Internal Revenue Service issued Tax Identification number. On the application mark the appropriate box for your type of organization, include the registered name of your organization and requested contact information. Be prepared with your documentation at the Special Events meeting. You will receive an invoice after the event, payable within 60 days.

Carnival Rides

All carnival rides are inspected and approved by the State of Florida Consumer Services Division, Bureau of Fair Rides. They are regulated by Florida state Rule, Chapter 5J-18, and State Statute 616.242. If you are using a vendor to provide the rides, you need to contact the state bureau to confirm that your chosen vendor is licensed and approved 30 days before the event starts at (850) 410-3838. A fee schedule is available in the Appendix if you plan on providing your own carnival rides and need to have them inspected.

All rides are also required to adhere to National Fire Prevention Association (NFPA) applicable codes. A fire inspection is required for all fairs, festivals, and carnivals and a fire watch may be required at the discretion of the Fire Marshal depending on the hazards identified, fire department access, and number of attendees at any time at the event.

Electricity & Generators

If your event needs electricity from a nearby business or a generator, you will need to fill out the City's Department of Sustainable Development Building Permit form and schedule an electrical inspection prior to the event. You may need detailed plans depending on the size of your event, stages, number of vendors, location and other factors.

Generators

To use a generator, indicate the fuel type and wattage when you apply for your electrical permit using the Building Permits form. The generator must be shown on your site plan. If you are going to have more than a single power line coming from the generator, you will need to provide a detailed electrical schematic at the time of your permit application.

Since typical gasoline and diesel generators can be noisy and emit odors and air pollutants, we encourage you to consider cleaner fuel sources or renewable energy sources such as:

- Solar powered generators;
- Battery powered generators; or
- Propane generators.

A fee from $150 to $200 will be required for the generator permit application.

Fences, Stages & Bleachers

In your Site Plan, which is due with your application, you need to include the locations of all fencing, stages and bleachers because they may need to be inspected and permitted. Details for these structures should be in your Site Plan Narrative which is also required at the time of application. If these require inspection and permits, you will be informed at the Special Events meeting and you will need to indicate this on the Department of Sustainable Development's Building Permit Form.

The Fire-Rescue department will use your detailed drawings to determine access to all structures and all hazardous areas on the property, and the means of egress of the attendees. The placement and construction of these temporary structures will be also used to determine adequate and well placed security, how crowd control issues will be handled and how many attendees an event can safely accommodate.

Maximum Capacity Calculations

- For open area fenced events and canopy and tent occupant loads, there is a requirement of an occupant load calculation of one person per seven square feet where no tables or chairs exist in the area.
- For areas with tables and chairs, the Fire Department uses an occupant load calculation of 1 person per 15 square feet.
- Areas not restricted by barriers in any direction such as the beach, non-fenced parks, roadway; the Fire Department uses an occupant load calculation of 1 person per 5 square feet calculation.

Fireworks & Flame Effects

Fireworks and flame effects are exciting, but must be handled safely. All activities requiring use of pyrotechnics and flame effects must be reviewed, approved and permitted by the Fire Rescue Department's Fire Marshal. Fireworks and flame effects permit applications will be available at your required special events meeting if you indicate you will have them on your Special Events Application. They will also provide you with a Fire Watch application. The Fire Watch is required for all fireworks and flame effects at an event. Based on your application, the Fire Marshal may decide that you need more permits and fees.

- Applications need to be submitted 30 days prior event day
- $25 fee for permitting the fireworks
- $75 fee for Fire Watch with a two-hour minimum

Examples of pyrotechnic activities include but are not limited to indoor and outdoor fireworks, lasers, model rocket launches, and special effects using pyrotechnical devices. A flame effect is the combustion of flammable solids, liquids, or gases to produce thermal, physical, visual, or audible phenomena before an audience. Some examples include hand-held burning torches, flaming batons, flame acts, fire walking, and flaming sword dancers.

Food Service

You will need to work with multiple organizations if you plan on cooking or providing food at an event. Public cooking and distribution of food is regulated by the City and the Florida Department of Business and Professional Regulation Division of Hotels and Restaurants. In addition to meeting health codes you will need to have your equipment inspected by the Fire-Rescue Department. Indicate that you will be serving food on your Special Events Application so the Fire Marshal can help you prepare for their final required inspection prior to the event.

- Cooking is not permitted inside or within ten feet of any enclosed tents.
- A portable 2A/10BC fire extinguisher is required for all cooking stations with grills. A type K portable extinguisher is required for fryers. Extinguishers are required to be serviced, inspected, and tagged annually by a licensed fire extinguisher company. Certification reports should be available upon request.
- Propane tanks need to be secured a minimum of 10 feet away from the cooking appliance and be placed on the exterior of the canopy and secured.
- Deep fat fryers are required to be separated from other cooking appliances by a minimum of 18 inches and/or a vertical baffle plate of 18 inches.

Contact the State by phone (850)487-1395 or email dhr.info@myfloridalicense.com no less than three business days prior to the scheduled event and pay the appropriate fee.

When you contact them, provide the following information:

1. Type of food service proposed;
2. Time and location of the event;
3. Complete list of food service vendor owners and operators participating; and
4. Current license number of each public food service establishment participating.

They will contact you to confirm the details of your event and schedule a time to visit you after you have set up and before the event begins.

Food Trucks

The City and the Florida Department of Business and Professional Regulation Division of Hotels and Restaurants also regulate Food Trucks. If the trucks are not already permitted, then they will need to be inspected by Division of Hotels and Restaurants and the Fort Lauderdale Fire Marshal's Office. Any trucks cooking or producing grease laden vapors will be required to have an exhaust hood and fire suppression system complying with the most current Florida Fire Prevention Code (FFPC). Their system is required to be marked biannually by a Florida certified fire extinguisher company. All food trucks are required to have one portable 2A/10BC and one portable K fire extinguisher, each with a currently dated service tag from a Florida Licensed company. Certification reports will be available for review if requested from the Fire Inspector at the time of inspection.

- All cooking equipment will be clean and free of any excessive grease build- up.
- All vehicles are required to have one portable 2A/10BC minimum and one portable K type fire extinguisher.

- All Portable Fire Extinguishers (annually)/ Manual and/or Automatic Extinguishing equipment (bi-annually) have been inspected, tested, tagged with a current approved tag, and certified for continued use by a license fire extinguisher company in Florida.
- All cooking equipment needs to be listed and approved for its use by an independent listing agency.
- All cooking equipment needs to comply with the most current Florida Fire Prevention Code (FFPC) and UL300.
- All propane gas systems shall comply with NFPA 58. Gas lines and tanks shall be free of any damage. All tanks should be mounted in the open air outside, placarded and secured on the vehicle to prevent damage or tampering. Extra propane tanks are not permitted in the vehicle.
- The cooking needs to have a maintained and clear path to the outside of the vehicle at all times when occupied to provide a safe escape for the occupants in the event of an emergency.

If you have any questions about your Food Vendors, contact the State by phone (850) 487-1395 or email dhr.info@myfloridalicense.com no less than three business days prior to the scheduled event and be prepared with the vendors names and contact information.

Parks & Pavilions

Using our parks and their covered facilities is a great way to have special events. Each park has a different collection of amenities and scenery so you will need to visit them to find the one that best fits your needs. The fees for each facility are different depending on its size and location. You can find most of the rates online at the City of Fort Lauderdale website.

Tents & Canopies

Canopies larger than 10 X 10 and all tents require permits. A canopy is a structure or shelter without any sides or curtains, constructed of fabric and rigid frame covered only at the roof and open to air on all sides and providing free and unobstructed egress. Food is allowed to be prepared inside a canopy with permits.

Tents are similar to canopies but they have walls, curtains, barriers, or valance more than 18 inches deep, constructed of fabric, pliable material, and a rigid frame that limits the flow of egress from inside the structure. No open flames or food preparation is permitted inside a tent.

Your Site Plan and Narrative must identify canopy and tent locations, size, and use. Permits are always required for canopies larger than 225 sq feet, beach locations, and for uses such as cooking that create potential safety hazards.

The City's Department of Sustainable Development (DSD) Building Services Division Building Permit Form is found in the Appendix or at their office. On the back is an option for canopies. The permit must be submitted at least 30 days before the event, with final permitting requiring an inspection the day of the event, before the event starts.

When you apply for your canopy permit at DSD, make sure to provide:

1. The Site Plan and Narrative;
2. Two layout plans for each canopy showing cooking equipment, tables, chairs, electrical, fire exits, sand buckets, fire extinguishers, electrical components and any other anticipated structures underneath them;
3. A sample of the canopy fabric with a flame retardant certificate;
4. Contact information for the company delivering and assembling the structures;
5. The time you will have them assembled and ready for inspection; and
6. Florida Fireworks Seller/Vendor license for the sale of fireworks (if applicable)

Weddings

The City of Fort Lauderdale offers many beautiful outdoor wedding locations in our parks and on certain parts of the beach. Most locations require a reservation and permit at a nominal fee and do not allow receptions. On our City website we list all of our parks and pavilions. There are a few simple rules you will need to follow when choosing these special facilities.

- Alcohol, gas grills and amplified music are not allowed in the parks.
- Catered affairs, soliciting and homeless feeding programs are not allowed.
- Attendance is limited to 50 people and your rental does not provide exclusive use of the park.
- No tents or canopies may be used.
- Sidewalks may not be blocked with chairs.

If you provide sixty (60) days' notice to the Parks and Recreation department with all your details, then no permit is required to have a wedding ceremony on a certain section of the Fort Lauderdale Beach. You are allowed to bring chairs and a bridal arch to this location. However, you are not allowed to rope off any areas or restrict public access. Stakes cannot be used to secure the bridal arch, but sandbags can be used. Wedding receptions are not allowed at this location.

TRANSPORTATION & PARKING

Special events brings people, and cars, together. This can create traffic congestion and confusion. Minimizing traffic and confusion for your attendees, businesses and residents is an important element of a successful event. Our staff is ready and able to help you figure out how to reroute traffic, find adequate parking and encourage alternative forms of transportation so that everyone can enjoy the City. To accomplish all this you may need to create two types of plans: a Maintenance of Traffic Plan and a Transportation Plan. The Maintenance of Traffic plan (MOT) describes how you will reroute traffic because of closed roads and extra cars. The Transportation Plan describes the options and marketing you will provide to help attendees arrive and leave the event using traditional and alternative modes of transportation.

Maintenance of Traffic (MOT) Plans

If your event will impact traffic from either an influx of attendees or road closures, you will need to complete and submit a Maintenance of Traffic (MOT) plan and have it permitted before your event will be approved. MOT plans specify how traffic will be detoured, including where signs and markers will be placed when a portion of a road is taken out of use. Using the Maintenance of Traffic (MOT) plan the special events team will help you determine how your event will impact traffic and parking and how to mitigate that impact at your Special Events meeting. If your event uses a state or county road, be prepared to work with those jurisdictions in addition to the City of Fort Lauderdale. If you are unsure if you will need a MOT for your event, start by including a list of roads and/or a map with your Special Events Application showing the roads you will impact.

During your Special Events meeting, the Police, Fire-Rescue and Transportation & Mobility Department representatives will review your proposed MOT plans to determine if it is adequate and to make estimates for the number of Police and or Fire Rescue staff you will need. They may also be able to help you consider other routes or help you get in touch with people who can. The Police Department has significant experience with creating MOT plans for events that take place at popular locations and may already have one you can use. If they don't have a plan you can use, a barricade rental company with engineering staff will be able to help complete an MOT plan. Please note that the City does not provide barricades. Working directly with a barricade company before your Special Events meeting may be beneficial for effective planning.

There are three street closure permits which may be required:

- City Roads: Requires a Maintenance of Traffic Plan approved by Fort Lauderdale Police Department and Transportation & Mobility Department.
- County Roads: Requires an approved Maintenance of Traffic Plan and Broward County Traffic Engineering Division Maintenance of Traffic Submittal Form.
- State Roads: Requires an approved Maintenance of Traffic Plan and Florida Department of Transportation Temporary Closing of State Road Permit.

You can find the forms for the City of Fort Lauderdale, Broward County, and the Florida Department of Transportation online. The Department of Sustainable Development- Building Division located at 700 NW 19 Avenue in Fort Lauderdale has paper applications and will issue your final MOT permit for the City. After you have obtained a signed approval form from the City, approval to the county and state agencies is necessary. In addition, the state requires an official transcript from the City Commission meeting showing that the event was approved. This process may take a significant amount of time, you are encouraged to begin as soon as your Special Events meeting is concluded.

City road closures are approved by the City Manager for events up to three days. If the road closure will be in effect for more than this, City Commission approval is required. A copy of the City Maintenance of Traffic Routing form, along with an example and guidelines is available in the appendix. For additional information, please refer to the Checklist at the front of this manual.

Transportation Plan

We encourage all applicants to create a Transportation Plan but if your estimated attendance is 5,000 or more people, it is required. A Transportation Plan illustrates how attendees will get arrive and leave the event. The City encourages alternative forms of transportation to reduce congestion and to make pedestrian and bicycle options safe. Your transportation plan will complement your MOT plan and also help the Special Events Team understand how you intend to communicate transportation options to your attendees. The communication strategy should include proposed signage, fliers and media types you will be using to explain the transportation options. The Transportation and Mobility Department can help you with each of these options:

- Bike routes and parking;
- Bus routes;
- Satellite parking;
- Sun Trolley and Water Trolley routes;
- Water Taxi routes; and
- Valet parking requirements

Bicycles

Bicycles take up a fraction of the space of vehicles and reduce congestion near an event. Encouraging bikes could save you a significant amount of parking spaces for your event. The City encourages event organizers to provide bicycle parking for special events by providing a safe, well lit, and convenient location near the event. Bicycle parking can be provided through a bike valet service where bicycles are parked in an enclosed and monitored area with an attendant to park and return the bicycle. Self-park style bike racks are another option, where riders lock bicycles to temporary bike racks provided in convenient locations. Bike parking can be on a paved or unpaved surface and coordinated with the Parking Division.

Signage is needed both at and near the event. Way finding signage along transportation routes assist bikers in finding parking. The location of the bike parking should be communicated through any event maps and event fliers that mention event parking.

Parking

Most events impact public parking in the City. Any parking spaces made unavailable for parking by the events activities must be paid for by the event organizer in advance. A Parking Division representative will provide recommendations and options for your event based primarily on your Site Plan, MOT and your Transportation Plan. It is important to come to the Special Events meeting prepared with as many details as possible so they can make an accurate estimate and avoid more expensive alternatives later. Using your plans, the City staff will help you confirm the anticipated event impact area and the estimated parking spaces you will need.

Fees are determined in one of two ways for all days that the spaces will not be available for the general public. Both methods will be discounted 10%.

1. Multiplying the number of reserved parking spaces by the days of use, hours of operation and the meter or lot rate applicable at the time of the event.
2. Utilizing a flat rate, not to exceed $20 per space per day.

A request to have valet parking requires an additional permit and fee. The form can found online or at the Transportation & Mobility Department.

Once it is decided what parking will be required the Parking Division will send you an invoice detailing the fees which needs to be paid before the event.

- Exclusive use of parking spaces is not guaranteed. You are strongly encouraged to arrive at the reserved garage or lot early on your event day to secure spaces.
- Reselling any prepaid parking spaces for a profit is prohibited and will result in immediate revocation of your permit and you will be prohibited from purchasing parking spaces for future special events.

A list of parking facilities in Fort Lauderdale is available in the Appendix. A list of private parking lot contacts is available upon request.

Sun Trolley/Water Trolley

The City also encourages bus and trolley transportation. The Sun Trolley is the City's provider of community bus and water trolley services. It is managed by the Downtown Fort Lauderdale Transportation Management Association and is an easy way to reduce congestion near an event. Based on the event, arrangements can be made with Sun Trolley to provide service to riders at a reduced rate. For more information about securing this service for your special event, see the Sun Trolley website.

SANITATION

Protecting and maintaining the environment is a priority for our community so all official City special events need to be clean and encourage resources conservation. In addition to providing sufficient waste and recycling opportunities for your vendors and attendees you will be expected to take care of the surrounding landscape, vegetation, and natural environment. This can be a daunting task for anyone so we have provided some helpful information below. We have also created a Green Checklist in the Appendix to help you. It is a great tool to use for this requirement and it will help ensure that your event can be held again in the future.

Garbage & Recycling Plan

An effective Garbage and Recycling Plan is required for all events to reduce littering, promote recycling, and protect the surrounding environment. Approval of larger events may require a plan. At a minimum, your waste management plan must include at least (1) 25-gallon waste receptacle and (1) 25-gallon recycling receptacle per 50 people. Following your event, you are responsible for cleaning the event area and returning it to its original state. Failure to do so will result in clean-up fees issued by the City.

Knowing the types of waste that your attendees, staff and vendors will produce will help in the calculation of waste disposal needs. This list shows you what local vendors can recycle.

WHAT CAN BE RECYCLED IN FORT LAUDERDALE

- ✓ Clean Cardboard and Mixed Paper of All Kinds
- ✓ Metal (Aluminum and Steel Cans)
- ✓ Plastics #1 through #7
- ✓ Glass
- ✓ Aseptic Packaging
- ✓ Yard Waste

Understanding your waste stream and what can be recycled will help you work with your expected food and service vendors. You will need to guide them to reduce waste, support recycling, and prevent littering, which will in turn reduce clean up time after an event. A lot of waste is generated by vendors and concessions "behind the scenes." Be sure to include those materials in your plan.

For non-recyclable waste, you will typically need a minimum of (1) six-cubic yard dumpster for every 400 attendees. If food is going to be served at your event, larger dumpsters should be used. Once you calculate how much waste you might produce and how many containers you may need, contact a vendor to get quotes and secure a commitment to provide your event with service. At a minimum you should have one recycling container and one garbage container for every fifty people.

A list of local vendors that provide recycling is included in the Appendix.

Helpful hints to reduce clean up after an event:

- Pair trash and recycling containers so they are easy to find.
- Color-code containers so you can easily identify between trash and recyclable containers. Most vendors provide color coded bins.
- Containers should be clearly labeled and distinctly different.
- Recycling container lids with small circular opening are recommended to prevent non-recyclables from being deposited.
- Watse stations should be located no more than 150 feet apart to ensure adequate coverage and making it more convenient for attendees.
- More trash and recycling containers should be placed in areas where higher volumes of waste will be expected such as concession areas, restrooms, entrance and exits.
- If vendors will generate large amounts of recyclables, consider providing additional recycling containers just for them and request that they recycle and dispose of their waste prior to leaving the event.

Hauling

When large containers (dumpsters or rolloffs) are needed, it is recommended that they be placed so that the haulers will be able to easily deliver and remove containers. Consider areas without any obstacles, away from traffic and accessible during the event if they will be emptied throughout the event. Prevent littering by emptying containers when full. Coordinate with the vendor how many times and when the containers will be emptied.

To allow for easy break down on event day, applicants are strongly encouraged to contact local event companies to assist in cleaning up at large events. A list of local licensed haulers is available in the Appendix. They can help you contact companies that clean up events.

Below are the types and common names of containers typically provided by haulers for special events. Please contact your selected hauler for available sizes and dimensions.

CART

DUMPSTER

ROLLOFF

Food Recovery

Most events produce more food than can be consumed. This can result in large amounts of unsold food being thrown away. The City of Fort Lauderdale strongly encourages you to consider food recovery. There are organizations around the region that can provide assistance to ensure that excess food is delivered to the needy and your donation may be tax deductible.

Please note that these organizations typically have requirements for the types of food that are recovered and for how the foods are handled, stored and transported. Please reach out to them early in your planning process to discuss food recovery options.

The Salvation Army is located here in the City and would appreciate your phone call. Try both numbers because they are different facilities with different needs.

Adult Rehabilitation Center
1901 W Broward Blvd.
Kitchen Super
Phone: (954) 463-3725

Area Command
1445 W Broward Blvd.
Kitchen Supervisor
Phone: (954) 463-3725

If you know of another organization that is licensed to accept and distribute unused food here in the City please contact us to have them included in the special events manual.

Portable Toilets

Portable Toilets are regulated by the State of Florida's Health Department in Broward County (BCHD). Once you secure the correct number of toilets, you will need to deliver a document that lists the service provider and their contact information, the number of toilets, the dates being used, the frequency of cleaning and the number of expected attendees to BCHD at least one day before the event. If you request a detailed invoice from your vendor, it will probably list all these items. You can hand deliver it, fax it or email it in.

To get an estimate of how many toilets you need, refer to the Portable Toilet Matrix in the Appendix or contact a local vendor. The number of portable toilets and wash stations at events are subject to change based on state requirements and the predicted event attendance. For certain events such as a marathon or a 5K race, the Parks Supervisor may require that you secure more than the minimum number of portable toilets.

There are no required inspections before, during or after an event, unless the Department of Health receives a complaint related to the toilets conditions or a failure to remove them in time. All portable toilets must be removed from the event location within 24 hours.

The required details of the toilets and complaints can be sent to fax number 954- 467-4898 or emailed to Anthony.Johnson@flhealth.gov. You can also call Anthony Johnson at 954-467-4700 ext 4231.

Animal Waste

Any special events including livestock or pets can generate a significant amount of manure and bedding. The Director of Parks and Recreation may require an animal waste plan to deal with these special types of waste including pet waste bag stations and removal from the site. During the event, be sure that any animal waste is disposed of far away from concession areas and is in a location where there is little risk of the public coming into contact with it. Work with your hauler to identify the best way to manage any animal waste during and after the event.

MISCELLANEOUS

Event Publicity

Marketing and promotions are important elements to ensure event attendance and we would like to help you spread the word. The City's Public Affairs Office is happy to work with event promoters to advertise Citywide through its social media platforms and electronic mail marketing mechanisms. Below are some guidelines you will want to keep in mind when asking Public Affairs to help promote your event.

1. When preparing for your special events application meeting, brainstorm what communications mechanisms you plan to utilize to promote the event. Consider both hard copy paper flyers or posters and electronic platforms. Come prepared to discuss whether or not you have any marketing needs from the City and what your expectations are from the City's Public Affairs Office.
2. If you need assistance in creating a flyer for your event, please notify Public Affairs at least one month prior to the event via e-mail at PublicAffairs@fortlauderdale.gov. Include a comprehensive email request with the name, date, time and location of the event. Provide contact information (e.g., phone number and email address) of the event organizer or lead. Public Affairs receives a high volume of requests from across the City, so a one-month lead time is a key requirement to complete a request. Please note there may be a charge for this service, depending on how complex your promotion needs are.
3. If you are hosting an event where the City is a co-sponsor (e.g., committing financial resources to the event), contact Public Affairs at the email address above to request the official City logo for use on promotional materials. You are responsible for including the City on all promotional materials per the sponsorship agreement.
4. Submit a finalized flyer in a PDF form via email to PublicAffairs@fortlauderdale.gov at least 2 weeks prior to an event. Include in your email a brief description of what the event is (include the size and scope), who the intended audience is and whether or not it is family-friendly. Include any other pertinent information an attendee would need to know, such as estimated attendance. Please provide as accurate representation of the event as possible so Public Affairs may place the flyer or advertisement in the appropriate spaces.
5. Once your Maintenance of Traffic (MOT) plan has been approved by the Fort Lauderdale Police Department, please notify Public Affairs so it may make note of street closures and detours. The Public Affairs Office sends out weekly notifications regarding construction projects in the City and street closures. This information is crucial to circulate both internally and externally.

Landscaping/Beautification

The City's public places are clean and aesthetically pleasing year round and ready for your event. However, if you are holding an event at a City Park, you may want to let Parks and Recreation know at least one week prior to the event to trim any bushes and grass that may have been overlooked.

Noise Allowances

In an effort to provide an enjoyable experience for event host and attendees and consideration to our neighbors, the City of Fort Lauderdale Police Department enforces the City noise ordinance during special events. The ordinance stipulates that all outdoor event music or noise need to end by 9 pm Sunday through Thursday and by 10 pm Friday and Saturday.

There are a few areas that allow extended hours during the weekdays and on legal holidays. These special entertainment areas are near the Riverwalk district and the beach. Since these areas have significant traffic you will probably need to have a Maintenance of Traffic plan if you want to host an event there. If you are interested in using one of these areas, contact the Special Events Coordinator at eventcoordinator@fortlauderdale.gov.

Noise may be mitigated by replacing or baffling speakers and lowering bass volume. If City staff determines music or noise is a nuisance, you will be asked to lower the volume or cease the activity which is causing the disruption. Failure to comply may result in a civil citation, arrest or shutting down of the event. The full noise ordinance, including information about noise levels for entertainment districts, is available online.

Neighborhood Block Parties

Block parties are a great way to celebrate neighborhoods and promote community in the City of Fort Lauderdale. If you believe you and your neighborhood qualify, you should have one of your association's officers complete the Block Party Notification form available online or in person at the Office of Neighbor Support (Hal Barnes, 100 N. Andrews Ave., 5th Floor, Fort Lauderdale, FL 33301).

The form should be submitted at least two weeks before your proposed block party to the City Manager's Office Division of Neighbor Support. There is no charge for block party road closures but time is needed to coordinate staff and resources. Neighbor Support will obtain approval from the City Manager. The Neighborhood Homeowners' Association or Civic Association president will receive notification from Neighbor Support once a block party is approved.

APPENDIX

A Quick Guide to Special Events

DESCRIPTION	TASK	FEE	CONTACT
Applications	#1 Complete and submit Special Events Application, Site Plan & all other appropriate applications with fees 60 days before event. Missing components will delay the process.	$200 $400	Parks and Recreation specialevents@ fortlauderdale.gov (954) 828-6075
Presentation	#2 Present your event to the Special Events Team at weekly meeting.	n/a	Parks and Recreation specialevents@ fortlauderdale.gov (954) 828-6075
Insurance	#3 Present Certificates of Insurance to Special Events Coordinator and/or Risk Manager 30 days before an event.	Varies	Risk Management risk@fortlauderdale.gov (954) 828-5494

Alcoholic Beverages	Obtain appropriate State of Florida alcohol licenses and necessary insurance; submit proof of insurance	varies	Alcohol & Tobacco Licenses (954) 917-1350
Banners	Submit Banner Permit Application with application fee at least 30 days before event. State Right of Way - contact FDOT.	$100+	Sustainable Development banners@fortlauderdale.gov (954) 828-5984 or (954) 776-4300
Beach Turtle Season Permit	Nighttime beach events between March and October will need a permit from Florida Department of Environmental Protection.	varies	Florida Department of Environmental Protection (561) 313-9007
Beach Usage Fee	Indicate the proposed location on the application and include a detailed Site Plan.	$500 plus 20% of gross profits.	Parks and Recreation specialevents@ fortlauderdale.gov (954) 828-6075
Business Fees	A for profit business tax	$368 plus 20% of gross profits.	Finance businesstax@fortlauderdale.gov (954) 828-5151
Carnival Rides	Contact the State Bureau to confirm that vendors are licensed and insured.		Florida Bureau of Fair Rides Inspection michelle.faulk@freshfromflorida.com (850) 410-3838
Emergency Services	Contact Fire Rescue to find out what you will need be safe.	varies	Fire Rescue eventems@fortlauderdale.gov (954) 828-5896
Flames & Fireworks	Department of Sustainable Development form & fee.	$25 plus $75 minimum	Sustainable Development firemarshal@fortlauderdale.gov (954) 828-6370
Food Trucks, Preparation & Serving	Notify Florida Deptartment of Business and Professional Regulations and complete Department of Sustainable Development form & fee.	varies	Tara Palmer tara.palmer@myfloridalicense.com (850) 487-1395 (954) 397-9366

A Quick Guide to Special Events (continued)

DESCRIPTION	TASK	FEE	CONTACT
Generators	Department of Sustainable Development form & fee	$150-$200	Sustainable Development eventpower@fortlauderdale.gov (954) 828-6312
Neighborhood Block Parties	Submit your block party request form to Neighbor Support 14 days before event	free	Neighbor Support blockparties@fortlauderdale.gov (954) 828-5065, (954) 828-5289, (954) 828-5063
Park Pavilions	Contact Parks & Rec. Dept., Submit application & Fee	varies	Parks and Recreation eventparks@fortlauderdale.gov (954) 828-7275
Parking	Submit Site Plan, Maintenance of Traffic Plan and Transportation plan; purchase pre-paid parking, advertise mass stransit options, provide Bike Parking	varies	Transportation & Mobility eventtam@fortlauderdale.gov (954) 828-6128
Publicity	Send in event information to get free advertising.	free	Public Information Office publicaffairs@fortlauderdale.gov (954)-828-4743
Security	Submit a Security Plan with your Application	varies	Police eventpolice@fortlauderdale.gov (954)-828-5794
Site Plan & Narrative	Submit a Site Plan with Narrative detailing tables, barricades, stages, canopies, etc.	free	Police eventpolice@fortlauderdale.gov (954) 828-5794
Street Closures for races, walks, or structures	Contact a Barricade rental company to find an MOT engineer. Submit a Maintenance of Traffic Plan for rerouting traffic.	varies	Police eventtam@fortlauderdale.gov (954) 828-5649
Tents & Canopies	Show locations and usage on Site Plan, Department of Sustainable Development form & fee.	varies	Fire Marshal firemarshal@fortlauderdale.gov (954) 828-6370
Toilets	Contact a vendor to get the number of portable toilets you need. Fax your detailed receipt.	varies	Broward Department of Health (954) 467-4700
Transportation	Submit a Transportation plan for attendees to arrive by bike, bus, car or some tolley.	free	Transportation & Mobility eventtam@fortlauderdale.gov (954) 828-6128
Vollyball Courts	Each court needs to be rented per hour prior to use.	$15 (resident) $20 (non-resident)	Parks and Recreation specialevents@ fortlauderdale.gov (954) 828-6075
Waste	Contact a vendor to get the number of waste and recycling containers you need.	varies	Appendix eventwaste@fortlauderdale.gov (954) 828-5869
Weddings	Contact Parks and Recreation or go to our City website for costs and locations.	varies	Parks and Recreation eventparks@fortlauderdale.gov (954) 828-7275

CITY OF FORT LAUDERDALE
SPECIAL EVENT APPLICATION

Submit a **COMPLETED APPLICATION,** SITE PLAN and SITE PLAN NARRATIVE by email **60 days** before your planned event. Events Planned for July or August must be submitted by **May 1st**.

After you submit the application with your fee you will be contacted to meet with the Special Events team to review:

1. Facility/Location requested
2. Compliance with City ordinances
3. Special permits required
4. Other Charges for City Services
5. Security requirements
6. Environmental issues/effects on surrounding areas

Fee must accompany application

At least 60 days prior to event
$200.00

59 to 30 days prior to event
$400.00

Less than 30 days prior to event
Denied unless approved by City Manager or designee

PART I: EVENT REOUEST

Event Name ____

Purpose of event (check one): ☐ Fundraiser ☐ Awareness ☐ Recreation ☐ Other ____________
Expected maximum attendance ____________ Expected sustained attendance ____________
Has this event been held in the past? ____Yes ____No
If yes, please list past dates, locations and attendance ______________________________

____

Detailed Description (Activities, Vendors, Entertainment, etc.)

____

____

____

Location ____

Date and Time	DATE	DAY	BEGIN	END	Attendance
SETUP:	________	________	______AM/PM	______AM/PM	________
EVENT DAY 1:	________	________	______AM/PM	______AM/PM	________
EVENT DAY 2:	________	________	______AM/PM	______AM/PM	________
EVENT DAY 3:	________	________	______AM/PM	______AM/PM	________
BREAKDOWN:	________	________	______AM/PM	______AM/PM	________

*events scheduled for more than 3 days will be subject to special council approval

PART II: APPLICANT

Organization Name ______________________________ Phone: ____________________
For-Profit ☐ Non-profit ☐ Private ☐ (as registered)

Address: ______________________________ City, State, Zip: ____________________

Date of registration: __________ State registered in: _____ Federal ID #:__________________

Email Address: ______________________________ Fax: ____________________

Two Authorizing Officials for the Organization

President: ______________________________ Phone: ____________________

Secretary: ______________________________ Phone: ____________________

Event Coordinator Name ______________________ Will you be on-site? ___Yes ___No

Title: ________________ Phone: ________________ Cell: ________________

E-mail address: ______________________________ Fax: ________________

Additional Contact Name ______________________ Will you be on-site? ___Yes ___No

Title: ________________ Phone: ________________ Cell: ________________

E-mail address: ______________________________ Fax: ________________

Event Production Company (if other than applicant): ______________________________

Address: ______________________________ City, State, Zip: ____________________

Contact Name: ______________________________Title: ____________________

Phone: (day) ________________ (night) ______________ Cell ________________

E-mail address: ______________________________ Fax:________________

PART III: EVENT INFORMATION

All City permits must be obtained through the City's Department of Sustainable Development Building Services Division using the Building Permit Form - Apply and pay for the permits at least 30 days before the event. Contact the DSD Building Services Division (954) 828-5191 with any questions.

Admission ___Yes ___No If yes, how much? $__________

* All events that are hosted by a for profit will be subject to a fee equal to 20% of their gross profits from the event within 30 days of the conclusion of the event.

Alcohol For Sale ___Yes ___No **Alcohol For Free** ___Yes ___No

If yes, how will the beverages be controlled and served? (Draft truck, bar tender, beer tub, etc.)

____

*Provide State of Florida alcohol licenses and $500,000 of Liquor Liability Insurance 30 days before event.

Amusement Rides ___Yes ___No

If yes, name and contact of company: ______________________________

What type of rides are you planning? ______________________________

*Florida Bureau of Fair Rides, Ron Jacobs (850) 921-1530 must be contacted 30 days before the event to schedule inspections and final approval of all vendors and rides prior to use.

Electricity ____Yes ____No
* Events requiring electricity must be permitted. eventpower@fortlauderdale.gov

Company: ______________________________ License #: ______________________

Name of electrician: ______________________________ Phone: ______________________

Entertainment ___Yes ___No
If yes, what type of entertainment will be there? Any notable performers?

____

Fencing or Barricades ___Yes ___No
* Include proposed fences in your Site Plan & Narrative

Fireworks & Flame Effects ____Yes ____No

Name & Contact of Company conducting the show: ______________________________
*A permit and Fire Watch is required for all pyrotechnics displays. firemarshal@fortlauderdale.gov

Food Vendors ____Yes ____No
* State Health Dept. John Litscher at (954) 632-8094 must be notified 10 days prior to event. All Food Vendors must be inspected by the Fire Rescue Department, Capt. Bruce Strandhagen at (954) 828-5080 to ensure compliance prior to serving food. A fire extinguisher is required for each food booth. If a propane tank is used for a fuel source, it must be secured on the outside of the booth. Inspections during non-working hours cost will cost $75 per hour.

Music ____Yes ___No
If yes, what music format(s) will be used? (amplified, acoustic, recorded, live, MC, DJ, etc):

____

List the type of equipment you will use (speakers, amplifier, drums, etc):

____

Days and times music will be played: ______________________________

How close is the event to the nearest residence? ______________________________

Soundproofing equipment? ___Yes ___No

Parking Impact ____Yes ___No
*All Parking Spaces that are impacted by an event will be billed to the event organizer through the Transportation & Mobility Dept. and must be paid in full before the event. *eventtam@fortlauderdale.gov*

Road Closings ____Yes ___No
*Closing roads requires submitting an approved Maintenance of Traffic plan to the Special Events Director for each agency affected BEFORE the Commission will vote on it. Some Forms and instructions can be found in the Special Events manual Appendix. To expedite the process you may want to select a pre-approved MOT plan.

Sanitation & Waste
Will the event encourage Recycling and Sustainability? ___Yes ___No
*The Green Checklist in the Events Manual Appendix can help you. Portable Toilets are regulated by Broward County.

Service Provider: ____________________Contact: ____________________ Phone: ______________________
*All grounds must be cleaned up **immediately** after completion of event or you will be subject to fees. Recycling must be provided at all City events, facilities and parks. You are responsible for securing recycling services.*

Tents or Canopies ___Yes ___No

Quantity and size of each? ____

Name & Contact of Company: ____

*A detailed Site Plan showing the locations and size of each canopy or tent is required. A permit and final inspection is required if there are multiple canopies, if they are going to be used for cooking or if there are Tents (with walls).

Toilets ___Yes ___No

*All toilets must be removed within 24 hours. Broward County requires a copy of your contract or invoice to be faxed to (954) 467-4898 to ensure compliance with minimum standards.

Transportation Plan ___Yes ___No

* Any events larger than 5,000 people must have an approved Transportation Plan. eventtam@fortlauderdale.gov

Part IV: SECURITY AND EMERGENCY SERVICES

Your Event may require Security and Emergency Services which will be determined using this application, your Site Plan and Narrative, your MOT, your transportation plan and any additional information requested during your Special Events meeting. The hourly rate and costs to be incurred by the event organizer will be quoted on the "Cost Estimate" worksheet developed at the meeting and provided to the organizer. The cost may change if any of your event details change after the meeting. You may be required to provide a deposit based on historical performance or lack thereof. The Appendix of the Special Events Manual has a description of most City services and their associated fees.

Fire Prevention and Emergency Medical Services

Fire Rescue will most likely need to inspect your event based on your Building Permit, expected attendance and other risk factors such as alcohol, time or day, location, event type or weather. When you complete your Building Permit Form with DSD you should indicate all the permits and inspections you need to avoid delays. See the Special Events Manual Appendix for estimated fees. For any inspections conducted by the Fire-Rescue department before the event, fees must be paid in advance through the Department of Sustainable Development. A minimum of four hours for each Fire Rescue staff member will be charged for all special event details unless the department receives a cancelation. Any cancelations need to be made by phone at least 24 hours before an event is expected to begin or you will be charged for the services. All payments will be invoiced to the Event Organizer and must be paid within thirty (30) days. For questions contact the Fire Marshal at (954) 828-6370

On-site Contact Name______________________________ Phone______________________________

Police

Your event may require Security. Depending on your event it may be possible to supplement some of the City Police services with a private third-party security company if their security plan is approved by the City Police department. If you want to use a private security company you or the security company must present the proposed security plan along with the businesses business license and contact information with the events application. The Police will review the plan and let you know if it will meet City requirements.

If a Fort Lauderdale Police Vehicle is required then a Hold-Harmless Agreement must be signed and Liability coverage of a minimum of ONE MILLION DOLLARS must be provided.

Security Plan ____Yes ____No

Security Company ____Yes ____No

Name ___________________________ Contact ____________________ Phone______________________

PART V: APPLICANT'S ACCEPTANCE

The information I have provided on this application is true and complete to the best of my knowledge. If I have not submitted my application within the deadline and according to the rules outlined in the Special Events Manual it may be denied.

Before receiving final approval from the City Commission, I understand that I (and the production company, if applicable) must furnish an original certificate of General Liability insurance naming the City of Fort Lauderdale as additionally insured in the amount of at least one million dollars ($1,000,000) or greater as deemed satisfactory by the City Risk Manager, and an original certificate of liquor liability insurance in the amount of five hundred thousand dollars ($500,000) if alcohol is being served. Other liability insurance and fees may also be required up to 30 days in advance of the event.

I understand that a City of Fort Lauderdale Parks and Recreation sponsored activity has precedence over the event requested above and I will be notified if any conflicts arise.

I understand that the City of Fort Lauderdale Police Department will determine all security requirements and that Emergency Medical Services is required by City Ordinance to be onsite during all special events.

Any cancelations need to be made by phone to each department representative providing services at least 24 hours before the scheduled event time or the organizer will be liable for any associated fees.

I understand that the City has a noise ordinance. If at any time during the event it is determined by law enforcement personnel, code enforcement personnel, parks and recreation personnel, or any other city representative that the entertainment or music is causing a noise disturbance, I will be directed to lower the volume to an acceptable level as determined by City staff. If a second noise disturbance arises during the event, I may be directed to shut down the music or entertainment for the remainder of the event. I agree to abide by all provisions of the noise control ordinance and understand that my failure to do so may result in a civil citation, a physical arrest, or the shutting down of the event.

________________________________ ________________________________

Name of applicant Title

____

Date

Email completed application at least 60 days ahead of your planned event to:

events@fortlauderdale.gov

Please mail the application fee (payable to the City of Fort Lauderdale) to:
Jeff Meehan, Special Events Coordinator
1350 W. Broward Boulevard, Fort Lauderdale, FL 33312
Phone: (954) 828-6075 Fax: (954) 828-5650

Please include the following with the application if necessary:

*** Event Site Plan & Narrative – including stage(s), other entertainment locations, activities, booths, restrooms, canopies, dumpsters, fencing, generators, etc.**

*** Maintenance of Traffic plan - including the placement and number of barricades, signs, directional arrows, cones, message boards, and name of the barricade and/or traffic signs company being used.**

Carnival Permit & Inspection Fees

Please note fees are subject to change. Contact Florida Department of Agriculture and Consumer Services – Bureau of Fair Rides Inspection for more information.

CARNIVAL PERMIT OR INSPECTION SERVICE	COST
Annual permit for any amusement ride	$430.00
Annual permit for any bungee jump	$500.00
Inspection fee per kiddie amusement ride	$35.00
Inspection fee per non-kiddie amusement ride	$70.00
Inspection fee per super amusement ride	$140.00
Inspection fee per go-kart (in addition to track inspection fee)	$7.00
Re-inspection fee	$500.00
Replacement of lost USAID plate	$100.00
Late inspection request per amusement ride	$100.00

Emergency Services Fees

Please note that if you request emergency services for a special event, you need to hire staff and apparatus for a minimum of four hours.

APPARATUS/STAFFING	COST
1 Rescue Unit w/2 Paramedics	$130.00/hour
1 Rescue Unit w/3 Paramedics	$175.00/hour
1 Cart w/2 Paramedics	$130.00/hour
1 Bike Team w/2 Paramedics	$130.00/hour
1 Command Officer	$50.00/hour
1 Engine Company w/3 Personnel	$175.00/hour
1 Engine Company w/4 Personnel	$225.00/hour
1 Aerial Company w/3 Personnel	$175.00/hour
1 Fire Boat w/3 Personnel	$175.00/hour
1 Fire Boat w/4 Personnel	$225.00/hour
1 BP Lifeguard (Overtime)	$42.00/hour
1 BP Lifeguard (Overtime) w/ Jet Ski	$92.00/hour
2 BP Lifeguard (Overtime) w/ Jet Ski	$132.00/hour
1 BP Lifeguard (BPL) (Part-Time)	$21.00/hour
1 BP Lifeguard (Part-Time) w/ Jet Ski	$71.00/hour
2 BP Lifeguards (Part-Time) w/ Jet Ski	$92.00/hour
Fire Marshal's Office(Min. 2 hours)	$75.00/hour
Administrative fee	$50.00/hour
Failure to cancel inspection request per amusement ride	$100.00
Additional fee per amusement ride for inspections on weekend or state holidays	$75.00

Why not Green your Event with this Easy to Use "Green" Checklist?

Leadership	
☐	*Articulate sustainable goals to partners early in the planning process*
☐	*Use written agreements with vendors to ensure full cooperation*
☐	*Be realistic when devising your strategy and setting your green goals*
☐	*Require vendors to follow your sustainability guidance*
Event Activities	
	Reduce and reuse waste
☐	*Make waste reduction and recycling a requirement in your agreement with vendors*
☐	*Include a list of approved packaging and dispensing materials for your event*
☐	*Use recyclable/reusable materials for booths, displays, exhibits*
☐	*Offer bulk water dispenser or use drinking fountains*
☐	*Avoid vendors that use excessive plastic water bottles or request that they discontinue their use for your event*
☐	*Provide napkins only upon request*
☐	*Provide unwaxed paper cups and plates that can be recycled*
	Purchase responsibly
☐	*Provide beverages and food in recyclable containers such as paper plates, plastic bottles and cans*
☐	*Purchase biodegradable materials such as wooden products, paper and natural fibers*
☐	*Discourage use of styrofoam for beverage and food distribution*
☐	*Avoid using prepackaged utensils and plastic wrap*
☐	*Provide condiments in large reusable tubs instead of individual packets*

	Food Management
☐	*Offer local and organic food choices*
☐	*Donate unused food/concessions to local not-for-profit agencies*
Resource Recovery	
☐	*Use electronic or sustainable media for event promotion and registration; Limit paper handouts or flyers*
☐	*Use recycled paper with soy or vegetable-based ink*
☐	*Utilize email/web for event advertisement and coordination to substantially decrease printed or mailed materials*
☐	*Use double-sided printing for promotional materials*
☐	*Use volunteers to help sort recycling and trash*
☐	*Promote reusable plastic cups or personal water bottles*
Energy Management and Conservation	
☐	*Establish goals for water conservation and energy efficiency*
☐	*Offer opportunities to calculate and offset carbon impacts*
☐	*Offer bulk water dispenser or use drinking fountains*
☐	*Use cleaner burning fuels and trucks, buses or generators*
Transportation	
☐	*Choose a venue that reduces transportation needs*
☐	*Publicize bus and train routes and schedules for attendees*
☐	*Encourage carpooling, biking and walking*
☐	*Use hybrid or alternative fuel-powered buses for tours or airport shuttles*
☐	*Offer priority parking for carpool vehicles*
Site Management	
☐	*Consider preservation and impacts to existing habitats, trees and landscaping when laying out your event site plan*
Communication/Education	
☐	*Send out an early invitation that clearly states your sustainable goals*
☐	*Be consistent in your messaging when talking about green initiatives*
☐	*Be creative and make it fun for the attendees to be "green"*
☐	*Work closely with stakeholders, such as vendors and waste haulers*

TEMPORARY MODIFICATION OF TRAFFIC (MOT) ROUTING FORM

DATE:

APPLICANT/ADDRESS/PHONE:
____
____
____
____

PERMIT NO. ___________________________________

(PROVIDED BY CITY AT TIME OF PERMIT APPLICATION)

PROJECT NAME/ADDRESS: _____________________________

- This routing form should be completed and submitted as an attachment to the above-referenced permit (hereinafter "PERMIT").
- Obtaining signatures on this routing form does not constitute any approvals by the City. The MOT may be implemented only after issuance of the PERMIT, subject to satisfaction of all prerequisite conditions.
- This form is for MOT's within rights-of-way under City of Fort Lauderdale's jurisdiction. If the MOT or detour routes affect rights-of-way under Broward County jurisdiction, the County's form (available on the City website) should also be completed with the required signatures and attached. If the detours affect FDOT right-of-way, a permit from FDOT must be attached.
- If work is taking place in County or FDOT R/W, an MOT permit is not required from the City. However, PERMIT applicant (hereinafter APPLICANT) is asked to provide two weeks advance notice of any closures or detours to the City's Public Information Office.

Specific dates and times requested for MOT implementation:

Begin ___________________________ End ______________________________

Describe Work, including location of site and address, names of affected streets, why MOT is necessary, nature of the construction, deliveries, staging areas, if cranes will be used, etc. (staging and storage of materials/equipment are not permitted in the right-of-way). Please note if additional sheets have been attached for the description of work.

____
____
____

Describe MOT, the number of lanes affected on each street, if metered parking spaces will be displaced, if detours are necessary, if flagmen will be provided, if MOT will be full-time (or times of day the MOT is to be in effect) and any other special considerations related to this request. Please note if additional sheets have been attached for the description of MOT.

____
____
____

Attach: MOT plan prepared by a certified worksite traffic control technician or traffic control supervisor (as appropriate for the complexity of the job), with a copy of current certification.

If implementation of an approved PERMIT is found to adversely affect public safety and/or public convenience or there is a conflict with a higher public purpose, the APPLICANT may be required to modify the MOT plan or the PERMIT may be temporarily suspended or permanently revoked at any time with reasonable notice from the City.

The MOT plan shall be in accordance with provisions of the latest edition of Part IV of the Manual of Uniform Traffic Control Devices for Streets and Highways and FDOT Design Standards. Compliance with the requirements of the approved plan shall be the responsibility of the APPLICANT.

____________________________ ____
(APPLICANT) (Print Name/Title)

As a consideration for the permission granted herein, ______________________________(APPLICANT) agrees to indemnify and hold harmless the City of Fort Lauderdale for any damages, claims or injuries that may result from the MOT plan approved under the PERMIT.

____________________________ By: ____
(Name of Company) (Company Officer, President, or Authorized Agent)

Rev. 6-8-12

Project Name: ____________________________________ **PERMIT NUMBER:** ________________________

Applicant should collect the signatures in this section (if required). To expedite processing, signatures may be requested concurrently via fax or pdf and provided on separate copies of this page.

______________________ (Date)

____
Police Department (Patrol Secretary Office)
(Required only if MOT includes a detour for any direction of travel)
1300 West Broward Boulevard
Tel.: (954) 828-5477 (call for appointment)

______________________ (Date)

____
Fire-Rescue Department
(Required only if MOT includes a detour for any direction of travel)
Bill Findland, Assistant Chief
528 NW 2nd Street
Tel.: (954) 828-4351 (call for appointment); Fax: (954) 828-6843

______________________ (Date)

____
Maj Shakib/ Studies Section
(Required only if MOT/detour affects County road or intersection)
2300 W. Commercial Boulevard
(Please call (954) 847-2655 for appt. Walk-ins NOT accepted)

After above signatures are collected, Applicant should forward the MOT Plan and this routing form to the person listed below.

______________________ (Date)

____
Transportation and Mobility
Heslop Daley, Project Engineer
290 NE 3rd Avenue
Tel: (954) 828-5734 Fax: (954) 828-3734

City Manager's signature to be requested by City Staff only (if signature is required)

______________________ (Date)

____
City Manager's Office

100 N. Andrews Avenue, 7th Floor
Tel.: (954) 828-5013 or Fax: (954) 828-5I21

A copy of the PERMIT, this routing form and MOT shall be kept on-site and made available to the City inspector at all times.

This form is for MOT plans associated with private utility projects and private development projects. MOT plans for City Capital Improvement Projects shall be coordinated through Engineering Inspection or the Project Manager. Traffic modifications required for special events shall be arranged through the City's Special Events Coordinator, Jeff Meehan at (954) 828-6705.

CITY OF FORT LAUDERDALE

Venice of America

GUIDELINES FOR COMPLETING A BUILDING PERMIT APPLICATION
FOR MAINTENANCE OF TRAFFIC PLANS

General Guidelines:

- Submit a Building Permit Application for a Maintenance of Traffic (MOT) Plan at the Building Services Department located at 700 NW 19 Avenue. The general phone number is (954) 828-5649.
- Obtain signatures on MOT Routing form, if applicable.
- A Certified Traffic Control Supervisor shall sign the MOT plan (include copy of current certification)
- Describe the nature of work, including purpose of job, installation methods, depth of excavation and materials being installed. If the project will be constructed in phases, describe each phase separately, and the durations. Provide a project map showing physical limits of each phase. Show any construction projects in the area and detour routes that could be affected by this project.

Provide the following information for <u>each</u> phase; information that is common to all phases, such as hours of work, need not be repeated, but should be indicated as applicable to all phases:

- Street name on which the MOT will be implemented and limits - Example: NE 2 Street from North Andrews Avenue to NE 3 Avenue.
- Requested start and end dates for the MOT, for that phase.
- Hours and days to which work will be limited (Example: M-F, 7:30 a.m. – 4 p.m.).
- **If sidewalk closures are required:** submit pedestrian detour plan and FDOT Standard Index, with north arrow and names of the main street and all cross streets.
- Show all driveways that are affected and indicate that access will be provided to all properties. The City may require evidence that the applicant has coordinated with the property owners to determine access needs.
- **If construction is <u>NOT</u> affecting lanes of traffic (i.e. edge of the Work Area is at least 2 feet from edge of travel way:**
  - Application needs to state that FDOT Standard Index 602 will be followed, all trenches will be covered or backfilled during non-working hours.
  - In this case, the MOT Routing Form will **<u>NOT</u>** be required (i.e. signatures from Police, Fire, Broward County)
- **If any lane closures are required (with no detours):**
  - Fully describe the lanes that are to remain open and the lanes that will be closed during the particular phase of construction (Example: During phase I, both westbound lanes and the inside eastbound lane of Las Olas Blvd. will be open to traffic. The outside eastbound lane will be closed to traffic).
  - State that no detours are required for this MOT.
  - Submit FDOT Standard Index, with north arrow and all main street/cross street names labeled on the index.
  - Provide an MOT routing form
- **If a full road closure or partial closure (requiring a detour for any direction of travel) is required:**
  - State if a full road closure is required or, in the case of a partial closure, the direction of travel that will be detoured (Example: all eastbound lanes on Las Olas Blvd will be detoured; all westbound lanes to remain open to traffic).
  - Provide a detour signing/circulation plan that shows other construction projects that are in progress or that may be planned in the vicinity of the project.
  - City Manager approval is required for all full/partial detours lasting up to 72 hours and City Commission approval is required for those lasting over 72 hours. City Commission approval may take eight weeks or more.
  - Provide the applicable FDOT Standard Index, provide north arrow and label all streets on the index
  - Provide an MOT routing form
- **If flag men will be used to avoid detouring traffic:**
  - State that the MOT will be removed during non-working hours and that lanes will be opened to traffic. Even if lanes are closed for an entire direction (Example: all eastbound lanes of Las Olas Blvd are being closed), if traffic flow for both directions is maintained by flag-men, City Manager or City Commission approvals are not needed. Where feasible, this option is recommended since these approvals can add considerable time to the permit approval process.
  - List all intersections affected – provide a sketch of intersection showing all approaches, showing all traffic control devices, lane configurations and the proposed lane closures and/or detours
  - Provide an MOT routing form signed by the appropriate parties

CITY OF FORT LAUDERDALE **PERMIT APPLICATION**
DEPARTMENT OF SUSTAINABLE DEVELOPMENT
700 NW 19th Avenue, Fort Lauderdale FL 33311

Permit Type: ____________________ **Master Permit #** ______________________ **Sub Permit #**______________________

☐ **AFFORDABLE HOUSING** ☐ **HOUSING AUTHORITY** ☐ **HABITAT FOR HUMANITY**

COMPLETE FORM IN BLACK INK - ONLY SIGNATURES MAY BE IN STANDARD BLUE INK

Owner's Name____Phone # ____________________

Owner's Street Address ____

City______________________________State______Zip Code_________Owner's Email _________________________

Fee Simple Titleholder's Name(if other than owner) ____

Fee Simple Titleholder's Address__________________________City___________________State______Zip________

Contractor's Company Name____Phone # ___________________

Contractor's Business Address_____________________________City___________________State_____Zip _______

Contractor's E-mail Address____Alternate Phone # _______________

Qualifier's Name____State Certificate # ____________________

Broward County Certificate of Competency #____________________State Registration # __________________

Job Address____City _________________________________

Legal Description: Subdivision__________________________________Lot________Block________Building # ________

Type of Property: ☐Single family ☐Duplex/Two-family ☐Multi-Family ☐Condominium ☐Commercial

Description of Work to be Done ____

Type of Work: ☐New ☐Addition ☐Alteration ☐Demolition ☐Repair ☐Revision ☐Other

Square Feet _____________ Linear Feet __________ # Windows/Doors __________ # Shutter Openings _________

Total Job Cost: $____________ # Gallons _____________ Max Cap _____________ Present Use _______________

☐ Electric	$______________	☐ Building	$______________	☐ Engineering	$______________
☐ Fire Sprinkler	$______________	☐ Roof	$______________	☐ Fence/Wall	$______________
☐ Mechanical	$______________	☐ Pool/Spa	$______________	☐ Sign	$______________
☐ Plumbing	$______________	☐ Paving/deck	$______________	☐ Landscape	$______________

For Office Use Only: Occupancy Type________Construction Type________Lowest Floor Elevation________Flood Zone _______

Designer of record____Reg#________________Phone________________
Address______________________________________City_________________________State__________Zip___________________

I acknowledge that by submitting these drawings to the City, they may be reproduced as part of a public record request. Under copyright law, they may not be used for any project unrelated to the project herein.

Application is hereby made to obtain a permit to do the work and installation as indicated. I certify that no installation or work has commenced prior to the issuance of a permit and that all work will be performed to meet the standards of all laws regulating construction in the City of Fort Lauderdale, **OR** I acknowledge that this is an application for an After the Fact permit. I understand that separate trade permits must also be secured as per section 105.1 Permits Required, and must have notarized owner/agent and qualifier signatures.

OWNER'S or AGENT AFFIDAVIT: I certify that all the foregoing information is accurate and that all work will be done in compliance with all applicable laws regulating construction and zoning. Furthermore, I authorize the above-named contractor to do the work stated.

WARNING TO OWNER or AGENT: Your failure to record a notice of commencement may result in your paying twice for improvements to your property. If you intend to obtain financing, consult your lender or an attorney before recording your notice of commencement. The notice of commencement must be recorded at the Broward County Clerk of the Courts, Room 114, 115 S Andrews Ave, Fort Lauderdale FL 33301.

STATE OF___________**COUNTY OF** ____________________________

Signature ____
Circle one: Owner or Agent

Print Owner/Agent Name ______________________________________

Sworn to (or affirmed) and subscribed before me this________day

of____________________________, 20_________.

Signature____
NOTARY as to Owner/Agent

Print Notary Name ____

______Personally known or_______Produced Identification

Type of Identification Produced ____________________________

Notary Stamp:

STATE OF FLORIDA – COUNTY OF ____________________________

Signature ____
Circle one: Contractor or Owner (with Owner Builder Affidavit)

Print Contractor/Owner Name ______________________________________

Sworn to (or affirmed) and subscribed before me this__________day

of____________________________, 20_________.

Signature____
NOTARY as to Contractor/Owner

Print Notary Name ____

______Personally Known or_______Produced Identification

Type of Identification Produced ____________________________

Notary Stamp:

City of Fort Lauderdale
PERMIT INFORMATION

MECHANICAL

QUANTITY

_____ A/C Unit
____ Boiler
_____ Cooling Tower
_____ Commercial Hood
_____ Dampers
_____ Dryer Vent
_____ Duct Register
_____ Exhaust System
_____ Fireplace
_____ Fire Suppression
_____ Fuel Tank
_____ Heater

QUANTITY

_____ Piping Length Feet
_____ Residential Hoods
_____ Spray Booth
_____ Smoke Detector
_____ Supply Fan
_____ Trash/Linen Chute
_____ VAV Box
_____ Walk-in Cooler
_____ Other Misc. (list)
_____ Other Misc. (list)
____
____

SIGN DATA

SQUARE FEET_________ **ZONE** __________

TYPE

__ Non-Illuminated
__ Electrical
__ Single Pole
__ Multiple Poles
__ Wall Flat
__ Wall Painted
__ Single Face
__ Double Face
__ Other (list)
____

BUILDING TYPE ____

PURPOSE

City
Direction
Identification
Real Estate
Temp. Construction
Other (list)
____
____

PLUMBING

QUANTITY

_____ Air Lines
_____ Area Drain
_____ Backflow
_____ Bar Sink
_____ Bath Tub
_____ Bidet
_____ Boiler
_____ Can Wash
_____ Coffee Urn
_____ Condensate
_____ Dishwasher
_____ Disposal
_____ Drainfield, Storm
_____ Drinking Fountain
_____ Drywell
_____ Dumpster Drain
_____ Floor Drain

QUANTITY

_____ Gas Outlet
_____ Grease Outlet
_____ Hand Sink
_____ Hose Bib
_____ Ice Maker
_____ Insta Hot
_____ Kitchen Sink
_____ Laundry Tray
_____ Lavatory
_____ Lawn Sprinkler Heads
_____ Pool Piping
_____ Pool Heater
_____ Pot Sink – 3 Comp.
_____ Remodel – Repair
_____ Roof Drain
_____ Safe Waste
_____ Septic Tank Conversion

QUANTITY

_____ Service Sink
_____ Sewer tap
_____ Sewer Cap
_____ Shower
_____ Sump Pump
_____ Trench Drain
_____ Urinal
_____ Washer
_____ Water Closet
_____ Water Heater
_____ Water Meter
_____ Water Service
_____ Water Softener
_____ Well, Irrig., Disposal
_____ Other (list)_________
____
____

FIRE

QUANTITY

___Boat Dock Protection
___Chemical System (lbs)
___Double Detector
___Fire Main (size)
___Fire Pump (size)
___Hose Outlets
___Siamese/FDC
___Smoke Control (sq ft)
___Sprinkler Heads (sq ft)
___Standpipe Risers
___Canopy/Tent
Other (list):__________
____
____

ELECTRICAL

QUANTITY

___A/C Heater
___Basic Receptacle
___Burglar Alarm Device
___Burglar Alarm Panel
___Data Outlet
___Dock Pedestal
___Fire Alarm Device
___Fire Alarm Panel
___Fixture
___Generator_______KW
___GFCI Receptacle
___Light/Outlet
___Motors______HP
___Motors______HP
___Motors______HP

QUANTITY

___Panels_________Amps
___Panels_________Amps
___Panels_________Amps
___Plug/Mold/per foot
___Pole/Site Lighting
___Service________Amps
___Service________Amps
___Service Repair
___Signs
___Special Purpose Receptacles
___Swimming Pool
___Switches
___Telephone Outlet
___Temporary Service Pole
___Transformers_______KVA

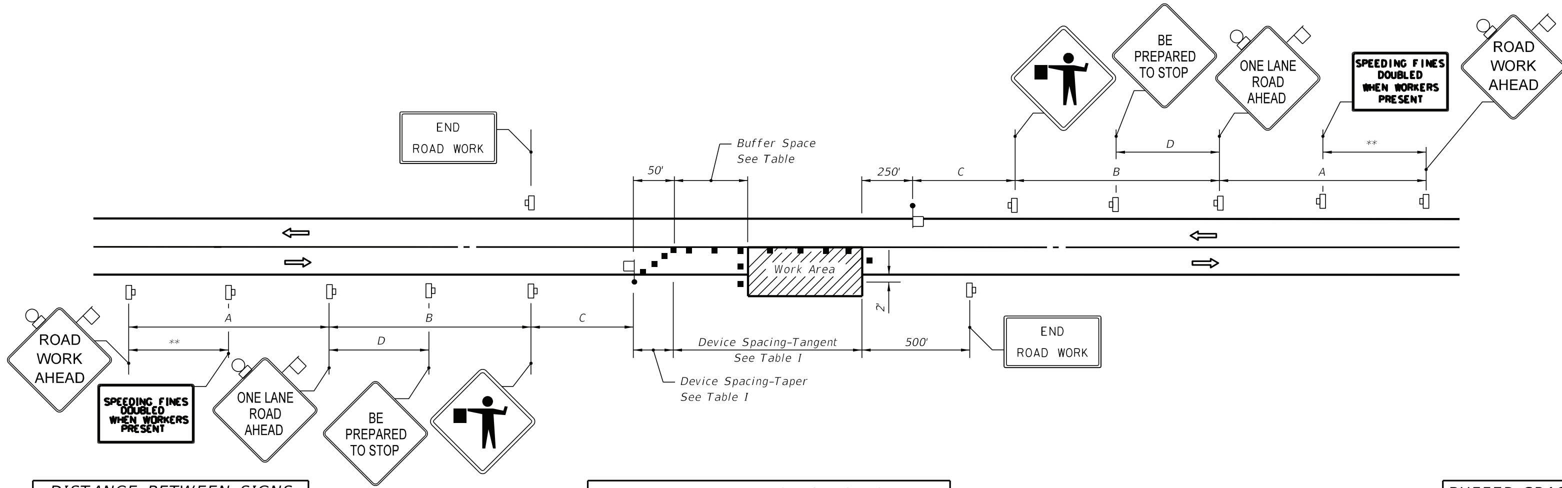
QUANTITY

___Track Lighting/ per foot
___TV Camera
___TV Monitor
___TV Outlets
___Other (list)
____
____
____
____
____
____

NOTICE: In addition to the requirements of this permit, there shall be additional restrictions applicable to this property that may be found in the public records of the county, and there shall be additional permits required by other governmental entities such as water management districts, state agencies or federal agencies.

The issuance of this permit by the City of Fort Lauderdale does not in any way create any right on the part of an applicant to obtain a permit from a state or federal agency and does not create any liability on the part of the City for issuance of the permit if the applicant fails to obtain requisite approvals or fulfill the obligations imposed by a state or federal agency or undertakes actions that result in a violation of state or federal law.

The applicant must obtain all other applicable state or federal permits before commencement of the development.



DISTANCE BETWEEN SIGNS				
Speed (mph)	Spacing (ft.)			
	A	B	C	D
40 or less	200	200	200	100
45	350	350	350	175
50	500	500	500	250
55 or greater	2640	1640	1000	500

* The ROAD WORK 1 MILE sign may be used as an alternate to the ROAD WORK AHEAD sign.

** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

*** BE PREPARED TO STOP sign may be omitted for speeds of 45 MPH or less.

TABLE I DEVICE SPACING				
Speed (mph)	Max. Distance Between Devices (ft.)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25 to 45	20	50	20	50
50 to 70	20	50	20	100

BUFFER SPACE	
Speed (mph)	Dist. (ft.)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Flagger
- Automated Flagger Assistance Devices (AFAD), With Gate
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the opposite lane open to traffic.

2. Additional one-way control may be effected by the following means:
   1. Flag-carrying vehicle;
   2. Official vehicle;
   3. Pilot vehicles;
   4. Traffic signals.

   When flaggers are the sole means of one-way control, the flaggers shall be in sight of each other or in direct communication at all times.

3. The ONE-LANE ROAD signs are to be fully covered and the FLAGGER signs either removed or fully covered when no work is being performed and the highway is open to two-way traffic.

4. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.

5. The two channelizing devices directly in front of the work area and the one channelizing device directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.

6. For general TCZ requirements and additional information, refer to Index No. 600.

DURATION NOTES

1. ROAD WORK AHEAD and the BE PREPARED TO STOP signs may be omitted if all of the following conditions are met:
   a. Work operations are 60 minutes or less.
   b. Speed limit is 45 mph or less.
   c. No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space.
   d. Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e. Volume and complexity of the roadway has been considered.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA BETWEEN THE CENTERLINE AND A LINE 2' OUTSIDE THE EDGE OF TRAVEL WAY.

LAST REVISION	REVISION	DESCRIPTION:	FDOT 2014 DESIGN STANDARDS	TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY	INDEX NO.	SHEET NO.
07/01/09					603	1 of 2

6/24/2013 6:30:49 PM sm970re C:\d\projects\standards\roadway\00600-s\00603-01.dgn

CAM 22-0103
Exhibit 2
Page 220 of 390

CITY OF FORT LAUDERDALE

BLOCK PARTY NOTIFICATION FORM

PLEASE RETURN THE COMPLETED FORM TO:
Neighbor Support Division | City of Fort Lauderdale
100 N. Andrews Ave | Fort Lauderdale, FL 33301
neighborsupport@fortlauderdale.gov
Questions? Call (954) 828-5213

NAME OF THE NEIGHBORHOOD ASSOCIATION OR AREA:

____

NEIGHBORHOOD CONTACT:

Name: ____

Address: ____

Phone: ____________________ E-mail: __________________________

ALTERNATE CONTACT:

Name: ____

Address: ____

Phone: ____________________ E-mail: __________________________

PARTY INFORMATION:

Date: ______________ Start Time: __________________ End Time: __________________

Expected Number of Attendees: _________________________________

Location: ____

Are you requesting a road closure? ☐ Yes ☐ No

If yes, please provide the location of the requested road closure:

____

If requesting a road closure, please provide the signature of the neighborhood Association President:

____

If requesting a road closure, please submit a completed form as soon as possible, and no less than one week prior to the block party so Neighbor Support has enough time to process the application, obtain necessary approvals and respond to the applicant. Thank you for your cooperation.

Parking Locations

PARKING GARAGES	# SPACES	HOURS OF OPERATION	MAX HOURS
Arts & Science District 101 SW 5 Ave Entrance on SW 5th Ave	571 spaces	24/7 Ramp clearance 7'6" (entry) 6'10" (ramp)	12
Bridgeside Pl 3020 NE 32 Ave (Shooters Area)	504 spaces	24/7 Ramp clearance 6'8"	24 Hours
City Hall 100 N. Andrews Avenue Entrance on NE 1st St or NE 2nd St W. of Andrews	135 spaces	8 am - 6 pm M-F Ramp Clearance 6'10"	3
City Park 150 SE 2 St Entrance on SE 2nd Avenue	526 spaces	24/7 Ramp clearance 7'5"	6 hrs (1st Floor) 10 hrs (2nd & 3rd Floor)

PARKING LOTS	# SPACES	HOURS OF OPERATION	MAX HOURS
Aquatic Complex Lot 501 Seabreeze Blvd Swimming Hall of Fame	1 Meter 100 spaces	5am-2:30am Everyday	10
DC Alexander Lot SE 5 St & A1A near Swimming Hall of Fame	1 Meter 30 spaces	24/7	4
E. Clay Shaw - East 2150 SE 17 Street	2 Meters 89 spaces	6 am - 12 Midnight Everyday	10 1 Hr Min
E. Clay Shaw -West 1881 SE 17 Street	4 Meters 111 spaces	6 am - 12 Midnight Everyday	10 1 Hr Min
Fort Lauderdale Beach 700 Seabreeze Blvd	15 Meters 438 spaces	5 am - 2 am everyday	10
SE 5 Street A1A-Seabreeze near Swimming Hall of Fame	2 Meters 26 spaces	24/7	4
Snyder Park 3299 SW 4 Ave	3 Meters 442 spaces	7am-7pm Saturday, Sunday & Holidays	12
South Side Lot South East of Las Olas Intracoastal Bridge	2 Meters 76 spaces	7 am - 2 am everyday	6

Portable Toilets Matrix

NUMBER OF PORTABLE RESTROOMS REQUIRED FOR SPECIAL EVENTS										
(ASSUMES SERVICING ONCE PER DAY)										
NUMBER OF PEOPLE PER DAY	NUMBER OF HOURS FOR EVENT PER DAY									
	1	2	3	4	5	6	7	8	9	10
250	2	2	2	2	2	3	3	3	3	3
500	2	3	4	4	4	4	4	4	4	4
1000	4	5	6	7	7	8	8	8	8	8
2000	6	10	12	13	14	14	14	15	15	15
3000	9	14	17	19	20	21	21	21	21	22
4000	12	19	23	25	28	28	28	30	30	30
5000	15	23	30	32	34	36	36	36	36	36
6000	17	28	34	38	40	42	42	42	44	44
7000	20	32	40	44	46	48	50	50	50	50
8000	23	38	46	50	54	57	57	58	58	58
9000	26	42	52	56	60	62	62	62	64	64
10,000	30	46	57	63	66	70	70	72	72	72
12,500	36	58	72	80	84	88	88	88	88	92
15,000	44	70	84	96	100	105	105	110	110	110
17,500	50	80	100	110	115	120	125	125	126	126
20,000	57	92	115	125	132	138	138	144	144	150
25,000	72	115	144	154	168	175	175	176	176	184
30,000	88	138	168	192	200	208	208	216	216	216

Special Events Definition

Special Events, or outdoor events, are defined in Section 15-181 of the City's Code of Ordinances. It states:

ARTICLE V. - OUTDOOR EVENTS

FOOTNOTE(S):

Editor's note— Ord. No. C-91-89, § 1, adopted Jan. 7, 1992, amended Art. V to read as herein set out in §§ 15-181—15-185. Prior to inclusion of said ordinance, Art. V, §§ 15-181—15-185, pertained to circuses, carnivals and outdoor shows and derived from Code 1953, § 28-36.1(a)—(e).

Sec. 15-181. - Restricted generally.

(a) Outdoor events shall mean concerts, festivals, races, walks, triathlons, circuses, carnivals, shows, exhibitions and other similar outdoor events on public property, private property, or both, whether operated totally outdoors, on stage, under tents or with the use of temporary buildings or structures, to which members of the public are invited as participants or spectators. Outdoor events shall not be permitted to locate or operate in the City except as provided in this article.

(b) This article shall not apply to outdoor events at the following facilities in the City: Lockhart Stadium, Fort Lauderdale Stadium, War Memorial Auditorium, the Fort Lauderdale Aquatics Complex and the International Swimming Hall of Fame.

(Ord. No. C-91-89, § 1, 1-7-92; Ord. No. C-12-14, § 1, 5-1-12)

Sec. 15-182. - Application fee; agreement.

(a) The City commission may, after an application has been filed and reviewed, and after passage of an appropriate motion, permit events coming under the provisions of this article to operate within the City for temporary periods of time. Such application shall be filed with the parks and recreation department not less than sixty (60) days in advance of the beginning date of the event and shall contain a detailed proposal of the location, hours and dates of operation, and a copy of any contract between the applicant and any person providing rides, mechanical entertainment or amusement devices for the event. The applicant shall pay a fee established by the City manager when the application is filed and submit any additional information required by the parks and recreation department. The City manager may establish a late fee to be imposed on applicants that file within such sixty-day period.

(b) If the information submitted by the applicant is responsive and if the parks and recreation department has reviewed and approved the application, the City shall prepare and submit to the applicant an agreement incorporating the terms and conditions listed in section 15-183 and such other terms and conditions as the City may specify.

(c) No person or organization shall hold an outdoor event prior to the delivery to the City of properly executed copies of the agreement and certificate of insurance provided for in this article.

(Ord. No. C-91-89, § 1, 1-7-92; Ord. No. C-12-14, § 2, 5-1-12)

Sec. 15-183. - Outdoor event requirements.

(a) The agreement for outdoor events shall contain the following terms and conditions:

  (1) The use of fireworks shall comply with all applicable state laws and requires a fireworks permit from the City fire department.

  (2) Sanitary facilities shall be provided and shall be of the type and in a sufficient number as to meet the requirements established by the building and zoning department.

  (3) The department of sustainable development shall conduct electrical inspections of all electrical facilities whether power is supplied by local utilities or is self-provided by generator systems.

  (4) Sponsors of events at which food or beverages will be sold or distributed shall meet all applicable state, county and City health codes.

  (5) Current flameproof certificates need to be provided for all canvas tents, awnings or canopies and shall be submitted for approval to the City fire department.

Special Events Definition (continued)

(6) The applicant shall pay for the expense of all City services provided as a result of the event identified by City staff prior to the event. The police department may require the applicant to provide and pay for security personnel for crowd control and traffic direction purposes. The fire department may require the applicant to provide and pay for EMS and fire watch personnel, or both. Police, fire and EMS costs are exempt from prior notice provisions.

(7) The applicant shall provide a certificate of insurance satisfactory to the office of the risk manager, such insurance to be comprehensive general liability insurance in a minimum amount of one million dollars ($1,000,000.00) combined single limit coverage, naming the City as an additional insured. If alcoholic beverages are to be dispensed, served, sold or distributed at the outdoor event, the applicant shall in addition provide liquor liability insurance in a minimum amount of five hundred thousand dollars ($500,000.00). The applicant shall also agree to indemnify and hold harmless the City for any damage to person or property which might occur during or as a result of the operation of the outdoor event.

(Ord. No. C-91-89, § 1, 1-7-92; Ord. No. C-12-14, § 3, 5-1-12)

Sec. 15-184. - Exceptions.

(a) A self-insured governmental entity may be exempted from the insurance requirements of this article.

(b) The City's parks and recreation director, in consultation with the risk manager, shall determine whether an event qualifies as a minor outdoor activity based on the following factors:

(1) Not anticipated to exceed the capacity of the facility or other property proposed to be used;

(2) Limited or no closing of streets/limited impact on traffic;

(3) Limited parking and noise in surrounding neighborhood(s);

(4) The absence of activities having an inherent risk or which increased exposure for either bodily injury or property damage;

(5) Limited size and scope of event; limited use of facility outside of normal use; no activities involving third party vendors.

The sponsor of a proposed minor outdoor activity shall submit all details of such proposed activity to the parks and recreation department at least sixty (60) days in advance of the event. If an event is determined to be a minor outdoor activity, it shall be exempted from the provisions of section 15-183(a)(7) of this article.

(Ord. No. C-91-89, § 1, 1-7-92; Ord. No. C-12-14, § 4, 5-1-12)

Sec. 15-185. - Exception for City-sponsored events.

Events sponsored or co-sponsored by the City and held at municipal facilities or on other property owned or controlled by a governmental entity are exempt from the provisions of this article; provided, however, that the co-sponsor of a co-sponsored event shall provide the insurance certificates required in section 15-183(7). A sponsored event is one which is solely or primarily planned, organized and funded by the City. A co-sponsored event is one which is partially planned, organized and funded or otherwise supported by the City at the request of another person or entity as established by City commission policy.

(Ord. No. C-91-89, § 1, 1-7-92)

Secs. 15-186—15-200. - Reserved.

CITY OF FORT LAUDERDALE

100 N. Andrews Avenue
Fort Lauderdale, FL 33301
www.fortlauderdale.gov

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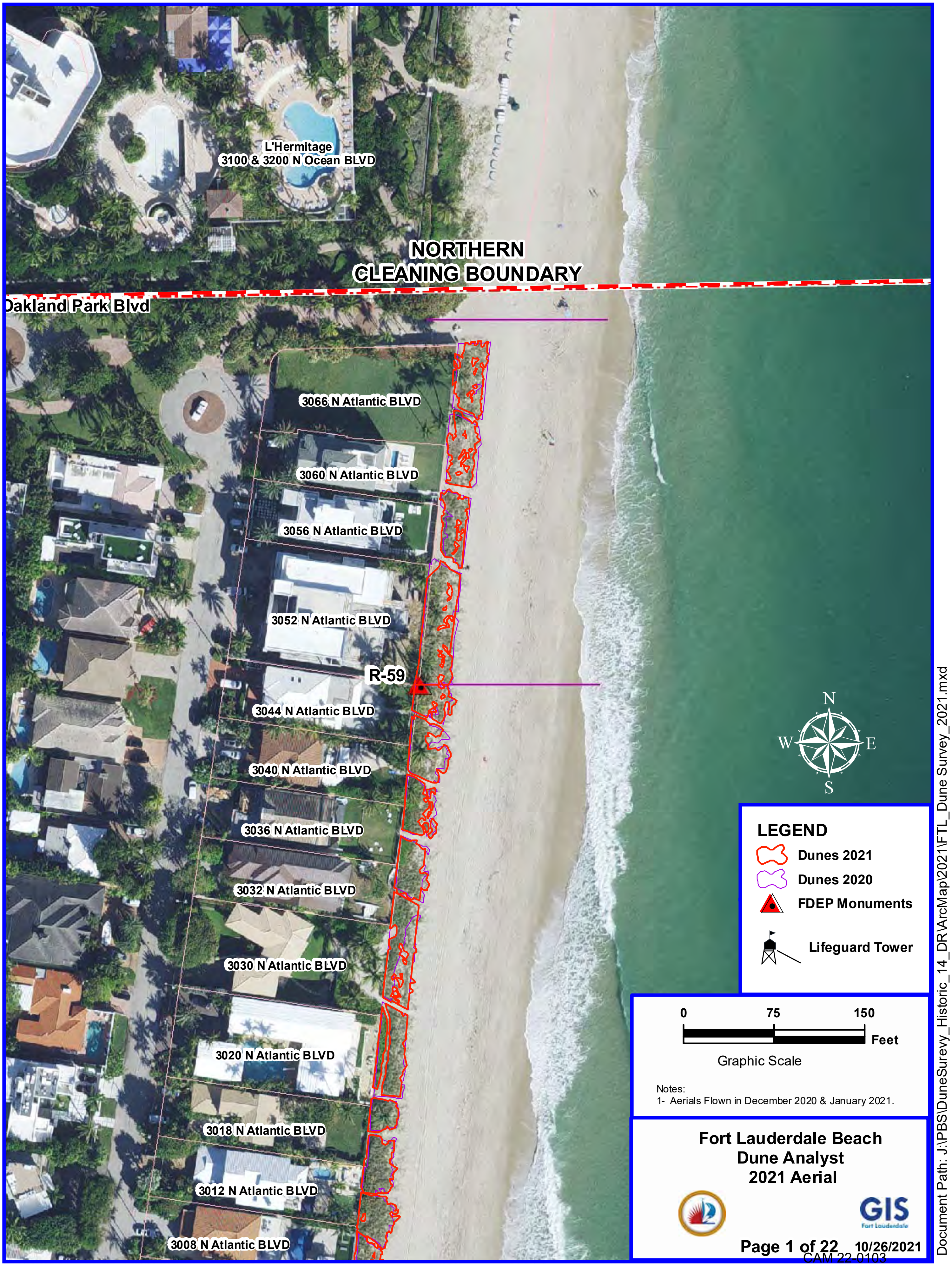
APPENDIX C: Dune Survey Maps 2021


L'Hermitage
3100 & 3200 N Ocean BLVD
NORTHERN
CLEANING BOUNDARY
Oakland Park Blvd
3066 N Atlantic BLVD
3060 N Atlantic BLVD
3056 N Atlantic BLVD
3052 N Atlantic BLVD
R-59
3044 N Atlantic BLVD
3040 N Atlantic BLVD
3036 N Atlantic BLVD
3032 N Atlantic BLVD
3030 N Atlantic BLVD
3020 N Atlantic BLVD
3018 N Atlantic BLVD
3012 N Atlantic BLVD
3008 N Atlantic BLVD
N
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E
S
LEGEND
Dunes 2021
Dunes 2020
FDEP Monuments
Lifeguard Tower
0
75
150
Feet
Graphic Scale
Notes:
1- Aerials Flown in December 2020 & January 2021.
Fort Lauderdale Beach
Dune Analyst
2021 Aerial
GIS
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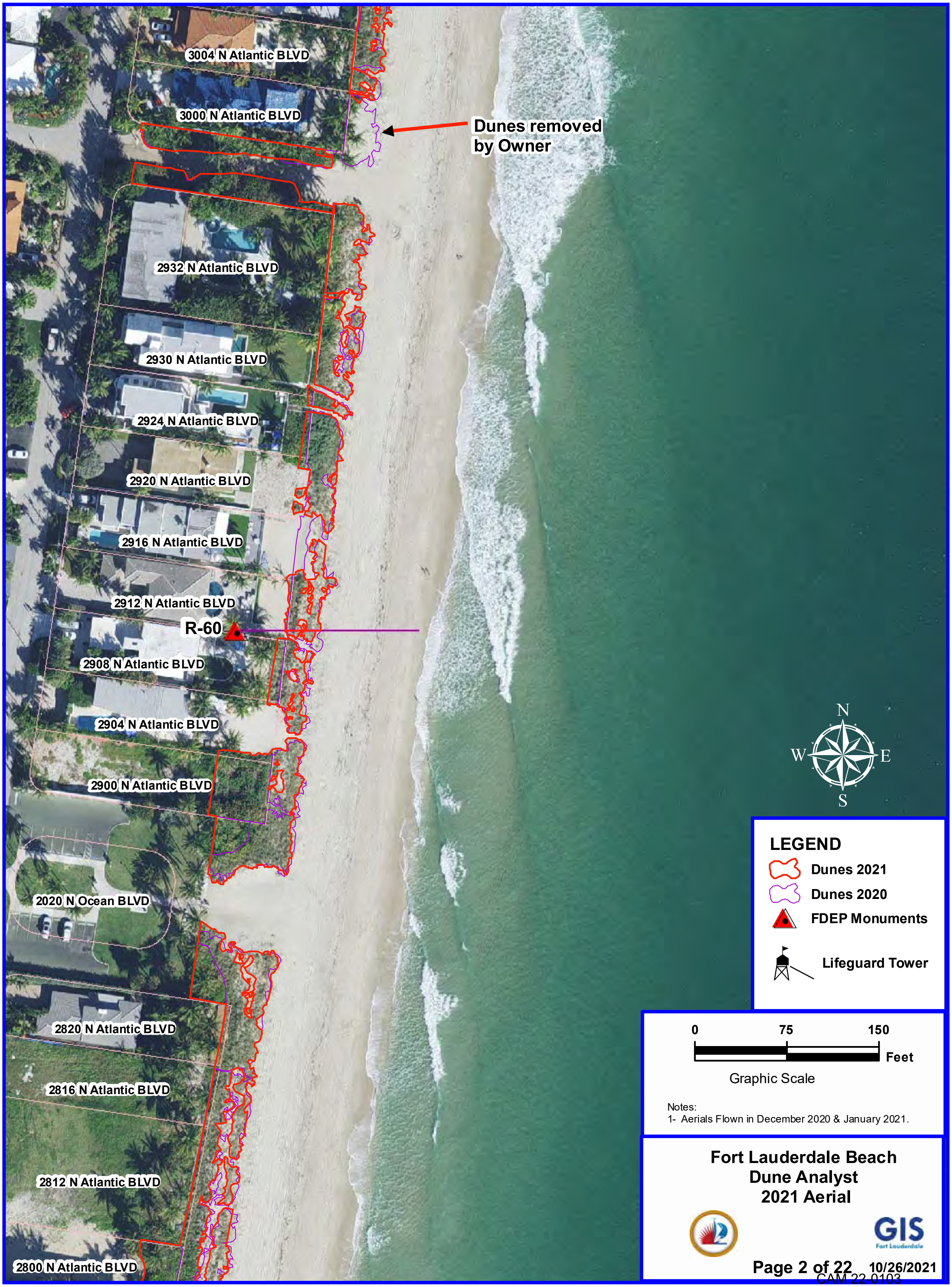

LEGEND

- Dunes 2021
- Dunes 2020
- FDEP Monuments
- Lifeguard Tower

0 75 150 Feet

Graphic Scale

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Fort Lauderdale Beach
Dune Analyst
2021 Aerial

GIS Fort Lauderdale

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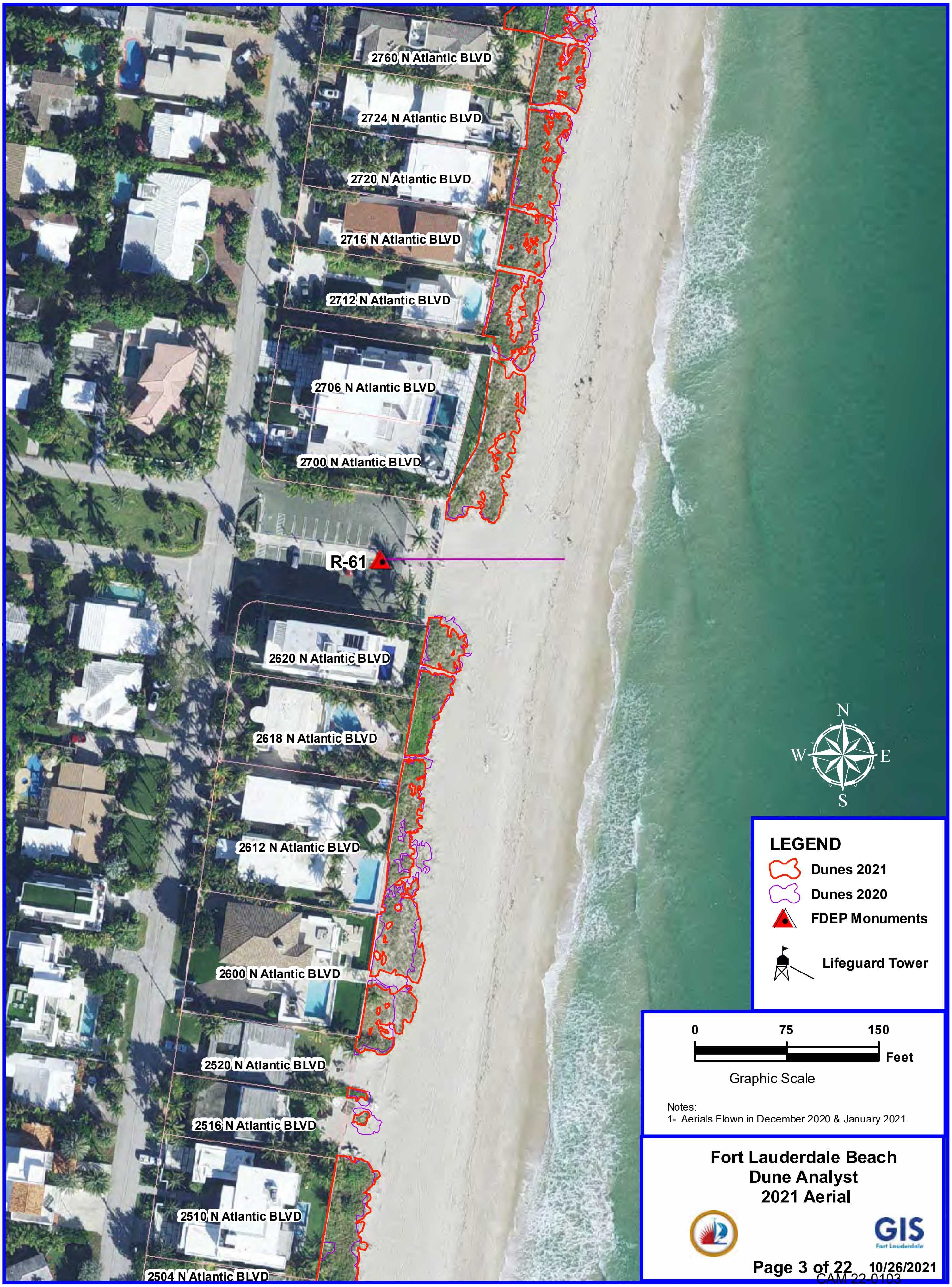

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Fort Lauderdale Beach Dune Analyst 2021 Aerial

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LEGEND

- Dunes 2021
- Dunes 2020
- FDEP Monuments
- Lifeguard Tower

0 75 150 Feet

Graphic Scale

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Fort Lauderdale Beach
Dune Analyst
2021 Aerial

GIS Fort Lauderdale

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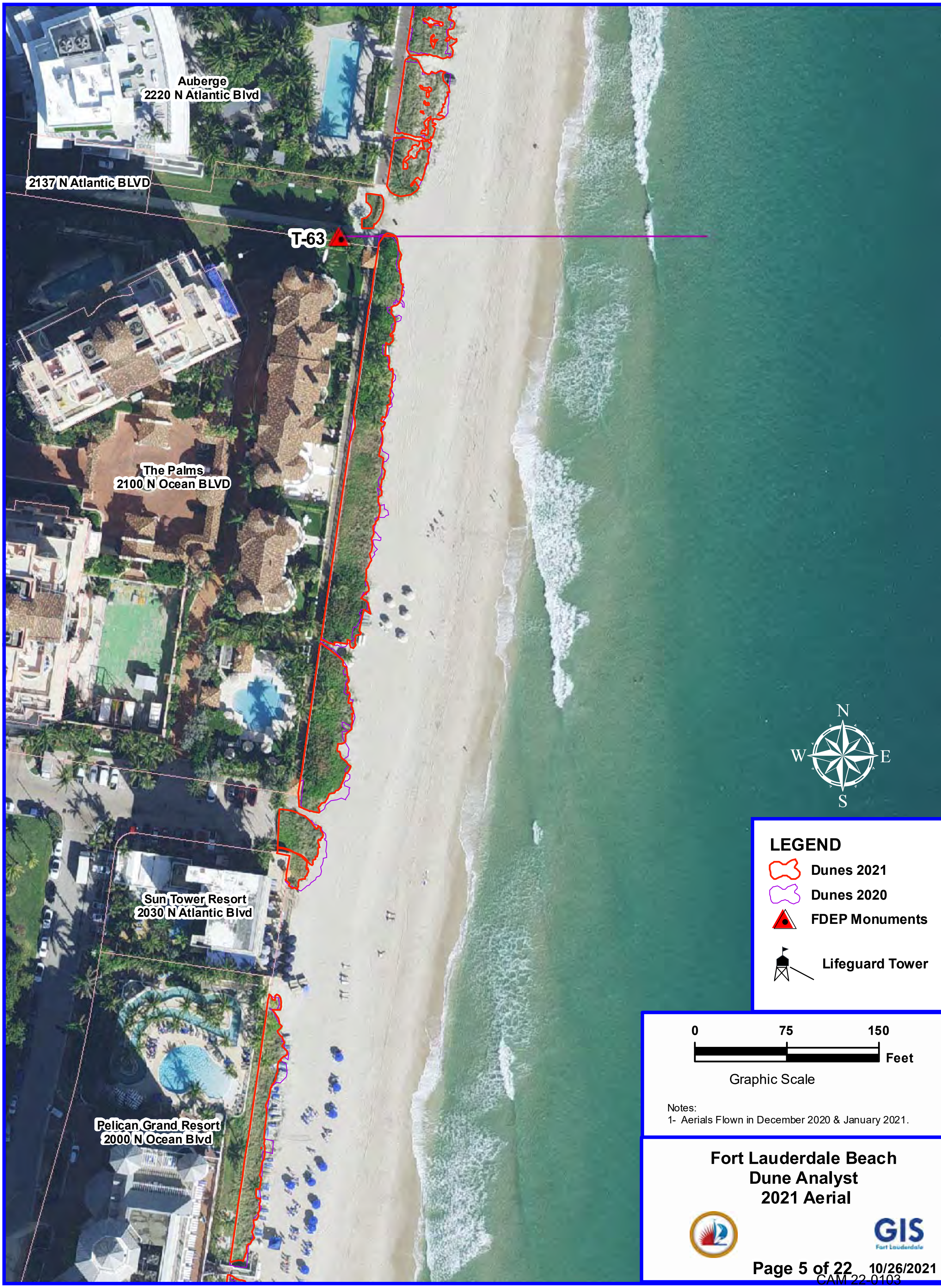

LEGEND

- Dunes 2021
- Dunes 2020
- FDEP Monuments
- Lifeguard Tower

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Graphic Scale

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Dune Analyst
2021 Aerial

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Fort Lauderdale

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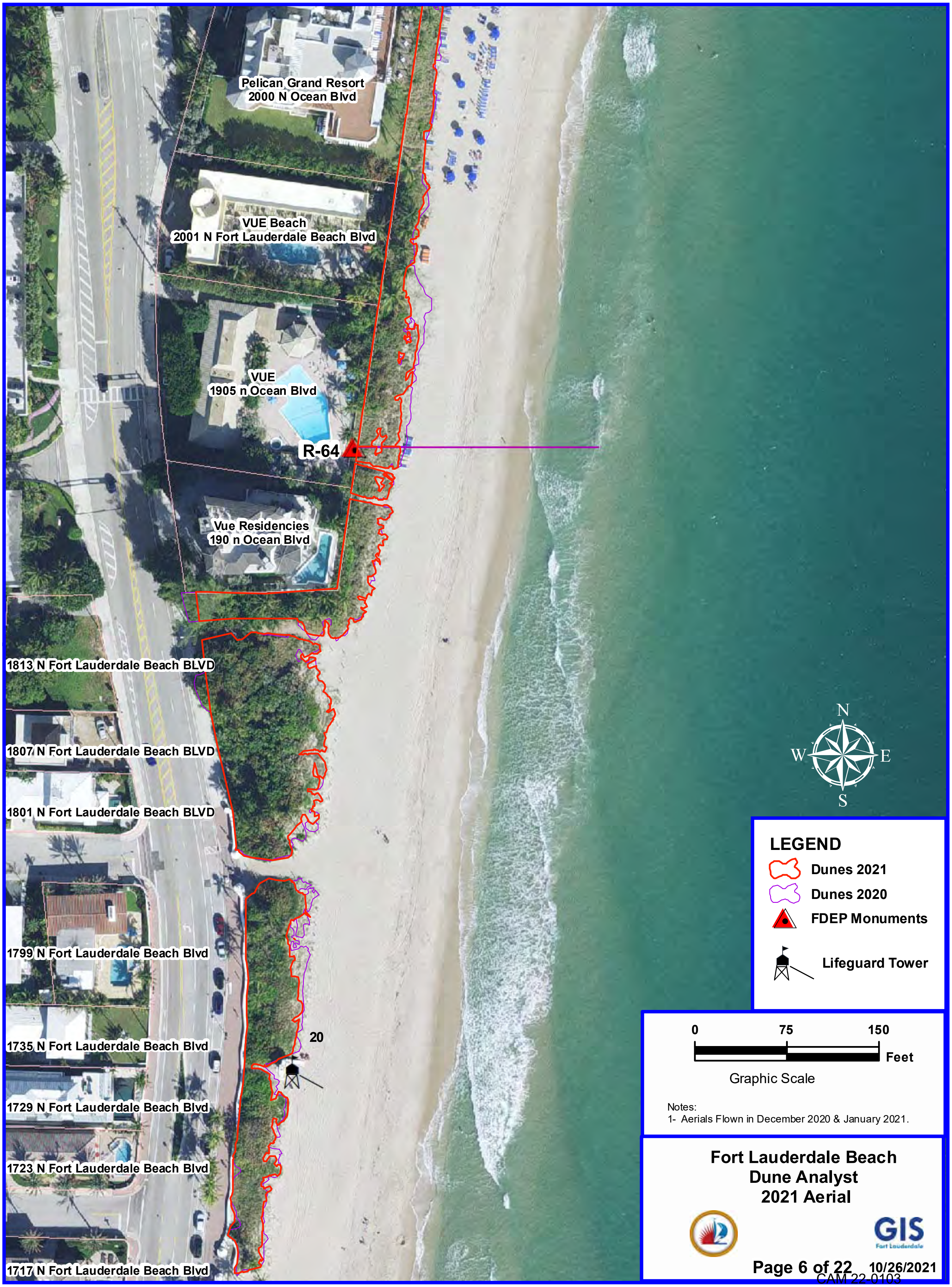

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2021 Aerial

GIS Fort Lauderdale

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2021 Aerial

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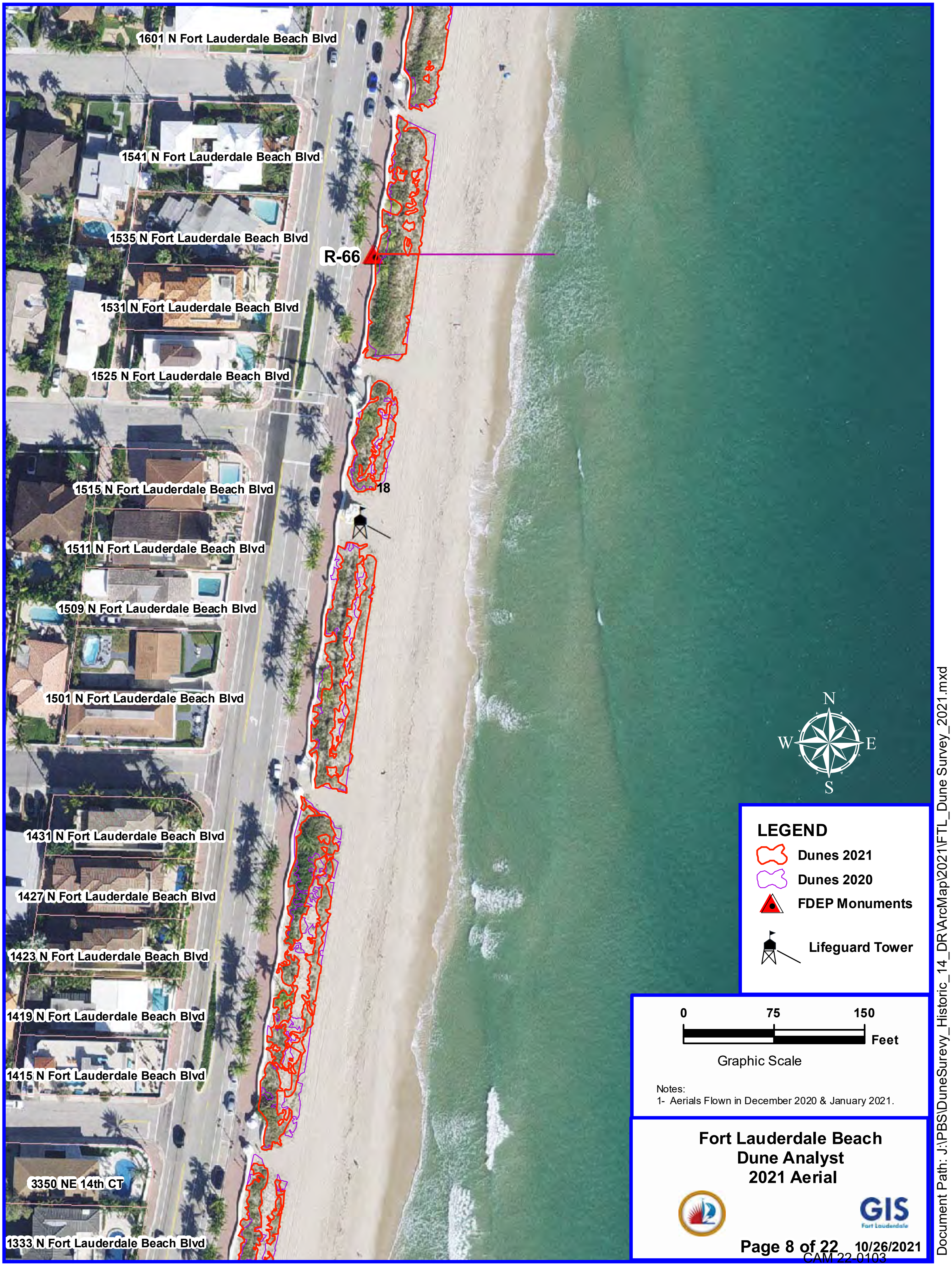
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1541 N Fort Lauderdale Beach Blvd
1535 N Fort Lauderdale Beach Blvd
R-66
1531 N Fort Lauderdale Beach Blvd
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1515 N Fort Lauderdale Beach Blvd
18
1511 N Fort Lauderdale Beach Blvd
1509 N Fort Lauderdale Beach Blvd
1501 N Fort Lauderdale Beach Blvd
1431 N Fort Lauderdale Beach Blvd
1427 N Fort Lauderdale Beach Blvd
1423 N Fort Lauderdale Beach Blvd
1419 N Fort Lauderdale Beach Blvd
1415 N Fort Lauderdale Beach Blvd
3350 NE 14th CT
1333 N Fort Lauderdale Beach Blvd
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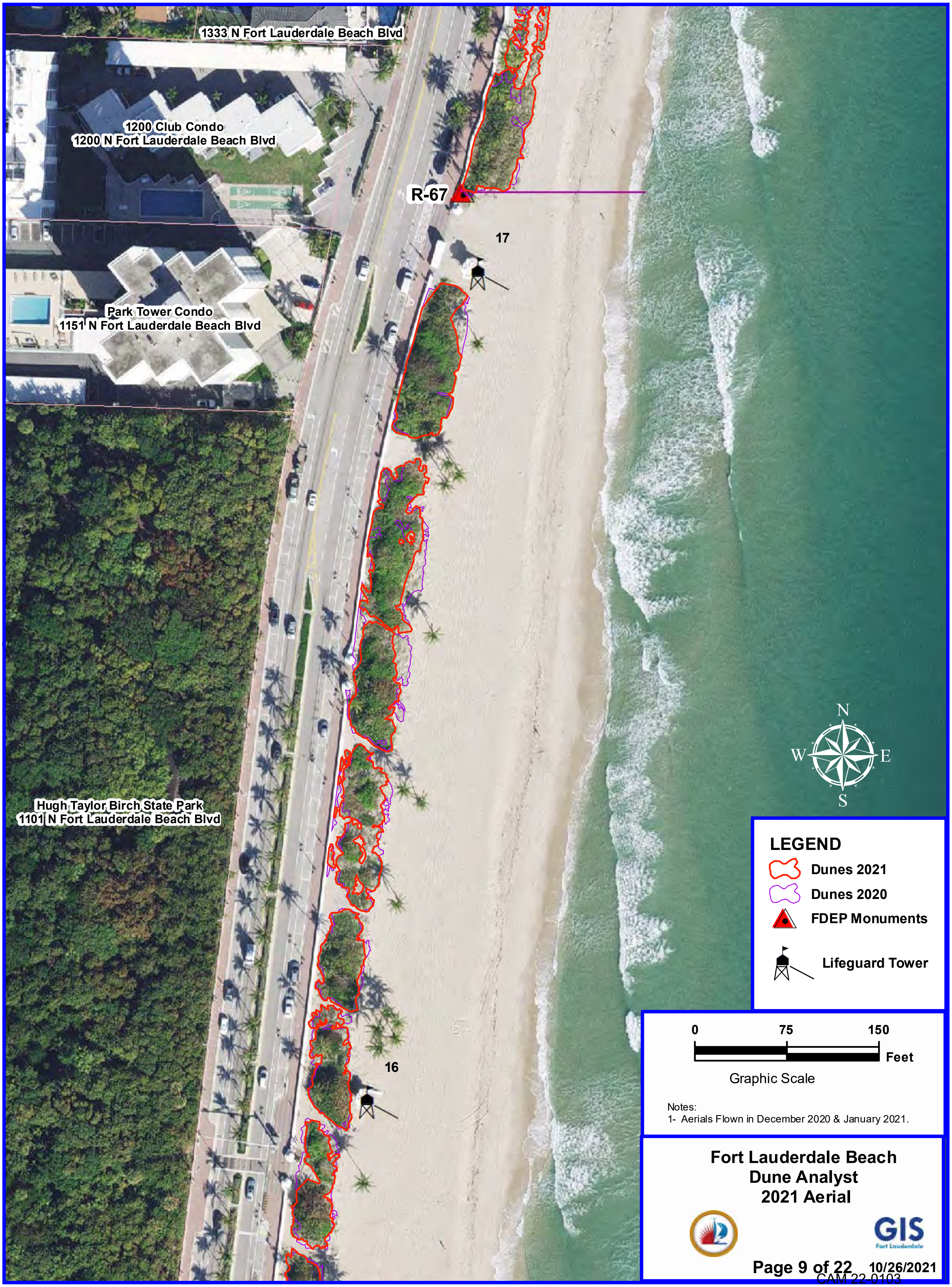

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GIS Fort Lauderdale

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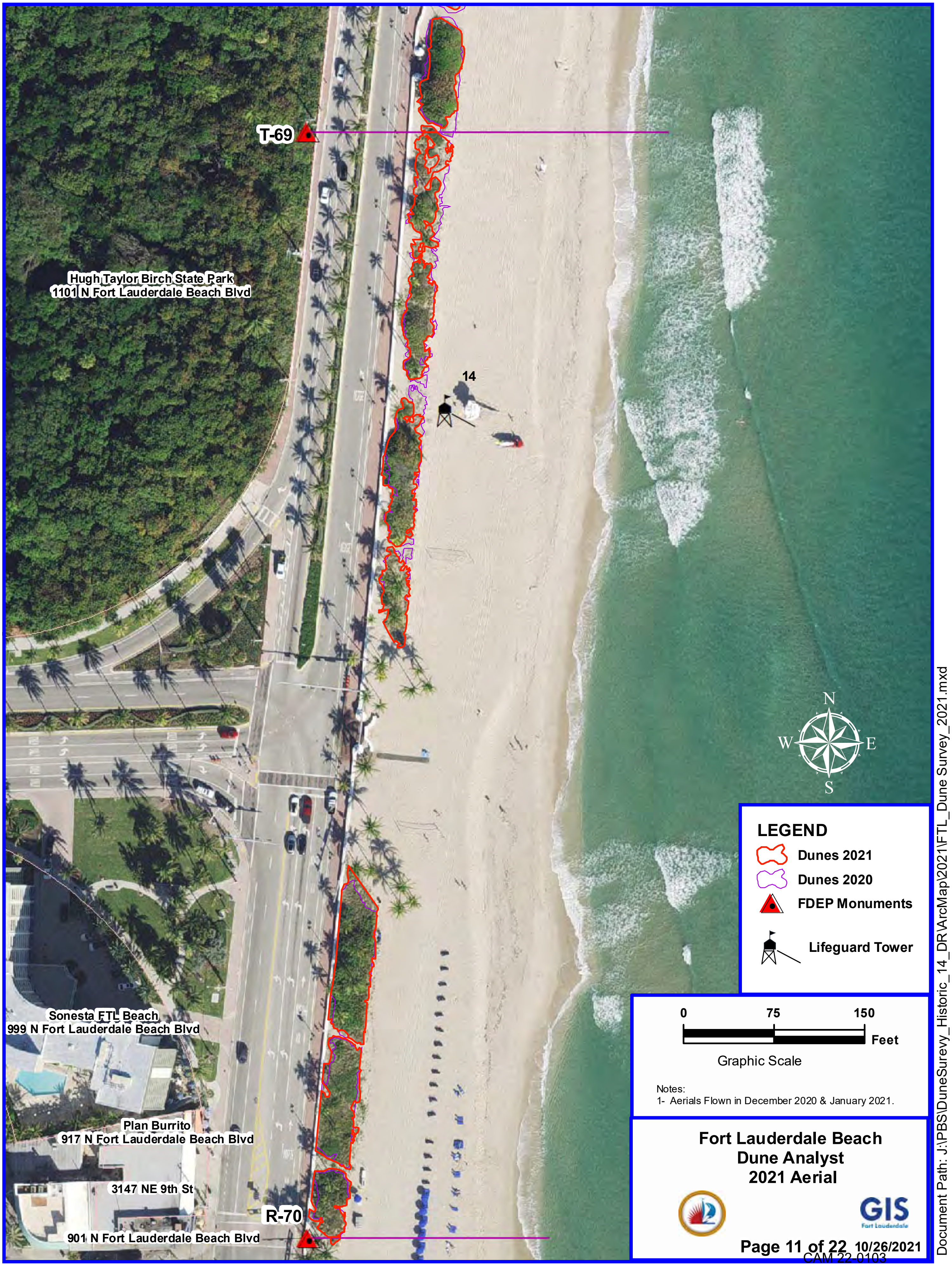

Fort Lauderdale Beach
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2021 Aerial

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LEGEND

- Dunes 2021
- Dunes 2020
- FDEP Monuments
- Lifeguard Tower

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Graphic Scale

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Fort Lauderdale Beach
Dune Analyst
2021 Aerial

GIS Fort Lauderdale

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Fort Lauderdale Beach
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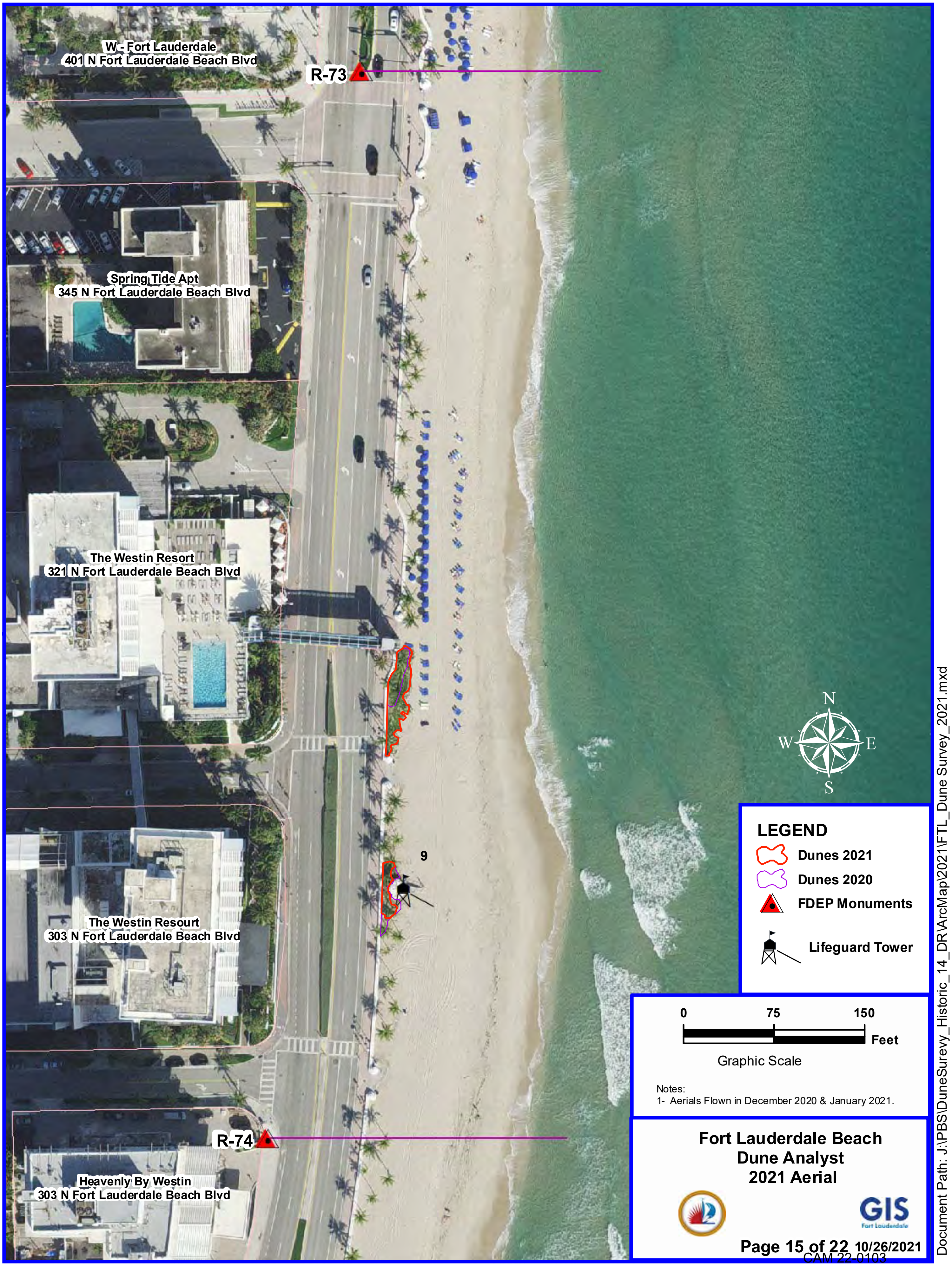
W - Fort Lauderdale
401 N Fort Lauderdale Beach Blvd
R-73
Spring Tide Apt
345 N Fort Lauderdale Beach Blvd
The Westin Resort
321 N Fort Lauderdale Beach Blvd
9
The Westin Resourt
303 N Fort Lauderdale Beach Blvd
R-74
Heavenly By Westin
303 N Fort Lauderdale Beach Blvd
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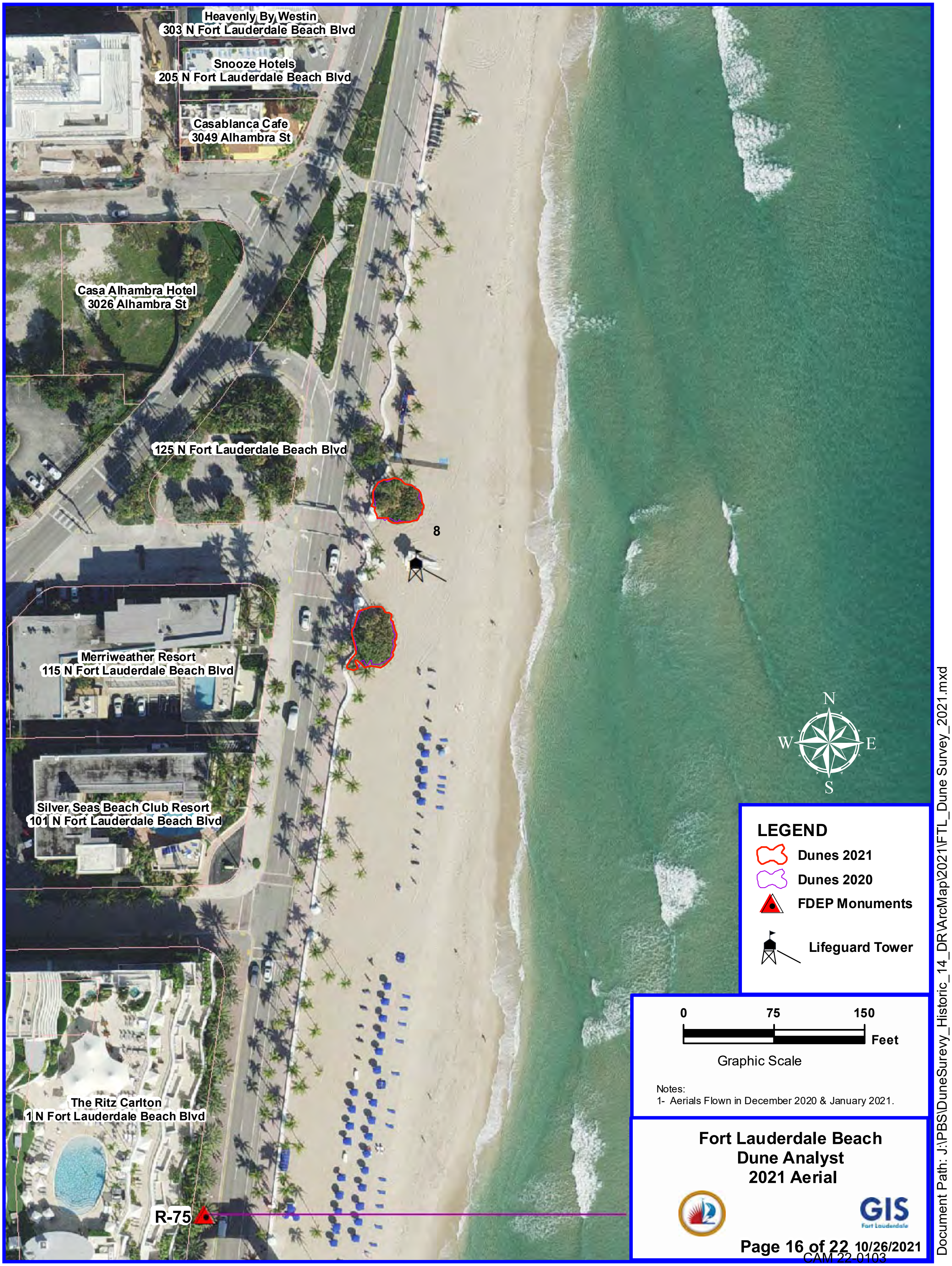

Heavenly By Westin
303 N Fort Lauderdale Beach Blvd
Snooze Hotels
205 N Fort Lauderdale Beach Blvd
Casablanca Cafe
3049 Alhambra St
Casa Alhambra Hotel
3026 Alhambra St
125 N Fort Lauderdale Beach Blvd
8
Merriweather Resort
115 N Fort Lauderdale Beach Blvd
Silver Seas Beach Club Resort
101 N Fort Lauderdale Beach Blvd
The Ritz Carlton
1 N Fort Lauderdale Beach Blvd
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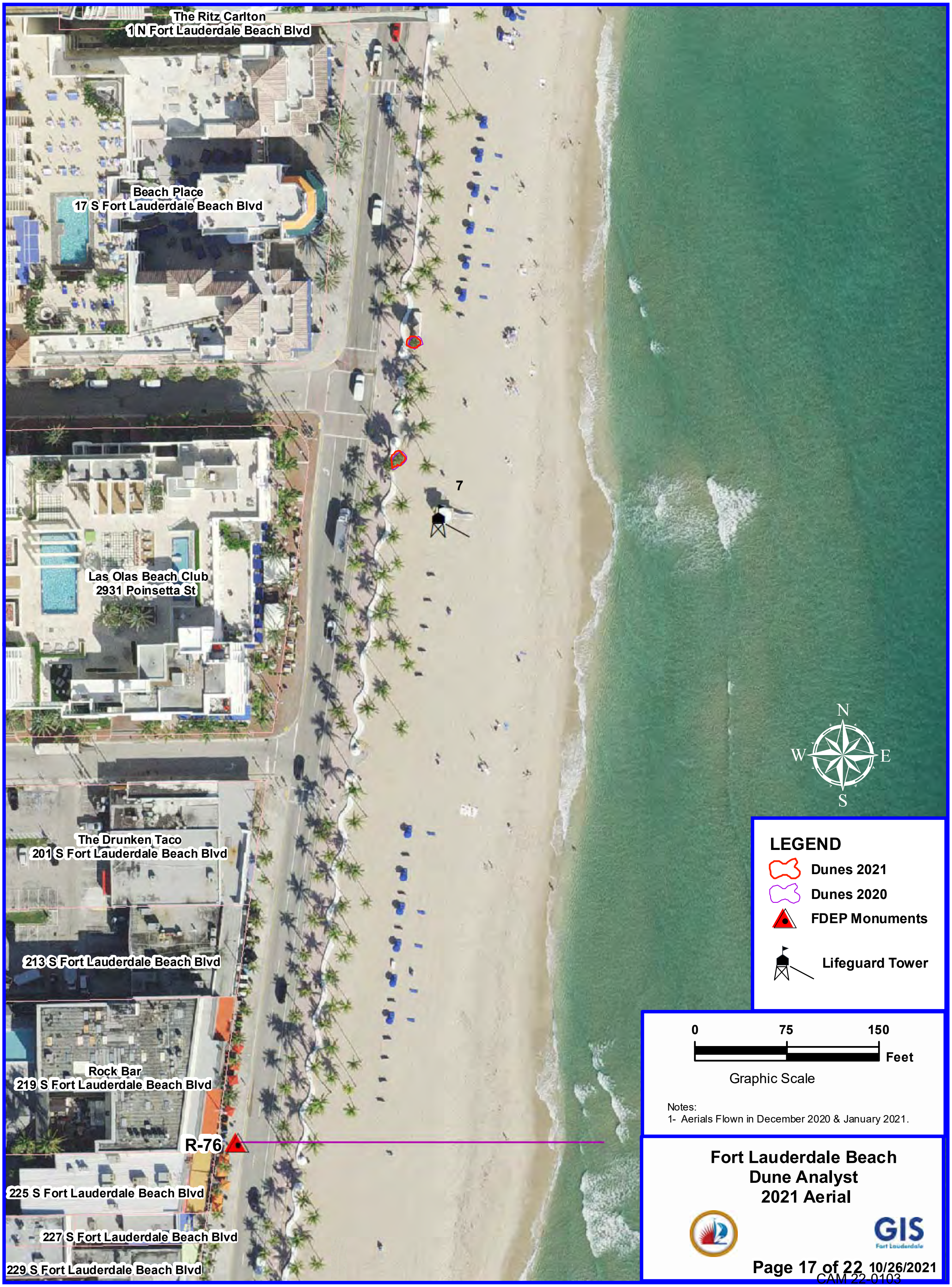

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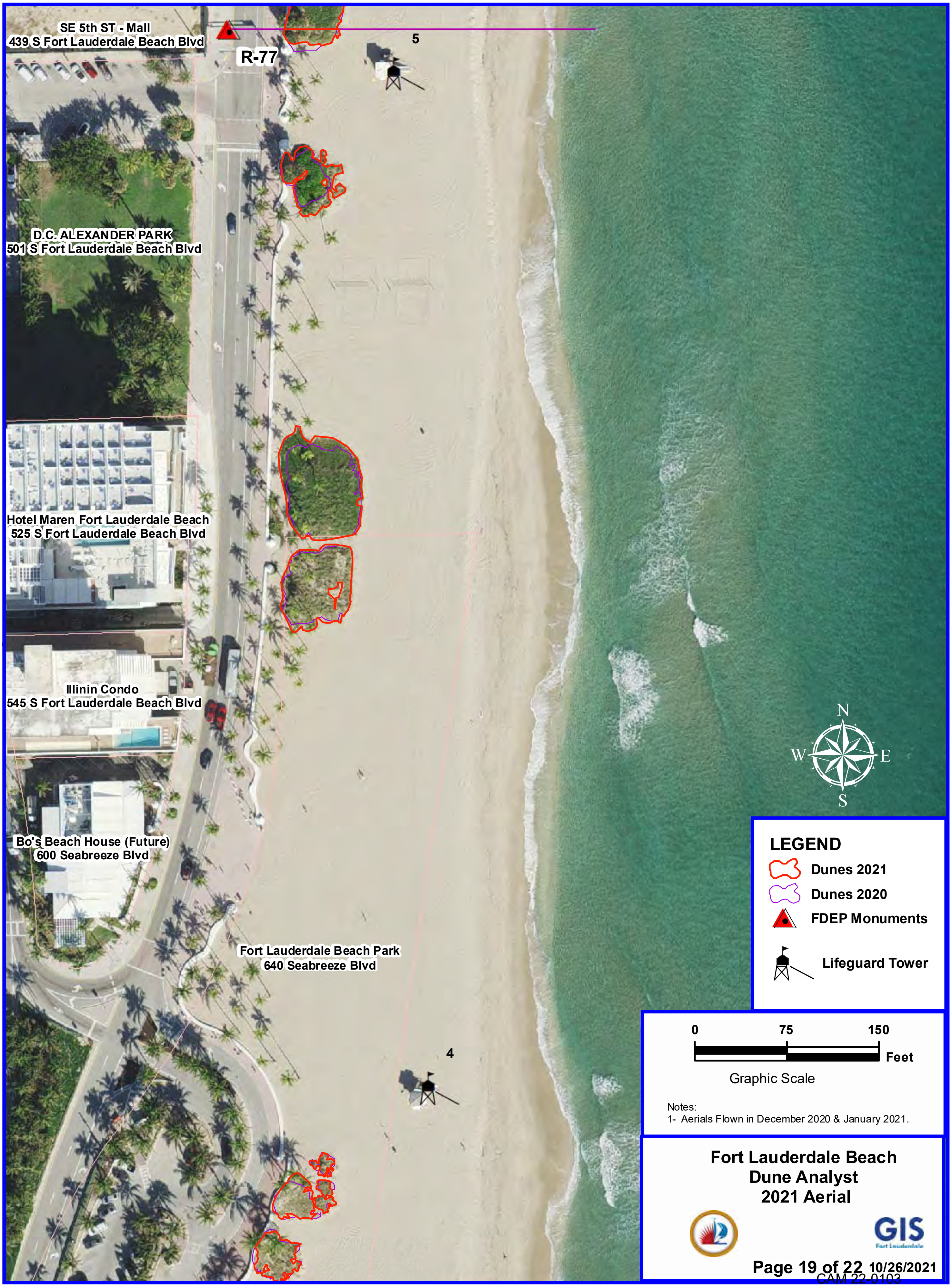

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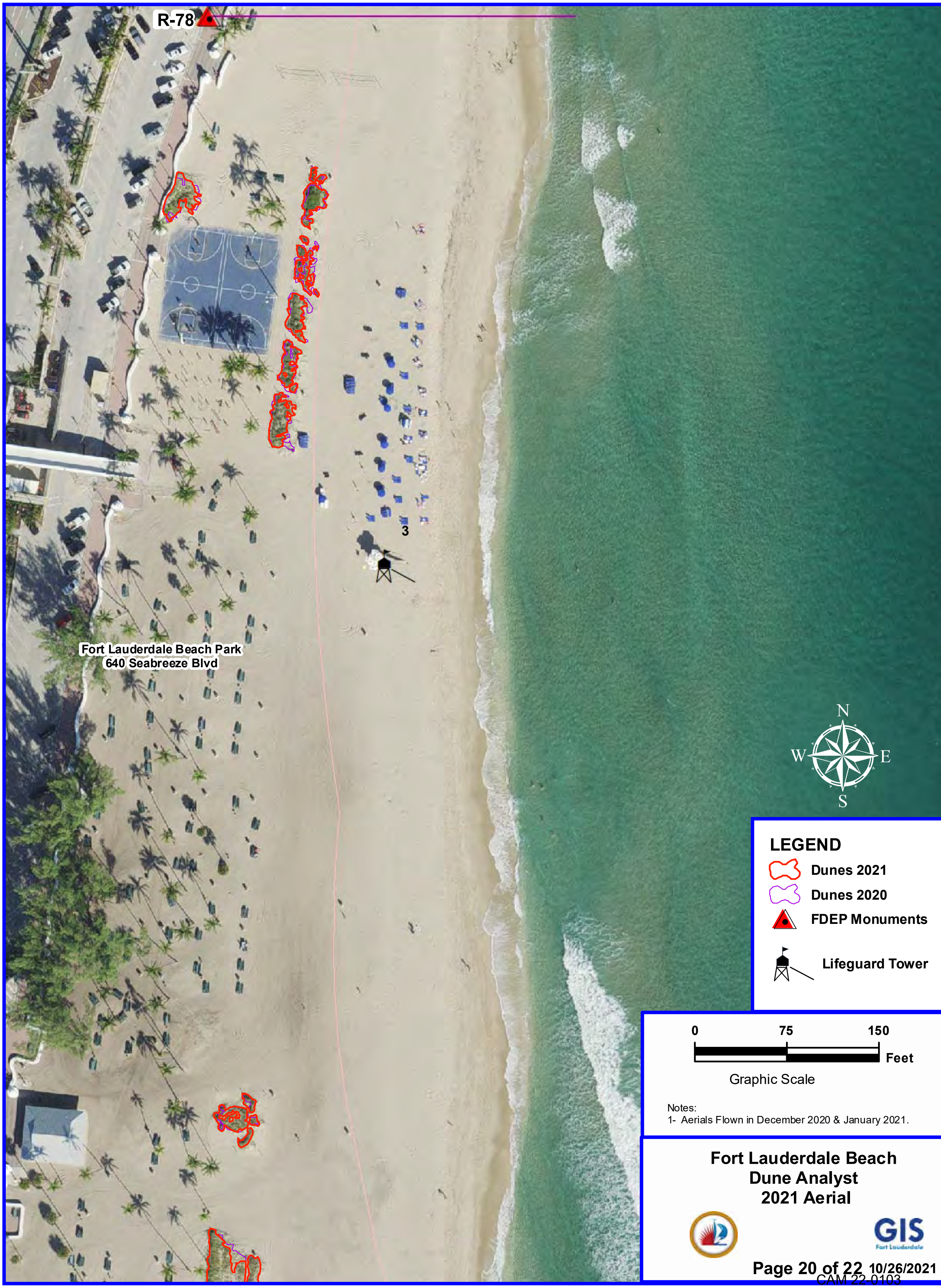

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Dune Analyst
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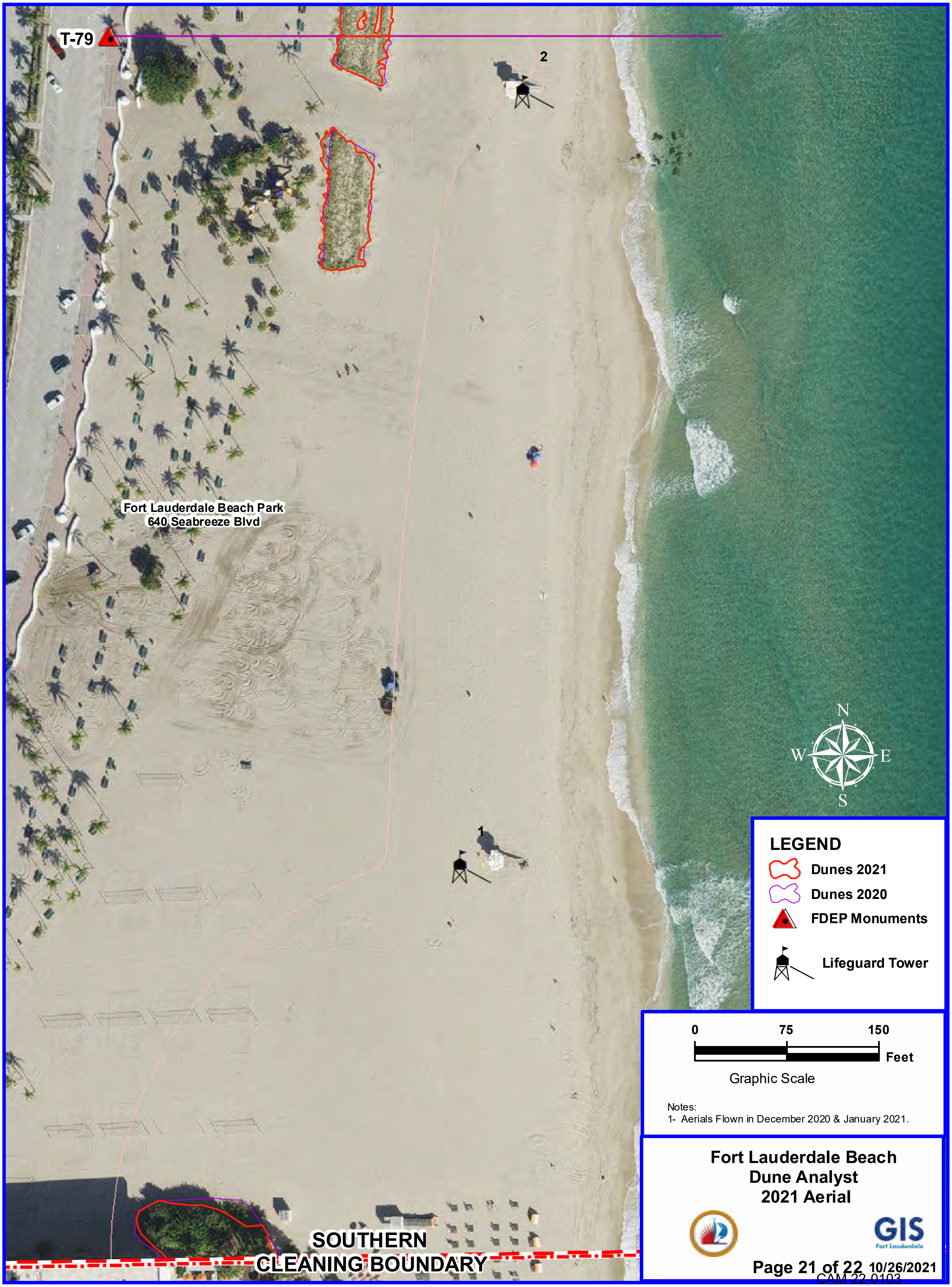

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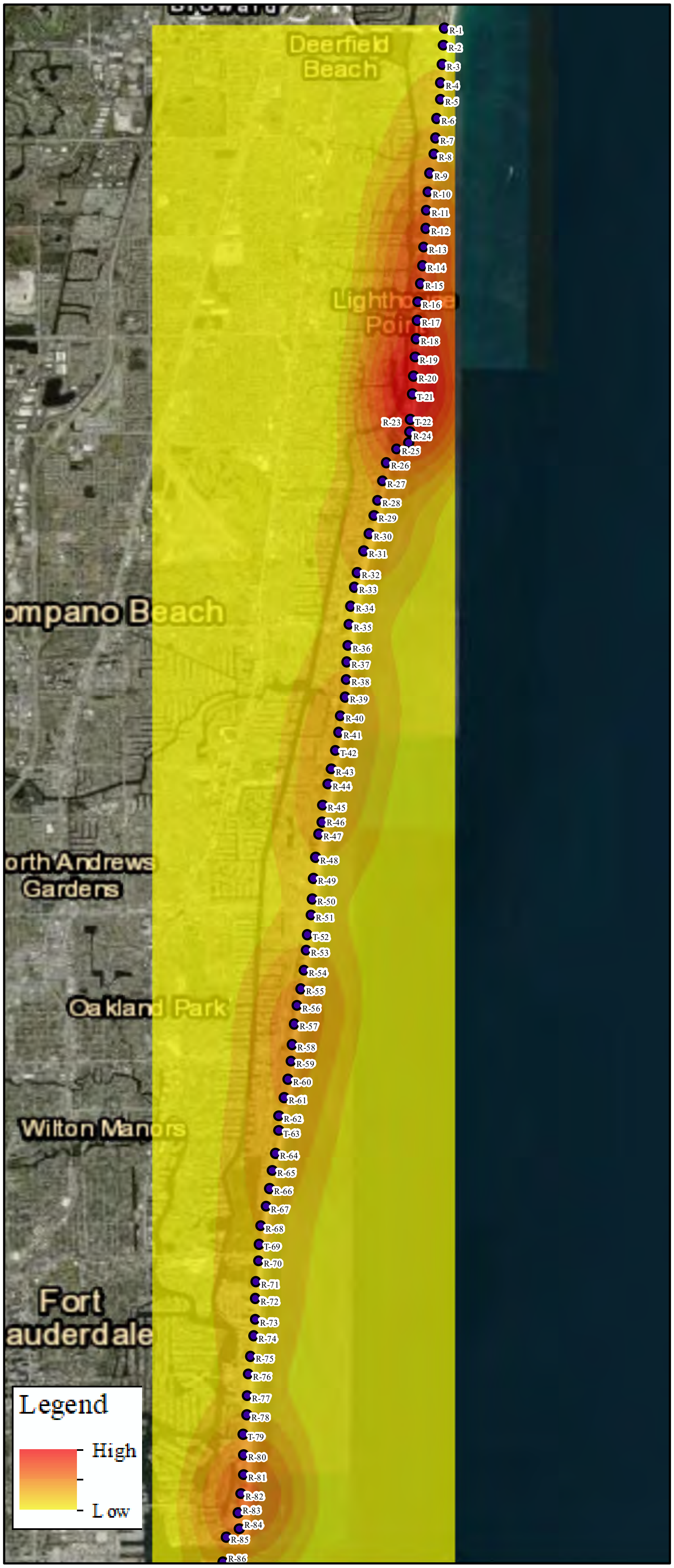
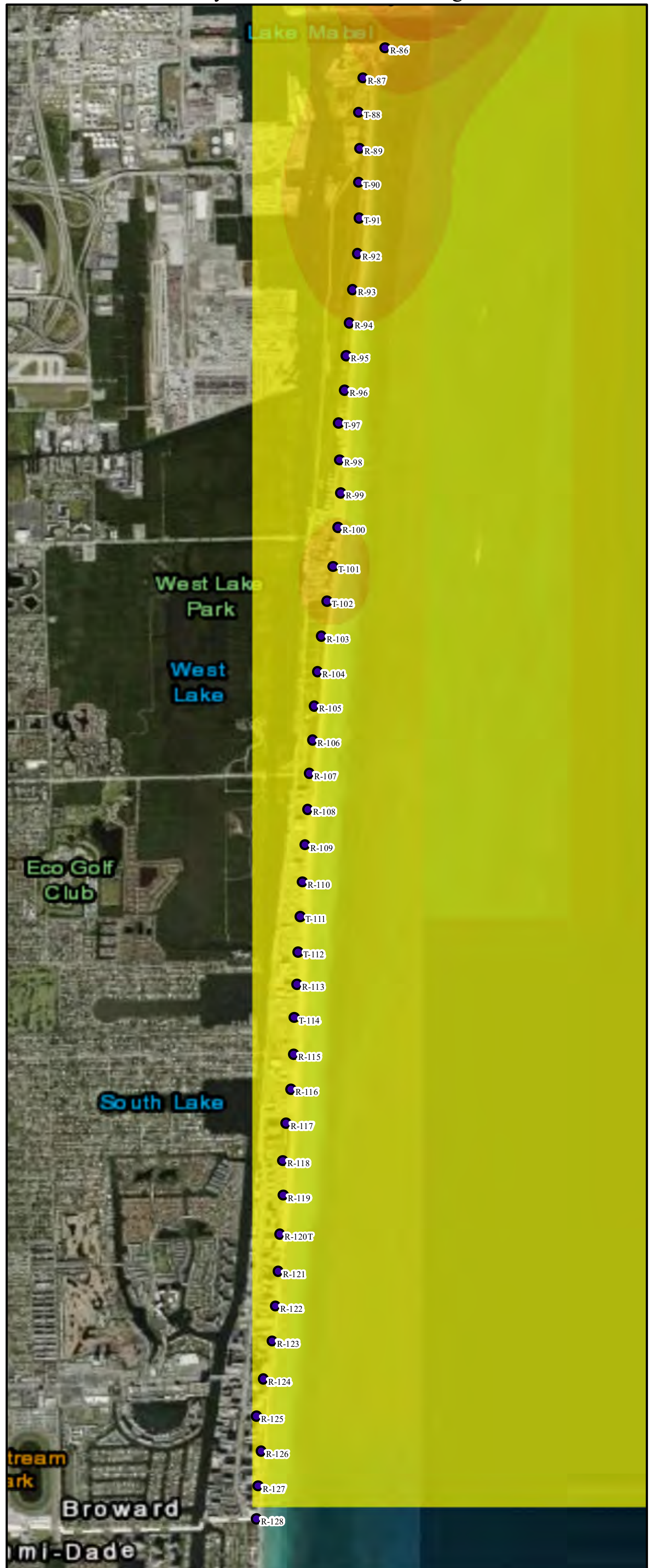
APPENDIX D: Nesting Heat Maps 2015-2020

2015 Sea Turtle Nest Density in Broward County

Survey Area North of Port Everglade



Survey Area South of Port Everglade



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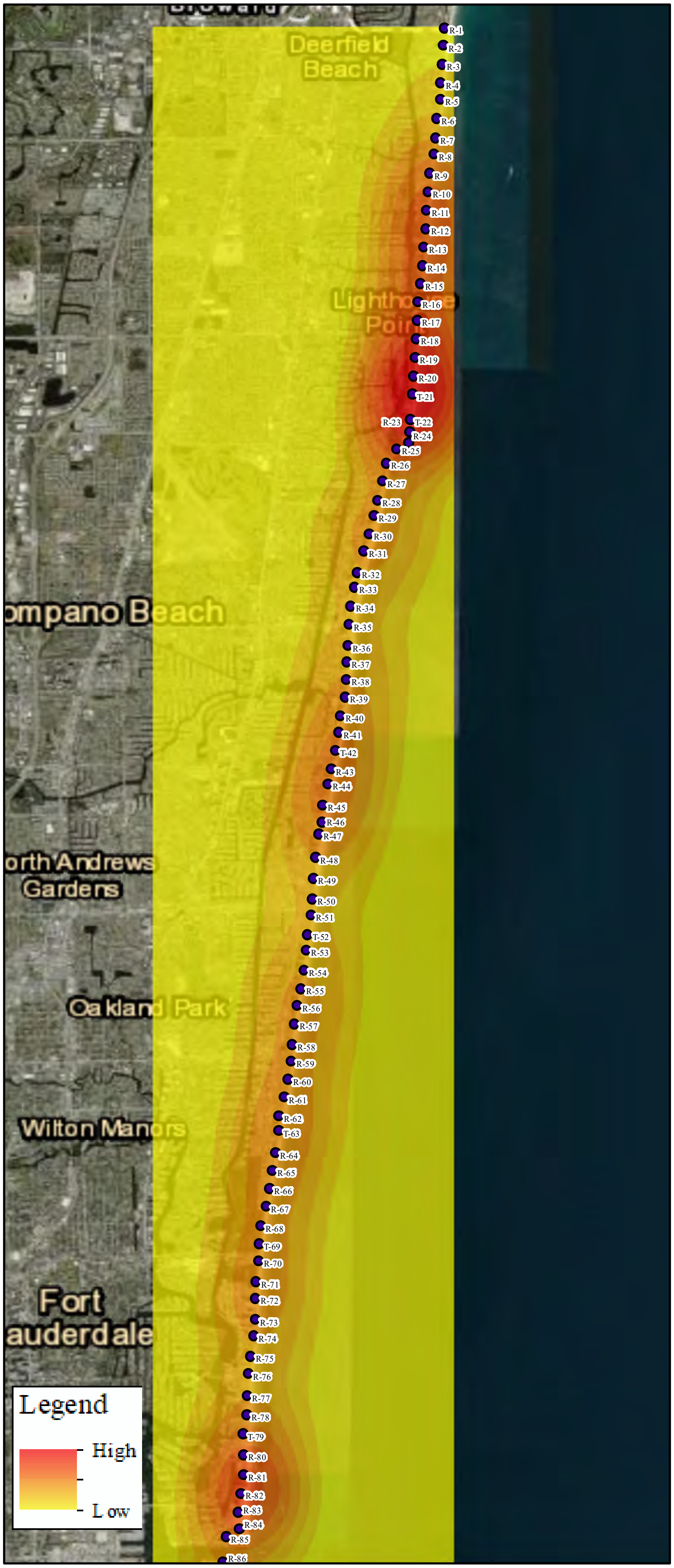
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.5 1 2 Miles

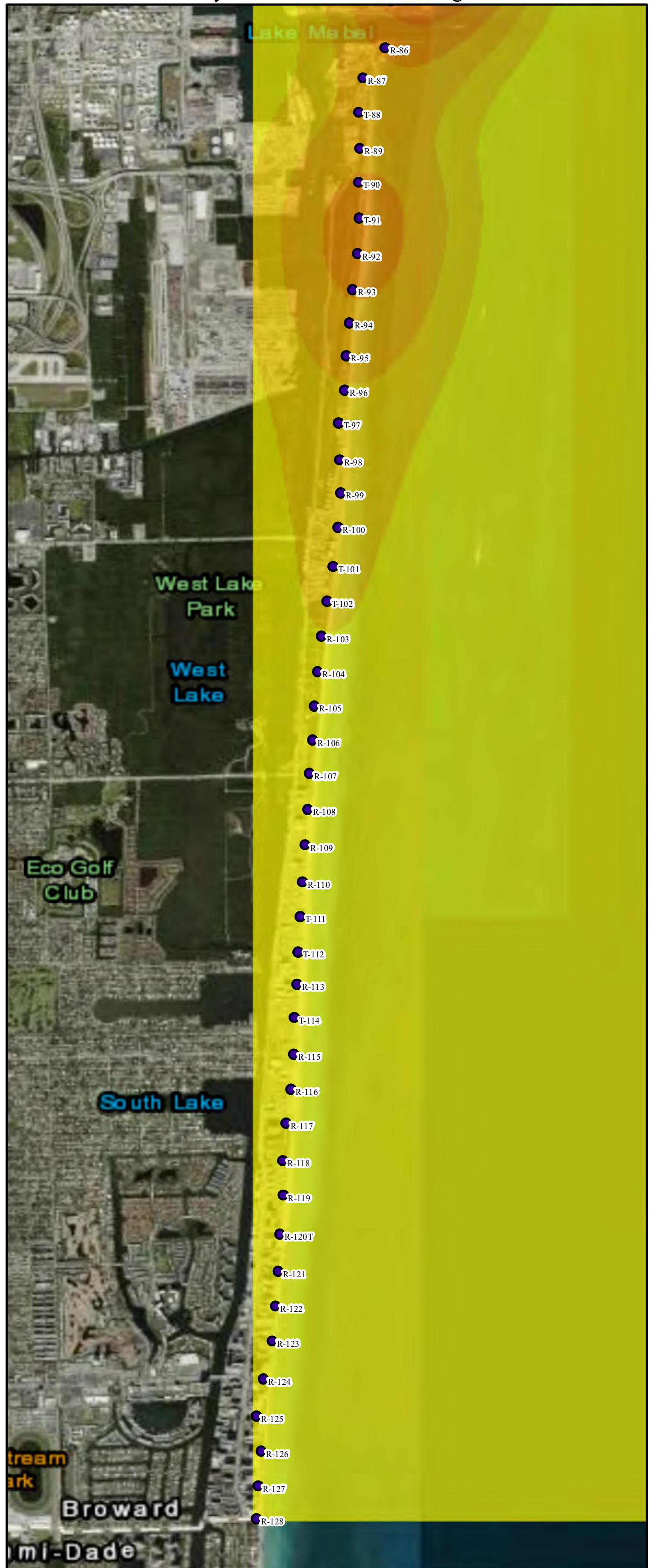
N

2016 Sea Turtle Nest Density in Broward County

Survey Area North of Port Everglade



Survey Area South of Port Everglade



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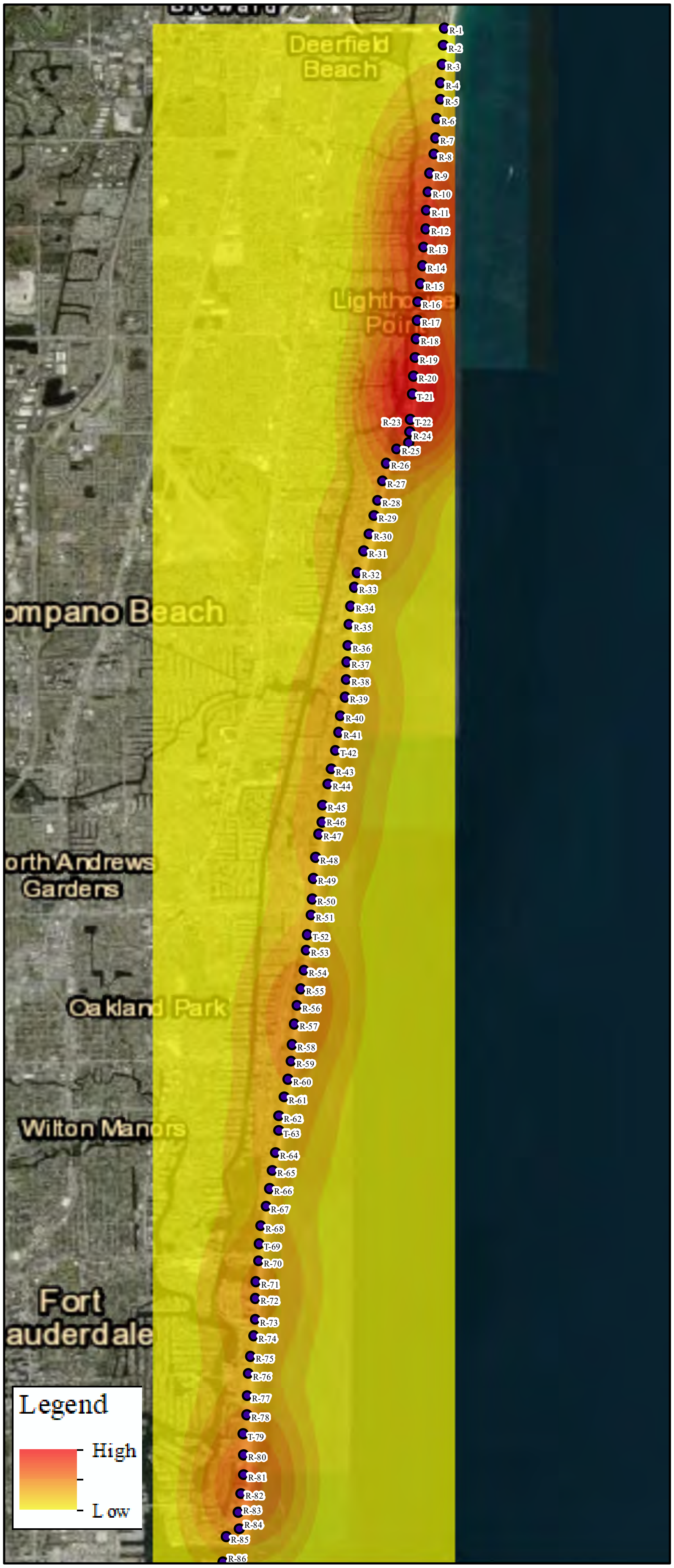
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.5 1 2 Miles

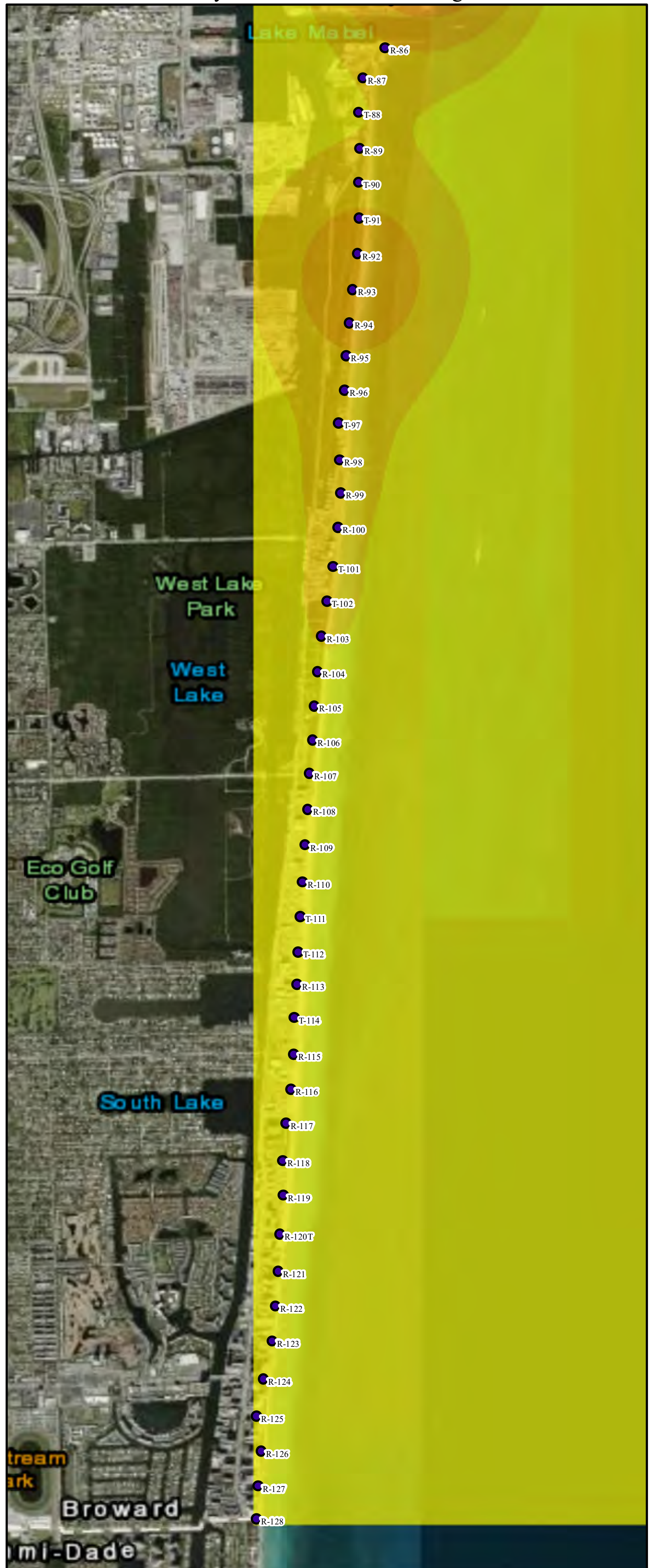
N

2017 Sea Turtle Nest Density in Broward County

Survey Area North of Port Everglade



Survey Area South of Port Everglade



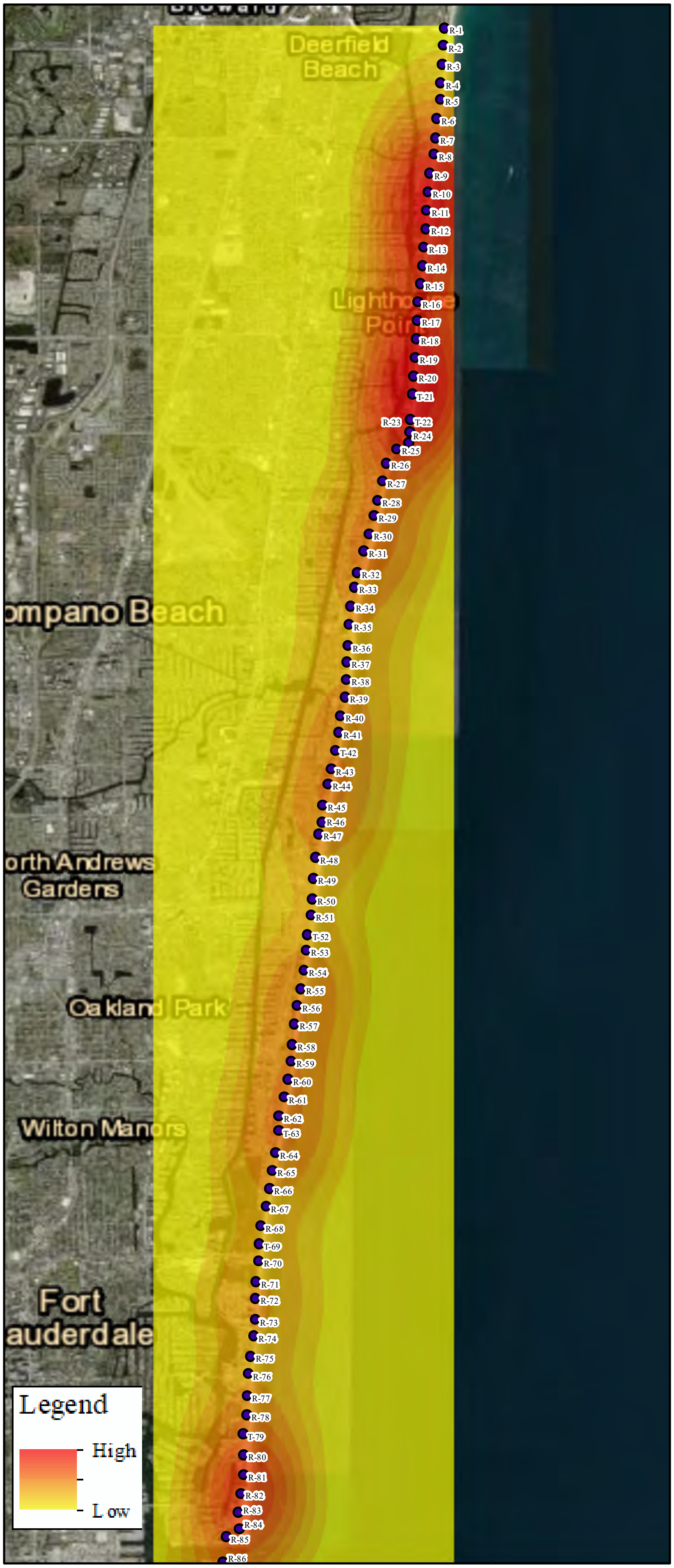
0 0.5 1 2 Miles

N

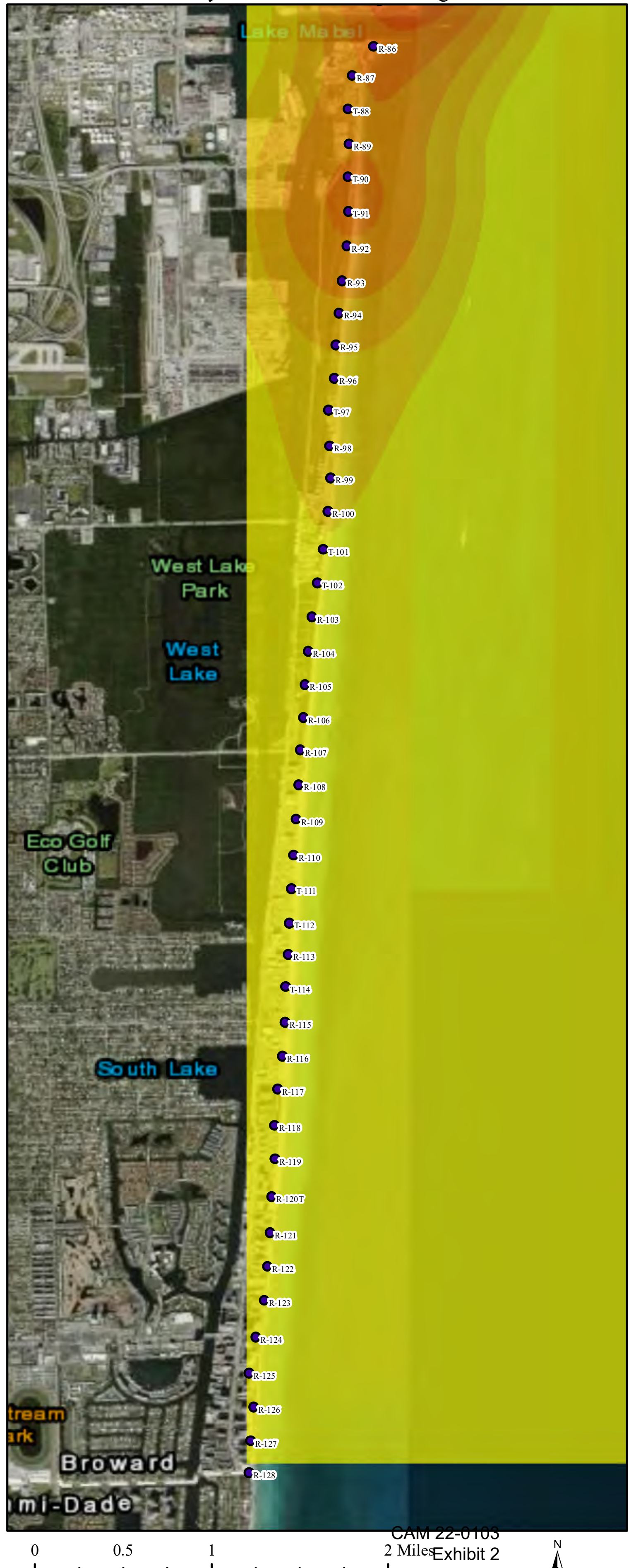
Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2018 Sea Turtle Nest Density in Broward County

Survey Area North of Port Everglade



Survey Area South of Port Everglade



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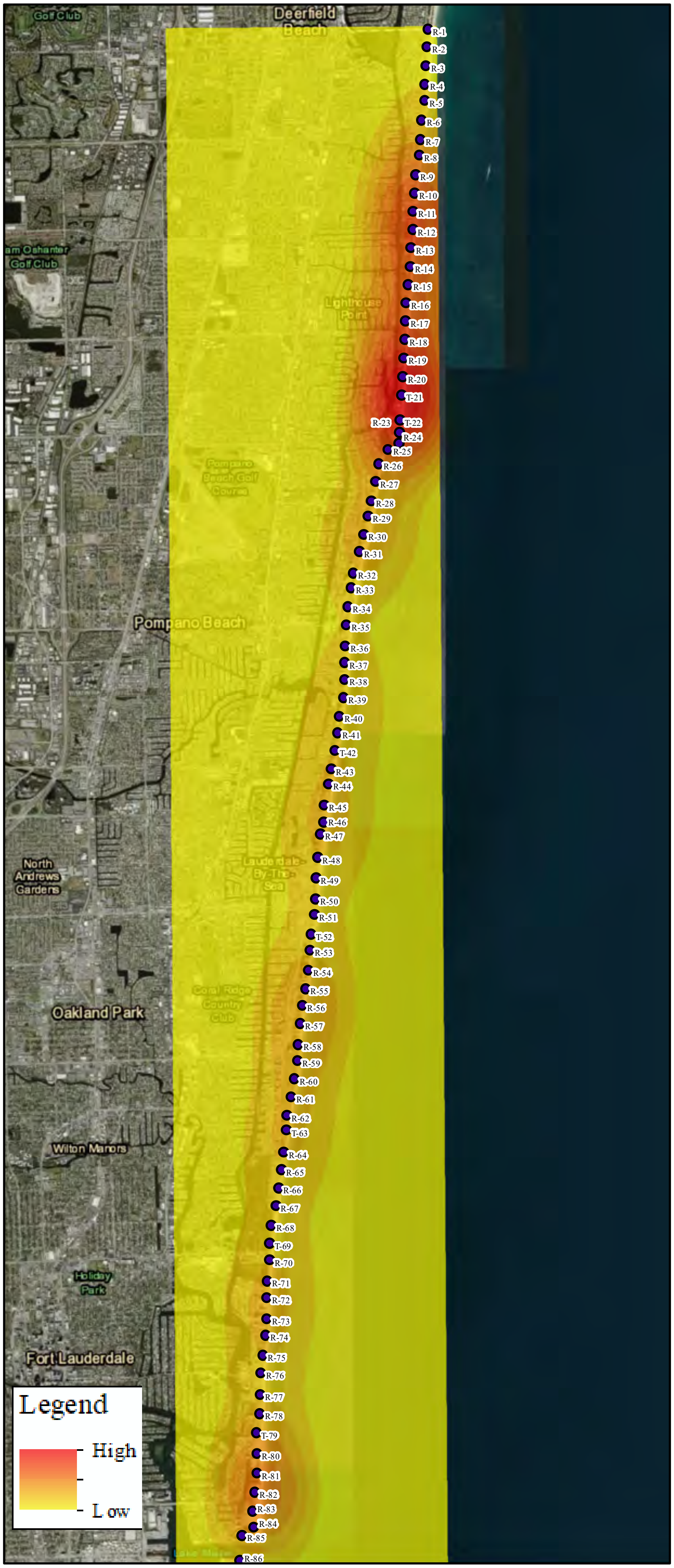
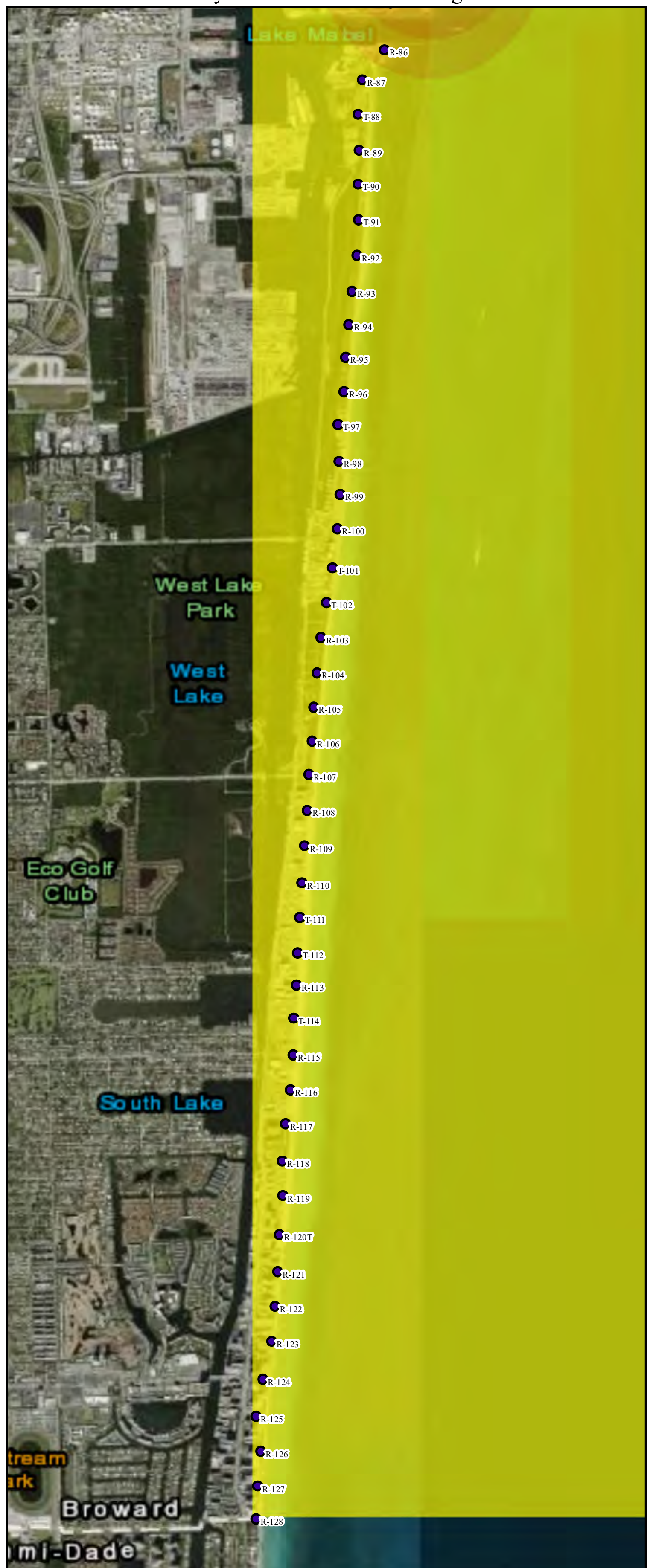
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2019 Sea Turtle Nest Density in Broward County

Survey Area North of Port Everglade



Survey Area South of Port Everglade



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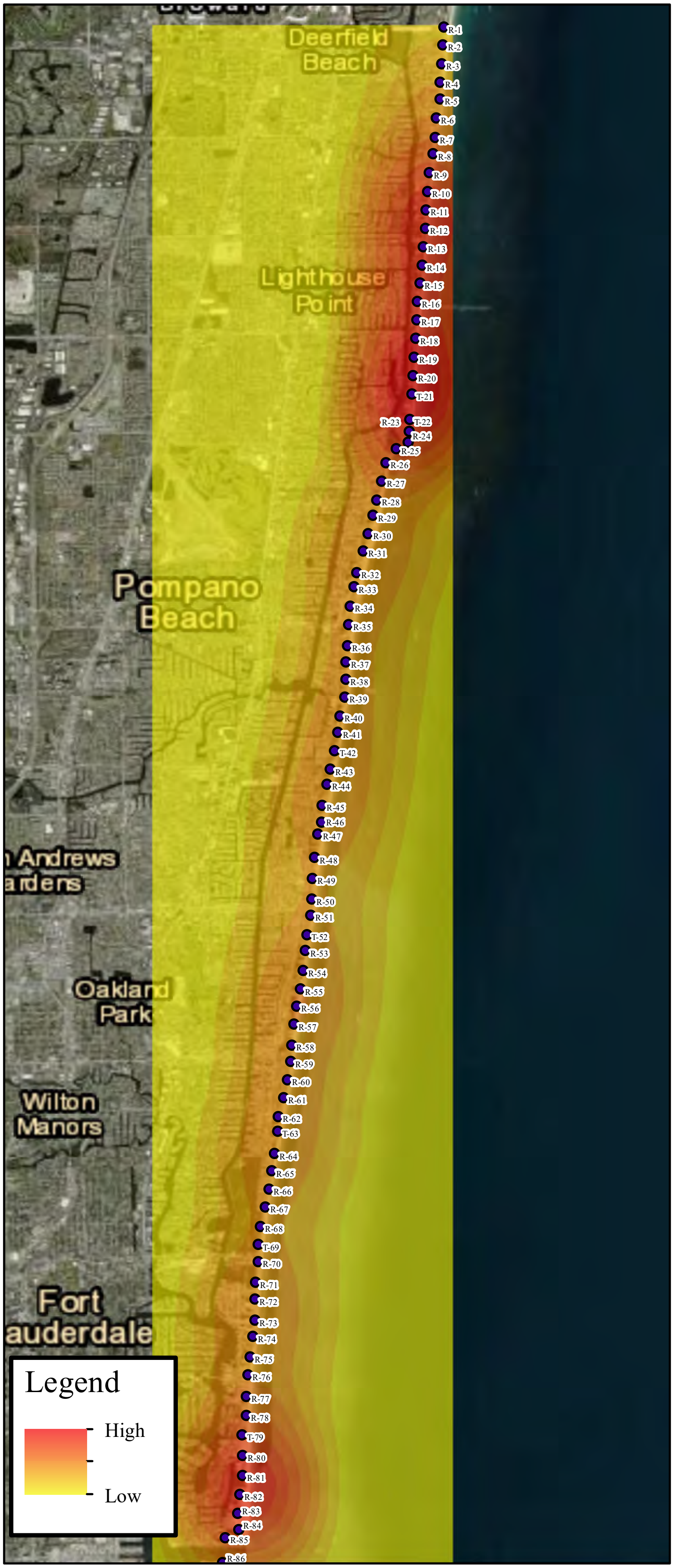
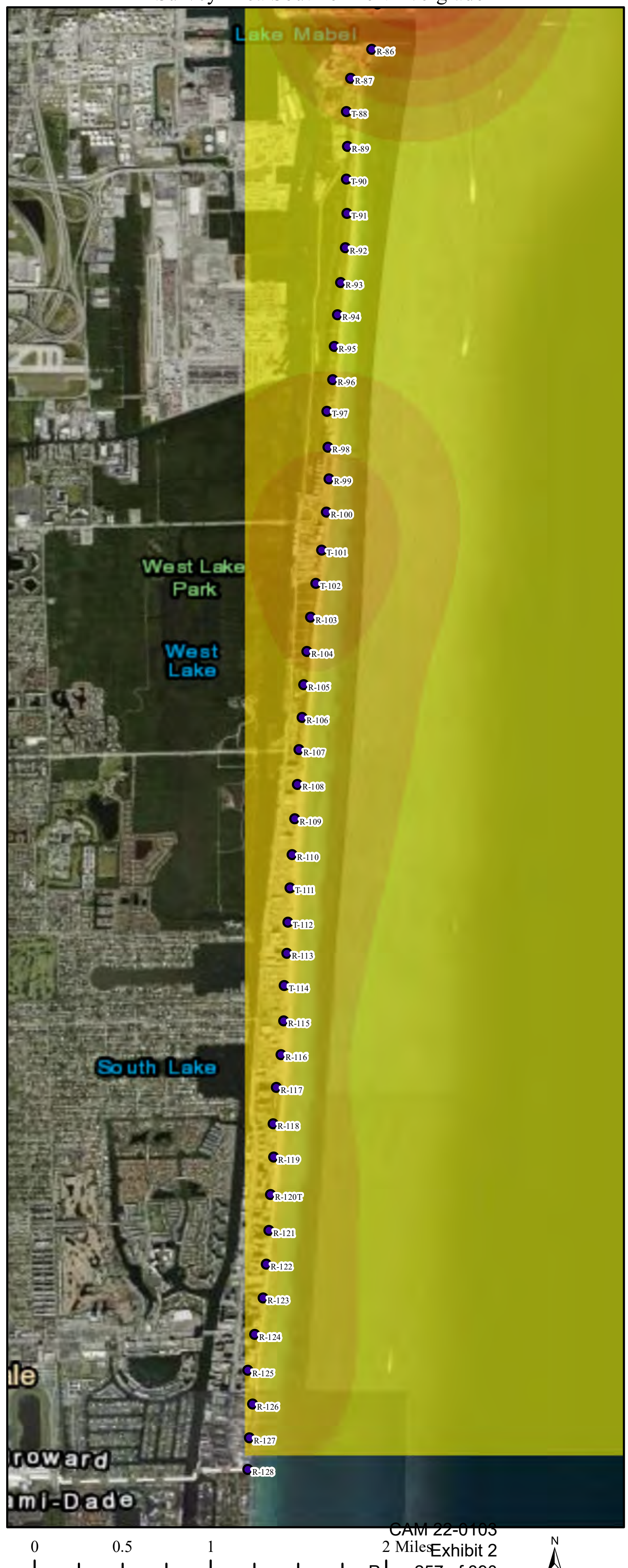
2020 Sea Turtle Nest Density in Broward County

Survey Area North of Port Everglade



Survey Area South of Port Everglade



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APPENDIX E: Special Event Minimization Measures

City of Fort Lauderdale

Habitat Conservation Plan (HCP) for Special Events

Minimization Measures

2022

Table of Contents

1.0 Introduction

The City of Fort Lauderdale (City) has developed a Habitat Conservation Plan (HCP) to avoid and reduce impacts to sea turtles from special events held on or adjacent to the beach. Special events must comply with the following minimization measures, as applicable, to be fully covered for take under the Endangered Species Act. There are different measures for each event depending on event size and date. See below for general event size definitions and event categories. Event categories are color-coded to help you easily identify the measures that apply to your event.

Event Sizes

As defined under the Fort Lauderdale Code of Ordinances C-91-89, Chapter 15, Article V, Section 15-181(b-d)

Minor events are those events with a sustained attendance level under 501 persons with no road closures, no alcohol, and no music exemptions. These events require administrative approval and do not require city commission approval.

Intermediate events are those events with a sustained attendance level under 501 persons with a road closure, and/or alcohol, and/or music exemption, ***or*** a sustained attendance level between 501 and 5,000 persons. These events require city commission approval.

Major events are those events with a sustained attendance level over 5,000. These events require city commission approval.

Event Categories

Single-day, daytime events (SDD)

Single-day, daytime events are those that last no more than one day, begin no earlier than sunrise, and conclude no later than sunset (including set-up and breakdown)

Single-day, lighting events (SDL)

Single-day, lighting events are those that last no more than one day, begin prior to sunrise or conclude after sunset, and require the use of artificial lighting (including set-up and breakdown)

Multi-day events (MD)

Multi-day events are those that extend beyond a single day. These events may include:

- The storage of equipment on the beach overnight
- Fencing left in place overnight
- Nighttime lighting

Sea Turtle Nesting Season: What to Expect

City beaches serve as valuable nesting habitat for three species of federally protected sea turtles: green, leatherback, and loggerhead turtles. Nesting season, as defined under the HCP, is February 15 to November 15, and events occurring during this time period will be required to pay a mitigation fee equal to the level of impacts expected from each event. The HCP nesting season encompasses a wider range of dates in comparison to the Broward County nesting season (March 1 to October 31). City nesting data has shown that earlier nesting and later hatchings are possible. The majority of nesting and hatching activity takes place at night.

Early	Early Shoulder	Peak	Late Shoulder	Late
Feb 15-Feb 29	Mar 1-Apr 30	May 1-Sep 15	Sep 16-Oct 31	Nov 1-Nov 15

- Early Season: Generally, very little nesting occurring; some early nest sites may be identified and there may be marked nests in the vicinity of your event.
- Early "Shoulder" Season: This part of the official nesting season has low to moderate nesting and little to no hatching. There may be marked nests in the vicinity of your event.
- Peak Season: The majority of nests are laid during this time period and many nests are hatching. There may be several marked nests in the vicinity of your event, and many of those may hatch during your event.
- Late "Shoulder" Season: Low levels of nesting occurring but some nests are still hatching. There may be marked nests in the vicinity of your event, and some may hatch during your event.
- Late Season: Very low chances of nesting occurring, but some hatching may still occur. There may be marked nests in the vicinity of your event that may hatch during your event.

How to Navigate This Document

The following elements will be required for all events taking place between February 15 and November 15:

Part A: Pre/Post Event Meeting	Pre-event meetings are required for all event applicants; on-site and post-event meetings are required for some events
Part B: Motor Vehicles	Required by all events that include the use of heavy equipment or light-weight vehicles (UTV, ATV, golf cart, or similar)
Part C: Beach/Dune Habitat	Required by all events to protect the beach and dune habitat
Part D: Removable Structures on the Beach	Required for all events that include the use of temporary structures (including tents, tables, chairs, stages, huts, bleachers, fencing, sandcastles, etc.)
Part E: Marine Turtle Protection	Required for all events taking place during the nesting season on City beaches
Part F: Lighting	Required for all events that have temporary lighting turned on before sunrise or after sunset
Part G: Debris and Litter	Required for all events

Permitting and Regulations

- The Special Event Permit Applicant (Applicant) shall ensure, either by contract or local agreement, that the event area is monitored for sea turtle nesting activity according to the conditions described in these Minimization Measures. Monitoring shall be conducted by a Nesting Beach Marine Turtle Permit Holder (NBMTPH), possessing a Nesting Beach Marine Turtle Permit issued by the Florida Fish and Wildlife Conservation Commission (FWC). If HCP monitoring requirements include activities outside the normal scope of work for the NBMTPH, their services may be charged at a fee to the Applicant. As used in this document, NBMTPH refers to the Principal Officer, Qualified Individual, or additional authorized personnel listed on the permit.

- All events requiring a Florida Department of Environmental Protection (FDEP) permit shall also be subject to standard conditions issued by the permitting authority.

- All events must comply with the City's Special Event Process. Please contact the City for the most recent version of the Special Events Manual.

2.0 Events Occurring March 1 – October 31 (Early Shoulder, Peak, and Late Shoulder Seasons)

A. Pre/Post-Event Meeting

1. SDD,SDL,MD Planning: Applicants must attend an initial meeting with City Parks and Recreation staff prior to permit approval to review the HCP and applicable minimization measures and mitigation fees. At the conclusion of this meeting, applicants must certify that they have received, fully understand and will comply with all applicable special event minimization measures, identified by the City and consistent with the HCP. The City shall be responsible for setting up this meeting.

2. SDD,SDL,MD Implementation: Prior to commencement of any Intermediate or Major event, a pre-event meeting shall be held at the event site and shall, at a minimum, include the Applicant, City staff, and the NBMTPH. Staff representatives from the FDEP, the FWC, and the U.S. Fish and Wildlife Service (USFWS) shall also be invited to attend. The purpose of the meeting is to establish an understanding among all parties as to who is responsible for the items specified in the general and specific conditions of the FDEP individual Coastal Construction Control Line (CCCL) permit and the HCP Minimization Measures, including lines of communication and authority. The permitted locations of structures, fencing, and vehicular/pedestrian access corridors shall be reviewed and confirmed during the meeting. The Applicant shall confirm understanding of sea turtle monitoring and nest protection requirements and demonstrate a plan for compliance. This meeting should take place no more than two weeks prior to the event. The City shall be responsible for setting up this meeting.

3. SDD,SDL,MD Post Event: Within 10 days of completion of activities for Intermediate or Major events, the Applicant and City staff shall meet to discuss compliance with HCP minimization measures. Sea turtle monitoring personnel as well as staff representatives from the FDEP, the FWC, and the USFWS shall be invited to attend. This meeting will be arranged by the City and may be held either in person at a location preferred by the City or be hosted virtually using a web-based meeting platform. Any non-compliance issues will be reviewed, and permit issuance for similar events in the future will be evaluated. A report documenting compliance for the event will be prepared by and kept on file with the City and submitted to the FDEP, the FWC, and the USFWS. If an event is fully compliant with all applicable minimization measures, the City may choose to waive the meeting requirement for that event but shall complete a compliance report providing details of the City's evaluation and the event's documented compliance.

B. Motor Vehicles

4. SDD,SDL,MD Any motor vehicle used in support of a special event, including the transportation of temporary structures, equipment, and/or supplies to and from the event site, shall access the beach only through designated construction access corridors as permitted and verified during the application process and pre-event meeting. Vehicles and equipment exceeding 4,536 kilograms (kg) (10,000 pounds [lb]) in maximum gross loaded weight are prohibited seaward of the line of permanent vegetation, or solid/armoring structure (Figure 1) during sea turtle nesting season, with the exception of set-up and breakdown equipment to be used on mats, per event-specific site plans and during daylight hours only.

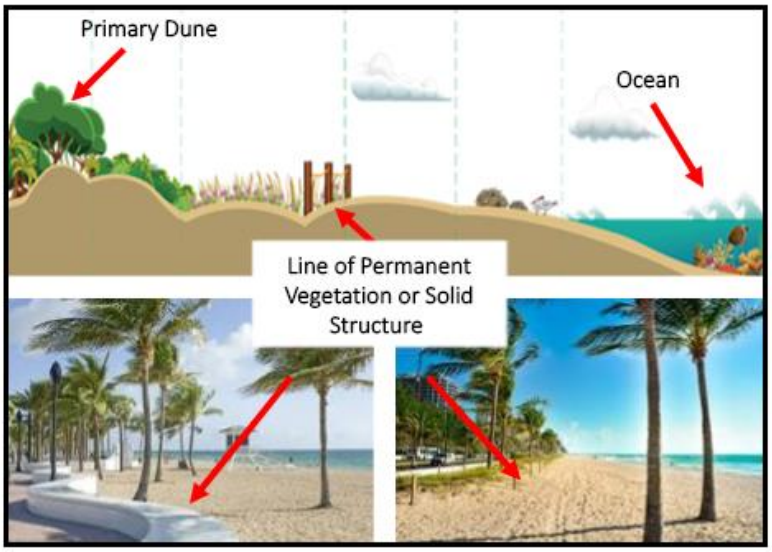

Figure 1: Location of notable features of beach and dune habitat including primary dune and line of permanent vegetation or solid structure. Image adapted from: http://www.mbrisingabove.com/climate-mitigation/natural-resources/dunes/

5. SDD,SDL,MD Light-weight vehicles with less than 10 pounds per square inch (psi) vehicle-to-ground pressure, such as all-terrain, utility task, side by side, multi-purpose utility, and recreational off highway vehicles, are permitted seaward of the line of permanent vegetation, or solid/armoring structure, during daylight hours only in support of special event activities. If event activities occur before sunrise or after sunset, light-weight vehicles are permitted only if a NBMTPH is present in the area where the vehicle is operating or if the event area is securely fenced at night so that sea turtles cannot enter the area where the light-weight vehicle is operating. All event personnel operating light-weight vehicles during events shall be required to abide by the FWC's Best Management Practices for Operating Vehicles on the Beach (Attachment A).

6. SDD,SDL,MD Any vehicle ruts leaving depressions greater than 20 centimeters (cm) (8 inches [in]) deep, seaward of the line of permanent vegetation or solid/armoring structure, shall be removed either by hand raking or by using a light-weight vehicle (to drag a sturdy pole, piece of chain link fence, etc.), and the sandy beach restored to natural beach grade by sunset each day the special event takes place or immediately

upon conclusion of daily event activities if the event occurs after sunset. A NBMTPH must be present if rut removal occurs after sunset. If the event area is securely fenced at night so that sea turtles cannot enter and there are no marked nests within the fenced area, a NBMTPH does not need to be present and rut removal is not required until secure fencing is no longer in place.

7. SDD,SDL,MD No fluids (e.g., grease, oils, gas, radiator coolant, etc.) shall be discharged onto the beach or dune and all vehicles shall be stored and fueled/maintained landward of the beach/dune system. A spill kit shall be required on site and stationed on the beach.

C. Beach/Dune Habitat

8. SDD,SDL,MD No alteration of existing dune topography or destruction of dune vegetation is authorized for special events.

9. SDD,SDL,MD No water shall be allowed to run or be discharged onto the beach.

10. SDD,SDL,MD No excavation of sand is permitted.

11. SDD,SDL,MD Any temporary, minor disturbances in the sand (including ruts, depressions holes, or mounds) shall be filled in and restored to natural beach grade, either by hand raking or using light-weight vehicles (see Condition #6), prior to sunset each day the event takes place. A NBMTPH must be present if grading occurs after sunset. If the event area is securely fenced at night so that sea turtles cannot enter, and there are no marked nests inside the fenced area, a NBMTPH does not need to be present, and grading is not required until secure fencing is no longer in place.

12. SDD,SDL,MD The seaward edge of dune vegetation, if present and not already marked by the City, shall be conspicuously posted using post, rope, and signage to keep event participants and spectators off the dunes and dune vegetation. If necessary, the Applicant shall install postings 24 hours prior to the event during daylight hours only and following completion of the morning sea turtle nesting survey. The Applicant will inspect the postings at a frequency necessary to ensure they remain continuously intact for the duration of the event and are effectively keeping spectators and event participants off the dune and dune vegetation. Dune postings shall consist of a series of posts no greater than 10 cm (4.0 in) in diameter and at least 2.1 meters (m) (7.0 feet [ft]) apart connected with rope or flagging tape elevated at least 0.9 m (3.0 ft) above the sand surface. Posts may not be set in concrete or other base material. Temporary dune postings for an event shall be approved by City staff at least 24 hours prior to initiation of any event activities and shall be removed by sunset on the final day of the special event or event breakdown.

13. SDD,SDL,MD Pedestrian traffic corridors to and from special events seaward of the line of permanent vegetation, or armoring structure, shall be conspicuously marked with rope/post and signage and restricted to dune crossovers or other established access points. Pedestrian corridors shall be installed by the Applicant following completion of the morning sea turtle nesting survey. Temporary postings shall be approved by City staff at least 24 hours prior to event participants arriving on site and shall be removed by sunset on the final day of the special event or event breakdown.

14. SDD,SDL,MD For sandcastle events, no excavation of sand on the dry beach is allowed. All sand brought on site must be beach-compatible and may not contain fillers or glues. Sand must be spread evenly in place at the conclusion of the event.

D. Removable Structures on the Beach

Examples include tents, tables, chairs, stages, huts, bleachers, and fencing associated with the event.

15. SDD,SDL,MD The Applicant shall ensure that all setup and event equipment/materials not in use shall be stored off the beach and away from the dunes and dune vegetation.

16. SDD The Applicant shall only set up structures and/or materials on the beach after the sea turtle nesting survey in the morning has been conducted and all nests have been marked. Structures/materials must be removed by sunset.

17. SDL The Applicant shall only set up structures and/or materials on the beach after the sea turtle nesting survey in the morning has been conducted and all nests have been marked. Structures/materials must be removed by midnight.

18. MD If structures are proposed to be left out overnight, the Applicant shall ensure that they minimize interference with sea turtle nesting or hatching by implementing the measures described in (a)-(b) below. Events that wish to leave fencing in place overnight and comply with condition (c) below are not required to comply with conditions (a)-(b). If fencing is lifted but left in place, conditions (a)-(b) apply.

    a) MD Temporary structures authorized by FDEP to remain on the beach overnight shall be located as far landward as practicable and positioned so that they are shore-perpendicular to minimize the potential for limiting sea turtle access to the nesting beach. All elevated structures on the beach shall have at least 0.9 m (3.0 ft) of clearance between the ground and bottom of the structure and at least 2.1 m (7.0 ft) of horizontal clearance between the supports. Any structures or materials not meeting these criteria must be removed from the beach by sunset each day or a solid material, such as plywood, shall be placed securely around the base of the structure to prevent any nesting turtles or hatchlings from becoming trapped underneath. If event materials must be stored on the beach, they shall be consolidated and stored at the landward edge of the sandy beach in such a manner as to minimize their footprint on the beach and minimize risk of sea turtle entrapment/entanglement. No storage of materials or supplies is permitted in the dunes or dune vegetation.

b) MD The sides of all tents will be rolled down to the sand's surface and secured at night to prevent nesting turtles and/or hatchlings from becoming entrapped inside the tent. Boards of other sturdy materials may be needed to secure the sides of the tent at the beach surface.

c) MD For multi-day events that wish to enclose the event space with fencing that will remain in place overnight, the following area and time restrictions apply:
   i. Fencing must be composed of a rigid material and must be secured at the beach surface to prevent turtles from entering the event area and so as not to entrap a nesting sea turtle. At no time shall fencing be laid down flush with the beach surface at night.
   ii. Early Shoulder Marine Turtle Nesting Season (Mar 1 – Apr 30): Up to 83,613 square meters (m^2) (900,000 square feet [ft^2]), not extending more than 914 m (3,000 linear feet) for more than 5 nights. If day-time fencing extends beyond 5 nights, it must be elevated 0.9 m (3.0 ft) along the shoreline to allow sea turtles to enter or exit the area or rolled out of the way over-night.
   iii. Peak and Late Shoulder Marine Turtle Nesting Season (May 1 – Oct 31): No overnight fencing is allowed.

E. Marine Turtle Protection

19. SDD,SDL,MD If special events (including placement of temporary structures) are conducted seaward of the line of permanent vegetation, or solid/armoring structure, in sea turtle habitat and occur during the sea turtle nesting season (March 1 – October 31), it is the responsibility of the Applicant to ensure that the designated event area, including access areas, are surveyed daily for sea turtle nesting activity by a NBMTPH authorized to conduct surveys in Broward County. Currently, all daily nesting surveys and nest marking are coordinated by the Broward County Sea Turtle Conservation Program. Applicants may contact the Broward County Sea Turtle Program at (954) 519-1255.
   a) All nesting surveys and nest protection measures shall be conducted only by persons who hold a valid Marine Turtle Permit for nesting beach survey work in Broward County issued by the FWC pursuant to Florida Administrative Code 68E-1.

   b) If daily nesting surveys are not coordinated by the County, the Applicant must arrange for a NBMTPH to conduct all sea turtle nesting surveys and nest protection work and shall have in place a current written agreement with the NBMTPH detailing this arrangement and demonstrating the NBMTPH is sufficiently resourced to meet all permit conditions. FWC must approve the

NBMTPH prior to entering into an agreement with the Applicant. Evidence of the written agreement and name of the NBMTPH shall be provided to City staff prior to initiation of any authorized work. A sample agreement can be found in Appendix F of the HCP or by emailing BHenry@fortlauderdale.gov and CBean@fortlauderdale.gov. A list of NBMTPHs authorized to conduct nesting beach survey work may be obtained by contacting the FWC at MTP@MyFWC.com.

c) The Applicant shall provide the NBMTPH who has been authorized by FWC and agreed to conduct nest marking for the permitted event a copy of the FDEP CCCL permit and HCP Minimization Measures detailing authorized activities, permit conditions, and nesting survey and nest marking requirements.

d) For any special events occurring during the nesting season, daily sea turtle nesting surveys and marking of all nests in the event and access areas shall begin either following the first nest documented in Broward County, on the first day of the sea turtle nesting season (March 1), or 65 days prior to the event, whichever is later, and shall continue uninterrupted throughout the duration of the event, including breakdown.

e) In the absence of a daily nesting survey, nest protection, and monitoring program, special events can only occur outside the sea turtle nesting season.

f) Sea turtle nesting surveys and nest marking may be initiated completed by the NBMTPH no sooner than 30 minutes before sunrise as required by the FWC and must be completed prior to the commencement of any special event activities, including the movement and placement of equipment and materials.

g) All nests deposited within the event area shall be conspicuously marked by the NBMTPH and left in place; nests shall not be relocated for special events. Nest markers shall include a series of stakes connected by brightly colored surveyor's tape or similar conspicuous material shall be placed around the nest. Stakes shall be centered at least 0.9 m (3.0 ft) from the approximate clutch location. No activities, work, movement, or storage of equipment and materials shall occur within the markers surrounding a marked sea turtle nest. For Intermediate and Major events, an additional hard barrier (e.g., steel crowd control fencing or similar, that would not shade the nest or prevent hatchlings from escaping the nest), centered at least 4.6 m (15.0 ft) from the nest shall be installed by the Applicant under the supervision of the NBMTPH. This hard barrier should remain in place for the duration of the event, including set-up and breakdown. Such barriers should be included in the site plan submitted to FDEP.

h) For all events, if heavy equipment is used in an area with marked nests at any time, the NBMTPH must be present to ensure there is no damage to a marked sea turtle nest.

i) For Intermediate and Major events, if a sea turtle nest is marked within the designated event area, both Event Security and the NBMTPH must be present during event activities. Event Security must have the authority to control event activities, including crowds, and shall ensure that there is no interference (e.g., vandalism) with the nest. The NBMTPH will ensure that the integrity of the nest markers is maintained. Large event areas with multiple marked nests may require more than one person to perform event security duties.

j) Inspections of all marked nests shall be conducted by the NBMTPH and shall occur concurrent with the morning nesting survey and must be completed prior to commencement of any permitted special event activities. Nest markers shall be examined and repaired by the NBMTPH at a frequency necessary to ensure they remain continuously intact and visible for the duration of the event.

k) No temporary structures shall be placed within 7.6 m (25.0 ft) of an existing marked sea turtle nest. If a new nest occurs within 7.6 m (25.0 ft) of an existing temporary structure or within the event area, the nest shall be cordoned off as described in section (g) above.

l) No event materials or temporary structures that could impede the progress of sea turtle hatchlings toward the ocean may remain on the beach overnight seaward of a marked nest.

m) In the event a sea turtle lays a nest in the event area, and/or hatchlings emerge during an event, the Applicant shall immediately notify the NBMTPH so appropriate conservation measures can be taken. Event Security shall also respond to assist with crowd control for Intermediate and Major events. Within 24 hours of any such occurrence, a report (with photographs, if available), shall be sent to the FWC at MarineTurtle@MyFWC.com.

n) In the event an unmarked sea turtle nest is exposed, or a dead, injured, or sick sea turtle is discovered within the event area, the NBMTPH shall be notified immediately so that appropriate conservation measures can be taken. Within 24 hours of any such occurrence, a report of the incident shall be sent to the FWC at MarineTurtle@MyFWC.com.

F. Lighting

20. SDL,MD If nighttime lighting is included in the special event permit, the Applicant must comply with all applicable minimization measures as outlined below.

    a) SDL,MD All event personnel (e.g. security, custodial, etc.) shall utilize only red LED or red-filtered flashlights on site at night. No other security or other lighting shall remain on at night during set-up and breakdown of the event. All light-weight vehicles authorized to operate on the beach at night must use red filters on their headlights.

    b) SDL,MD All stationary lights shall be long wavelength amber lamps (greater than 560 nanometers), downward directed, and shielded such that all illumination is maintained within the event area (lighting associated with performances does not have to comply with this requirement, but no bright white lights shall be shone along the beach). A list of FWC-approved light fixtures and spec sheets can be obtained by contacting the FWC at MarineTurtle@MyFWC.com.

    c) SDL,MD Lights placed on trees shall be directed downward and installed no higher than 8-ft. Large visible, "moon" type fixtures shall not be utilized unless needed during an emergency to mark locations of exits; such lights shall only be illuminated during an emergency or at conclusion of event as crowds are exiting site.

    d) SDL,MD During set-up and breakdown days, activities must cease and stationary and security lighting shall be turned off by 10:00 PM. During event days, lights shall be turned off by midnight, with the exception of safety lighting and lighting required for post-event litter removal (see Condition #23).

    e) SDL,MD Any temporary parking areas established specifically for an event that are immediately adjacent to the beach must have downward directed and shielded lights and should be in compliance with the City's Lighting Ordinance (C-03-9, Chapter 6, Article III, Division 2: Beach Area Artificial Lighting Restrictions).

    f) SDL,MD Fireworks, if approved for a special event, shall be prohibited after 10:00 PM (11:00 PM during National Holidays) between March 1 and October 31.

    g) SDL,MD Bonfires, including fire pits, if proposed as part of the special event application and authorized under a CCCL permit, are prohibited during the marine turtle nesting season (March 1 – October 31), as defined by the City's Ordinance C-03-9, Chapter 6, Article III, Division 2: Beach Area Artificial Lighting Restrictions.

    h) SDL,MD Movie screens for nighttime special events must be opaque with the viewing screen facing landward and conclude by 10:00 PM between March 1 and October 31. Projected lighting should not spill over the edges of the viewing screen.

G. Debris and Litter

21. SDD,SDL,MD No balloons (provided or sold), illuminated paper lanterns, or other irretrievable floating or air-borne items may be released during the event, as these materials may settle into the ocean where they could entangle or be ingested by sea turtles and other marine animals.

22. SDD All debris and litter generated by special events shall be collected and removed from the beach, and properly disposed of prior to sunset each day the event takes place.

23. SDL,MD For events where activities are authorized to take place on the beach past sunset, trash collection must occur at the conclusion of each day. Lighting is restricted to light-weight vehicle headlights and shielded temporary light fixtures. Vehicle headlights should use red filters. If the event is not securely fenced, the authorized NBMTPH must be present while short sections of beach, maximum 50.0 m (164.0 ft) in width, are cleared of debris and litter. Regardless of fencing, once all trash is removed from a section, all lights must be turned off in that section and no additional vehicular traffic associated with the event is permitted within that section until after the NBMTPH clears the beach the next morning. If the event area is securely fenced after sunset and there are no marked nests within the fenced area, the NBMTPH does not need to be present. If the event area is fenced but there is a marked nest within the fenced area, the NBMTPH must be present while trash collection occurs.

3.0 Events Occurring February 15 – February 29 (Early Season)

In Broward County, dedicated daily sea turtle nesting surveys are conducted by the NBMTPH from March 1 through October 31 annually. If a nest is discovered prior to March 1, the nest is conspicuously marked by the NBMTPH. For special events taking place on the beach during the early nesting season, defined by the HCP as February 15 – 29, or at any earlier time when marked nests are present on the beach, the Applicant will be notified of the presence of any nests located within the event area during the pre-event meeting and must comply with nest protection measures, as outlined below.

A. Pre/Post-Event Meeting

1. SDD,SDL,MD All Applicants must attend an initial meeting with City Parks and Recreation staff prior to permit approval to review the HCP and applicable minimization measures and mitigation fees. Applicants will be notified if there is an early season nest present within the event area. At the conclusion of this meeting, Applicants must certify that they have received, fully understand, and will comply with all applicable special event minimization measures. If a nest is laid in the event area after the initial meeting but before the event takes place, the City will contact the Applicant and provide the applicable minimization measures. The City shall be responsible for setting up this meeting.

2. SDD,SDL,MD If a marked nest is located within an approved Intermediate or Major event area, a pre-event conference shall be held at the site and shall, at a minimum, include the Applicant , City staff, and NBMTPH. Staff representatives from the FDEP, the FWC, and the USFWS shall also be invited to attend. The purpose of the meeting is to establish an understanding among the parties as to who is responsible for the items specified in the general and specific conditions of the FDEP individual CCCL permit and the HCP Minimization Measures, including lines of communication and authority. The permitted locations of structures, fencing, and vehicular/pedestrian access corridors shall be reviewed and confirmed during the conference. The Applicant shall confirm understanding of sea turtle nest protection requirements and demonstrate a plan for compliance. This meeting should take place no more than two weeks prior to the event. The City shall be responsible for setting up this meeting.

3. SDD,SDL,MD Within 10 days of completion of activities for Intermediate or Major events where marked nest minimization measures were required, the Applicant and City staff shall meet to discuss compliance with HCP Minimization Measures. Sea turtle monitoring personnel as well as staff representatives from the FDEP, the FWC, and the USFWS shall be invited to attend. This meeting will be arranged by the City and may be held either in person at a location preferred by the City or be hosted virtually using a web-based meeting platform. Any non-compliance issues will be reviewed, and permit issuance for similar events in the future will be evaluated. A

report documenting compliance for the event will be prepared by and kept on file with the City and submitted to the FDEP, the FWC, and the USFWS. If an event is fully compliant with all applicable minimization measures, the City may choose to waive the meeting requirement for that event but shall complete a compliance report providing details of the City's evaluation and the event's documented compliance.

B. Motor Vehicles

4. SDD,SDL,MD Any motor vehicle used in support of a special event, including the transportation of temporary structures, equipment, and/or supplies to and from the event site, shall access the beach only through designated construction access corridors as permitted and verified during the application process and pre-event meeting. Vehicles and equipment exceeding 4,536 kg (10,000 lb) in maximum gross loaded weight are prohibited seaward of the line of permanent vegetation, or solid/armoring structure (Figure 1) during sea turtle nesting season, with the exception of set-up and breakdown equipment to be used on mats, per event-specific site plans and during daylight hours only.

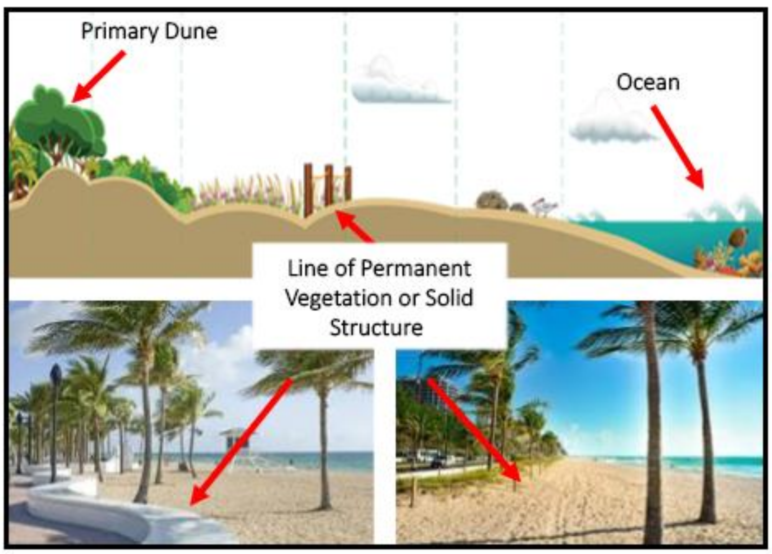

Figure 1: Location of notable features of beach and dune habitat including primary dune and line of permanent vegetation or solid structure. Image adapted from: http://www.mbrisingabove.com/climate-mitigation/natural-resources/dunes/

5. SDD,SDL,MD Light-weight vehicles with less than 10 psi vehicle-to-ground pressure, such as all-terrain, utility task, side by side, multi-purpose utility, and recreational off highway vehicles, are permitted seaward of the line of permanent vegetation, or solid/armoring structure, during daylight hours only in support of special event activities. If event activities occur before sunrise or after sunset, and there is a marked nest in the event area, light-weight vehicles are permitted only if a NBMTPH is present in the area where the vehicle is operating. All event personnel operating light-weight

vehicles during events shall be required to abide by the FWC's Best Management Practices for Operating Vehicles on the Beach (Attachment A).

6. SDD,SDL,MD Any vehicle ruts leaving depressions greater than 20 cm (8 in) deep, seaward of the line of permanent vegetation or solid/armoring structure, shall be removed either by hand raking or by using a light-weight vehicle (to drag a sturdy pole, piece of chain link fence, etc.), and the sandy beach restored to natural beach grade by sunset each day the special event takes place or immediately upon conclusion of daily event activities if the event occurs after sunset. A NBMTPH must be present if grading occurs after sunset. If the event area is securely fenced at night so that sea turtles cannot enter, and there are no marked nests inside the fenced area, a NBMTPH does not need to be present, and grading is not required until secure fencing is no longer in place.

7. SDD,SDL,MD No fluids (e.g., grease, oils, gas, radiator coolant, etc.) shall be discharged onto the beach or dune and all vehicles shall be stored and fueled/maintained landward of the beach/dune system. A spill kit shall be required on site and stationed on the beach.

C. Beach/Dune Habitat

8. SDD,SDL,MD No alteration of existing dune topography or destruction of dune vegetation is authorized for special events.

9. SDD,SDL,MD No water shall be allowed to run or be discharged onto the beach.

10. SDD,SDL,MD No excavation of sand is permitted.

11. SDD,SDL,MD Any temporary, minor disturbances in the sand (including ruts, depressions, holes, or mounds) shall be filled in and restored to natural beach grade, either by hand raking or using light-weight vehicles (see Condition #6), prior to sunset each day the event takes place. A NBMTPH must be present if grading occurs after sunset and/or there is a marked nest in the area where grading will occur.

12. SDD,SDL,MD The seaward edge of dune vegetation, if present and not already marked by the City, shall be conspicuously posted using post, rope, and signage to keep event participants and spectators off the dunes and dune vegetation. If necessary, the Applicant shall install postings 24 hours prior to the event during daylight hours only. The Applicant will inspect the postings at a frequency necessary to ensure they remain continuously intact for the duration of the event and are effectively keeping spectators and event participants off the dune and dune vegetation. Dune postings shall consist of a series of posts no greater than 10 cm (4 in) in diameter and at least 2.1 m (7.0 ft) apart connected with rope or flagging tape elevated at least 0.9 m (3.0 ft) above the sand surface. Posts may not be set in concrete or other base material. Temporary dune postings for an event shall be approved by City staff at least 24 hours

prior to initiation of any event activities and shall be removed by sunset on the final day of the special event or event breakdown.

13. SDD,SDL,MD Pedestrian traffic corridors to and from special events seaward of the line of permanent vegetation, or armoring structure, shall be conspicuously marked with rope/post and signage and restricted to dune crossovers or other established access points. Temporary postings shall be approved by City staff at least 24 hours prior to event participants arriving on site and shall be removed by sunset on the final day of the special event or event breakdown.

14. SDD,SDL,MD For sandcastle events, no excavation of sand on the dry beach is allowed. All sand brought on site must be beach-compatible and may not contain fillers or glues. Sand must be spread evenly in place at the conclusion of the event.

D. Removable Structures on the Beach

Examples include tents, tables, chairs, stages, huts, bleachers, and fencing associated with the event.

15. SDD,SDL,MD The Applicant shall ensure that all setup and event equipment and materials not in use shall be stored off the beach and away from the dunes and dune vegetation.

16. MD For multi-day events that wish to enclose the event space with fencing that will remain in place overnight, the following area and time restrictions apply:
    i. Fencing must be composed of a rigid material and must be secured at the beach surface to prevent turtles from entering the event area and so as not to entrap a nesting sea turtle. At no time shall fencing be laid down flush with the beach surface at night.
    ii. Early Marine Turtle Nesting Season (February 15 to February 29): Up to 83,613 m^2 (900,000 ft^2), not extending more than 914 m (3,000 linear ft) for more than 5 nights. If day-time fencing extends beyond 5 nights, it must be elevated 0.9 m (3.0 ft) along the shoreline to allow sea turtles to enter or exit the area or rolled out of the way over-night.

E. Marine Turtle Protection

17. SDD,SDL,MD If special events (including placement of temporary structures) are conducted seaward of the line of permanent vegetation, or solid/armoring structure, in sea turtle habitat between February 15 – 29, which is prior to the official sea turtle nesting season (March 1 – October 31), or at any earlier time when a marked nest is present on the beach within the event area, it is the responsibility of the Applicant to ensure that any nests marked within the designated event area, including access areas, are avoided. Currently, all daily nesting surveys and nest marking are coordinated by the Broward County Sea Turtle Conservation Program; however, this

is subject to change, and Applicants should coordinate with the City to ensure compliance.

a. All nest protection measures shall be conducted only by persons who hold a valid Marine Turtle Permit for nesting beach survey work in Broward County issued by the FWC pursuant to Florida Administrative Code 68E-1.

b. If nesting surveys are not coordinated by the County, the Applicant must arrange for a NBMTPH to conduct all sea turtle nest protection work and shall have in place a current written agreement with the NBMTPH detailing this arrangement and demonstrating the NBMTPH is sufficiently resourced to meet all permit conditions. Evidence of the written agreement and name of the NBMTPH shall be provided to City Staff prior to initiation of any authorized work. A sample agreement can be found in Appendix F of the HCP or by emailing BHenry@fortlauderdale.gov and CBean@fortlauderdale.gov. A list of NBMTPHs authorized to conduct nesting beach survey work in the Fort Lauderdale area may be obtained by contacting the FWC at MTP@MyFWC.com.

c. The Applicant shall provide the NBMTPH who has agreed to conduct nest marking for the permitted event with a copy of the FDEP CCCL permit and HCP Minimization Measures detailing authorized activities, permit conditions, and nest marking requirements.

d. All nests deposited within the event area shall be conspicuously marked by the NBMTPH and left in place; nests shall not be relocated for special events. Nest markers shall include a series of stakes connected by brightly colored surveyor's tape, flagging, or similar conspicuous material, and stakes shall be placed around the nest and centered at least 0.9 m (3.0 ft) from the approximate clutch location. No activities, work, movement, or storage of equipment and materials shall occur within the markers surrounding a marked sea turtle nest. For Intermediate and Major events, an additional hard barrier (e.g., steel crowd control fencing or similar, that would not shade the nest or prevent hatchlings from escaping the nest), centered at least 4.6 m (15.0 ft) from the nest shall be installed by the Applicant under the supervision of the NBMTPH. This hard barrier should remain in place for the duration of the event, including set-up and breakdown. Such barriers should be included in the site plan submitted to FDEP.

e. For all events, if heavy equipment is used at any time, the NBMTPH must be present to ensure there is no damage to a marked sea turtle nest. If there are no marked nests in the event area, the NBMTPH is not required to be present.

f. For Intermediate and Major events, if a sea turtle nest is marked within the designated event area, both Event Security and the NBMTPH must be present during event activities. Event Security must have the authority to control event activities, including crowds, and shall ensure that there is no interference (e.g., vandalism) with the nest. The NBMTPH will ensure that the integrity of the nest markers is maintained. Large event areas with multiple marked nests may require more than one person to perform event security duties.

g. Inspections of all marked nests shall occur prior to commencement of any permitted special event activities. Nest markers shall be examined and repaired by the NBMTPH monitoring personnel at a frequency necessary to ensure they remain continuously intact and visible for the duration of the event.

h. No temporary structures shall be placed within 7.6 m (25.0 ft) of an existing marked sea turtle nest. If a new nest occurs within 7.6 m (25.0 ft) of a temporary structure or within the event area, the nest shall be cordoned off as described in section (d) above.

i. In the event a sea turtle lays a nest in the event area, the Applicant shall immediately notify the NBMTPH so appropriate conservation measures can be taken. Within 24 hours of any such occurrence, a report (with photographs, if available), shall be sent to the FWC at MarineTurtle@MyFWC.com.

j. In the event an unmarked sea turtle nest is exposed, or a dead, injured, or sick sea turtle is discovered within the event area, the NBMTPH shall be notified immediately so that appropriate conservation measures can be taken. Within 24 hours of any such occurrence, a report of the incident shall be sent to the FWC at MarineTurtle@MyFWC.com.

F. Lighting

18. SDL,MD If temporary lighting is included in the special event permit, and there is a marked nest in the event area, a NBMTPH shall be present at the nest site until the lighting is turned off.

G. Debris and Litter

19. SDD,SDL,MD No balloons (provided, sold, or released) , illuminated paper lanterns, or other irretrievable floating or air-borne items may be released during the event, as these materials may settle into the ocean where they could entangle or be ingested by sea turtles and other marine animals.

20. SDD All debris and litter generated by special events shall be collected and removed from the beach, and properly disposed of prior to sunset each day the event takes place.

21. SDL,MD For events where activities are authorized to take place on the beach past sunset, trash collection must occur at the conclusion of each day. Lighting is restricted to light-weight vehicle headlights and shielded temporary light fixtures. A NBMTPH must be present while trash collection occurs if there is a marked nest within the event area.

4.0 Events Occurring November 1 – November 15 (Late Season)

In Broward County, dedicated daily sea turtle nesting surveys are conducted through October 31 annually. However, there may still be late season nesting and/or sea turtle nests incubating on the beach and hatchlings from those nests may emerge in November, or later. For special events taking place on the beach during the late season, defined by the HCP as November 1 – 15, or at any later time when marked nests are present on the beach, the Applicant will be notified of the presence of any nests located within the event area during the pre-event meeting and must comply with nest protection measures, as outlined below.

A. Pre/Post-Event Meeting

1. SDD,SDL,MD All Applicants must attend an initial meeting with City Parks and Recreation staff prior to permit approval to review the HCP and applicable minimization measures and mitigation fees. Applicants will be notified if there are late season nests present within the event area. At the conclusion of this meeting, Applicants must certify that they have received, fully understand, and will comply with all applicable special event minimization measures. If a nest is laid in the event area after the initial meeting but before the event takes place, the City will contact the Applicant and provide the applicable minimization measures. The City shall be responsible for setting up this meeting.

2. SDD,SDL,MD If a marked nest is located within an approved Intermediate or Major event area, a pre-event conference shall be held at the site and shall, at a minimum, include the Applicant , City staff, and NBMTPH. Staff representatives from the FDEP, the FWC, and the USFWS shall also be invited to attend. The purpose of the meeting is to establish an understanding among the parties as to who is responsible for the items specified in the general and specific conditions of the FDEP individual CCCL permit and the HCP Minimization Measures, including lines of communication and authority. The permitted locations of structures, fencing, and vehicular/pedestrian access corridors shall be reviewed and confirmed during the conference. The Applicant shall confirm understanding of sea turtle monitoring and nest protection requirements and demonstrate a plan for compliance. This meeting should take place no more than two weeks prior to the event. The City shall be responsible for setting up this meeting.

3. SDD,SDL,MD Within 10 days of completion of activities for Intermediate or Major events, the Applicant and City staff shall meet to discuss compliance with HCP minimization measures. Sea turtle monitoring personnel as well as staff representatives from the FDEP, the FWC, and the USFWS shall be invited to attend. This meeting will be arranged by the City and may be held either in person at a location preferred by the City or be hosted virtually using a web-based meeting platform. Any non-compliance issues will be reviewed, and permit issuance for

similar events in the future will be evaluated. A report documenting compliance for the event will be prepared by and kept on file with the City and submitted to the FDEP, the FWC, and the USFWS. If an event is fully compliant with all applicable minimization measures, the City may choose to waive the meeting requirement for that event but shall complete a compliance report providing details of the City's evaluation and the event's documented compliance.

B. Motor Vehicles

4. SDD,SDL,MD Any motor vehicle used in support of a special event, including the transportation of temporary structures, equipment, and/or supplies to and from the event site, shall access the beach only through designated construction access corridors as permitted and verified during the application process and pre-event meeting. Vehicles and equipment exceeding 4,536 kg (10,000 lb) in maximum gross loaded weight are prohibited seaward of the line of permanent vegetation, or solid/armoring structure (Figure 1) during sea turtle nesting season, with the exception of set-up and breakdown equipment to be used on mats, per event-specific site plans and during daylight hours only.

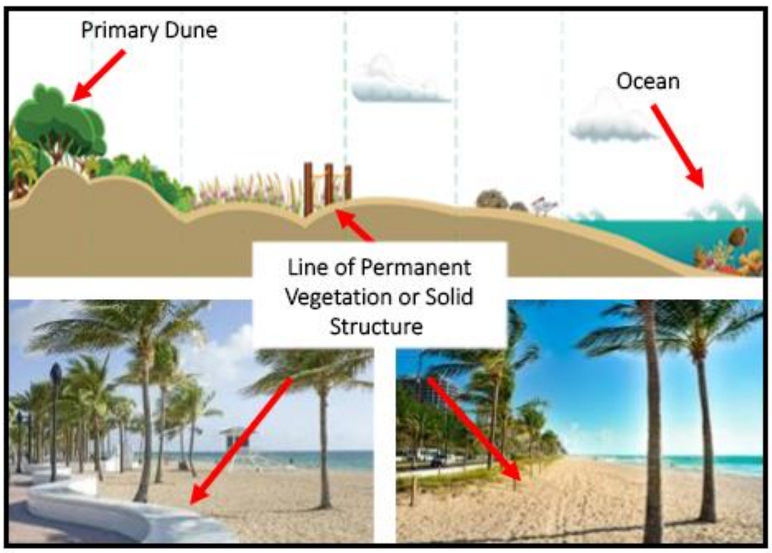

Figure 1: Location of notable features of beach and dune habitat including primary dune and line of permanent vegetation or solid structure. Image adapted from: http://www.mbrisingabove.com/climate-mitigation/natural-resources/dunes/

5. SDD,SDL,MD Light-weight vehicles with less than 10 psi vehicle-to-ground pressure, such as all-terrain, utility task, side by side, multi-purpose utility, and recreational off highway vehicles, are permitted seaward of the line of permanent vegetation, or solid/armoring structure, during daylight hours only in support of special event activities. If event activities occur before sunrise or after sunset, and there is a marked nest in the event area, light-weight vehicles are permitted only if a NBMTPH is present in the area where the vehicle is operating. All event personnel operating light-weight

vehicles during events shall be required to abide by the FWC's Best Management Practices for Operating Vehicles on the Beach (Attachment A).

6. SDD,SDL,MD Any vehicle ruts leaving depressions greater than 20 cm (8 in) deep, seaward of the line of permanent vegetation or solid/armoring structure, shall be removed either by hand raking or by using a light-weight vehicle (to drag a sturdy pole, piece of chain link fence, etc.), and the sandy beach restored to natural beach grade by sunset each day the special event takes place or immediately upon conclusion of daily event activities if the event occurs after sunset. A NBMTPH must be present if rut removal occurs after sunset and/or there is a marked nest in the event area.

7. SDD,SDL,MD No fluids (e.g., grease, oils, gas, radiator coolant, etc.) shall be discharged onto the beach or dune and all vehicles shall be stored and fueled/maintained landward of the beach/dune system. A spill kit shall be required on site and stationed on the beach.

C. Beach/Dune Habitat

8. SDD,SDL,MD No alteration of existing dune topography or destruction of dune vegetation is authorized for special events.

9. SDD,SDL,MD No water shall be allowed to run or be discharged onto the beach.

10. SDD,SDL,MD No excavation of sand is permitted.

11. SDD,SDL,MD Any temporary, minor disturbances in the sand (including ruts, depressions holes, or mounds) shall be filled in and restored to natural beach grade, either by hand raking or using light-weight vehicles (see Condition #6), prior to sunset each day the event takes place. A NBMTPH must be present if grading occurs after sunset and/or there is a marked nest present in the area where grading will occur.

12. SDD,SDL,MD The seaward edge of dune vegetation, if present and not already marked by the City, shall be conspicuously posted using post, rope, and signage to keep event participants and spectators off the dunes and dune vegetation. If necessary, the Applicant shall install postings 24 hours prior to the event during daylight hours only. The Applicant will inspect the postings at a frequency necessary to ensure they remain continuously intact for the duration of the event and are effectively keeping spectators and event participants off the dune and dune vegetation. Dune postings shall consist of a series of posts no greater than 10 cm (4 in) in diameter and at least 2.1 m (7.0 ft) apart connected with rope or flagging tape elevated at least 0.9 m (3.0 ft) above the sand surface. Posts may not be set in concrete or other base material. Temporary dune postings for an event shall be approved by City staff at least 24 hours

prior to initiation of any event activities and shall be removed by sunset on the final day of the special event or event breakdown.

13. SDD,SDL,MD Pedestrian traffic corridors to and from special events seaward of the line of permanent vegetation, or armoring structure, shall be conspicuously marked with rope/post and signage and restricted to dune crossovers or other established access points. Temporary postings shall be approved by City staff at least 24 hours prior to event participants arriving on site and shall be removed by sunset on the final day of the special event or event breakdown.

14. SDD,SDL,MD For sandcastle events, no excavation of sand on the dry beach is allowed. All sand brought on site must be beach-compatible and may not contain fillers or glues. Sand must be spread evenly in place at the conclusion of the event.

D. Removable Structures on the Beach

Examples include tents, tables, chairs, stages, huts, bleachers, and fencing associated with the event.

15. SDD,SDL,MD The Applicant shall ensure that all setup and event equipment/materials not in use shall be stored off the beach and away from the dunes and dune vegetation.

16. MD For multi-day events (occurring November 1 - November 15) that wish to enclose the event space with fencing that will remain in place overnight, all fencing must be elevated 0.9 m (3.0 ft) along the shoreline to allow sea turtles to enter or exit the area or rolled out of the way over-night. At no time shall fencing be laid down flush with the beach surface at night.

E. Marine Turtle Protection

17. SDD,SDL,MD If special events (including placement of temporary structures) are conducted seaward of the line of permanent vegetation, or solid/armoring structure, in sea turtle habitat between November 1 – 15, which is after the official sea turtle nesting season (March 1 – October 31), or at any later time when a marked nest is present on the beach within the event area, it is the responsibility of the Applicant to ensure that any marked nests still incubating on the beach within the designated event area, including access areas, are avoided. Currently, all daily nesting surveys and nest marking are coordinated by the Broward County Sea Turtle Conservation Program; however, this is subject to change, and the Applicant should coordinate with the City to ensure compliance.

    a) All nest protection measures shall be conducted only by persons who hold a valid Marine Turtle Permit for nesting beach survey work in Broward County issued by the FWC pursuant to Florida Administrative Code 68E-1.

b) If nesting surveys are not coordinated by the County, the Applicant must arrange for a NBMTPH to conduct all sea turtle nest protection work and shall have in place a current written agreement with the NBMTPH detailing this arrangement and demonstrating the NBMTPH is sufficiently resourced to meet all permit conditions. Evidence of the written agreement and name of the NBMTPH shall be provided to City Staff prior to initiation of any authorized work. A sample agreement can be found in Appendix F of the HCP or by emailing BHenry@fortlauderdale.gov and CBean@fortlauderdale.gov. A list of NBMTPHs authorized to conduct nesting beach survey work in the Fort Lauderdale area may be obtained by contacting the FWC at MTP@MyFWC.com.

c) The Applicant shall provide the NBMTPH who has agreed to conduct nest marking for the permitted activity with a copy of the FDEP CCCL permit and HCP Minimization Measures detailing authorized activities, permit conditions, and nest marking requirements.

d) All nests deposited within the event area shall be conspicuously marked by the NBMTPH and left in place; nests shall not be relocated for special events. Nest markers shall include a series of stakes connected by brightly colored surveyor's tape or similar conspicuous material shall be placed around the nest; stakes shall be centered at least 0.9 m (3.0 ft) from the approximate clutch location. No activities, work, movement, or storage of equipment and materials shall occur within the markers surrounding a marked sea turtle nest. For Intermediate and Major events, an additional hard barrier (e.g., steel crowd control fencing or similar, that would not shade the nest or prevent hatchlings from escaping the nest), centered at least 4.6 m (15.0 ft) from the nest shall be installed by the Applicant under the supervision of the NBMTPH. This hard barrier should remain in place for the duration of the event, including set-up and breakdown. Such barriers should be included in the site plan submitted to FDEP.

e) For all events, if heavy equipment is used at any time, the NBMTPH must be present to ensure there is no damage to a marked sea turtle nest. If there are no marked nests in the event area, the NBMTPH is not required to be present.

f) For Intermediate and Major events, if a sea turtle nest is marked within the designated event area, both Event Security and the NBMTPH must be present during event activities. Event Security must have the authority to control event activities, including crowds, and shall ensure that there is no interference (e.g., vandalism) with the nest. The NBMTPH will ensure that the integrity of the nest markers is maintained. Large event areas with multiple marked nests may require more than one person to perform event security duties.

g) Inspections of all marked nests shall occur prior to commencement of any permitted special event activities. Nest markers shall be examined and repaired by the NBMTPH monitoring personnel at a frequency necessary to ensure they remain continuously intact and visible for the duration of the event.

h) No temporary structures shall be placed within 7.6 m (25.0 ft) of an existing marked sea turtle nest. If a new nest occurs within 7.6 m (25.0 ft) of a temporary structure or within the event area, the nest shall be cordoned off as described in section (d) above.

i) No event materials or temporary structures that could impede the progress of sea turtle hatchlings toward the ocean may remain on the beach overnight seaward of a marked nest.

j) In the event a sea turtle lays a nest in the event area, and/or hatchlings emerge during an event, the Applicant shall immediately notify the NBMTPH so appropriate conservation measures can be taken. Within 24 hours of any such occurrence, a report (with photographs, if available), shall be sent to the FWC at MarineTurtle@MyFWC.com.

k) In the event an unmarked sea turtle nest is exposed or hatches or a dead, injured, or sick sea turtle is discovered within the event area, the NBMTPH shall be notified immediately so that appropriate conservation measures can be taken. Within 24 hours of any such occurrence, a report of the incident shall be sent to the FWC at MarineTurtle@MyFWC.com.

F. Lighting

18. SDL,MD If temporary lighting is included in the special event permit, and there is a marked nest in the event area, a NBMTPH shall be present at the nest site until the lighting is turned off.

G. Debris and Litter

19. SDD,SDL,MD No balloons (provided, sold, or released) , illuminated paper lanterns, or other irretrievable floating or air-borne items may be released during the event, as these materials may settle into the ocean where they could entangle or be ingested by sea turtles and other marine animals.

20. SDD All debris and litter generated by special events shall be collected and removed from the beach, and properly disposed of prior to sunset each day the event takes place.

21. SDL,MD For events where activities are authorized to take place on the beach past sunset, trash collection must occur at the conclusion of each day. Lighting is restricted to light-weight vehicle headlights and shielded temporary light fixtures. A NBMTPH must be present while trash collection occurs if there is a marked nest within the event area.

5.0 Events Occurring Adjacent to the Beach

Events occurring at the four locations listed below that involve the use of temporary artificial lighting between February 15 and November 15, must comply with these HCP Minimization Measures. If any portion of an event held at the following locations should occur on the beach, the event must also comply with the standard HCP Minimization Measures specific to the timing of the event. Permanent lighting at these locations is not covered under the HCP and will be required to follow the standard state permitting process, including review and approval by the FWC.

- Las Olas Oceanside Park, 300 S. Fort Lauderdale Beach Boulevard
- Fort Lauderdale Aquatic Complex, 501 Seabreeze Boulevard
- Bahia Mar Yachting Center, 801 Seabreeze Boulevard
- DC Alexander Park, SE 5th and A1A

A. Pre-Event Meeting

1. All Applicants must attend an initial meeting with City Parks and Recreation staff prior to permit approval to review the HCP and mitigation fees. At the conclusion of this meeting, Applicants must certify that they have received, fully understand, and will comply with all applicable special event permit conditions. The City shall be responsible for setting up this meeting.

B. Motor Vehicles

2. All event personnel operating light-weight vehicles during events shall be required to abide by all local and state traffic laws. If at any time light-weight vehicles are operated on the beach, drivers must follow the FWC's Best Management Practices for Operating Vehicles on the Beach (Attachment A).

C. Beach/Dune Habitat

3. No alteration of existing dune topography or destruction of dune vegetation is authorized for special events.

4. No water shall be allowed to run or be discharged onto the beach.

5. No excavation of sand is permitted.

D. Removable Structures on the Beach

6. The Applicant shall ensure that all setup and event equipment/materials not in use shall be stored off the beach and away from the dunes and dune vegetation.

E. Marine Turtle Protection

7. During the early and late nesting seasons (or at any other earlier or later time a marked nest is present on the beach immediately adjacent to an off-beach event location), a NBMTPH shall be present at the nest site until the event lighting is turned off.

F. Lighting

8. From March 1 to October 31, all temporary lighting associated with the event that will be removed upon the event's conclusion must comply with the City's Lighting Ordinance (C-03-9, Chapter 6, Article III, Division 2: Beach Area Artificial Lighting Restrictions).

6.0 Definitions

City Staff: The City's staff responsible for implementation of the HCP to ensure compliance with the City's Incidental Take Permit.

Event Staff: All personnel associated with the production of the permitted special event (not including City staff).

Marine Turtle Nesting Habitat: All sandy beaches adjoining the waters of the Atlantic Ocean, the Gulf of Mexico, and the Straits of Florida in all coastal counties and all inlet shorelines of those beaches. Nesting habitat includes all sandy beach and unvegetated or sparsely vegetated dunes immediately adjacent to the sandy beach and accessible to nesting female turtles. (Florida Administrative Rule 62B-34.010.)

Marine Turtle Nesting Season: The official sea turtle nesting season in Broward County is defined as March 1 – October 31 (Florida Administrative Rule 62B-33.002). The City's HCP for Special Events requires that all events occurring on the beach or at the four adjacent locations named in Section 5.0. between February 15 and November 15, adhere to minimization measures and pay a mitigation fee.

Event Security: A person provided by the Applicant whose job it is to coordinate with and assist the NBMTPH in protecting marked nests inside an event area during the event. Event Security does not need to possess an FWC Marine Turtle Permit and, and as such, must defer to the local NBMTPH on all matters related to the conservation of sea turtles. Event Security must have the authority to control crowds around marked nests and must wear appropriate clothing indicating their role as Event Staff.

Nesting Beach Marine Turtle Permit Holder: A person or entity possessing a valid Marine Turtle Permit (MTP), issued by the FWC. The MTP must authorize sea turtle nesting beach monitoring activities in Broward County. A NBMTPH may assign other individuals on the permit as authorized personnel who are covered by the MTP to perform nesting beach monitoring activities. Such activities include, but are not limited to, conducting sea turtle nesting surveys, nest marking, hatchling disorientation documentation, and stranding/salvage documentation. The NBMTPH or authorized personnel may handle turtles, their eggs, or hatchlings and may evaluate habitat conditions and make recommendations to improve nesting conditions for turtles (e.g., artificial lighting, beach surface/ruts, obstructions, vehicles, equipment storage, human presence).

Special Event Applicant: Person, entity, or production company that applies for and receives a special event permit through the City.

Attachment A: FWC BMP for Beach Driving.pdf

Best management practices for operating vehicles *on the beach*

Operating vehicles, including ATVs, on the beach can destroy wildlife habitat and be harmful or fatal to wildlife. This is one reason that, in many areas, beach-driving is strictly prohibited year-round to all but authorized personnel. The eggs and flightless young of beach-nesting birds can be virtually invisible, especially from a vehicle. Sea turtles coming ashore to nest may be scared away by vehicles and hatchlings are vulnerable to being run over. Both adult and hatchling sea turtles can be disoriented by any form of artificial light, including headlights. Ruts made by vehicles can trap and disorient turtle hatchlings and baby birds. May through October is considered sea turtle nesting season. However, some species of sea turtles have been known to nest as early as February, and hatchlings can emerge from their nests as late as the mid-winter months. Beach-nesting birds may be active from mid-February through the end of August. Therefore it is best to avoid beach-driving whenever feasible and critical that everyone authorized to operate a vehicle on the beach during these periods of the year take the following precautions:

- Enter the beach only at designated access points and proceed directly to the hard-packed sand near or below the high tide line. Avoid driving on the upper beach whenever possible, and never drive over any dunes or over beach vegetation. If beach conditions require driving above the high tide line, avoid those areas with known sea turtle nests or shorebird breeding areas.
- Avoid the wrack line or areas of dense seaweed, which may contain sea turtle hatchlings or baby birds.
- Minimize ruts on the dry sandy beach by lowering tire pressure and using 4WD, particularly in front of sea turtle or bird nests.
- Drive slowly. Movement should be slow enough to observe any bird eggs, chicks, or sea turtle hatchlings in the vehicle's line of travel. Please be aware that recently hatched chicks often feed along the water's edge. They may freeze in place rather than run away when ATVs or other vehicles approach.
- Whenever possible, avoid driving on the beach at night.
- Do not park vehicles adjacent to nests or posted areas, and, if you must drive on the beach at night, turn headlights off when parking.
- If you observe a sea turtle crawling out of the surf, stop the vehicle and turn off all lights. No additional movement should occur until the turtle moves across the beach and begins digging her nest or moves into deeper water.

Florida Fish and Wildlife
Conservation Commission
MyFWC.com

APPENDIX F: Sample Contract and Scope of Work for Sea Turtle Monitoring

FEE FOR SERVICE AGREEMENT
between
XXXXXXX
and
NOVA SOUTHEASTERN UNIVERSITY, INC.

THIS FEE FOR SERVICE AGREEMENT (the "Agreement") is entered into as of _____________, by and between XXXXX (hereinafter referred to as the "XXXX") and Nova Southeastern University, Inc., a not-for-profit corporation registered in the State of Florida, on behalf of its Halmos College of Natural Sciences and Oceanography, having its principal place of business at 3301 College Avenue, Fort Lauderdale, FL 33314, (hereinafter referred to as "Contractor") for delivery of services identified as *Sea Turtle Monitoring*.

RECITALS:

WHEREAS, XXXXX requests that Contractor perform certain services in accordance with the terms and conditions contained in herein and Contractor wishes to perform such services in accordance with the terms and conditions contained herein.

NOW, THEREFORE, in consideration of the mutual covenants contained herein, and for other good and valuable consideration the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. **DESCRIPTION OF SERVICES:**

Contractor covenants and agrees to accomplish the work described in the Scope of Services attached hereto as *Exhibit "A"* and made a part hereof.

2. **TERM**

The term of this Agreement shall commence on XXXXX and shall expire on XXXXXX unless further extended by amendment of this Agreement, which shall be by mutual consent and in writing by both parties to this Agreement.

3. **COMPENSATION AND PAYMENT:**

This is a Fee for Service Agreement for the amount of $XXXXXX. Payment of the Agreement amount will be made within fifteen (15) days after receipt of Contractor's invoice, after services have been provided by Contractor.

4. USE OF NAME

Both parties agree that it will not under any circumstance use the name of the other party or the name of any faculty and/or employee in advertising, publicity, or otherwise, without the other party's prior written consent. Contractor may include the identity of XXXXX, the total amount of funding, a brief description and title of the services to meet its reporting obligations, including reports of sponsored activities of Contractor.

5. PUBLICATION

Contractor reserves the right to publish the results of the work described in the Exhibit "A", attached hereto and incorporated herein by reference. If publication occurs, Contactor shall provide XXXXXX a copy of the published results specifically relating to services performed under this Agreement. This Article is not subject to technical reporting required by governmental authorities for the *Sea Turtle Monitoring* program.

6. COMPLIANCE WITH LAWS

Both parties shall comply with all applicable laws, regulations, ordinances, rules, and codes of conduct of all governmental authorities.

7. INDEMNIFICATON

Each party shall be responsible for its negligent acts or omissions and the negligent acts or omissions of its employees, officers, or director's, to the extent allowed by law.

8. RELATIONSHIP OF PARTIES

The Contractor's services hereunder are provided as an independent contractor to XXXX. Consequently, the Contractor is responsible for payment of all applicable income tax, social security, worker's compensation, and unemployment insurance. This Agreement does not create nor shall be deemed to create an employer-employee, principal-agent, joint venture or partnership relationship between the parties. The Contractor has no authority or power to bind or otherwise obligate XXXX in any manner.

10. TERMINATION

Either party shall at any time have the right to terminate this Agreement by giving the other party ten (10) days written notice of its intent to terminate. XXXX shall reimburse Contractor for expenses incurred prior to the date of termination, including, but not limited to, non-cancellable obligations.

11. LAW GOVERNING, VENUE, AND JURISDICTION

This Agreement shall be governed by and construed in accordance with the laws of the State of Florida. Venue with respect to any action instituted in connection with this Agreement shall lie exclusively in Broward County, Florida. Both parties accept the exclusive jurisdiction of the courts of the State of Florida.

12. SEVERABILITY

If any provision of this Agreement is found to be invalid or unenforceable by a court of competent jurisdiction, then all other provisions of the Agreement shall be valid and enforceable to the maximum extent permitted by law.

13. NOTICE

Any notices required or permitted to be given hereunder to either party hereto shall be in writing and shall be deemed given and received (i) when personally delivered with a receipt obtained, (ii) on the date noted as received, refused, or uncollected if given by deposit with the United States Postal Service and sent by certified or registered mail, postage prepaid and return receipt requested, or (iii) the earlier of receipt or two (2) business days after acceptance for delivery by a nationally recognized overnight delivery service (e.g., Federal Express). The address at which notices are to be sent or delivered may be changed by either party by providing notice pursuant to this Article. Notices shall be sent to the attention of the following:

If to XXX:

If to Contractor: Catherine M. Harlan, MPA, CRA, GPC
Director
Office of Sponsored Programs
Nova Southeastern University
3301 College Avenue
Fort Lauderdale, Florida 33314

With a copy to: Katherine Rose, Esq., Assistant Vice President, Associate Counsel
Office of Research and Technology Transfer
Nova Southeastern University
3301 College Avenue
Fort Lauderdale, Florida 33314

14. ELECTRONIC SIGNATURES, ENTIRE AGREEMENT AND MODIFICATION

This Agreement represents the entire understanding of the parties with respect to matters covered herein, and supersedes all prior and contemporaneous discussion, negotiations, representations, and agreements, whether written or oral. This Agreement may only be altered, amended or modified by a written instrument duly executed by the parties.

This Agreement may be executed via email of a PDF document or by facsimile and may be executed in counterparts, each an original and together the entire document.

IN WITNESS WHEREOF, the parties hereto have executed and signed this Agreement by their duly authorized officers on the day, month, and year first written above.

XXXXX	**Nova Southeastern University, Inc.**
______________________________	______________________________
NAME:	Catherine M. Harlan
TITLE:	Director
	Office of Sponsored Programs

EXHIBIT A: Scope of Services and Budget

BROWARD COUNTY SEA TURTLE CONSERVATION PROGRAM
TORTUGA MUSIC FESTIVAL 2019 SEA TURTLE MONITORING

SCOPE OF SERVICES

Contractor shall conduct sea turtle monitoring within the Tortuga Music Festival's operation area permitted by Florida's Department of Environmental Protection for the Tortuga Music Festival including setup, teardown, and the event itself to be held on the beaches of Ft Lauderdale, Florida.

1. The Broward County Sea Turtle Conservation Program (BCSTCP) will monitor the area for sea turtle activity around the festival grounds where tents, stages, booths, vendors, temporary bathrooms will be constructed on the beach.

2. BCSTCP will monitor the area during setup and teardown of the event, and will monitor the beach nightly while in place to ensure nesting sea turtles do not get entangled in the structures on the beach.

3. Work will commence for 2 staff as early as March 27, 2019.

4. Work will cease for 2 staff after all equipment/structures are removed from the beach, no later than April 21, 2019.

Full time Nova employees may conduct the work associated with this project and would be paid as an administrative overload, as the work contained in this proposed Scope of Work is above and beyond the job description of the contracted full time position resulting in additional time and duties to complete this project.

APPENDIX G: Mitigation Calculation Spreadsheet

Biological Threat/Activity Matrix	Structures (sq. ft.)	Attendees (#)	Lighting (Shore length X Minutes)	Vehicle Access (sq. ft.)
Entrapment (at night)	X			
Exclusion (at night)	X			X
Deterrence (at night)		X	X	
Disorientation (at night)			X	
Compaction		X		X
Seasonal Timing - higher risk of ST impacts closer to peak season	X	X	X	X

Orange highlighted cells to be set as part of plan development and are not expected to change over the course of the HCP.

	2		4	3	1			
	Sq. Ft.		Sq. Ft.	Attendee(s)	Minute(s)			
Point per:	8		10	2	30			
	Structures	Structures	Vehicle Access	Attendees	Lighting	Lighting	Attendees	Vehicle Access
% of DailyPoints	9%	9%	7%	8%	26%	26%	8%	7%

1=early/late (Feb 15-Mar 1 and Nov 1-Nov 15)
2=shoulder (Mar 2-April 30 and Sept 16-Oct 31
3=middle (May 1-Sept 15)

Fee per Point $ 0.026
Annual HCP Budget: $ 85,412.71

		Event Details (* indicates new application information need)										Threats: Entrapment		Threats: Exclusion				Threats: Deterrence				Threats: Disorientation		Threats: Compaction							
	2019 Beach Events (Beach Adjacent)	Event Start Date	Event End Date	Days of Activity in Plan Area	Nights of Activity in Plan Area	Maximum Attendance	*Nighttime Lighting Minutes	*Shoreline Length	*Vehicle Access Sq. Ft.	*Structures Sq. Ft.		Structures at Night	Nights of Impact	Structures at Night	Nights of Impact	Vehicle Access	Nights of Impact	Attendees at Night	Nights of Impact	Lighting at Night	Nights of Impact	Lighting at Night	Nights of Impact	Attendees	Days of Impact	Vehicle Access	Days of Impact	Seasonal Multiplier	Points	% of Total Points	Event's HCP Fee
1	Set Up - 14th Annual 2019 Fort Lauderdale Marathon & Half Marathon and 5K	2/15/19	2/15/19	1		10	107					0	0	0	0	0	0	5	0	0	0	0	0	5	1	0	1	1	5	0.00%	**$0.13**
2	25th Annual Fort Lauderdale Masters Challenge	2/16/19	2/17/19	2	1		60	350				0	1	0	1	0	1	0	1	700	1	700	1	0	2	0	2	1	1,400	0.04%	**$36.40**
	14th Annual 2019 Fort Lauderdale Marathon & Half Marathon and 5K	2/16/19	2/17/19	2	1	7000	166					0	1	0	1	0	1	3,500	1	0	1	0	1	3,500	2	0	2	1	10,500	0.32%	**$273.00**
3	Set Up - Pride Fort Lauderdale - Festival at Fort Lauderdale Beach	2/21/19	2/22/19	2	2	100		1200	7,500	5,000		625	2	625	2	750	2	50	2	0	2	0	2	50	2	750	2	1	5,700	0.17%	**$148.20**
	Pride Fort Lauderdale - Festival at Fort Lauderdale Beach	2/23/19	2/25/19	3	3	10000	223	1200	15,000	10,000		1,250	3	1,250	3	1,500	3	5,000	3	8,920	3	8,920	3	5,000	3	1,500	3	1	100,020	3.04%	**$2,600.52**
	Breakdown - Pride Fort Lauderdale - Festival at Fort Lauderdale Beach	2/26/19	2/27/19	2	1	100		1200	7,500	5,000		625	1	625	1	750	1	50	1	0	1	0	1	50	2	750	2	1	3,650	0.11%	**$94.90**
4	Wendy Wyland Diving Invitational	3/1/19	3/3/19	3	2		60	350				0	2	0	2	0	2	0	2	700	2	700	2	0	3	0	3	2	5,600	0.17%	**$145.60**
5	Set - Up Las Olas International Triathlon	3/9/19	3/9/19	1		10						0	0	0	0	0	0	5	0	0	0	0	0	5	1	0	1	2	10	0.00%	**$0.26**
	Las Olas International Triathlon	3/10/19	3/10/19	1		900						0	0	0	0	0	0	450	0	0	0	0	0	450	1	0	1	2	900	0.03%	**$23.40**
6	FIU Collegiate Beach Volleyball Tournament	3/15/19	3/15/19	1		300		275		6,682		835	0	835	0	0	0	150	0	0	0	0	0	150	1	0	1	2	300	0.01%	**$7.80**
7	Friday Night Sound Waves	3/15/19	3/16/19	2	1		151	400				0	1	0	1	0	1	0	1	2,013	1	2,013	1	0	2	0	2	2	8,053	0.25%	**$209.39**
8	Set Up - AIDS Walk	3/20/19	3/22/19	3	2	40		800		5,476		685	2	685	2	0	2	20	2	0	2	0	2	20	3	0	3	2	5,676	0.17%	**$147.58**
9	Friday Night Sound Waves	3/22/19	3/23/19	2	1		147	400				0	1	0	1	0	1	0	1	1,960	1	1,960	1	0	2	0	2	2	7,840	0.24%	**$203.84**
	2019 AIDS Walk & Music Festival	3/23/19	3/23/19	1		7500	87	800		10,952		1,369	0	1,369	0	0	0	3,750	0	2,320	0	2,320	0	3,750	1	0	1	2	7,500	0.23%	**$195.00**
	Breakdown - AIDS Walk	3/24/19	3/25/19	2	1	20		800		5,476		685	1	685	1	0	1	10	1	0	1	0	1	10	2	0	2	2	2,798	0.09%	**$72.75**
10	Friday Night Sound Waves	3/29/19	3/30/19	2	1		144	400				0	1	0	1	0	1	0	1	1,920	1	1,920	1	0	2	0	2	2	7,680	0.23%	**$199.68**
11	Tortuga Set Up[1]	4/5/19	4/11/19	17	17	121	56	2584	128,824	20,885		2,611	17	2,611	17	12,882	17	61	17	4,823	17	4,823	17	61	17	12,882	17	2	1,385,635	42.18%	**$36,026.52**
12	Friday Night Sound Waves	4/5/19	4/6/19	2	1		141	400				0	1	0	1	0	1	0	1	1,880	1	1,880	1	0	2	0	2	2	7,520	0.23%	**$195.52**
	Tortuga Music Festival - Event Days	4/12/19	4/14/19	3	3	23000	410	3030	156,000	46,000		5,750	3	5,750	3	15,600	3	11,500	3	41,410	3	41,410	3	11,500	3	15,600	3	2	891,120	27.13%	**$23,169.12**
13	Friday Night Sound Waves	4/12/19	4/13/19	2	1		137	400				0	1	0	1	0	1	0	1	1,827	1	1,827	1	0	2	0	2	2	7,307	0.22%	**$189.97**
	Tortuga Breakdown	4/15/19	4/19/19	5	4	144	60	3030	32,000	18,000		2,250	4	2,250	4	3,200	4	72	4	6,060	4	6,060	4	72	5	3,200	5	2	191,856	5.84%	**$4,988.26**
14	Friday Night Sound Waves	4/19/19	4/20/19	2	1		134	400				0	1	0	1	0	1	0	1	1,787	1	1,787	1	0	2	0	2	2	7,147	0.22%	**$185.81**
15	SETUP/BREAKDOWN Business & Professional Women's Club Fort Lauderdale (E	4/20/19	4/21/19	1		4				1,850		231	0	231	0	0	0	2	0	0	0	0	0	2	1	0	1	2	4	0.00%	**$0.10**
	Business & Professional Women's Club Fort Lauderdale (Easter Sunrise Service	4/20/19	4/21/19	1	1	1000	112	55		1,850		231	1	231	1	0	1	500	1	205	1	205	1	500	1	0	1	2	3,746	0.11%	**$97.40**
16	Friday Night Sound Waves	4/26/19	4/27/19	2	1		130	400				0	1	0	1	0	1	0	1	1,733	1	1,733	1	0	2	0	2	2	6,933	0.21%	**$180.27**
17	A Call to the Father	4/27/19	4/27/19	1		100		40		4,250		531	0	531	0	0	0	50	0	0	0	0	0	50	1	0	1	2	100	0.00%	**$2.60**
18	SETUP/BREAKDOWN Dig the Beach	4/25/19	4/28/19	2		10		735		10,318		1,290	0	1,290	0	0	0	5	0	0	0	0	0	5	2	0	2	2	20	0.00%	**$0.52**
	Dig the Beach	4/27/19	4/28/19	2	2	300	10	735		20,635		2,579	2	2,579	2	0	2	150	2	245	2	245	2	150	2	0	2	2	23,795	0.72%	**$618.67**
19	Friday Night Sound Waves	5/3/19	5/4/19	2	1		127	400				0	1	0	1	0	1	0	1	1,693	1	1,693	1	0	2	0	2	3	10,160	0.31%	**$264.16**
20	SETUP/BREAKDOWN - Fort Lauderdale Air Show	5/3/19	5/6/19	2	2	10	42	3200		5,000		625	2	625	2	0	2	5	2	4,480	2	4,480	2	5	2	0	2	3	61,320	1.87%	**$1,594.32**
	Fort Lauderdale Air Show	5/4/19	5/5/19	2	1	7500		3200		10,000		1,250	1	1,250	1	0	1	3,750	1	0	1	0	1	3,750	2	0	2	3	41,250	1.26%	**$1,072.50**
21	Friday Night Sound Waves	5/10/19	5/11/19	2	1		123	400				0	1	0	1	0	1	0	1	1,640	1	1,640	1	0	2	0	2	3	9,840	0.30%	**$255.84**
22	Fit Lauderdale Beach Bash	5/11/19	5/11/19	1		200				15,876		1,985	0	1,985	0	0	0	100	0	0	0	0	0	100	1	0	1	3	300	0.01%	**$7.80**
23	Estate - An Elegant Dinner Party	5/12/19	5/13/19	2	1		182	250				0	1	0	1	0	1	0	1	1,517	1	1,517	1	0	2	0	2	3	9,100	0.28%	**$236.60**
24	SE Florida Apartment Association 23rd Annual Volleyball Tournament	5/17/19	5/17/19	1		600	33	275		6,682		835	0	835	0	0	0	300	0	303	0	303	0	300	1	0	1	3	900	0.03%	**$23.40**
25	Friday Night Sound Waves	5/17/19	5/18/19	2	1		119	400				0	1	0	1	0	1	0	1	1,587	1	1,587	1	0	2	0	2	3	9,520	0.29%	**$247.52**
26	International Swimming Hall of Fame Honoree Induction Weekend	5/17/19	5/19/19	3	2		60	350				0	2	0	2	0	2	0	2	700	2	700	2	0	3	0	3	3	8,400	0.26%	**$218.40**
27	March for Cancer	5/18/19	5/18/19		1		272	250				0	1	0	1	0	1	0	1	2,267	1	2,267	1	0	0	0	0	3	13,600	0.41%	**$353.60**
28	Friday Night Sound Waves	5/24/19	5/25/19	2	1		115	400				0	1	0	1	0	1	0	1	1,533	1	1,533	1	0	2	0	2	3	9,200	0.28%	**$239.20**
29	SETUP/BREAKDOWN Great American Beach Party	5/24/19	5/26/19	2	1		174	950		21,450		2,681	1	2,681	1	0	1	0	1	5,510	1	5,510	1	0	2	0	2	3	49,148	1.50%	**$1,277.84**
	Great American Beach Party	5/25/19	5/26/19	1	1	7500	25	950		42,900		5,363	1	5,363	1	0	1	3,750	1	792	1	792	1	3,750	1	0	1	3	59,425	1.81%	**$1,545.05**
30	Friday Night Sound Waves	5/31/19	6/1/19	2	1		112	400				0	1	0	1	0	1	0	1	1,493	1	1,493	1	0	2	0	2	3	8,960	0.27%	**$232.96**
31	Friday Night Sound Waves	6/7/19	6/8/19	2	1		109	400				0	1	0	1	0	1	0	1	1,453	1	1,453	1	0	2	0	2	3	8,720	0.27%	**$226.72**
32	SETUP/BREAKDOWN Dig the Beach	6/6/19	6/9/19	2		10		735		10,318		1,290	0	1,290	0	0	0	5	0	0	0	0	0	5	2	0	2	3	30	0.00%	**$0.78**
	Dig the Beach	6/8/19	6/9/19	2	2	300	10	735		20,635		2,579	2	2,579	2	0	2	150	2	245	2	245	2	150	2	0	2	3	35,693	1.09%	**$928.01**
33	Beach Daz - Summer Caribbean Beach Party	6/9/19	6/10/19	2	1	500	108	200		7,998		1,000	1	1,000	1	0	1	250	1	720	1	720	1	250	2	0	2	3	12,569	0.38%	**$326.78**
34	Friday Night Sound Waves	6/14/19	6/15/19	2	1		106	400				0	1	0	1	0	1	0	1	1,413	1	1,413	1	0	2	0	2	3	8,480	0.26%	**$220.48**
35	Backyard BBQ - Caribbean Jerk Festival	6/16/19	6/16/19	1			106	250				0	0	0	0	0	0	0	0	883	0	883	0	0	1	0	1	3	0	0.00%	**$0.00**
36	Friday Night Sound Waves	6/21/19	6/22/19	2	1		104	400				0	1	0	1	0	1	0	1	1,387	1	1,387	1	0	2	0	2	3	8,320	0.25%	**$216.32**
37	Friday Night Sound Waves	6/28/19	6/29/19	2	1		103	400				0	1	0	1	0	1	0	1	1,373	1	1,373	1	0	2	0	2	3	8,240	0.25%	**$214.24**
38	4th of July Celebration	7/4/19	7/4/19	1		10000						0	0	0	0	0	0	5,000	0	0	0	0	0	5,000	1	0	1	3	15,000	0.46%	**$390.00**
39	Friday Night Sound Waves	7/5/19	7/6/19	2	1		103	400				0	1	0	1	0	1	0	1	1,373	1	1,373	1	0	2	0	2	3	8,240	0.25%	**$214.24**
40	FlockFest	7/6/19	7/6/19	1		500	34	60		1,500		188	0	188	0	0	0	250	0	68	0	68	0	250	1	0	1	3	750	0.02%	**$19.50**
41	SETUP/BREAKDOWN Dig the Beach	7/18/19	7/21/19	2		10		735		10,318		1,290	0	1,290	0	0	0	5	0	0	0	0	0	5	2	0	2	3	30	0.00%	**$0.78**
	Dig the Beach	7/20/19	7/21/19	2	2	300	10	735		20,635		2,579	2	2,579	2	0	2	150	2	245	2	245	2	150	2	0	2	3	35,693	1.09%	**$928.01**
42	SETUP/BREAKDOWN Dig the Beach	8/22/19	8/25/19	2		10		735		10,318		1,290	0	1,290	0	0	0	5	0	0	0	0	0	5	2	0	2	3	30	0.00%	**$0.78**
	Dig the Beach	8/24/19	8/25/19	2	2	300	10	735		20,635		2,579	2	2,579	2	0	2	150	2	245	2	245	2	150	2	0	2	3	35,693	1.09%	**$928.01**
43	Naked Feet 5K	9/14/19	9/14/19	1		100	66	10				0	0	0	0	0	0	50	0	22	0	22	0	50	1	0	1	3	150	0.00%	**$3.90**
44	Backyard BBQ (Jerk Festival)	9/15/19	9/16/19	2	1		95	250				0	1	0	1	0	1	0	1	792	1	792	1	0	2	0	2	3	4,750	0.14%	**$123.50**
45	2019 Lanakila Iki Ocean Challenge	10/12/19	10/13/19	2	1	150		35		660		83	1	83	1	0	1	75	1	0	1	0	1	75	2	0	2	2	780	0.02%	**$20.28**
46	Fort lauderdale International Boat Show 2019	10/30/19	10/31/19	2	1		201	1750				0	1	0	1	0	1	0	1	11,725	1	11,725	1	0	2	0	2	2	46,900	1.43%	**$1,219.40**
	Fort lauderdale International Boat Show 2019	11/1/19	11/4/19	4	3		201	1750				0	3	0	3	0	3	0	3	11,725	3	11,725	3	0	4	0	4	1	70,350	2.14%	**$1,829.10**
47	Sandz Fort Lauderdale Caribbean Music Festival	11/10/19	11/10/19	1		1500	108	300		7,998		1,000	0	1,000	0	0	0	750	0	1,080	0	1,080	0	750	1	0	1	1	750	0.02%	**$19.50**
											Totals	48,162		48,162		34,682		40,075		136,768		136,768		40,075		34,682		149	**3,285,104**	**100.00%**	**$85,412.71**

[1] Tortuga event data are from 2021 but dates were changed to simulate 2019 event timing.

APPENDIX H: Lighting Summary Report 2020

BROWARD COUNTY SEA TURTLE CONSERVATION PROGRAM LIGHTING SURVEY

2020 Summary Report

Prepared by:

Broward County Environmental Protection and Growth Management Department

Environmental Planning and Community Resilience Division

115 S. Andrews Ave. Room 329H

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INTRODUCTION

Three species of sea turtles utilize Florida's beaches for nesting: loggerheads (*Caretta caretta*), green turtles (*Chelonia mydas*), and leatherbacks (*Dermochelys coriacea*) regularly come ashore under the cover of darkness to construct their nests. Florida is one of the most densely nested locations for loggerhead turtles in the entire world (Witherington et al. 2006). Human population growth continues to soar in the Sunshine State as well; the estimated Florida population for 2020 was almost 22 million people (Florida Population 2020). With such high rates of population growth, coastal development has also steadily increased over time which has led to habitat alteration and destruction for many species. Sea turtles are particularly vulnerable to habitat alteration regarding coastal lighting.

Most species of adult female sea turtles emerge from the ocean at night to construct their nests. This behavior likely evolved to take advantage of the cooler temperatures (Spotila and Standora 1984) and low visibility to potential predators (Pritchard and Trebbau 1984). Hatchling turtles likewise emerge from their nests in darkness, avoiding heat exhaustion and lowering their chance of predation by diurnal predators (Gyuris 1994). Hatchlings rely primarily on visual cues in ocean-finding emerging from their nests (Mrosovsky 1972; Mrosovsky and Shettleworth 1968; Mrosovsky and Shettleworth 1975) and tend to orient toward the brightest horizon (Witherington 1992b).

Historically, dunes provided a contrasting dark silhouette opposite the bright ocean horizon that reflected light from the moon and stars on its surface (Lutz and Musick 1997). However, with increased coastal development, land now outshines the sea because of artificial light emanating from condominiums, hotels, private homes, and businesses. Artificial lighting can cause misorientation (orienting in a constant incorrect direction) and disorientation (the inability to properly orient in any direction) among sea turtle hatchlings. Disorientation of nesting females also occurs, though much less frequently than hatchlings (Witherington et al. 2014).

Female sea turtles searching for suitable nesting sites along the coast may abandon their nesting attempts (creating a "false crawl") if artificial lights are present. Light pollution can even cause an overall decrease in nesting success on a beach (Witherington 1992a). Studies have shown that when deterred from nesting, loggerheads chose nesting beaches outside their typical range (Worth and Smith 1976) or inappropriate nesting sites (Murphy 1985).

The goals and objectives of the Broward County Commission are to celebrate and protect sea turtles as a unique natural resource. The Broward County Lighting Management Plan (Broward County Department of Natural Resource Protection 1997) provides the County and municipal governments the tools needed to effectively reduce beachfront lighting. The Plan was incorporated into Sea Turtle Friendly Lighting Ordinances from 1999-2012, and it has been adopted by the coastal municipalities within Broward County because of modifications to the Broward County Land Use Plan. Additionally, the Broward County Sea Turtle Conservation Program (BCSTCP) conducts beach lighting surveys once a month during sea turtle nesting season to identify lighted properties that may negatively impact sea turtles. These surveys are submitted to coastal municipalities to assist code compliance officials who work with residents and building mangers to resolve sources of beach photo-pollution. The goals of the BCSTCP are to track lighting trends in the County, prioritize outreach efforts based on lighting surveys and nesting densities, identify egregious and repetitive addresses for sea turtle-friendly lighting retrofit, and make lighting compliance enforcement easier and more efficient for local code enforcement.

METHODS

The BCSTCP beach lighting surveys were conducted monthly during sea turtle nesting season. These surveys identified the occurrence of illuminated light source types (Appendix 1) at coastal properties and included photo documentation of lighting at excessively illuminated addresses or locations. Survey protocols followed standard techniques as described by the Florida Fish and Wildlife Conservation Commission (FWC) Technical Report: Understanding, Assessing, and Resolving Light-Pollution Problems on Sea Turtle Nesting Beaches (Witherington et al. 2014).

This 2020 summary report examined beach lighting surveys conducted between 2012 and 2020. This period is of relevance, because it includes all years following the adoption of Sea Turtle Friendly Lighting Ordinances by all of Broward County's coastal municipalities. The City of Pompano Beach was the first to adopt this type of ordinance (1999), followed by the City of Deerfield Beach (2000), the City of Hallandale Beach (2001), the Town of Lauderdale-By-The-Sea (2002), the City of Fort Lauderdale (2003), the Town of Hillsboro Beach (2007), and lastly both the cities of Dania Beach and Hollywood (2011). Lighting surveys took place once per month (from March through August in 2012 and 2013; surveys were extended to include the month of September starting in 2014).

Surveyors walked the beach length of each coastal municipality in Broward County during the late evening and examined each address, park, or other coastal infrastructure for the presence of visible, artificially illuminated lights. If a property was visibly lit, the type(s) of lighting was noted on a standardized "BCSTCP Lighting Survey Data Sheet" (Appendix 2). Illuminated light fixtures that can be seen from the beach and are not affixed with "turtle-friendly" long wavelength (> 560 nm) bulbs are considered non-compliant under Florida Administrative Code Chapter 62B-55. Lights were classified in a "present vs. absent" (i.e., non-compliant vs. compliant) fashion. Fixtures were sub-grouped into one of nineteen "fixture types" for the analyses in this report.

Changes in light fixture type were considered trending, or clear and consistent, if they exhibited both a statistical difference between 2012 vs. 2020 percent usage (except for bell, step, and walkway which were examined between 2016 vs. 2020) and the inter-annual rate of change was significantly greater or less than zero. Confidence intervals for statistical determinations were made using a standard normal distribution z-score at alpha = 0.10.

Beginning in 2016, each light category was also classified based on the number of illuminated lights that were present. Classifications were as follows: no lights (0), one light (1), 2-10 lights (2), 11-25 lights (3), and 25 or more lights (4); this method gave each property a minimum number of lights visible for every month's survey. In 2018, an additional notation on the survey indicated "turtle-friendly" lights, as measured by a spectroscope (Radical DVS 5 Prism). Light types with some (one or more, but not all) unshielded, turtle-friendly lights present were indicated by a red outlined cell on the datasheet. Light types with all unshielded, turtle-friendly lights present were indicated by a red shaded cell on the datasheet (Appendix 2). Providing information about "turtle-friendly" lights allowed Code Enforcement to prioritize either "turtle-friendly" unshielded lighting, or non-turtle-friendly unshielded lighting.

For properties with "all" or "some" turtle-friendly lights present, a conservative approach was applied to this report to count the minimum number of lights visible. If a light category had "some" turtle-friendly lights, it was given a "1" to represent the minimum number of lights that could negatively impact turtles. Properties on the Lighting Survey Data Sheet (Appendix 2) were organized north-to-south by R-zone (Appendix 3; each R-zone is approximately 1,000 feet in length). The minimum number of lights visible was summed for each R-zone when lighting surveys took place (March-September). All properties to the south of the R-zone were included in that zone (see Appendix 3). An average monthly minimum number of lights per R-zone was then calculated from this total. Each R-zone was then assigned to its respective municipality, providing an average monthly minimum number of lights observed for every municipality in 2020. Due to differences in length of beach in each municipality, the number of lights visible was standardized by dividing by the length of beach. This resulted in a standardized measurement of the average monthly minimum number of lights visible per mile.

Hatchling disorientations (DIS) were reported by multiple groups in 2020. For this report, disorientations recorded by the BCSTCP, Sea Turtle Oversight Protection (STOP), the South Florida Audubon Society (SFAS), and Sea Turtle Awareness Rescue Stranding (STARS) were considered. A disorientation occurs when a hatchling turtle meanders and circles on the beach in search of the ocean; similarly, a misorientation occurs when a hatchling crawls in a direction other than the ocean (Florida Fish and Wildlife Conservation Commission 2016). For the purposes of this report, the term "disorientation" includes both disorientation and misorientation events. Each disorientation event was reported via the FWC online reporting system using Survey123 and included information such as the number of turtles affected (FWC considers disorientations involving two or more hatchlings), the location of the event, and possible light sources. It is possible that a single nest disorients multiple times prior to inventory; each individual event is reported separately. For this summary, subsequent disorientation events were not included in the analysis to more accurately examine the percentage of hatched nests that disoriented overall. Due to differences in nesting density among municipalities and since not every nest that is marked will hatch, disorientations were standardized to reflect the percentage of hatched nests that were reported disoriented.

Goals of the 2020 Lighting Summary

The goals of this lighting synopsis were to:

1. Examine lighting ordinance compliance throughout Broward County.
2. Examine and compare compliance among individual municipalities.
3. Analyze the fixture type usage among and within municipalities.
4. Compare the average minimum number of lights to occurrence of sea turtle disorientations.

RESULTS

Light Ordinance Compliance: County-Wide

Lighting ordinance compliance (i.e., “dark” properties with no lights observed) across Broward County has varied since 2012 but reached the second-highest average yearly compliance in 2020 of 23% (Table 1). Although some month-to-month compliance rates were lower in 2020 than 2019, they collectively resulted in a higher average yearly compliance rate for Broward County (Figure 1).

Light Ordinance Compliance: Municipalities

Among all municipalities and monthly surveys, property compliance with beach lighting ordinances in 2020 ranged from 11%% to 57% “dark” properties (Table 2). All but two municipalities increased in their seasonal average monthly light ordinance compliance from 2019 to 2020. The Town of Hillsboro Beach and the City of Pompano Beach were the only two municipalities to experience a decline in compliance from 2019 to 2020. The City of Dania Beach recorded the highest seasonal average of 53% compliance in 2020. Additionally, increases in the seasonal average compliance were observed in The City of Deerfield Beach, the Town of Lauderdale-By-The-Sea, the City of Fort Lauderdale, the City of Hollywood, and the City of Hallandale Beach (Figure 2).

Fixture Type Usage: County-Wide

The most common fixture type observed on lighting surveys throughout the entire County in 2020 was interior lights, which accounted for about 24% of all non-compliance observations (Figure 3). Interior light prevalence increased from 23% of all non-compliance observations in 2019. Cobra streetlights were the only fixture type to significantly change between the 2012 vs. 2020 seasons; a decline to just 2% was observed in 2020. Although not statistically significant, notable declines in posted lights, up lighting, acorn lights, globe, signage, spotlights, rope, neon, fluorescent, floodlight, NEMA, and step lights were observed in the County in 2020 (Table 3).

Fixture Type Usage: Municipalities

Each municipality faces unique challenges in reducing the prevalence of beachfront lighting including differing public, residential, and commercial property densities; ordinance code verbiage and enforcement capabilities; beach lengths; and public conservation interest. Presented in order, from north to south, Tables 4-12 provide relative trends in the seasonal average of fixture type observations across municipalities in Broward County from 2012-2020. Tables are sorted by the 2012, highest to lowest, relative frequency non-complying light fixture types among properties, to more clearly present changes through time.

Fixture Type Usage: City of Deerfield Beach

The most common fixture type observed during the 2020 surveys in the City of Deerfield Beach was interior lights. This trend was consistent with what was observed in previous years as well. Although not significant, increases in interior light observations were observed over the past two years in The City of Deerfield Beach. Other fixture types declined in 2020 including cobra, up lighting, posted, globe, rope, NEMA, pool lighting, neon, signage, and fluorescent. Notably, step lighting declined to 0% in 2020. The only light fixture type that demonstrated a significant change in the City of Deerfield Beach was walkway lights, which increased from 0% in 2016 to 6% of all observations in 2020 (Table 4). The City of Deerfield Beach ranked second in compliance among all municipalities in 2020 at 40% and improved from its 2019 seasonal average compliance of 26% (Figure 2).

Fixture Type Usage: Town of Hillsboro Beach

Interior lights were the most common fixture type observed during surveys in 2020 for the Town of Hillsboro Beach and comprised 33% of non-compliant observations. Up lighting was the second most common fixture type observed at 19% of observations. Walkway lights significantly increased from 0% of non-compliant observations in 2016 to 7% of observations in 2020. Other year-to-year changes were noteworthy, though not statistically significant. The Town of Hillsboro Beach saw declines in up lighting, spotlights, posted, rope, floodlights, signage, and step lights. Cobra and NEMA lighting declined to 0% while fluorescent and neon lighting remained at 0% in 2020 (Table 5). The Town of Hillsboro Beach ranked third in average compliance in 2020 at 30% (Figure 2).

Fixture Type Usage: City of Pompano Beach

Like other municipalities, interior lights were the most common observation on surveys in the City of Pompano Beach in 2020, increasing to 31%. Pool lighting significantly increased from 1% of non-compliant observations in 2012 to 7% of observations in 2020. However, some improvements were observed as well. Declines in percent usage of cobra, posted, up lighting, globe, rope, neon, bell, and walkway lights were seen (Table 6). NEMA and floodlight observations declined to 0% in 2020. The City of Pompano Beach ranked fourth in compliance in the County in 2020 at 28% (Figure 2).

Fixture Type Usage: Town of Lauderdale-By-The-Sea

The most observations of non-compliance in the Town of Lauderdale-By-The-Sea were from interior lights, at 24%. While not statistically significant, the Town of Lauderdale-By-The-Sea had some commendable improvements in light reduction during the 2020 season. Cobra lights continued their decline since 2016 and comprised just 1% of all non-compliant observations. The percentage occurrence of up lighting, posted, globe, floodlights, NEMA, neon, signage, bell, step, and walkway lights also declined from 2019 to 2020 (Table 7). Seasonal average compliance increased to 22% in 2020, an improvement from 2019, which resulted in the Town of Lauderdale-By-The-Sea ranking sixth in compliance among all municipalities (Figure 2).

Fixture Type Usage: City of Fort Lauderdale

The most common non-compliant fixture type observed in the City of Fort Lauderdale in 2020 was interior lights, though a small decline from 23% of observations in 2019 to 23% of observations in 2020 was demonstrated. Cobra lights significantly decreased in the City of Fort Lauderdale in 2020 to 2%. Additionally, though not statistically significant, decreases in fixture type usage were seen for interior, ceiling mount, up lighting, fluorescent, signage, neon, spotlights, floodlight, rope, acorn, and NEMA lights in 2020 (Table 8). Overall, the City of Fort Lauderdale ranked fifth among the eight municipalities in average monthly light ordinance compliance in 2020 at 23%, which was an increase from 2019 (Figure 2).

Fixture Type Usage: City of Dania Beach

In the City of Dania Beach, the most common light fixture type observed was interior lights (28% of observations). Wall mounted lights continued to increase in prevalence to 18% of all observations in 2020 although they were absent in the City's coastal area from 2016-2018. Despite some increases, there were notable declines in some fixture type usage. Cobra, rope, neon, and signage decreased in their prevalence from 2019 to 2020; NEMA, fluorescent, and bell lighting also declined in 2020 to 0% (Table 9). The City of Dania Beach ranked the highest in the County for average monthly compliance at 53%, which was higher than its average monthly compliance in 2019, and was the highest seasonal average compliance recorded in Broward County to date (Figure 2).

Fixture Type Usage: City of Hollywood

For the second year in a row, interior lights were the most recorded fixture type in the City of Hollywood in 2020, comprising 20% of all observations. Globe lights were the front-runner in years past, and they were a close second again in 2020 at 17% of observations. A significant decrease in cobra lights was observed from 2012 to 2020 in the City of Hollywood, which was at an all-time low of just 2% of observations in 2020; other decreases, though not significant, also occurred. Posted, signage, neon, rope, up lighting, floodlights, spotlights, NEMA, fluorescent, and step lights all declined in use from 2019 to 2020 (Table 10). The City of Hollywood ranked seventh in average monthly compliance (16%) among all County municipalities in 2020 and improved in its average compliance from 2019 (Figure 2).

Fixture Type Usage: City of Hallandale Beach

Interior lights comprised the highest percentage of non-compliant fixture type observations in the City of Hallandale Beach in 2020 (30% of observations). Step lights exhibited a statistically significant decline to 0% of observations in 2020. Other fixture types decreased in their prevalence in the City of Hallandale Beach in 2020, though not significantly. Up lighting, floodlights, globe, spotlights, neon, signage, fluorescent, and walkway lighting all declined from 2019. In 2020, cobra lights reached an all-time low of just 1% of non-compliant observations and observations of NEMA reached 0% (Table 11). The City of Hallandale Beach ranked eighth among all municipalities in the average monthly light ordinance compliance at 14% but improved from 9% compliance in 2019 (Figure 2).

Number of Lights Observed: County-Wide

Based on the categorization of the number of lights observed on monthly surveys, an average monthly minimum number of lights per R-zone and municipality were able to be determined. The “darkest” municipality in 2020 was the City of Dania Beach, with an average monthly minimum of 15 lights observed. The “brightest” municipality was the City of Hallandale Beach, which had an average monthly minimum of 69 lights observed in 2020 (Figure 4).

Hatchling Disorientations and Lighting

According to reports from all groups permitted by FWC to monitor for disorientations (BCSTCP, STOP, SFAS, and STARS), 532 nests were reported to have disoriented in Broward County in 2020 (in total 556 hatch out disorientation reports were filed, but some nests disoriented multiple times prior to being inventoried). The most disorientations were recorded in the City of Fort Lauderdale, whereas the fewest disorientations were recorded in the City of Dania Beach (Figure 5). When lighting in each municipality and disorientations were standardized, there was a positive correlation between the average number of lights visible per mile and the percentage of hatched nests that disoriented ($R^2 = 0.3434$; Figures 6 and 7). Among the R-zones, some peaks in the minimum number of lights observed occurred with peaks of the percentage of hatched nests that disoriented. These simultaneous peaks occurred at R-zones 2, 28, 56, 72, 83, 107, and 112 (Figure 8). When the minimum number of lights observed was plotted against the percentage of hatched nests disoriented in each R-zone, there was a weak positive correlation ($R^2 = 0.1828$; Figure 9).

DISCUSSION

COVID-19

2020 was a much different year for Broward County, southeast Florida, and the United States as a whole. In response to the coronavirus (COVID-19) pandemic, Broward County's County Administrator urged residents to shelter in place and ordered non-essential businesses to close (Emergency Order 20-01, effective March 22, 2020). Under Emergency Order 20-01, restaurants were only permitted to provide takeaway service and hotels/motels were restricted to limitations in the Florida Governor's Executive Order 20-70. On May 22, 2020, restaurants were permitted to open at 50% capacity, but most bars were still closed, and hotels still had some limitations (Emergency Order 20-12). On May 26, 2020, hotels were open to regular guests (Emergency Order 20-13), but it was not until September 30, 2020 that restaurants could open with up to 100% capacity (Emergency Order 20-27). Additionally, as businesses slowly reopened through the summer, code compliance officers were often directed to shift their priorities from enforcing sea turtle lighting code to enforcing COVID-19 ordinances (S. Kedzuf, personal communication).

Lighting Ordinance Compliance

Average lighting ordinance compliance in Broward County increased slightly from 22% in 2019 to 23% in 2020 (Figure 1). Month-to-month lighting ordinance compliance in 2020 varied, from a high average compliance of 25% in July to a low of 22% in April. For the second year in a row, the lowest compliance rates were seen in the first two months of nesting season (March and April; Table 1). The municipality with the highest compliance in 2020 was the City of Dania Beach. The municipality with the lowest compliance in 2020 was the City of Hallandale Beach (Figure 2). It is important to note that large differences in beach length and number of properties exist among the municipalities, making it somewhat challenging to compare municipalities side-by-side for compliance.

Increased compliance County-wide could be attributed in part to the COVID-19 pandemic. With less tourism, fewer businesses open, and more people staying home, increased lighting compliance may have been an unintentional result. However, compliance has not exceeded the peak compliance observed in 2015 (29% average seasonal compliance). Increased compliance from 2019 to 2020 could also be attributed to increased awareness in the community as well as a stronger local code enforcement presence.

Additionally, an annual lighting workshop was offered again in 2020 on January 29, 2020. The workshop brings together representatives from FWC, BCSTCP, STOP, SFAS, STARS, local code enforcement, and municipal management. The workshop is designed to explain the effects of artificial lighting on sea turtles; introduce turtle-friendly lighting; and brainstorm the best way to conduct, distribute, and follow up with lighting surveys. Representatives from seven municipalities were able to attend the workshop in 2020. An additional workshop was held on March 2, 2020 for the City of Deerfield

Beach since a scheduling conflict prevented them from attending the initial workshop. Looking forward to 2021, another workshop will be held, but in a virtual setting. County staff are hopeful that the virtual platform will increase attendance even more than in 2020. The annual lighting workshop is crucial to unite code enforcers from all municipalities with the common goal of improving coastal lighting for sea turtles while still maintaining human safety.

Fixture Type Usage

Interior lighting was clearly the front-runner for non-compliant fixture type usage in Broward County in 2020 (Table 3; Figure 3). In fact, interior lighting was the most common fixture type observed in every coastal municipality in 2020 (Tables 4-11). An outreach campaign to reduce the number of properties with interior lighting is one possible solution to combat the excess light emanating from inside buildings during nesting season. Increased awareness through non-traditional methods should also be explored, such as the use of social media platforms to educate visitors who may be unaware of the impacts of interior lighting on nesting and hatchling sea turtles.

The City of Deerfield Beach, the Town of Hillsboro Beach, and the City of Dania Beach saw significant increases in the prevalence of walkway lights from 2016 to 2020 (Tables 4, 5, and 9). The City of Pompano Beach experienced a significant increase in pool lighting from 2012 to 2020 (Table 6). Increases in certain types of lighting may be related to businesses increasing lights to enhance safety, or homeowners adding lights to the existing property. Meanwhile, Broward County and the cities of Fort Lauderdale and the City of Hollywood have experienced a statistically significant decline in the percent usage of cobra lights from 2012 to 2020 (Tables 3, 8, and 10). A decline in cobra fixtures may be attributed to local electric companies transitioning to using cut-off fixtures instead of traditional drop lens “cobra” fixtures. The City of Hallandale Beach had a significant decline in step lights from 2016 to 2020 (Table 11).

While not statistically significant, some municipalities have seen decreases in the occurrence of certain types of light that are used mainly for decorative purposes and not for safety: rope, neon, and up lighting. In 2020, the County as a whole saw decreases in the use of all three of these light types (Table 3). Most municipalities followed this same pattern except for The Town of Hillsboro Beach, which saw neon lighting stay at 0% (Table 5); the Town of Lauderdale-By-The-Sea, which experienced an increase in rope lighting (Table 7); and the City of Dania Beach, which saw an increase in up lighting in 2020 (Table 9). Reducing the occurrence of “decorative” lights is a good starting point to improve coastal lighting in Broward County. In 2021, keeping lights not intended for safety switched “off” should be encouraged.

Emergency Order restrictions may have unintentionally caused different lighting patterns in 2020 that have been previously observed in Broward County. Though not statistically significant, light types that are typically associated with businesses such as signage, rope lighting, and neon lighting declined in the County in 2020. Comparatively, light types that are commonly documented at residential properties including interior, pool lighting, wall mounted, and ceiling mounted lights increased in their prevalence across the County in 2020 (Table 3). These trends are not unexpected, given the emergency orders that were implemented due to COVID-19.

It is worth noting that the total number of non-compliant fixture type observations declined across most municipalities from 2019 to 2020. The Town of Hillsboro Beach and the City of Dania Beach were the only two municipalities to see increases in the number of non-compliant fixture type observations in 2020 (Tables 3-11). A similar decline was observed from 2018 to 2019. This trend indicates that efforts to reduce lighting in Broward County were successful and/or more properties have implemented compliant turtle-friendly lighting, which is not noted on monthly surveys unless the light(s) is unshielded.

Number of Lights and Sea Turtle Disorientations

It is worth noting that the volunteer groups present on the beach at night do not monitor each beach with equal effort due to permitting, availability of personnel, prioritization of beaches with more nesting, etc. In 2020, effort was more unequal among beaches and time due to COVID-19, beach closures, and personnel availability. Morning surveyors from the BCSTCP also examine each nest for evidence of disorientation, but many factors including human foot traffic, rain, wind, etc. often erase hatchling tracks before surveyors are present to observe them. As a result, the number of disorientation events reported in this summary may be conservative. Disorientations were reported online to FWC's reporting system by volunteer groups and BCSTCP staff. The online system was launched in 2019 and allows marine turtle permit holders to document disorientations in real-time. Reports were downloaded and summarized weekly by the BCSTCP contract manager and distributed to local code enforcement to further aid in their efforts to identify areas with potentially problematic lighting.

Any source of light that is visible from the beach can potentially cause a disorientation, as shown by analyses performed for this report. When lights and sea turtle disorientations were both standardized, there was a correlation between lights per mile and number of disorientations, with fewer nests disorienting in municipalities with less lights visible per mile overall (Figure 6). When the percentage of hatched nests disoriented were plotted against the average number of lights observed per mile, there was a positive correlation ($R^2 = 0.3434$; Figure 7). The City of Deerfield Beach, the City of Pompano Beach, the Town of Lauderdale-By-The-Sea, the City of Fort Lauderdale, and the City of Hollywood had more than 150 lights documented per mile; each of these municipalities had over 20% of hatched nests disorient. Municipalities with lower illumination (less than 150 lights observed per mile) including the Town of Hillsboro Beach and the City of Dania Beach saw less than 10% of hatched nests disorient. The City of Hallandale Beach was the only exception to this pattern in 2020; with over 300 lights documented per mile, this municipality saw less than 20% of hatched nests disorient (Figure 6). This suggests that the number of lights present may not be the only factor to determine if disorientations will occur. A single point source of light can cause a disorientation (Salmon et al. 1995), but the position of light on the horizon can also play a role in hatchling orientation (Witherington et al. 2004). For these reasons, it is important to minimize any artificial light sources reaching the beach wherever possible.

Plotting the percentage of hatched nests disoriented and the minimum number of lights observed monthly for each R-zone (Figure 8) suggests that point source lights can negatively impact hatchlings. This is demonstrated by simultaneous peaks in disorientations and number of lights observed among R-zones. For example, R-zones 2, 28, 56, 72, 83, 107, and 112 had considerable peaks in the average number of lights observed each month as well as peaks in the percentage of hatched nests that disoriented. Linear correlation analysis indicates that there was a weak positive correlation between disorientations and the number of lights observed within R-zones ($R^2 = 0.1828$; Figure 9).

It is important to correct problematic lighting at the source by educating residents and business owners about how artificial lights can affect turtles. Not only does Figure 8 suggest that direct lighting can be an issue for sea turtle hatchlings, but it also suggests that lights some distance away can also pose a problem for turtles. Cumulative "sky glow" results from poorly directed light being aimed into the sky. The resulting effect is a glow that can be seen from miles away and can cause disorientations (Rusenko et al. 2005). Increases in disorientations in R-zones 36, 48, 65, 67, 69, 77, 83, 103, 115, and 118 are possibly the result of sky glow since the number of lights documented in these R-zones is relatively low compared to adjacent R-zones (Figure 8). To reduce the amount of sky glow that is visible from the beach, lights are recommended to be full cut-off and shielded to direct the light where it is needed: on the ground (Witherington et al. 2014). It is also worth noting that lighting surveys only capture artificial lighting from properties located directly on the beach. Sky glow from properties located further west could also contribute to disorientations.

Conclusions

This report revealed that small improvements in lighting ordinance compliance have occurred in Broward County. Overall, 2020 was a more compliant year than 2019 but additional factors such as the COVID-19 pandemic likely affected light usage and ordinance enforcement. Outreach in the community about the impacts of artificial lighting on sea turtles will continue in upcoming seasons, nonetheless. Some improvements can be made, especially with interior lighting, which is perhaps one of the simplest types of lighting to reduce because property owners can close curtains, move light sources away from windows, or turn off lights after dark during nesting season. A more expensive solution to interior lighting is applying window tint; this option is especially attractive to property owners not just for its ability to minimize potentially impactful interior lighting, but also because it results in energy savings.

Communication among BCSTCP staff, FWC staff, municipal code enforcement, and property owners is a crucial part of increasing the lighting ordinance compliance County-wide. These communications are better solidified with a yearly lighting workshop with local code enforcement, which is recommended to occur each year before nesting season begins. Volunteer groups have been an integral piece of the BCSTCP for many years; their efforts on the beaches at night to collect valuable data on hatchling disorientations and visible lights are extremely helpful in preparing reports such as this one. Additionally, new tools such as online reporting of sea turtle disorientations in real-time by marine turtle permit holders may help code enforcement prioritize areas of the beach that are experiencing more disorientations due to non-compliant lighting. Broward County staff are optimistic that lighting will continue to improve, given the suggestions mentioned in this lighting summary report.

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FIGURES AND TABLES

Table 1. Average Lighting Ordinance Compliance in Broward County, 2012-2020. *Lighting surveys were not conducted in September until the 2014 season.*

	2012	2013	2014	2015	2016	2017	2018	2019	2020
March	14%	12%	20%	33%	22%	16%	16%	11%	23%
April	15%	14%	21%	30%	21%	16%	13%	11%	22%
May	15%	18%	21%	28%	17%	16%	13%	24%	24%
June	16%	21%	22%	29%	16%	16%	13%	24%	24%
July	16%	24%	23%	27%	15%	16%	12%	28%	25%
August	15%	26%	25%	28%	16%	15%	15%	26%	22%
September	N/A	N/A	25%	30%	17%	18%	14%	29%	23%
Average	15%	19%	23%	29%	18%	16%	14%	22%	23%
Standard Error	0.00	0.02	0.01	0.01	0.01	0.00	0.00	0.03	0.00

Table 2. Yearly and Monthly Lighting Ordinance Compliance by Municipality, 2012-2020. *Standard error of the mean was calculated by dividing the standard deviation of all months in a given year by the square root of the number of months that were surveyed that year. Lighting surveys were not conducted in September until the 2014 season.*

City	Year	March	April	May	June	July	August	September	Seasonal Average	Standard Error
City of Deerfield Beach	2012	17%	24%	29%	32%	32%	32%	N/A	24%	2.47
City of Deerfield Beach	2013	26%	33%	57%	54%	60%	31%	N/A	37%	6.07
City of Deerfield Beach	2014	31%	21%	31%	19%	31%	19%	29%	26%	2.17

City	Year	March	April	May	June	July	August	September	Seasonal Average	Standard Error
City of Deerfield Beach	2015	31%	50%	50%	29%	42%	43%	50%	42%	3.43
City of Deerfield Beach	2016	30%	26%	28%	33%	26%	30%	33%	29%	1.12
City of Deerfield Beach	2017	33%	26%	30%	30%	28%	28%	37%	30%	1.44
City of Deerfield Beach	2018	19%	16%	14%	12%	12%	14%	12%	14%	1.01
City of Deerfield Beach	2019	19%	14%	23%	33%	30%	23%	42%	26%	3.54
City of Deerfield Beach	2020	35%	30%	40%	47%	44%	42%	44%	40%	2.20
Town of Hillsboro Beach	2012	45%	41%	40%	45%	47%	47%	N/A	38%	1.19
Town of Hillsboro Beach	2013	49%	56%	66%	53%	51%	59%	N/A	48%	2.64
Town of Hillsboro Beach	2014	42%	54%	51%	44%	49%	63%	39%	49%	3.09
Town of Hillsboro Beach	2015	45%	62%	59%	56%	42%	44%	60%	53%	3.27

City	Year	March	April	May	June	July	August	September	Seasonal Average	Standard Error
Town of Hillsboro Beach	2016	45%	42%	38%	35%	30%	34%	33%	37%	1.98
Town of Hillsboro Beach	2017	32%	34%	36%	36%	39%	37%	38%	36%	0.98
Town of Hillsboro Beach	2018	38%	33%	35%	34%	33%	33%	35%	34%	0.74
Town of Hillsboro Beach	2019	29%	27%	33%	35%	46%	34%	46%	36%	2.85
Town of Hillsboro Beach	2020	35%	30%	33%	26%	29%	29%	27%	30%	1.28
City of Pompano Beach	2012	12%	18%	16%	19%	19%	19%	N/A	15%	1.08
City of Pompano Beach	2013	4%	12%	7%	17%	18%	16%	N/A	11%	2.42
City of Pompano Beach	2014	18%	17%	11%	14%	14%	15%	20%	16%	1.11
City of Pompano Beach	2015	33%	23%	22%	27%	26%	25%	26%	26%	1.39
City of Pompano Beach	2016	19%	17%	17%	12%	12%	14%	14%	15%	1.045

City	Year	March	April	May	June	July	August	September	Seasonal Average	Standard Error
City of Pompano Beach	2017	18%	16%	16%	20%	19%	11%	20%	17%	1.18
City of Pompano Beach	2018	20%	11%	15%	11%	11%	20%	16%	15%	1.50
City of Pompano Beach	2019	6%	15%	34%	35%	35%	39%	40%	29%	4.94
City of Pompano Beach	2020	26%	33%	28%	26%	28%	25%	29%	28%	1.00
Town of Lauderdale-By-The-Sea	2012	1%	7%	7%	8%	9%	9%	N/A	6%	1.20
Town of Lauderdale-By-The-Sea	2013	4%	8%	8%	7%	13%	21%	N/A	9%	2.47
Town of Lauderdale-By-The-Sea	2014	14%	21%	9%	16%	13%	18%	18%	16%	1.45
Town of Lauderdale-By-The-Sea	2015	17%	13%	15%	15%	15%	19%	19%	16%	0.81
Town of Lauderdale-By-The-Sea	2016	26%	30%	18%	16%	19%	16%	18%	20%	2.09
Town of Lauderdale-By-The-Sea	2017	13%	11%	9%	11%	9%	10%	13%	11%	0.60

City	Year	March	April	May	June	July	August	September	Seasonal Average	Standard Error
Town of Lauderdale-By-The-Sea	2018	10%	5%	5%	6%	5%	8%	9%	7%	0.77
Town of Lauderdale-By-The-Sea	2019	3%	5%	24%	19%	19%	25%	19%	16%	3.32
Town of Lauderdale-By-The-Sea	2020	28%	25%	20%	21%	23%	20%	19%	22%	1.18
City of Fort Lauderdale	2012	13%	14%	14%	12%	12%	12%	N/A	11%	0.36
City of Fort Lauderdale	2013	7%	5%	13%	21%	25%	26%	N/A	14%	3.75
City of Fort Lauderdale	2014	24%	24%	22%	24%	26%	24%	24%	24%	0.44
City of Fort Lauderdale	2015	38%	27%	26%	26%	26%	28%	29%	29%	1.59
City of Fort Lauderdale	2016	21%	21%	13%	15%	13%	15%	15%	16%	1.24
City of Fort Lauderdale	2017	13%	13%	13%	14%	13%	13%	14%	13%	0.22
City of Fort Lauderdale	2018	9%	10%	11%	10%	10%	12%	13%	11%	0.55
City of Fort Lauderdale	2019	7%	12%	26%	26%	28%	30%	33%	23%	3.67
City of Fort Lauderdale	2020	19%	19%	25%	25%	26%	24%	23%	23%	1.11
City of Dania Beach	2012	46%	46%	43%	38%	46%	9%	N/A	32%	5.85
City of Dania Beach	2013	0%	0%	0%	13%	5%	68%	N/A	12%	10.97

City	Year	March	April	May	June	July	August	September	Seasonal Average	Standard Error
City of Dania Beach	2014	77%	0%	36%	41%	35%	82%	82%	51%	11.77
City of Dania Beach	2015	33%	50%	33%	67%	33%	33%	50%	43%	4.96
City of Dania Beach	2016	43%	20%	33%	50%	50%	50%	50%	42%	4.41
City of Dania Beach	2017	43%	43%	43%	43%	29%	43%	50%	42%	2.43
City of Dania Beach	2018	29%	29%	29%	29%	14%	14%	29%	25%	2.63
City of Dania Beach	2019	43%	29%	57%	57%	57%	43%	43%	47%	4.07
City of Dania Beach	2020	57%	57%	57%	57%	43%	43%	57%	53%	2.62
City of Hollywood	2012	1%	1%	2%	2%	1%	1%	N/A	1%	0.29
City of Hollywood	2013	6%	2%	5%	9%	12%	14%	N/A	7%	1.77
City of Hollywood	2014	4%	10%	12%	16%	15%	13%	20%	13%	1.85
City of Hollywood	2015	27%	24%	22%	26%	24%	20%	20%	23%	1.14
City of Hollywood	2016	12%	13%	11%	10%	10%	10%	12%	11%	0.45
City of Hollywood	2017	11%	11%	10%	7%	9%	11%	11%	10%	0.54
City of Hollywood	2018	13%	10%	10%	11%	9%	11%	10%	10%	0.46
City of Hollywood	2019	12%	4%	13%	14%	21%	15%	17%	14%	1.91

City	Year	March	April	May	June	July	August	September	Seasonal Average	Standard Error
City of Hollywood	2020	14%	14%	17%	19%	17%	14%	16%	16%	0.80
City of Hallandale Beach	2012	13%	13%	13%	13%	8%	13%	N/A	10%	0.69
City of Hallandale Beach	2013	24%	25%	17%	0%	33%	4%	N/A	15%	5.27
City of Hallandale Beach	2014	17%	17%	13%	8%	12%	40%	20%	18%	3.94
City of Hallandale Beach	2015	16%	16%	0%	21%	5%	47%	26%	19%	5.84
City of Hallandale Beach	2016	16%	5%	5%	5%	5%	5%	5%	7%	1.50
City of Hallandale Beach	2017	5%	5%	5%	5%	0%	0%	0%	3%	1.06
City of Hallandale Beach	2018	5%	0%	0%	0%	0%	0%	0%	1%	0.75
City of Hallandale Beach	2019	5%	5%	11%	11%	11%	11%	11%	9%	0.96
City of Hallandale Beach	2020	16%	11%	16%	11%	16%	11%	16%	14%	1.07

Table 3. Percentage of All Observations of Light Fixture Types in Broward County, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Cobra *	18	13	10	7	10	10	8	4	2	-2.01	1.00
Interior	17	21	24	26	20	18	17	23	24	0.91	1.57
Posted (non-specific)	13	7	5	3	5	5	7	5	5	-1.07	1.06
Ceiling mount	11	11	10	10	9	9	9	10	10	-0.10	0.36
Wall mount	9	10	10	10	11	11	12	9	10	0.12	0.61
Up lighting	5	4	6	4	7	8	7	10	10	0.53	0.82
Acorn	4	3	3	3	3	3	3	3	3	-0.08	0.12
Globe	2	7	8	3	6	5	5	5	5	0.38	1.06
Sign	2	4	3	4	4	4	4	6	6	0.44	0.42
Spotlights	2	2	2	4	4	6	6	3	3	0.17	0.50
Rope	2	2	2	2	3	3	3	3	3	0.10	0.14
Neon	1	2	1	2	1	0	1	2	2	0.02	0.45
Pool lighting	1	1	1	3	1	2	2	4	5	0.47	0.49
Fluorescent	1	2	1	3	3	3	3	2	2	0.06	0.37
Floodlight	1	3	4	3	3	3	4	1	0	-0.07	0.59
NEMA	0	1	2	2	2	1	2	1	0	0.00	0.31
Bell	N/A	N/A	N/A	N/A	4	5	5	4	5	0.23	0.32
Step lights	N/A	N/A	N/A	N/A	1	1	0	1	1	-0.07	0.19
Walkway	N/A	N/A	N/A	N/A	0	0	0	4	4	1.11	0.86
Total Non-Compliant Fixture Type Observations	12751	11192	11223	8626	11498	14409	14430	11352	10499		

Table 4. Percentage of All Observations of Light Fixture Types in the City of Deerfield Beach, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Interior	27	37	40	30	27	23	21	23	27	-0.04	2.11
Cobra	15	10	13	9	15	14	10	6	2	-1.57	1.40
Wall mount	15	11	9	10	10	10	10	10	11	-0.49	0.64
Ceiling mount	12	15	8	13	14	11	11	11	12	-0.05	1.21
Up lighting	8	15	13	9	13	10	8	14	12	0.53	1.57
Posted (non-specific)	5	0	2	2	7	7	8	7	6	0.12	0.91
Acorn	2	0	0	1	0	1	2	1	2	0.01	0.40
Globe	1	4	0	0	0	0	1	1	0	-0.10	0.65
Floodlight	1	0	0	1	2	3	4	1	1	-0.01	0.51
Spotlights	1	1	0	2	4	7	5	3	6	0.64	0.72
Rope	0	0	0	1	0	0	2	2	1	0.06	0.23
NEMA	0	0	0	1	0	0	0	1	0	0.03	0.32
Pool lighting	0	0	2	3	0	1	3	5	7	0.91	0.65
Neon	0	0	0	1	0	2	2	3	1	0.18	0.39
Sign	0	0	2	6	4	5	6	7	6	0.76	0.54
Fluorescent	0	0	0	0	0	1	2	2	1	0.12	0.18
Bell	N/A	N/A	N/A	N/A	0	0	0	0	0	0.00	0.00
Step lights	N/A	N/A	N/A	N/A	1	0	0	0	0	-0.32	0.33
Walkway *	N/A	N/A	N/A	N/A	0	1	2	4	6	1.46	0.28
Total Non-Compliant Fixture Type Observations	390	234	376	306	469	494	626	526	428		

Table 5. Percentage of All Observations of Light Fixture Types in the Town of Hillsboro Beach, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Interior	29	34	33	42	39	35	29	33	33	0.47	1.79
Up lighting	17	19	18	11	21	21	15	21	19	0.30	1.99
Ceiling mount	11	15	12	10	10	12	11	11	12	0.07	0.73
Spotlights	7	2	3	4	3	4	4	4	4	-0.39	0.66
Wall mount	6	7	8	7	9	9	14	7	8	0.21	1.19
Posted (non-specific)	5	3	1	2	5	5	5	6	3	-0.23	0.70
Globe	3	3	3	1	1	1	5	2	2	-0.09	0.72
Cobra	2	1	1	0	2	1	1	0	0	-0.30	0.34
Pool lighting	1	0	2	2	0	3	2	5	7	0.69	0.63
Rope	1	0	1	0	1	0	1	2	2	0.09	0.22
NEMA	1	0	0	0	0	0	0	0	0	-0.08	0.05
Fluorescent	1	0	0	0	1	0	1	0	0	-0.08	0.22
Acorn	0	0	0	0	0	0	0	0	1	0.08	0.11
Floodlight	0	0	2	1	1	0	1	0	0	0.03	0.27
Neon	0	0	1	0	0	0	0	0	0	0.00	0.11
Sign	0	0	0	0	0	0	0	3	2	0.26	0.35
Bell	N/A	N/A	N/A	N/A	0	0	0	0	0	0.03	0.03
Step lights	N/A	N/A	N/A	N/A	1	1	0	1	0	0.14	0.46
Walkway *	N/A	N/A	N/A	N/A	0	0	1	6	7	3.04	1.14
Total Non-Compliant Fixture Type Observations	829	408	688	486	796	729	967	860	956		

Table 6. Percentage of All Observations of Light Fixture Types in the City of Pompano Beach, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Cobra	24	17	15	6	15	15	13	4	2	-2.70	2.05
Interior	22	30	26	31	25	21	19	30	31	1.15	2.20
Posted (non-specific)	13	5	3	1	5	4	6	6	5	-0.95	1.17
Ceiling mount	13	13	15	15	11	11	10	11	12	-0.09	0.70
Wall mount	5	9	10	13	11	13	13	8	9	0.52	0.98
Up lighting	5	4	5	4	7	8	7	13	13	0.96	0.88
Spotlights	2	2	1	4	3	6	7	2	2	0.00	0.84
Globe	2	2	3	1	2	2	1	1	1	-0.20	0.25
Rope	2	1	1	1	2	2	2	2	1	-0.10	0.31
Sign	1	2	1	1	2	3	2	6	7	0.68	0.62
NEMA	1	0	1	2	0	1	1	0	0	-0.13	0.29
Pool lighting *	1	2	3	2	1	3	5	5	7	0.78	0.46
Acorn	0	1	0	0	1	0	0	0	0	0.03	0.16
Floodlight	0	2	2	2	3	1	4	1	0	0.00	0.72
Neon	0	0	0	1	0	0	0	0	0	0.02	0.18
Fluorescent	0	0	1	5	4	4	5	3	3	0.38	0.62
Bell	N/A	N/A	N/A	N/A	0	0	0	2	0	0.03	0.73
Step lights	N/A	N/A	N/A	N/A	1	1	0	1	1	-0.09	0.21
Walkway	N/A	N/A	N/A	N/A	0	0	1	5	5	1.15	1.07
Total Non-Compliant Fixture Type Observations	1487	1320	1516	1473	1571	1620	1692	1310	1224		

Table 7. Percentage of All Observations of Light Fixture Types in the Town of Lauderdale-By-The-Sea, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Interior	22	30	31	33	23	20	18	24	24	0.29	2.00
Ceiling mount	18	16	10	9	10	9	10	8	12	-0.81	0.97
Wall mount	15	13	12	7	11	13	13	11	13	-0.18	1.13
Up lighting	10	5	9	3	8	10	10	13	11	0.11	1.53
Cobra	10	6	8	3	11	10	8	3	1	-1.06	1.54
Posted	6	2	5	2	6	6	9	8	7	0.12	1.04
Spotlights	3	3	2	7	5	7	7	5	6	0.41	0.87
Rope	2	2	1	3	7	4	4	2	3	0.11	0.77
Globe	2	3	4	1	2	2	3	2	1	-0.10	0.44
Acorn	1	1	1	3	0	0	1	1	1	-0.07	0.42
Floodlight	0	2	4	2	5	4	5	2	1	0.08	0.81
NEMA	0	0	0	2	0	0	0	1	0	0.01	0.38
Pool lighting	0	0	2	7	2	3	3	4	6	0.81	1.07
Neon	0	0	0	2	0	0	1	1	0	0.06	0.32
Sign	0	0	1	2	2	1	1	6	5	0.60	0.62
Fluorescent	0	0	1	5	2	2	1	1	2	0.25	0.78
Bell	N/A	N/A	N/A	N/A	0	0	2	1	1	0.20	0.48
Step lights	N/A	N/A	N/A	N/A	1	1	0	1	0	-0.14	0.23
Walkway	N/A	N/A	N/A	N/A	0	1	0	6	6	1.32	1.55
Total Non-Compliant Fixture Type Observations	1331	1022	1116	753	691	1466	1740	1399	1220		

Table 8. Percentage of All Observations of Light Fixture Types in the City of Fort Lauderdale, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Cobra *	22	13	11	10	11	11	9	3	2	-2.54	1.20
Interior	15	24	27	26	20	19	17	23	23	0.98	1.70
Ceiling mount	9	10	9	8	8	8	8	10	9	0.04	0.44
Posted	9	6	5	6	7	7	8	5	5	-0.53	0.61
Wall mount	8	8	9	8	11	10	12	9	9	0.16	0.63
Up lighting	6	5	7	5	7	8	7	11	10	0.55	0.69
Fluorescent	4	3	2	3	4	3	3	2	1	-0.32	0.29
Sign	4	7	7	5	6	6	6	9	9	0.60	0.54
Pool lighting	3	1	1	3	0	1	1	4	5	0.19	0.60
Neon	2	4	2	5	1	1	1	3	2	-0.01	0.69
Spotlights	2	2	2	4	5	5	5	3	3	0.04	0.44
Globe	2	2	2	1	1	1	1	1	1	-0.12	0.17
Floodlight	2	2	3	2	3	2	3	1	0	-0.20	0.39
Rope	2	3	2	3	4	4	4	4	4	0.28	0.21
Acorn	1	1	1	2	1	1	2	1	1	-0.08	0.16
NEMA	0	0	1	0	0	0	2	1	0	0.02	0.26
Bell	N/A	N/A	N/A	N/A	6	8	8	7	10	0.86	0.83
Step lights	N/A	N/A	N/A	N/A	1	1	0	1	2	0.05	0.33
Walkway	N/A	N/A	N/A	N/A	0	0	1	4	4	1.12	0.81
Total Non-Compliant Fixture Type Observations	3639	3263	2970	2647	3544	4005	4406	3436	3331		

Table 9. Percentage of All Observations of Light Fixture Types in the City of Dania Beach, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Cobra	61	70	54	0	9	16	12	6	4	-7.17	7.35
Wall mount	17	8	15	2	0	0	0	12	18	0.10	2.90
Floodlight	11	0	1	4	0	0	0	0	0	-1.39	1.59
Ceiling mount	11	6	7	9	8	0	1	1	4	-0.92	1.23
Acorn	0	1	0	0	0	0	0	0	0	0.00	0.12
Globe	0	0	0	0	0	0	0	0	0	0.00	0.00
NEMA	0	0	0	9	0	0	0	1	0	0.00	1.70
Up lighting	0	1	0	0	0	0	0	3	6	0.78	0.53
Spotlights	0	1	0	2	4	9	3	0	3	0.31	1.22
Interior	0	9	13	31	28	27	28	32	28	3.44	2.62
Rope	0	3	7	4	21	22	18	12	9	1.09	2.50
Posted	0	1	3	2	13	16	15	7	14	1.72	1.91
Pool lighting	0	0	0	0	0	0	0	0	0	0.00	0.00
Neon	0	0	0	18	0	0	3	4	3	0.31	3.40
Sign	0	0	0	9	17	11	9	12	6	0.78	1.97
Fluorescent	0	0	0	2	0	0	0	3	0	0.00	0.70
Bell	N/A	N/A	N/A	N/A	0	0	12	1	0	0.00	4.53
Step lights	N/A	N/A	N/A	N/A	0	0	0	0	0	0.00	0.00
Walkway *	N/A	N/A	N/A	N/A	0	0	0	4	8	1.88	1.12
Total Non-Compliant Fixture Type Observations	108	156	107	45	56	45	68	68	80		

Table 10. Percentage of All Observations of Light Fixture Types in the City of Hollywood, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Posted	22	10	6	3	3	3	5	3	3	-2.33	1.50
Cobra *	17	14	9	8	8	8	5	5	2	-1.87	0.70
Interior	13	14	16	17	12	11	11	16	20	0.82	1.06
Ceiling mount	10	10	8	11	8	8	9	8	9	-0.11	0.56
Wall mount	10	10	11	11	13	12	13	9	10	0.08	0.61
Acorn	9	7	8	6	7	8	7	9	10	0.14	0.51
Globe	3	13	16	7	14	13	13	15	17	1.75	2.03
Sign	2	4	4	7	4	4	4	5	4	0.15	0.57
Neon	2	3	2	1	0	0	1	3	3	0.08	0.44
Rope	2	2	2	3	2	3	3	3	2	-0.01	0.28
Up lighting	1	1	2	2	3	3	3	5	4	0.28	0.34
Floodlight	1	4	5	4	4	3	4	1	1	0.02	0.65
Spotlights	1	1	3	4	5	6	6	4	3	0.31	0.49
NEMA	0	2	3	5	4	3	5	1	0	0.05	0.60
Pool lighting	0	0	0	1	0	0	0	2	2	0.23	0.21
Fluorescent	0	2	2	4	3	4	3	3	2	0.26	0.44
Bell	N/A	N/A	N/A	N/A	7	7	7	6	7	0.05	0.55
Step lights	N/A	N/A	N/A	N/A	1	1	0	1	0	-0.12	0.19
Walkway	N/A	N/A	N/A	N/A	0	0	0	2	3	0.63	0.55
Total Non-Compliant Fixture Type Observations	4644	4505	4125	2663	3895	3947	4707	3337	2860		

Table 11. Percentage of All Observations of Light Fixture Types in the City of Hallandale Beach, 2012-2020. *Percentages are of the total non-compliant fixture type observations, which are provided in the last row of the table. Asterisks (*) indicate statistically significant average annual rates of change at α = 0.10.*

Light Fixture Type	2012	2013	2014	2015	2016	2017	2018	2019	2020	Average Annual Change	Standard Error
Interior	22	31	26	35	29	24	20	26	30	0.99	2.30
Posted (non-specific)	15	13	6	3	10	9	10	9	13	-0.22	1.52
Cobra	12	7	11	4	5	12	12	2	1	-1.47	2.11
Wall mount	11	12	12	9	10	10	12	10	13	0.21	0.67
Ceiling mount	8	9	7	8	4	8	8	9	10	0.25	0.89
Up lighting	7	2	2	4	5	9	5	11	8	0.06	1.18
Floodlight	4	2	5	8	9	6	7	2	1	-0.39	1.05
Globe	4	12	16	8	11	7	8	6	3	-0.05	1.83
Acorn	2	0	0	2	0	0	0	0	0	-0.23	0.44
NEMA	0	5	2	1	0	0	0	0	0	0.00	0.85
Spotlights	0	0	4	1	2	3	2	3	2	0.19	0.85
Rope	0	1	1	1	2	1	1	1	2	0.30	0.40
Pool lighting	0	0	1	7	2	5	1	8	9	1.18	1.43
Neon	0	0	0	0	0	0	1	1	0	0.04	0.17
Sign	0	0	0	0	0	0	0	2	2	0.27	0.23
Fluorescent	0	0	1	2	4	3	4	2	1	0.08	0.62
Bell	N/A	N/A	N/A	N/A	0	0	0	0	1	0.15	0.12
Step lights *	N/A	N/A	N/A	N/A	1	1	0	0	0	-0.22	0.12
Walkway	N/A	N/A	N/A	N/A	0	0	0	6	5	1.14	1.60
Total Non-Compliant Fixture Type Observations	323	284	325	253	347	452	515	410			

Figure 1. Yearly Lighting Ordinance Compliance in Broward County, 2012-2020. *Asterisks (*) indicate that lighting surveys were not conducted during the months of September in 2012-2013.*

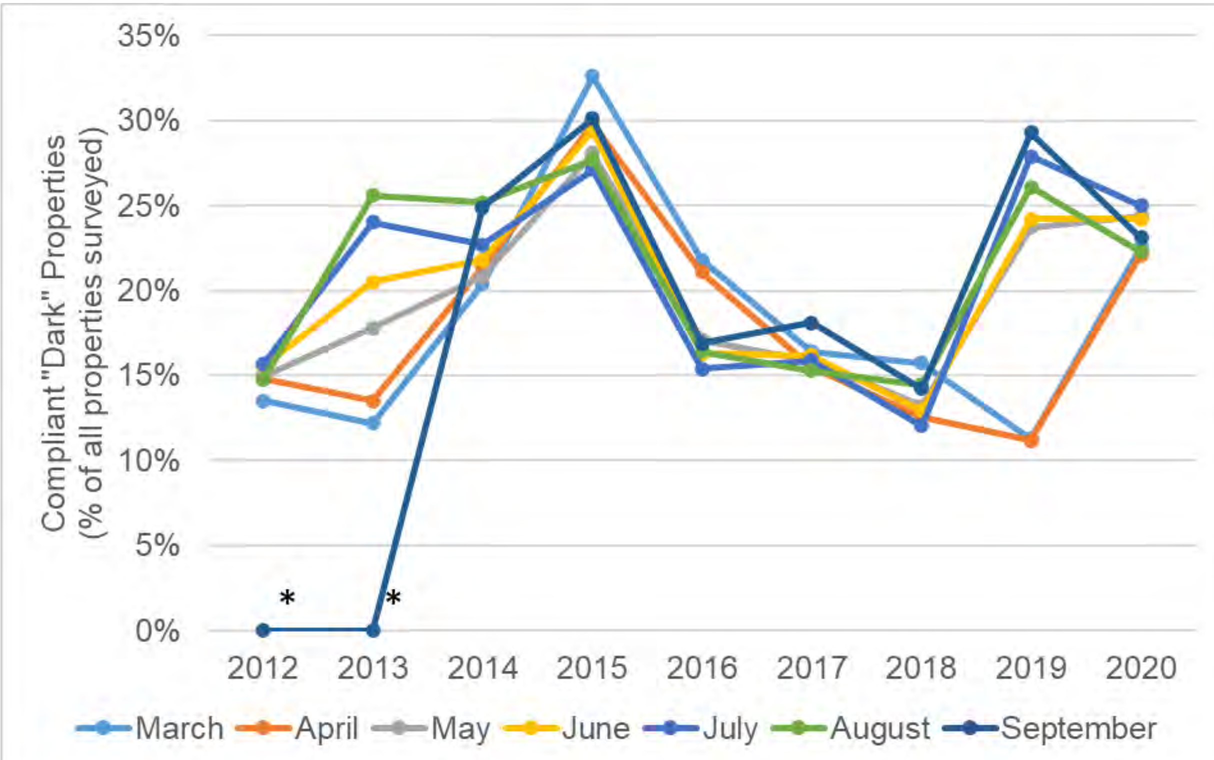


Figure 2. Seasonal Lighting Ordinance Compliance by Municipality in Broward County, 2012-2020. *Lighting surveys were not conducted in September in 2012-2013.*

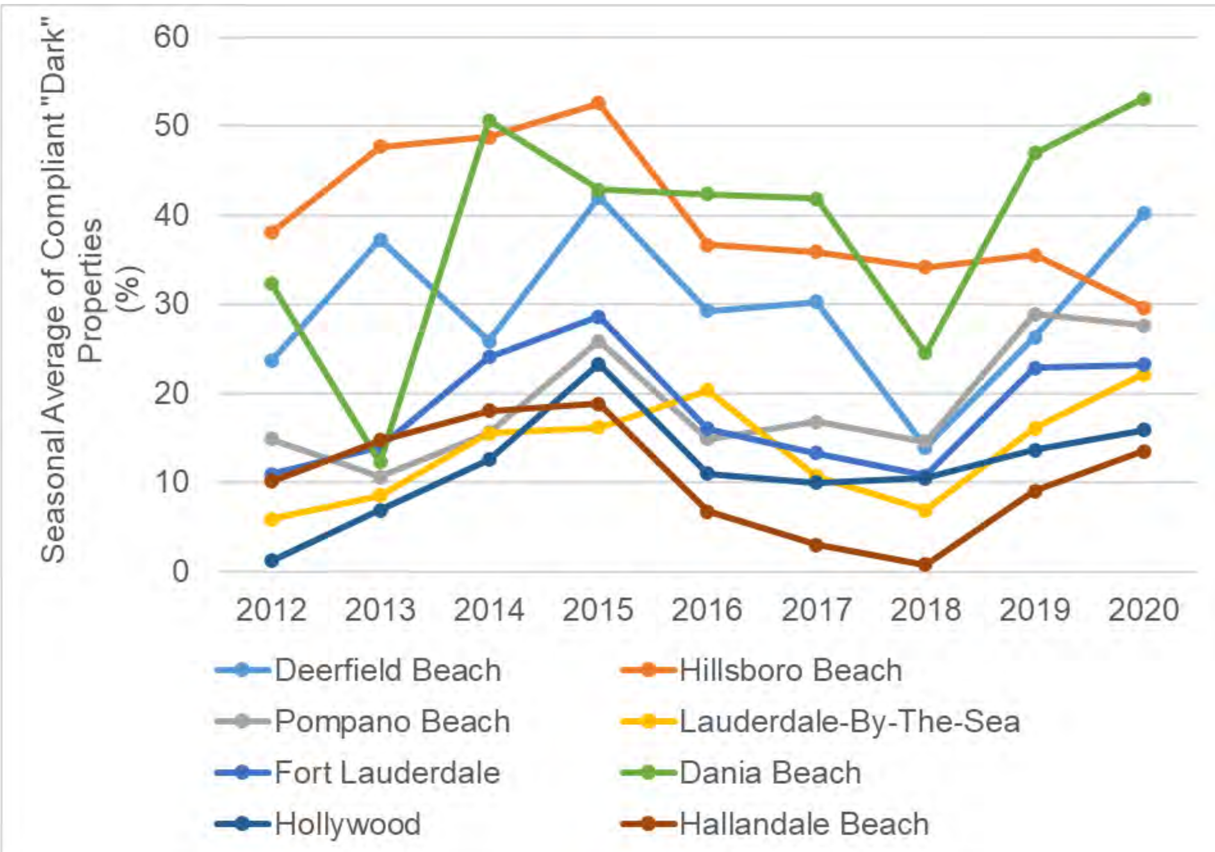


Figure 3. Usage of Each Fixture Type in Broward County, 2020. *All non-compliant fixture type observations for 2020 were summed, and each light category was converted to a percentage of the whole.*

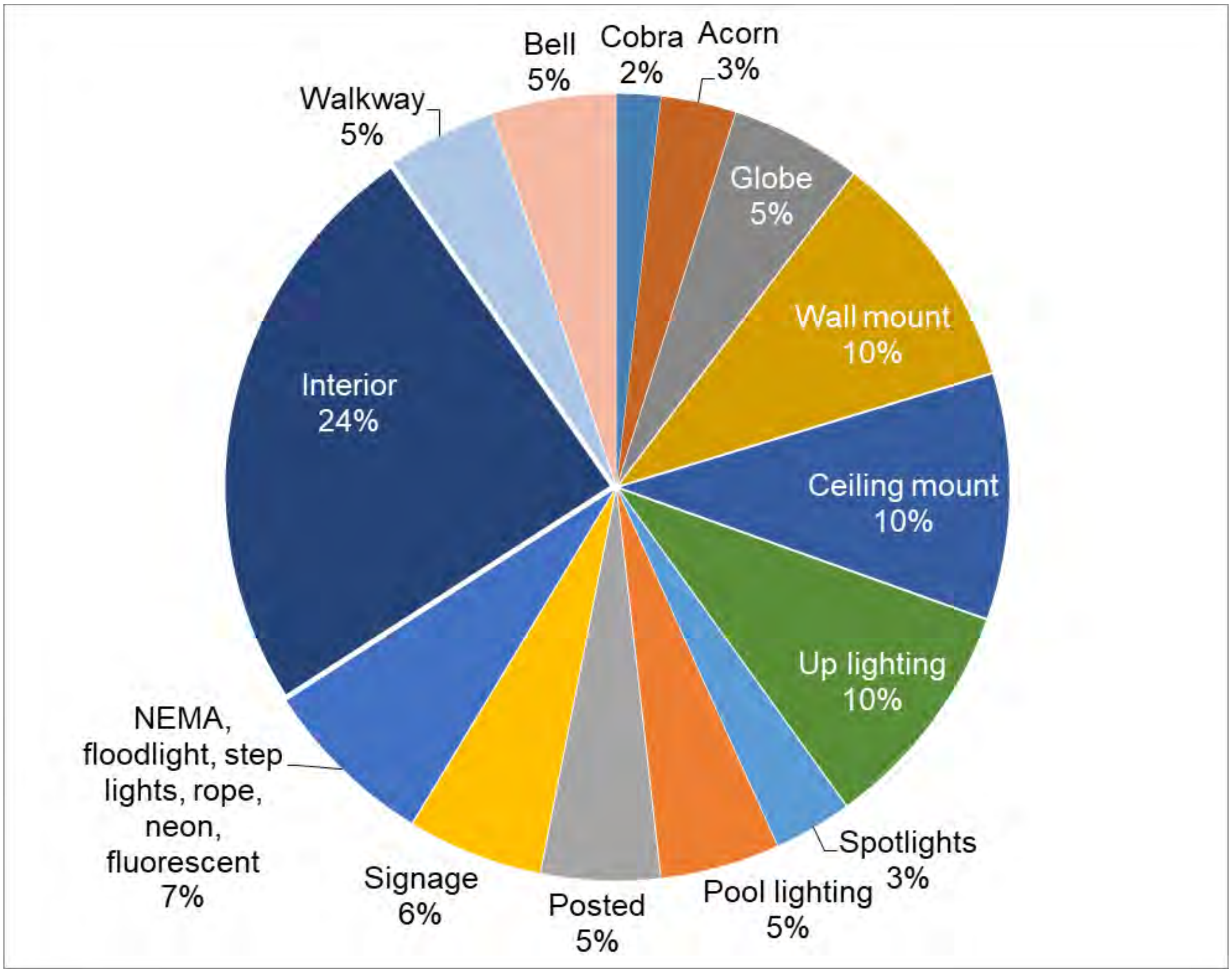


Figure 4. Average Monthly Minimum Number of Lights Observed in Broward County, 2020. *See text for details.*

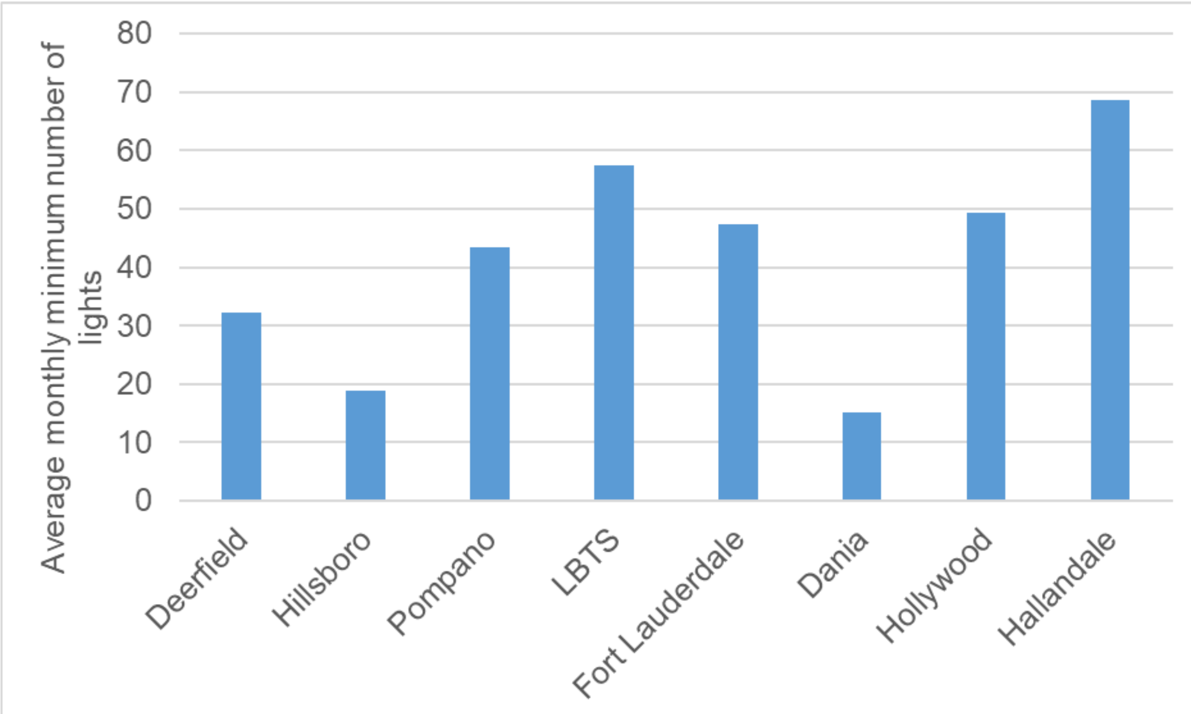


Figure 5. Disorientations Reported by the Broward County Sea Turtle Conservation Program, Sea Turtle Oversight Protection, South Florida Audubon Society, and Sea Turtle Awareness Rescue Stranding in Broward County, 2020. *See text for details.*

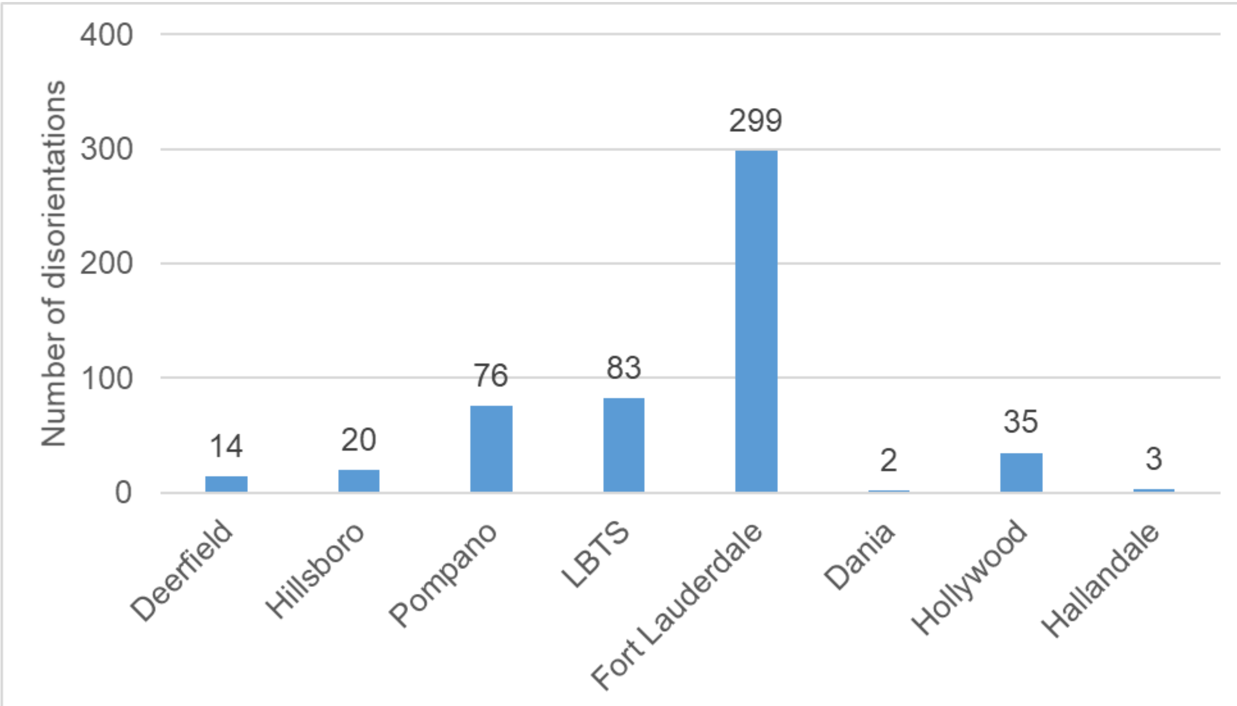


Figure 6. Lights and Hatchling Disorientations in Broward County, 2020. *The average minimum number of lights (from Figure 4) has been standardized to factor in the length of beach for each municipality; lights per mile is plotted as the solid orange line. The number of disorientations (DIS) recorded (from Figure 5) has been standardized to factor in the number of recorded hatch outs in each municipality; percentage of hatched nests disoriented is plotted as the solid blue bars.*

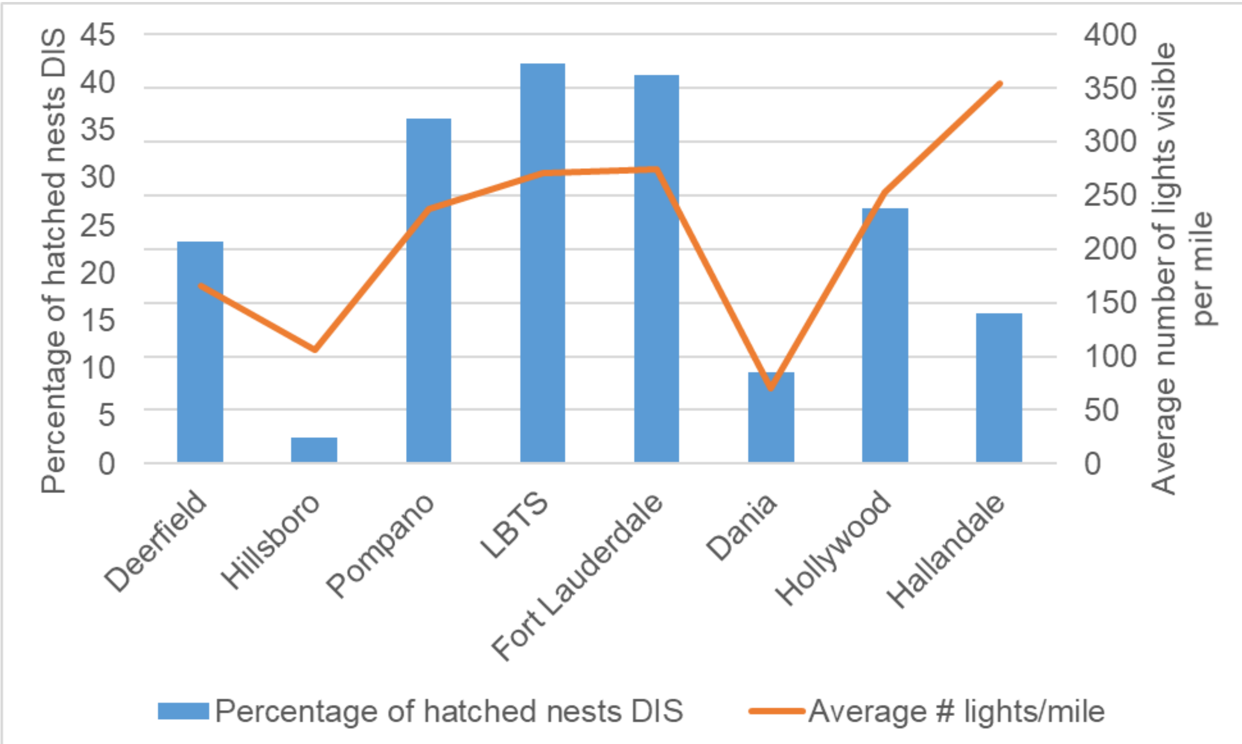


Figure 7. A Scatter Plot Showing the Correlation Between the Number of Lights Observed Per Mile and the Percentage of Disoriented Nests. *See text for details.*

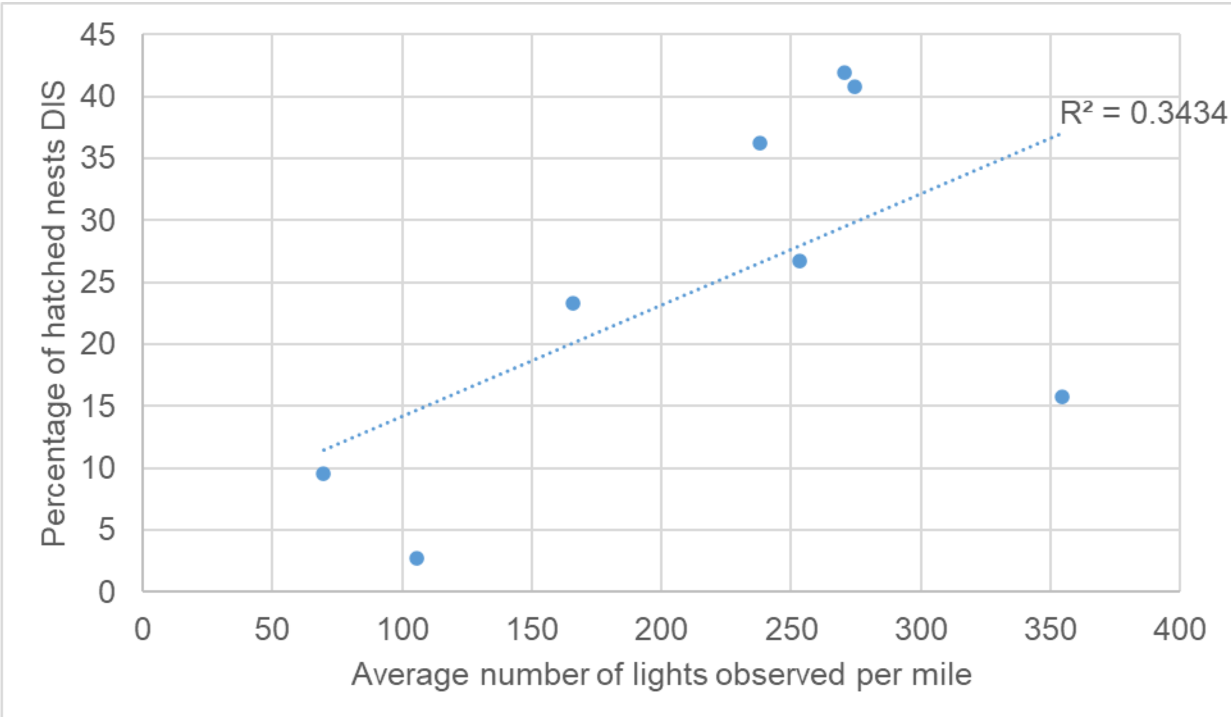


Figure 8. Disorientations and Minimum Number of Lights Observed by R-Zone in Broward County, 2020. *The blue line is the percentage of hatched nests that disoriented (DIS) reported by Nova Southeastern University, Sea Turtle Oversight Protection, South Florida Audubon Society, and Sea Turtle Awareness Rescue Stranding. The orange line is the minimum number of lights observed on all surveys combined in 2019. Asterisk (*) indicates that R-86 through R-96 encompasses Dr. Von D. Mizell-Eula Johnson State Park and is not included in this report.*

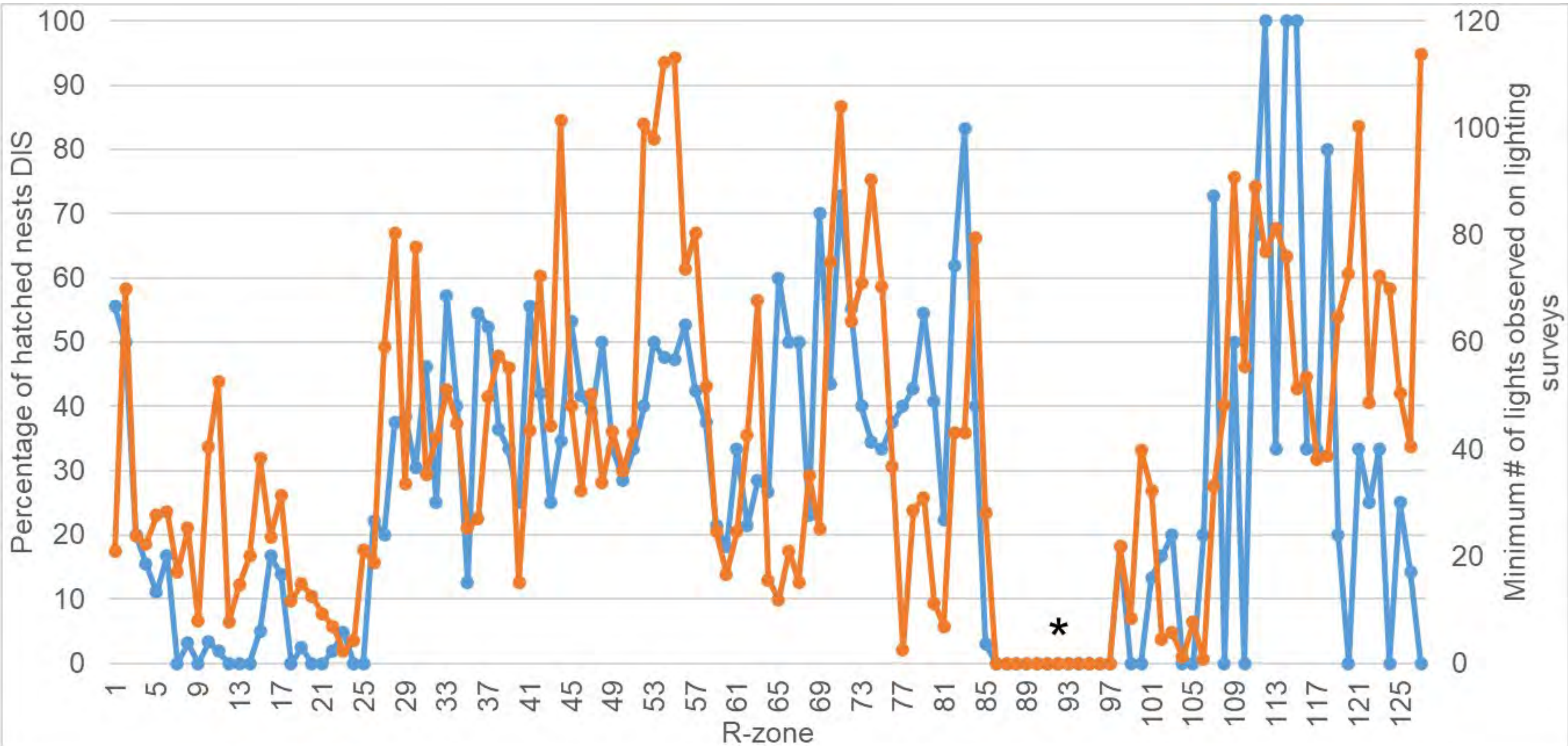
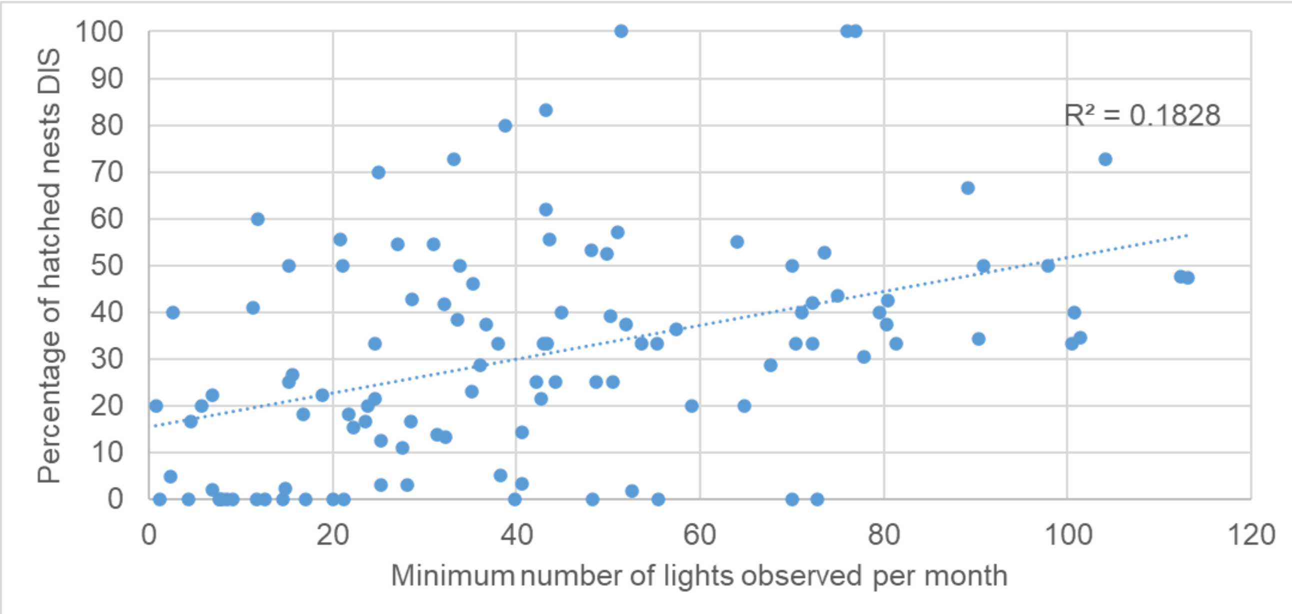


Figure 9. A Scatter Plot Showing the Correlation Between the Number of Lights Observed Per Month and the Percentage of Disoriented Nests for Each R-Zone. *Those R-zones that did not have any nests laid were eliminated from this analysis. See text for more details.*



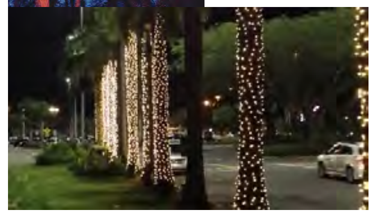
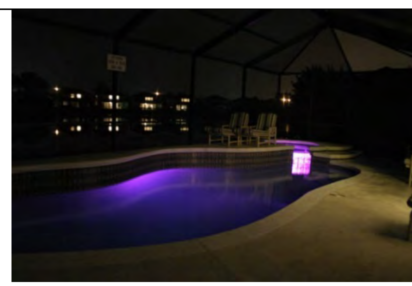
APPENDICES

Appendix 1. Illuminated Light Source Types. *These are the types of lights that may be encountered during a lighting survey.*

Light Fixture Type	Description	Example
Cobra	Streetlights that look like a snake head.	
Acorn	Streetlights that resemble acorns.	
Floodlight	Lights that are typically attached to corners of buildings and illuminate a broad area.	 

Light Fixture Type	Description	Example
Globe	Circular, posted lights. May be "shielded" on one side with black paint, canvas, or inside the fixture.	
Bell	Pole-mounted lights with a bell-shaped fixture.	
Wall Mount	A light fixture that is mounted to a wall that is not described elsewhere.	
Ceiling Mount	A light fixture that is mounted to a ceiling that is not described elsewhere.	

Light Fixture Type	Description	Example
NEMA	Streetlight with a circular covering and open bottom.	
Up Lighting	Lights that are directed upward.	
Spotlights	Lighting that is directed toward something specific.	
Interior	Lights that are located inside a property and turned on.	

Light Fixture Type	Description	Example
Rope	Multiple small lights attached to a rope.	 
Posted	Any other lights on a pole not previously described.	
Pool Lighting	Lights that are found underwater in swimming pools.	

Light Fixture Type	Description	Example
Neon	True neon lighting of various colors (e.g., blue, green, purple, etc.).	
Signage	Signs that are illuminated internally.	
Fluorescent	Long tube lights that are typically seen in parking garages.	
Walkway	Lights that illuminate a pathway.	 

Light Fixture Type	Description	Example
Step Lights	Lights that illuminate stairs.	

Appendix 2. Example Broward County Sea Turtle Conservation Program Lighting Survey Data Sheet. *See text for details.*

HALLANDALE

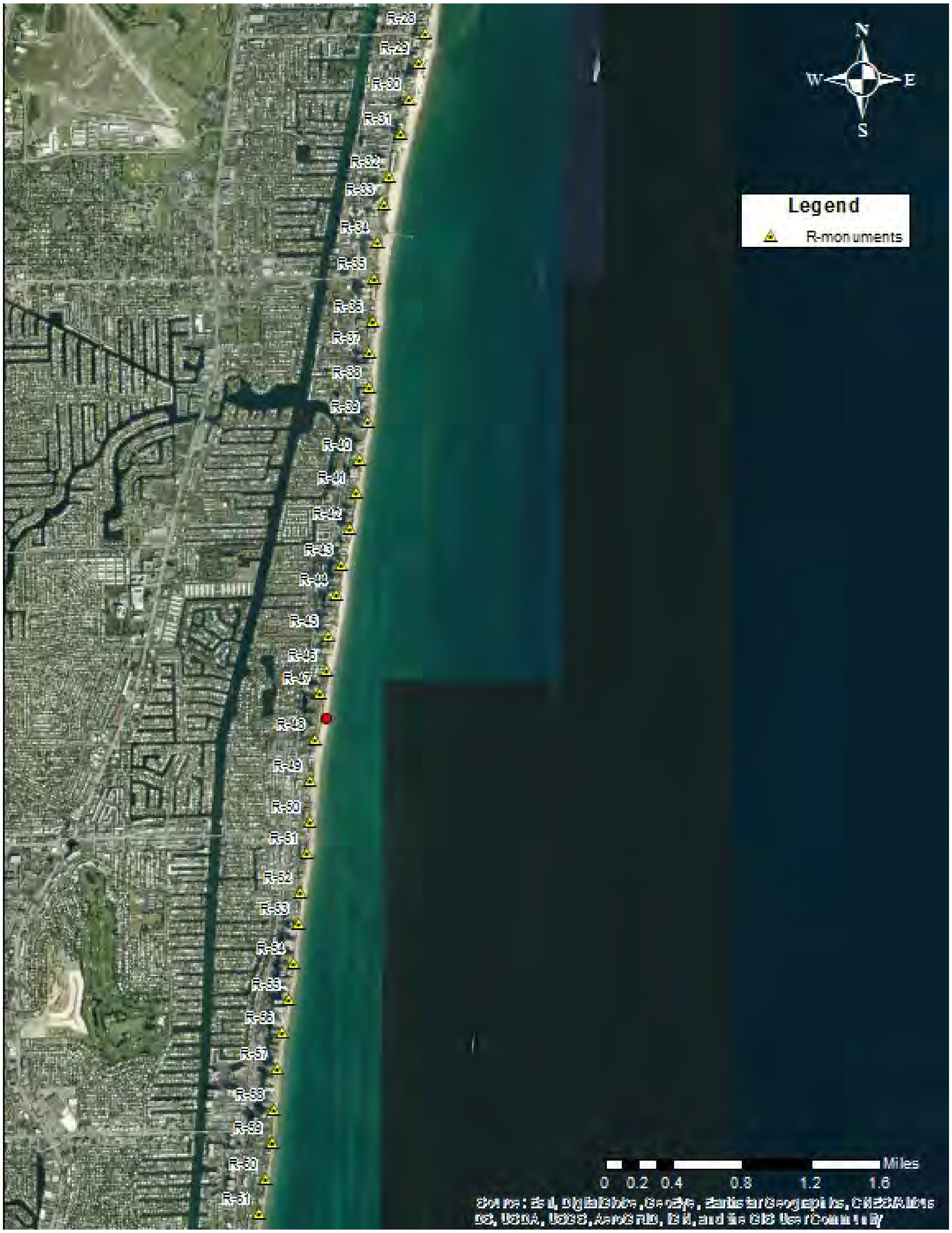
BLANK = 0 LIGHTS; 1 = 1 LIGHT; 2 = 2-10 LIGHTS; 3 = 11-25 LIGHTS; 4 = 25+ LIGHTS

Cells with red outline = Some lights of that fixture type are the appropriate wavelength but not shielded

Cells with red highlight = All lights of that fixture type are the appropriate wavelength but not shielded

ADDRESS	PROPERTY NAME	Acorn	Bell	Ceiling Mount	Cobra	Floodlight	Fluorescent	Globe	Interior	NEMA	Neon	Pool Lighting	Posted	Rope	Signage	Spotlights	Step Lights	Up Lighting	Walkway	Wall Mount	Picture?	DATE	COMMENTS
111 S Surf Rd	ETARU										1			2	2				2		Y	May-27-2019	Interior lights (3) west; Uplighting west
2801 E Hallandale Beach Blv	Hallandale Fire Station								2				2					1			Y	May-23-2019	Cobra light west
1800 S Ocean Dr	The Beach Club								3			1								2	Y	May-23-2019	
1830 S Ocean Dr	The Beach Club			1					3			1									Y	May-23-2019	
1850 S Ocean Dr	The Beach Club								3			1						1			Y	May-23-2019	Globe lights(2), wall mount (2), and interior lights (2) west
1870 S Ocean Dr	Hallandale South Beach City Par																				Y	May-23-2019	Wall mounts (2) south; Uplighting west; Interior lights (3) west
1904-1880 S Ocean Dr	La Mer			2				1	3				2					2		2	Y	May-23-2019	Sand illuminated from posted lights
1920-1912 S Ocean Dr	Malaga Towers							2	2												Y	May-23-2019	Interior lights (3) west
1928 S Ocean Dr				2															2		Y	May-23-2019	
1936 S Ocean Dr	Taromina			1				2	2							1					Y	May-23-2019	
1950 S Ocean Dr	The Hemispheres							2	4												Y	May-23-2019	NEMA light west; Posted lights (2) west; Interior lights west
1980 S Ocean Dr	The Hemispheres								4		1							1			Y	May-23-2019	
2000 S Ocean Dr																						May-23-2019	Interior lights (3) west
2030 S Ocean Dr	Parker Plaza								4									2			Y	May-23-2019	
2080 S Ocean Dr	Ocean Drive Condo		2	3					3				1		1			2		1	Y	May-23-2019	NEMA light west
2076 S Ocean Dr	Sea Edge			1					2			1	2						2	2	Y	May-23-2019	NEMA (2) lights at beach access point
3140 S Ocean Dr	Parker Tower							2	3			1	1					1			Y	May-23-2019	
3180 S Ocean Dr	Parker Dorado								3										2		Y	May-23-2019	Red lights extremely bright; Sand illuminated
Miami Dade County Line																		2				May-23-2019	

Appendix 3. Example Map of Broward County R-zones. *Each R-zone is approximately 1,000 feet in length. R-monuments are numbered consecutively north to south starting at R-1 in The City of Deerfield Beach and ending at R-128 in the City of Hallandale Beach. Properties and disorientations were referenced to the nearest R-monument to the north. For example, a disorientation event at the red circle would be referenced as occurring in R-47.*



Appendix 4. Florida Fish and Wildlife Conservation Commission (FWC) Sea Turtle Disorientation Form. *A separate form for each disorientation event is filled out and submitted to FWC.*

C J S | 1 7 | 08 | 02 | 01 | B R O
Permit Holder Initials | Year | Month | Day | Dis # by Day | County Code

FWC MARINE TURTLE DISORIENTATION REPORT

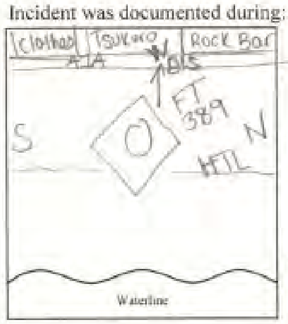
If you have any questions, please contact FWC at the Tequesta Field Laboratory (561) 882-5975
Fax reports to: (561) 743-6228 or Email reports to: SeaTurtleLighting@MyFWC.com
Send reports to: Disorientation Reports, FWC, 19100 SE Federal Highway, Tequesta, FL 33469

Marine Turtle Permit #: 215 Date of Incident: 8/2/17
Observer's Name: Sarah Koerner
Telephone (include area code): (954) 383-2072 E-mail address: cs1858@nova.edu

Location of Disorientation Event: (address, beach name and/or nearest landmark): FT Beach, Tsukuro 225 South FT Lauderdale Beach Blvd
City: Fort Lauderdale County: Broward
Local nest ID#: 389 Zone nest was located in: 76
Nest GPS Coordinates (***use decimal degrees: i.e., Lat 26.845412 Long -80.458796***):
Latitude: 26.119758 Longitude: -80.103926

SPECIES: (check one)	TYPE OF EVENT: (check one)	NEST TREATMENT: (check all used)
[x] Cc = Loggerhead [ ] Cm = Green Turtle [ ] Dc = Leatherback [ ] Un = Unidentified [ ] O = Other ______	[ ] Adult – Nesting Emergence [ ] Adult – False Crawl [x] Hatchling	[x] Restraining Cage [ ] Self-releasing Screen/Cage [ ] Light Barrier (i.e., silt screen)* [ ] Relocated *Must be specifically authorized by FWC

Incident was documented during: (check one) [ ] Morning Survey [x] Night Survey [ ] Daytime



Was the incident photographed? [ ] YES [x] NO
Was the source nest found? [x] YES [ ] NO
Was the nest excavated? [x] YES [ ] NO
If "YES" report date of excavation: 8/6/17

Number of turtles disoriented:	Disoriented turtles reaching the water:
[ ] 1 [ ] 2-10 [x] 11-50 [ ] >50	[x] All [ ] Some [ ] None [ ] Not investigated

Were any disoriented turtles found dead? [ ] YES [x] NO
If "YES" indicate the number: ______

Addresses/landmarks turtle(s) disoriented towards: Rock Bar, Sangria's cafe, Tsukuro, Clothing Connection, Red palm tree lights, Neon signs

Were probable/possible light source(s) identified? [x] YES [ ] NO
If "NO" indicate why: (check one) [ ] No lights present [ ] Too many lights [ ] Other: ______
Indicate categories of light(s) identified as probable/possible lighting sources: (check all that apply)

[ ] parking lot	[ ] street light	[ ] condominium (interior)
[ ] dune crossover	[ ] single family home (interior)	[ ] condominium (exterior)
[x] restaurant/bar	[ ] single family home (exterior)	[ ] sky glow/urban glow
[ ] pier	[x] sign	[ ] other: ______

Additional comments (use back if necessary): 18 hatchlings at 11:12p. checked again @ 11:47p - no additional hatchlings; 75°; DT5

Local authority provided a copy of this report: [x] City [x] County [x] FWC [ ] Other: ______

Signature of Observer Date 8/2/17

FWC Form DIS-1 – MARINE TURTLE TRANSFER FORM – 12/2007, amended 2016, FAC Rule 68E-1

SM

APPENDIX I: Lighting Per Property Hot Spots 2019-2020 Comparison

Fort Lauderdale Beach Heat Lighting Map

Page 1 of 7 10/25/2021

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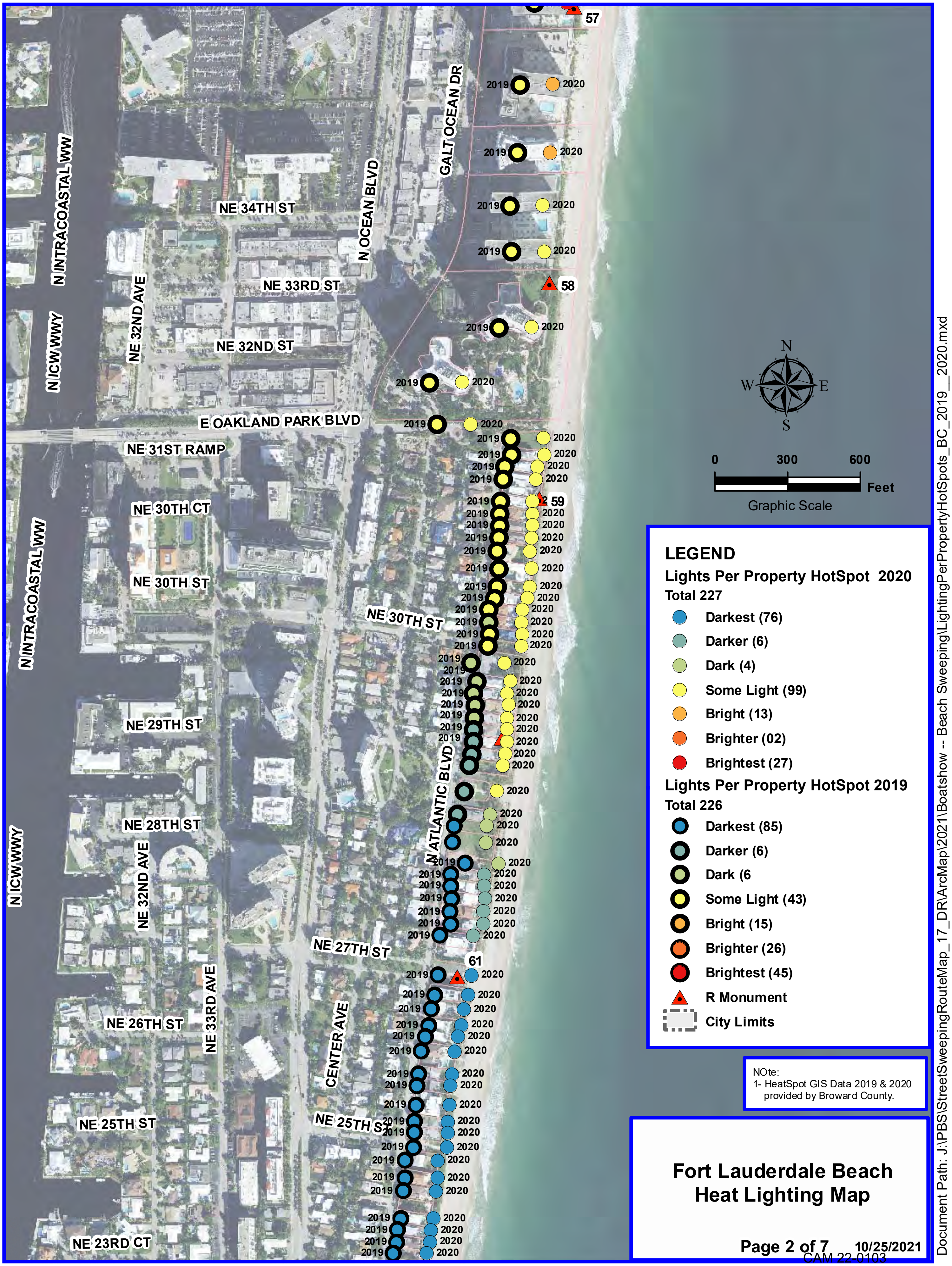
Fort Lauderdale Beach
Heat Lighting Map
Page 2 of 7
10/25/2021
LEGEND
Lights Per Property HotSpot 2020
Total 227
Darkest (76)
Darker (6)
Dark (4)
Some Light (99)
Bright (13)
Brighter (02)
Brightest (27)
Lights Per Property HotSpot 2019
Total 226
Darkest (85)
Darker (6)
Dark (6
Some Light (43)
Bright (15)
Brighter (26)
Brightest (45)
R Monument
City Limits
NOte:
1- HeatSpot GIS Data 2019 & 2020 provided by Broward County.
0 300 600
Feet
Graphic Scale
N
S
E
W
57
58
59
61
GALT OCEAN DR
N OCEAN BLVD
N INTRACOASTAL WW
N ICW WWY
NE 34TH ST
NE 33RD ST
NE 32ND AVE
NE 32ND ST
E OAKLAND PARK BLVD
NE 31ST RAMP
NE 30TH CT
NE 30TH ST
NE 29TH ST
NE 28TH ST
N ATLANTIC BLVD
NE 27TH ST
NE 33RD AVE
NE 26TH ST
CENTER AVE
NE 25TH ST
NE 23RD CT
2019
2020
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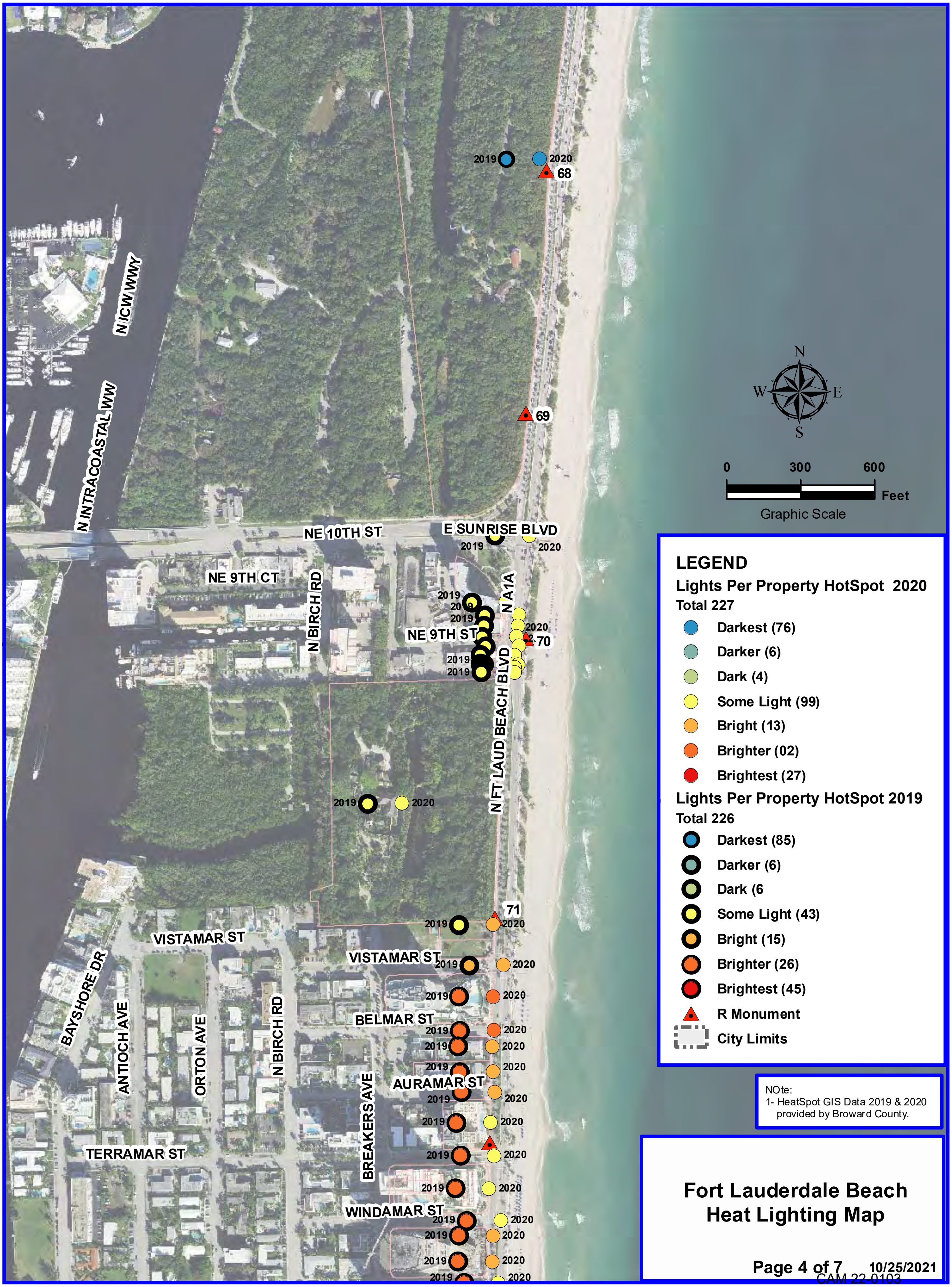

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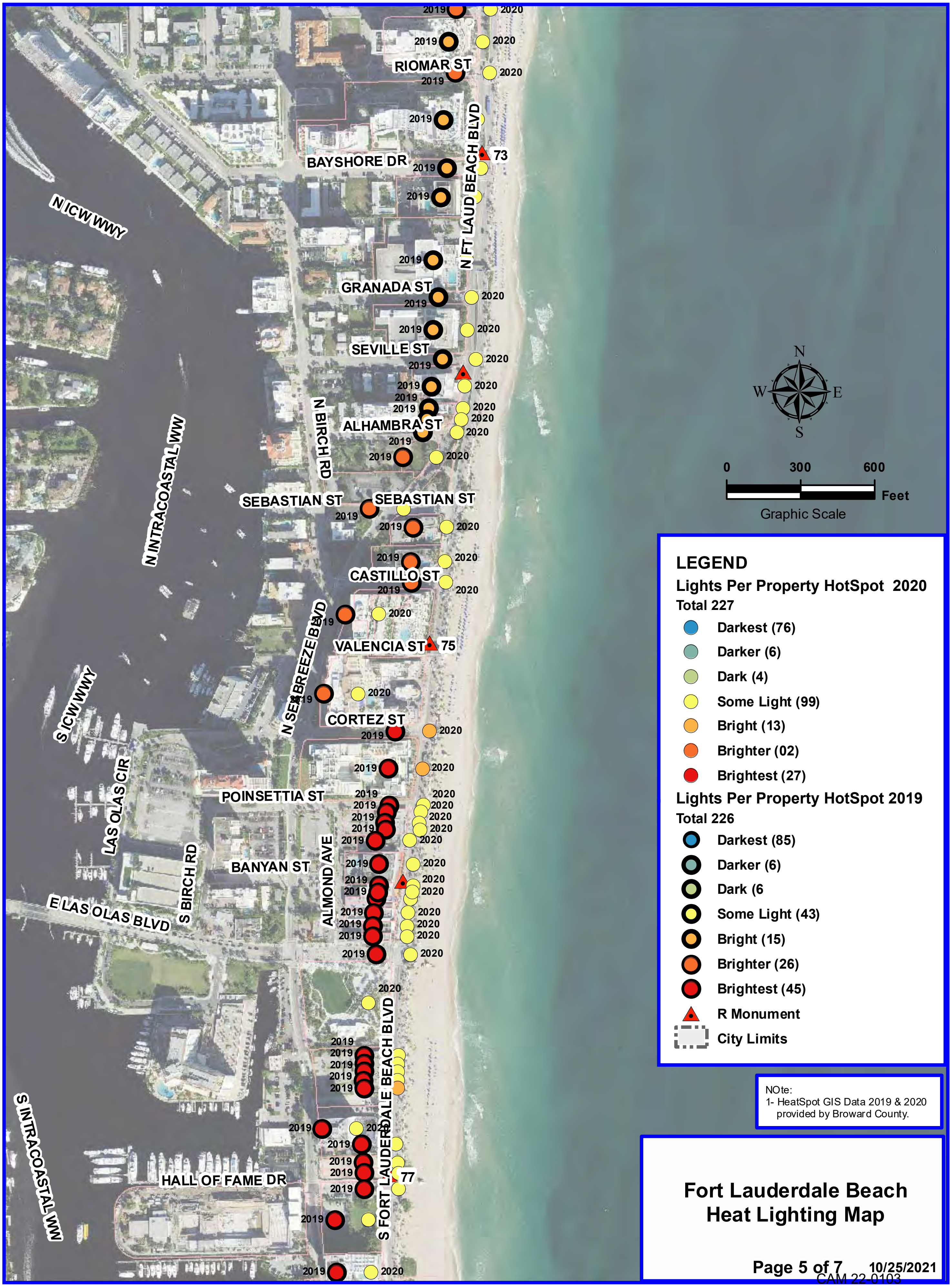

NOte:
1- HeatSpot GIS Data 2019 & 2020 provided by Broward County.

Fort Lauderdale Beach Heat Lighting Map

Page 5 of 7 10/25/2021

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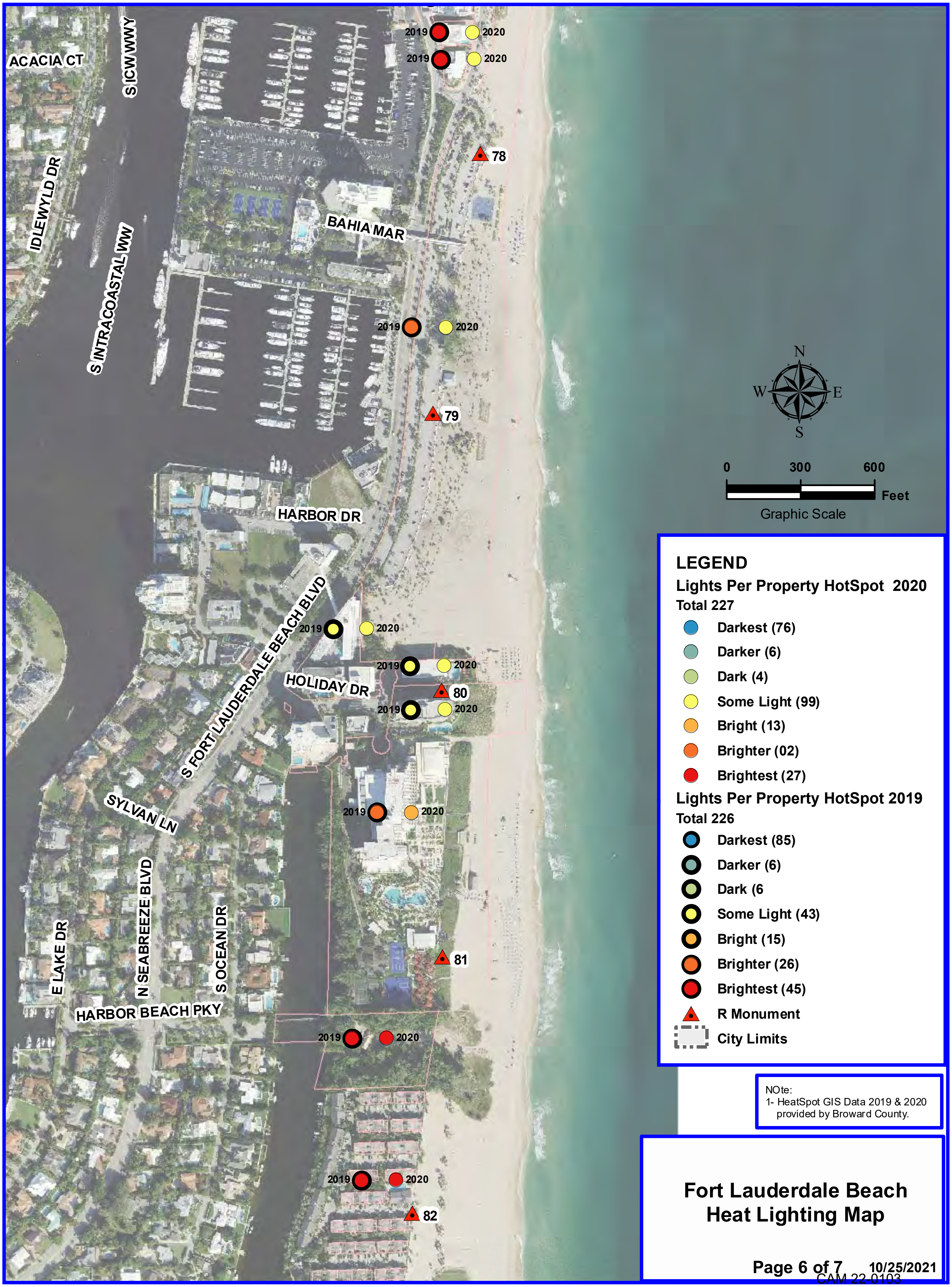

Fort Lauderdale Beach Heat Lighting Map

Page 6 of 7 10/25/2021

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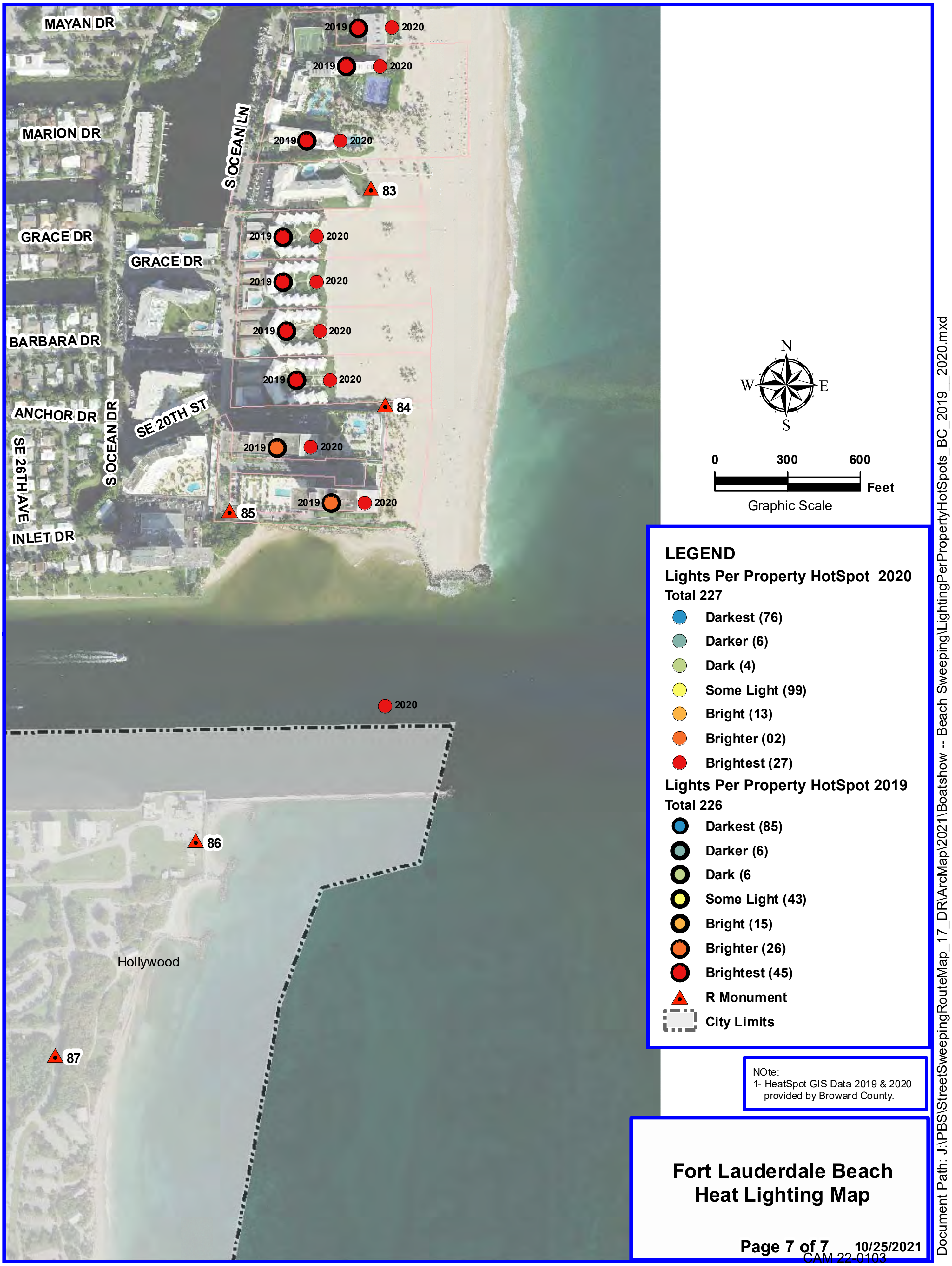
MAYAN DR
MARION DR
S OCEAN LN
GRACE DR
GRACE DR
BARBARA DR
ANCHOR DR
S OCEAN DR
SE 20TH ST
SE 26TH AVE
INLET DR
Hollywood
2019
2020
83
84
85
86
87
N
S
E
W
0
300
600
Feet
Graphic Scale
LEGEND
Lights Per Property HotSpot 2020
Total 227
Darkest (76)
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Some Light (99)
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Brighter (26)
Brightest (45)
R Monument
City Limits
NOte:
1- HeatSpot GIS Data 2019 & 2020 provided by Broward County.
Fort Lauderdale Beach
Heat Lighting Map
Page 7 of 7
10/25/2021
Document Path: J:\PBS\StreetSweepingRouteMap_17_DR\ArcMap\2021\Boatshow -- Beach Sweeping\LightingPerPropertyHotSpots_BC_2019__2020.mxd

APPENDIX J: Sea Turtle Lighting Outreach Flyer

The City of Fort Lauderdale is enforcing an ordinance to protect sea turtles from the adverse effects of artificial lighting

The City of Fort Lauderdale continues to make progress in our commitment toward protecting sea turtles through education and pro-active enforcement. The City works diligently to map sea turtle nests, set-up protective barriers where necessary and monitor hatchlings. The City partners with Nova Southeastern University to check the beach for new nests each morning. We also rake our beaches each day, capturing debris such as cigarette butts and plastic items, which can be harmful to sea turtles and all marine wildlife.

The City aims to balance the protection of marine turtles with the protection of public safety.

Please be especially vigilant to comply with the City ordinance during turtle nesting season: March 1 – October 31st.

CITY ORDINANCE

Chapter 6 Article III – Sea Turtles

Purpose: To reduce the impacts of artificial coastal lighting on threatened and endangered sea turtles that nest on the beaches of Fort Lauderdale by restricting artificial lighting that disorients turtles hatchlings, causing them to crawl toward land rather than toward the ocean. The restrictions and constraints of this division shall be effective within the incorporated areas of Fort Lauderdale and apply to any coastal lighting activity that has the potential to adversely impact sea turtles within city limits.

Sec. 6-51. - Lighting standards for existing development.

It is the policy of the City of Fort Lauderdale that no artificial light shall illuminate any area of the incorporated beaches of Fort Lauderdale, Florida. To meet this intent, lighting of existing structures that can be seen from the beach shall be in compliance with the following:

Internal lamps and other lighting sources in rooms in single and multi-story structures with windows or glass doors facing the ocean shall be relocated so that no lighting shall be seen from the beach at nighttime during nesting season. Lights illuminating dune crosswalks of any areas westward of the dune line shall be turned off at nighttime during nesting season. Lights illuminating any buildings or associated grounds for decorative or recreational purposes shall be shielded or screened such that

See back for more details

they are not visible from the beach at nighttime during nesting season, or shall be turned off if shielding or screening cannot be installed within the six-month period.

Window treatments shall be installed in windows and glass doors in rooms in single and multi-story structures with windows or glass doors facing the beach so that lights are not visible from the beach, or filming in compliance with this division shall be installed on the exterior of all such windows and glass doors, so that internal lights are not visible from the beach. Shade screens can be substituted for this requirement. Existing security lighting shall be screened in such a way that those lights do not illuminate the beach. Existing wall and overhead lighting on balconies and catwalks shall be fitted with screens or hoods that minimize backlighting and reduce their visibility from the beach. Installation of any new security lighting and lighting on balconies and catwalks shall comply with section 6-49 of this division.

Commercial signage facing the ocean or in the line-of-sight of the beach shall not be illuminated during nighttime hours of nesting season within eighteen (18) months of the effective date of this division.

Sec. 6-53. - Penalty.

Violation of the provisions of this division or failure to comply with any of its requirements shall constitute an offense. When it has been determined that a violation has occurred, notice of the violation and an opportunity for a hearing shall be served on the person or persons responsible. Upon refusal, failure or neglect of the person or persons served with a notice of violation to cure the violation, and when the violator or the violator's representatives do not appear at the hearing granted pursuant to this Code or as otherwise provided by law, or when an order finding a violation is entered against the violator, the enforcing agency shall notify the violator, in writing, that an external lighting source causing the violation may be removed by the city within ten (10) business days thereafter, or that a fine may be assessed against the violator, with said fine to begin to be assessed within ten (10) business days thereafter, and to be continuously assessed until the conclusion of nesting season or until the violation is corrected. Costs associated with the removal by the city of external lighting sources causing violations shall be recovered from the person or persons causing the violation, and, if not recovered from the person or persons, shall be placed as a lien against the property and reimbursed to the city at time of sale of the property.

APPROVED LIGHT FIXTURES AND BULBS:

All of these fixtures are sea-turtle friendly because they are directed downward, are low to the ground, and are shielded.

These bulbs are sea turtle-friendly because they utilize long-wavelength light (570 nanometers or longer), such as lights that are yellow, amber, or red in color.

For more information, please visit: http://myfwc.com/conservation/you-conserve/lighting/certified

If you would like this publication in an alternate format, please call (954) 828-4755 or email strategiccommunications@fortlauderdale.gov.

APPENDIX K: Broward County Lighting Trends 2020 (PowerPoint Presentation)

2020 Broward County Lighting Trends

Photo credit: BCSTCP

Broward County Environmental Planning and Community Resilience Division

Population Growth

- Broward County population estimates ~1.9 million (World Population Review 2021)
  - 11.8% increase from 2010
- More development = more artificial lighting
- Coastal living is highly desired

Reducing Beachfront Lighting

- 1997: Broward County Beach Lighting Management Plan
  - Tools, procedures, and strategies to reduce coastal light pollution
- 1999-2011: Municipalities adopted lighting ordinances
- 2019: Updates to Broward County lighting ordinance
  - Cities still have authority along the beach

Photo credit: BCSTCP

Reducing Beachfront Lighting

- Monthly lighting surveys
  - March-September
  - Document and classify all lights visible from the beach
  - Distributed to local code enforcement agencies
- Education and outreach
  - Property site visits upon request
  - Annual workshop for Code Enforcement

Photo credit: BCSTCP

Challenges

1. Beach length
2. Number of properties
3. Types of properties
4. Available code enforcement staff

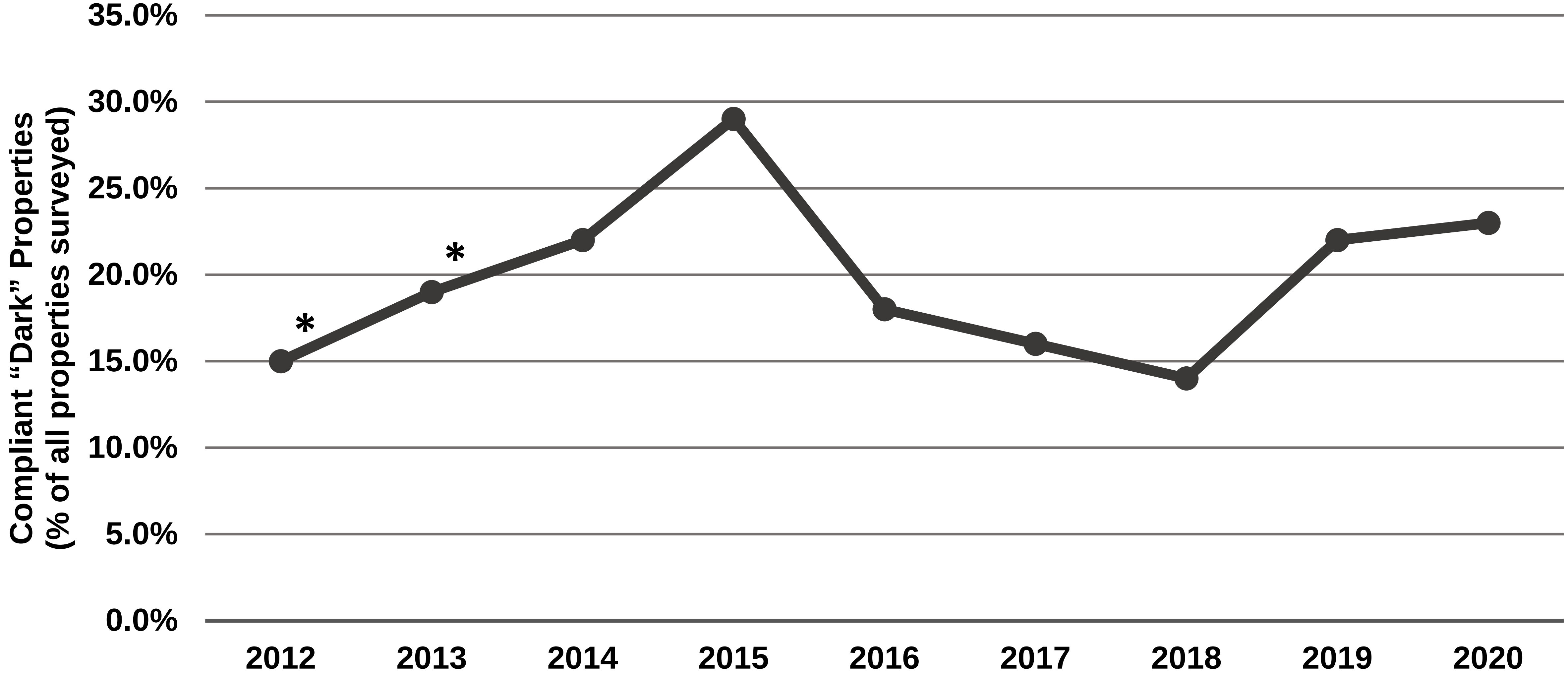
Photo credit: BCSTCP

Goals: To Examine and Discuss…

- Average County-wide light ordinance compliance
- County-wide fixture type usage
- Municipality light ordinance compliance
- Lighting hot spots
- Next steps

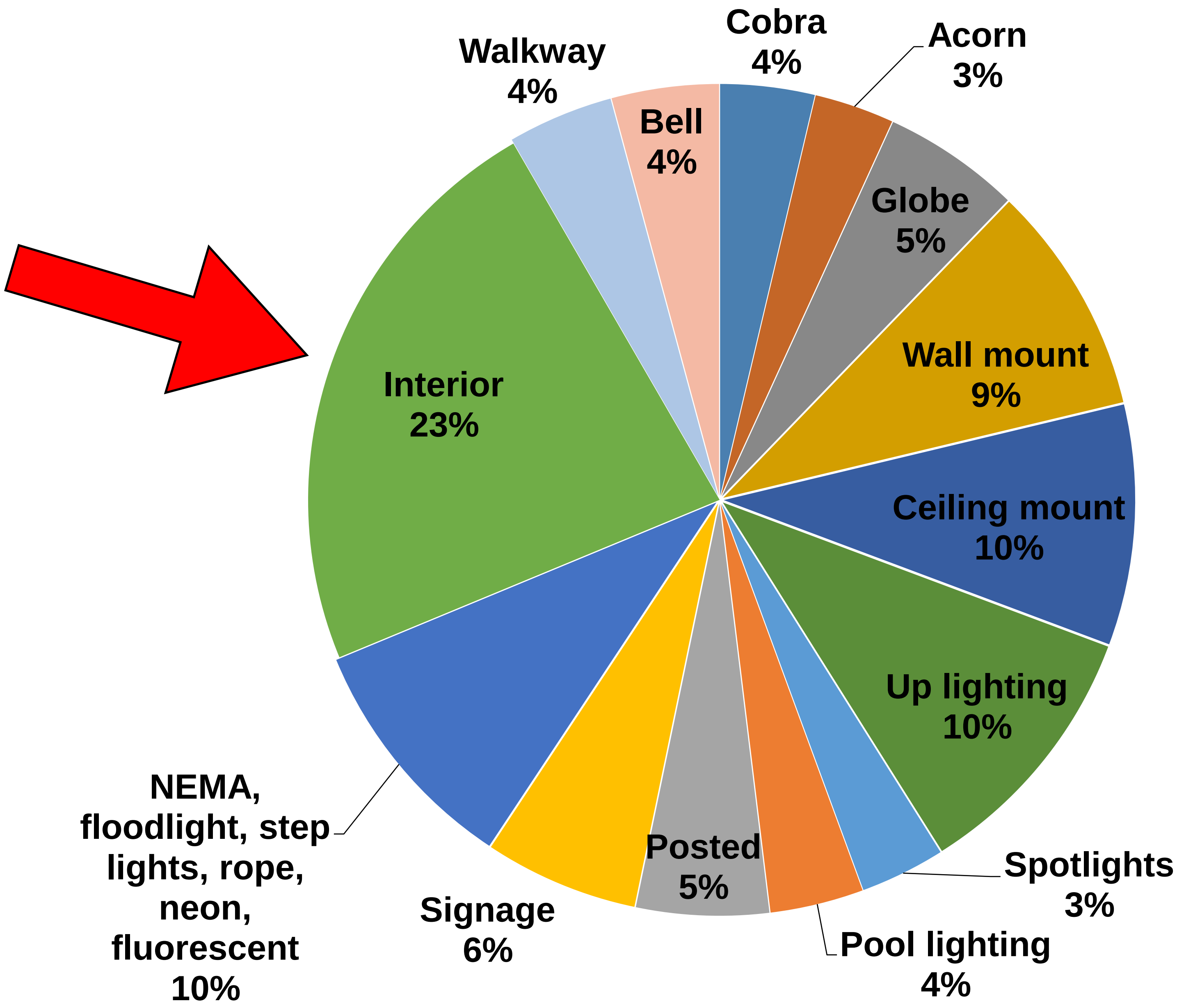
Photo credit: Stephanie Kedzuf

Average County-Wide Compliance

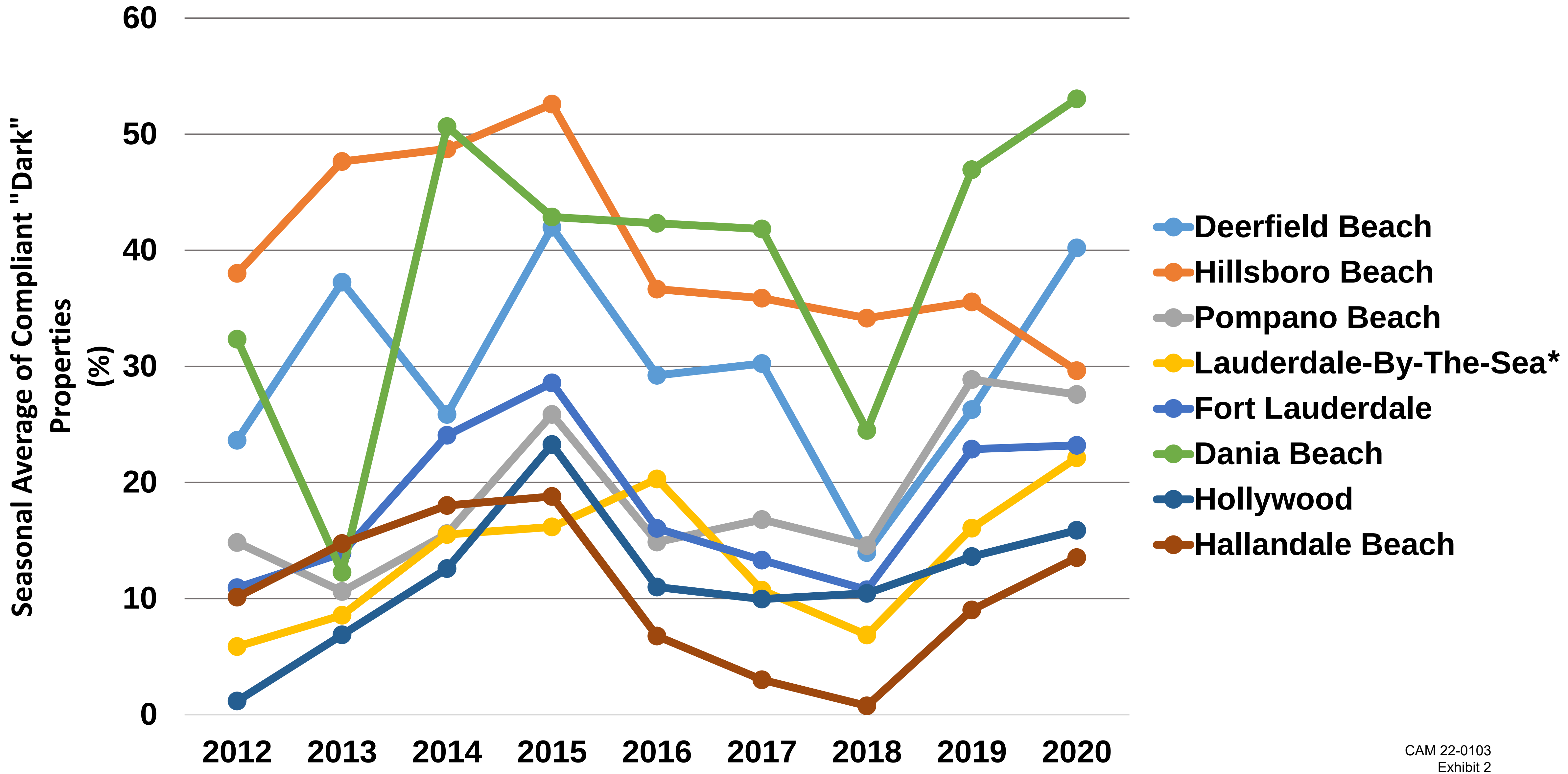


* Lighting surveys not conducted in September in 2012 or 2013

County-Wide Fixture Type Usage



Municipality Compliance



*including Sea Ranch Lakes

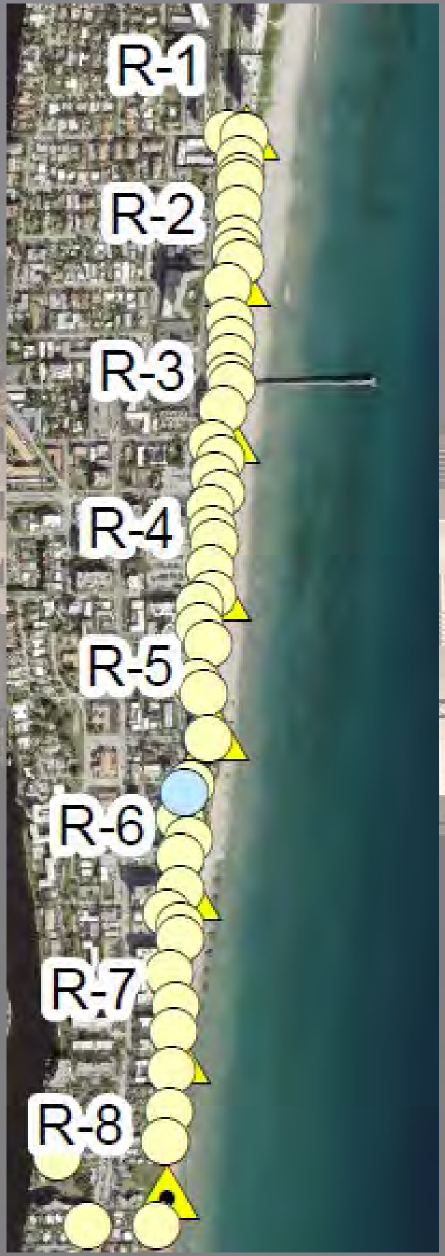
Lighting Hot Spots

- **On each property**
  - **Average minimum number of lights observed per month**
- **Plotted in ArcMap 10.8.1**
  - **Conducted a hot spot analysis**
    - **Classifies points based on their statistical significance compared to nearby points**
  - **Categorized properties from darkest → brightest**

Photo credit: BCSTCP

Deerfield

- **R1-R6**
- **42 properties**
  - **43% residential (mostly condos)**
- **Lights per property: 0-40**
- **Average # lights per property = 4.33**



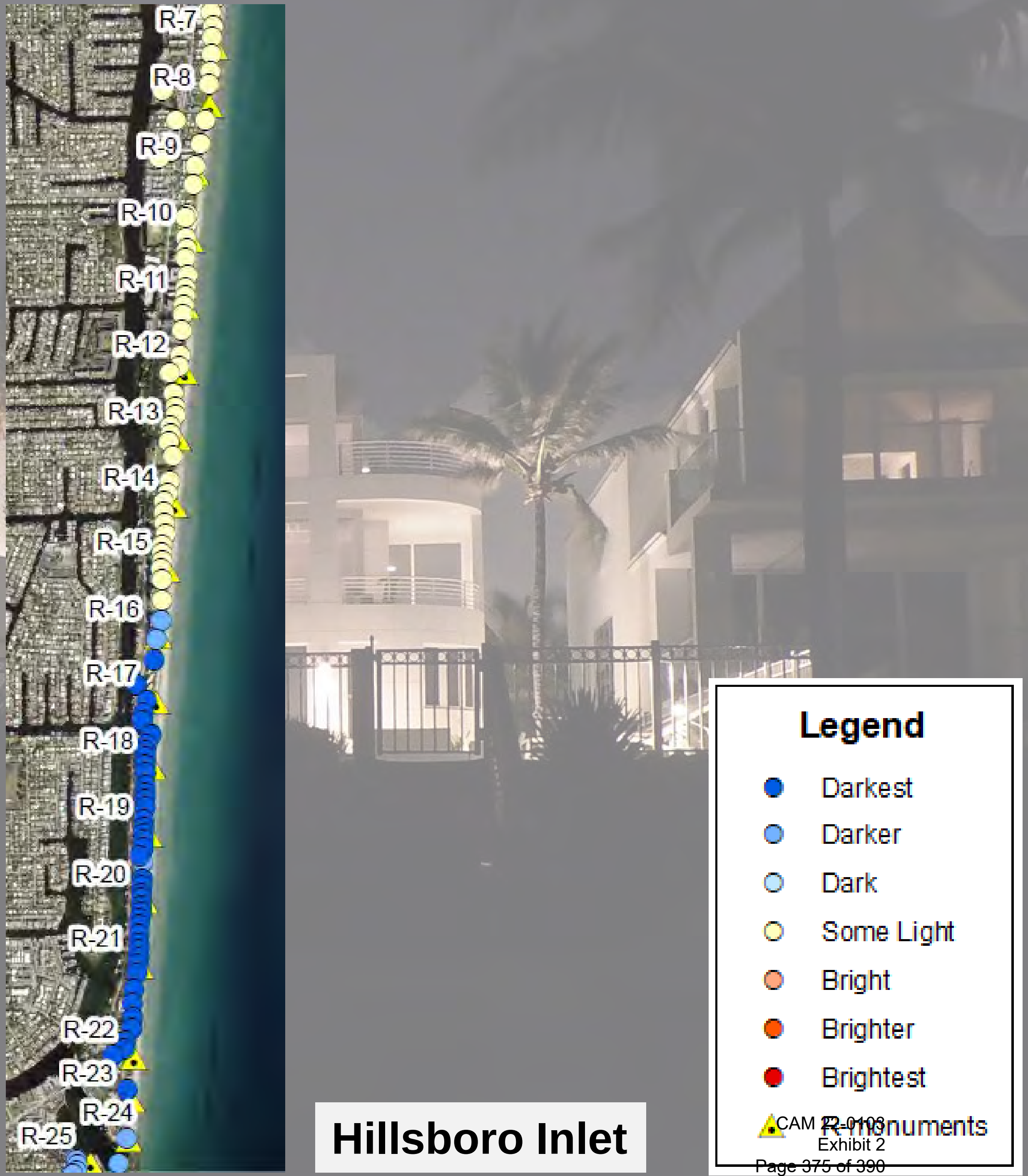
Deerfield Pier

Legend

- Darkest
- Darker
- Dark
- Some Light
- Bright
- Brighter
- Brightest
- R-monuments

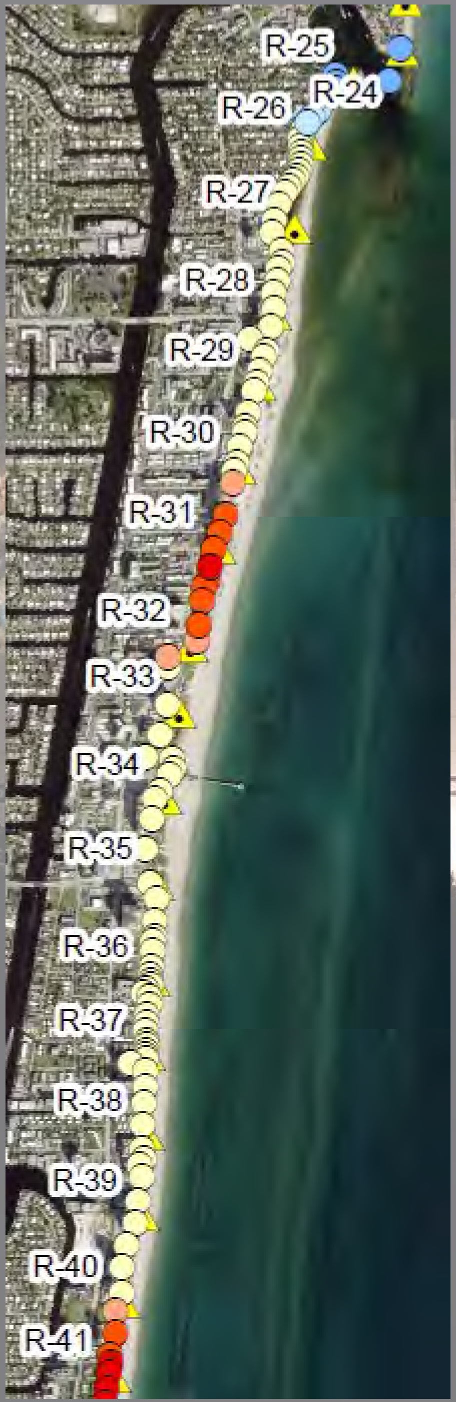
Hillsboro

- **R7-R24**
- **94 properties**
  - **96% residential (mostly SFH)**
- **Lights per property: 0-38**
- **Average # lights per property = 3.70**



Pompano

- **R25-R40**
- **102 properties**
  - **75% residential (mostly condos)**
- **Lights per property: 0-78**
- **Average # lights per property = 6.82**

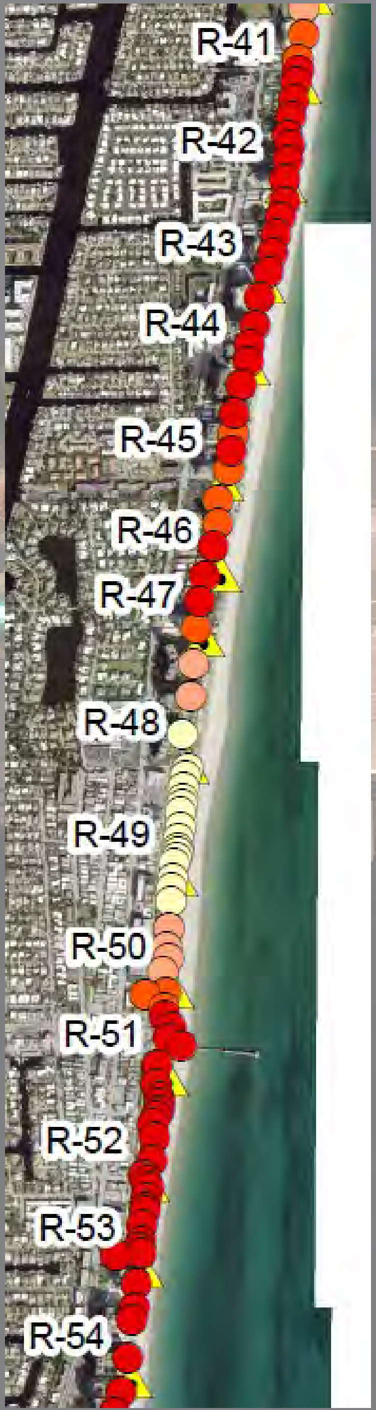


14th Street

Pompano Pier/ Atlantic Blvd

Lauderdale-By-The-Sea

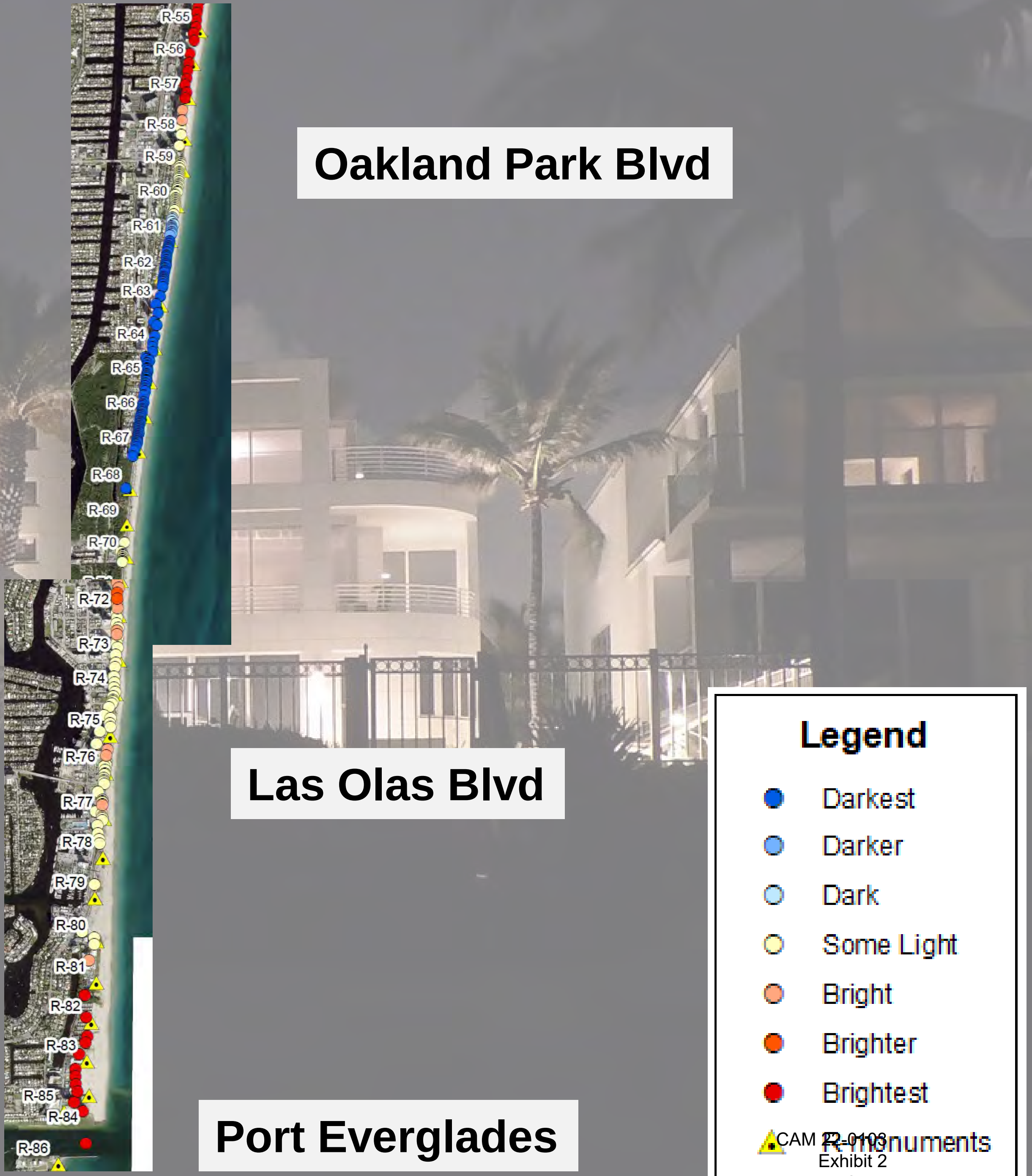
- **R41-R53**
- **80 properties**
  - **68% residential (mostly condos)**
- **Lights per property: 0-78**
- **Average # lights per property = 8.17**
- **Sea Ranch Lakes**
  - **Single property for lighting survey**
  - **Lights observed at this property: 14-32**
  - **Average # lights at this property = 21.00**



Anglin's Fishing Pier/ Commercial Blvd

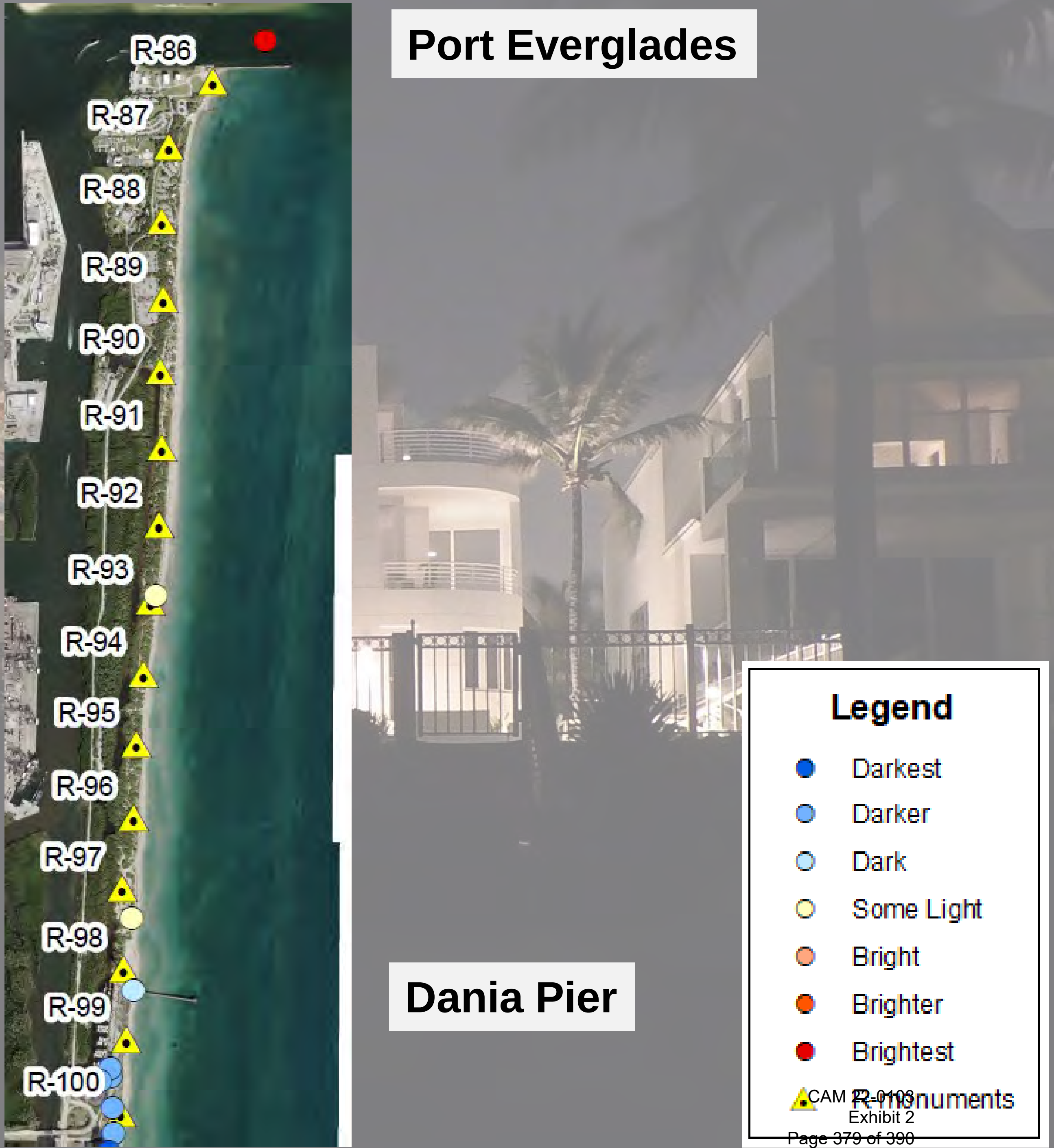
Fort Lauderdale

- **R54-R85**
- **228 properties**
- **59% residential (mostly SFH)**
- **Lights per property: 0-85**
- **Average # lights per property = 6.87**



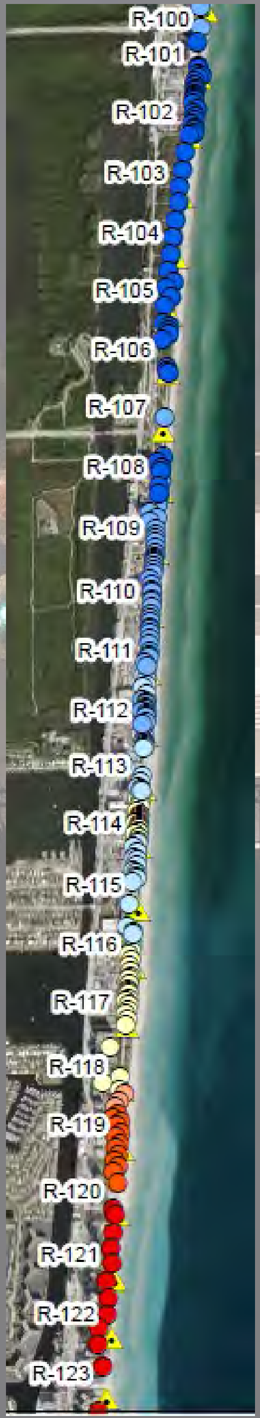
Mizell-Eula State Park/ Dania Beach

- State Park
  - R86-R96
  - Nesting surveys conducted by Park staff
- Dania Beach
  - R97-R99
  - 7 properties
    - 57% municipal
    - Lights per property 0-33
    - Average # lights per property = 4.31



Hollywood

- R100-R123
- 218 properties
  - 38% residential (mostly condos)
- Lights per property: 0-69
- Average # lights per property = 5.36



North Beach Park

Broadwalk start

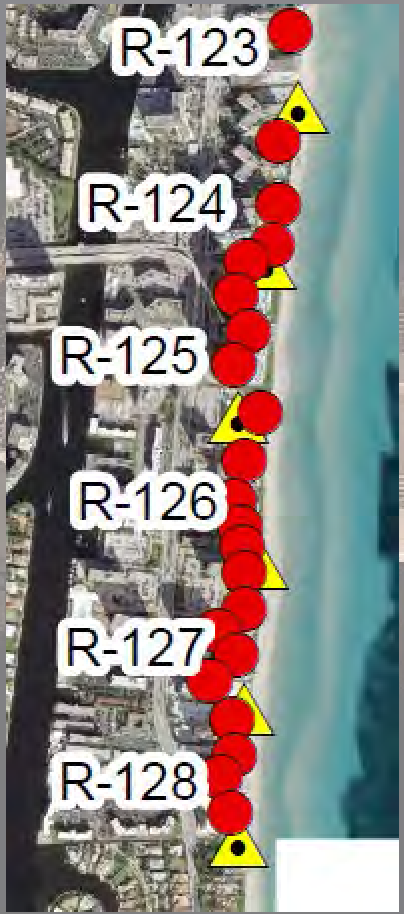
Broadwalk end

Legend

- Darkest
- Darker
- Dark
- Some Light
- Bright
- Brighter
- Brightest
- R-monuments

Hallandale

- **R124-R128**
- **19 properties**
  - **79% residential (mostly condos)**
- **Lights per property: 0-41**
- **Average # lights per property = 15.31**



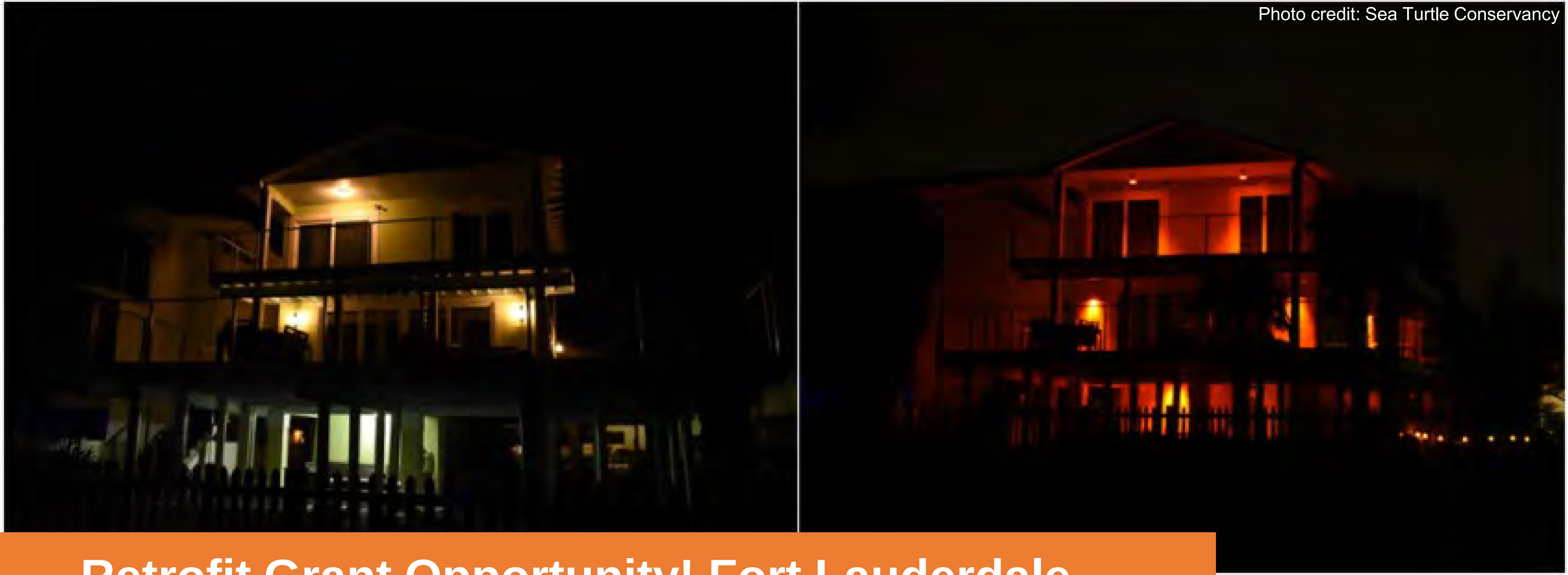
COVID-19 and Lighting

- Code enforcement efforts transitioned to COVID compliance
- Businesses closed, less lighting at restaurants or other establishments
  - Signage, rope lighting, neon lighting all declined in 2020
- More people staying home, more lighting at residences
  - Interior, pool, wall mount, and ceiling mount lights all increased in 2020

Next Steps…

- Continued community outreach
  - BCSTCP brochures and door hangers are available!
- Reducing interior lighting
  - Social media messaging
- Increased educational opportunities for code enforcement, residences, business managers, etc.
- Continued collaboration and communication among turtle staff, volunteers, code enforcement, state/local agencies, etc.

Photo credit: BCSTCP



Retrofit Grant Opportunity! Fort Lauderdale

- **Sea Turtle Conservancy (non-profit organization based out of Gainesville)**
- **For more information, email Rachel Tighe rachel@conserveturtles.org, Emily Asp emily@conserveturtles.org, and Ashley Wilson ashley@conserveturtles.org**

Break Time!

Please return in 10 minutes.

Lighting Site Inspection practice and Open Discussion will follow the break.

APPENDIX L: City HCP Supplemental Application

CITY OF FORT LAUDERDALE

City Habitat Conservation Plan Special Event Supplemental Application

Attendees: What is the maximum number of people that will be at the event during the indicated times?
Fencing: If fencing is proposed to be used, **and left in place overnight**, what is the area on the beach, in square feet, that will be enclosed within the fence? (Note: If fencing is lifted from the beach surface, do not include square feet enclosed).
Structures: If any additional structures (e.g., tents, stages, tables, platforms, storage boxes, etc.) will be used **outside** of the fenced in area, **and left in place overnight**, what is the total square footage of these structures?
Distance: What is the distance in linear feet from the northern extent to the southern extent of your event (i.e., Shore-parallel length, See attachment for guidance on measuring)?
Lighting: Will lights be required **before sunrise or after sunset?** If so, how long will they be turned on?
Matting: If vehicle and/or pedestrian access matting will be used, how many square feet of matting will be placed on the beach (Do not include matting underneath structures)?

For multiday events, calculate an average for all setup days, event days and breakdown days.

	Start Date	**Number of Days**	**Attendees**	**Fencing** (sq. ft.)	**Structures** (sq. ft.)	**Distance** (Linear ft.)	**Lighting** (Minutes)	**Matting** (sq. ft.)
Setup:								
Event Day(s):								
Breakdown:								

CITY OF
FORT LAUDERDALE

City Habitat Conservation Plan Special Event Supplemental Application

Please detail how your event plans to comply with each of the minimization measures for your event type. Please note this information will be used to streamline your application to Florida Department of Environmental Protection (if required) so more detail is preferred. Please use additional pages if necessary.

CITY OF FORT LAUDERDALE

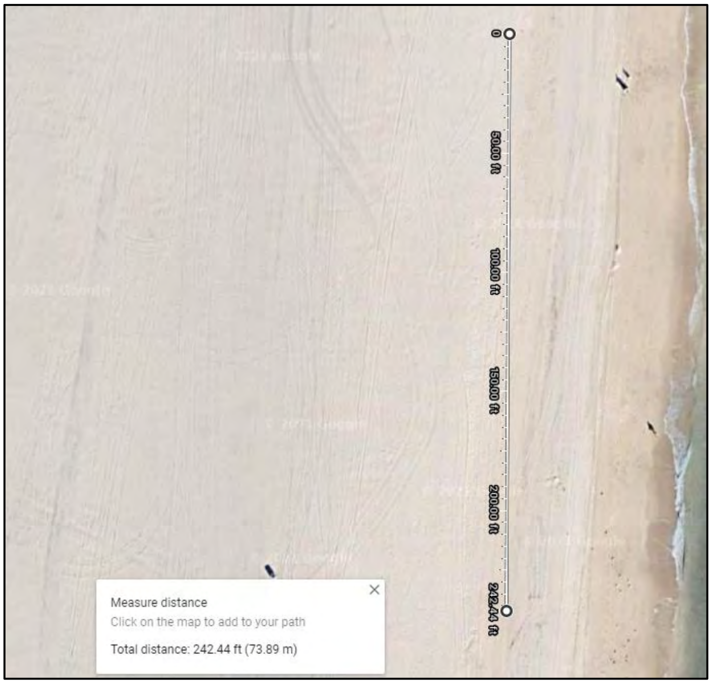
Special Event Supplemental Application Assistance

0 90 180 Feet

GIS Fort Lauderdale

Map Created by Property Reporter GIS

Printed on: 7/12/2021



Measure distance between points on Google Maps

You can calculate the distance between two or more points on the map. For example, you can measure linear feet in a straight line along the shore.

1. On your computer, open Google Maps. If you're using Maps in Lite mode, you'll see a lightning bolt at the bottom and you won't be able to measure the distance between points.
2. Right-click on your starting point.
3. Choose Measure distance.
4. Click anywhere on the map to create a path to measure. To add another point, click anywhere on the map.
5. Optional: Drag a point or path to move it, or click a point to remove it.
6. At the bottom, you'll see the total distance in feet (ft)/miles (mi) and meters (m)/kilometers (km).
7. When done: On the card at the bottom, click Close ✕.