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March 29, 2005

Mr. Osvaldo Collazo
U.S. Army Corps of Engineers
Jacksonville District Office
Pensacola Regulatory Office
41 North Jefferson Street, Suite 104
Pensacola, Florida 32501

Attn: Mary Hartshorn

Re: FWS No. 4-P-02-056
Public Notice 2001 -5838 (IP-MBH)
Date Started: March 2, 2005
Applicant: Santa Rosa Island Authority
Project Title: Pensacola Beach Nourishment,
Post Hurricane Ivan
Ecosystem: NE Gulf
County: Escambia County, Florida

Dear Mr. Collazo:

This letter constitutes amendment no. 1 to the June 3, 2002, Biological Opinion (BO) on the Santa Rosa Island Authority (SRIA) offshore dredging and beach nourishment project on Pensacola Beach, Escambia County, Florida. The Fish and Wildlife Service (Service) received your letter dated March 2, 2005, requesting reinitiation of consultation due to the passage of Hurricane Ivan in September 2004. The U.S. Army Corps of Engineers (Corps) has determined that the proposed work would not likely adversely affect (NLAA) non-breeding piping plover and manatee, and would not result in adverse modification of designated critical habitat for either species. Subsequent to our e-mail dated March 11, 2005, the Corps has determined the project will adversely affect nesting loggerhead, green, and leatherback sea turtles as covered under the existing Biological Opinion for the subject project dated June 3, 2002. Thus, the Corps has determined that the "Reasonable and Prudent Measures" (RPM) and the "Terms and Conditions" (TC) contained in the BO are applicable to the emergency work. Our comments are provided in accordance with the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1351 *et seq.*).

The Service concurs with your determination that the proposed work is not likely to adversely affect non-breeding piping plover and manatees. However, recent post-hurricane assessments indicate new habitat for the plover was potentially created by Hurricane Ivan. Areas used by migrating and wintering piping plovers are ephemeral habitats and therefore we must consider their changing nature over time. Hurricanes and episodic storm events increase overwash processes that transport sediment (sand) across barrier islands and form inlets and sand and mud flats. Washover areas are created by the flow of water through the primary dune line with deposition of sand on the barrier flats, marsh, or into a lagoon, depending on the storm magnitude and the width of the beach. On developed beaches, structures may prevent or minimize this occurrence. Washover passes are used by migrating and wintering piping plovers for feeding and roosting.

Dredging projects and shoreline manipulations in wintering areas can have an effect on the piping plovers food base and result in habitat loss and direct disturbance of individual birds. For these reasons, we have reviewed post-hurricane photos (National Oceanographic Atmospheric Administration; September 17, 2004) with the purpose of locating newly formed habitat ideal for piping plover use in the Pensacola Beach proposed beach nourishment area (R-107 to R151). While washover did occur over most of the Gulf of Mexico beachfront, it does not appear that habitat ideal for piping plover use was created where the proposed material placement will occur. It appears that some areas on the Santa Rosa Sound/Pensacola Bay side may now have pockets of washover habitat (sand and mud flats) that might be attractive to piping plovers, but we will assess these areas should future projects in their location be proposed. If we have overlooked any newly formed washover areas that are of a low enough nature to be inundated on a periodic basis within the project area that the applicant is aware of or becomes aware of, please contact the Service immediately.

The Service concurs with the determination that the proposed project is covered under the existing BO for effects on nesting sea turtles. However, new information on sea turtle nesting on nourished beaches and Service policy necessitate changes to the RPM and TCs. These changes include new information about increased lighting disorientations of sea turtles resulting from beach nourishment and Service guidance on section 7 consultations.

Since the BO was prepared, new information has become available concerning lighting disorientations of hatchling sea turtles after nourishment. The wider and elevated beaches resulting from nourishment allow more lights to become visible from the beach that were less visible or not at all visible from the beach pre-nourishment (Brevard County nourishment project). Thus, the effects of the nourished beach and visible light will need to be monitored and corrected, if necessary.

The following sections of the BO have been changed. All other parts of the June 3, 2002, BO are applicable to the emergency nourishment work.

Incidental Take Statement

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA, as amended, prohibit take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to

attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be included in the Corps' project plans for the exemption in section 7(o) (2) to apply. The Corps has a continuing duty to implement the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions, or (2) fails to adhere to the terms and conditions of the incidental take statement, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the project and its impacts on the species to the Service as specified in the incidental take statement [50 CFR §402.14(I)(3)].

AMOUNT OR EXTENT OF TAKE

The Service has reviewed the biological information and other information relevant to this action. The Service anticipates 8.0 miles of sea turtle nesting beach habitat could be taken as a result of this proposed action. The take is expected to be in the form of: (1) destruction of all nests that may be constructed and eggs that may be deposited and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) destruction of all nests deposited during the period when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) reduced hatching success due to egg mortality during relocation and adverse conditions at the relocation site; (4) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities; (5) misdirection of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of project lighting; (6) behavior modification of nesting females due to escarpment formation within the project area during a nesting season, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; and (7) destruction of nests from escarpment leveling within a nesting season when such leveling has been approved by the Fish and Wildlife Service.

Incidental take is anticipated for only the 8.0 miles of beach that has been identified for sand placement. The Service anticipates incidental take of sea turtles will be difficult to detect for the following reasons: (1) the turtles nest primarily at night and all nests are not found because [a] natural factors, such as rainfall, wind, and tides may obscure crawls and [b] human-caused factors, such as pedestrian and vehicular traffic, may obscure crawls and result in nests being destroyed because they were missed during a nesting survey and egg relocation program; (2) the total number of hatchlings per undiscovered nest is unknown; (3) the reduction in percent

hatching and emerging success per relocated nest over the natural nest site is unknown; (4) an unknown number of females may avoid the project beach and be forced to nest in a less than optimal area; (5) lights may disorient an unknown number of hatchlings and cause death; and (6) escarpments may form and cause an unknown number of females from accessing a suitable nesting site.

Take of these species can be anticipated by the disturbance and restoration of suitable turtle nesting beach habitat because: (1) turtles nest within the project site; (2) beach restoration will likely occur during a portion of the nesting season; (3) the restoration project will modify the incubation substrate, beach slope, and sand compaction; and (4) artificial lighting will disorient nesting females and hatchlings. The amount or extent of incidental take for nesting sea turtles will be considered exceeded if the emergency project continues into the 2006 nesting season for sea turtles (May 1, 2006).

Reasonable and Prudent Measures

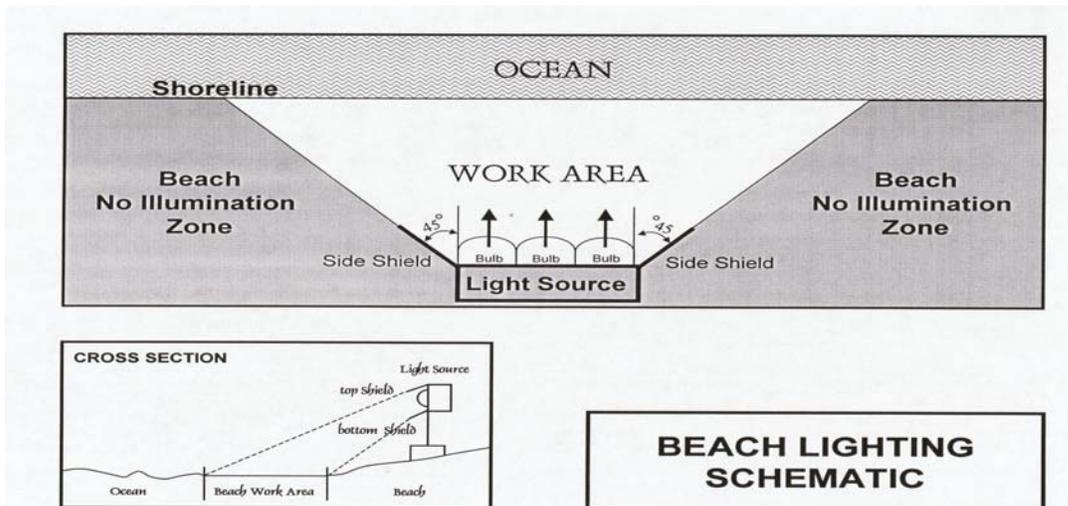
Beachfront Lighting Reasonable and Prudent Measures (New RPM no. 11)

The applicant, Santa Rosa Island Authority (SRIA) following construction of the project, shall complete a survey to determine the amount of light visible from the nourished beach.

Terms and Conditions

Protection of Sea Turtles Terms and Conditions (TC no. 5)

From May 1 through October 31, direct lighting of the beach and nearshore waters shall be limited to the immediate construction area and shall comply with safety requirements. Lighting on offshore or onshore equipment shall be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the water's surface and nesting beach while meeting all Coast Guard, EM 385-1-1, and OSHA requirements. Light intensity of lighting lamps shall be reduced to the minimum standard required by OSHA for General Construction areas, in order not to mis-direct sea turtles. Shields shall be affixed to the light housing and be large enough to block light from all lamps from being transmitted outside the construction area (see below schematic).



Reporting Terms and Conditions (New TCs no. 4)

The applicant, Santa Rosa Island Authority (SRIA), shall complete a survey of all lighting visible from the nourished beach, using standard techniques for such a survey (enclosure 1) by May 15, 2006. For each light source visible, the SRIA shall provide documentation that the property owner(s) has been notified of the light with recommendations correcting the light.

Recommendations should be in accordance with the State's Model Lighting Ordinance for Marine Turtle Protection Chapter 62B-55 (enclosure 2). A summary report of the survey and documentation of property owner notification shall be submitted to the Service by May 30, 2006. Additional lighting surveys shall be conducted monthly through August 2006, and results reported by the 15th of the following month.

The Service believes that incidental take will be limited to the 8.0 miles of beach that have been identified for beach nourishment. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize incidental take that might otherwise result from the proposed action. With implementation of these measures, the Service believes that no more than the following levels and types of incidental take will result from the proposed project: (1) all sea turtle nests that may be constructed and eggs that may be deposited and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) destruction of all sea turtle nests deposited during the period when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent project and non-project beaches; (4) disorientation of hatchling turtles on adjacent project and non-project beaches as they emerge from the nest and crawl to the water; (5) behavior modification of nesting females due to escarpment formation within the project area during a nesting season, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; (6) destruction of all nests as a result of escarpment

leveling within a nesting season when such leveling has been approved by the Fish and Wildlife Service; and (7) reduced hatching success due to egg mortality during relocation and adverse conditions at the relocation site.

If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

Sincerely,

Janet Mizzi
Deputy Project Leader

Enclosures:

Assessments: Discerning Problems Caused by Artificial Lighting
Model Lighting Ordinance for Marine Turtle Protection

cc:

FWS, Jacksonville, FL (Nicole Adimey)(w/ copy of incoming)
NMFS, Habitat Conservation, Panama City, FL (Mark Thompson)
NMFS, Protected Species, St. Pete., FL
FWC, Non-game Program, Panama City, FL (Brad Smith)
FWC, Non-game Program, Lake City, FL (Terry Doonan)
FWC, Imperiled Species Mgt. Section, Tallahassee, FL (Robbin Trindell)
FDEP, Beaches and Coastal Systems, Tallahassee, FL
Mark Nicholas, GINS, Gulf Breeze, FL
Tim Day, Escambia County, NESD, Pensacola, FL
Debbie Norton, Santa Rosa Island Authority, Pensacola Beach, FL

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Enclosure 1

Assessments: Discerning Problems Caused by Artificial Lighting

Excerpted from: Understanding, Assessing, and Resolving Light-Pollution
Problems on Sea Turtle Nesting Beaches
Blair E. Witherington and R. Erik Martin
Florida Fish and Wildlife Conservation Commission, FMRI
Tech Rep. TR-2, 3rd Edition 2003

Assessments: Discerning Problems Caused by Artificial Lighting

Lighting Inspections

WHAT ARE LIGHTING INSPECTIONS?

During a lighting inspection, a complete census is made of the number, types, locations, and custodians of artificial light sources that emit light visible from the beach. The goal of lighting inspections is to locate lighting problems and to identify the property owner, manager, caretaker, or tenant who can modify the lighting or turn it off.

WHICH LIGHTS CAUSE PROBLEMS?

Although the attributes that can make a light source harmful to sea turtles are complex, a simple rule has proven to be useful in identifying problem lighting under a variety of conditions:

An artificial light source is likely to cause problems for sea turtles if light from the source can be seen by an observer standing anywhere on the nesting beach.

If light can be seen by an observer on the beach, then the light is reaching the beach and can affect sea turtles. If any glowing portion of a luminaire (including the lamp, globe, or reflector) is directly visible from the beach, then this source is likely to be a problem for sea turtles. But light may also reach the beach indirectly by reflecting off buildings or trees that are visible from the beach. Bright or numerous sources, especially those directed upward, will illuminate sea mist and low clouds, creating a distinct glow visible from the beach. This "urban skyglow" is common over brightly lighted areas. Although some indirect lighting may be perceived as nonpoint-source light pollution, contributing light sources can be readily identified and include sources that are poorly directed or are directed upward. Indirect lighting can originate far from the beach.

Although most of the light that sea turtles can detect can also be seen by humans, observers should realize that some sources, particularly those emitting near-ultraviolet and violet light (e.g., bug-zapper lights, white electric-discharge lighting) will appear brighter to sea turtles than to humans. A human is also considerably taller than a hatchling; however, an observer on the dry beach who crouches to the level of a hatchling may miss some lighting that will affect turtles. Because of the way that some lights are par-

tially hidden by the dune, a standing observer is more likely to see light that is visible to hatchlings and nesting turtles in the swash zone.

HOW SHOULD LIGHTING INSPECTIONS BE CONDUCTED?

Lighting inspections to identify problem light sources may be conducted either under the purview of a lighting ordinance (see Appendix H and the section below on sea turtle lighting ordinances) or independently. In either case, goals and methods should be similar.

GATHER BACKGROUND INFORMATION

Before walking the beach in search of lighting, it is important to identify the boundaries of the area to be inspected. For inspections that are part of lighting-ordinance enforcement efforts, the jurisdictional boundaries of the sponsoring local government should be determined. It will help to have a list that includes the name, owner, and address of each property within inspection area so that custodians of problem lighting can be identified. Plat maps or aerial photographs will help surveyors orient themselves on heavily developed beaches.

PRELIMINARY DAYTIME INSPECTIONS

An advantage to conducting lighting inspections during the day is that surveyors will be better able to judge their exact location than they would be able to at night. Preliminary daytime inspections are especially important on beaches that have restricted access at night. Property owners are also more likely to be available during the day than at night to discuss strategies for dealing with problem lighting at their sites.

A disadvantage to daytime inspections is that fixtures that are not directly visible from the beach will be difficult to identify as problems. Moreover, some light sources that can be seen from the beach in daylight may be kept off at night and thus present no problems. For these reasons, daytime inspections are not a substitute for nighttime inspections.

Descriptions of light sources identified during daytime inspections should be detailed enough so that anyone can locate the lighting. In addition to a general description of each luminaire (e.g., HPS floodlight directed seaward at top northeast corner of

the building at 123 Ocean Street), photographs or sketches of the lighting may be necessary. Descriptions should also include an assessment of how the specific lighting problem can be resolved (*e.g.*, needs turning off; should be redirected 90° to the east). These detailed descriptions will show property owners exactly which luminaires need what remedy.

NIGHTTIME INSPECTIONS

Surveyors orienting themselves on the beach at night will benefit from notes made during daytime surveys. During nighttime lighting inspections, a surveyor walks the length of the nesting beach looking for light from artificial sources. There are two general categories of artificial lighting that observers are likely to detect:

1. **Direct lighting.** A luminaire is considered to be direct lighting if some glowing element of the luminaire (*e.g.*, the globe, lamp [bulb], reflector) is visible to an observer on the beach. A source not visible from one location may be visible from another farther down the beach. When direct lighting is observed, notes should be made of the number, lamp type (discernable by color; Appendix A), style of fixture (Appendix E), mounting (pole, porch, *etc.*), and location (street address, apartment number, or pole identification number) of the luminaire(s). If exact locations of problem sources were not determined during preliminary daytime surveys, this should be done during daylight soon after the nighttime survey. Photographing light sources (using long exposure times) is often helpful.
2. **Indirect lighting.** A luminaire is considered to be indirect lighting if it is not visible from the beach but illuminates an object (*e.g.*, building, wall, tree) that is visible from the beach. Any object on the dune that appears to glow is probably being lighted by an indirect source. When possible, notes should be made of the number, lamp type, fixture style, and mounting of an indirect-lighting source. Minimally, notes should be taken that would allow a surveyor to find the lighting during a follow-up daytime inspection (for instance, which building wall is illuminated and from what angle?).

WHEN SHOULD LIGHTING INSPECTIONS BE CONDUCTED?

Because problem lighting will be most visible on the darkest nights, lighting inspections are ideally conducted when there is no moon visible. Except for a few nights near the time of the full moon, each night

of the month has periods when there is no moon visible. Early-evening lighting inspections (probably the time of night most convenient for inspectors) are best conducted during the period of 2–14 days following the full moon. Although most lighting problems will be visible on moonlit nights, some problems, especially those involving indirect lighting, will be difficult to detect on bright nights.

A set of daytime and nighttime lighting inspections before the nesting season and a minimum of three additional nighttime inspections during the nesting-hatching season are recommended. The first set of day and night inspections should take place just before nesting begins. The hope is that managers, tenants, and owners made aware of lighting problems will alter or replace lights before they can affect sea turtles. A follow-up nighttime lighting inspection should be made approximately two weeks after the first inspection so that remaining problems can be identified. During the nesting-hatching season, lighting problems that seemed to have been remedied may reappear because owners have been forgetful or because ownership has changed. For this reason, two midseason lighting inspections are recommended. The first of these should take place approximately two months after the beginning of the nesting season, which is about when hatchlings begin to emerge from nests. To verify that lighting problems have been resolved, another follow-up inspection should be conducted approximately one week after the first midseason inspection.

WHO SHOULD CONDUCT LIGHTING INSPECTIONS?

Although no specific authority is required to conduct lighting inspections, property managers, tenants, and owners are more likely to be receptive if the individual making recommendations represents a recognized conservation group, research consultant, or government agency. When local ordinances regulate beach lighting, local government code-enforcement agents should conduct lighting inspections and contact the public about resolving problems.

WHAT SHOULD BE DONE WITH INFORMATION FROM LIGHTING INSPECTIONS?

Although lighting surveys serve as a way for conservationists to assess the extent of lighting problems on a particular nesting beach, the principal goal of those conducting lighting inspections should be to ensure that lighting problems are resolved. To resolve lighting problems, property managers, tenants, and owners should be given the information they need to make proper alterations to light

sources. This information should include details on the location and description of problem lights, as well as on how the lighting problem can be solved. One should also be prepared to discuss the details of how lighting affects sea turtles. Understanding the nature of the problem will motivate people more than simply being told what to do.

Monitoring Sea Turtle Behavior

In part, the behavior of nesting sea turtles and their hatchlings on the beach can be monitored by studying the tracks they leave in the sand. This evidence can reveal how much and where nesting occurs and how well oriented hatchlings are as they attempt to find the sea from their nest. Monitoring this behavior is one way to assess problems caused by artificial lighting, but it is no substitute for a lighting inspection program as described above. Many lighting problems may affect sea turtles and cause mortality without their leaving conspicuous track evidence on the beach.

SEA TURTLE NESTING

On many beaches, sea turtle biologists make early-morning surveys of tracks made the previous night in order to gather information on nesting. With training, one can determine the species of sea turtles nesting, the success of their nesting attempts, and where these attempts have occurred. These nesting surveys are one of the most common assessments made of sea turtle populations.

Because many factors affect nest-site choice in sea turtles, monitoring nesting is not a very sensitive way to assess lighting problems. However, changes that are observed in the distribution or species composition of nesting can indicate serious lighting problems and should be followed with a program of lighting inspections if one is not already in place.

HATCHLING ORIENTATION

Although hatchlings are more sensitive to artificial lighting than are nesting turtles, the evidence they leave behind on the beach is less conspicuous. Evidence of disrupted sea-finding in hatchlings (hatchling disorientation) can vastly underrepresent the extent of a lighting problem; however, this evidence can be useful in locating specific problems between lighting inspections. There are two ways one can use hatchling-orientation evidence to help assess lighting problems:

HATCHLING-ORIENTATION SURVEYS

Of the two methods, hatchling-orientation surveys, which involve measuring the orientation of hatchling tracks at a sample of sites where hatchlings have emerged, provide the most accurate assessment. Because the jumble of hatchling tracks at most emergence sites is often too confused to allow individual tracks to be measured, simple measures of angular range (the width that the tracks disperse) and modal direction (the direction that most hatchlings seem to have gone) are substituted. If the sampling of hatchling emergence sites does not favor a specific stretch of beach or a particular time of the lunar cycle, data from these samples can be an accurate index of how well hatchlings are oriented (Witherington *et al.*, 1996).

HATCHLING-DISORIENTATION REPORTS

Although many cases of hatchling disorientation go unnoticed, some are observed and reported. The evidence of such events includes numerous circling tracks, tracks that are directed away from the ocean, or the carcasses of hatchlings that have succumbed to dehydration and exhaustion. Because reporters often discover this evidence while conducting other activities, such as nesting surveys, the events reported often include only the most conspicuous cases. Although these reports have a distinct coverage bias, they can still yield valuable information.

Hatchling-disorientation reports can help researchers immediately identify light-pollution problems. Although not every hatchling that is misled by lighting may be observed and reported, each report constitutes a documented event. When reports are received by management agencies or conservation groups, action can be taken to correct the light-pollution problem at the specific site recorded in the report. To facilitate the gathering of this information, standardized report forms should be distributed to workers on the beach who may discover evidence of hatchling disorientation. The following is a list of information that should be included on a standardized hatchling-disorientation report form:

1. Date and time (night or morning) that evidence was discovered.
2. Observer's name, address, telephone number, and affiliation (if any). The reporter may need to be contacted so that information about the event can be verified and the site can be located.
3. Location of the event and the possible light sources

responsible. Written directions to the locations should be detailed enough to guide a person unfamiliar with the site. The reporter should judge which lighting may have caused the sea-finding disruption, a decision that may involve knowledge about lighting that was on during the previous night and the direction(s) of the tracks on the beach. If possible, the type of lighting responsible

should be identified (*e.g.*, a high-pressure-sodium street light).

4. The number of hatchlings of each species involved in the event. Unless carcasses or live hatchlings are found, the species and numbers involved will be an estimate.
5. Additional notes about the event.

Enclosure 2

Model Lighting Ordinance for Marine Turtle Protection

Excerpted from: Understanding, Assessing, and Resolving Light-Pollution
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Blair E. Witherington and R. Erik Martin
Florida Fish and Wildlife Conservation Commission, FMRI
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APPENDIX H

CHAPTER 62B-55 Model Lighting Ordinance for Marine Turtle Protection

- 62B-55.001 Purpose and Intent.
- 62B-55.002 Definitions.
- 62B-55.003 Marine Turtle Nesting Areas.
- 62B-55.004 General Guidance to Local Governments.
- 62B-55.005 Prohibition of Activities Disruptive to Marine Turtles
- 62B-55.006 Model Standards for New Beachfront Lighting.
- 62B-55.007 Model Standards for Existing Beachfront Lighting.
- 62B-55.008 Proposed Enforcement and Penalties.
- 62B-55.009 Monitoring and Reporting Guidance.

62B-55.001 Purpose and Intent.—The purpose of this rule is to implement Section 161.163, Florida Statutes, which requires the department to designate coastal areas utilized, or likely to be utilized, by sea turtles for nesting, and to establish guidelines for local government regulations that control beachfront lighting to protect hatching sea turtles. This rule is intended to guide local governments in developing ordinances which will protect hatchling marine turtles from the adverse effects of artificial lighting, provide overall improvement in nesting habitat degraded by light pollution, and increase successful nesting activity and production of hatchlings.

Specific Authority 161.163 F.S., Law Implemented 161.163 F.S., History—New 3-93.

62B-55.002 Definitions.

- (1) "Artificial light" or "artificial lighting" means the light emanating from any human-made device.
- (2) "Beach" means the zone of unconsolidated material that extends landward from the mean low water line to the place where there is a marked change in material or physiographic form, or to the line of permanent vegetation, usually the effective limit of storm waves.
- (3) "Bug" type bulb means any yellow colored light bulb that is marketed as being specifically treated in such a way so as to reduce the attraction of bugs to the light.
- (4) "Coastal construction activities" means any work or activity that is likely to have a material physical effect on existing coastal conditions or natural shore and inlet processes.
- (5) "County" means Bay, Brevard, Broward, Charlotte, Citrus, Collier, Dade, Dixie, Duval, Escambia, Flagler, Franklin, Gulf, Hernando, Indian River, Jefferson, Lee, Levy, Manatee, Martin, Monroe, Nassau, Okaloosa, Palm Beach, Pasco, Pinellas, St. Johns, St. Lucie, Santa Rosa, Sarasota, Suwanee, Taylor, Volusia, Wakulla, and Walton Counties.
- (6) "Cumulatively illuminated" means illuminated by numerous artificial light sources that as a group illuminate any portion of the beach.
- (7) "Department" means the Florida Department of Natural Resources.
- (8) "Directly illuminated" means illuminated as a result of glowing element(s), lamp(s), globe(s), or reflector(s) of an artificial light source which is visible to an observer on the beach.
- (9) "Dune" means a mound or ridge of loose sediments, usually sand-sized, lying landward of the beach and deposited by any natural or artificial mechanism.
- (10) "Frontal dune" means the first natural or man-made mound or bluff of sand which is located landward of the beach and which has sufficient vegetation, height, continuity, and configuration to offer protective value.
- (11) "Ground-level barrier" means any vegetation, natural feature or artificial structure rising from the ground which prevents beachfront lighting from shining directly onto the beach-dune system.
- (12) "Hatchling" means any species of marine turtle, within or outside of a nest, that has recently hatched from an egg.
- (13) "Indirectly illuminated" means illuminated as a result of the glowing element(s), lamp(s), globe(s), or reflector(s) of an artificial light source which is not visible to an observer on the beach.

(14) "Local government" means any county listed in (4) above and any municipality, community development district, or special taxing district within those counties.

(15) "Marine turtle" means any marine-dwelling reptile of the families Cheloniidae or Dermochelyidae found in Florida waters or using the beach as nesting habitat, including the species: *Caretta caretta* (loggerhead), *Chelonia mydas* (green), *Dermochelys coriacea* (leatherback), *Eretmochelys imbricata* (hawksbill), and *Lepidochelys kempi* (Kemp's ridley). For purposes of this rule, marine turtle is synonymous with sea turtle.

(16) "Nest" means an area where marine turtle eggs have been naturally deposited or subsequently relocated.

(17) "Nesting season" means the period from May 1 through October 31 of each year for all counties except Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward. Nesting season for Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward counties means the period from March 1 through October 31 of each year.

(18) "Nighttime" means the locally effective time period between sunset and sunrise.

(19) "Person" means individuals, firms, associations, joint ventures, partnerships, estates, trusts, syndicates, fiduciaries, corporations, and all other groups or combinations.

(20) "Tinted glass" means any glass treated to achieve an industry-approved, inside-to-outside light transmittance value of 45% or less. Such transmittance is limited to the visible spectrum (400 to 700 nanometers) and is measured as the percentage of light that is transmitted through the glass.

62B-55.003 Marine Turtle Nesting Areas.—Scientific investigations have demonstrated that marine turtles can nest along the entire coastline of the state. Historical data are not sufficient to exclude any county as an area utilized by marine turtles for nesting. For the purposes of this rule, however, the coastal areas of the state utilized, or likely to be utilized, by marine turtles for nesting include all beaches adjoining the waters of the Atlantic Ocean, the Gulf of Mexico, and the Straits of Florida and located within Bay, Brevard, Broward, Charlotte, Collier, Dade, Duval, Escambia, Flagler, Franklin, Gulf, Indian River, Lee, Manatee, Martin, Monroe, Nassau, Okaloosa, Palm Beach, Pinellas, St. Johns, St. Lucie, Santa Rosa, Sarasota, Volusia, and Walton Counties; and all inlet shorelines of those beaches.

62B-55.004 General Guidance to Local Governments.

(1) The responsibility for protecting nesting female and hatchling marine turtles should be a joint responsibility of local government and the department. Local governments are encouraged to adopt, implement, and enforce the guidelines provided herein to assist in that responsibility. Local governments that have adopted less stringent regulations should consider amending existing ordinances to provide greater protection to nesting marine turtles and hatchlings. In the process of implementing these guidelines, the following management goals should also be considered by local governments:

(a) Public Awareness. Any person submitting an application for coastal construction activities within the jurisdictional boundaries of the local government should be informed of the existence of and requirements within the local government's ordinances concerning artificial lighting and marine turtle protection.

(b) Local Government–Department Communication. Upon adoption of these guidelines, a system of communication between the local government and the department should be developed if it does not already exist. Protection of marine turtle nesting habitat, nesting females, and hatchlings is greatly enhanced when local governments manage their beaches and coastal activities in a manner consistent with prudent marine turtle conservation strategies. The department is ready to assist local governments by providing such conservation information and other technical assistance.

(c) Inter-Governmental Cooperation. Upon adoption of these guidelines, local governments should develop a system for receiving copies of permits issued by the department, the Department of Environmental Regulation, or the United States Army Corps of Engineers for any coastal construction within the local government's jurisdiction. Activities permitted by these agencies should be assessed for compliance with the local government's lighting ordinance.

(d) Enforcement. Local governments should develop a process for the consistent and effective

enforcement of adopted guidelines. This process should include at least one compliance inspection of the beach conducted at night prior to the commencement of the main portion of the marine turtle nesting season and one compliance inspection conducted during the marine turtle nesting season.

- (2) The department considers the provisions of this Chapter to be minimum guidelines for the protection of nesting habitat, nesting females, and hatchling marine turtles from the negative effects of artificial lighting. More stringent standards for marine turtle protection may be adopted by local governments. Prior to adoption of any additional standards, local governments are encouraged to consult with the department to ensure that the proposed standards are consistent with the guidelines set forth herein and with all other applicable department rules.

62B-55.005 Prohibition of Activities Disruptive to Marine Turtles.

The following activities involving direct illumination of portions of the beach should be prohibited on the beach at nighttime during the nesting season for the protection of nesting females, nests, and hatchling marine turtles:

- (1) The operation of all motorized vehicles, except emergency and law enforcement vehicles or those permitted on the beach for marine turtle conservation or research.
- (2) The building of campfires or bonfires.

62B-55.006 Model Standards for New Beachfront Lighting.

In order to provide the highest level of protection for nesting marine turtles and their hatchlings, local governments should adopt all of the following standards for artificial light sources on all new coastal construction:

- (1) Exterior artificial light fixtures shall be designed and positioned so that:
 - (a) The point source of light or any reflective surface of the light fixture is not directly visible from the beach;
 - (b) Areas seaward of the frontal dune are not directly or indirectly illuminated; and
 - (c) Areas seaward of the frontal dune are not cumulatively illuminated.
- (2) Exterior artificial light fixtures within direct line-of-sight of the beach are considered appropriately designed if:
 - (a) Completely shielded downlight only fixtures or recessed fixtures having low wattage (*i.e.*, 50 watts or less) "bug" type bulbs and non-reflective interior surfaces are used. Other fixtures that have appropriate shields, louvers, or cutoff features may also be used if they are in compliance with subsection (1)(a), (b), and (c) above; and
 - (b) All fixtures are mounted as low in elevation as possible through use of low-mounted wall fixtures, low bollards, and ground-level fixtures.
- (3) Floodlights, uplights or spotlights for decorative and accent purposes that are directly visible from the beach, or which indirectly or cumulatively illuminate the beach, shall not be used.
- (4) Exterior lights used expressly for safety or security purposes shall be limited to the minimum number and configuration required to achieve their functional role(s). The use of motion detector switches that keep lights off except when approached and that switch lights on for the minimum duration possible are preferred.
- (5) Only low intensity lighting shall be used in parking areas within line-of-sight of the beach. Such lighting shall be:
 - (a) Set on a base which raises the source of light no higher than 48 inches off the ground; and
 - (b) Positioned or shielded so that the light is cast downward and the source of light or any reflective surface of the light fixture is not visible from the beach and does not directly or indirectly illuminate the beach.
- (6) Parking areas and roadways, including any paved or unpaved areas upon which motorized vehicles will park or operate, shall be designed and located to prevent vehicular headlights from directly or indirectly illuminating the beach.
- (7) Vehicular lighting, parking area lighting, and roadway lighting shall be shielded from the beach through the use of ground-level barriers. Ground-level barriers must not interfere with marine turtle nesting or hatchling emergence, or cause short- or long-term damage to the beach/dune system.

- (8) Tinted glass shall be installed on all windows and glass doors of single or multi-story structures within line-of-sight of the beach.
- (9) Use of appropriately shielded low-pressure sodium-vapor lamps and fixtures shall be preferred for high-intensity lighting applications such as lighting parking areas and roadways, providing security, and similar applications.
- (10) Temporary lighting of construction sites during the marine turtle nesting season shall be restricted to the minimal amount necessary and shall incorporate all of the standards of this section.

62B-55.007 Model Standards For Existing Beachfront Lighting. In order to provide the highest level of protection for nesting marine turtles and their hatchlings, local governments should adopt all of the following standards for existing artificial beachfront lighting sources:

- (1) Existing artificial light fixtures shall be repositioned, modified, or removed so that:
 - (a) The point source of light or any reflective surface of the light fixture is not directly visible from the beach;
 - (b) Areas seaward of the frontal dune are not directly or indirectly illuminated; and
 - (c) Areas seaward of the frontal dune are not cumulatively illuminated.
- (2) The following measures shall be taken to reduce or eliminate the negative effects of existing exterior artificial lighting:
 - (a) Reposition fixtures so that the point source of light or any reflective surface of the light fixture is no longer visible from the beach;
 - (b) Replace fixtures having an exposed light source with fixtures containing recessed light sources or shields;
 - (c) Replace traditional light bulbs with yellow "bug" type bulbs not exceeding 50 watts;
 - (d) Replace non-directional fixtures with directional fixtures that point down and away from the beach;
 - (e) Replace fixtures having transparent or translucent coverings with fixtures having opaque shields covering an arc of at least 180 degrees and extending an appropriate distance below the bottom edge of the fixture on the seaward side so that the light source or any reflective surface of the light fixture is not visible from the beach;
 - (f) Replace pole lamps with low-profile, low-level luminaries so that the light source or any reflective surface of the light fixture is not visible from the beach;
 - (g) Replace incandescent, fluorescent, and high intensity lighting with the lowest wattage low-pressure sodium-vapor lighting possible for the specific application;
 - (h) Plant or improve vegetation buffers between the light source and the beach to screen light from the beach;
 - (i) Construct a ground level barrier to shield light sources from the beach. Ground-level barriers must not interfere with marine turtle nesting or hatchling emergence, or cause short- or long-term damage to the beach/dune system;
 - (j) Permanently remove or permanently disable any fixture which cannot be brought into compliance with the provisions of these standards.
- (3) The following measures shall be taken to reduce or eliminate the negative effects of interior light emanating from doors and windows within line-of-sight of the beach:
 - (a) Apply window tint or film that meets the standards for tinted glass;
 - (b) Rearrange lamps and other moveable fixtures away from windows;
 - (c) Use window treatments (e.g., blinds, curtains) to shield interior lights from the beach; and
 - (d) Turn off unnecessary lights.

62B-55.008 Proposed Enforcement and Penalties.—Enforcement, appeal, and remedy of matters related to this Chapter should be regulated pursuant to procedures established under local ordinances. Penalties for non-compliance should be established and should be sufficient to discourage violations. Enforcement capability should be adequate to respond to possible violations within the timeframe necessary to prevent continued and prolonged impacts to marine turtles and hatchlings.

62B-55.009 Monitoring and Reporting Guidance.

The following information should be compiled on an annual basis and submitted to the department.

- (1) Number of lighting applications reviewed;
- (2) Number of potential violations reported;
- (3) Number of potential violations investigated;
- (4) Disposition of all potential violations including results of enforcement actions and amounts of penalties assessed;
- (5) Results of compliance checks conducted prior to and during the marine turtle nesting season; and
- (6) Status of local lighting ordinances and any amendments to those ordinances.