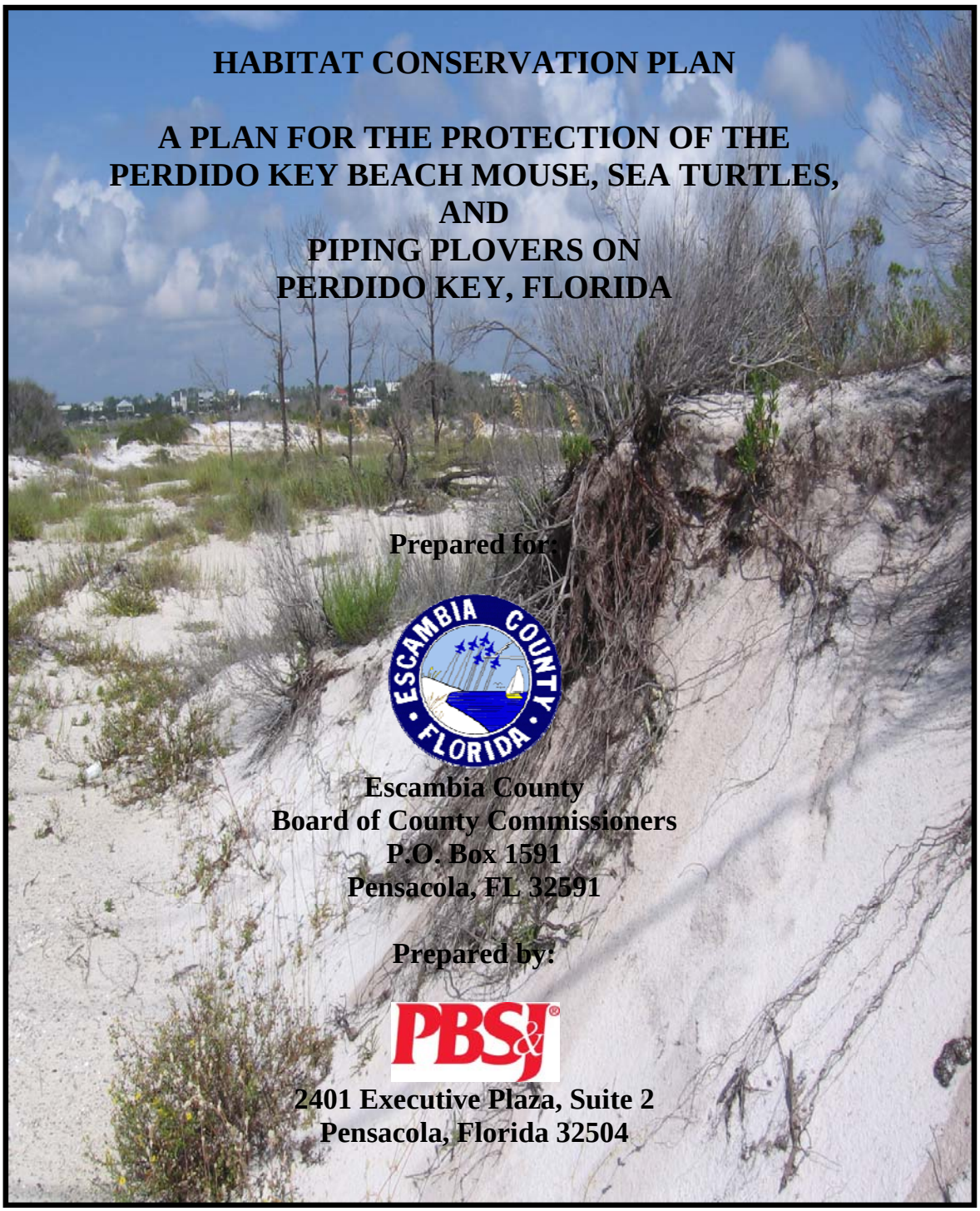

HABITAT CONSERVATION PLAN

A PLAN FOR THE PROTECTION OF THE PERDIDO KEY BEACH MOUSE, SEA TURTLES, AND PIPING PLOVERS ON PERDIDO KEY, FLORIDA

Prepared for:

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HABITAT CONSERVATION PLAN

A PLAN FOR THE PROTECTION OF THE PERDIDO KEY BEACH MOUSE, SEA TURTLES, AND PIPING PLOVERS ON PERDIDO KEY, FLORIDA

**Prepared in Support of Incidental Take Permit No.
for Incidental Take Related to Private Development and Escambia County Owned Land and Infrastructure Improvements on Perdido Key, Florida**

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ABBREVIATIONS

ABM	Alabama Beach Mouse
ACOE	United States Army Corps of Engineers
ATV	All Terrain Vehicle
BMP	Best Management Practices
BO	Biological Opinion
BOCC	Escambia County Board of County Commissioners
CCCL	Coastal Construction Control Line
CFR	Code of Federal Regulations
CMF	Conservation Management Fund
Comp Plan	Escambia County Comprehensive Plan
CZ	Conservation Zone
DPS	Distinct Population Segment
DRC	Escambia County Development and Review Committee
EA	Environmental Assessment
ECUA	Emerald Coast Utilities Authority
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FATPO	Florida Alabama Transportation Planning Organization
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FFWCC	Florida Fish and Wildlife Conservation Commission
FNAI	Florida Natural Areas Inventory
FPS	Florida Park Service
FS	Florida Statutes
Fund	PKBM Fund
FWHA	Federal Highway Administration
FY	Fiscal Year
GPS	Global Positioning System
GSP	Gulf State Park, Alabama
GUIS	Gulf Islands National Seashore
HCP	Habitat Conservation Plan
ITP	Incidental Take Permit
LDC	Escambia Land Development Code
MHWL	Mean High Water Line
MOT	Maintenance of Traffic
NEPA	National Environmental Policy Act
NESD	Neighborhood and Environmental Services Department
NGVD	National Geodetic Vertical Datum
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
OCRM	Office of Ocean and Coastal Resource Management
PCE	Primary Constituent Elements
PIT	Passive Integrated Transponder

PKBM	Perdido Key Beach Mouse
PKSP	Perdido Key State Park
PSS	Protected Species Specialist
PVA	Population Viability Analysis
ROW	Right of Way
SEIR	State Environmental Impact Report
SSC	Species of Special Concern
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

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EXECUTIVE SUMMARY

The take of any federally listed species of plants or animals is prohibited under the U.S. Endangered Species Act (ESA) of 1973, as amended, unless specifically authorized. The ESA defines the term take as an action "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (ESA section 3(18)). Harassment includes the disruption of normal behavioral patterns, like breeding, feeding, and sheltering (50 CFR 222.102). Harming includes habitat modification or degradation (50 CFR 17.3). Thus, both direct and indirect impacts can constitute a take under the ESA.

To obtain a Section 10(a)(2)(A) (section 10) incidental take permit (ITP) in accordance with the ESA of 1973 an applicant is required to submit a "conservation plan" that specifies the impacts which are likely to result from a proposed taking, and the measures the permit applicant will undertake to minimize and mitigate such impacts. Due to the noted occurrence and potential occurrence of federally listed species on Perdido Key, Florida, this Programmatic Habitat Conservation Plan (HCP) is submitted by Escambia County, Florida in an effort to reduce the need for individual incidental take permit applications for non-federal related developments and Escambia County owned public infrastructure improvements. Developing a HCP for Perdido Key, Florida will address programmatic processing and conservation plan analysis requirements which will function to reduce conflicts between listed species and economic development activities to facilitate "creative partnerships" between the public/private sectors and federal, state, and municipal agencies.

Escambia County is applying to the U.S. Fish and Wildlife Service (USFWS) for a 30-year section 10 ITP that will authorize the incidental take of Perdido Key beach mice (PKBM), nesting sea turtles (loggerhead, green, leatherback, and Kemp's Ridley sea turtles) and non-breeding piping plover concerning development, some County activities, and public infrastructure improvements. The PKBM will be the primary species of interest addressed in this HCP. For the 30-year coverage period of the ITP, a phased take of up to 66 acres of PKBM habitat is anticipated to be permanently impacted, resulting in take of the PKBM.

Activities covered under this HCP include residential and commercial development on private and Escambia County owned lands, utility infrastructure improvements, and other public infrastructure/transportation improvements to meet the community needs of Perdido Key, Florida. This HCP does not cover or include improvements to State Road 292 except for impacts directly associated with developments adjacent to State Road 292, i.e. turn lanes, and driveways.

1.0 INTRODUCTION

1.1 Background

The County of Escambia County (Applicant), Florida, will apply to the U.S. Fish and Wildlife Service (USFWS) for an incidental take permit (ITP) pursuant to Section 10(a)(1)(B) of the U.S. Endangered Species Act (ESA) of 1973, as amended. If issued, the ITP will authorize the "take" of Perdido Key beach mice (PKBM), four (4) nesting sea turtle species (loggerhead, green, leatherback, and Kemp's Ridley sea turtles), and the non-breeding piping plover indirectly impacted by development on private and Escambia County owned lands and public infrastructure improvements. The PKBM will be the primary species of interest addressed in this Programmatic Habitat Conservation Plan (HCP). This HCP has been developed as a mandatory element of the County's ITP application.

Approximately 274 acres of PKBM habitat on private and County-owned properties has been identified by photo interpretation and limited ground truthing to exist on Perdido Key in Escambia County, Florida from the Florida/Alabama state line east. Additionally, approximately 20 acres of PKBM habitat has been identified by photo interpretation within the State Road (SR) 292 (Perdido Key Drive) right-of-way, which may be relevant for possible future utility infrastructure improvements, turn lanes, and driveway approaches for private development. These acreage estimates do not include PKBM habitat within Perdido Key State Park (PKSP) or Gulf Islands National Seashore (GUIS). Habitat impacts from residential, commercial, and resort based development continues on Perdido Key. Areas available for development have been considered in preparing this HCP to encompass a landscape level approach to listed species habitat conservation; emphasizing habitat corridors and connectivity.

The Applicants' objectives in developing this HCP were to allow County permitted development activities on Perdido Key (Florida portion) in conjunction with current zoning restrictions and Comprehensive Plan (Comp Plan) mandates, which will satisfy safety, functional, and recreational needs of the Perdido Key community, while maintaining the long-term viability of covered species and their habitat. Through this HCP, the County will implement a multi-faceted program to conserve and manage PKBM habitat along with beach and dune habitats associated with sea turtles and shorebird ecosystems in a manner that accommodates site-specific and landscape approach conditions.

1.2 Evolution of the Perdido Key Programmatic Habitat Conservation Plan

This HCP developed from a need to streamline the incidental take permit process, develop standard conservation measures to promote the existence of listed species, and create a "one-stop shop" for application of impacts to listed species. Initially, the concept of a HCP for Perdido Key included proposed improvements to SR 292 (Perdido Key Drive).

Investigation of potential improvements to SR 292 (Perdido Key Drive) included the Project Development and Environment (PD&E) study and a State Environmental Impact Report (SEIR). Multiple meetings were conducted to outline concerns relative to proposed transportation improvements for SR 292 (Perdido Key Drive), including widening. The initial proposed Perdido

Key HCP scope included consideration of impacts from widening SR 292 (Perdido Key Drive) and establishing the conservation measures to offset potential impacts to listed species and their habitats. Agency communication through the PD&E study process has resulted in a position letter from the USFWS that the proposed impacts to PKBM habitat would be significant. Subsequently, the SEIR has been elevated to an Environmental Impact Statement (EIS) by the Federal Highway Administration (FWHA). Because of the involvement of FWHA, a federal agency, a Section 7 consultation in accordance with the ESA will be conducted, and will therefore not be included in this HCP.

1.3 Purpose of the Programmatic Habitat Conservation Plan

Perdido Key, Florida encompasses the historic range of the PKBM and important habitat for the nesting habitat for sea turtles, habitat for non-breeding piping plover, and habitat for breeding and non-breeding shorebirds. Designated critical habitat has been established for the PKBM by the USFWS. Utilizing designated critical habitat data along with photo-interpreted habitat, approximately 274 acres of PKBM habitat exists on private and County owned lands on Perdido Key, Florida, with an additional estimated 20 acres of PKBM habitat within the SR 292 (Perdido Key Drive) right-of-way. As development continues on Perdido Key, the importance to maintain/improve the quality and connectivity of PKBM habitat has established a need for an ITP associated with listed species habitat on Perdido Key.

This HCP is prepared in accordance with the requirements of Section 10(a)(1)(B) of the ESA. The *Habitat Conservation Planning Handbook* (Handbook), published by the USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA-Fisheries), dated November 1996 was used to guide the preparation of the plan. Other documents utilized in developing this plan include, but are not limited to: the *Perdido Key Beach Mouse Conservation Strategy* (April 2005), *Choctawhatchee Beach Mouse, Perdido Key Beach Mouse, and Alabama Beach Mouse Recovery Plan, USFWS* (August 1987) and the *Perdido Key Neighborhood Plan 2002 Update*.

The HCP is a requirement of the ITP application process. The purpose of this HCP is to develop a framework for effectively conserving and improving the productivity of PKBM habitat as well as other listed species habitat on Perdido Key while providing property owners with a means of allowing take of listed species and associated habitat incidental to otherwise lawful activities (construction). To that end, this document presents the following:

- A description of the goals, objectives, and benefits of the HCP;
- Geographic boundaries of the area to be covered under the HCP (i.e. Plan Area);
- General and site-specific biological information related to protected flora and fauna within the Plan Area;
- A discussion of natural factors and human activities potentially affecting PKBM, four (4) nesting sea turtle species (loggerhead, green, leatherback, and Kemp's Ridley sea turtles), and the non-breeding piping plover within the Plan Area;
- An estimate of the amount of take likely to occur as a result of private development and public infrastructure improvements;
- A description of the programs, policies and procedures that the County will implement to avoid the potential for take;

- A description of the programs, policies and procedures that the County will implement to minimize the potential for take;
- A description of measures that the County will implement to mitigate unavoidable incidental take of listed species and their habitats;
- A description of ITP management;
- A description of ITP monitoring;
- A commitment to funding the Plan;
- Methods to address changed circumstances;
- Methods for addressing unforeseen circumstances; and
- A mechanism for assessing HCP performance, ITP reporting, and amending the Plan, as needed, to address changing conditions within the Plan Area.

2.0 PLAN PREPARATION PROCESS

During its development, this HCP was subject to technical committee, steering committee, and stakeholder input, review and comment. Draft documents and public comments were posted on the County's website for broad distribution and hard copies were made available to those without internet access.

http://www.co.escambia.fl.us/Bureaus/DevelopmentServices/HCP.html

2.1 Technical Committee

A committee functioning to provide technical discussion and review throughout the development of the HCP, consisted of the USFWS, the Florida Fish and Wildlife Conservation Commission (FFWCC), the Florida Department of Environmental Protection, Division of Parks (PKSP), Gulf Island National Seashore (GUIS), and Escambia County Neighborhood and Environmental Services. This technical committee was established to meet on a quarterly basis throughout the development of the HCP. Technical discussion related to listed species and associated habitat covered under the HCP, as well as document format to ensure inclusion of appropriate sections. The technical committee was formed to review comments, suggestions, questions, and concerns related to the HCP development process.

As of October 2009, technical committee meetings were conducted quarterly from December 2007 through September 2009. Additional technical committee meetings were held through this timeframe to cover various topics during the document development phase. See Appendix O for minutes of these meetings.

Technical Committee Meetings were conducted on:

- December 13, 2007 – Kick off Meeting
- March 19, 2008 – Project Discussion/Document Development
- June 25, 2008 – SR 292 and Document Development
- August 7, 2008 – Zoning Districts & HCP/EA examples
- September 24, 2008 – HCP/EA Table of Contents
- January 28, 2009 – Impact Acreage Calculation & Discussion

- February 6, 2009 – PKBM Habitat Interpretation Discussion
- April 22, 2009 – HCP/EA Progress Update
- August 12, 2009 – HCP/EA Progress Update
- September 30, 2009 – Final Technical Meeting

2.2 Steering Committee

A steering committee which functions as an element of public involvement for the HCP, was established by District 2 Escambia County Commissioner Gene Valentino to address issues related to the west end of Escambia County. Termed the West-End Advisory Committee, it includes five individuals from the community chosen to represent the interests of the west end of Escambia County. This committee discusses issues related to Perdido Key as well as other areas in western Escambia County including mainland areas. The West-End Advisory Committee is to provide comments to the County in relation to questions and concerns related to the HCP development process.

As of October 2009, presentations to the Steering Committee were conducted on:

- April 28, 2008
- August 11, 2008
- March 16, 2009

Public announcements were issued inviting public attendance and allowed for public comment to the West-End Advisory Committee. As of October 2009, no formal written comments have been submitted to the County by the West-End Advisory Committee relative to the HCP.

2.3 Public Workshops and Stakeholder Involvement

Public workshops are a crucial and required part of the HCP process. Public workshops were held to present the HCP and EA to the public and receive stakeholder comments. As of October 2009, presentations to the public have been made on:

- April 9, 2009
- June 29, 2009
- September 24, 2009

Stakeholder participation was achieved primarily through a series of public workshops, as noted above. Copies of all drafts were made available to the public, and stakeholders were encouraged to provide written comments to the County for consideration.

Public comments have been submitted to the County and placed on the County's HCP website. Finally, a Committee of the Whole meeting with the Escambia BOCC is scheduled for November 12, 2009.

See Appendix O for copies of the technical committee meeting minutes, steering committee presentations and public workshop presentations.

3.0 GOALS AND BENEFITS

Escambia County is applying to the USFWS for an ITP, as provided under section 10(a)(1)(B) of the ESA. In formulating Section 10 of the ESA, Congress envisioned a process for the resolution of conflicts between traditional and lawful land-use practices and the conservation of protected species. Escambia County desires to streamline processing the application of non-federal requests for take of listed species in a manner that will also ensure adequate conservation measures are in existence for listed species on Perdido Key. Implementation of the programs and policies contained in this HCP will allow the County to engage in these activities in a manner and extent compatible with the protection of PKBM, sea turtles and shorebirds.

3.1 Requested Take

The County is requesting an ITP that will authorize the incidental take of PKBM, four (4) nesting sea turtle species (loggerhead, green, leatherback, and Kemp's Ridley sea turtles), and the non-breeding piping plover within the Plan Area for a period of 30 years pursuant to the terms and conditions of this HCP and the ITP. Activities associated with future private and Escambia County development and public infrastructure improvements under the County's authority to review and issue permits will be included in the ITP. Escambia County seeks coverage, for take to include:

- Impacts to habitats and/or individuals of PKBM, sea turtles, and piping plover during the construction of non-federal related private development and County infrastructure improvements approved under review by Escambia County;
- Direct and indirect impacts to PKBM, sea turtles, and piping plover as the result of physical interaction with private and County developments and infrastructure installed under the ITP;
- Impacts to PKBM, sea turtles, and piping plover as the result of authorized activities such as beach driving, beach cleanup, use of recreational beach equipment, special beach events, beach concessions, and other County authorized activities;
- Impacts to PKBM, sea turtles, and piping plover related to emergency management activities, primarily related to post tropical storm clean-up, excluding Federal Emergency Management funded activities.

Based on demand for development of privately owned parcels and a need to improve and/or expand County infrastructure, this HCP is developed to provide adequate conservation measures to ensure the conservation of listed species on Perdido Key.

Escambia County is not requesting take coverage for the following:

- Impacts to PKBM, sea turtles, and piping plover resulting from any activities or conditions associated with impacts from widening the driving lanes or other transportation related improvements of State Road 292 (Perdido Key Drive);

- Impacts to PKBM, sea turtles, and piping plover resulting from any activities or conditions associated with impacts from private development where an applicant is not utilizing this HCP;
- Impacts to PKBM, sea turtles, and piping plover resulting from any activities or conditions associated with the implementation of County approved temporary emergency shoreline protection measures;
- Impacts to PKBM, sea turtles, and piping plover associated with beach renourishment or other federally permitted or funded coastal projects; and
- Impacts to any federally protected species other than PKBM, sea turtles, piping plover, and the red knot.

3.2 Goals of HCP

The USFWS is mandated by the ESA to protect and recover federally listed species, including the species covered in this HCP. The USFWS is also required to issue ITPs when applicants submit adequate ITP applications as required by 50 CFR 17.32.

The goals of this HCP include multiple aspects. This HCP will provide landowners and Escambia County with a streamlined permitting process that will assist in obtaining timely incidental take authorization on Perdido Key that impact the species covered by this HCP. The HCP provides conservation measures to avoid and minimize the take. It is also anticipated that mitigation, including adequate funding to support an HCP Coordinator and associated tasks/responsibilities, will aid in the protection and conservation of listed species and their habitat on Perdido Key. This HCP will provide a streamlined section 10 permitting process over a 30 year term.

To achieve these goals, the HCP includes, but is not limited to the following objectives: embrace Federal, State, and County laws/regulations pertaining to the conservation of protected species on Perdido Key, Florida; establish a plan that will effectively and efficiently manage impacts from development, Escambia County infrastructure improvements, and other activities; and develop a process by which this HCP will be managed by Escambia County to sustain the environmental, social, recreational, cultural, and economic values of Perdido Key.

This HCP is designed to be a dynamic document. It is structured to permit adaptive changes in response to new information derived from monitoring programs and possible changes to zoning regulations and codes. This HCP is designed to establish and facilitate communication between the USFWS and Escambia County in response to changing conditions. This HCP will also allow for the timely revision of procedures and policies to achieve HCP objectives and/or respond to unforeseen circumstances.

3.3 Benefits of HCP

Perdido Key, Florida provides Escambia County citizens and visitors economic, recreational, social, and educational benefits relative to the natural resources provided on Perdido Key. Use and development of the natural resources associated with the habitats of this barrier island can result in the incidental take of federally protected species indigenous to Perdido Key.

Accordingly, Escambia County will benefit from issuance of a section 10 ITP by being afforded Federal protection for take of listed species covered in this HCP, pursuant to the terms and conditions of the ITP.

If not authorized by a section 10 ITP, such take could result in civil and/or criminal penalties against Escambia County and/or individual property owners. Additionally, in the absence of an ITP, the County is vulnerable to citizen lawsuits alleging take of protected species in violation of the ESA. Legal proceedings of this nature could result in court-ordered actions associated with listed species or other legal actions that would be contrary to Escambia County's best interests.

Implementation of this HCP will also improve the County's management of conservation activities on Perdido Key and establish additional enforcement mechanisms to ensure listed species survival is promoted. This HCP is developed to support the ITP and to balance protected species conservation with the economic values of private development and social values of providing public access on a barrier island.

This HCP is developed to effectively minimize and mitigate impacts as a result of County issued permits in response to this HCP and can assist in meeting obligations for the protection and recovery of federally listed species.

3.3.1 Protected Species

Several Federal and State listed species, as well as species of special concern are described in this HCP due to their listed status or associated habitat within the project area. The specific federally listed species addressed in the HCP includes:

- Perdido Key beach mouse (*Peromyscus polionotus trissylepsis*)
- Loggerhead sea turtle (*Caretta caretta*)
- Green sea turtle (*Chelonia mydas*)
- Leatherback sea turtle (*Dermochelys coriacea*)
- Kemp's Ridley sea turtle (*Lepidochelys kempii*)
- Piping plover (*Charadrius melodus*)
- Red Knot (*Calidris canutus*)

Biological information for these species is provided in the following sections. This HCP also includes consideration for species listed by the State of Florida and are also protected by this HCP due to similarity of habitat with the federally listed species described above. These species may include, but are not necessarily limited to: least tern (*Sterna antillarum*), snowy plover (*Charadrius alexandrius*), black skimmer (*Rynchops niger*), American oystercatcher (*Haematopus pallaitus*), Cruise's golden aster (*Chrysopsis cruseana*), large-leaved jointweed (*Polygonella macrophylla*), and Gulf coast lupine (*Lupinus westianus*). Potential habitat impacts, conservation, mitigation intents, and habitat management programs are addressed elsewhere in this HCP.

3.3.2 Property Owners

This HCP and ITP will benefit Perdido Key property owners by providing assurances that applications for development, which may result in incidental take, will be processed in a timely and effective manner and will provide the baseline for conservation measures property owners will utilize for mitigating impacts. Property owners will be afforded a streamlined permitting process with application to one agency (Escambia County) minimizing multiple permit agency application coordination efforts, saving time, money, and effort. Utilizing Escambia County's ITP, property owners can pursue private development ventures, in accordance with current rules and regulations, with protection for any take associated with approved impacts. This HCP will provide for a landscape approach to habitat conservation and promote protection to listed species and their habitat while allowing property owners to utilize their real estate investments.

3.3.3 Escambia County

Escambia County is taking a proactive approach to developing this HCP which will benefit the County by being afforded Federal protection for take of listed species covered in this HCP, pursuant to the terms and conditions of the ITP. The County will be able to provide a one-stop shop for non-federal related permit application review and to provide property owners and utility upgrade providers on Perdido Key a consistent process to review the requests for take of listed species and habitat.

The County will also derive benefit from this HCP by being afforded Federal protection for take of listed species associated with public infrastructure improvements such as County road improvements, utility upgrades, public beach access and emergency response. The County will also be able to streamline County permitted beach activities like beach vending, special events, beach driving, and regular beach cleanup.

The County will ultimately be able to implement conservation strategies outlined in this HCP, which will provide for habitat conservation measures on a landscape scale to protect natural resources.

4.0 PLAN AREA

4.1 Geographical Setting

Perdido Key lies within the East Gulf Coastal Plain physiographic region (USGS 2008) and is within the Florida Coastal Lowlands ecoregion (USFS 2008). The predominant landform is a flat, weakly dissected alluvial plain formed by deposition of continental sediments onto a submerged, shallow continental shelf. This shelf was later exposed by sea level subsidence. Along the coast, fluvial deposition and shore zone processes are active in developing and maintaining beaches, swamps, and mud flats. Elevations within the Florida Coastal Lowlands ecoregion range from 0 to 80 feet (USFS 2008) and are noted to range between 0 to 25 feet on Perdido Key. Perdido Key is predominantly a flat barrier island feature, containing old dune ridges with areas exhibiting surface modification by erosion and underground solution.

Perdido Key is located southwest of Pensacola in northwest Florida and southeast Alabama. Perdido Key totals approximately 2,940 acres. The eastern 80% is in Florida and the western 20% is in Alabama. Significant portions of the undeveloped area of Perdido Key are primary, secondary, and scrub dunes. Secondary and scrub dunes occur particularly in the areas where the Key is wider. Wetland systems are also found further inland, typically north of State Road 292 (Perdido Key Drive).

4.2 Plan Boundaries

The Perdido Key Programmatic HCP Plan Area boundaries include private and Escambia County owned lands on Perdido Key, Florida. The western boundary is located at the Florida/Alabama state line. The eastern boundary limit is the western limits of GUIS. The north-south boundary includes land from the mean high water line (MHWL) of the northern shore of Perdido Key (Old River) south towards the MHWL of the Gulf of Mexico. The HCP Plan Area boundary excludes PKSP and GUIS and does not include impacts to habitat within the PKSP and GUIS. This HCP does not include take of listed marine species whose life history is solely exclusive to use of the aquatic environment seaward of the MHWL. Potential impacts to sea turtle species discussed in this HCP are relative to nesting, hatching, and other uses of the beach habitat above the mean high tide line. Shorebird habitat within the Plan Area includes use of the beach and intertidal areas of Perdido Key. See Figure 4.1 in Appendix A.

4.3 Coastal Characterization

The majority of the Gulf of Mexico coastlines in northwest Florida (similar to Perdido Key) include barrier islands, mainland beaches, and peninsulas. These dynamic ecosystems are subjected to diverse coastal processes including: climate, geomorphology, sediment deposition, littoral drift in ocean currents, tides, wind, saltwater and spray, erosion, and tropical storms. As described above, Perdido Key is a barrier island with limited elevation and relatively narrow width. The Gulf of Mexico shoreline of Perdido Key is a white sandy beach with diurnal tides including amplitude of 1.2 feet to 1.7 feet.

4.4 Natural Resources and Community Types

4.4.1 Beach Dune

Based on the Florida Natural Areas Inventory (FNAI) definition of a Beach Dune habitat, this ecotype is characterized as a wind-deposited, foredune and wave-deposited upper beach that is sparsely to densely vegetated with pioneer species, especially sea oats (*Uniola paniculata*). Other typical pioneer species include sand spur (*Cenchrus* spp.), panic grass (*Panicum amarum*), railroad vine (*Ipomoea pes capre*), beach morning glory (*Ipomoea imperati*), seashore paspalum (*Paspalum vaginatum*), beach elder (*Iva imbricata*), dune sunflower (*Helianthus debilis*), sea purslane (*Sesuvium portulacastrum*), and sea rocket (*Cakile edentula*). Typical animals include ghost crab (*Ocypode* spp.), six-lined racerunner (*Cnemidophorus sexlineatus*), red-winged blackbird (*Agelaius phoeniceus*), raccoon (*Procyon lotor*) and PKBM.

The unvegetated ecotone between the mean high water line and the primary dune is the primary nesting habitat for numerous sea turtles and shorebirds, including many rare and endangered species. Beach Dune communities are characteristic to shorelines subject to high energy waves depositing sand to form the open beach. Onshore winds move sand until slowed by an obstacle such as vegetation, which results in the sand deposition. As vegetation and other obstacles promote deposition foredunes will become evident. Dune height is affected by the sand budget, winds and vegetation to form and stabilize the dunes. Beach Dunes are well known to be dynamic communities and mobile environments.

Beach Dunes are subject to drastic topographic alterations during winter and tropical storms. The established Beach Dune provides protection of inland ecotypes. The soils of Beach Dunes are composed primarily of deep siliceous or calcareous sands which drain rapidly and create xeric conditions.

Vegetation associated with Beach Dune environments have evolved to survive an array of harsh environmental conditions loose, dry, unstable, nutrient poor soils, as well as exposure to wind, salt spray, sand abrasion, intense sunlight, and storms. Many species of dune plants will root easily from fragments, or produce large seeds that can be transported by ocean currents. Other adaptations include thickened cuticles and succulent foliage to retain water and reduce the effects of salt spray and windblown sand abrasion. Many plant species have the ability to produce roots from nodes along the stems of the plant to promote upward growth, thus increasing sand deposition. See Figure 4.2 in Appendix A for an example of Beach Dune habitat on Perdido Key.

4.4.2 Coastal Strand

Based on the FNAI definition of a Coastal Strand, this ecotype is characterized as stabilized, wind-deposited coastal dunes that are vegetated with dense higher trophic level salt-tolerant shrubs including saw palmetto (*Serenoa repens*). Typical plants include, but may not necessarily be limited to: sand live oak (*Quercus geminata geminata*), myrtle oak (*Quercus myrtifolia*), yaupon (*Illex vomitoria*), lantana (*Lantana* spp.), greenbrier (*Smilax* spp,), Spanish bayonet (*Yucca aloifolia*), woody goldenrod (*Chrysoma pauciflosculosa*) and Florida rosemary (*Ceratiola ericoides*). See Figure 4.3 in Appendix A for an example of this habitat.

Typical animals include six-lined racerunner, coachwhip (*Masticophis flagellum*) and corn snakes (*Elaphe guttata guttata*), pygmy rattlesnake (*Sistrurus miliarius*), and eastern diamondback rattlesnake (*Crotalus adamanteus*), and PKBM. Coastal Strand occurs on deep, windblown sands. Shell fragments can be found mixed with the sand, but is rapidly leached in the course of a few hundred years.

Coastal Strand dunes are generally stable, but disturbance of vegetation can make the dune structure susceptible to damage. Shrubs in the Coastal Strand are commonly observed to be dwarfed and pruned as a result of the salt spray winds that kill branches on the seaward side. This phenomenon can result in a dense upward-slanting canopy resembling a sheared hedge. Coastal Strand is commonly observed to be an ecotonal community that lying between Beach Dune and Maritime hammock. It may also grade into Coastal Scrub.

Coastal Strand is susceptible to development pressure and impacts as it is targeted as prime resort or residential property. Coastal Strand originally occurred as a nearly continuous band along shoreline environments, but the majority of these habitats have been developed or impacted by tropical storms to become broken and isolated small patches. See Figure 4.3 in Appendix A for an example of Coastal Strand habitat on Perdido Key.

4.4.3 Coastal Scrub

Found in proximity to or more likely north of SR 292 (Perdido Key Drive), this habitat is similar to the Coastal Strand ecotype. Scrub as described by FNAI, occurs in many forms, but is often characterized as a closed to open canopy forest of sand pines with dense clumps or vast scrub oaks and other shrubs dominating the understory. Scrub habitat on Perdido Key is more indicative of a coastal influence to the vegetative species in this ecotype, which includes more slash pine (*Pinus elliotti*) than sand pine (*Pinus clausa*). The ground cover is generally very sparse, being dominated by ground lichens or few herbs. Patches of barren sand are common where the overstory of pines and oaks is widely scattered or absent. Typical plants include slash pine, sand pine, sand live oak, myrtle oak, Chapman's oak (*Quercus chapmanii*), saw palmetto, rosemary, and ground lichens. Typical animals include those described above for the Coastal Strand.

Coastal Scrub commonly occurs on sand ridges along former shorelines. Associated soils are composed of well-washed, deep sand which drain rapidly, creating very xeric conditions. Scrub in mainland scenarios is essentially a fire maintained community. Fire on the barrier island is less influential. Effects from harsh elements of the beach environment such as xeric conditions and salt spray likely contribute to maintaining overgrowth in the Coastal Scrub habitat.

Coastal Scrub is associated with and often grades into Coastal Strand. Some Coastal Scrubs extend into adjacent Alabama and Georgia. Coastal Scrub is also susceptible to being lost to development. Coastal Scrub can be damaged by off-road vehicle traffic or foot traffic, which may destroy ground cover species and promote erosion and further damage from tropical storms. See Figure 4.4 in Appendix A for an example of Coastal Scrub habitat on Perdido Key.

4.4.4 Maritime Forest

Maritime forest is characterized as a narrow band of hardwood forest lying just inland of the Coastal Strand community. Sand live oak, pines, and red bay (*Persea borbonia*) generally combine to form a dense, wind pruned canopy whose streamlined profile deflects winds and generally prevents hurricanes from uprooting trees. Other typical plants include American holly (*Ilex opaca*), southern magnolia (*Magnolia virginiana*), red cedar (*Juniper virginiana*), wild olive (*Osmanthus americanus*), saw palmetto, American beautyberry (*Callicarpa americana*), and ferns. Typical animals include tree frogs, ring-necked snakes (*Diapdophis punctatus*), rat snakes (*Elaphe* spp.), gray squirrels (*Sciurus carolinensis*) and to some degree PKBM. Migrating birds rely on these forests for food and shelter following transoceanic or trans-gulf migrations.

Maritime forests occur on old coastal dunes that have been stabilized long enough for the growth of a forest. Tree growth often begins in swales between old dune ridges where a higher moisture

gradient exists. The isolated strips of tree growth gradually coalesce into a continuous forest. Humus buildup contributes to moisture retention, while the dense canopy minimizes temperature fluctuations by reducing soil warming during the day and heat loss at night. Soils are usually well-drained because of the underlying deep sands.

Maritime forest is closely associated with and often grades into Coastal Strand, Scrub, moist hammock, or prairie hammock. Maritime hammock is the terminal stage or succession in coastal areas. See Figure 4.5 in Appendix A for an example of Maritime Forest habitat on Perdido Key.

4.4.5 Coastal Grassland

According to FNAI descriptions of Coastal Grassland, these habitats are characterized as treeless flat or undulating land with bare sand or a sparse to dense ground cover of grasses, prostrate vines, and other herbaceous species adapted to harsh beach conditions. Older, more established sites may include scattered or small clumps of trees or shrubs. Typical plants include muhly grass (*Muhlenbergia capillaries*), bluestem grasses, sea oats, marsh hay (*Spartina patens*), dune panic grass, beach morning glory, sea oxeye (*Borrichia frutescens*), beach elder, sea purslane, sand spurs, evening primrose (*Oenothera biennis*), ground cherry (*Physalis* spp.), sedges, dropseed (*Sporobolus virginicus*), cactus (*Opuntia* spp.), rushes, love grass (*Eragrostis* spp.), and wax myrtle (*Myrica cerifera*). Typical animals include ghost crab and redwing blackbirds. Some shorebirds may also rely on this community for nesting, roosting, and feeding. Coastal Grassland is a low flat area commonly found behind the foredunes on broader barrier islands and is best developed along the Gulf Coast.

This habitat is susceptible to periodic flooding by saltwater and can be covered with sand and storm generated debris during major storms. The frequency of overwash processes is largely related to the height, structure, and continuity of the seaward beach dunes. Coastal Grassland species are capable of colonizing the newly deposited sands. These areas can become vegetated with pioneer species succeeding to prairie characteristics. The frequency of major storms will dictate the process with Coastal Grasslands possibly being colonized by shrubs and trees. These habitats eventually may succeed to Coastal Strand.
See Figure 4.6 in Appendix A for an example of Coastal Grassland habitat on Perdido Key.

4.4.6 Bayside Mudflats

Bayside mudflats, which may also be referred to as unconsolidated substrate, are typically mineral based natural communities generally characterized as expansive, relatively open areas of subtidal, intertidal, and supratidal zones which lack dense populations of sessile plant and animal species. Barrier island bayside mudflats are often formed from episodic storm events that cause overwash and assist with island migration.
Unconsolidated substrates along the northern shore of Perdido Key along Old River are unsolidified and include mud, mud/sand, sand or shell. This community may support a large population of infaunal organisms as well as a variety of transient planktonic and pelagic organisms (e.g., tube worms, mollusks, isopods, amphipods, burrowing shrimp, and an assortment of crabs).

These unconsolidated sediments can originate from organic sources, such as decaying plant tissues and may include mud, mud/sand, sand, and shell. Although these areas may seem relatively barren, the intertidal and supratidal zones are extremely important feeding grounds for many shorebirds and invertebrates. Unconsolidated substrates are also important in that they can form the foundation for the development of other marine and estuarine natural communities when conditions become appropriate. Unconsolidated substrate communities are associated with and often grade into beach dunes, tidal marshes, tidal swamps, grass beds, and mollusk reefs. See Figure 4.7 in Appendix A for an example of Bayside Mudflats.

4.4.7 Wetlands

Coastal Interdunal Swales are the most common wetland features found within the HCP project limits on Perdido Key as well as many other islands on the Florida panhandle coast. Common characteristics include a mix of grasslands, small ponds, and depression marshes where dune and swale topography has developed with influence from groundwater at the lower points of swales. Extensive flooding by saltwater is less common than saltwater flooding in the Coastal Grassland. See Figure 4.8 in Appendix A for an example of a wetland typical to Perdido Key. Rainfall events also strongly influence the development and maintenance of these systems. Vegetative structure is dependent on elevation and groundwater/rainfall. Primary species observed in these interdunal swales is saltmarsh hay, but can also support redroot (*Lacnanthes caroliniana*), centella (*Centella asiatica*), yellow-eyed grass (*Xyris elliottii*), and broomsedge (*Andropogon virginicus*).

Other wetland habitats noted within the Project Area include freshwater marsh and tidal marsh. Wetlands within the Project Area are generally excluded from the project limits of this HCP. The primary habitats supporting the life history stages of the listed species included in this HCP are predominated by the Beach Dune and Coastal Strand/Scrub habitats. Other Federal, State, and County regulations apply to wetland habitat impacts and are not included in this HCP. See Figures 4.8A-4.8I in Appendix A for National Wetland Inventory interpreted wetlands in the HCP Plan Area.

4.5 Public Lands

Gulf Islands National Seashore

The Johnson Beach-Perdido Key Area of GUIS consists of approximately 1,100 acres along 7-miles of the 16.9-mile Perdido Key (see Figure 4.9 in Appendix A). The GUIS composes the east end of the Key and is a peninsula bounded to the north by Big Lagoon and to the south by the Gulf of Mexico. The GUIS was first acquired through donations from the Navy between 1972 and 1981. The majority of the remaining parcels were acquired through donations, purchase, transfer from other Federal agencies, land exchange, and condemnation. In 1995, the last two parcels were acquired from the Bureau of Land Management. The developed area of the GUIS-Perdido Key Area consists of a 2.5- mile paved road, an entrance station, main parking lot, snack bar, ranger station, maintenance building, public restrooms and showers, picnic pavilions, and public swimming beach. Some of these facilities have been rebuilt, most in more landward

locations. Although not within the HCP Plan Area boundaries, the GUIS is an important component of Perdido Key.

Perdido Key State Park

The PKSP, which was acquired in 1978 using Environmentally Endangered Lands funds, consists of 290.32 acres (273.36 upland acres and 16.96 acres submerged) (see Figure 4.10 in Appendix A). At PKSP public outdoor recreation and conservation is the primary designated use of the property. There are no legislative or executive directives that constrain the use of this property. Perdido Key offers two use areas with parking, restroom facilities and covered picnic shelters. Two additional boardwalks access 1.6 miles of beach. Access in the PKSP is by payment through an honor system located at the toll booths or boardwalk entrances. Access to the beach provides swimming along the Gulf of Mexico.

PKSP promotes fishing along the Gulf of Mexico and along the Old River Trail on the northeast parcel. The Old River Trail is less than one mile long and traverses the northeast portion of the park along Old River. Access to this hiking trail is provided from Lafitte Reef Road, but there is no parking at the trail entrance. Pets are permitted on the trail, if kept on a 6-foot leash. Periodically, this area may be closed for resource management activities.

Escambia County

The Escambia County owned land, including parcels and county road right-of-way, on Perdido Key consists of approximately 14.75 acres. There are 11 County owned properties on Perdido Key, of which 4 are public beach access areas south of SR 292 (Perdido Key Drive). The public beach access areas include parking, trash receptacles and restroom facilities.

Escambia County Code of Ordinances Policy 11.B.6.3 states that protected lands held in public ownership shall be provided for public use, ensure the provision of facilities for outdoor recreation activities, including nature trails or boardwalks, waterway trails, interpretive displays, educational programs, wildlife observation areas, or picnic areas, whenever feasible (Ord. No. 2002-38, § 3(Att. A), 8-15-2002). See Figure 4.11 in Appendix A for the location of County–owned lands.

4.6 Escambia County Shoreline Protection Zone

Shoreline protection zones specific to Escambia County Code of Ordinances correlate to the area that commences at the MHWL and runs to and includes the 1975 Coastal Construction Control Line (CCCL) as recorded in Plat Book 9 Page 72 A-P. The shoreline protection zones in Escambia County are also known as the "beach preservation zone" (Municode 2008)

The following outlines the Escambia County Code of Ordinances specific to the shoreline protection zone (Municode 2008):

A. *Zone 1.* The following areas along the Gulf of Mexico and Santa Rosa Sound shall be considered within Shoreline Protection Zone 1:

1. The waterward line shall run along the line of mean high water.
2. The landward line shall run along the 1975 CCCL.
3. For sound-side properties the shoreline protection zone shall be the mean high tide line of Santa Rosa Sound.

B. *Zone 2.* Zone 2 is the shoreline protection zone on Escambia Bay, Pensacola Bay, Perdido Bay, Old River, Big Lagoon and the basins and bayous and shall be measured from the mean high water line to a point five feet landward of the mean high water line.

C. *Prohibitions.* The following activities, unless specifically accepted, shall be prohibited within the shoreline protection zones:

1. Construction of major structures, minor structures, and nonhabitable major structures (see section 12.02.00 for definitions); and
2. Removal of vegetation in Zone 1; and
3. Planting of new vegetation in Zone 1 except for native, indigenous salt-resistant vegetation suitable for beach and dune or area stabilization.
4. No variances shall be granted to authorize development activities within Shoreline Protection Zone 1.

D. *Dune enhancement.* All persons constructing elevated boardwalks or other accessory structures on property located in the shoreline protection zone shall include in their plans, provisions to enhance and revegetate the dune system, if any, on their property.

E. *Exemptions.* Exemptions from this section are beach and dune restoration, water dependant and water related uses and other structures which are intended to prevent erosion or protect other structures from wave and hydrodynamic forces.

12.01.01. Design standards in areas adjacent to shoreline protection zone. In areas adjacent to the shoreline protection zone, the following shall apply:

A. *Setbacks.*

1. *Zone 1.* All major structures, minor structures, and nonhabitable major structures shall be setback greater than or equal to the landward boundary of the 1975 CCCL along the Gulf of Mexico or 50 feet from the landward boundary of the shoreline protection zone of Santa Rosa Sound;
2. *Zone 2.* All major structures shall be setback 25 feet from the landward boundary of the shoreline protection zone in Zone 2.
3. *Exemptions.*
   a. For properties fronting the Gulf of Mexico, pile-supported, elevated dune and beach walkover structures are permissible.
   b. Pensacola Beach gulf-front properties may construct sundecks, patios, walkways, etc. on a case by case basis consistent with the Santa Rosa Island Authority board policy manual.
   c. In order to prevent takings, Pensacola Beach gulf-front properties that have an insufficient building area to rebuild or redevelop may request a variance to allow construction of a similar structure provided that intrusion into Shoreline Protection Zone 1 is reduced to the maximum extent possible.
   d. Rebuilding/repair of decks and nonhabitable major structures within Shoreline Protection Zone 1 is permissible provided the associated major structure has not been substantially damaged.

B. *Impervious area.* Total impervious surface, including but not limited to buildings, houses, parking lots, garages, accessory buildings, driveways, pools and walkways is limited to that

which is required to serve the proposed development but in no case shall exceed 75 percent of the land area of the entire site.

C. *Vegetation.* The development shall leave a minimum of ten percent of the site as trees, shrubs, or other natural vegetation, or replace existing trees at a minimum ratio of 1.1.

D. *Discharges.* Point source and non-point-source discharges are prohibited, except for stormwater, which may be discharged only if it meets the following minimum standards:

1. Stormwater discharges shall provide off-line retention or off-line detention with filtration of the first one-half inch of runoff.

E. *Erosion control.* Siltation and erosion control measures shall be applied to stabilize barren areas and other unvegetated areas during and after construction. Sediment settling ponds shall be installed for stormwater runoff prior to the creation of any impervious surfaces. For lots or parcels that are cleared, silt screens shall be placed between the construction site and the water body to prevent erosion and siltation.

F. *Channels.* Any channels constructed shall meet all relevant state and or federal standards. The direct discharge of stormwater through channelization to adjacent water bodies is prohibited.

G. *Dredging.* Any dredging shall be conducted at times of minimum biological activity to avoid fish migration and spawning, and other cycles and activities of wildlife.

H. *Spoil disposal.* Any spoil that results from dredging shall be disposed of at upland sites and stabilized within 30 days, unless the spoil is causing turbidity or other problems, in which case the developer must stabilize the spoil immediately.

I. *Littoral drift.* If dredging changes the littoral drift processes and causes adjacent shores to erode, the developer shall periodically replenish these shores with the appropriate quantity and quality of aggregate (sand) in accordance with section 12.05.01.

J. *Buffer.* Buffers shall conform to the requirements of section 7.15.06I.

[K. *Reserved.*]

L. *Discoloration.* Material used for fill shall not discolor the natural white sands of Santa Rosa Island or Perdido Key. White sand, oyster shell, limestone and white dolomite are among materials approved for fill or masonry mixes for new development or redevelopment projects on Santa Rosa Island or Perdido Key; reference section 12.05.02.

(Ord. No. 2000-45, § 1, 10-5-2000; Ord. No. 2005-56, § 1, 11-17-2005)

The 1975 CCCL on Perdido Key is located approximately 140 feet (range 48 to 400 ft) seaward of SR 292 (see Figure 4.12A-4.12G in Appendix A). The current 1986 CCCL is approximately 30 to 150 feet seaward of SR 292. The majority of most current structures south of the highway are seaward of the 1986 CCCL. Generally, development consists of one single row of structures between the highway and the CCCL.

4.7 Upland Development

Single and multi-family residential, resort, and commercial properties compose the bulk of the development on Perdido Key. Condos or multi-family residences are the most notable developments south of SR 292 (Perdido Key Drive). Combinations of single and multifamily residential units are found north of SR 292 (Perdido Key Drive) within the Plan Area. There are sparse single family units inter mixed among the condominium developments south of SR 292 (Perdido Key Drive). Commercial and tourist based establishments are also spread throughout

the project area. Undeveloped parcels and parcels that once had previously existing structures are also found throughout the Project Area.

4.7.1 Current Zoning Districts

The zoning districts are established to be the goals, objectives and policies set forth in the Comprehensive Plan (Comp Plan) relating to land use in Escambia County. The zoning districts are set forth based on the type of land use, density and intensity permitted relative to the various districts. The following districts are specific to Perdido Key. See Appendix A for Figures 4.13A - 4.13I illustrating the various zoning districts on Perdido Key.

The intent and purpose of each district is summarized below. See Appendix B for more explanation and specific details to each Perdido Key District. For the most up to date listing of the zoning districts see the Municode website:
http://www.municode.com/resources/gateway.asp?pid=10700&sid=9

4.7.1.1 R-1PK Residential district (Perdido Key), low density

This district is intended to be a low population density area, with a maximum density of 2 dwelling units per acre. Refer to the Comp Plan and latest amendments, specifically Policy 7.A.4.7.f.(4), regarding dwelling and lodging unit caps on Perdido Key. Refer to Article 11 for uses, heights and densities allowed in R-1PK areas located in the Airport/Airfield Environs.

4.7.1.2 R-2PK Residential District (Perdido Key) medium density

This district is intended to be a medium population density, with a maximum density of 4.5 dwelling units per acre. A component of this residential area is to recognize the desirability of maintaining open space. Refer to the Comp Plan and latest amendments, specifically Policy 7.A.4.7.f.(4), regarding dwelling and lodging unit caps on Perdido Key. Refer to Article 11 for uses, heights and densities allowed in R-2PK areas located in the Airport/Airfield Environs.

4.7.1.3 R-3PK Residential district (Perdido Key) high density

This district is intended to be primarily a high-density residential area, which also allows low intensity office use and service facilities to be permitted. The maximum density is 12 dwelling units per acre. Refer to the Comp Plan and latest amendments, specifically Policy 7.A.4.7.f.(4), regarding dwelling and lodging unit caps on Perdido Key. Refer to Article 11 for uses, heights and densities allowed in R-3PK areas located in the Airport/Airfield Environs.

4.7.1.4 C-1PK (Perdido Key) commercial district

This district is composed of lands and where the primary use supports retail of commodities and furnishing of selected services. This district is intended to permit and encourage a full development of essential neighborhood commercial uses, while protecting nearby residential properties from adverse effects of commercial activity. The maximum density is 3 dwelling units per acre. Refer to the Comp Plan and latest amendments, specifically Policy 7.A.4.7.f.(4),

regarding dwelling and lodging unit caps on Perdido Key. Refer to Article 11 for uses, heights and densities allowed in C- 1PK areas located in the Airport/Airfield Environs.

4.7.1.5 CCPK (Perdido Key) commercial core district

This district is established to support intense residential development and resort-related commodities retail and services. The regulations are intended to permit and encourage mixed use development, including high density residential, hotels and motels, and commercial uses associated with resort areas. The maximum density is 13 dwelling units per acre. Refer to the Comp Plan and latest amendments, specifically Policy 7.A.4.7.f.(4), regarding dwelling and lodging unit caps on Perdido Key. Refer to article 11 for uses, heights and densities allowed in CCPK areas located in the Airport/Airfield Environs.

4.7.1.6 CGPK (Perdido Key) commercial gateway district

This district is intended to provide an identity for Perdido Key as a visually attractive, family style, resort community gateway into Perdido Key. The district is characterized by resort-related commercial uses, including hotels and motels, as well as high density residential development. The maximum density is 12.5 dwelling units per acre. Refer to the Comp Plan and latest amendments, specifically Policy 7.A.4.7.f.(4), regarding dwelling and lodging unit caps on Perdido Key. Refer to article 11 for uses, heights and densities allowed in CCPK areas located in the Airport/Airfield Environs.

4.7.1.7 PRPK planned resort district (Perdido Key) medium density

This district is intended to support a large-scale planned resort district, allowing for destination-type mixed uses that include residential and hotel development and the supporting recreational and commercial facilities. The intent is that developments would be established within a master planned setting that includes extensive open space, adequate internal pedestrian/bicycle circulation, creative design, resort-related amenities, and adequate buffer areas. Parcels in this district shall have a gross site area of no less than ten acres. A master plan submittal for a proposed development would be required. The maximum area-wide density is five units per acre. Refer to the Comp Plan and latest amendments, specifically Policy 7.A.4.7.f.(4), regarding dwelling and lodging unit caps on Perdido Key. Refer to article 11 for uses, heights and densities allowed in PRPK areas located in the Airport/Airfield Environs.

4.7.1.8 S-1PK outdoor recreational district (noncumulative)

This district is intended to preserve and maintain land for outdoor recreational uses and open space. Refer to article 11 for uses, heights and densities allowed in S-1, outdoor-recreational areas located in the Airport/Airfield Environs. Examples of permitted uses include: golf courses, country clubs, bird and wildlife sanctuaries, and parks and greenbelt areas.

5.0 LISTED SPECIES THAT MAY OCCUR IN THE PLAN AREA

The primary purpose and goal of this HCP is to develop a management plan that will protect and enhance the protected species and their habitats on Perdido Key, Florida. This HCP is developed with consideration to allow for take of listed species and their habitat relative to development of private property and Escambia County owned land and infrastructure improvements. This HCP takes into account the most current scientific information available pertaining to federally listed species and their use of habitat within the Plan Area.

5.1 Species Covered Under This Habitat Conservation Plan

This HCP is developed to provide for the effective management and protection of federally listed species utilizing or potentially utilizing habitat within the Plan Area. The specific federally protected species to be addressed in this HCP are the PKBM, four nesting sea turtle species (loggerhead, green, leatherback, and Kemp's Ridley sea turtles), and non-breeding piping plover. The Red Knot is also included as it has the potential to utilize the shoreline habitat along Perdido Key. The PKBM is the primary species of interest addressed in this HCP. Table 5.1 provides a list of species and listing status.

Table 5.1 List of Species and Listing Status

Species	State Status	Federal Status
Perdido Key Beach Mouse	Endangered	Endangered/Critical Habitat
Loggerhead Sea Turtle	Threatened	Threatened
Green Sea Turtle	Endangered	Endangered
Leatherback Sea Turtle	Endangered	Endangered
Kemp's Ridley	Endangered	Endangered
Piping Plover	Threatened	Threatened
Red Knot	Species of Special Concern	Candidate for Listing

State Listed Species

Certain additional species listed by the State of Florida are also protected by this HCP due to similarity of habitat with the species listed above. These species may include snowy plover, least tern, black skimmer and American oystercatcher. State listed plants may include Cruise's golden aster, large-leaved jointweed, and coastal lupine.

Although the ESA does not generally prohibit the incidental taking of listed plants on private property in accordance with State Law (USFWS 1996), plants listed by the State of Florida may be protected by this HCP due to the similarity of habitat used by the covered wildlife species. These include: Cruises golden aster, large-leaved jointweed, and coastal lupine. Because these species are tolerant of high energy dune systems, they may also occur in locally disturbed areas where other plant species have not yet been established or re-established.

5.2 Federal and State Listed Species In Plan Area But Not Covered Under This HCP

The potential for other federal and state listed species to occur in the Plan Area are primarily associated with species or life-history stages of species under the jurisdiction of NOAA-Fisheries or occur adjacent but not within the Plan Area. Therefore the Gulf sturgeon (*Acipenser oxyrinchus desotoi*), West Indian manatee (*Trichechus manatus latirostris*) and Smalltooth sawfish (*Pristis pectinata*) will not be specifically addressed under this HCP.

5.3 Species Accounts

5.3.1 Perdido Key Beach Mouse

The PKBM is a subspecies of the old field mouse (*Peromyscus polionotus*) and is endemic to Perdido Key in Alabama and Florida (Humphrey 1992). The PKBM is one of several subspecies of beach mice that inhabit the coastal areas and barrier islands of Alabama and Florida. These subspecies differ from the old field mouse in color, markings, and size. The PKBM is pale and smaller than the other subspecies and lack a stripe on the tail (see Figure 5.1 in Appendix A). The mouse generally ranges from 2.7 to 3.3 inches in length.

The historic range of the PKBM included coastal dunes extending from Gulf State Park-Florida Point in Baldwin County, Alabama to the eastern terminus of GUIS-Johnson's Beach in Escambia County, Florida. The USFWS (1987) originally identified three areas of critical habitat for the mouse, including:

- Gulf State Park West, Florida Point in Alabama (GSP)
- Perdido Key State Park (PKSP) and adjacent privately owned lands
- Johnson Beach section of the GUIS

PKBM designated critical habitat was revised October 12, 2006 (71 FR 60238) and was expanded to include habitat on private lands.

5.3.1.1 Critical Habitat

Since the listing of the PKBM, research has refined previous knowledge of beach mouse habitat requirements and factors that influence their use of habitat. The findings most pertinent to the revision of critical habitat and determination to revise critical habitat involved the role of scrub dune habitat. Coastal dune habitat is generally categorized as: primary dunes with sea oats and other grasses commonly distributed, secondary dunes characterized by such plants as woody goldenrod, Florida rosemary, and interior or scrub dunes dominated by scrub oaks and yaupon holly.

Contrary to the early belief that beach mice were restricted to (Howell 1909; 1921; Ivey 1949), or preferred the frontal dunes (Blair 1951; Pournelle and Barrington 1953; Bowen 1968), more recent research has shown that scrub habitat serves an invaluable role in the persistence of beach mouse populations (Swilling et al. 1998; Sneckenberger 2001). Beach mice occupy scrub dunes on a permanent basis and studies have found no detectable differences between scrub and frontal

dunes in beach mouse body mass, home range size, dispersal, reproduction, survival, food quality, and burrow site availability (Swilling et al. 1998; Swilling 2000; Sneckenberger 2001).

While seasonally abundant, the availability of food resources in the primary and secondary dunes fluctuates (Sneckenberger 2001). In contrast, the scrub habitat provides a more stable level of food resources which becomes crucial when food is scarce or nonexistent in the primary and secondary dunes. This provided for assumption that primary, secondary and scrub dune habitat is essential to beach mice at the individual level. Together, these new findings warranted a reevaluation of critical habitat of PKBM.

Based on current knowledge of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, the USFWS determined that the critical habitat primary constituent elements (PCE) for Gulf Coast beach mice include:

1. A contiguous mosaic of primary, secondary and scrub vegetation and dune structure, with a balanced level of competition and predation and few or no competitive or predaceous nonnative species present, that collectively provide foraging opportunities, cover, and burrow sites.

2. Primary and secondary dunes, generally dominated by sea oats, that despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators.

3. Scrub dunes, generally dominated by scrub oaks, that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane induced storm surge.

4. Functional, unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and recolonization of locally extirpated areas.

5. A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth and viability of all life stages.

The USFWS designated critical habitat on lands essential to the conservation of PKBM. An area is considered essential if it possesses one or more of the primary constituent elements and one of the following characteristics: (1) supports a core population of beach mice; (2) was occupied by PKBM at the time of listing; or (3) is currently occupied by the beach mouse and is an area essential to the conservation of the species because it represents an existing population needed for conservation.

A total of 5 coastal dune areas (units) in southern Alabama and the panhandle of Florida are designated as critical habitat for the PKBM, outlined in Table 5.2. These units total 1,300 acres

of coastal dunes for the PKBM in Escambia County, Florida and Baldwin County, Alabama. The Escambia County units are shown on Figures 5.2A-5.2I in Appendix A. The revision of PKBM critical habitat is a landward expansion of previously designated units in order to include scrub dune habitat which is now known to play a crucial role in the long-term persistence of beach mice.

Table 5.2 Critical Habitat Units for the Perdido Key Beach Mouse

Perdido Key Beach Mouse Critical Habitat Units	Federal Acres	State Acres	Local and Private Acres	Total Acres
1. Gulf State Park Unit	0	115	0	115
2. West Perdido Key Unit	0	0	147	147
3. Perdido Key State Park Unit	0	238	0	238
4. Gulf Beach Unit	0	0	162	162
5. Gulf Islands National Seashore Unit	638	0	0	638
Total	638	353	309	1300

The Gulf State Park Unit (PKBM-1), which is not included in the HCP Plan Area, consists of 115 acres in southern Baldwin County, Alabama, on the westernmost region of Perdido Key. This unit includes beach mouse habitat within the boundary of Gulf State Park from the west tip of Perdido Key at Perdido Pass east to approximately 1.0 mile west of where the Alabama–Florida State line bisects Perdido Key and the area from the MHWL north to the seaward extent of the maritime forest. This unit was occupied by the species at the time of listing. PKBM were known to inhabit this unit during surveys in 1979 and 1982, and by 1986 this was the only known existing population of the subspecies (Humphrey and Barbour 1981; Holler et al. 1989). This population was a core population and was the donor site for the reestablishment of PKBM into GUIS in 1986.

Beach mouse habitat in this unit consists of primary, secondary, and scrub dune habitat. Because scrub habitat is separated from the frontal dunes by a highway in some areas, the population inhabiting this unit can be especially vulnerable to hurricane impacts, and therefore further linkage to scrub habitat and/or habitat management would improve connectivity. This unit is managed by the Alabama Department of Conservation and Natural Resources and provides PCEs 2, 3, 4, and 5. This unit, which contains interior scrub habitat as well as primary and secondary dunes, serves as an expansion of the original critical habitat designation (50 FR 23872).

The West Perdido Key Unit (PKBM-2) consists of 114 acres in southern Escambia County, Florida, and 33 acres in southern Baldwin County, Alabama. The 33 acres in Baldwin County, Alabama are not included in this HCP Plan Area. This unit encompasses beach mouse habitat from approximately 1.0 mile west of where the Alabama-Florida State line bisects Perdido Key east to 2.0 miles east of the State line and areas from the MHWL north to the seaward extent of human development or maritime forest. This unit consists of private lands and ultimately includes essential features of beach mouse habitat between Perdido Key State Park (PKBM-3)

and Gulf State Park (PKBM-1). Beach mouse habitat in this unit consists of primary, secondary, and scrub dune habitat and provides PCEs 2, 3, and 4.

The Perdido Key State Park Unit (PKBM-3) consists of 238 acres in southern Escambia County, Florida. This unit encompasses essential features of beach mouse habitat within the boundary of Perdido Key State Park from approximately 2.0 miles east of the Alabama–Florida State line to 4.0 miles east of the State line and the area from the MHWL north to the seaward extent of the maritime forest. Beach mouse habitat in this unit consists of primary, secondary and scrub dune habitat. Trapping efforts in this area were limited in the past. In 2000-2001, PKBM were translocated to PKSP from GUIS. This unit provides PCEs 2, 3, 4, and 5.

The Gulf Beach Unit (PKBM-4) consists of 162 acres in southern Escambia County, Florida. This unit includes essential features of beach mouse habitat between Gulf Islands National Seashore and Perdido Key State Park from approximately 4.0 miles east of the Alabama–Florida State line to 6.0 miles east of the State line and areas from the MHWL north to the seaward extent of human development or maritime forest. This unit consists of private lands. Beach mouse habitat in this unit consists of primary, secondary, and scrub dune habitat. While not known to be occupied at the time of listing, presence of beach mice has been confirmed within the unit as a result of trapping efforts in conjunction with permitting (Lynn 2004). This unit provides PCEs 2, 3, and 4 and is essential to the conservation of the species. This unit currently provides essential connectivity between two populations (PKBM-3 and PKBM-5).

The Gulf Islands National Seashore Unit (PKBM-5) consists of 638 acres in southern Escambia County, Florida, on the easternmost region of Perdido Key. This unit encompasses essential features of beach mouse habitat within the boundary of GUIS–Perdido Key Area (also referred to as Johnson Beach) from approximately 6.0 miles east of the Alabama–Florida State line to the eastern tip of Perdido Key at Pensacola Bay and the area from the MHWL north to the seaward extent of the maritime forest. This unit is not included in the HCP Plan Area. Beach mouse habitat in this unit consists mainly of primary and secondary dune habitat, but provides the longest contiguous expanse of frontal dune habitat within the historic range of the PKBM. PKBM were known to inhabit this unit in 1979, though the population was impacted by Hurricane Frederic (1979) and no beach mice were captured during surveys in 1982 and 1986 (Humphrey and Barbour 1981; Holler et al. 1989) therefore, the unit was unoccupied at the time of listing. In 1986, PKBM were reestablished at this unit as a part of USFWS recovery efforts. This reestablishment project was identified as the most urgent recovery need for the mouse (USFWS 1987; Holler et al. 1989). PKBM-5, in its entirety, possesses all five PCEs and is essential to the conservation of the species. However, most of this unit consists of frontal dunes, making the population inhabiting this unit particularly threatened by storm events.

5.3.1.2 Biological Information

The PKBM is primarily a granivore, foraging mainly on seeds and fruits of bluestem (*Schizachyrium* spp.), sea oats, and evening primrose; however, insects are also an important component of their diet (Moyers 1996). These foods are often stored in burrows excavated by the mouse. The PKBM is likely preyed upon by a variety of larger animals such as foxes, raccoons, herons, barred owl (*Strix varia*), screech owl (*Otus asio*), great horned owl (*Bubo virginianus*),

and coyotes (*Canis latrans*), as well as domestic cats (*Felis cattus*). PKBM are nocturnal foragers, in part to avoid predation.

Sex ratios in beach mouse populations are generally 1:1 (Extine 1980; Rave and Holler 1992). Beach mice are believed to be generally monogamous (Smith 1966; Foltz 1981; Lynn 2000). While a majority of individuals appear to pair for life, paired males may sire extra litters with unpaired females. Beach mice are considered sexually mature at 55 days of age; however some are capable of breeding earlier (Weston 2007). Gestation averages 28 to 30 days (Weston 2007) and the average litter size is four pups (Kaufman and Kaufman 1987). Littering intervals may be as short as 26 days (Bowen 1968). Peak breeding season for beach mice is autumn and winter, declining in spring, and falling to low levels in summer (Blair 1951). However, pregnant and lactating beach mice have been observed in all seasons (Moyers et al. 1999).

Habitat for the PKBM consists of rolling, stabilized, inland and frontal sand dunes which support vegetation communities of sea oats, grasses, herbs, and small shrubs.

Generally, suitable beach mouse habitat is characterized by:

- primary, secondary, and scrub dunes, and interdunal areas
- high maximum elevation of the coastal sand dunes
- sparse cover of ground vegetation with moderate number (average 3.5) of plant species
- relatively low cover of sea oats and other dune plants

Beach mice are the only member of the genus that digs an extensive burrow. They are semifossorial, using their complex burrows as a place to rest during the day and between nightly foraging bouts, escape from predators, have and care for young, and hold limited food caches. Entrances to the burrows are typically on the sloping side of a dune at the base of vegetation, where the burrow is both stabilized and concealed (see Figure 5.3 in Appendix A). The burrows usually have secondary exits, which provide escape from predators. The beach mouse burrow consists on an entrance tunnel, usually descending obliquely for some distance before continuing straight into the dune bank, where there is typically a nesting chamber 2 to 3 feet in depth, and an escape tunnel rising steeply to within an inch from the surface. Beach mouse home ranges may include numerous burrows for safe refuge from predators and shelter for food storage and nesting.

Beach mice have been found to select burrow sites based on a suite of biotic and abiotic features including dune slope, soil compaction, vegetative cover, and height above sea level (Lynn 2000; Sneckenberger 2001). The nest chamber is formed at the end of the level portion of the entrance tunnel at a depth of 23.6 to 35.4 inches, and the escape tunnel rises from the nest chamber to within 9.8 inches of the surface (Blair 1951). Nests of beach mice are constructed in the nest chamber of their burrows, a spherical cavity about 0.63 to 0.94 inches in diameter. The nest comprises about one fourth of the size of the cavity and is composed of sea oat roots, stems, leaves and the chaffy parts of the panicles (Ivey 1949).

5.3.1.3 Site-Specific Information

PKBM population estimates have never numbered more than 400 to 500 individuals, since its listing in 1985 (Loggins et. al. 2008). The 2003 population estimate (pre- Hurricane Ivan) was between 500 to 800 PKBM divided among two populations: GUIS Area and PKSP (USFWS 2004). Tracking and trapping surveys have been conducted on PKSP and small sections of GUIS since the passage of Hurricane Ivan in 2004 to determine presence or absence of beach mice. In October 2005, a trapping effort of less than one-third of the habitat available on public lands yielded captures of less than 30 individuals. Tracking data from June 2006 indicated that about 25 and 32 percent of the available habitat was occupied at PKSP and GUIS, respectively (FFWCC 2007). Tracking data from March 2007 indicated that less than 10 percent and about 28 percent of the available habitat was occupied at PKSP and GUIS, respectively (FFWCC 2007).

Population viability analysis (PVA) is essentially a demographic modeling exercise to predict the likelihood a population will continue to exist over time (Groom and Pascual 1997). The true value in using this analytical approach is not to determine the probability of a species' extinction, but to clarify factors that have the most influence on a species' persistence. Auburn University developed PVAs for two PKBM and two Alabama beach mouse (ABM) subpopulations (Holler et al. 1999; Oli et al. 2001). The subpopulations modeled consisted of two subpopulations of PKBM, one at GUIS-Perdido Key Area and one at GSP - Florida Point, and two subpopulations of ABM, one at Bon Secour National Wildlife Refuge and one at Ft. Morgan State Park.

They used a stochastic (random) differential equation (Wiener-drift) model, applied to long term demographic data. The model is "stochastic" because it incorporates the variable effects of the environment upon population change. However, it did not model the effects of hurricanes on the habitat or population of beach mice.

The Oli et al. (2001) analyses indicated that all four subpopulations were at risk of extinction, with habitat fragmentation as the most influential factor. The GUIS-Perdido Key Area had the highest risk for extinction; the PKBM had a 100 percent chance of reaching one individual (becoming functionally extinct) within 21 (mode) or 45 (median) years. At GSP - Florida Point, the PKBM had a low risk of becoming functionally extinct (1.3 percent) within 13 to 20 years. However, following Hurricane Opal in 1995 and subsequent predation pressure, the PKBM population at GSP was believed to be extirpated in 1998. This localized extirpation clearly demonstrates that while PVAs are useful in determining significant factors in species survival, they have limited use in predicting the time to extinction for a given species.

Species which are protected across their ranges have lower probabilities of extinction (Soulé and Wilcox 1980). Beach mouse populations naturally persist through local extirpations due to storm events or the harsh, stochastic nature of coastal ecosystems. Historically, these areas would be recolonized as population densities increase and dispersal occurs from adjacent populated areas. From a genetic perspective, beach mice recover well from population size reductions (Wooten 1994), given sufficient habitat is available for population expansion after the bottleneck occurs. As human development has fragmented the coastal dune landscape, beach mice can no longer recolonize along these areas as they did in the past (Holliman 1983). As a continuous presence of beach mice or suitable habitat along the coastline is no longer possible and any hurricane can

impact the entire range of each subspecies, the probability of beach mice persisting would be enhanced by the presence of contiguous tracts of suitable habitat occupied by multiple independent populations (Danielson 2005).

The history of the PKBM illustrates the need for multiple populations (a now extirpated population was the source of the two remaining populations of the subspecies) (Holler et al. 1989; USFWS 2006). While maintaining multiple populations of beach mouse subspecies provides protection from total loss (extinction), especially when migration and relocations are possible (Oli et al. 2001), conservation of each subspecies necessitates protection of genetic variability throughout their ranges (Ehrlich 1988). Preservation of natural populations is therefore crucial, as the loss of a population of beach mice can result in a permanent loss of alleles (Wooten et al. 1999). This loss of genetic variability cannot be regained through translocations or other efforts.

The PKBM is restricted to the 15 mile-long Perdido Key (Bowen 1968). Most private land on the island has been developed and nearly all records of beach mice have come from 3 areas of public land (Humphrey and Barbour 1981, Holler 1992b). All of these areas, GSP, PKSP, and GUIS, are highly susceptible to damage from tropical storms and mice have been moved among sites to restore extirpated populations (Holler et al. 1989). Mice at GSP in Alabama survived Hurricane Opal in 1995, but none have been observed there since 1996 (Holler 1996, Moyers et al. 1999). Tube tracking surveys conducted by Loggins, et. al. found no tracks at GSP, but recorded tracks at PKSP and GUIS in the Florida portion of Perdido Key (Loggins et. al. 2008).

Beach mice visited 35.3% (30/85) of tubes in PKSP in May 2005, but the proportion of tubes with tracks declined from that maximum, and by the end of January 2008, no tracks were being recorded in the park. Although few or no tracks were recorded in some prior sample periods, the number of tracks always subsequently increased and was never lowest in the winter when reproduction is typically highest (Loggins et.al. 2008).

Mice were reestablished in PKSP when 21 pairs were translocated from GUIS in 2000 and 2001. The new population grew to a few hundred mice until Hurricane Ivan struck in 2004. If mice are now absent in PKSP, the only remaining large population is at GUIS with PKBM also potentially occurring on private and County owned properties. Interestingly, mice also were previously extirpated at GUIS and subsequently reintroduced via translocation from the former population at GSP (Holler et al. 1989). The translocated population grew to occupy all available habitat at GUIS and subsequently served as a donor for mice translocated to PKSP (Moyers et al. 1999).

After track tubes were installed at GUIS in 2005, the proportion of tubes with tracks increased dramatically in the first few months of sampling (Loggins et. al. 2008); however, that likely reflected the number of mice learning to use or accept the tubes rather than a change in the true number or distribution of mice in the area.

The status of current PKBM populations is uncertain following Hurricane Ivan and the subsequent active 2005 storm season (Hurricanes Cindy, Dennis, Katrina, and tropical storm Arlene) and erosion and overwash caused by minor storms in 2007 and 2008 (Hurricanes Ike and Gustav). Sightings of beach mouse tracks and burrows have been limited at PKSP and GUIS.

PKBM monitoring efforts since 2007 suggest the population at PKSP has declined to extremely low levels. Therefore, the current population of PKBM is extremely small, declining, and highly vulnerable to being extirpated.

5.3.2 Loggerhead Sea Turtle

See Figures 5.4-5.7 in Appendix A for representative photos of all sea turtle species described below.

The loggerhead sea turtle (*Caretta caretta*), was listed as a threatened species on July 28, 1978 (43 FR 32800). NOAA-Fisheries announced on March 5, 2008, a 90-day finding under the ESA to reclassify the North Atlantic Ocean loggerhead sea turtles as a Distinct Population Segment (DPS) with endangered status and critical habitat designation (73 FR 11849). The loggerhead inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian Oceans. Loggerhead sea turtles nest within the continental U.S. from Louisiana to Virginia. Major nesting concentrations in the U.S. are found on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida (Hopkins and Richardson 1984).

5.3.2.1 Biological Information

The loggerhead sea turtle grows to a maximum of 3 feet and an average weight of about 200 pounds and is characterized by a large head with blunt jaws. Adults and subadults have a reddish-brown carapace. Scales on the top of the head and top of the flippers are also reddish-brown with yellow on the borders. Hatchlings are a dull brown color (NOAA-Fisheries 2002a). The loggerhead feeds on mollusks, crustaceans, fish, and other marine animals. Major loggerhead sea turtle nesting beaches are located in the Sultanate of Oman, southeastern U.S., and eastern Australia.

The species is widely distributed within its range. It may be found hundreds of miles out to sea, as well as in inshore areas such as bays, lagoons, salt marshes, creeks, ship channels, and the mouths of large rivers. Coral reefs, rocky places, and ship wrecks are often used as feeding areas. Nesting occurs mainly on open beaches or along narrow bays having suitable sand, and often in association with other species of sea turtles. Nesting by loggerhead sea turtles has been documented in all northwest Florida counties including Escambia County (FFWCC-FWRI 2008).

In the final 2008 Recovery Plan for the Northwest Atlantic loggerhead population, five recovery units were identified (Northern Recovery Unit, Peninsular Florida Recovery Unit, Dry Tortugas Recovery Unit, Northern Gulf of Mexico Recovery Unit, and Greater Caribbean Recovery Unit). A combination of geographic distribution of nesting densities, genetic differences, geographic separation, and geopolitical boundaries were used to reassess the designation of subpopulations within the U.S. to identify recovery units for the Northwest Atlantic population of the loggerhead. The sea turtles that nest on the gulf front beaches of Perdido Key are included in the Northern Gulf of Mexico Recovery Unit. Because of the affinity to natal beach site fidelity, if a sea turtle Recovery Unit is lost or depleted it is unlikely that turtles from other Recovery Units

would repopulate it. Thus, it is important to ensure the viability of each Recovery Unit of loggerhead sea turtles. (http://www.nmfs.noaa.gov/pr/recovery/plans.htm#turtles or http://www.fws.gov/northflorida/SeaTurtles/2008_Recovery_Plan/20081231_Final%20NW%20Loggerhead%20Recovery%20Plan_signed/pdf).

Critical habitat has not been designated for loggerhead sea turtles including the Gulf coast of Florida.

5.3.2.2 Site-Specific Information

Loggerhead turtles are the most common nesting sea turtle and account for over 99 percent of the nests in northwest Florida. The loggerhead sea turtle nesting and hatching season in this region generally extends from about May 1 through October 31. Average annual nesting in northwest Florida is about 897 nests (range 565 – 1285 nests) (FFWCC-FWRI 2008). Nest incubation ranges from about 49 to 95 days. The National Park Service and Florida Park Service (FPS) documented approximately 238 sea turtle nests on Perdido Key including private lands between 1994 and 2005 (FFWCC-FWRI 2008; GUIS 2005).

5.3.3 Green Sea Turtle

The green sea turtle (*Chelonia mydas*) was federally listed on July 28, 1978 (43 FR 32808). Breeding populations of the green sea turtle in Florida and along the Pacific Coast of Mexico are listed as endangered; all other populations are listed as threatened. The green sea turtle is a circumglobal species in tropical and subtropical waters. Within the U.S., green sea turtles nest in small numbers in the U.S. Virgin Islands and Puerto Rico, and in larger numbers along the east coast of Florida (NOAA-Fisheries and USFWS 1991). Nesting also has been documented as far north as North Carolina and along the southwest and northwest Gulf coasts of Florida (Meylan et al. 1995; FFWCC-FWRI 2008).

Critical habitat for the green sea turtle has been designated for the waters surrounding Culebra Island, Puerto Rico, and its outlying keys. Critical habitat has not been designated for green sea turtles along Florida's Gulf of Mexico coast.

5.3.3.1 Biological Information

The green sea turtle grows to a maximum size of about 4 feet and a weight of 440 pounds. It has a heart-shaped shell, small head, and single-clawed flippers. The carapace is smooth and colored gray, green, brown and black. Hatchlings are black on top and white on the bottom (NOAA Fisheries 2002b). Hatchling green turtles eat a variety of plants and animals, but adults feed almost exclusively on seagrasses and marine algae.

5.3.3.2 Site-Specific Information

The green sea turtle nesting and hatching season for northwest Florida beaches extends from May 1 through October 31. Nest incubation ranges from about 60 to 90 days. Nesting in northwest Florida has been consistently documented at least every other year since 1990

(FFWCC-FWRI 2008). Only a few dozen green turtle nests have been documented on Perdido Key (FFWCC-FWRI 2008).

5.3.4 Leatherback Sea Turtle

The leatherback sea turtle (*Dermochelys coriacea*), was listed as an endangered species on June 2, 1970 (35 FR 8491), and nests on shores of the Atlantic, Pacific and Indian Oceans. Non-breeding animals have been recorded as far north as the British Isles and the Maritime Provinces of Canada and as far south as Argentina and the Cape of Good Hope (Pritchard 1992). Nesting grounds are distributed worldwide, with the Pacific Coast of Mexico supporting the world's largest known concentration of nesting leatherbacks. The largest nesting colony in the wider Caribbean region is found in French Guiana, but nesting occurs frequently, although in lesser numbers, from Costa Rica to Columbia and in Guyana, Surinam, and Trinidad (NOAA-Fisheries and USFWS 1992; National Research Council 1990a).

Marine and terrestrial critical habitat for the leatherback sea turtle has been designated at Sandy Point on the western end of the island of St. Croix, U.S. Virgin Islands (50 CFR 17.95). Critical habitat has not been designated for the leatherback sea turtle along the Gulf Coast of Florida.

5.3.4.1 Biological Information

This is the largest, deepest diving, and most migratory and wide ranging of all sea turtle species. The adult leatherback can reach 4 to 8 feet in length and weigh 500 to 2,000 pounds. The carapace is distinguished by a rubber-like texture, about 1.6 inches thick, made primarily of tough, oil-saturated connective tissue. Hatchlings are dorsally mostly black and are covered with tiny scales; the flippers are edged in white, and rows of white scales appear as stripes along the length of the back (NOAA-Fisheries 2002c). Jellyfish are the main staple of its diet, but it is also known to feed on sea urchins, squid, crustaceans, tunicates, fish, blue-green algae, and floating seaweed.

5.3.4.2 Site-Specific Information

Documented leatherback nests are rare in northwest Florida. From 1990 to 2006, 35 nests have been reported for northwest Florida beaches, 21 in Franklin County, 3 in Okaloosa County, 7 in Bay County, 3 in Gulf County, and 1 in Escambia County (FFWCC-FWRI 2006). Leatherback sea turtle nesting has not been documented on Perdido Key. The leatherback sea turtle nesting and hatching season for northwest Florida beaches extends from May 1 through October 31. Documented nest incubation in northwest Florida ranges from about 63 to 84 days (Miller 2001; FFWCC-FWRI 2008; GUIS 2005).

5.3.5 Kemp's Ridley Sea Turtle

The Kemp's Ridley sea turtle (*Lepidochelys kempii*) was listed as endangered on December 2, 1970 (35 FR 18320). The range of the Kemp's Ridley sea turtles includes the Gulf coasts of Mexico and the U.S., and the Atlantic coast of North America as far north as Nova Scotia and Newfoundland. Most Kemp's Ridley sea turtles nest on the coastal beaches of the Mexican states

of Tamaulipas and Veracruz, although a small number of Kemp's Ridley sea turtles nest along the Texas coast (Turtle Expert Working Group 1998; Frey et al 2007). In addition, rare nesting events have been reported in Florida, Alabama, Georgia, South Carolina, and North Carolina. Outside of nesting, adult Kemp's Ridley sea turtles are believed to spend most of their time in the Gulf of Mexico, while juveniles and subadults also regularly occur along the eastern seaboard of the United States (USFWS and NOAA-Fisheries 1992).

No critical habitat has been designated for the Kemp's Ridley sea turtle. Critical habitat has not been designated for the Kemp's Ridley sea turtle along the Gulf Coast of Florida.

5.3.5.1 Biological Information

Hatchlings, after leaving the nesting beach, are believed to become entrained in eddies within the Gulf of Mexico, where they are dispersed within the Gulf and Atlantic by oceanic surface currents until they reach about 7.9 inches in length, at which size they enter coastal shallow water habitats (Ogren 1989).

5.3.5.2 Site-Specific Information

Documented Kemp's Ridley nests are rare in northwest Florida. The first Kemp's Ridley nest documented in northwest Florida was on Perdido Key in 1998 (GUIS 2005). Since then (1998-2007), there have been 12 Kemp's Ridley nests documented on Perdido Key, 1 in Santa Rosa County, 1 in Walton County, and 1 in Gulf County (FFWCC-FWRI 2008). Average incubation for three documented nests is 63 days (range 61 to 65 days) (GUIS 2005; Spector 2005).

5.3.6 Piping Plover

The piping plover (*Charadrius melodus*) is a small, American shorebird. It breeds in three distinct areas (the Northern Great Plains, Great Lakes, and Atlantic Coast) and winters in coastal areas of the United States from North Carolina to Texas. On December 11, 1985, the Great Lakes population of piping plovers was listed in the Federal Register (50 FR 50720) as endangered, while all other populations were listed as threatened under the ESA. All populations are considered threatened when on their wintering grounds.

Critical habitat for wintering piping plovers was designated July 10, 2001 (66 FR 36038). Migratory patterns for the piping plover are not well understood. Piping plovers generally migrate to their wintering areas from late July through September, returning to their breeding grounds beginning in late February through mid-May.

The Florida critical habitat unit 1 – Big Lagoon encompasses 19 acres, with the majority in Big Lagoon State Park. This unit covers the peninsula, emerging sand and mudflats, emerging sandbars, and shoreline from MLW ending at densely vegetated habitat. Occurrence records document one to five piping plovers consistently using the Big Lagoon area during migration and winter months, with no presence likely from May 15 to July 15. This area is north and east of the Perdido Key HCP area just across Big Lagoon. Piping plovers have also been documented using bayside flats on GUIS, adjacent to County land. If suitable habitat is found in the HCP Plan

Area, there is a possibility that piping plovers could be using the Project Area sometime during the nonbreeding season.

5.3.6.1 Biological Information

The piping plover is a small, pale sand-colored shorebird, about seven inches long with a wingspan of about 15 inches (Palmer 1967) (see Figure 5.8 in Appendix A). Cryptic coloration is a primary defense mechanism for this species; nests, adults, and chicks all blend in with their typical beach surroundings. Piping plovers on wintering and migration grounds respond to intruders (pedestrian, avian and mammalian) usually by squatting, running, and flushing (flying).

Behavioral observation of piping plovers on the wintering grounds suggests that they spend the majority of their time foraging (Nicholls and Baldassarre 1990a; Drake 1999a, 1999b). Feeding activities may occur during all hours of the day and night (Staine and Burger 1994; Zonick 1997), and at all stages in the tidal cycle (Goldin 1993; Hoopes 1993). Wintering plovers primarily feed on invertebrates such as polychaete marine worms, various crustaceans, fly larvae, beetles, and occasionally bivalve mollusks (Bent 1929; Cairns 1977; Nicholls 1989; Zonick and Ryan 1996). They peck these invertebrates on top or just beneath the surface.

Plovers forage on moist substrate features such as intertidal portions of ocean beaches, washover areas, mudflats, sand flats, algal flats, wrack lines, sparse vegetation, and shorelines of coastal ponds, lagoons, ephemeral pools and adjacent to salt marshes (Gibbs 1986; Zivojnovich 1987; Nichols 1989; Nicholls and Baldassarre 1990a; Nicholls and Baldassarre 1990b; Coutu et al. 1990; Hoopes et al. 1992; Loegering 1992; Goldin 1993; Elias-Gerken 1994; Wilkinson and Spinks 1994; Zonick 1997; USFWS 2001a). Studies have shown that the relative importance of various feeding habitat types may vary by site (Gibbs 1986, Coutu et al. 1990; McConnaughey et al. 1990; Loegering 1992; Goldin 1993; Hoopes 1993). Cohen et al. (2006) documented more abundant prey items and biomass on sound island and sound beaches than the ocean beach.

Habitat used by piping plovers for foraging, roosting and shelter include intertidal beaches and flats (between annual low tide and annual high tide), and associated dune systems and flats above annual high tide. The sand or mud flats possess no or minimal emergent vegetation. Important features of the beach and dune systems include surf-cast algae, sparsely vegetated backbeach, spits, and washover areas. In addition, adjacent non- or sparsely vegetated sand, mud, or algal flats above high tide are important habitat for roosting piping plovers, and are primary constituent elements. These roost sites may have debris and detritus that provide shelter from high winds and cold.

Piping plover breeding activity begins in mid-March when birds begin returning to their nesting areas (Coutu et al. 1990; Cross 1990; Goldin et al. 1990; MacIvor 1990; Hake 1993). Plovers are known to begin breeding as early as one year of age (MacIvor 1990; Haig 1992); however, the percentage of birds that breed in their first adult year is unknown. Piping plovers generally fledge only a single brood per season, but may renest several times if previous nests are lost.

5.3.6.2 Site-Specific Information

Non-breeding piping plover are found consistently in the Florida panhandle from July 15 to May 15, up to 10 months of the year. Areas used by piping plovers are ephemeral habitats that due to their nature change 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 plover food base, and result in habitat loss and direct disturbance of individual birds. Increased development (commercial and residential) increase human disturbances to piping plover feeding and roosting areas. The current use of this area by piping plovers post recent hurricane events is currently unknown.

5.3.7 Other Shorebirds

This section contains other shorebirds that may or have been documented to occur on Perdido Key and therefore have a potential to occur in the HCP Plan Area. This includes the red knot, snowy plovers, least tern, black skimmer and the American oystercatcher. In addition to being in compliance with all state laws, this HCP will comply with the protections afforded to native bird species under the Migratory Bird Treaty Act (MBTA). See Figures 5.9-5.13 Appendix A for representative photos of each species described below.

Red Knot

The red knot (*Calidris canutus*) is noted as the largest calidridine sandpiper of North America and largest species in the genus *Calidris*, which is exceeded in size only by the Great Knot (*C. tenuirostris*). The red knot is colorful in breeding plumage, changing to a dull gray in winter plumage with few distinct markings. This species is a Holarctic breeder, mainly in middle and high-arctic zones, with 3 races (*islandica*, *rufa*, and *roselaari*) distributed in the Nearctic from Greenland to northern Alaska. The red knot was added as a Federal candidate species in 2006 (71 FR 53755). Red knots are federally protected under the MBTA.

Biological Information

Red knots are noted to be nine to ten inches long and are a large, bulky sandpiper with a short, straight, black bill. Their legs are dark brown to black during the breeding season. The breast and belly are russet in color and can range from salmon-red to brick-red. Males generally exhibit a brighter shade of red, with a more distinct line through the eye. Both sexes have similar appearances when not in the breeding season. They display gray above and dirty white below with faint, dark streaking.

Red knots are noted for their long-distance migrations in groups, sometimes flying with other species with travel between arctic tundra and marine wintering habitats in Tierra del Fuego. They

are known for gathering in huge flocks at migration staging areas, this provides an opportunity to develop energy stores before embarking on long-distance, nonstop flights, known to exceed 1,500 miles.

Red knots are monogamous and single-brooded, and typically lay a clutch of four eggs. Their courtship includes elaborate flight, ground, and vocal displays. Red knots prefer drier tundra such as sparsely vegetated hillsides. Red knots are principally marine shorebirds in the non-breeding season (from July through May). Red knots in Florida have been observed to use salt marshes, brackish lagoons, and tidal mudflats, while feeding on invertebrates, especially bivalves, small snails, and crustaceans.

Red knots winter from Georgia to the southern tip of South America and breed above the Arctic Circle. Migrating red knots will fly in non-stop segments of 1,500 miles or more, utilizing a few critical migration stopover areas. Large flocks of red knots arrive at stopover areas along the Delaware Bay and Atlantic coast each spring. Many of the birds have flown directly from northern Brazil.

Site-Specific Information

A lack of data specific to red knots in Florida and specifically to Perdido Key has been noted by the FFWCC. The FFWCC describes red knots as one of the species of greatest conservation concern in Florida. Improving gaps in data is a priority of the FFWCC Avian Taxa Team. It is ranked among the most biologically vulnerable avian species in the FFWCC Species Ranking Database and occurs exclusively in coastal habitats, identified as Florida's highest priority biotic region. Red knots are also identified as a Species of Greatest Conservation Need in *Florida's Comprehensive Wildlife Conservation Strategy*. Red knots winter in four distinct areas of the Western Hemisphere with Florida and Georgia being the main locations in southeastern United States.

State Listed Shorebirds

Snowy Plover

Biological Information

The snowy plover (*Charadrius alexandrinus*) is a small whitish light colored shorebird with a dark, thin bill and dark legs. In breeding plumage, adult snowy plovers have black patches on either side of their breast, not a full breast band like many similar plover species. The pale brown plumage of their upper body is similar to that of the piping plover, but much lighter than other closely related species like the Wilson's plover and semipalmated plover. The relatively long dark legs and bill help distinguish the snowy plover from the piping plover, which has a stubby bill (orange in breeding plumage) and orange legs (Page et al. 1995). Snowy plovers feed on seeds, small mollusks, flies, beetles, and aquatic invertebrates (Howell 1932).

Snowy plovers are solitary nesters and require open dry sand near dunes for breeding. Nesting can occur in early February but typically the nesting season is March to September in Florida. Nests are an open scrape, sometimes lined with shell matter, within sight of the Gulf of Mexico

and near the frontal dune line. Locations of nest are usually near an object such as a log, debris, or small clumps of vegetation. Renest attempts are typically farther back in the dunes in open flat areas. Snowy plovers typically lay three eggs, which are light blue with black markings. Incubation is about 26 days with both males and females participating. Chicks fledge about 30 days later. The length of the snowy plovers nesting season may allow the species to raise two broods per season (Stevenson and Anderson 1994).

Site–Specific Information

Snowy plover nesting has been well documented at GUIS and recent nesting attempts were documented at PKSP (Anne Harvey, PKSP pers. comm. 2008). Most known nesting locations in Northwest Florida have been on State or Federal lands. Suitable nesting habitat does not usually exist in the privately owned lands in the Project Area (Himes et al. 2006), probably due to disturbance or limited food resources. However, resting and feeding habitat does occur in the Plan Area.

Least Tern

Biological Information

The least tern (*Sterna antillarum*) is the smallest of American terns and is listed as "Threatened" by the State of Florida. The historical habitat of least terns are seacoasts, beaches, bays, estuaries, lagoons, lakes and rivers, preferring breeding on sandy or gravelly beaches and banks of rivers or lakes. The least tern also breeds on flat gravelly rooftops of buildings that simulate natural habitat. During breeding season, a black cap covers the crown and nape. It has a white forehead, a short white eye stripe and the bill is yellow with a black tip. The back is light gray. Its underside is white. It has a black leading wing edge to the wing tip. In the non-breeding season its plumage includes a black eye stripe extending to the back of the head, white top of head, and black bill. Each sex is highly similar in coloration. Immature or juvenile least terns have a U-shaped mark on their back. Immature least terns resemble winter adult plumage. Least terns are excellent catchers of small fish. Invertebrates such as shrimp and marine worms also make up some of the diet. Least terns plunge into water from flight or a hovering flight to grab its prey (Thompson et al. 1997).

Least tern nesting season in Florida is April to July but, renesting and late-nesting pairs often extend the season into August or even September. The adult least terns construct each nest by simply working a shallow depression, or scrape, into the loose sand or gravel (FFWCC 2003).

In Florida, two eggs are usually produced, but clutches of 1 or 3 are also recorded. The eggs, which are cream colored with blotches or spots of dark brown, are laid in April or May and hatch after about 21 days. When the young hatch, their eyes are open, are covered with downy and are able to walk but they stay in the nest. After 3 or 4 days, the young leave the nest, but cannot fly strongly until about 4 weeks of age.

In Florida, nests are found primarily along the coast, nearby gravelly roofs that provide nest sites and near waters containing a supply of small forage fish. Small colonies can occur inland on flat,

gravel-covered rooftops of warehouses, shopping malls, and other large buildings with nearby canals, lakes, or ponds (Fisk 1978). Rooftop colonies may be difficult to notice. In south Florida, least terns also occupy recently dredged or deposited sandy substrates in active phosphate mines and in lime rock quarries.

Least tern nesting colonies may consist of only a few nests to several hundred or more. The number of nests and their density is governed by many factors, including past reproductive success of the colony, availability of food, and disturbance. Least terns usually return to the same nesting site each year, unless the colony has consistently failed to fledge young, then the site will be abandoned (FFWCC 2003).

Site-specific Information

Least terns have been documented to nest in Escambia County. Several roof nesting colonies exist throughout the coastal area and ground nesting colonies have been documented at GUIS– Fort Pickens (FFWCC 2008). Individual sightings or nests have occurred at GUIS– Johnson Beach (1990, 1993, 1999), Big Lagoon State Park (1987) and Big Lagoon Spoil Island (1993, 1998, 2000) (Himes 2008). Suitable resting and nesting habitat exists in the Plan Area.

Black Skimmer

Biological Information

The black skimmer (*Rhynchops niger*) is the only American representative of the skimmer family. The other two, rather similar, species are the African skimmer and the Indian skimmer. All skimmers use the same unusual feeding method. Although the black skimmer is active throughout the day, it is largely crepuscular (active in the dawn and dusk) and even nocturnal. Its use of touch to catch fish allows it to be successful in low light or darkness. This enables the birds to forage by night, when waters are calmer and fish are closer to the surface (FFWCC 2003).

The black skimmer is a medium-sized to large water bird. It has a long red and black bill, with the upper bill shorter than the lower bill. The red color of the bill covers about one quarter of the bill and is near the face while the black color covers about three quarter of the bill and is more towards the tip. The black skimmer has a solid black back and cap. Its underparts are white. The black skimmer has very short red legs and long pointed wings. Although black skimmers are a water bird with webbed feet, it is unusual for them to be seen on the water swimming (MDNR 2007). The size of the black skimmer is 16 – 20 inches and weight is usually between 7.48 - 15.78 ounces. Male black skimmers are slightly larger and have a longer bill than female black skimmers. Immature black skimmers are similar to adults, but have a mottled black and white back and head (Gough et al. 1998).

Black skimmers nest in colonies, usually in association with other aggressive shorebirds. Their nests are built on the ground on open sandy beaches, inlets, sandbars, offshore islands, and dredge disposal islands that are sparsely vegetated and contain shell fragments. The growth of dense vegetation may cause colony relocation. Skimmers also frequently nest on wrack mats

(deposits of dead sea grasses and other vegetation) on marsh islands in the back bays; however, these colonies are typically much smaller than the beach colonies. Similar coastal and estuarine habitats are used throughout the year. Black skimmers have also adapted to rooftop nesting where loss of native habitat has occurred (FFWCC 2003).

Mates take turns scraping, exhibiting exaggerated sand-kicking posture (neck, head, bill, and tail elevated) with alternate foot strokes that throw sand backwards. Birds rotate in the scrape to create a saucer-shaped depression, similar to resting scrapes used throughout the year. The depression takes only a few minutes to create, but the process of nesting may involve several scrapes and nest showing behavior, requiring 5-7 days between onset of nest "building" and laying. No material is added to the nest.

Black skimmers lay four to five blue or pink eggs with brown, lavender, and gray marks. Eggs are perfectly camouflaged and hard to spot in the natural habitat. Both parents share incubation responsibilities which range from 21 to 23 days. Young fledge in 23-25 days (Gochfeld and Burger 1994). Breeding colonies of black skimmers can be found along Florida's Gulf and Atlantic coasts. On busy beaches, the birds and their nests are extremely vulnerable to human disturbance and predation by domestic dogs, raccoons and laughing gulls. At hatching, the two mandibles of a young black skimmer are equal in length, but by fledging at four weeks, the lower mandible is already nearly 0.4 inches longer than the upper (FFWCC 2003).

Black skimmers forage in shallow-water tidal creeks, inlets, and ponds and get their name from "skimming" the surface of the water with their black-tipped bright red bills. The unique adaptation of their bill, the lower half of the bill is longer than the upper, allows the black skimmer to cut through the water and dip down to grab small fish encountered near the surface. When sensing a fish, the bird snaps its upper bill shut, tucks its head and seizes its prey. They will also catch shrimp and other small crustaceans in this manner (Dick 2008).

Site-specific Information

Black skimmer nests have been documented in Escambia County. However, no nests have been documented on Perdido Key. Ground colony nest locations include Pensacola Beach, GUIS-Fort Pickens, and the Pensacola Port Authority (FFWCC 2008). Suitable resting and nesting habitat exists in the Plan Area.

American Oystercatcher

Biological Information

The American oystercatcher (*Haematopus palliates*) is the largest and heaviest Florida shorebird. Its bright red-orange bill is built for opening mussels and oysters. They have black heads and necks and dark blackish-brown underparts. They have white wing and upper tail patches. A diagonal white stripe in each wing forms a V-pattern aiding identification in flight. Their legs are a tan or sand color. Males and females look alike but females are larger and heavier than males. In young birds, the bill is a pinkish brown and dusky black toward the tip. It has a yellow eye and an orange-red eye ring. Breeding and non-breeding plumage is almost identical (FFWCC 2006).

This shorebird eats oysters, clams, barnacles, starfish, crabs, jellyfish, limpets, chitons, marine worms, and other marine invertebrates. When an American oystercatcher pries an oyster shell open, it quickly clips the bivalve's adductor muscle. The bivalve cannot protect itself by closing its shell and is eaten by the oystercatcher (TPWD 2008). Their mating season is from February through July. Nests are shallow scraped depressions lined with tiny pebbles, bits of shell and seaweed and are on higher parts of sandy or rocky beaches above the high tide line. Females typically lay two to four buff-colored eggs with light and dark brown spots and other marks. Both parents incubate the eggs. The chicks can run within 24 hours of hatching, but it takes up to 60 days for their beaks to become strong enough to pry open their own bivalves. The young birds may remain with their parents for up to six months. American oystercatchers can live ten years or longer in the wild (TPWD2008).

Oystercatchers are very protective of their young. To distract predators, adult birds will fake an injury to attract attention away from the nest or pretend to brood where there is no nest. Oystercatchers give such extensive care to their young that the adults sometime starve.

Site-specific Information

No American oystercatcher site specific information exists for Perdido Key or Escambia County. However, suitable resting and feeding habitat does occur within the Plan Area.

6.0 FACTORS AFFECTING THE SPECIES IN THE PLAN AREA

The species included in this HCP are subjected to a variety of natural and anthropogenic or man made threats. Threats to the species can include erosion from damaging tropical storms, habitat fragmentation, habitat loss, predation, artificial lighting, trash, beach furniture and many other factors. Most pertinent to this HCP are impacts associated with coastal development, beachfront construction activities, recreational human use of the beachfront, and public infrastructure improvements.

6.1 Natural Events

6.1.1 Predation

Predation by native and non-native predators, are a constant threat to the PKBM, sea turtles, and shorebirds. Beach mice have numerous natural predators including coachwhip and corn snakes, pygmy rattlesnake, and eastern diamondback rattlesnake, short-eared (*Asio flammeus*) and great-horned owls (*Bubo virginianus*), great blue heron (*Ardea herodias*), northern harrier (*Circus cyaneus*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*) skunk (*Mephitis mephitis*), weasel (*Mustela frenata*), and raccoon (Blair 1951; Bowen 1968; Holler 1992; Novak 1997; Moyers et al. 1999; Van Zant and Wooten 2003).

Concern is minimal for predation of beach mice in populations where sufficient recruitment and habitat is present. Predation pressure from natural and non-native predators on beach mice

populations, already exhibiting stress from threats, may result in extirpation of small, localized populations of beach mice.

Free-roaming pets and feral pets are believed to have devastating consequences to beach mouse persistence (Bowen 1968; Linzey 1978). Cat tracks have been observed in areas of low trapping success for beach mice (Moyers et al. 1999). The Population and Habitat Viability Analysis for the ABM indicated that if each population had as few as one cat which ate one mouse a day, rapid extinction occurred in over 99% of all iterations (Traylor-Holzer 2005). The PHVA analysis referenced is a model. It was developed to show the potential effects of cats on mice when mice are in a depressed population condition (from storms, etc) such as the status of the PKBM. The model was not intended to be used for large healthy beach mouse populations. In the situations where this model is applicable, every mouse death is significant to the successful continuation of the population. Cats in this scenario could be the deciding factor whether a population of beach mice survives.

Other common predators associated with beach environments in Florida are ghost crabs (*Ocypode quadrata*), imported fire ants (*Solenopsis invicta*), and armadillos (*Dasypus novemcinctus*). Sea turtles and shorebirds are also subject to impacts from these predators. Depredation of sea turtle eggs and hatchlings by native and introduced species is likely to occur on most nesting beaches. Sea turtle and shorebird nests are more subject to depredation by coyotes, foxes, raccoons, and dogs. However, pet cats have been noted to bring sea turtle hatchlings home (Lorna Patrick, pers. comm. 2009). Nests can be depredated prior to egg hatching and scavenging after hatchlings have emerged. Shorebirds can be affected by the predators listed above. Adults can be predated by dogs, cats, red foxes, grey foxes, and blue crabs. Pets, especially dogs, may harass or kill the birds.

Responding to increasing depredation of sea turtle nests by coyote, fox, and raccoon, a multi-agency cooperative effort was initiated in northwest Florida in 1996. Ten Federal and State agencies have participated to provide funding and/or in-kind services to implement a control program on coastal public lands across northwest Florida. The program, which is ongoing and includes a permanent Department of Agriculture (USDA) position, was established in northwest Florida to conduct the control work (Daniel et al. 2002). Feral cats and free-ranging cats continue to be captured in beach mouse habitat on Perdido Key.

6.1.2 Tropical Storm Activity

Tropical storms, or tropical cyclones, are violent storms that originate in tropical or subtropical waters, and are characterized by high-velocity cyclonic winds and heavy rains. Tropical storms are a significant factor affecting species and habitats on Perdido Key. Hurricanes are tropical storms with sustained winds in excess of 74 miles per hour, see Table 6.1. Much of the tropical storm damage can be attributed to storm surge. In tropical storms affecting northwest Florida, storm surge and a rise in coastal water level is most prominent on the eastern side of the storm's center relative to the counterclockwise wind circulation. Coastal waters are pushed ahead of the storm towards the shoreline.

Table 6.1 Description of the Saffir-Simpson Hurricane Scale

Storm Category	Wind velocity	Typical effects
Tropical Storm	39-73 mph	
Category 1 Hurricane	74-95 mph	No real damage to buildings. Damage to unanchored mobile homes. Some damage to poorly constructed signs.
Category 2 Hurricane	96-110 mph	Some damage to roofs, doors, and windows. Some trees blown down.
Category 3 Hurricane	111-130 mph	Some structural damage to small residences and utility buildings. Large trees blown down. Mobile homes and poorly built signs destroyed.
Category 4 hurricane	131-155 mph	Wall failures in homes and complete roof structure failures on small homes. Trees, shrubs, and signs blown down.
Category 5 Hurricane	156 mph and higher	Complete roof failure on homes and industrial buildings. Some complete building failures. Severe and extensive window and door damage.

Records of hurricane intensity began in 1885. Since then, 32 hurricanes have struck northwest Florida (between Gulf County and the Alabama border) (Williams and Duedall 1997; Doehring et al. 1994; Neumann et al. 1993). In recent years, the most destructive hurricanes in terms of coastal dune habitat damage and impacts were Hurricanes Eloise (1975), Frederic (1979), Elena and Kate (1985), Erin and Opal (1995), Ivan (2004), and Dennis (2005). Hurricanes contributing to a lesser extent of damage include Allison (1995), Danny (1997), Earl (1998), Georges (1998), Katrina, Wilma and Rita (2005), and Gustav (2008). Hurricanes have shown to strike the northeast Gulf Coast on a frequency of approximately one hurricane every 8.5 years. However, an increase in hurricane activity occurred from 1995 - 2005 in the southeast U.S. (NOAA 2005).

6.2 Human-Related Activities

6.2.1 Development Activities

Chapter 11 of the Coastal Management and Conservation element of the Code of Ordinances for Escambia County provides guidance as to the County's planning efforts to minimize impacts from development activities. The purpose of this element (chapter) is to plan, guide and direct development activities (and, where appropriate, restrict activities where such activities would damage or destroy coastal resources), protect human life, limit public expenditures in areas that are subject to destruction by natural disaster and promote the conservation, use and protection of natural resources. The intent is to restrict impacts to coastal resources, but even well designed and appropriately permitted development can affect listed species.

6.2.1.1 Residential

Impacts from residential development relative to the zoning districts for Perdido Key range from low density to high density. The higher density residential districts may also allow for low intensity office use and service facilities. The maximum density allowed on Perdido Key is 12 dwelling units per acre.

Land disturbance relative to construction activities can affect listed species included in this HCP. Since PKBM rely on a variety of beach and dune habitats, impacts from development can reduce the overall availability and accessibility of habitat. Site specific conditions of a particular development location may include habitat such as beach/dune, coastal scrub, coastal strand, maritime forest and coastal grasslands. These habitats can be altered or eliminated by development, thereby threatening the ability of PKBM populations to persist through sequences of violent storms.

Development is the most serious threat to PKBM persistence. Any construction involving beach mouse habitat is likely to result in direct habitat loss and/or habitat fragmentation.

Injury or death to individual beach mice may occur incidentally due to the site clearing, demolition, preparation, or construction work. Effects to PKBM are expected to be a result of the following: (a) direct loss or injury of adult and sub-adult PKBM from physical injury caused by use of heavy equipment and placement of building materials during demolition, site prep, and construction activities; (b) adult female PKBM losing litters caused by physical injury or stress due to disturbance from heavy equipment use and placement of building materials during construction activities; (c) loss of newly born or juvenile PKBM left alone in the burrow resulting from the loss of a lactating adult female; and (d) loss of adult, juvenile, and newborn PKBM resulting from the temporary and/or permanent destruction or damage to coastal habitat used by PKBM for foraging, nesting, and refugia. If vehicles are used on the beach in support of coastal construction additional secondary and cumulative impacts to PKBM may occur. In addition, PKBM habitat may be affected by foot traffic from construction workers.

Development along the beach front may also eliminate or alter nesting sea turtle habitat, impacting sea turtle eggs, hatchlings, and/or nesting females. If vehicles are used on the beach in

support of coastal construction, impacts to sea turtles may occur. 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 escape from the nest. Hatchlings may be trapped beneath equipment, supplies, and/or construction debris on the beach. The migration of hatchlings to the ocean may be impeded by equipment/supplies on the beach.

Holes and ruts left on the beach by construction activities may also trap or misdirect hatchlings, increasing energy expenditures and susceptibility to predation. Construction lighting may disorient hatchlings. Construction lighting and/or construction activities may deter nesting females from emerging onto the beach and reduce nesting success. Females may become entangled or trapped in building equipment and materials while searching for a nest site. Disturbed soil and holes left overnight in the construction areas may trap or topple nesting females.

Non-breeding piping plovers are found consistently in the Florida panhandle from July 15 to May 15. Disturbance of plovers in their resting and feeding habitats may occur from developed beaches along with new development activities. Equipment and other building activities may affect plovers as they are only mildly tolerant to interaction with humans upon approach, the piping plover will evade perceived threats by retreating on the ground to more distant locations or may take to the air in search of habitat with less disturbance.

It is reasonable to expect that human occupancy and recreational use of Perdido Key will increase to the maximum allowable by the comprehensive plan in the future. Development and re-development activities have continued since the storms of 2004 and 2005. Impacts relative to projects associated with this HCP that are within endangered or threatened species habitat will undergo section 7 or 10 permitting from the USFWS. Those that are not will nonetheless add to the infrastructural and recreational pressures on the beaches and dunes of the region.

In addition to the direct effects of the residential development, indirect affects to PKBM may occur due to the increased human population and presence. Increased human use of PKBM habitats is expected to occur as residential units are occupied and recreational opportunities are sought by the occupants. Foot traffic across sand dunes destroys vegetation essential for dune development and maintenance. Lighting in the beachfront environment that is not sea turtle friendly, may also result in indirect affects.

Increased human presence may also lead to increases in pet populations and possible proliferation of feral cat populations. Free-roaming pets and feral cats are believed to have a devastating effect on beach mouse persistence (Bowen 1968; Linzey 1978) and are considered to be the main cause of the loss of at least one population of beach mice (Holliman 1983). In addition to the foxes and raccoons that appear to concentrate their depredation activities on sea turtle nests, free-roaming domestic dogs can present a risk to sea turtle nests. The tracks and signs of depredation by dogs may look very similar to that by foxes.

Elliott and Teas (1996) found a significant difference in actions between piping plovers encountering pedestrians and those not encountering pedestrians. Piping plovers not encountering pedestrians spend proportionately less time in active non-foraging behavior. This study suggests that interactions with pedestrians on beaches cause birds to shift their activities from calorie acquisition to calorie expenditure. In winter and migration sites, human disturbance continues to decrease the amount of undisturbed habitat and appears to limit local piping plover abundance (Zonick and Ryan 1996).

The presence of pets increases disturbance to wintering and migrating piping plovers. The duration of the disturbance behavior stimulated by pets can be significantly greater than disturbances caused by pedestrians. Disturbance also reduces the time migrating shorebirds spend foraging (Burger 1991). Pfister et al. (1992) implicate disturbance as a factor in the long-term decline of migrating shorebirds at staging areas. While piping plover migration patterns and needs remain poorly understood and occupancy of a particular habitat may involve shorter periods relative to wintering, information about the energetics of avian migration indicates that this might be a particularly critical time in the species' life cycle.

6.2.1.2 Planned Resort

Planned resort developments are likely to have similar effects to listed species as described above for residential developments. Effects may be more substantial due to the additional development activities allowed in this particular district. This district is intended to be a large-scale planned resort district, allowing for destination-type mixed uses that include residential and hotel development and the supporting recreational and commercial facilities. The associated amenities are developed within a master planned setting that includes open space, internal pedestrian/bicycle circulation, creative design, resort-related amenities, and buffer areas. Parcels in this district shall have a gross site area of no less than ten acres. A master plan submittal of the overall proposed development is required. The maximum area-wide density is five units per acre. Impacts may result in larger scale effects from this type of development.

Pedestrian effects to listed species may be more substantial with planned resorts. Residents and visitors are likely to utilize amenities within the developments and possibly wander outside of designated use areas. Residents and visitors may be more likely to be accompanied by pets. Domestic and feral animal effects discussed above for residential developments are likely to have similar if not more potential for occurrence relative to planned resort development.

6.2.1.3 Commercial

Impacts from commercial developments are relative to planned resort and residential, if occurring in similar habitat. Additional factors affecting listed species in the Plan Area may be generated by the particular uses allowed in the commercial zoning district. This district is composed of lands and structures used primarily to provide retailing of commodities and the furnishing of selected services. The regulations are intended to permit and encourage a full development of essential neighborhood commercial uses. Examples of the uses allowed in this zoning district include: any retail business, personal service establishments (i.e. financial institutions, beauty and barber shops, tailors, shoe repairs, watches, etc), service stations and auto

repair shops, restaurants, bars, night clubs/package stores, recreational/commercial marinas, educational facilities, and bed and breakfast inns that conform to the residential character of Perdido Key.

Delivery of goods and products to the commercial establishments may present more vehicular and human disturbances. Delivery trucks and retail personnel may be associated with businesses at varying hours that may be different from the typical operating hours of an establishment. Customers and patrons to commercial establishments present a possible secondary and cumulative effect relative to the use of facilities and services. Effects from domestic and feral animal populations related to commercial establishments may not present the same effects, although trash and other waste relative to commercial establishments may attract and provide food and cover for feral cats.

6.2.2 Public Infrastructure

According to Policy 7.A.6.2 in the Escambia County Code of Ordinances, the County shall promote, to the extent possible, improvements to the critical roadway segments delineated in the Northwest Florida Hurricane Evacuation Restudy, U.S. Army Corps of Engineers, June 1999. Promotion of roadway improvements is a likely component to Escambia County's participation with the Pensacola Metropolitan Planning Organization and interaction with the Florida Department of Transportation (FDOT) (also, see Objective 11.A.7 and the policies there under).

Escambia County Policy 14.A.3.2 identifies the level of service standards for public facilities which are within the jurisdiction of Escambia County, as provided by F.A.C. 9J-5.005(3) and F.A.C. 9J-5.015(3)(b)3. These standards shall be those found in the other comprehensive plan elements of this ordinance (reference LOS contained in Policies 8.A.1.3, 8.B.2.3, 10.A.2.2, 10.B.2.3, 10.C.2.3, 10.D.2.3, and 12.A.4.9; also, see section 6.06). (Ord. No. 2002-38, § 3(Att. A), 8-15-2002)

The Escambia County Code of Ordinances establishes that the County shall ensure the availability of suitable land for utility facilities necessary to support proposed development by allowing utilities as permitted uses in all land use categories. (Ord. No. 2002-38, § 3(Att. A), 8-15-2002) Policy 7.A.7.1. The County shall include land acquisition within its capital improvements element and within its capital improvements program (reference Policy 14.A.5.1) when necessary to provide for public lands for County owned facilities. (Ord. No. 2002-38, § 3(Att. A), 8-15-2002) Policy 7.A.7.2.

The County shall continue to enforce the public access requirements of the Coastal Zone Protection Act of 1985. Where the public has a legally established prescriptive easement through private lands to lands waterward of the CCCL and/or seaward of mean high tide or waterline by prescription, or any other legal means, development or construction shall not interfere with such right of access unless a comparable alternative access way is provided. The developer or applicant shall have the right to improve, consolidate, or relocate such public access ways so long as they are:

A. Of substantially similar quality and convenient to the public.
B. Approved by the BOA.
C. Consistent with the comprehensive plan.

6.2.2.1 Existing

The existing transportation infrastructure on Perdido Key includes pedestrian pathways and roadways. Escambia County maintained roads on Perdido Key include, but are not limited to, River Road, Don Carlos Drive, Gongora Drive, and Johnson Beach Road (see Figures 6.1A and 6.1B in Appendix A).

The main roadway traversing the majority of Perdido Key is SR 292 (Perdido Key Drive), a two-lane state roadway which spans Perdido Key from the Alabama/Florida state line east and then takes a northerly route to the Theo Baars Bridge. SR 292 (Perdido Key Drive) is a significant coastal, east-west route connecting the rapidly growing communities in coastal Alabama (Gulf Shores and Orange Beach) with those in Florida (Perdido Key and Pensacola). Alabama Route 182, which connects to SR 292, is a 4-lane divided roadway with bicycle lanes and sidewalks. SR 292 is the only through route on Perdido Key and, beyond the Theo Baars Bridge provides access to US 98 (Lillian Highway) by intersecting with CR 293 (Bauer Road) or SR 173 (Blue Angel Parkway). SR 292 provides access to the following regional facilities: PKSP, Big Lagoon State Park, and the Perdido Key Area of the GUIS (Johnson Beach).

Escambia County currently provides 6 public beach access areas. The public beach access areas include parking, trash receptacles and restroom facilities. Escambia County owns a total of 14.75 acres on Perdido Key.

Areas made available by Escambia County to allow access to the beach present additional effects to listed species habitat. Increased human traffic in areas designated as public access may condense uses, but also allow for pedestrian traffic to disperse from access points to other areas of the beach, including access to adjacent public lands. Certain public safety operations, such as those involving lifeguards, emergency vehicles, and law enforcement vehicles; emergency vehicular access; routine beach maintenance and sanitation may be increased to provide safety services increases in development.

The Emerald Coast Utilities Authority (ECUA), which is not a department of Escambia County and considered a private entity, provides potable water service to Perdido Key and much of southern Escambia County. The ECUA potable water facilities on Perdido Key are connected to the water supply and distribution system components on the mainland of southwest Escambia County. Between 1997 and 2002, ECUA funded and implemented a number of projects to improve the water distribution system pressure and water quality. These projects include placing into service a 3,000,000-gallon ground storage tank and Southwest Pumping Station near the intersection of Bauer and Sorrento Roads, dedicating the water produced by the Bronson Well to filling the 3,000,000-gallon ground storage tank near the Southwest Pumping Station, installing iron removal facilities at the Bronson, Lillian, and Villa Wells, and implementing a comprehensive distribution system flushing program in the southwest portion of the distribution system.

ECUA provides sanitary sewer service to Perdido Key and much of southern Escambia County. The ECUA wastewater system on Perdido Key is connected to wastewater system components

on the mainland of southwest Escambia County. Septic tanks near waterways have the potential to adversely affect surface water quality. Therefore, ECUA made sanitary sewer service available to Perdido Key Coves during 1997, and wastewater systems are in the design phase for Siguenza Cove and the Old River Road/Perdido Key Drive areas.

It is foreseeable that ECUA will continue to improve the pressure and capacity of the water distribution system serving the residents of southwest Escambia County, including Perdido Key and to provide their customers with potable water of the highest possible quality.

ECUA will continue to increase the design capacity of the existing lift stations and transmission lines and construct new lift stations and transmission lines to accommodate increased development in southwest Escambia County. Components of existing lift stations are replaced periodically in order to ensure wastewater system reliability. Proposed increases in capacity include construction of a 16-inch force main along Perdido Key Drive (SR 292) from Old River Road to the Gulfside Lift Station during FY 2014-2020.

6.2.2.2 Improvements

It is feasible to perceive Escambia County pursuing initiation of new construction to improve infrastructure and/or upgrade existing facilities, such as roads, buildings, or parking areas within the plan area. The County, in cooperation with other operating departments, shall review projects and maintain information regarding the impact of projects on hurricane evacuation times established by comprehensive plan objective 11.A.7. Increases in development may relate to needs to improve existing hurricane evacuation needs and abilities.

Traffic demands from increased development and a reduction of the level of service of existing roadways will likely require upgrades and expansion. Long-term impacts may include direct impacts to critical habitat for the PKBM adjacent to County maintained roads. Improvements to utilities are also likely to be required as a result of increases in development and demand. Improvements to public infrastructure have the potential to cause a decrease in use of nearby habitat due to increased disturbance levels. Impacts from future potential improvements to the driving surface of SR 292 (Perdido Key Drive) are not included in this HCP.

As described in the *Perdido Key Neighborhood Plan 2002 Update*, the need for public comfort and recreation amenities on the 6 County access locations is recognized and is currently being considered. An additional parcel has been acquired by the County in 2008. Four of the County beach access locations face the Gulf of Mexico and allow for public access to beach areas. Two of the County beach access locations face the Intracoastal Waterway along River Road and are being considered for possible public water related facilities. Several local businesses have expressed interest in helping to fund some of the improvements to the public access areas. The County will aggressively pursue these possible public-private funding opportunities. The Marine Resources Division and Engineering Departments are performing feasibility and permitting analyses for a public boat ramp at an additional site on the Intracoastal Waterway.

Escambia County has identified needs to provide a safe pedestrian and bicycle corridor along all County roadways on Perdido Key. This will be to encourage non-motorized transportation and to

provide increased recreational opportunities to Perdido Key residents. These improvements may affect PKBM habitat more than other listed species included in this HCP.

Plans for improvement of the three public beach access areas along Perdido Key Drive continue to be a possibility as needs increase with use and demand. Since financing has not been available, the County is exploring private-public relationships to help with implementation. Staff will continue feasibility analysis of developing dune walkovers, parking, public showers, restrooms and picnic areas in the County-owned areas.

Also of consideration for potential future effects relative to Escambia County are those activities necessary to implement the terms and conditions of the HCP and ITP (e.g., sea turtle monitoring, Code Enforcement, data collection, HCP management, etc.). Beach driving, pedestrian foot traffic, and other beach uses to accomplish tasks such as monitoring may affect listed species and habitats.

Other activities such as: planned coastal construction projects properly permitted by local, State, and/or Federal regulatory agencies, such as seawall repairs, beach nourishment, dune restoration, and removal of wind-blown sand, scientific monitoring and studies other than those related to PKBM, sea turtles and shorebirds have the potential to occur in the future on Perdido Key. Emergency shoreline protection projects properly permitted by local, State, and/or Federal regulatory agencies; and non-routine beach maintenance and sanitation, such as storm cleanup and removal of hazardous materials, debris and/or obstacles from the beach that pose a public health or safety risk following storms and other unforeseen circumstances (i.e., boat groundings, plane crashes, etc.) may all be possible occurrences.

6.3 Recreational Activities

Recreational activities on Perdido Key revolve around the mild climate and water related activities typical of the Gulf coast. Recreational swimming and sun bathing provide seasonal enjoyment for residents and tourists, and fishing, both on Old River and the Gulf of Mexico provide year round opportunities. Approximately half of Perdido Key is in public land that provides significant recreational opportunities.

The GUIS, Florida and Mississippi, was authorized by Act of Congress, Public Law 91-660, January 8, 1971, to provide for recognition of certain historic values such as coastal fortifications and other purposes such as the preservation and enjoyment of undeveloped barrier islands and beaches. Camping, hiking, birding, sunbathing, walking, sightseeing, swimming, biking, and fishing are many of the activities that are available at GUIS.

Most visitors come from within a 500-mile radius and include all or portions of the states of Georgia, Alabama, Florida, Mississippi, Tennessee, Louisiana, Texas and Arkansas. Since the GUIS is the nearest salt water beach to most of the nation's midsection, recreational beach use is the primary objective of most visitors. Significant numbers, nevertheless, visit the seashore to see and tour the cultural and historic features. The GUIS is the most heavily visited seashore in the National Park System, and one of the 10 most heavily visited National Park areas.

The Johnson Beach-Perdido Key Area of GUIS consists of approximately 1,100 acres along 7-miles of the 16.9-mile Key. The developed area of the GUIS -Perdido Key Area (prior to Hurricane Ivan) consisted of a 2.5- mile paved road, an entrance station, main parking lot, snack bar, ranger station, maintenance building, public restrooms and showers, picnic pavilions, and public swimming beach. Some of these facilities have been rebuilt, most in more landward locations.

PKSP is located in the center of Perdido Key and encompasses about 290 acres. The Park is bisected by SR 292 (Perdido Key Drive), providing 1.5-miles of Gulf of Mexico beachfront and Old River shoreline access. Two public access areas provide parking, bathrooms, boardwalks and picnic pavilions. The white sand beaches and rolling dunes covered with sea oats make this park a favorite destination for swimmers and sunbathers. Surf fishing is another popular activity.

Florida Point is part of the Gulf State Park (GSP) complex on Perdido Key in Alabama. The main portion of the complex is located in the City of Gulf Shores. The main complex in Gulf Shores offered 6,150 acres with 2-miles of white sand beaches including primitive camping, cottages, marina, golf, trails and fishing (saltwater and fresh water). The Florida Point portion, situated on the western part of Perdido Key adjacent to Perdido Pass provides fishing, swimming and sunbathing along the Gulf of Mexico beachfront. Two parking and public access areas are provided.

Escambia County Code of Ordinances Policy 11.B.6.3 states that protected lands held in public ownership shall be provided for public use, ensure the provision of facilities for outdoor recreation activities, including nature trails or boardwalks, waterway trails, interpretive displays, educational programs, wildlife observation areas, or picnic areas, whenever feasible. (Ord. No. 2002-38, § 3(Att. A), 8-15-2002)

The various public beach access and recreational opportunities available on Perdido Key have the potential to increase human foot traffic and other aspects related to recreational pursuits. Although educational material and kiosks are provided to promote protection of resources on Perdido Key, visitors may impact habitats through inadvertent and unauthorized activities. New developments on Perdido Key increase visitor use on public lands, which in turn increases disturbance to listed species from recreational activities (i.e. walking swimming, fishing, kite flying, etc.).

6.4 Beach Management Activities

6.4.1 Public Safety & Law Enforcement

Public safety, law enforcement and other emergency vehicles are provided unlimited access to all beaches within the HCP Plan Area. Both routine and emergency operations of vehicles on the beach have the potential to impact PKBM, sea turtles, and shorebirds.

The Escambia County Department of Public Safety works with the Department of Growth Management, the Planning Board and other appropriate agencies to develop adequate levels of service for fire and emergency medical services. These agencies and organizations work together

to incorporate best practices for the levels of service into documents such as the Comprehensive Plan, the Land Development Code and the local Building Code on Perdido Key, as well as creating support to ensure adequate funding is available.

Fire protection for Perdido Key was previously provided by a combination fire services. The Innerarity Point Volunteer Fire Department provided primary emergency response. Enhancements to fire protection have included full-time regional coverage by career firefighters 24 hours a day, 7 days a week; a Fire Services 5-year implementation plan for water supply enhancements coordinated with ECUA and increased fire prevention and education activities. Volunteer fire fighting resources are augmented by a small contingent of career firefighters throughout the County who are on-duty Monday-Friday from 7 AM to 4 PM. Additional resources will be needed for fire service enhancements as Perdido Key continues to grow. Improvements to the existing fire station on Perdido Key are being processed.

Public safety and law enforcement entities which utilize vehicles that have access to the beaches of Perdido Key are fire rescue, ambulances, County and state law enforcement, Florida Sate Park officers, and GUIS park rangers. These entities generally drive on the hard-sand portions of the beach as needed. Their presence and their access to the beach are essential to life saving and considered absolutely necessary.

The potential for impacts related to emergency and/or law enforcement vehicles on the beach may be slightly higher, in some respects, than for those associated with operation of vehicles by the general public. That is because these vehicles are required to respond to calls relating to public safety and law enforcement both day and night and at all locations on Perdido Key. This may require these vehicles to enter areas closed to the public, where listed species habitat exists. Life-threatening emergencies sometimes require access by Emergency Vehicle and Communications ambulances and fire trucks. The size and weight of these vehicles demand that they only be driven on hard packed sand. Due to the infrequent need for these large vehicles, the potential for impacts to listed species is relatively low.

Minimization of potential future impacts will be achieved primarily through HCP training of public safety personnel, as described elsewhere in this HCP.

6.4.2 Emergency Management Activities

In accordance with and pursuant to the authority of Florida Statutes, Chapter 252 the Escambia County Board of County Commissioners (BOCC) establishes emergency management regulations to provide effective and orderly governmental control and coordination of emergency operations, and further to establish and maintain an emergency management agency in support of the state comprehensive emergency plan and program. (Code 1985, § 1-24-76).

Provisions in Sec. 94-4 pertaining to vehicles on Perdido Key states the operation of this section shall be temporarily suspended by order of the County Administrator or his designee in the event of a state of emergency, such as war, declared or undeclared, insurrection, hurricane, flood, tornado or any other form of disaster or unforeseen circumstances that would threaten the destruction of life or property. This exemption shall be in effect through the duration of such

circumstances or as determined by the county administrator or his designee. This section shall not apply to authorized emergency vehicles, including, but not limited to police, fire, or rescue vehicles and equipment.

General responsibilities of the local emergency management agency include but are not limited to the following aspects:

(1) Reduction of vulnerability of people of the County to damage, injury, and loss of life and property resulting from natural or manmade catastrophes or hostile military or paramilitary action.
(2) Preparation for prompt and efficient rescue, care, and treatment of persons victimized or threatened by disasters.
(3) Provision of a setting conducive to the rapid and orderly start of restoration and rehabilitation of persons and property affected by emergencies.
(4) Provision of an emergency management system embodying all aspects of pre-emergency preparedness and post-emergency response.
(5) Assistance in anticipation, recognition, appraisal, prevention, mitigation of emergencies which may be caused or aggravated by inadequate planning for, and regulation of, public and private facilities and land use.
(Code 1985, § 1-24-83)

Escambia County has also developed a comprehensive emergency management plan. In order to ensure the health, safety and welfare of the community for the duration of each state of emergency declared in the County, the BOCC has adopted, by Resolution 2002-76 the Escambia County Comprehensive Emergency Management Plan, in accordance with F.S. ch. 252. A copy of the plan is on file with the clerk of the BOCC and the department of public safety division of emergency management. (Code 1985, § 1-24-84; Ord. No. 2002-28, § 5, 7-2-2002)

Due to the nature of an event requiring emergency response, there could be various effects to listed species in the Plan Area. Various needs to respond to emergency situations from homeland security to storm response that may affect habitat include beach driving, human foot traffic, and establishing temporary base stations among other components to emergency response.

6.4.3 Trash Collection & Beach Maintenance

Management of trash is important because trash left on the beach overnight may attract predators such as raccoons, foxes, crows, and ants. This is particularly important along those stretches of beach where natural plant communities are largely intact (e.g., in and around park lands) and foxes and raccoons are most abundant.

Escambia County contracts to a private entity to collect trash at the County maintained public beach accesses. The trash collection is scheduled to occur every Monday and Friday through-out the year. The contracted entity is responsible for replacing trash bag liners in all trash receptacles that are located at the public beach access areas and debris on the ground is collected within approximately 20 yards of each barrel. Public restrooms at the beach access areas are also washed down and cleaned twice a week and the toilet paper dispensers are refilled as required.

The County provides trash receptacles at the designated public parking and beach access areas to collect refuse discarded by beachgoers. The following trash receptacles are provided at the public beach access areas:

- Beach Access 1 Entrance: 3-4 trash receptacles
- Beach Access 2 Entrance: 3-4 trash receptacles
- Sandy Key Beach Access Entrance: 3-4 trash receptacles
- River Road: 1 trash receptacle
- Johnson Beach Road: 2 trash receptacles

Full restroom facilities exist at 2 of the 5 public beach access locations. Portable toilets may be utilized during beach events or other times of expected high levels of beach use. Pumping trucks should not present a significant concern for impacts to listed species as they have access to stable parking areas to clean the facilities. Sometimes tidal or other conditions necessitate the relocation or removal of the portable facilities from the beach. Additionally, the portable facilities are sometimes knocked over by tides, particularly during storms, or vandals. The overturned restrooms can pose an obstacle to PKBM and nesting turtles and may cause sanitation problems for beachgoers. These events are largely rare and dealt with in a timely manner.

There have been no documented PKBM, sea turtle, or shorebird vehicle interactions resulting from trash collection activities on Perdido Key. Minimization of future impacts associated with trash collection will be achieved through HCP training and other protective measures, as described elsewhere in this document.

Mechanical beach raking used to collect debris and trash from the beach may cause damage to sea turtle nests, particularly if the tongs on the raking machine are set below 4 inches (Witham 1982). Impacts to shorebird nests and chicks may also occur from beach raking. The County currently does not conduct mechanical raking of its beaches. However it is expected that limited mechanical raking may occur after a beach nourishment project is constructed. A permit from the State of Florida is required for mechanical beach cleaning and raking is limited to a 2-inch depth penetration. Specific details to minimize effects from beach raking will be defined by the County as necessary.

6.5 Artificial Beachfront Lighting

Escambia County does not have a beachfront lighting ordinance. However, Article 7.03.00 Exterior Lighting of their Land Development Code states “Artificial beachfront lighting should be designed and positioned in such a way that it is not disruptive or have an adverse impact on the activities of Florida’s endangered sea turtles.” The Florida Department of Environmental Protection (FDEP) guidelines for protection of nesting habitat, nesting females, and hatchling marine turtles from the negative effects of artificial can be found in their pamphlet titled “Sea Turtles and Lights.” During sea turtle nesting surveys lighting disorientation events of adult or hatchling sea turtles are provided to FFWCC. According to FFWCC records, there were six events since 2005 on the developed beaches of Perdido Key and the PKSP. All events were on loggerhead hatchlings turtles. Three events were attributed to sky glow, one to vehicle

headlights, and one to condo and pool lights, and streetlights. FDEP CCCL permit staff conducts a review of light on proposed new developments, single family, multi-family, condominiums and commercial. All lighting is required to be sea turtle lighting.

Both nesting and hatchling sea turtles are adversely affected by the presence of artificial lights near the beach (Witherington and Martin 2003). Experimental studies have clearly demonstrated that bright lights can deter adult female turtles from emerging from the ocean to nest (Witherington 1992). In areas where a glow of artificial light is present behind the dune, loggerhead turtles prefer to nest in the darker areas silhouetted by tall buildings and dune vegetation (Salmon *et al.* 1995a). Thus, many researchers have noted a relationship between the amount of lighted beach development and sea turtle nest densities.

Sea turtles tend to prefer dark beaches, but many do nest along lighted shorelines. Nesting close to artificial lighting can place the hatchlings at risk. This can affect the ability of hatchlings to properly orient to the Gulf of Mexico once they have emerged from the nest. Hatchling sea turtles exhibit sea-finding behavior. Timely emergence from the nest and movement to the Gulf of Mexico may be vital to their survivorship. Although the cues involved in sea finding are complex, hatchlings rely primarily on vision for proper orientation (Witherington and Martin 2003, Salmon *et al.* 1992, Lohmann *et al.* 1997). A combination of light and shapes is thought to be responsible. The extent to which one or the other drives the process may be a function of the relative strength of each stimulus. Hatchlings have a tendency to orient toward the brightest direction.

On natural undeveloped beaches the brightest direction is, in most cases, away from elevated natural features such as dunes and vegetation. On developed beaches, the brightest direction is often away from the Gulf of Mexico and toward lighted structures. Hatchlings unable to find the Gulf of Mexico, or delayed in reaching it, are likely to incur high mortality from dehydration, exhaustion, or predation (Carr and Ogren 1960, Witherington and Ehrhart 1987, Witherington and Martin 2003). Hatchlings lured into lighted parking lots or toward street lights are often crushed by passing vehicles (McFarlane 1963, Philibosian 1976, Peters and Verhoeven 1994, Witherington and Martin 2003).

Artificial lighting in and adjacent to dune habitats may also affect beach mice. Although the negative effects of light pollution have been demonstrated clearly for sea turtles (McFarlane 1963; Philibosian 1976; Peters and Verhoeven 1994), a lack of studies exist to address the effects of artificial lighting on other coastal species. Previous research on mainland populations of *P. polionotus* and other mice indicates that nights with bright moonlight may reduce movement of mice (Gentry and Odum 1957; Wolfe and Summerlin 1989; Brillhart and Kaufman 1991), and these effects are more pronounced in areas with little vegetative cover (Kaufman and Kaufman 1982; Kotler 1984; Price et al. 1984; Bowers 1988; Longland 1994). These findings suggest that increased artificial illumination associated with coastal development has the potential to impede movement of mice, particularly on fragmented landscapes characterized by remnants of fragmented dunes separated by large expanses of sand (Bird 2003).

Artificial lighting has the potential to compound the effects of introduced predators on PKBM by increasing predation risks. To reduce the harmful effects of artificial beachfront lighting, many

communities have adopted lighting regulations. Escambia County is in the process of developing and approving a "wildlife lighting" ordinance. The ordinance is designed to provide lighting restrictions all year to not only protect sea turtles, but also reduce lighting stressors to PKBM and shorebirds. See Appendix C for a proposed draft of the Escambia County Lighting Ordinance.

6.6 Beach Driving

The general public is not permitted to operate motorized vehicles on the beaches of Perdido Key. The following is described in Sec. 94-4 of the Escambia County Code of Ordinances Vehicles on Perdido Key.

(a) *Prohibited activity.* It is unlawful to operate a motor vehicle on public beaches off of the public roads, public parking areas, and private driveways, on that portion of the county known as Perdido Key which is bordered to the south by the waters of the Gulf of Mexico, to the west by the state line of Alabama, to the north by the waters of the Intracoastal Waterway, and to the east by the property of the U.S. Government. However, owners of private property and their families and guests may park their motor vehicles on their private property. Motor vehicles actively engaged in construction projects may be operated on sites for which building permits have been issued by the county.
(b) *Exemptions.*
(1) Notwithstanding the provisions of subsection (a) of this section, a motor vehicle may be operated upon the areas described in this section, provided the county administrator or his designee exempts, by permit, a motor vehicle from the provisions of this section, in his discretion, if the individual requests an exemption hereunder in writing establishing to the satisfaction of the county administrator or his designee that the use of such motor vehicle on the area described in subsection (a) of this section shall be used in connection with the operation of a concession or other business; provided further that the individual holds a valid occupational license for such concession or other business. A request for an exemption shall be in writing to the county administrator, and shall be accompanied by the following documentation: A valid occupational license, a contract or other sufficient written proof of permission of the property owner on which the business is operated to engage in the concession or other business activity; and any other evidence that the county administrator or his designee may require. This exemption shall apply only for the specific period of time allowed by the county administrator or his designee as specified in the permit issued.
(2) The operation of this section shall be temporarily suspended by order of the county administrator or his designee in the event of a state of emergency, such as war, declared or undeclared, insurrection, hurricane, flood, tornado or any other form of disaster or unforeseen circumstances that would threaten the destruction of life or property. This exemption shall be in effect through the duration of such circumstances or as determined by the county administrator or his designee.
(3) This section shall not apply to authorized emergency vehicles, including, but not limited to police, fire, or rescue vehicles and equipment.

According to the exemption in Section 94-(a)(1) a private entity may request authorization to drive on Perdido Key. Section 94-4 of the Escambia County Code of Ordinances allows

conditional use of vehicles on the beaches of Perdido Key in association with the normal operation of a private business. The following activities are authorized under this exemption:

- Utilization of an appropriate vehicle to transport beach lounges and associated materials to and from the beach is allowed outside of the turtle nesting season (November 1 – April 30). Refer to Florida Fish and Wildlife Conservation Commission guidelines regarding beach lounge placement at: http://myfwc.com/seaturtle/Beach%20Activities/Beach_Furniture.htm or See Appendix D
    - The applicant may utilize equipment necessary to evacuate materials in the case of an eminent landfall of a named storm or other disaster
- Utilization of a 4-wheel drive tractor or pickup to remove hazards to public safety and welfare off the beach
- Driving on vegetated areas of the beach is prohibited

The exemption letter is valid from January 1 through December 31 on an annual basis. Renewal for exemption require 10 working days for processing.

Although the exemption allows for the utilization of certain motorized vehicles on the beach, it is the applicant's responsibility to obtain necessary permission from individual property owners to cross private property.

An applicant for this exemption is advised that other State or Federal Agencies may also regulate these proposed activities. In the case of multiple jurisdictions regarding an activity, the most restrictive shall prevail. See Appendix E for an example of the exemption letter issued for this activity.

Other motorized vehicles on the beach may be related to wildlife surveys and lifeguard safety observations. Motorized vehicles may also pertain to all-terrain vehicles (ATVs). These lightweight vehicles have wide, low-pressure tires that minimize the potential for impacts compared to full size passenger vehicles.

If vehicles are on the beach during the sea turtle nesting season, this could result in damage to nests or potentially result in direct take of adult and hatchling sea turtles. Ruts left by vehicles in the sand may prevent or impede hatchlings from reaching the gulf following nest emergence. Vehicles and ATV's may also impact shorebird activity along the beach interface.

Potential impacts to PKBM habitat may occur if beach and dune driving disturbs dune structure and function. Vegetation disturbance and erosion promoting ruts may cause long lasting impacts if not restored.

6.7 Beach Cleanup

Current to development of this HCP, Escambia County does not have an established beach cleanup program that includes raking on Perdido Key. Individual condominium covenants may have established beach cleanup procedures through the development review process or State/Federal permitting. Although beach cleanup via raking is not established on Perdido Key,

trash receptacles with regular pickup are provided at County maintained public beach access areas on Perdido Key to reduce trash on the beach from public beach goers.

6.8 Recreational Beach Equipment

The use and storage of lounge chairs, cabanas, umbrellas, jet skis/boats, and other types of recreational equipment on nesting beaches can hamper or deter sea turtle nesting by adult females. This equipment can also trap and/or impede sea turtle hatchlings during their nest to sea migrations. The extent to which recreational equipment is impacting turtles on Perdido Key is unknown.

6.9 Special Beach Events

Special beach events occurring on Perdido Key are typically associated with warmer temperature months, but the milder climate of Perdido Key lends the opportunity for beach events to occur year-round. Escambia County does not currently have a specific permitting process for regulating special beach events on Perdido Key relative to listed species and habitat protection. Escambia County currently does have a permitting process established specifically authorizing the placement of tents for use in special events (See Appendix F for the Special Event Permit Application).

The FDEP is responsible for issuing special beach use permits for beach events under Chapter 62-33 FAC. The FDEP must be contacted to determine if a special beach event will meet qualifications for a field permit. To initiate the process to obtain authorization for special beach events an applicant shall contact the FDEP at 877-314-1329 or (850) 595-8300.

Special events may include, but are not limited to the following:

- Volleyball tournaments;
- Company picnics;
- Family reunions;
- Organized runs and walks;
- Surfing contests;
- Weddings/receptions;
- Physical fitness competitions;
- Sand soccer games;
- Concerts; and
- Church events.

Large events scheduled on Perdido Key (e.g., Mullet Toss, the Mullet Man Triathlon, etc.) may require coordination with the Escambia County Engineering Department to develop a Maintenance of Traffic (MOT) Plan. The County shall be responsible for ensuring that establishments hosting annual events that generate a large amount of traffic contact the Escambia County Engineering Department and coordinate with the County on developing a MOT plan. In the past, MOT plans have not been considered for large events on Perdido Key. A MOT plan outlines how traffic will be routed through or around an event to ensure safety for participants as well as the traveling public. Special provisions to further protect listed species habitat shall be addressed in any MOT plan for large events if necessary.

The Mullet Toss Festival is likely the most attended organized beach event on Perdido Key. This event consists of individuals throwing a mullet from a 10-foot circle in Alabama across the state line into Florida along the beach adjacent to the Florabama Lounge. Historically, this event occurs in late April.

Special beach events can considerably increase the number of people and vehicles in a given area. Attendance at these events can lead to trash and other debris, but most times these events are organized to collect any trash generated during the event.

6.10 Beach Concessions

Escambia County does not currently have a specific permitting process for regulating the sale of goods and services by concessionaires on Perdido Key. The current process to acquire authorization for concession activities is regulated through the Escambia County Tax Collector. Beach concessionaires would be required to apply for a Local Business Tax Receipt (see Appendix G for a copy of the application).

Local Business Tax Receipts (formerly Occupational Licenses) are permits for conducting business within Escambia County and are administered through the local Tax Collector's office. Local Business Tax Receipts are renewable during August and September of each year, with September 30 marked as the expiration date of each. Fees for these Local Business Tax Receipts are $26.25 annually. Businesses that do not maintain a current Escambia County Local Business Tax Receipt are subject to a $250.00 fine.

While the requirement for obtaining most Local Business Tax Receipts is to fill out an application, there are sometimes other conditions of City, County, State, or Federal agencies to be met before a license can be issued. The following information provides other resources to guide a concessionaire in the process. Any applicant should contact the Escambia County Tax Collector Office for full details on the process.

The Department of Business and Professional Regulation , Division of Hotels and Restaurants, Panama City Beach District #6 (Phone: 850-487-1395) inspects the following businesses:

- Restaurants
- Food Concessions
- Mobile Food Units
- Take-Out
- Catering

The Department of Agriculture and Consumer Services (Phone: 800-435-7352) inspects the following:

- Grocery Stores
- Bakeries
- Food Processing Plants
- Bottling Plants
- Ice Plants

- Seafood Vendors
- Juice/Sno-Cone Concessions

Potential concession based activities occurring on Perdido Key may include, but not be limited to: recreation services, food and beverage services, and merchandise services. Some concession types may offer more than one type of service.

The FDEP is responsible for issuing special beach use permits for beach concessions under 62-33 FAC. The FDEP must be contacted to determine if a beach concession activity will meet qualifications for a field permit. To initiate the process to obtain authorization for beach concession authorization an applicant shall contact the FDEP at 877-314-1329 or (850) 595-8300.

Under current County regulations, any concessionaire desiring to drive on Perdido Key would be required to obtain a permit to drive on the beach, see Section 6.6 of this HCP. Concession vehicles must travel to and from their designated locations as referenced in the beach driving permit.

Potential impacts of concessionaires are associated with increased trash on the beach. The presence of concessionaires is likely to result in the congregation of people in the area surrounding the concession, which can exacerbate a refuse problem. When left on the beach overnight, this litter can attract fire ants and other predators or can create obstacles for nesting and hatchling turtles.

Another potential impact associated with concession operations is the rental of beach umbrellas. Umbrellas placement could potentially damage sea turtle nests. The appropriate procedures for umbrella placement are discussed above in Section 6.8.

6.11 Coastal Armoring

Seawalls, rock revetments and other types of armoring structures are oftentimes perceived to prevent shoreline erosion and inundation from wave action or flooding. Armoring structures have the potential to affect natural shoreline processes and the physical beach environment. Seawalls have been identified to prevent long-term recovery of the beach/dune system by prohibiting dune formation by wave inundation and wind-blown sand. However, reported topographic effects seaward and adjacent to seawalls often vary and conflict between project sites (Kaufman and Pilkey 1979, Pilkey *et al.* 1984, Kraus 1988, Kraus and McDougal 1996). Controversy surrounding these effects can be attributed to the difficulty in distinguishing between term “passive” and “active” erosion (Pilkey and Wright 1988). Passive erosion relates to the natural tendencies of the shoreline (e.g., erosion or accretion) at a site prior to the presence of a seawall. Active erosion results from the interaction of the wall with local coastal processes.

Erosion of adjacent downdrift beaches can occur if the updrift wall acts as a jetty and impounds sand (Kraus 1988, Tait and Griggs 1990). Additionally, seawalls can cause wave reflection and scour, processes that accelerate erosion seaward of the structure and steepen the offshore profile (Pilkey *et al.* 1984). Sand can move alongshore past a seawall, but it is not clear if the longshore

sediment transport rate changes (Kraus and McDougal 1996). Pilkey *et al.* (1984) contend that the intensity of longshore currents does increase in front of seawalls and this hastens removal of beach sand. Most likely, the extent to which any of these potentially harmful effects may be realized is largely dependent upon a structure's physical position on the beach relative to the surf zone (Kraus 1988, Tait and Griggs 1990). The closer a seawall is to the surf zone, the greater its potential for altering shoreline processes.

Use of seawalls, rock revetments and other types of armoring structures are not typical to the shoreline along Perdido Key. Escambia County has further established through *Policy 11.A.9.6: Beach Hardening Restrictions* that no hardening (seawalls, break-waters, revetments, etc.) of gulf beaches shall be allowed unless such hardening has been determined to have an overriding public purpose. Such determination, by necessity, will be made cooperatively between all regulatory agencies having authority over the gulf beaches.

6.12 Beach and Dune Restoration/Maintenance

Dune, berm, and/or beach fill projects considered as restoration or maintenance that occurs within habitat that is used by sea turtles for nesting may negatively affect sea turtles, especially if accomplished during a portion of the sea turtle nesting season. Long-term and permanent impacts could include a change in the nest incubation environment from a dune, berm, and/or beach fill project material. Short-term and temporary impacts to sea turtle nesting activities could result from project work occurring on the nesting beach during the active nesting or hatching period, changes in the physical characteristics of the beach from the placement of the dune, berm, and beach fill material and change in the nest incubation environment from the material.

The sea turtle nesting season for northwest Florida is considered to extend between May 1 and October 31. The timing of a dune, berm, and/or beach fill project activity could directly and indirectly impact nesting and hatchling sea turtles when conducted between these times.

Beach and dune restoration may have effects on PKBM similar to those affecting sea turtles. Short-term and temporary impacts to PKBM movement and foraging activities could result from project work occurring in their associated habitat. Some beach mice (all life stages) may be lost during the initial construction or expansion of beach accesses where heavy equipment may compact the sand within the access corridor. Any mice that survive initial construction activities may move outside of the disturbed area and construct burrows elsewhere in the vicinity. Following access construction, a bare gap of sand could form a barrier to limit beach mouse movement within the area thus altering regular movement patterns. Existing vegetation adjacent to a work area may be disturbed, limiting cover and food sources. Newly planted vegetation for restoration, will require time for establishment. Construction activities may generate noise disturbances along with trash and construction debris.

Such impacts would be expected to be limited to the construction phase of a particular activity. Since the life span of a beach mouse is estimated to be approximately 9 months, the loss of individual mice or the temporary loss of habitat could affect several generations of beach mice, but because beach mice can reproduce rapidly (every 26 days), colonization or recolonization of

a restored area would be expected within several months/generations. Once established though, dune restoration areas would likely provide suitable habitat for the PKBM.

Beach and dune restoration may have effects on wintering and migrating piping plovers. Construction activities could disrupt the piping plover foraging and resting activities. Infauna may be temporarily affected from the sand placement. Changes in the shoreline topography may affect the natural processes (overwash) beneficial for piping plover bayside habitat. Dunes and appropriately placed fill can prohibit overwash to bayside habitats form occurring. Plantings associated with dune restoration activities can remove shorebird nesting habitats.

6.12.1 Beach Nourishment

Beach nourishment is seen as an approach to combating erosion and providing shoreline protection. 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 or other sources may also be used. State and County rules require that the introduced material be of compatible and comparable physical nature to the native sands it replaces.

In some cases, beach nourishment is viewed as less impacting than armoring, but the potential exists for impacts to PKBM, sea turtles and shorebirds. It can affect the sea turtle reproductive process in a variety of ways. Although nourished beaches may provide a greater quantity of nesting habitat, the quality of that habitat may be less suitable than pre-existing natural beaches. Sub-optimal nesting habitat may decrease nesting, place an increased energy burden on nesting females, result in abnormal nest construction, and reduce the survivorship of eggs and hatchlings.

Nourished beaches tend to differ in several important ways from natural beaches. They are typically wider, flatter, more compact, and the sediments are moister than those on natural beaches (Ackerman *et al.* 1991, Nelson *et al.* 1987, 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 beaches, nesting success typically declines for the first one or two years following construction, even though more habitat is available for turtles (Trindell *et al.* 1998).

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 create a physical barrier and 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. Nourished beaches are virtually sterile (as a food supply for shorebirds) until the next warm season following the nourishment (Peterson et al 2000).

Escambia County proposes to construct a dune, berm, and beach restoration project (dune, berm, and beach fill project) along 6.5 miles of Gulf of Mexico shoreline on Perdido Key. The project is specifically located between Department of Natural Resources monuments R-1 and R-34. Approximately 1.25 million cubic yards of beach quality material is proposed to be used in the

project. The project is estimated to encompass approximately 197 acreages, which includes 77 acres of submerged marine bottom. The beach fill placement area extends from the seaward edge of "any vegetation line" Gulfward to minus 14 feet mean low water.

Take of federally listed species associated with beach nourishment projects is authorized under the Corps federal permits or federal projects issued for such projects. Minimization of impacts is usually established during consultations among Federal agencies as stipulated in Section 7 of the ESA. Environmental impacts associated with the Perdido Key beach nourishment project sponsored by the County have been addressed independently of this HCP.

6.12.2 Sand Fences

Sand fences are installed on the open beach to accelerate dune building. Sand fences have been known to trap hatchling turtles and act as barriers to nesting turtles (National Research Council 1990). Sand fences have been installed along the majority of the beach fronting the Gulf of Mexico on Perdido Key. All sand fences seaward of the CCCL are permitted by FDEP through the CCCL permit system. The design and placement of these fences are regulated through these permits to minimize negative impacts on turtles.

Sand fences may cause other affects to listed species if in place at the time of a tropical storm and subsequently become storm generated debris. The sand fences may result in irregular sand accumulation and affect localized primary dune formation and listed species habitat.

6.13 Coastal Construction

In addition to shoreline protection activities, there are a variety of other types of coastal construction activities, each of which may affect PKBM, sea turtles, and piping plover. These may include, but are not limited to the following:

- Construction of new upland structures and dune crossovers
- Repair/maintenance of existing upland structures and dune crossovers
- Installation of public infrastructure
- Repair of public infrastructure
- Dune restoration

Impacts may be more relevant to sea turtle nests, adults, and hatchlings. If vehicles are used on the beach in support of coastal construction both direct and indirect impacts to PKBM, sea turtle, and piping plover habitat; and sea turtle nests and hatchlings may also occur. Construction-related impacts can largely be minimized by requiring that non-emergency activities be performed outside of the turtle nesting season.

All construction seaward of the State's CCCL requires a FDEP permit that incorporates measures for sea turtle protection. Similar safeguards are contained within federal permits issued for coastal construction projects conducted below the MHWL.

7.0 ALTERNATIVES ANALYSIS

Escambia County, Florida is seeking Federal authorization for the incidental take of PKBM, sea turtles and piping plovers caused by private development, Escambia County owned lands infrastructure improvements, and impacts directly associated with developments within the State Road 292 right of way, (i.e. turn lanes, and driveways), as afforded under section 10(a)(1)(B) of the ESA.

In the absence of programmatic federal authorization for such incidental take, private landowners and the County could pursue a spectrum of management alternatives, including individual requests for incidental take from the USFWS. There are a number of possible alternatives, and this HCP will consider the most reasonable alternatives to cover the range of possibilities.

This analysis of alternatives is presented to satisfy requirements of the National Environmental Policy Act (NEPA). Alternatives are not critiqued in detail in HCPs. Complete detailed analysis of the environmental and social impacts of each alternative will be presented in the Environmental Assessment (EA) prepared for this HCP. The EA is prepared during USFWS review of the ITP application. A notice of availability for both the HCP and EA will be posted in the Federal Register and will be subject to a 60-day public comment period. USFWS must address all Public Comments.

Alternatives for private development and County infrastructure improvements are discussed separately. Private development alternatives analysis comparison includes development under current zoning district requirements compared to the preferred alternative, which incorporates additional conservation measures. County infrastructure improvement alternatives analysis includes improvements without conservation measures compared to improvements with additional conservation measures.

Both private development and County infrastructure improvements include the no action alternative. The following alternatives have been briefly evaluated relative to their impacts on PKBM, sea turtles and piping plovers; and are based on best available data. Historical baseline data regarding incidental take of PKBM, sea turtles and piping plovers exists relative to past ITP's issued.

7.1 Private Development

The following private development zoning districts currently exist on Perdido Key:

- R-1PK Residential district (Perdido Key), low density
- R-2PK Residential district (Perdido Key) medium density
- R-3PK Residential district (Perdido Key) high density
- C-1PK (Perdido Key) commercial district
- CCPK (Perdido Key) commercial core district
- CGPK (Perdido Key) commercial gateway district
- PRPK planned resort district (Perdido Key) medium density

The individual districts are described in more detail in Section 4.9.1 of this HCP. Specific requirements relative to each zoning district classification are represented in full context in Appendix B.

It is foreseeable that ECUA will continue to maintain and improve capacity of the water distribution system serving the residents of southwest Escambia County, including Perdido Key and to provide their customers with potable water of the highest possible quality.

ECUA will continue to increase the design capacity of the existing lift stations and transmission lines and construct new lift stations and transmission lines to accommodate increased development in southwest Escambia County. Components of existing lift stations are replaced periodically in order to ensure wastewater system reliability. Proposed increases in capacity include construction of a 16-inch force main along Perdido Key Drive from Old River Road to the Gulfside Lift Station during FY 2014-2020. Any impacts to listed species associated with ECUA activities will be required to be mitigated by ECUA.

7.1.1 Private Development Based on Current Zoning District Requirements

Under this alternative the current requirements of each zoning district would apply without modification to each proposed development within the respective districts. An applicant could possibly propose maximum build out for a particular development or commercial use. Maximum build out may include extra parking and amenities for residents and visitors, although still within specific zoning district requirements. Accommodations to users of a specific development could include more expansive decks, larger pools, etc. However, a full development scenario may not meet Federal, State, or County regulatory requirements including conservation of protected species. Additional time, effort, and finances may be required to redesign the developments and minimize impacts to provide conservation.

This alternative would not necessarily include additional provisions for conservation relative to a landscape scale approach. To have coverage under the ESA, individual property owners would need to apply for individual ITPs.

7.1.2 Private Development Based on Additional Conservation Measures (Preferred)

Under this alternative, the implementation of a programmatic HCP developed by Escambia County will provide opportunities to address PKBM, sea turtle, and piping plover conservation at a landscape scale while considering development interests of many individual property owners. Proposals for development will be primarily required to implement the most suitable and applicable minimization and avoidance measures.

As per Policy 11.A.1.8 (Clustering) of the Escambia County Code of Ordinances, siting of developments in sensitive natural areas will be avoided whenever feasible. In the event development must be permitted in such areas, adverse impacts shall be minimized through the use of clustering and variance of lot and setback requirements by the County. Further, development which may impact sensitive natural resources may be required to reduce construction "footprints," modify construction techniques, use innovative construction

techniques, and development techniques which minimize negative environmental impacts or results. To achieve sufficient clustering, density transfers may be accomplished on a one-to-one basis. Sufficient clustering is defined as that which is required to achieve protection of the natural resources.

Based on current zoning district requirements, the allowable lot coverage for R-1PK, R-2PK, and R-3PK requires that the pervious area shall be at least 30 percent of the total area (a maximum of 70 percent impervious cover ratio). The allowable lot coverage for C-1PK requires that the pervious area shall be at least 25 percent of the total area (a maximum of 75 percent impervious cover ratio). The allowable lot coverage for CCPK requires that the pervious area shall be at least 20 percent of the total area (a maximum of 80 percent impervious cover ratio). The allowable lot coverage for CGPK requires that the pervious area shall be at least 15 percent of the total area (a maximum of 85 percent impervious cover ratio). For additional conservation measures to be applicable to meet this alternative, an increase in the pervious area shall be factored into initial design plans. While pervious/impervious only relates to drainage under this ordinance, the consideration of natural habitat including soils and vegetation are important components of the project footprint.

The most recent trends in ITPs issued for development impacts on sites with PKBM habitat on Perdido Key have resulted in impervious surfaces between 25-26 percent of the property, as per data communicated by the USFWS at the HCP Technical Committee Meeting on August 8, 2008, held for this HCP. USFWS data on issued ITPs range between 55 to 75 percent of pervious surface in the form of PKBM habitat permanently protected. Proactive planning elements factoring the permitting trends listed above, as well as the implementation of conservation corridors from Section 10.1.5 of this HCP, shall be used in meeting requirements of fulfilling this alternative.

An Applicant shall implement mitigation provisions which must be followed by any development where impacts cannot be avoided to environmentally sensitive areas, primary dunes, or other natural resources identified in this HCP or the County's LDC. The provisions include a no net loss of habitat.

Even with the currently required minimization strategies, impacts to listed species may still occur. Thus additional conservation measures will be needed to offset impacts to listed species. The intent of this alternative is to allow reasonable use of property by landowners, while affording the most effective conservation for listed species. Since this HCP is developed for possible implementation by various stakeholders, specific site condition details shall be developed with components of Section 10.1 of this HCP.

The conservation elements of this HCP shall not supersede the need to acquire other required authorizations for development or site disturbance authorizations from all appropriate state and Federal agencies or County permitting requirements. All required DRC processes and procedures will be required as detailed in Section 9.0 of this HCP.

7.1.3 No Action Alternative

Under this alternative, this HCP would not be implemented and property owners or developers would be required to pursue individual HCPs and ITPs to obtain coverage under the ESA. Without the approval and implementation of this HCP, it is likely that many HCPs would be proposed by individual landowners or groups of landowners. The benefits of a streamlined HCP/ITP process would not be afforded to property owners applying for coverage under the ESA. Additional time, effort, and finances may be required on each individual development to further minimize a proposed development beyond standard zoning district requirements.

7.2 Escambia County Owned Lands and Infrastructure

It is feasible to perceive Escambia County pursuing new construction to improve infrastructure and/or upgrade existing facilities, such as County owned roads/right-of-ways, buildings, utilities, or parking areas within the Plan Area. An increase in private development and visitors to Perdido Key is likely to exceed the limitations of existing infrastructure. Additionally, increases in development may require improving existing hurricane evacuation needs and abilities. Although, improvements to State Road 292, including widening, may be studied in the future, this HCP does not include considerations of impacts to listed species from future potential widening of State Road 292.

As described in the *Perdido Key Neighborhood Plan 2002 Update*, the need for public comfort and recreation amenities on County-owned Perdido Key properties is recognized and is currently being considered. Four County owned properties front the Gulf of Mexico and allow for public access to beach areas. Two properties are located on the Intracoastal Waterway along River Road and are being considered for possible public use water related facilities. The Marine Resources Division and Engineering Departments are performing feasibility and permitting analyses for a public boat ramp at a sixth site on the Intracoastal Waterway.

Escambia County has identified needs to provide a safe pedestrian and bicycle corridor along all County roadways on Perdido Key. This will be to encourage non-motorized transportation and to provide increased recreational opportunities to Perdido Key residents. These improvements may affect PKBM habitat more than other listed species included in this HCP.

Plans for improvement of the County-based public beach access areas along Perdido Key Drive continue to be a possibility as needs increase with use and demand. Since financing has not been available, the County is exploring private-public relationships to help with implementation. Staff will continue feasibility analysis of developing dune walkovers, parking, showers, restrooms and picnic areas in the County-owned areas.

Also considered for potential future effects relative to Escambia County are those activities necessary to implement future resource management analysis needs (e.g., sea turtle monitoring, Code Enforcement, data collection, HCP management, etc.). Other activities such as non-routine beach maintenance and sanitation, storm cleanup and removal of hazardous materials, removal of debris and/or obstacles from the beach that pose a public health or safety risk following storms

and other unforeseen circumstances (i.e., boat groundings, plane crashes, etc.) may all be possible activities.

7.2.1 Escambia County Owned Lands and Improvements No Conservation Measures

Under this alternative the improvements to County infrastructure would be accomplished without modification to standard construction designs and activities. The County could possibly propose maximum impacts to PKBM, sea turtle, and shorebird habitats to accomplish required upgrades and improvements. Although all standard construction best management practices may be implemented, improvements may be initially designed with maximum habitat impacts. However, a maximum proposed impact scenario may not meet federal or state regulatory requirements including conservation of protected species. Time, effort, and finances may be required to redesign the projects to minimize impacts from proposed improvements.

Even with minimization and implementation of conservation measures incidental take of protected species could still occur. For the County to be covered for the take, they would need an ITP from the USFWS to be covered under the ESA.

7.2.2 Escambia County Owned Lands and Improvements Additional Conservation Measures (Preferred)

Under this alternative, the implementation of this HCP would provide opportunities to address PKBM, sea turtle, and piping plover conservation at a landscape scale in the preplanning stages of County infrastructure improvements. An additional benefit to this alternative would include the provision that County staff fully apprised of additional requirements to minimize impacts and incorporate the conservation measures of this HCP. Proposals for infrastructure improvements will be primarily required to implement the most suitable and applicable minimization and avoidance to impacts.

A streamlined process to review County infrastructure improvement proposals would save the County valuable budget resources and reduce internal review timeframes. If the infrastructure improvements incorporate the conservation measures of this HCP and requirements of the ITP, the County could recognize expedited timeframes to accomplish their projects.

7.2.3 No Action Alternative

Under this alternative, the County would not apply for a programmatic ITP from USFWS. Improvements to County owned land or infrastructure would be subject to standard individual proposed impact review by Federal and State agencies. Enhanced lines of communication to resource agencies would not be developed. The County would lose the ability to obtain expedited infrastructure improvement approvals. It is likely that individual HCPs would be submitted by the County to the USFWS. Escambia County would be required to develop separate conservation measures for individual projects, possibly requiring costly consulting services, which would increase budget requirements for improvement proposals.

8.0 ANTICIPATED LEVEL OF TAKE

8.1 Direct Impacts

Direct impacts are immediate effects of an action on the species or its habitat. Direct impacts to PKBM are those that may occur during construction of structures related to residential, commercial or resort activities as well as County infrastructure improvement. Sea turtles may be directly affected by construction activities and/or as the result of interaction between turtles and structures close to the beach. Direct impacts to piping plovers are not anticipated relative to construction activities. See Section 6.0 for details of potential direct impacts to listed species covered in this HCP.

The PBS&J photo-interpreted PKBM habitat is an interpretation of PKBM habitat for general estimation of PKBM habitat within the HCP Plan Area (see Appendix N for methods). Site specific determinations of PKBM habitat will be required per individual development requests on a specific property. Due to the large Project Area, various categories of potential private development, and various potential impacts from County infrastructure improvements, it is difficult to quantify the amount of take that is likely to occur as a result of direct impacts to PKBM, sea turtles, and piping plovers. The following factors, all of which are presently unknown, may influence the extent of take:

- The specific location where development activities covered under this HCP will occur (PKBM populations may be unknown on a specific project location; and sea turtle nest locations and piping plover occurrences may vary along the shoreline on Perdido Key);
- The type of development authorized (the size and scope of a particular development or construction activity may have greater potential for impacting PKBM, sea turtle and shorebird habitat);
- The time of year or season when a proposed activity will occur (for PKBM construction during the most active times of the year may have greater impact; and for sea turtles direct impacts are not likely to occur if construction is accomplished outside of the nesting season); and
- Whether construction impacts are temporary or permanent.

The PKBM is likely to be the species most affected by direct impacts from activities discussed in this HCP. Impacts during construction have the potential to result in direct effects to all activities (breeding, feeding, and sheltering) of PKBM. Direct and permanent habitat impacts from development will likely permanently displace PKBM populations and reduce carrying capacity. Direct and permanent habitat impacts from development will likely result in habitat fragmentation affecting breeding, feeding, and sheltering.

Implementation of the HCP would be predicated on a phased approach for anticipated take and documentation of PKBM, and would provide incentives for the County and property owners to further the recovery of PKBM, while authorizing accelerated take if certain conditions are met. The amount of PKBM habitat estimated to be permanently impacted during the 30-year coverage period of the ITP was based on all completed USFWS-permitted activities, whether conducted as section 10 (ITPs) or section 7 (biological opinions) actions under the Endangered Species Act.

While this HCP was being prepared, the USFWS continued to receive ITP applications and requests from federal agencies for actions on Perdido Key. Only the actions that were finalized by the USFWS through early 2008 were included in the baseline of PKBM take for this HCP. By law, the USFWS must process applications that are deemed statutorily complete or process section 7 formal consultation requests within 135 days.

As of October 2009, the USFWS has pending applications/actions amounting to 0.92 acres.

Spanish Key: 0.21 acre
Whalen: 0.19 acre
Evans: 0.21 acre
Fire Station: 0.31 acre
Total: 0.92 acre

For the 30-year coverage period of the ITP, up to 66 acres of PKBM habitat is anticipated to be permanently impacted, resulting in take of the PKBM. The take would result from private development activities, County owned lands and infrastructure improvement activities, and actions within the coverage area of the HCP. This excludes State-maintained roadways and improvements (e.g., SR 292 (Perdido Key Drive)). However, actions received by the USFWS and not processed during the HCP preparation or the ITP processing, must be considered and would be subtracted from the 66 acres of take.

The resulting 66 acres of anticipated permanent impact (Table 8.2) would include all private development and County owned infrastructure improvement activities and actions described in the HCP, regardless of whether the USFWS issues separate individual permits or conducts section 7 consultations with federal agencies during the 30-year timeframe. By this method, the County retains flexibility to provide oversight where take of PKBM habitat may occur on the Key.

Consideration of an exemption to the total acreage allotted for take, per phase, for large parcels greater than ten (10) acres may be considered if developers of said large parcels agree to avoid 70 % of PKBM habitat within the parcel. Additional design considerations would include requirements for parcels with PKBM habitat at higher elevations to maximize the amount of those areas with higher elevations to be in conservation. The take acreage issued to a large development parcel meeting this criteria would still be deducted from the 66 acres of overall take, but not count against take allotted within the associated phase timeframe, unless feasible for the development to be phased.

Any potential impacts associated with future proposed improvements of the driving surface of SR 292 (Perdido Key Drive) and ROW is not included in the 66 acres of anticipated permanent impact. Future proposed improvements of the driving surface of SR 292 (Perdido Key Drive) will be analyzed through an EIS and as stated previously in this HCP, is not included in this HCP.

Data or information used:

PKBM Habitat as of January 2009: 273.72 acres (based on PBS&J aerial interpretation & concurrence by USFWS & FFWCC)

Total take authorized (as a result of either section 7 or 10 activities) for PKBM habitat from 2004-08 (Table 8.1):
8.34 acres

History of issued take of PKBM habitat from 2004-08 related to zoning district (Table 8.2; Appendix A: Figures 4.13A through 4.13I):

- R-1PK – 1 property; single-family 17% of PKBM habitat impacted on property
- R-2PK – 0 properties
- R-3PK – 5 properties; Multi-family; average of 32% of PKBM habitat impacted on properties
- PR PK – 1 property; Multi-family; 45% of PKBM habitat impacted on property
- C-1 PK - 1 property – partial, 100% of PKBM habitat impacted on property
- CC PK – 2 properties; Multi-family/commercial; average of 45% of PKBM habitat impacted on properties

The provision of additional Conservation Measures and Mitigation for the Perdido Key – wide HCP/ITP:

- Include covenants or deed restrictions to prohibit ownership of cats or ferrets (ferrets included as per pers. comm. Dr. John Himes, FFWCC) on Perdido Key for those requesting coverage under the County's ITP. For developments considered as rebuilds utilizing the County's ITP with existing cats or ferrets, those animals shall be registered with the County, obtain a County license annually, and kept indoors at all times.
- The County will enhance animal control enforcement efforts by dedicating more County staff (i.e. animal control officers) to provide patrol and ensure compliance for animals that are not under the direct control of their owners. As per County Ordinance Chapter 10 Section 10-3 (Code 1985, § 1-4-3), *Direct control* means immediate, continuous physical control of an animal at all times such as by means of a fence, leash, cord, or chain of such strength to restrain the same. In the case of specifically trained or hunting animals which immediately respond to such commands, direct control shall also include aural and/or oral control, if the controlling person is at all times clearly and fully within unobstructed sight and hearing of the animal.
- The County will also increase fines for free roaming pets through a separate fee table established for the barrier islands of Escambia County (i.e. Perdido Key and Pensacola Beach). Chapter 10 of the Escambia County Ordinances addresses fees (Section 10-6) and animal control (Section 10-11 and Section 10-12) in relation to defining free roaming animals.
- Siting of developments and structures to preserve and maximize the continuity of dune habitats 3 feet above FEMA base flood elevations within a project site and with habitats on adjacent lands.

- To the maximum extent practicable, areas maintained as habitat corridors shall have widths at least 10% of the corridor length (i.e. if a corridor is 200 ft long (N-S) its width should be 20 ft). This would be applicable to all corridors 500 feet or less in length.
- Provide variance for building height increase if parking is provided under the building.
- All private property owners within the area covered by the HCP shall contribute to the fund by paying the annual fee of $201.00 on their property tax ($6,000 over the life of the ITP)[1].
- No transfer of zoning densities in the PR PK zoning district shall be allowed.

The phased approach for the take is based on: 1) the current status of the PKBM, 2) the time needed for the County to implement the HCP/ITP conditions successfully, and 3) the lag time for the HCP conservation measures to be realized for beach mouse recovery.

Years 1 to 5 of ITP – 10.9 acres

Zoning District	Acres of PKBM Habitat Impacted
R-1 PK	0.2
R-2 PK	0.8
R-3 PK	2.0
PR PK	5.6
C-1 PK	0.9
CC PK	1.4
CG PK	0.0
Total	10.9

At the end of five years the following must have been documented or completed:

- .
- Documentation of PKBM throughout 50% of suitable PKBM habitat in PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM west of PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- PKBM habitat impact (acres) in each zoning area restricted as shown.

The impact to PKBM habitat may be accelerated to twelve (12) acres within the first five (5) years provided: 1) PKBM are documented on at least one existing ITP or section 7 covered property, 2) feral and free-ranging cats are effectively controlled as evidenced by the lack of cat

[1] Parcels exist on Perdido Key within the HCP coverage area that contain PKBM habitat. However, upon review it may be determined that the habitat on these parcels and the developed nature of the area surrounding the parcel have isolated the habitat to the extent that PKBM would not be expected to occur on the site. Thus, development, substantial improvement, or damage repair of these sites seeking coverage for potential liability under the ESA would not be needed. However, these sites may have supported PKBM historically when connected to other habitats and may continue to provide value to the conservation of the beach mouse. Therefore, these properties would be required to minimize the developed part of the site, connect to adjacent native habitats if available, plant native dune plant vegetation, install wildlife lighting, keep pets, especially cats indoors, and use predator proof trash receptacles, and contribute on an annual basis to the PKBM conservation fund ($201.00 per year).

tracks over 90% of PKSP at the end of year one (1) and maintained throughout the five (5) years, and three (3) acres of PKBM habitat acquired and rezoned to S1-PK.

Years 1 to 10 of ITP – 21.9 acres (cumulative including acres taken in years 1 to 5)

Zoning District	**Acres of PKBM Habitat Impacted**
R-1 PK	0.4
R-2 PK	1.5
R-3 PK	4.1
PR PK	11.2
C-1 PK	1.8
CC PK	2.9
CG PK	0.0
Total	21.9

At the end of ten years the following must have been documented or completed:

- Documentation of PKBM throughout suitable PKBM habitat in PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM throughout 75% of the acreage of suitable PKBM habitat in GUIS as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM east & west of PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- PKBM habitat impact (acres) in each zoning area restricted as shown.

- The impact to PKBM habitat may be accelerated to 25 acres within years five (5) to ten (10) provided: 1) PKBM are documented on at least one existing ITP or section 7 covered property both east and west of PKSP; and 2) feral and free-ranging cats are effectively controlled as evidenced by the lack of cat tracks over 90% of PKSP and 90% of GUIS between the PKSP's west boundary and the eastern edge of the parking lot at Johnson Beach at the end of year one (1) and maintained throughout the five (5) years; and five (5) acres of PKBM habitat acquired and rezoned to S1 – PK.

Years 1 to 15 of ITP – 32.9 acres (cumulative including acres taken in Years 1 to 10)

Zoning District	**Acres of PKBM Habitat Impacted**
R-1 PK	0.6
R-2 PK	2.3
R-3 PK	6.1
PR PK	16.8
C-1 PK	2.7
CC PK	4.3
CG PK	0.1
Total	32.9

At the end of 15 years the following must have been documented or completed:

- Documentation of PKBM throughout PKSP suitable PKBM habitat in PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM throughout 75% of the acreage of suitable PKBM habitat in GUIS as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM east & west of PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- PKBM habitat impact (acres) in each zoning area restricted as shown.

- The impact to PKBM habitat may be accelerated to 35 acres within years ten (10) to fifteen (15) provided: 1) PKBM are documented on at least three (3) existing ITP or section 7 covered properties both east and west of PKSP; and 2) feral and free-ranging cats are effectively controlled as evidenced by the lack of cat tracks over 90% of PKSP and 90% of GUIS between the Park's west boundary and the eastern edge of the parking lot at Johnson Beach at the end of year one and maintained throughout the five years; and five (5) acres of PKBM habitat acquired and rezoned to S1 – PK.

Years 1 to 20 of ITP – 44.1 acres (cumulative including acres taken in years 1 to 15)

Zoning District	Acres of PKBM Habitat Impacted
R-1 PK	0.9
R-2 PK	3.0
R-3 PK	8.2
PR PK	22.5
C-1 PK	3.6
CC PK	5.8
CG PK	0.1
Total	44.1

At the end of 20 years the following must have been documented or completed:

- Documentation of PKBM throughout suitable PKBM habitat in PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM throughout 80% of the acreage of suitable PKBM habitat in GUIS as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County documentation of PKBM west of PKSP and between PKSP and GUIS as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- PKBM habitat impact (acres) in each zoning area restricted as shown.

- The impact to PKBM habitat may be accelerated to 45 acres within years fifteen (15) to twenty (20) provided: 1) PKBM are documented on at least 25% of existing ITP or section 7 covered property both east and west of PKSP on both the north and south sides of Florida 292; and 2) feral and free-ranging cats are effectively controlled as evidenced by the lack of cat tracks over 90% of PKSP and 90% of GUIS between the Park's west boundary and the eastern edge of the parking lot at Johnson Beach at the end of year one (1) and maintained throughout the five (5) years; and six (6) acres of PKBM habitat acquired and rezoned to S1 – PK.

<u>Years 1 to 25 of ITP – 55 acres (cumulative including acres taken in years 1 to 20))</u>

Zoning District	Acres of PKBM Habitat Impacted
R-1 PK	1.1
R-2 PK	3.8
R-3 PK	10.2
PR PK	28.1
C-1 PK	4.5
CC PK	7.2
CG PK	0.1
Total	55

At the end of 25 years the following must have been documented or completed:

- Documentation of PKBM throughout suitable PKBM habitat in PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM throughout 80% of the acreage of suitable PKBM habitat in GUIS as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM west of PKSP and between PKSP and GUIS.
- PKBM habitat impact (acres) in each zoning area restricted as shown.
- The impact to PKBM habitat may be accelerated to 57 acres within years twenty (20) to twenty-five (25) provided: 1) PKBM are documented on at least 35% of existing ITP or section 7 covered property east and west of PKSP on both the north and south sides of Florida 292; and 2) feral and free-ranging cats are effectively controlled as evidenced by the lack of cat tracks over 90% of PKSP and 90% of GUIS, as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County; and ten (10) acres of PKBM habitat acquired and rezoned to S1 – PK.

Years 1 to 30 of ITP – 66 acres (cumulative including acres taken in years 1 to 25))

Zoning District	Acres of PKBM Habitat Impacted
R-1 PK	1.3
R-2 PK	4.5
R-3 PK	12.3
PR PK	33.7
C-1 PK	5.4
CC PK	8.7
CG PK	0.1
Total	66

At the end of 30 years the following must have been documented or completed:

- Documentation of PKBM throughout PKSP suitable PKBM habitat in PKSP as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM throughout 80% of the acreage of suitable PKBM habitat in GUIS as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- Documentation of PKBM east & west of PKSP and between PKSP and GUIS as determined by surveys agreed to by the USFWS, FWC, PKSP, GUIS and the County.
- PKBM habitat impact (acres) in each zoning area restricted as shown.

Calculation/Estimation of Take

Species which are protected across their ranges have lower probabilities of extinction (Soulé and Wilcox 1980). Beach mouse populations naturally persist through local extirpations due to storm events or the harsh, stochastic nature of coastal ecosystems. Historically, these areas would be recolonized as population densities increase and dispersal occurs from adjacent populated areas. From a genetic perspective, beach mice recover well from population size reductions (Wooten 1994), given sufficient habitat is available for population expansion after the bottleneck occurs. As human development has fragmented the coastal dune landscape, beach mice can no longer recolonize along these areas as they did in the past (Holliman 1983).

As a continuous presence of beach mice or suitable habitat along the coastline is no longer possible and any hurricane can impact the entire range of each subspecies, the probability of beach mice persisting would be enhanced by the presence of contiguous tracts of suitable habitat occupied by multiple independent populations (Danielson 2005). The history of the PKBM illustrates the need for multiple populations (a now extirpated population was the source of the two remaining populations of the subspecies) (Holler et al. 1989; Service 2006). Maintaining multiple populations of beach mouse subspecies provides protection from total loss (extinction), especially when migration and relocations are possible (Oli et al. 2001). However, conservation of each beach mouse subspecies necessitates protection of genetic variability throughout its range (Ehrlich 1988). Preservation of natural populations is therefore crucial, as the loss of a population of beach mice can result in a permanent loss of alleles (Wooten 1999). This loss of genetic variability cannot be regained through translocations or other efforts.

One of the HCP goals is to ensure that PKBM persist throughout Perdido Key in suitable habitats on both public and private lands. Four items were evaluated in determining take levels for the HCP: 1) the amount of PKBM habitat on private lands, 2) currently authorized take of PKBM, 3) PKBM within existing zoning districts on Perdido Key, and 4) conservation of higher elevation dune habitats to promote and ensure connectivity and contiguous areas of suitable PKBM habitat.

Currently Authorized take of PKBM

USFWS-issued take for section 7 and 10 actions provided under the ESA were summarized from 2004-2008. For that time period, 8.34 acres were covered for incidental take in connection with private development on Perdido Key in Florida (Table 8.1).

Table 8.1: Endangered Species Act section 7 and 10 actions completed by the U.S. Fish and Wildlife Service from 2004-2008 and acres of beach mouse habitat affected.

Project	ESA Action	Total BM habitat onsite	BM habitat impacted/lost	Habitat to remain onsite
Magnolia West	section 7 - BO	11.00	5.20	5.80
Palazzo	section 10-ITP	1.72	0.58	1.14
Retreat	section 10-ITP	0.88	0.21	0.67
Searinity	section 10-ITP	0.87	0.32	0.55
Norton	section 10-ITP	1.03	0.17	0.86
Paradise Isle	section 7- BO	2.07	0.91	1.16
Island Club	section 10-ITP	0.67	0.31	0.36
Marquesas	section 10-ITP	1.39	0.50	0.89
Lorelei	section 10-ITP	0.57	0.14	0.43
Total			**8.34**	

Zoning Districts

The existing covered take was identified for each existing zoning district on Perdido Key.
The zoning is fairly uniform across the Key in that the different zoning districts tend to be concentrated or located in one area or along one section of the Key. Based on the impacted habitat from 2004-2008 it was determined how many acres of PKBM habitat per zoning district could potentially be lost in the 30-year ITP (Table 8.2). However, there was no covered take provided for the R-2 PK, S-2 PK, and CG PK zoning districts during 2004-2008.

Table 8.2: PKBM habitat in Perdido Key zoning districts.

Zoning District	The number of acres in the zoning districts as of 2009 that are PKBM Habitat	Percent of zoning district in 2009 that is PKBM Habitat (acres)	The number of acres affected in the zoning districts from 2004-08 that are PKBM Habitat	The avg. number of acres lost per yr in each zoning district that are PKBM Habitat	The total number of acres projected to be lost in 30 yrs based only on 2004-08 actions affecting PKBM Habitat
R-1 PK	28.9	27.2	0.2	0.0	1.3
R-2 PK	32.8	14.5	0.0	0.0	0.0
R-3 PK	60.1	30.2	1.8	0.4	13.1
PR PK	80.2	14.3	4.6	1.2	36.0
C-1 PK	22.5	31.3	0.6	0.2	6.0
CC PK	45.5	25.2	1.2	0.3	9.2
CG PK	2.6	5.0	0.0	0.0	0.0
S-1 PK	0.8	24.9	0.0	0.0	0
Total	**273.4**		**8.3**		**65.6**

The S-1 PK district was not further analyzed; S-1 PK is zoned for conservation; only a small amount (Escambia Co Fire Station 0.8 acres) on PKSP was included in the original habitat analysis conducted by PBS&J. Thus, only PKBM habitat loss in the R-2 PK and CG PK zoning districts was projected. For the R-2 PK zoning district a comparison was completed between requests made to the USFWS for the need for ESA coverage in the R-2 PK and R-3 PK zoning districts. This provided an estimate of how much activity may result in the zoning district in the future. There were about half the number of requests for habitat review for the R-2 PK zoned properties than for the R-3 PK zoned properties (four (4) vs eight (8) properties). Thus, about half the amount of habitat lost for R-3 PK was used. There is only one property zoned CG PK and it currently has little PKBM habitat. Thus, based on the amount of habitat an estimate of 0.1 acre of PKBM habitat was used.

The current baseline of PKBM habitat percentage in each zoning district should be maintained at a minimum to ensure that at least the current ratio of habitat to non-habitat is maintained. There should be no net loss of the current percentage of PKBM habitat within each zoning district at the end of the 30-year ITP. Thus, the percentage of PKBM impacted habitat within each zoning district from 2004-2008 (baseline) was compared to the 30-year projected loss. The difference and offset acres needed between the baseline and 30-year percentages was calculated. Then, the final total of PKBM habitat estimated to be lost within the 30-year ITP was calculated (Table 8.3).

Table 8.3: Final calculation of PKBM habitat to be lost during the 30-year ITP.

Zoning District	PKBM habitat acres lost for the 30-yr ITP if based only on 2004-2008 actions	Final PKBM habitat acres lost for the 30-yr ITP based on 2004-2008 actions, maintaining baseline habitat percentage within zoning districts, and requests for determination of ITP coverage needs
R-1 PK	1.3	1.3
R-2 PK	0.0	4.5
R-3 PK	13.1	12.3
PR PK	36.0	33.7
C-1 PK	6.0	5.4
CC PK	9.2	8.7
CG PK	0.0	0.1
Total	65.6	66*

*An additional five (5) percent of take may be administratively authorized with concurrence by the Service as a contingency for unforeseen circumstances. This administrative authorization will constitute up to three and three-tenths (3.3) acres of take. Prior to receiving Service concurrence, the County will additionally create/restore and perpetually maintain PKBM habitat on a 2:1 ratio of up to six and six-tenths (6.6) acres.

Comment [MM1]: Based on continued discussions with Tim Day, Escambia County.

Incidental take of PKBM and sea turtles could occur as a result of vehicular access to the beach. Vehicular impacts could directly affect all life history stages of beach mice, as described in Section 5.3.1. There were no available documents recording historical cases of direct impacts to PKBM due to beach driving on Perdido Key. However, the impacts on PKBM from public vehicular access to the beaches are most likely indirect impacts, with unauthorized vehicular access presenting further difficulty in quantification. Potential indirect impacts include degradation of habitat by vehicles damaging/removing dune vegetation, and the use of vehicles to gain access to remote beaches where human trespassing, garbage, and excrement in the dunes might not otherwise be a problem.

During construction, nesting turtles might encounter obstacles or bright security lights on the beach that could cause them to abandon their nesting attempt. Lights from construction sites and structures post development may also alter nesting activities and result in disorientation of newly hatched sea turtles.

It is difficult to quantify future incidental take levels potentially resulting from vehicular activity on the beach. Incidental take of sea turtles can occur as a result of vehicular access to the beach. Impacts can be direct or indirect and affect sea turtle nests, eggs, adults, and/or hatchlings. Most effects are likely to result from beachgoers recreating in the vicinity of turtle nests.

Direct impacts to piping plovers and other shorebirds are expected to be minimal. Construction activities may directly affect the resting and foraging activities by disturbing shorebirds present along the shore while specific activities are occurring. Bayside seawall construction may cause a loss of foraging and rousting habitat.

8.2 Indirect Impacts

Indirect impacts to the PKBM, sea turtles and piping plovers are likely to be the result of increased human activity from new residential development, use of commercial facilities and improvements to County infrastructure. Indirect impacts may include increased pedestrian traffic resulting in disturbance, introduction of house pets, attraction of feral animals, increased trash, disturbance due to lighting, and habitat fragmentation among other factors. Increased human disturbance can be reasonably expected on Perdido Key, PKSP and GUIS.

An increase in development with associated loss of PKBM critical habitat may further compromise the natural beach ecosystems as a whole. Fragmentation of vegetated habitat may result in indirect stress on feeding and breeding capabilities of PKBM. A substantially greater potential for take relates to changes in beach/dune characteristics caused by the physical disturbance from development and/or county infrastructure improvements. The USFWS considers that these types of impacts diminish the functional value of available habitat for PKBM, sea turtles and piping plovers and can therefore cause additional loss of carrying capacity.

8.3 Cumulative Impacts

Except areas set aside for wildlife and natural resources within the public lands, existing land uses on Perdido Key are primarily related to coastal development for human recreation and habitation. It is reasonably certain to expect that human occupancy and recreational use of Perdido Key will increase in the future.

There has been an increase in the number of multifamily developments on Perdido Key since 1995, typically being developed at the maximum density allowed. Into the early 2000s development or re-development continued. Single-family residences and small multi-family complexes have been sold for construction of high-rise/high density complexes (Perdido Key Neighborhood Plan 1997 as referenced in Escambia County 2003) and this trend continues into 2009. Projects that are within endangered or threatened species habitat will require section 7 or 10 permitting from the USFWS to be covered under the ESA. Those that are not will nonetheless, add to the recreational pressures on the beaches and dunes of Perdido Key.

Reasonably foreseeable projects and their cumulative impacts have been considered in this HCP. The FATPO recently amended the 2020 Cost Feasible Long Range Transportation Plan to include four-laning SR 292 (Perdido Key Drive) from the Alabama Line to Innerarity Road. The roadway runs adjacent to and includes habitat for the PKBM along the east–west length of Perdido Key. The right-of-way, where potential roadway improvements/expansion may be proposed to occur, contains portions of PKBM designated critical habitat. Impacts relative to potential future proposed plans for expansion of SR 292 (Perdido Key Drive) are not included or covered in this HCP.

After Hurricane Ivan, the Federal Emergency Management Agency (FEMA) provided funds for Escambia County to construct an emergency berm for storm protection along the Gulf of Mexico beachfront. While the berm project may potentially have adversely affected the PKBM during construction, the project restored dune habitats and connectivity to over 4 miles of beachfront PKBM habitat. The berm protected landward PKBM habitats that are naturally restoring after the 2004 and 2005 hurricane seasons. An emergency consultation was completed for this work.

The USFWS provided the following recommended guidance for minimizing and avoiding project impacts to listed species which will be followed by a biological opinion after the emergency work is complete. Measures pertinent to the PKBM include:

(1) berm material needed to be placed as far landward as possible except where dunes remain to maximize the extent of dune growth and provide habitat connectivity;

(2) berm material needed to be placed in a low, wide configuration to encourage dune vegetation growth and natural acceleration of the dune restoration process;

(3) material for the berm needed to be compatible with existing beach sand as determined by the FDEP, and should not contain more than 10 % fines, and be free of cobbles, gravel, or debris;

(4) the berm needed to be planted with native dune species of vegetation to accelerate the berm stabilization process;

(5) equipment staging and storage needed to be located outside of vegetated dune habitat and public lands.

(6) vehicle and equipment beach access sites needed to be minimal in number, designated and marked, and be in areas devoid of vegetation; and

(7) all areas impacted by the work needed to be restored upon completion of the berm construction.

Remediation may be required if adverse impacts to listed species habitat are documented. The berm has been constructed and vegetation installed. Upon receipt of the final report for the project, the USFWS will complete the biological opinion and consultation for the work.

Escambia County is currently planning a beach nourishment project for Perdido Key. The County has received funds from the State of Florida to conduct a feasibility study for the beach nourishment project. A large portion of the feasibility study is to locate suitable offshore borrow areas that contain an adequate quantity and quality (beach compatible) nourishment material. The project is in the planning and the State and federal permitting process.

While the nourishment project may potentially adversely affect the PKBM during construction, the project would help restore beach and dune habitats and connectivity within over 4 miles of beachfront. The nourished beach and restored dunes would also protect landward PKBM habitats.

The USFWS completed a biological opinion for the project's Corps permit in a second beach nourishment project planned by the Pensacola Naval Air Station (Navy) has proposed to dredge their navigation channel resulting in the need to place 8 million cubic yards of dredged material that is beach compatible. Because of the cost to pump the dredged material, Perdido Key is the

closest and most logical area to receive the material. Receiving areas include the Perdido Key offshore borrow site, the Pensacola offshore borrow site, a nearshore site at the eastern end of Perdido Key, and the beachfront of GUIS at Johnson Beach (Perdido Key) and Fort Pickens. Because Perdido Key has suffered erosion from the 2004 and 2005 storm seasons, a portion of the 8.0 million cubic yards could help in restoring beach and dune habitats Key-wide. The USFWS completed a biological opinion (BO) for the project's Corps permit in October of 2007.

Terms and Conditions of the BO, address the need to place the dredged material to enhance the natural dune restoration process and minimize negative affects to the PKBM, sea turtles, and piping plover. While the Navy project may potentially adversely affect the PKBM, sea turtles, and piping plover during construction, it could help restore beach and dune habitats and connectivity within over 16 miles of beachfront. The project would also protect landward PKBM habitats that are naturally recovering after the 2004 and 2005 hurricane seasons. The project is expected to be accomplished from late sometime in 2009.

9.0 ESCAMBIA COUNTY PERMITTING PROCESS

The Escambia County development review process varies depending on the type of development approval being requested. The Escambia County Development and Review Committee (DRC) separates development reviews based on a proposed development being minor, a subdivision, or commercial. An Escambia County Development Review Flowchart is provided in Appendix H1 as a reference to the process and procedures for review of proposed developments. The County also maintains a website which contains the process guidelines, submittal timeline requirements, and all required forms for various development review proposals at:

http://www.co.escambia.fl.us/Bureaus/DevelopmentServices/DevelopmentReviewCommitteeDivision.html

The fee schedules approved as of September 6, 2007 are located in Appendix H2. The fees schedule does not necessarily contain fees that would be associated with implementation of mitigation requirements or conservation measures associated with this HCP. The County shall establish any fee schedules relative to processing development approvals that may result in take of listed species and review for authorization to use this HCP.

The forms to be completed for the DRC process are outlined below and are hyperlinked to the documents on the County website (if this HCP is being reviewed electronically and the hyperlinks are activated). The forms are also provided in Appendix H3-H5 for reference. Applicants for the DRC process should contact the County and or access the County's website listed above to ensure all forms and requirements are current.

A Pre-application conference is required for ALL subdivisions of land, and may be requested for any other project type. The Pre-application submittal package shall be submitted to the DRC Coordinator, in the Department of Planning and Engineering by calling (850) 595-3472 to schedule an appointment. The County shall include on the Project Information Form and the Pre-application Package Submittal Requirements form a check box for any project that will occur on

Perdido Key. This check box shall be an initial trigger mechanism to involve review of a proposed project on Perdido Key relative to the County's ITP and this HCP.

Pre-Application Submittal Packages
Pre-application Conference

- Project Information Form
- Pre-application Package Submittal Requirements

The following sections provide a brief discussion of the requirements for proposed development review. Any applicant proposing to utilize this HCP specific to the County's ITP on Perdido Key are required to incorporate elements of Section 10 (MINIMIZATION OF IMPACTS) of this HCP. All County development requirements and processes will be considered as a component of the County allowing use of the ITP and HCP for specific development proposals.

9.1 Residential Development (Minor Developments)

Minor Development Site Plan reviews are required for small developments that meet the requirements of the Escambia County Land Development Code (LDC), including a division of land into five lots or less. If a subdivision of land is being proposed a pre-application conference is required prior to submitting the package for initial review (follow the requirements for a pre-application submittal listed on the County's website). Minor submittal packages shall be submitted at the Building Inspections Department at the Town & County Plaza. For information or to schedule an appointment call 850-595-3632.

Pre Application Conference (optional)

Initial Submittal

- Project Information Form
- Development Review Application
- Minor Development Site Plan Application Package Submittal Requirements

Additional Forms

- Airport Environs Overlay
- As Built Certification Form

Final Comparison Package

- Minor Site Plan Final Comparison Submittal Requirement

9.2 Planned Resort (Subdivisions)

A Pre-application conference **is required for ALL subdivisions of land**, and may be requested for any other project types. The Pre-application submittal package shall be submitted to the DRC Coordinator, in the Department of Planning and Engineering by calling (850) 595-3472 to schedule an appointment.

Preliminary Plat/Construction Plan reviews are required for all subdivisions of land with more than five lots. Submittal Packages shall be submitted to the DRC Coordinator, in the Department of Planning and Engineering by calling (850) 595-3472 to schedule an appointment.

Pre-Application Conference (required)

- Pre-application package submittal requirements required prior to submittal

Initial Submittal Package

- Project Information Form
- Development Review Application
- Application Submittal Package Requirements

Additional Forms:

- For property in an Airport Environs Overlay: Avigation Easement (not included in Appendix, refer to County website)

- To sell alcoholic beverages for on-premises consumption: Site Inspection
- As Built Certification Form

Additional information to be included on drawings

- Stormwater Management Review Checklist
- Access Management Checklist
- Traffic Impact Analysis
- Traffic Study-Initial Test for Traffic Currency

Final Comparison Package

- Site Plan Final Comparison Requirements

Links to other review elements, i.e. Handicap Accessibility, Water, Sewer, Environment etc., not available at this time. See Appendix H6 for the Land and Tree Management Permit application form; and Appendix H7 for the Stormwater Management permit application form.

Final Plat reviews are required for all subdivisions of land with more than five lots**.** Final Plat Submittal Packages shall be submitted to the DRC Coordinator, in the Department of Planning and Engineering by calling (850) 595-3472 to schedule an appointment.

Initial Submittal Package

- Project Information Form

- Development Review Application
- Final Plat Application Submittal Package Requirements

Additional information to be included on drawings

- Stormwater Review Checklist

Additional Forms:

- For property in an Airport Environs Overlay: Avigation Easement (not included in Appendix, refer to County website)
- Warranty Agreement With Surety if applicable
- Warranty Agreement Without Surety if applicable
- Development Review Committee Final Plat Deadlines
- Hold Harmless Agreements
- Conservation Easements

Final Comparison Package

- Final Plat Final Comparison Package Submittal Requirements
- As-Built Certification Form

Links to other review elements, i.e. Handicap Accessibility, Water, Sewer, Environment etc., not available at this time. See Appendix H6 for the Land and Tree Management Permit application form; and Appendix H7 for the Stormwater Management permit application form.

Unplatted Subdivision reviews are required for all division of lands less than five lots and shall be submitted to the DRC Coordinator, in the Department of Planning and Engineering by calling (850) 595-3472 to schedule an appointment.

Pre-application Conference

- Pre-application package submittal requirements

Initial Submittal Package

- Project Information Form
- Development Review Application
- Unplatted Subdivision Application Submittal Package Requirements

Additional information to be included on drawings

Additional Forms:

- For property in an Airport Environs Overlay: Avigation Easement (not included in Appendix, refer to County website)

Final Comparison Package

- Unplatted Subdivision Submittal Checklist
- As-Built Certification Form

Links to other review elements, i.e. Handicap Accessibility, Water, Sewer, Environment etc., not available at this time. See Appendix H6 for the Land and Tree Management Permit application form; and Appendix H7 for the Stormwater Management permit application form.

9.3 Commercial

Site Plan reviews **are required for All New Commercial Developments**. Site Plan Submittal Packages shall be submitted to the DRC Coordinator, in the Department of Planning and Engineering by calling (850) 595-3472 to schedule an appointment.

Pre-application Conference (optional)

- Site Plan Pre-Application Conference Application Submittal Package Requirements (Complete ONLY if requesting a conference)

Initial Submittal Package

- Project Information Form
- Development Review Application
- Site Plan Application Package Submittal Requirements

Additional Forms:

- For property in an Airport Environs Overlay: Avigation Easement (not included in Appendix, refer to County website)

- To sell alcoholic beverages for on-premise consumption: Site Inspection
- As-Built Certification Form

Additional information to be included on drawings

- Stormwater Management Review Checklist
- Access Management Checklist
- Traffic Impact Analysis
- Traffic Study-Inital Test for Traffic Currency

Links to other review elements, i.e. Handicap Accessibility, Water, Sewer, Environment etc., not available at this time. See Appendix H6 for the Land and Tree Management Permit application form; and Appendix H7 for the Stormwater Management permit application form.

Final Comparison Package

- Site Plan Final Comparison Requirements

Environmental Permitting

The following describes the process involved for land disturbance authorization and sand permit requirements.

Land Disturbance Permit Procedure:

1) State on site plan all proposed land disturbance activities.

2) Neighborhood and Environmental Services Department (NESD) staff will make a site visit to the parcel in order of application received.

3) NESD staff will determine if proposed land disturbance activities are permittable under Escambia County's Land Development Code (LDC).

4) After approval, permit application is then entered into a database and the applicant is contacted for permit pickup and fee payment.

Sand Permit for Santa Rosa Island and Perdido Key:

1) Obtain a Land & Tree Management Permit available on the Internet or NESD, complete application, and return at 1190 West Leonard Street along with a sample of the sand to be placed on the site.

2) NESD staff will make a site visit to the parcel in order of application received. Sand will be evaluated to match criteria for permitted sand to be placed on Perdido Key and/or Santa Rosa Island.

3) If sand is not found to match criteria for placement, the applicant will be contacted and asked to submit another sample to NESD for review.

4) NESD staff will determine if proposed sand placement activities are permittable under Escambia County's Land Development Code (LDC).

5) After approval, permit application is then entered into a database and the applicant is contacted for permit pickup and fee payment.

Sand Permit criteria can be referenced in Article 12.05.00 of the Escambia County LDC.

See section 12.3 for details related to Voluntary Financial Contribution to PKBM Conservation Fund as it relates to commercial and hotel developments.

9.4 Coverage for Take Associated With Permitting

For the purposes of calculating the amount of take that is likely to occur under this HCP, see Section 8.0 of this HCP. Any take occurring as the result of the ITP issued for this HCP, will be covered for the period that the ITP is in effect.

10.0 MINIMIZATION OF IMPACTS

This section of the HCP describes programs, policies, and other measures that will be implemented by Escambia County or property owners, managers or developers to minimize impacts to PKBM, sea turtles, and piping plovers causally related to permitted private development activities and County infrastructure improvements. Impacts can occur during and after construction or infrastructure improvements, as described in Section 8.0 of this HCP. See Table 10.1 for a list of minimization measures, responsible entities for implementation, and species benefited by the measures.

Table 10.1 Perdido Key Programmatic HCP Minimization Measures

Perdido Key Programmatic HCP Minimization Measures		
Measure	**Measure Required to be Implemented**	**Species Benefited**

	By				
	Private	**County**	**PKBM**	**Sea Turtles**	**Shorebirds**
Proactive planning	X	X	√		
Project Siting	X	X	√		
Project Footprint	X	X	√		
Landscaping Design	X	X	√		
Conservation Corridors	X	X	√		
Seasonality Considerations	X	X	√	√	√
Establishing Project Boundaries	X	X	√	√	√
Predator control	X	X	√	√	√
Trash Collection/Management	X	X	√	√	√
Dune Restoration	X	X	√		
Boardwalks/Walkovers	X	X	√		
Wildlife lighting	X	X	√	√	√
Vehicle Access Management	X	X	√	√	√
HCP/ITP Training		X	√	√	√
Public Education		X	√	√	√
Post Construction Monitoring	X	X	√	√	√
	X = **Required to Implement**		√ = **Benefitted**		

The following sections describe in more detail the avoidance and minimization measures to reduce impacts from take of listed species covered in this HCP.

10.1 Proactive Planning

One of the principal methods of minimizing the potential for impacts to PKBM, sea turtles, and piping plovers under this HCP is initiation of a proactive approach to educate prospective land purchasers and current land owners about listed species and their habitat. Many beachfront property owners, particularly those that have recently moved to Escambia County from other areas, may be unfamiliar with the sensitive nature of the habitats on Perdido Key. It is imperative that these individuals be alerted to the importance of listed species, their habitat, and legal requirements for coverage under the ESA. It is also important that stakeholders are made aware of this HCP and the Escambia County's responsibilities to review proposals for development and associated requests for take of listed species and their responsibility under the ESA.

In 2001, Escambia County developed the "Got Habitat?" campaign with an educational brochure for Perdido Key. The campaign emphasized protection of beach and dune habitats. Similar to the "Got Habitat?" campaign message, Escambia County will develop a public awareness brochure that will be distributed and made readily available to all prospective Perdido Key development interests relative to this HCP Plan Area. The public awareness brochure will be developed within six months of issuance of the ITP. Draft copies of the document will be provided to FFWCC, FDEP, and USFWS for review and approval prior to distribution. At least one mailing will be made to all Perdido Key property owners, with property within the HCP Plan Area, within six months of USFWS final approval. The County will then assess the most effective method for subsequent distributions, such as during real estate transactions and pre-application consultations.

Escambia County will also develop cross-training and an internal guidance process which will include a copy of the public awareness brochure to be distributed to other County staff. This cross training and information dissemination will assist staff with planning and other permitting responsibilities at the County, who may be contacted by potential development interests. The cross-training will be accomplished to provide consistent information dissemination to the public.

In addition to the proactive information distribution described above, the brochure will contain contact numbers of County and State agencies that can provide technical guidance and assistance on projects with potential to result in impacts to listed species.

Since this HCP is developed to provide conservation measures on a landscape scale, other proactive planning considerations shall be implemented to protect habitat between and around development projects or County infrastructure improvements. More specific considerations for maximizing habitat conservation onsite are discussed in detail in Sections 10.1.1 through 10.1.5. The following general considerations are important factors in the proactive planning phases and are required avoidance and minimization measures under the HCP:

- Projects shall be sited to maximize the best habitat conservation on site and incorporate appropriate connectivity and buffers between developments;
- Structural designs to homes and other buildings to make them less vulnerable to storm damage (e.g., elevate on pilings);

- Locating structures farther landward toward SR 292 (Perdido Key Drive) "as appropriate";
- Minimizing impervious surfaces; and
- Maximizing use of vegetation native to Perdido Key, which also provide food and cover for PKBM.

Stakeholders in proposed developments will be required to consult with the County to avoid and minimize impacts and maximize onsite conservation. The design and siting of structures, along with the timing of their construction, are intended to avoid impacts to PKBM, sea turtles and piping plovers. Pre-application coordination helps to reduce design costs in the long term. **A pre-application meeting with County staff relative to any project on Perdido Key shall be a requirement.**

10.1.1 Project Siting

Regardless of the size and scope of a proposed development or infrastructure improvement, appropriate project siting to reduce impacts to existing natural resources and habitats shall be a priority. Appropriately sited designs would ideally reduce impacts to listed species and provide for conservation measures to promote a landscape connection with offsite habitats. Certain minimum requirements exist for proposed developments based on the zoning district's designated use and the type of proposed developments. Parking, sidewalks, and other requirements shall be properly sited along with structures to promote maintaining the greatest amount of PKBM habitat on site. Even though the County requires maintaining 35% open space, on average, only 25-26% impacted area has been permitted on previously issued ITP's on Perdido Key. On average 75% of open space is being protected through the previously issued ITP's. However, each project will be evaluated individually.

Site design and footprints must also take into account aspects of maintaining safety of life and property, therefore, emergency response accessibility around building perimeters must be ensured.

10.1.2 Project Footprint

The design of the project footprint shall limit impacts to existing habitat on a parcel. Clustering of developments away from "environmentally sensitive land" is discussed in Section 7.13.04 of the Escambia County Code of Ordinances. Specifically, clustering of development away from environmentally sensitive lands requires that at least 90 percent of the environmentally sensitive lands remain undisturbed and preserved under a conservation easement, deed restrictions or covenants, or other method approved by the county and recorded in the public records of Escambia County. The easement may be executed in favor of Escambia County, the State of Florida, a Federal agency, or other entity approved by the Board of County Commissioners.

10.1.3 Landscaping Design

The Escambia County Code of Ordinances defines landscaping regulation per individual zoning district category (see Appendix B).

The purpose of Section 7.01.01 (Landscaping) in the Escambia County Code of Ordinances is to establish functional landscaping in the County, whether within the rights-of-way or on a project site. This section describes the preservation and protection of certain existing trees, for the conservation of energy through the shading of buildings, for enhancing the aesthetic and natural conditions of the County and for standards and criteria for new landscaping, thereby promoting the health and general welfare of the citizenry.

Prior to the issuance of a building permit for any structure, a landscaping plan is submitted as a part of the site plan and related approval process. A landscape plan is required to be submitted prior to commencement of construction and simultaneously with the site plan review application to the DRC. The plan has to be drawn to scale showing the landscaped area required by this article, including the calculations and information made to meet the minimum landscape area requirements. The plan includes the following for living plant materials which are part of the required landscape plan:

1. Locations;
2. Species;
3. Height and spacing; and
4. Protected or preserved trees.

As required in article 13, section 13.18.00, of the Escambia County Code of Ordinances, the landscape plan for projects for all coastal properties shall show soil, landscaping, stabilization, and species to be planted. Native vegetation associated with PKBM habitat is listed in Table 10.1 and Appendix I. The use of these species shall be required in developing a proposed landscaping or restoration plan.

It should be noted that the landscape component of zoning districts on Perdido Key specifically reference other more restrictive requirements by the following statement: “When county landscaping or buffer regulations conflict with requirements of State or Federal authorizations, including biological opinions, technical assistance letters or concurrence letters, the conditions in those state or federal documents shall prevail.”

All disturbed areas outside the development footprint in PKBM habitat would be required to be landscaped with appropriate native PKBM habitat vegetation and neither sod nor mulch is allowed. Further, no buried irrigation is allowed. The landscape plan for a development would require approval by the County.

10.1.4 Habitat Restoration Plans

Habitat restoration plans shall be a component of the proactive planning process. Restoration plans shall be developed during a pre-application meeting with the County. Temporary impacts from construction and previous impacts from damaging tropical storms to dune habitats will be required to be restored based on site specific conditions. Restoration plans will be developed to provide restoration of habitats specific to Perdido Key.

Each project site will require specific restoration design plans be developed that specifically fit the topography, complement adjacent existing habitats, and other varying factors. Environmental and/or landscape professionals with knowledge and expertise in beach dune habitats should be utilized to determine an appropriate restoration plan that utilizes various native dune plant species. Designs that incorporate multiple native plant species appropriate to on site conditions will avoid a monocultured planting design and help to facilitate year-round forage and cover for PKBM. See Table 10.2 below for native dune plant species appropriate for use in restoration designs on Perdido Key.

Generally, native plantings shall be arranged on 12 to 18 inch centers. It is usually considered that more planting units tend to solicit higher survival rates and will therefore provide habitat more quickly. Containerized plants shall be planted at least six inches deep, or deep enough to cover the top of the potting soil for the plant. Other sized plants (i.e. liners, bare root etc.) will require specific planting depths relative to the amount of vegetative material above the root mass. Appropriate planting depth is important to reduce potential post installation desiccation and ensure plants are secured at the location where planted. The use of slow release fertilizer and a hydrated biodegradable polymer placed in each planting hole shall be assessed based on the site conditions, species proposed, and other factors such as advances in research for dune plant survivability. To ensure acceptable survival rates of installed plants, temporary irrigation may be used in the initial establishment of appropriate herbaceous plantings. The restoration design shall be reviewed and approved by the County.

Table 10.2 Native Coastal Dune Plant Species for Restoration Plan Design

Scientific Name	Common Name	Primary & Secondary Dune	Inter-dunal	Scrub dune
Trees				
Magnolia grandiflora	Southern Magnolia			X
Osmanthus americanus	Wild Olive			X
Pinus clausa	Sand Pine			X
Pinus elliottii	Slash Pine			X
Quercus geminata	Sand Live Oak			X
Quercus myrtifolia	Myrtle Oak			X
Quercus virginiana maritima	Sand Live Oak			X
Medium to Large Shrubs & Small Trees				
Callicarpa americana	Beautyberry			X
Erythrina herbacea	Eastern Coralbean	X		X
Ilex vomitoria	Yaupon Holly			X
Iva frutescens	Marsh-Elder		X	
Rhus copallina	Winged Sumac		X	X
Serenoa repens	Saw Palmetto			X
Small Shrubs & Ground Covers				

Schizachyrium scoparium (formerly maritimum)	Bluestem	X		
Asclepias humistrata	Sandhill Milkweed			X
Bignonia capreolata	Cross Vine			X
Cakile constricta	Sea Rocket	X		
Ceratiola ericoides	Seaside Rosemary			X
Chryosoma pauciflosculosa	Seaside Goldenrod	X		X
Chrysopsis gossypina trichophylla	Golden Aster	X		X
Conradina canescens	Beach Heather	X		X
Cyperus sp.	Sedge		X	
Heterotheca subaxillaris	Aster (Camphor weed)	X		X
Hydrocotyle bonariensis	Pennywort	X	X	X
Ipomoea pes-caprae	Railroad Vine	X		
Ipomoea imperati (formerly stolonifera)	Beach Morning Glory	X		
Licania michauxii	Gopher Apple			X
Panicum amarum	Beach Grass	X		
(E) *Polygonella macrophylla*	Large-leaved Jointweed			X
Tradescantia ohiensis	Spiderwort			X
Uniola paniculata	Sea Oats	X		

T & E = State of Florida protected plant. Planting is strongly encouraged to help recover the species. It is also strongly encouraged that T&E plants be purchased from a supplier that is a member of the Association of Florida Native Plants as they adhere to all State regulations to grow and sell protected species.

To provide conditions appropriate for the natural recovery of the dunes and ensure best chances of survivability of a dune restoration project, the following steps shall be included in a restoration design:

- utilize approved sand to begin the process if needed,
- acquire sea oats and other appropriate plant species which are of sufficient quality, health, and genetic integrity,
- install plants in a way that ensures their success,
- maintain plants to ensure their continued success,
- protect plants to avoid disturbance from human activities.

Although installation of sand fencing has been described in previous HCPs issued for Perdido Key, sand fencing is not necessarily a preferred approach. Planting native vegetation as described above would be a preferred approach. Sand fence and post and rope should be used to direct pedestrian traffic out of dune habitats.

Applicants will be required to supplement County dune restoration efforts with additional native vegetation plantings, as deemed appropriate. The exact numbers and species shall be determined

in a habitat restoration plan submitted in the development proposal, as discussed above. This would be expected to aid in overall coverage of the newly established dune system by the County, as well as provide additional forage opportunities for the PKBM and stabilize the dune system.

10.1.5 Conservation Corridors

A conservation corridor relative to this HCP refers to habitat that connects two or more larger areas of habitat via vegetation and/or other natural elements of native habitat. These corridors are intended to be protected and maintained in perpetuity for the conservation of PKBM. In developing the landscape approach to conservation with this HCP, the County is approaching conservation corridors on a broader scale that includes a mosaic of land uses. Functionally connected pathways are promoted to allow for natural PKBM behavior such as dispersal and exploratory movements, as well as gene flow, to maintain genetic variability of a population of beach mice within fragmented or isolated areas. An advantage to a programmatic HCP is that the County will be able to provide facilitation and feedback to development interests to plan and target conservation strategies that accommodate economic development and other social goals, while incorporating conservation corridors into a project design.

Conservation corridors shall be considered early in the proactive planning process for any private development or County infrastructure improvement project. Conservation corridors will primarily consist of native dune vegetation buffers incorporating elements discussed above in the Sections 10.1.3 and 10.1.4. These elements may include, but not be limited to establishing conservation corridors along all boundaries of a project site.

Conservation corridors shall be designated and maintained to provide corridors for the PKBM to access off-site habitat on adjacent parcels, including to the south, north, east and west and around the general perimeter of an impact site whenever feasible. One theory suggests that these corridors shall be a minimum width of 10% of the total linear length of the property (Laurance et al 2003). Contiguous tracts of habitat and/or functionally connected patches of suitable habitat are noted to be essential to the long-term conservation of beach mice. Regulatory mechanisms are in place to track impacts to PKBM habitat and aid in minimizing impacts from development on public lands. However, the subspecies' requirements for corridor size and level of tolerance for fragmentation are unknown (USFWS 2007). Therefore, since each future proposed impact scenario will vary between private residential, commercial, and County based projects, it is imperative that the proactive planning component of a project include elements to satisfy conservation corridor elements. Accepted conservation corridor and/or functionally connected patch design requirements may change throughout the timeframe of this HCP and be reflective of future studies and research specific to beach mice corridor needs.

Existing natural landscape elements which should be given highest priority in maintaining corridor connectivity include the following critical habitat primary constituent elements (PCE):

1. A contiguous mosaic of primary, secondary and scrub vegetation and dune structure, with a balanced level of competition and predation and few or no competitive or predaceous nonnative species present, that collectively provide

foraging opportunities, cover, and burrow sites.

2. Primary and secondary dunes, generally dominated by sea oats, that despite occasional temporary impacts and reconfiguration from tropical storms and hurricanes, provide abundant food resources, burrow sites, and protection from predators.

3. Scrub dunes, generally dominated by scrub oaks, that provide food resources and burrow sites, and provide elevated refugia during and after intense flooding due to rainfall and/or hurricane induced storm surge.

4. Functional, unobstructed habitat connections that facilitate genetic exchange, dispersal, natural exploratory movements, and recolonization of locally extirpated areas.

5. A natural light regime within the coastal dune ecosystem, compatible with the nocturnal activity of beach mice, necessary for normal behavior, growth and viability of all life stages.

PCE number 5 should incorporate minimization elements of lighting appropriate to sea turtles and should also consider additional lighting restrictions for PKBM discussed further in Section 12.4 of this HCP. Predation of beach mice by feral cat activity should also be minimized in the conservation corridors. More specific buffer requirements based on County code requirements are provided in Appendix B. It should be noted that buffer requirements relative to specific PKBM needs shall take precedence over County current standardized zoning district requirements to meet minimization requirements of proposed development impacts.

10.2 Pre-permitting Assessment of Habitat

Assessments of habitat on parcels subject to proposed development shall be conducted to provide a baseline of existing habitats. The habitats on site may first be identified on aerial photographs. Any PKBM designated critical habitat on a particular parcel will be noted. The assessment would provide an estimate in acreage of the existing habitat types including a breakout of designated critical habitat acreage for comparison, if applicable.

Escambia County Code of Ordinances describes, in Section 7.13.02., certain components to include in identification of environmentally sensitive lands for threatened and endangered species habitat. The applicant for development approval shall utilize the National Wetlands Inventory Map and the Escambia County Soils Survey, FFWCC LANDSAT Imagery, the Escambia County Geographic Information System, or other reliable information (such as Florida Natural Areas Inventory data) to determine if the site has potential for containing wetlands or threatened and endangered species habitat. If the potential exists, a site specific survey shall be conducted, and such survey will include in the delineation all such wetlands and threatened and endangered species habitat on the subject parcel. All site-specific surveys shall be conducted and completed by the applicant or their consultant, and approved by the County.

10.3 Precautions Implemented During Construction Activities (All Species)

10.3.1 Seasonality Considerations

The species covered under this HCP have the potential to utilize habitats on Perdido Key at various intensities and seasonal variations. PKBM typically exhibit more breeding activity during cooler months. However, they occupy the habitat year round and thus; there are no seasonal restrictions relative to PKBM. For sea turtles, all construction on the nesting beach shall be conducted outside the sea turtle nesting season (May 1 through October 31). Otherwise for work on the beach/dune interface, work cannot commence until the daily sea turtle surveys and nest protection/markings have been completed. Non-breeding piping plover are found consistently in the Florida panhandle from July 15 to May 15.

Restoration designs shall include that all vegetation planting must be completed between November and May to increase chances of plant survivability by reducing effects from heat and desiccation during warmer months and reduce impacts to nesting sea turtles.

10.3.2 Best Management Practices

Best management practices (BMPs) are innovative, dynamic, and improved environmental protection practices developed and applied to construction projects in coastal habitats to help ensure construction activities are conducted responsibly. BMPs are included for implementation in this HCP to protect wildlife and habitat.

Escambia County and any private property owner or developer utilizing the County's ITP will be required to implement BMPs specific to the species and habitats. The County and/or any (private development interest) will be required to ensure all construction personnel, including supervisors, are aware of the sensitive habitats within a work zone to minimize impacts and not exceed take permitted for a specific project. A copy of the ITP shall be provided to the general contractor and included in all sub-contracts for a specific project. The construction contract documents entered into by the County and/or private development interests shall include a stipulation that conservation objectives of a take permit shall be communicated to and agreed upon by all sub-contractors.

During construction, impacts to PKBM shall be avoided or minimized by:

(a) placing sediment barriers and notification signs to restrict access and avoid impacts to habitat;
(b) storing materials at appropriate staging sites and on previously disturbed areas outside of PKBM habitat;
(c) keeping the construction site clean and free of debris, keeping trash out of habitats and in predator proof containers;
(d) limiting disturbance from site preparation and construction grading by clearly indicating on all construction plans and onsite with silt fence or other barrier fence installation; and
(e) adhering to the defined limits of construction.

Litter and trash attract pets, raccoons, feral cats, and other animals. Raccoons especially are notorious turtle egg predators. Requirements to store trash and litter are necessary if turtle eggs are to be protected from these animals. A trash and rubbish control program will be incorporated into construction plans designed for any development or public infrastructure improvement project. Trash collection and storage for a specific project shall be confined to the permitted impact area. Trash receptacles exterior to the project limits shall not be allowed. Receptacles for trash pick-up shall be animal-proof and would reduce predator and competition pressure from nuisance and exotic species. Predator proof containers shall be elevated above the ground and covered to limit wildlife scavenger access.

Any lighting on permanent structures for year round use as well as lighting which may be used during the construction phase shall follow the general guidelines presented in Section 12.4 and Appendix C (Wildlife Lighting) of this HCP.

The following BMPs were developed by the FFWCC specific to reduce impacts to shorebirds. These components shall be implemented during any construction in beach environments on Perdido Key:

1. Prior to any construction activity during shorebird nesting season (February 15 through September 1 on the Gulf of Mexico coast), a permittee shall follow the guidelines below:

    a. The permittee will arrange for daily nesting surveys prior to project commencement throughout the construction period or through August.
    b. Surveys for detecting nesting activity will be completed prior to movement of equipment, operation of vehicles, or other activities that could potentially disrupt nesting behavior or cause harm to the birds or their eggs or young.
    c. The FFWCC Regional Biologist should be notified within 24 hours if a scrape or eggs are observed (phone: 850-265-3676).
    d. A protective buffer zone, up to 300-feet wide if possible, should be created around any nests or colonial nesting areas. Any and all construction activities, including movement of vehicles, will be prohibited in the buffer zone.
    e. The width of the buffer zone shall be increased if birds appear agitated or disturbed by construction or other activities in adjacent areas.
    f. FFWCC staff may assist the permittee with posting buffer zones with clearly marked signs around the perimeter.

2. Observations of nesting shorebirds within the project area shall be submitted to the County and the Florida Beach-Nesting Bird Website at www.wildflorida.org/shorebirds/ for each individual project.

3. All tilling and escarpment removal should be done outside the shorebird nesting season. It is the responsibility of the contractors to avoid tilling or scarp removal in areas where nesting birds are present.
    a. A relatively even surface, with no deep ruts or furrows, shall be created during tilling. To do this, chain-linked fencing or other material shall be dragged over those areas as necessary after tilling.

b. The slope between the mean high water line and the mean low water line must be maintained in such a manner as to approximate natural slopes.
c. Tilling will occur landward of any organic wrack line, but not include the wrack line.

The following BMPs shall be followed relating to County based public infrastructure improvements on County roadway right-of-ways. These BMPs are from the USFWS guidance document titled *Guidance for Road Construction and Maintenance In Areas with Federally Protected Beach Mice,* U.S. Fish and Wildlife Service, August 2, 2005.

Construction Activities

- There will be no clay materials used in construction.

- Fill material must be certified as clean of noxious weeds. Hay bales must also be certified by the Florida Department of Agriculture and Consumer Services Division of Plant Industry as free from noxious weeds. No hay bales will be used in dunes. No fertilizer or lime will be applied within the "limits of construction" zone.

- All construction will occur within existing County owned/maintained right-of-way (ROW) zone with the exception of areas with additional ROW requirements.

- There will be no vegetation removal/destruction beyond the existing maintained ROW.

- Staging/storing areas will be identified and approved by the County during the design phase of the project. These areas will be used as turning points, parking areas, and stockpiling areas to prevent vehicles or construction equipment from violating the construction zone limits. These identified, surveyed, and approved areas will be depicted as hatched areas on the construction plan sheets. Station number will identify the locations of these areas in project documentation. These staging/storage areas will be located only in the non-native, disturbed/maintained ROW areas to avoid impacts to native vegetation and wildlife habitat and reduce erosion control problems.

- Native grasses such as seashore paspalum (*Paspalum vaginatum*), beach grass (*Panicum amarum*), and sea oats (*Uniola paniculata*) will be incorporated into the design as commercially available, as well as other native vegetation for aesthetic and erosion-control function, drought hardiness, and low maintenance value. These plants will be especially considered in areas where sod will not grow and to replace the use of rock aggregate. (See Appendix I, *Species Plant List for Coastal Dune and Beaches in Escambia County, FL*).

- Use of sod in the ROW is not allowed due to its tendency to spread into adjacent beach mouse habitat.

- In locations where aggregate material is needed for shoulder stabilization along the pavement edge, White Bahama Rock is considered an acceptable material for use in the coastal zone.

- Sands outside of the ROW shall be sifted post-construction to remove construction debris and restore the habitat to pristine fine sand.

10.3.3 Inclusive Period of Monitoring

During construction monitoring, if any construction activities are to occur on the beach during any portion of the sea turtle nesting season (May 1 through October 31), a sea turtle monitoring program must be in place for any areas of the beach potentially affected. The intent of construction-phase monitoring is to identify and protect any nests that may be deposited in the project area during the period of construction and to ensure that marked nests, if present, are unaffected by construction activities. Daily monitoring shall commence on May 1 or 65 days prior to the date of construction initiation and shall continue uninterrupted until the completion of construction or September 1, whichever is earlier. If construction proceeds beyond September 1 and marked nests remain within the project area, daily monitoring of the nests will continue until the last marked nest has hatched.

Sea turtle monitoring is conducted by entities permitted by the FFWCC (Rule 68E-1, FAC) (http://myfwc.com/seaturtle/Rules/Ch68E1_FAC_rvsd2007.pdf). The property owner/manager, developer, etc. shall contact the sea turtle surveyor to ensure that turtle monitoring is conducted. To obtain sea turtle surveyor contact information, contact the FFWCC at (561) 575-5407.

Pre-construction surveys for non-breeding piping plover in specific project areas will be conducted daily starting two weeks prior to project initiation between July 15 and May 15 (10 months of the year), see Appendix J for methodology. Daily piping plover survey results shall be submitted to the USFWS Panama City Florida Field Office with maps in the ITP annual report documenting the locations of piping plovers (with GPS coordinates or latitude and longitude coordinates) if seen during this survey period.

The property owner/developer shall be responsible for post construction monitoring requirements by contracting with a qualified consultant to monitor the status of PKBM for three years following issuance of the first certificate of occupancy by Escambia County, Florida covering any monitoring portion of a project within the Plan Area. The County shall approve of the design. The design shall be submitted to the County at least 120 days prior to the start of the monitoring. Specific details related to monitoring are discussed in Section 13.0 of this HCP.

Persons conducting the monitoring shall be required to obtain appropriate permits from the USFWS and FFWCC and shall follow the stipulations outlined in the permit(s). All information shall be provided in the annual reports for this Permit.

10.3.4 Establishing Project Boundaries

The limits of disturbance due to construction activities, whether on County owned lands, County owned road rights-of-way, or private parcels; shall be delineated on all building and site disturbance plans by the County or property owner/developer depending on the entity authorized

for take. An appropriate buffer specific to each site proposed for impact will be established to provide a physical demarcation between the area of permitted impact activities and areas to remain in conservation. Silt fences or other barriers approved for utilization to ensure the protection of adjacent habitat on the subject property and off-site shall be installed before construction begins. The silt fence or other appropriate barrier shall be placed along the perimeter of permitted construction impact areas. Signs providing notice to the building contractor/workers that penalties will be levied for disturbing habitat beyond the barrier shall be posted at 100-foot intervals. The silt fence or other appropriate barrier shall be designed to allow movement of PKBM and prevent pedestrian trespass. All silt fence/appropriate barriers and habitat notice signs shall be monitored and maintained daily until the project construction is completed.

The construction site, the access point(s) for construction equipment, and corridor(s) used by equipment and workers to travel between any staging areas and the construction zone of the site shall also be identified and maintained as such. The limits of the areas encompassing the construction site, buffer zone(s), access point(s), and travel corridor(s), as applicable within the site, shall be considered as a component of the project area. Areas defined and permitted as providing temporary construction access may be defined as temporary impacts, but must be minimized and fully restored once construction activities have been completed.

Pertaining to shorebird habitat within the Project Area, the permittee shall establish a 300 ft-wide buffer zone around any location where shorebirds have been engaged in feeding or nesting behavior, including territory defense. Any and all construction activities, including movement of vehicles, shall be prohibited in the buffer zone year-round. The width of the buffer zone shall be increased if birds appear agitated or disturbed by construction or other activities in adjacent areas.

Designated shorebird buffer zones must be posted with clearly marked signs around the perimeter. If pedestrian pathways are approved within the 300-foot buffer zone, these will be clearly marked. No construction activities, movement of vehicles, or stockpiling of equipment shall be allowed within the buffer area. Approved travel corridors should be designated and marked outside the buffer areas. Heavy equipment, other vehicles, or pedestrians may transit past nesting areas in these corridors. However, other activities such as stopping or turning shall be prohibited within the designated travel corridors adjacent to a nesting site.

If shorebird nesting occurs within the project area, a bulletin board will be placed and maintained in the construction area with the location map of the construction site showing the bird nesting areas and a warning, clearly visible, stating that “BIRD NESTING AREAS ARE PROTECTED BY THE FLORIDA THREATENED AND ENDANGERED SPECIES ACT AND THE STATE and FEDERAL MIGRATORY BIRD ACTS”.

10.3.5 Construction Equipment Staging

All permitted construction activities shall be conducted from areas specifically identified in approved plans and take permits. No heavy equipment (e.g., tracked or wheeled motorized machinery, such as bobcats, bulldozers, front-end loaders, etc.) shall be operated outside of the

defined project limits. If heavy equipment must be operated on the beach in support of a permitted project, an access site as close to the construction site as possible will be selected by the County in consultation with sea turtle monitoring personnel. Equipment staging areas shall be specifically defined on approved plans and at the end of a work period the equipment must be staged at the appropriately designated area.

10.4 Minimization Measures

Proposed developments are anticipated to be designed within the constraints of the LDC and Florida's coastal zone regulations. Considering that a parcel proposed for development includes the presence of suitable PKBM, sea turtle, and piping plover habitat; and the determination that some impacts are unavoidable, project designers shall fully evaluate how a project's purpose and need could be accomplished while preserving, to the greatest extent practicable, the habitat on a subject property. Preventing or minimizing secondary impacts associated with the proposed use of the property shall also be a component of minimization measures.

Conceptual minimization opportunities shall be evaluated and represented based on specific site suitability and practicability. Elimination of parking spaces, modifying the footprint of the parking lot, and placing parking under the building are design components to consider. The number of parking spaces provided in a specific development type as dictated by the Escambia County LDC should include only the minimum required by a specific code.

Onsite preservation of PKBM habitat associated with a site permitted for take, is the most preferred avoidance and minimization option to direct impacts. Appropriately designed and designated onsite preservation can be linked to other existing habitat adjacent to a project area. Habitat linkage will promote habitat corridors and allow for movement of PKBM. Any land offered as a conservation easement for onsite preservation will be required to be recorded as such.

A conservation easement with the FFWCC as the easement grantee shall be placed on specified portions of project areas to satisfy onsite conservation requirements. Certain areas may be excluded from recorded conservation easements associated with permitted structures (i.e. dune walkovers) as allowed through specific permit conditions. The boundaries of the conservation easement shall be surveyed by a licensed certified land surveyor. The conservation easement shall be recorded with the Clerk of Escambia County within 6 months of the completion of the Project (Owner occupancy). The property owner/developer shall work with the County and the FFWCC to draft a conservation easement. A draft copy of the conservation easement shall be provided to the County for review and approval. A copy of the survey and recorded conservation easement shall be provided to the County within ninety (90) days after the conservation easement is recorded.

10.4.1 Perdido Key Beach Mouse

Minimization measures shall be considered and incorporated specific to PKBM, while incorporating aspects of the design modifications described above. Minimization of impacts associated with a specific development may include:

- restoration and conservation measures
- construction setbacks
- boardwalks and walkovers
- wildlife friendly lighting
- protection measures incorporated into the day to day operation and management of the project

At least one walkover should be required for all projects on the Gulf of Mexico beachfront. The allocation of management responsibilities between developments and homeowners association (where applicable) would occur via deed restrictions on condominium complexes and the covenants and restrictions for a homeowners association. Shared allocation of management responsibilities shall be addressed in these same documents. The responsible entities for individual management activities are identified in Section 13.0 of this HCP.

10.4.2 Sea Turtles

In addition to the above minimization measures for the PKBM, efforts by the County to minimize take and allow for potential growth in the nesting population of sea turtles within the HCP Plan Area will include, but not be limited to implementation of:

- Methods for protecting sea turtle nests from vehicular traffic;
- Regulation of activities potentially impacting sea turtles;
- Standardizing data collection methodologies to allow for assessment of impacts;
- A professionally managed sea turtle monitoring and nest protection program;
- An active enforcement program of the HCP/ITP conditions.

Other sea turtle take minimization measures will include restricting vehicular access to daylight hours when the risk of encountering sea turtles is lowest. Establishing a Conservation Zone (CZ) to enhance development of nesting habitat and prohibiting public access and parking near the dunes where the majority of nests are deposited.

The County will be responsible for and/or coordinate with the primary sea turtle permit holder to ensure that the following will be accomplished:

a. Monitoring marked nest sites to ensure that the protection remain in place.
b. Reestablishing nest sites that are washed out or vandalized (if nests can be saved).
c. Removing ruts and other obstacles seaward of nests that are close to hatching.
d. Implementing procedures to protect nesting and hatching sea turtles from traffic during rare daylight emergence events.
e. Restricting non-emergency construction projects to periods outside the nesting season and requiring that any impacts to nesting habitat resulting from such activities be repaired.

f. Responding to live and dead stranded sea turtles and washback hatchlings.

Minimization of take for activities other than those related to construction projects shall, in part, been accomplished by:

a. Following rules for the operation of all vehicles on the beach, as described below in Section 10.4.4.
b. Developing guidelines for managing public vehicular access to, and traffic on Perdido Key.
c. Commitment to develop environmental conditions for the protection of sea turtles related to permits issued for special events.
d. Controlling the activities of concessionaires through permits and licensing agreements.
e. Establishing guidelines for trash collection, sanitation, and other beach maintenance activities.

Implementation of the Escambia County Wildlife Lighting Ordinance described in detail in Section 12.4 of this HCP will enhance minimization measures for sea turtles, PKBM, and other coastal species. Minimization of take will also be accomplished by Escambia County's commitment to active enforcement of all HCP and ITP rules and regulations.

Prior to the beginning of each sea turtle nesting season the County will meet with the sea turtle permit holder to review monitoring procedures, discuss any changes in HCP rules and regulations and/or ITP terms and conditions, and establish effective lines of communication. The sea turtle permit holder will be responsible for reviewing FFWCC guidelines (see the Florida Conservation website listed for the guidelines http://www.floridaconservation.org/seaturtle/Guidelines/Seaturtle_Guidelines.pdf) with all persons listed on their permits and ensuring that those individuals abide by established guidelines and adhere to HCP rules and regulations. Upon request, the County will meet with sea turtle monitoring personnel to review or clarify protocol contained in this HCP.

10.4.3 Piping Plovers

Minimization of impacts to piping plovers will be achieved through many of the same measures implemented to protect PKBM and sea turtles. The County will be tasked with ensuring specific minimization measures are provided for piping plovers. Minimization measures for piping plovers will include the components described below.

The public will be encouraged to properly dispose of trash in appropriate places. To avoid attracting predators or vermin, refuse containers at public access sites will be wildlife resistant. Refuse will be collected on a regular schedule so that excess refuse will not pile up or become a nuisance itself.

To preserve piping plover feeding and roosting habitat, the mechanical removal of natural organic material (wrack) shall be prohibited year-around along the shoreline. This has been identified as important foraging and roosting habitat by piping plovers as well as an abundance

of other shorebirds on the winter and migration grounds as well. Trash and litter may be manually removed. Exceptions apply when health of humans may be affected such as with red tide events. Protection of wrack will help to offset the impacts of shorebird habitat directly or indirectly by development activities and ensuing human disturbance.

Escambia County shall post, where appropriate, at each beach access points, the provisions of the County Animal Control Ordinance (Code 1985, § 1-4-1, Chap. 10) informing beach users about the prohibition of animals on the beach. Annually a notice shall be placed in the local paper informing in this same regard. A copy of the published notice should be mailed to the USFWS. Warnings and citations should be issued when appropriate to minimize harassment of piping plovers and other shorebirds.

10.4.4 Other Shorebirds

Minimization measures for other listed shorebirds will include the appropriate measures described above for piping plovers. This section also contains measures to minimize impacts to nesting shorebirds. Throughout the term of the ITP, Escambia County will continue to conduct and/or coordinate a survey of the Plan Area beaches to identify beach nesting sites of shore birds (e.g., least terns, black skimmers, American oystercatchers, snowy plovers, etc.). Monitoring personnel may include County staff or contracted biologists. The surveys will be conducted during shorebird nesting season, typically March 1 to September 15 of each year. Survey methods are detailed in Section 13.2.11.

If a nesting site is identified during the survey or otherwise reported to the County, the site will be cordoned off with appropriate materials, as directed by the County in consultation with FFWCC.

Pedestrian and vehicular access to cordoned off nesting sites will be prohibited. Signage will be installed to prevent further pedestrian disturbance. The County will periodically inspect the site to ensure appropriate protection measures remain in place until all nesting activity has ceased. Field personnel will take appropriate precautions to minimize disturbances to the nesting birds during identification, marking, and monitoring of nesting sites. Any observed or reported impacts to cordoned nesting sites will be documented and provided to the County.

Construction project boundaries will be established as described in Section 10.3.4. If any shorebird nesting areas are located near a construction area, a buffer zone will be established with stakes and rope ("post and rope") such that no operation of equipment, storage of equipment or supplies or entry by construction workers is allowed within 300 feet of a nesting area. This buffer zone will be marked by the appropriate nesting bird signage and entry to this area would be prohibited. The construction site should be kept clean and free of debris in dune habitats at all times during construction.

Vehicles are not allowed on the beaches of Perdido Key with exceptions for permitted uses and law enforcement/natural resource personnel. The following guidelines shall be followed when driving on the beach on Perdido Key. (FFWCC 2008a):

1. Vehicles will enter the beach only at designated access points and proceed directly to the hard-packed sand near or below the MHWL. Vehicles will avoid driving on the soft sand of the upper beach whenever possible.
2. Driving over dunes or beach vegetation shall be prohibited.
3. Vehicles will avoid operating through the wrack line or areas of dense seaweed on the beach.
4. If debris on the beach or high tides require driving above the MHWL, vehicles will avoid those areas with marked sea turtle nests or shorebird breeding areas.
5. Ruts will be minimized on the dry sandy beach by lowering the tire pressure and using four-wheel drive.
6. Vehicles will be operated at a low speed, slow enough for the driver to observe for any eggs, chicks, or adult birds. Vehicle operators should be aware that recently hatched chicks often feed along the water's edge. Young birds often do not run from ATV's or other vehicles upon approach.
7. Driving at night will not be allowed with the exception of emergencies. If vehicles must be driven on the beach at night, headlights will be turned off when parked with exceptions for emergency situations.
8. Vehicles will not be parked next to nests or posted areas.

10.4.5 HCP/ITP Training

As described throughout this document, numerous County departments, contractors, and outside groups and agencies are involved in implementation of the HCP and ITP. It is essential that all involved parties understand the intent of protected species regulations and his/her responsibilities under this plan and the ITP.

The County will develop a training manual and presentation, approved by the USFWS, to ensure consistency in HCP/ITP training. This manual shall contain information on the general biology and conservation issues for PKBM, sea turtles, and piping plovers, and specific measures to minimize take as described above. Material contained in the manual will be selectively presented to specific target audiences to ensure that they thoroughly understand their assigned responsibilities under the plan. The manual shall be finalized and approved by USFWS within six months of the ITP being issued.

Training for all groups will commence during the first year that the ITP is issued and then periodically thereafter as necessary. Video-taped training sessions may be used for initial and/or recurrent training, as appropriate. Upon receipt of notice of any possible HCP/ITP changes, the responsible parties must sign a standard form acknowledging the changes. Alternatively, a training session will be convened to review and discuss the changes, if deemed necessary.

Training will include a thorough review of relevant HCP programs and ITP terms and conditions and the following:

- A County maintained webpage for the PK ITP;
- A review of procedures for each of the activities to be performed under the HCP and ITP;
- A review of the County organizational chart (chain-of-command);

- All persons receiving HCP training will be required to sign a certification form indicating that they
  (1) have received the training class,
  (2) understand their responsibilities under the plan, and
  (3) agree to abide by all rules and regulations regarding permitted activities.

Any substantive changes in the ITP requirements occurring between training classes will be forwarded, in writing, to all affected parties by the County or made available on the County's website.

10.4.5.1 Public Education and Awareness

Escambia County will implement an education program, which is described in Section 14.1.6, to ensure public awareness of habitat conservation. Escambia County shall post the appropriate signage at public beach access points, to be completed within the first year post issuance of the ITP. The County will also develop brochures and other materials to disseminate information. The County will develop an educational brochure, within six months of issuance of the ITP, to outline the permitting process for potential applicants qualifying to use the County's ITP and HCP.

The County will also work with public education entities such as local science centers, museums, public and private schools, community organizations, chambers-of-commerce, and others to disseminate information regarding the HCP and the conservation of protected species on Perdido Key. A standard slide show discussing these topics will be developed and can be presented to community groups upon request. Other public information dissemination may include developing public services announcements, advisories, and/or other notices to local media regarding important HCP and protected species issues on Perdido Key. The information and slide show will be made available on the County's official website.

10.5 Post Construction & Monitoring

Subject to disturbance allowed by the terms of the ITP, permanent impact to each site shall be limited to the specific impacts indicated in the ITP and corresponding County issued permits. All temporary impacts associated with the ITP and this HCP shall be restored after completion of construction. Monitoring requirements specific to species covered under this HCP are fully detailed in Section 13.0.

Financial responsibilities of the County and/or property owner/developer shall include establishing an escrow account where funds sufficient to finance specifically designated PKBM (and other species as required) monitoring events for subject properties. Private property deed restrictions or covenants shall identify that such an account cannot be dissolved under any circumstances until the monitoring surveys are completed.

Other specific conditions identified in a building permit issued for each individual project will also contain requirements relative to post construction responsibilities of a permittee.

10.5.1 Predator Control/No Cats

Domestic cats will be prohibited from the premises of all permitted developments and/or County infrastructure improvements. Dogs will be allowed when kept confined inside the residential structure or condominium units. Dogs may be walked on a 6-foot hand held leash, outside of beach and dune areas in the impervious areas of a condominium complex and adjacent public access areas as permitted by local ordinances. All solid waste material must be picked up and disposed of properly by the pet owner/caretaker.

Any feral animals or free ranging pets will be captured and removed. The capture and removal of feral animals will be accomplished through onsite management or contractual arrangements with permitted nuisance species trappers and/or Escambia County Animal Control. If house mice are found within the managed project area, a trapping program shall be implemented and the mice removed. Pesticide and herbicide application will be prohibited in exterior areas of the units at all developments.

10.5.2 Best Management Practices

BMPs as described above in Section 10.3.2 for implementation during construction, shall largely be applicable to post construction activities.

Post construction BMPs relative to County infrastructure improvement and maintenance (i.e. County right-of-way improvements and public beach access points) shall include the following:

- Mowing a 10-foot width in the County right-of-way is an acceptable practice. Mowing provides habitat benefits by keeping vegetation in early succession stages and favoring plant species used as a food source by the beach mouse, such as *Smilax*.

- Trash cans shall be predator proof and kept covered to avoid attracting nuisance species. Trash receptacles will be restricted to the beach accesses.

- White Bahama Rock should be placed no further than 3 feet from the pavement edge to limit impacts and prevent migration into beach mouse habitat.

- Spot repairs with White Bahama Rock may occur within 9 feet of the pavement edge to address localized erosion. The County maintenance departments shall first contact the HCP coordinator before doing spot repairs outside of the 3-foot maintenance zone. This would provide an opportunity to recommend additional minimization measures and assure compliance with the ESA.

- Roadside parking shall be discouraged within the County right-of-way when beach mouse habitat is present.

10.5.3 Data Collection

The County shall develop standardized data sheets for monitoring project areas for PKBM, as applicable, sea turtles, and piping plovers. Monitoring shall be conducted by personnel skilled and properly permitted by State and Federal agencies for monitoring of the specific species included in this HCP. More details specific to monitoring are included in Section 13.0 of this HCP.

10.5.4 Data Reporting

To assess impacts of construction activities on PKBM, sea turtles, and piping plovers resultant data including negative reports from monitoring events will be furnished to the County. The data will be included in the Annual Report.

The ITPs require that an activities report be submitted to the USFWS by January 31st of each year. The annual report shall be prepared by the County and submitted to the USFWS and the FFWCC. The report shall contain a summary of development activities which took place within the HCP Plan Area and other information required by the ITP relevant to preservation of the habitat for the species of interest included in previous sections of this HCP. All data required from property owners/developers shall be provided to the County at least 30 days prior to January 31st of each year.

10.5.5 Habitat Restoration

Habitat restoration, as it pertains to this HCP Plan Area, primarily refers to dune habitats. Since the dune restoration requires natural accretion of sand over time and dependence on varying storm events, it cannot be conditioned as a single event relative to post construction requirements. Restoration plans for a disturbed area within a preserved habitat area will be designed as described previously. Restoration shall include the restoration to historic elevations and vegetation of the dunes with characteristic vegetation. Other potentially impacted habitats will require restoration with appropriate plant species.

11.0 MANAGEMENT OF OTHER POTENTIAL IMPACTS

A variety of human activities potentially impacting protected species on Perdido Key are either outside of the control of Escambia County or are regulated in part by other agencies or laws and regulations. The County's approach to managing these activities is described below.

11.1 Shoreline Protection

11.1.1 Structural Protection

Structural shoreline protection systems, including seawalls, revetments, and riprap, require permits from FDEP under the State's CCCL regulations. Other structural systems that extend

below the mean high water, such as groins and jetties, also require authorization from the ACOE. The repair of existing and installation of new structures shall not be permitted inside the Shoreline Protection Zone without a FDEP and/or an ACOE permit, as applicable along with written authorization from Escambia County. This HCP does not include shoreline protection.

Emergency repairs can occur during the sea turtle nesting season in accordance with procedures established elsewhere in this HCP, under other Federal ESA consultations, or permits (ITP). Restoration of damage to the beach/dune system as a result of construction activities shall be a condition of the County's authorization for shoreline stabilization projects. The County will work with FDEP and the ACOE to ensure that the spirit and intent of the HCP are considered during the review of permit applications for emergency shoreline protection projects.

11.1.2 Sand Fences

Sand fences installed for dune restoration and protection require permits from FDEP under the State's CCCL regulations. The repair of existing and installation of new fences shall not be permitted inside the Shoreline Protection Zone without a FDEP permit and written authorization from Escambia County. Sand fences cannot be installed or repaired during the sea turtle nesting season, unless otherwise authorized. All activities, including vehicle access locations, times, and operating procedures, must be conducted in accordance with this HCP and conditions imposed by County and/or State authorizations for the work. The County will work with FDEP to ensure that the spirit and intent of the HCP are considered during the review of permit applications for the installation of new and removal of relict sand fences.

11.1.3 Dune Modification and Restoration

Any project involving modifications to the dune system, including dune restoration, require permits from FDEP under the State's CCCL regulations. Construction of new and restoration of existing dunes shall not be permitted inside the Shoreline Protection Zone without a FDEP permit and written authorization from Escambia County. Under this HCP, some non-emergency dune restoration work may not occur during the sea turtle nesting season. All activities, including vehicle access locations, times, and operating procedures, must be conducted in accordance with this HCP and conditions imposed by County and/or State authorizations for the work.

11.1.4 Windblown Sand Removal

Removal of wind-blown sand from properties requires permits from FDEP under the State's CCCL regulations. This work shall not be permitted inside the Shoreline Protection Zone without a FDEP permit and written authorization from Escambia County. Under this HCP, wind-blown sand removal cannot occur during the sea turtle nesting season. All activities, including vehicle access locations, times, and operating procedures, must be conducted in accordance with this HCP and conditions imposed by County and/or State authorizations for the work. The County will work with FDEP to ensure that the spirit and intent of the HCP are considered during the review of permit applications for wind-blown sand removal.

11.1.5 Beach Nourishment

Beach nourishment projects require permits from FDEP and the ACOE. USFWS biological opinions and incidental take statements have and will cover the take of listed species on Perdido Key and will specify required minimization measures that will be incorporated into the ACOE permits issued for these projects. Therefore, construction activities and the use of vehicles associated with beach nourishment and other Federal sand placement projects shall not be regulated under this HCP or ITP. However, the County will work with FDEP and the ACOE to ensure that the spirit and intent of the HCP are considered during the review of permit applications for beach nourishment projects.

Construction schedules and methodologies will be reviewed to ensure that potential impacts to PKBM, sea turtles, piping plovers and their habitats are considered and minimized. To the greatest extent possible, project locations will be selected to enhance habitat for PKBM, sea turtles, piping plovers, and other protected species on Perdido Key.

12.0 MITIGATION FOR UNAVOIDABLE IMPACTS

12.1 Land Conservation

Mitigation is considered to be compensation for unavoidable impacts or losses. Mitigation actions may also include consideration for acquisition of land through fee-simple purchase and purchase of conservation easements on properties other than the property subject to take. For offsite mitigation there should be consideration for the efficacy of preserving habitat on a particular site based on the habitat existing on the site and/or the need for restoration and management. Offsite mitigation is not a replacement for onsite (avoidable) minimization. Land acquisition options relative to offsite preservation are discussed below.

12.2 Land Acquisition

Land acquisition may be considered as land set-asides according to a prescribed mitigation ratio or direct purchase for habitat preservation.

Land acquisition, in general on Perdido Key, may include components or be comprised of the possible options below:

- Purchase of private parcels to the south of Perdido Key Drive, east and west of PKSP.
- Purchase of private parcels to the north of Perdido Key Drive, east and west of PKSP.
- Establishment of a mouse corridor along the Gulf of Mexico beach, between the Alabama/Florida state line and the western edge of PKSP.

Land prices vary widely between the areas described above and the various zoning districts. The cost effectiveness of purchasing land for conservation offsite (on a barrier island) from the impact area may be cost prohibitive depending on each specific scenario.

Functioning from a landscape approach at conservation and maximizing land acquisition, development of a PKBM corridor to provide access of PKBM to sufficient habitat is important for future survivability of the species. Cost analysis and estimation for PKBM corridors of varying width were assumed for the estimation of the cost of a PKBM corridor south of Perdido Key Drive, along the beachfront, joining PKSP and GUIS and extending PKBM access from the western edge of PKSP to Gulf State Park in the Alabama portion of the Key.

The 2005 *Business Plan for the Perdido Key Beach Mouse Conservation Fund* analyzed a PKBM corridor in two segments, one extending west about 2.03 miles from the western edge of PKSP, the other from the eastern edge of PKSP to the eastern edge of GUIS, about 3.40 miles (RCF 2005). This analysis included approximately 20 acres of land in each segment, for a total of 40 acres for a PKBM corridor. Costs of parcels vary within these zones, but mean and median are close. The beachfront land closer to the center of the Key is considerably more expensive than the beachfront land further west.

Tables 12.1 and 12.2 from the report further delineate the land purchase cost estimates. Sale prices primarily from 2004 were used in the calculations of land acquisition and easement costs, since as stated in the business plan, 2005 sale price data were scarce and unsatisfactory; only a small number of 2005 transactions records contained usable information. A percent increase in price for sales between 2004 and 2005 could not be estimated.

Table 12.1 Estimated Value of Cost of Acquiring 40 Acres of Mouse Corridor South of Perdido Key Drive, 2005 Prices

Corridor location	Acres	Median Value per Acre	Corridor Cost
East side of PKSP to GINS	20	$6,426,230	$149,253,902
To west side of PKSP	20	$2,241,810	$52,067,680

The median land values, per acre, east of PKSP are somewhat lower than those west of that park. Acquisition costs of 3, 6½, and 10 acres north of Perdido Key Drive, on either side of PKSP, are shown in Table 12.2. Purchases are assumed to be divided equally between parcels east and west of PKSP when calculating total Strategy costs.

Table 12.2 Estimated Value of Cost of Acquiring Parcels North of Perdido Key Drive, 2005 Prices

Parcel location	Median Value per acre	Cost of		
		3 acres	6.5 acres	10 acres
West of PSKP	$1,906,250	$6,641,108	$14,389,067	$22,137,027
East of PKSP	$1,596,990	$5,563,689	$12,054,660	$18,545,631

Land acquisition is an effective approach to increasing conservation for the PKBM and additional protection for the other listed species covered in this HCP. The simple fact persists that land purchases available on Perdido Key may be more costly than if accomplished elsewhere for listed species requiring different, more affordable habitat.

As mentioned before, Escambia County has implemented land purchase for public conservation as a component of their ordinances. As per *Policy 11.B.6.1: List of Areas for Public Acquisition,* the county will develop and maintain a list of recommended areas for public acquisition. Such areas will include, but not be limited to, habitat for listed animal and plant species and parcels that would further the establishment of connected greenways. Escambia County will continue to pursue purchasing land that will provide suitable and appropriate habitat for PKBM and other listed species, such as the purchase of approximately 2 acres at the northwest corner of the intersection of River Road and SR 292 (Perdido Key Drive).

12.3 Voluntary Financial Contribution to PKBM Conservation Fund

One mitigation option to offset impacts to PKBM habitat includes electing to provide in-lieu fee mitigation compensation which includes an annual assessment fee. The current fee is $100,000 per acre of PKBM habitat lost per individual project. The specific Ordinance is detailed below.

Ordinance No. 2006-2 is enacted under authority of Article VII, Section 1(f) of the Constitution of the State of Florida and F.S. Ch. 125 for the purpose of providing a mechanism for imposition and collection of a recurring annual assessment for those properties involved in mitigation for PKBM habitat impacts.

a. *Short title.* This subsection shall be known as "The Perdido Key Beach Mouse Special Assessment Ordinance," and may be cited as such.
b. *Legislative findings.*
(1) Approximately 240 acres of private property on Perdido Key on which are located primary, secondary and scrub dunes have been identified as habitat for the Perdido Key Beach Mouse.
(2) Those wishing to commence new development within said 240 acres of Perdido Key Beach Mouse habitat must comply with federal, state and county permitting that includes the option of mitigation for impacts to Perdido Key Beach Mouse habitat.
(3) Those electing to provide in-lieu fee mitigation for impacts to Perdido Key Beach Mouse habitat will be assessed an annual assessment per unit.
(4) Those properties responsible for these annual assessments derive a special benefit from the improvements and services provided for by the annual assessments in that they benefit from the conservation and natural resource protection.
(5) The assessment is fairly and reasonably apportioned among the properties in the PKBM habitat area and is based upon the extent of the impact on the habitat.
c. *Imposition.* For those new developments or redevelopments on Perdido Key in the approximate 240 acres identified as Perdido Key Beach Mouse (PKBM) habitat that have elected mitigation for habitat impacts shall hereby be assessed an annual, recurring special assessment per unit on the subject site. The amount assessed shall be $201.00 per new unit as a recurring annual assessment. For purposes of this subsection, "unit" shall mean dwelling

unit as defined in Part III, article 3, section 3.00.01 of this Code. Additionally, for purposes of this subsection, "unit" shall also mean any commercial or lodging establishment. In those instances where a commercial establishment has definable delineations of separate ownership, each such division of separate ownership shall be considered a unit.

d. *Procedure for assessment.* Upon issuance of a certificate of occupancy for any unit subject to this assessment, the neighborhood and environmental services department shall report the subject parcel identification number(s) to the Escambia County Office of Management and Budget to process for collections.
e. *Method of collection.* Collection shall be by the uniform method of collection provided for by F.S. § 197.3632.
f. *Duration.* Recurring annual collections shall continue until such time as this subsection is repealed by the board of county commissioners.
g. *Appeal.* Any property owner assessed this special assessment in error may appeal in writing to the Escambia County Office of Management and Budget.

The PKBM business plan does not distinguish between residential and commercial developed land and the basis of the contribution to the fund ($201 per year) considers a full residential build-out of Perdido Key in terms of dwelling units. Under the existing intergovernmental agreement all residential development applying for take will make a contribution based on $201 per unit regardless of zoning category. It is prudent to formulate a uniform approach to determine the fee for Commercial and Hotel use. The following calculations will apply to Commercial and Hotel developments/Dwelling Units (DU):

Commercial (limited commercial is available in all zoning categories on Perdido Key)

- R1PK 106.26 acres 2 du/acre = 212.52 maximum dwelling units in this category
- R2PK 226.21 acres 4.5 du/acre = 1017.945
- R3PK 198.80 acres 12 du/acre = 2385.60
- C1PK 71.68 acres 3 du/acre = 214.04
- CCPK 180.37 acres 13 du/acre = 2344.81
- CGPK 51.92 acres 2.5 du/acre = 649.00
- PRPK 560.94 acres 5 du/acre = 2804.70

1. Total zoned acres = 1396.18
2. Maximum dwelling units = 9437.615
3. Average dwelling units per acre = 6.76
4. 6.76 x $201 = $1358.76 per acre, per year for non-residential development (excluding hotels)

Unless avoidance and minimization measures clearly exceed general permitting assumptions, the contribution would be based on the full size of the parcel (i.e. a commercial establishment or other non-residential use develops a one-acre parcel and through avoidance and minimization directly impacts 0.4 acres, the fee would be 6.76 units x 1 acre = $1358.76 – full utilization of averaged DUs and does not treat commercial differently (compare R3PK and C1PK uses and non-averaged contributions)

Hotel (hotel development is limited to select zoning categories)

- CCPK 180.37 acres 13 du/acre = 2344.81
- CGPK 51.92 acres 12.5 du/acre = 649.00
- PRPK 560.94 acres 5 du/acre = 2804.70

1. Total zoned acres = 793.23
2. Maximum dwelling units = 5798.51
3. Average dwelling units per acre = 7.31
4. 7.31 x $201 = $1469.31 per acre, per year for hotel development

Unless avoidance and minimization measures clearly exceed general permitting assumptions, the contribution would be based on the full size of the parcel (i.e. a one-acre hotel with 25 units may only utilize a footprint of 0.25 acres, the fee would be 7.31 units x 1 acre = $1469.31 for full use of averaged dwelling units and does not treat a hotel in CCPK differently than on in PRPK)

Utilization of this method will result in full funding as envisioned by the Business Plan in terms of total dollars generated based on dwelling units.

12.4 Escambia County Wildlife Lighting Ordinance

The shoreline along Perdido Key is currently developed with future development likely to occur, which will include lighted structures in close proximity to sea turtle nesting areas and other areas that support native coastal wildlife. Scientific studies conclude that certain types of artificial lighting have a detrimental effect on nesting sea turtles and their hatchlings by inhibiting nesting and interfering with the natural lighting cues used by hatchlings to properly orient to the open waters of the Gulf of Mexico.

Proper light management may positively affect other species of wildlife such as PKBM that utilize Escambia County's coastal areas. Since the County recognizes and respects the rights of citizens to use their property to the full extent and for their personal enjoyment, it is the goal of the Escambia County Board of County Commissioners (BOCC) to promote effective management of exterior and interior lighting to provide both safe and secure nighttime use of private property by property owners and minimize disturbances to nesting sea turtles, their hatchlings, and other coastal wildlife including PKBM. The County has made steps to draft an ordinance with the intention of reducing the detrimental effects of artificial lighting on sea turtles and other coastal wildlife. The purpose and intent of the ordinance is to reduce the impacts of artificial lighting on threatened and endangered sea turtles and other coastal wildlife including PKBM. If the draft ordinance becomes approved, private development projects will be required to adhere to the conditions of the ordinance.

See Appendix C for a copy of the DRAFT ordinance.

12.5 Cumulative Benefits

The cumulative benefits of the mitigation proposed in this HCP will be analyzed and reported to the USFWS as a component of the incidental take permit annual reporting requirement (see Section 14.0). Since this is a programmatic HCP, encompassing multiple future applications for take, this HCP will require oversight of individual site specific mitigation to functionally assess the cumulative benefits. The minimization of impacts coupled with the mitigation described above provides conservation benefits to outweigh impacts likely to occur as a result of issuance of the ITP. The take being mitigated is, for the most part, related to PKBM impacts.

12.6 Restoration Enhancements

Restoration components relative to this HCP have been detailed in Sections 10.1.4 and 10.5.5 of this HCP. Careful design and implementation of appropriate habitat restoration in effect should provide mitigation options. Depending on a site's specific conditions, adjacent habitat, functional usage provided by restoration, and other factors, each project applying or take under the County's ITP take shall be assessed individually. The County shall review restoration enhancements as they pertain to proposed mitigation.

12.7 Animal/Predator Control

Beach mice have a number of natural predators including snakes, owls, great blue herons, foxes, skunks, raccoons, and other wildlife as described in Section 5.3.1. Predation in beach mouse populations that have sufficient recruitment and habitat availability is natural and not a concern. However, predation pressure from natural and non-native predators on populations already stressed from a variety of threats may result in the extirpation of small, local populations of beach mice. Free-roaming and feral pets are believed to have a devastating effect on beach mouse persistence (Bowen 1968; Linzey 1978) and are considered to be the main cause of the loss of at least one population of beach mice (Holliman 1983).

A variety of sources suggest a range of annual costs for predator control between $12,000 and $80,000 for a territory roughly equivalent in extent to Perdido Key. High and low estimates are presented for this cost. The cost estimates in Table 12.3 below use annual costs of $30,091 for one-quarter time of a wildlife biologist and 10 percent time for a wildlife technician. These costs are comparable to an estimate for predator control costs obtained from a project to preserve the Shark Bay Mouse in Australia (Morris, Speldewinde and Orell 2001). The half-time estimate is double those values.

Table 12.3 2005 Estimate Value of Predator Control Costs (higher cost)

Cost Period	Half-time	Quarter-time
10 years	**$487,945**	**$243,972**
50 years	**$1,153,612**	**$576,806**
100 years	**$1,254,211**	**$627,106**

Table 12.4 reports predator control costs at the rate of an animal control officer on Perdido Key for half time, at an annual cost, including overhead, of $16,200, plus $2000 per year for vehicle expenses and $500 per year in miscellaneous equipment. Costs are reported at both half- and quarter-time.

Table 12.4 2005 Estimate Value of Predator Control Costs (lower cost)

Cost Period	Half-time	Quarter-time
10 years	**$130,704**	**$65,352**
50 years	**$309,013**	**$154,507**
100 years	**$335,960**	**$167,980**

The Escambia County animal control shall be contacted if free-roaming cats (pet or feral) are observed on the premises of any project utilizing this HCP. Inclusion in the ITP provides approval for Escambia County animal control to enter the premises and capture free-roaming cats. If house mice are found within the managed project area, a trapping program on the property shall be implemented as approved by USFWS and the mice removed.

Any feral animals will be captured and removed. The capture and removal of these species will be accomplished through contractual arrangements with permitted nuisance species trappers and/or Escambia County Animal Control or USDA-Wildlife Services. Pesticide and herbicide application would be prohibited outside the units at the development.

Domestic cats will be prohibited from the premises. Dogs will be allowed when kept confined inside the condominium units. Dogs may be walked on a 6-foot hand held leash, outside of beach and dune areas (PKBM habitat) in the hardscape areas of the condominium complex.

13.0 MONITORING AND MANAGEMENT OF LISTED SPECIES.

13.1 Perdido Key Beach Mouse Monitoring

A scientifically based PKBM monitoring program is essential to the success of this HCP. The monitoring program will be developed and managed by the County and will be conducted by personnel that are properly permitted by State and Federal authorities and either have prior experience or are trained specifically to carry out the field responsibilities described in the HCP. The County will monitor and evaluate PKBM monitoring to ensure that data collected in support of the HCP are consistent, reliable, and permit an accurate assessment of the effectiveness of protective measures implemented under the ITP.

Section 10 regulations require that an HCP specify the measures the Applicant will take to "monitor" the impacts of the taking resulting from the project actions [50 CFR 17.22(b)(1)(iii)(B) and 50 CFR 222.22 (b)(5)(iii)]. A property owner/developer would commit to a three year trapping program designed to establish the presence and population dynamics of the PKBM in association with permitted take activities allowed under the HCP. The County will be responsible for designing and implementing a PK-wide PKBM monitoring program. Subsequent

to the initial three year program, the County will work with a development concerning the need to monitor.

Researchers have used several methods to gather wildlife population information about specific subspecies including track surveys in sand (Gore and Schaefer 1993), live-trapping (e.g., Blair 1951, Rave and Holler 1992, Van Zant and Wooten 2003), and remote sensing with radio collars or Passive Integrated Transponder (PIT) tags (Swilling et al. 1998). Depending on the specific terrain of a site and other constraints, the following techniques are described to present the best application for PKBM monitoring associated with this HCP and the most appropriate trapping/monitoring protocol will be agreed upon by USFWS and the County.

13.1.1 Live Trapping

Live-trapping is an effective means of surveying small mammal populations generating data on both distribution and abundance (Loggins et al. 2008). Baited traps are typically set in grids or along transects and checked daily, typically for 4-5 days (Olsen 1975, Steele et al. 1984). Captured animals usually are uniquely marked, often with ear tags or by toe-clipping, and data on animal health, reproductive status, and body measurements are recorded. Animals are released at the trapping site and the ratio of marked and recaptured animals can be used to estimate the size of the sampled population (Otis et al. 1978, White et al. 1982, White and Burnham 1999). The accuracy of population size estimates from mark-recapture data is notably sensitive to small population sizes (Borchers et al. 2002, Conn et al. 2004). When the actual population size is small, as is often the case with beach mice, the variance of the estimate can be large and differentiating changes in the population is difficult.

The primary disadvantage of trapping is that it requires considerable labor and a rigid schedule, which makes it impractical to apply over a large area. In addition, predators may spring traps in search of food and may prey on captured animals (Layne 1987). Expertise in handling animals is required for trapping and, even with experienced trappers, captured animals may be inadvertently stressed, injured, or killed (Platt 1968).

Analysis of mark-recapture data from live-trapping can provide precise estimates of true population size or demographic parameter (White and Burnham 1999). Live-trapping will likely be of most interest for closely monitoring small populations that may be declining or for determining the size and demographics of populations impacted by tropical storms or other significant disturbances. If it is important to monitor true population size along with area occupied, a study design involving periodic mark-recapture in small areas along with regular track tube monitoring over larger areas may be appropriate (Wiewel et al. 2007).

13.1.2 Track Tubes

The distribution of animals can be determined by detection of animal tracks on a smooth or prepared surface (Nams and Gillis 2003). Several methods are available for monitoring presence of animals from tracks, including smoke plates (Barrett 1983), sand pads (Wilson and Delahay 2001), and track tubes (Nams and Gillis 2003). Smoke plates and sand pads, while effective at

detecting animals, are not an efficient large-scale monitoring technique because they typically require regular maintenance to keep the tracking surface viable (Barrett 1983).

These techniques would be especially ineffective in a beach or dune environment with blowing sand. In contrast, track tubes enclose the track surface in a weatherproof housing and, therefore, are inexpensive to operate and require little maintenance. Track tubes can provide a measure of relative abundance between locations or years. Individual animals are typically not recognized with track tubes and, consequently, estimates of population size from mark-recapture analysis are not possible (Loggins et al 2008).

The proportion of tubes with tracks provides an index of the relative abundance of beach mice in an area, but it may not be correlated with true population size. Indices of abundance obtained from track tube data may not accurately reflect true population size or even vary linearly with population size (Drennan et al. 1998, Glennon et al 2002, Wiewel et al. 2007). Analysis of mark-recapture data from live-trapping can provide precise estimates of true population size or demographic parameter (White and Burnham 1999).

13.2 Sea Turtle Monitoring

A scientifically based sea turtle monitoring program is also essential to the success of this HCP. The State of Florida has a sea turtle monitoring program in place statewide. Perdido Key (private and public lands) is part of the current program. The County will work with the State and current permitted surveyor to ensure that data collected in support of the HCP are consistent, reliable, and allow an accurate assessment of the effectiveness of protective measures implemented under the ITP.

All persons involved in sea turtle monitoring activities for this HCP on Perdido Key, as described below, must be listed on a valid Marine Turtle Permit from FFWCC. These individuals may include County staff, PKSP staff, members of non-profit organizations, unaffiliated volunteers, and/or professional consultants. The sea turtle permit holder will be responsible for directing and managing the activities of individuals listed on their permits in accordance with the most current FFWCC guidelines and requirements of this HCP. One or more sea turtle permit holders may be involved in implementation of the sea turtle monitoring program. A copy of all Marine Turtle Permits issued by FFWCC for activities associated with implementation of this HCP shall be provided to the USFWS prior to the beginning of each nesting season.

The primary objectives of the sea turtle monitoring program are to:

- Document the number of nesting and non-nesting emergences by species and the location of all observed nests on Perdido Key;
- Mark and protect nests and collect location data so they can be monitored;
- Monitor nest hatch and emergence success; and
- Document impacts to nests or unauthorized take of individuals.

13.2.1 Monitoring Nesting Activity

The purpose of the daily surveys is to document the temporal and spatial distribution of sea turtle nests on Perdido Key and to ensure that those nests are adequately protected from development, vendors, beach drivers and beach goers. Specific areas to be monitored are established by FFWCC and the permit holders.

Daily sea turtle nesting surveys will be performed annually from May 1 to September 1. Daily monitoring will be conducted on all unhatched nests after September 1 until all nests have hatched or nest barriers have been removed from the beach. In accordance with current FFWCC guidelines, monitoring personnel will begin the surveys at or near dawn. The County will take all practicable measures (e.g., contractual agreements with sea turtle permit holder) to ensure that a sufficient number of personnel are dedicated to the monitoring program to complete the morning survey in a timely manner and that all required monitoring and nest marking is completed before construction activities are to commence for the day and/or 9:00 AM. Monitoring personnel will utilize a system established by the County to notify appropriate Escambia County staff when the surveys have been completed to allow access by sanitation workers, concessionaires, vendors and other permitted beach users.

Monitoring personnel may use ATVs, and/or other motorized vehicles to conduct the surveys. These vehicles shall be operated in accordance with guidelines established in this HCP or a turtle permit. At a minimum the vehicles will have tire pressures of 10 pounds per square inch or less. Generally vehicles shall be required to operate along the wet/dry beach interface. Occasionally, primarily during extreme high tides, the vehicles used for these surveys may utilize other areas of the beach. Sea turtle recovery plans, such as the Recovery Plan for the U.S. Population of Loggerhead Turtle, recognize the need for vehicular access to nesting areas during performance of permitted research activities (NMFS and USFWS 2008). In addition, because of the length of beach to be surveyed daily before 9 AM, vehicles are needed.

Monitoring personnel will interpret each sea turtle emergence (crawl) evident from the previous night and will determine if the crawl resulted in a nest or non-nesting emergence. Nesting and non-nesting emergences (false crawls) will be recorded by species and survey area on standardized field data sheets developed in coordination with the County.

13.2.1.1 Marking Nest Sites

The purpose of nest marking is to make all nest sites conspicuous to equipment operators and beachgoers. Nests will be marked in accordance with current FFWCC guidelines (see http://www.floridaconservation.org/seaturtle/Guidelines/Seaturtle_Guidelines.pdf). Each marked nest will be assigned and inscribed with a unique identification number that identifies the species and nest date.

Frequently, a turtle will begin to excavate a nest but will then abandon her attempt. These abandoned digs are indicated by disturbed areas along the path of the crawl. If a determination cannot be made by monitoring personnel whether or not a disturbed area is a nest, the monitoring personnel will be required to mark it as a nest.

13.2.1.2 Mapping Nest Sites

Global Positioning System (GPS) data collection shall be required to document sea turtle nesting. GPS coordinates will be taken on the original nest site and relocated nest site if applicable. The GPS instrument used shall be of sufficient precision (sub-meter accuracy preferred) to allow for the reestablishment of nest protection in the case they require reestablishment. The GPS data will be collected in a timely manner and followed up by entering data into a database established by the County. All data shall be referenced by the nest identification number assigned and inscribed on the nest barrier. Nest mapping will be done in conjunction with ArcMap and/or other GIS software programs in coordination with the County. The County will be responsible for managing the mapping and data. The County will maintain an inventory of all marked nests relative to this HCP. The inventory shall be updated by the County on a regular basis with new nest data and updates on hatched nests.

13.2.2 Nest Monitoring

Every morning, all nests listed on the inventory shall be checked to ensure that nest protection is present and intact. Marked nests shall be monitored daily so that in the event markings are washed out, vandalized, or otherwise damaged, the markings can be reestablished as soon as possible. Damaged markings shall be repaired as necessary to ensure their visibility. Missing barriers will be reported immediately to the turtle permit holder and the nest using GPS data. The sea turtle permit holder will assess the nest site to determine if viable eggs are likely to be present. If it is determined that viable eggs may be present, the nest barrier shall be reestablished.

13.2.3 Missed Nests

Missed nests can be identified by signs of hatchling emergences in areas where no nests have been marked. Once discovered, missed nests will be marked and monitored in a manner consistent with procedures for in situ nests and nest hatch evaluation.

13.2.4 Hatchling Emergences

Data for first hatchling emergence signs shall be noted whenever observed and used to determine incubation period. Evidence of hatchling emergence shall be examined to determine if hatchlings properly oriented to the Gulf of Mexico. If monitoring personnel observe evidence of hatchling disorientations by artificial lights, a standard disorientation report form will be required to be completed in accordance with the most current FFWCC guidelines and a copy provided to the County.

Nests shall be excavated to determine hatch and emergence success in accordance with the most current FFWCC guidelines.

http://www.floridaconservation.org/seaturtle/Guidelines/Seaturtle_Guidelines.

13.2.5 Strandings

Throughout the year, Escambia County staff and the sea turtle permit holder will report all sea turtle strandings. The sea turtle permit holder shall retain authority for stranding response and provide info to the County. The permit holder will be required to complete a standard Sea Turtle Stranding and Salvage Report in accordance with the most current FFWCC guidelines. If there is any evidence that a stranded turtle has been impacted by activities covered under the ITP, the USFWS and the FFWCC will be notified immediately. The County will work with the permit holder to prepare a report and notify the USFWS and FFWCC in accordance with conditions of the ITP.

In the event that a live stranded turtle occurs in an area covered by this HCP, the County will be notified and appropriate measures taken to coordinate with FFWCC and/or USFWS. Live strandings will be handled by permitted personnel in accordance with the most current FFWCC guidelines. Personnel involved in the evaluation, care, rehabilitation, and/or release of stranded turtles must be properly permitted by FFWCC and must conduct all hands-on activities in accordance with the most current FFWCC guidelines.

13.2.6 Ancillary Protective Measures

The goal of this HCP is to eliminate or minimize impacts to sea turtles from activities associated with the HCP on Perdido Key. Although all permitted traffic is generally directed to wetted portions of the beach, vehicles may at times traverse soft sand areas. Ruts allowed to remain on the beach have the potential to impede or trap hatchlings during their nest to sea migration. Therefore, it may be necessary to implement a rut removal program to ensure that any ruts are appropriately removed.

All marked sea turtle nests on Perdido Key must be evaluated for rut removal as they near hatching. Sea turtle monitoring personnel will inspect nests each day for the presence of ruts and shall effectively remove the rut by hand. If the ruts are too extensive to remove in a timely manner without interfering with other monitoring requirements, the County shall be contacted as soon as possible, so appropriate measures can then be undertaken including rut removal. The County will supply sea turtle monitoring personnel with multiple contact numbers and a schedule of on-call County staff to be contacted on weekends and holidays to report rut problems. Rut removal may be conducted on weekends if needed.

Raking to remove the ruts will be conducted mechanically with equipment and/or vehicles approved by the HCP Coordinator and County staff. Equipment may include rakes, towed chains, sections of chain link fence, or other approved methods and equipment. The equipment used cannot penetrate the sand by more than three inches. If a particular method or equipment shown to be effective in rut raking operations conflicts with other provisions of this HCP, the USFWS shall be notified and a determination made as to its acceptability.

County staff responsible for rut removal and beach cleanup/raking will be trained by the County staff responsible for implementation of the ITP and HCP. The County will closely monitor the rut removal activities to ensure that established procedures are adhered to and the activities are meeting anticipated results.

13.2.7 Lighting Disorientation Reporting

Escambia County staff and the sea turtle permit holder will report all sea turtle lighting disorientations to the County. The sea turtle permit holder shall retain authority for disorientation response and provide info to the County. The permit holder will be required to complete a standard Sea Turtle Disorientation Report Form (see Appendix K) in accordance with the most current FFWCC guidelines. If there is any evidence that a turtle has been impacted by light disorientation, the USFWS and the FFWCC will be notified immediately if from an ITP permitted activity. Lighting disorientations will be provided in the annual ITP report to USFWS.

13.2.8 Obstruction Reports for Hatchlings and Adults

Throughout the year, Escambia County staff and the sea turtle permit holder will report all sea turtle nesting obstructions to the County. The sea turtle permit holder shall retain authority for nesting activity obstruction response and provide info to the County. The permit holder will be required to complete a standard Sea Turtle Obstructed Nesting Attempt Form (see Appendix L) in accordance with the most current FFWCC guidelines. If there is any evidence that a sea turtle has been impacted by construction or other activities, the USFWS and the FFWCC will be notified immediately if from an ITP permitted activity. Obstruction reports will be provided in the annual ITP report to USFWS.

13.2.9 Piping Plovers Monitoring

Pre-construction surveys for non-breeding piping plover in specific project areas will be conducted daily starting two weeks prior to project initiation between July 15 and May 15 (10 months of the year), see Appendix J for methodology. Daily piping plover survey results shall be submitted to the USFWS Panama City Florida Field Office with maps in the ITP annual report documenting the locations of piping plovers (with GPS coordinates or latitude and longitude coordinates) if seen during this survey period.

Post construction, negative data shall also be reported. To document the amount of recreational pressure potentially occurring along the shoreline in a specific project area, at least one bi-monthly shorebird survey shall be conducted in April through October on a weekend.

13.2.10 Other Shorebirds

Shorebird surveys for the other shorebirds included in this HCP will be conducted by trained, dedicated individuals (Shorebird Monitor) with proven shorebird identification skills and avian survey experience. Credentials of the Shorebird Monitor will be submitted to the County for initial verification and then to the FFWCC Regional Biologist for review and approval. Shorebird Monitors will use the following survey protocols:

Nesting Season Surveys. Shorebird Monitors will review and become familiar with the general information and data collection protocols outlined on the FFWCC's Beach-Nesting Bird Website

(http://myfwc.com/shorebirds/). An outline of what data should be collected, including downloadable field data sheets, is available on the website.

a. The nesting season is generally 1 April – 1 September, but some nesting may occur through September. In addition, the imperiled snowy plover (*Charadrius alexandrinus*) may nest as early as February along the west coast and panhandle of Florida. Nesting season surveys shall begin on April 1 (or February 15 in snowy plover habitat) or 10 days prior to project commencement (including surveying activities and other pre-construction presence on the beach), whichever is later, and be conducted daily throughout the construction period or through August if no shorebird nesting activity is observed.
b. Nesting season surveys shall be conducted in all potential beach-nesting bird habitats within the project boundaries that may be impacted by construction or pre-construction activities during the nesting season. Portions of the project in which there is no potential for project-related activity during the nesting season may be excluded.
c. Surveys for detecting new nesting activity will be completed on a daily basis prior to movement of equipment, operation of vehicles, or other activities that could potentially disrupt nesting behavior or cause harm to the birds or their eggs or young.
d. Surveys will be conducted by walking the length of the project area and visually inspecting, using binoculars or spotting scope, for the presence of shorebirds exhibiting breeding behavior.
e. If an ATV or other vehicle is needed to cover large project areas, the vehicle must be operated at a speed <6 mph, shall be run at or below the high-tide line, and the Shorebird Monitor will stop at no greater than 200 meter intervals to visually inspect for nesting activity.
f. Once breeding is confirmed by the presence of a scrape, eggs, or young, the Bird Monitor will notify the Regional Nongame Biologist of the FFWCC (Attachment 6) within 24 hours. All breeding activity will be reported to the Beach-Nesting Bird website within one week of data collection.
g. Observations of non-breeding shorebirds should be reported to the Shorebird-Seabird Occurrence Database, as described below.

Non-Breeding Shorebird Surveys. Data collected on non-breeding shorebirds should be compatible with, and reported to, the Shorebird-Seabird Occurrence Database (http://myfwc.com/shorebirds).

h. Surveys for non-breeding shorebirds should begin 14 days prior to construction commencement and be conducted once every 2 weeks for at least one year post-construction. Data collected during these surveys will provide valuable information on the use of disturbed beaches to shorebirds.
i. Survey for non-breeding shorebirds will include all potential shorebird habitats within the project boundary.

Data should be entered into the database within one month of collection.

14.0 INCIDENTAL TAKE PERMIT MANAGEMENT

14.1 Escambia County Administration of Habitat Conservation Plan

Escambia County shall be responsible for ensuring the County and any property owners/developers meet the terms and conditions of its ITP and for allocating sufficient staff and resources to ensure that the HCP can be effectively implemented. The organizational structure described below is established to provide communication and coordination among the various County departments, offices, County contractors, and other individuals and groups involved in implementation of the HCP.

14.1.1 HCP Coordinator

A HCP Coordinator position will be established to manage the ITP for the County. The HCP Coordinator will manage and/or coordinate PKBM, sea turtle, and piping plovers monitoring activities, HCP reporting, and all other aspects of the related conservation elements of this HCP. The HCP Coordinator will also be responsible for administering the ITP. This position may be filled by County staff or through contractual agreement with outside individuals or professional firms.

The person or contractor assigned to the role of the HCP Coordinator shall at a minimum have the following qualifications:

- A Bachelor's Degree in the biological sciences or closely related fields and at least three (5) years of practical experience managing projects in coastal habitats;
- A thorough knowledge/understanding of PKBM biology and conservation, with sufficient technical and practical experience to obtain any required PKBM permit to conduct surveys and other activities required under this HCP;
- A thorough knowledge/understanding of sea turtle and shorebird biology and conservation, with sufficient practical experience to obtain a FFWCC marine turtle permit to conduct nesting surveys and other activities required under this HCP;
- Knowledge of scientific data collection and analytical techniques, familiarity with database programs and related computer applications, and practical experience preparing technical reports;
- Ability to develop and manage multi-faceted programs;
- Knowledge and understanding of the HCP, the Escambia County Land Development Code, the Draft Escambia County Wildlife Lighting Ordinance, and other State and Federal regulations pertaining to the protection of sea turtles on Perdido Key;
- Ability to work out of doors, near salt air and salt water, and in beach sand;

- Ability to operate all terrain vehicles, trucks, pull a trailer behind a vehicle, and possess a valid drivers license;

- Ability to communicate effectively both orally and in writing; and

- Professional demeanor and the ability to effectively interface with diverse stakeholder groups.

Upon assuming the position, the HCP Coordinator will review and become thoroughly familiar with the following: the HCP and ITP; Escambia County's Land Development Code; Section 161, Florida Statutes (FS), and Chapter 62B-33, Florida Administrative Code (FAC) regarding rules and procedures for the State's shoreline protection program; Federal recovery plans for the PKBM, loggerhead, green and leatherback turtles, piping plovers; and other State and Federal regulations pertaining to the protection of listed species on Perdido Key.

The purpose of the HCP Coordinator is to provide professional leadership for all aspects of listed species management on the Perdido Key. Specifically, the HCP Coordinator shall perform the following functions under the HCP:

- Coordinate the activities of listed species monitoring personnel to ensure that HCP objectives are achieved;
- Provide HCP training to sea turtle monitoring personnel and supply them with data sheets, field equipment, assistance in the field, and other logistical support, as may be needed to effectively implement this HCP;
- Interface with the sea turtle permit holders to ensure that the County's obligations under this HCP are being met for sea turtles;
- Document impacts to PKBM, sea turtles, and piping plovers causally related to the ITP;
- Manage and analyze listed species data through a Countywide database;
- Assess the effectiveness of the HCP in achieving its biological goals;
- Develop educational materials/programs and provide presentations for public education, as necessary;
- Work with properties receiving certificates on inclusion for the ITP to ensure permit compliance and data collection;
- Prepare data reports and HCP program evaluations for submission to the USFWS in accordance with the terms and conditions of the ITP;
- Provide guidance and oversight to all technical aspects of the HCP;
- Ensure that personnel and equipment directed by the County toward implementation of HCP and related programs is sufficient to achieve HCP objectives;
- Coordinate the activities of various County departments, divisions and offices, Primary Permit Holder, outside contractors, and others involved in implementation of the HCP;
- Interact with the property owners/manager and the public concerning the ITP;
- Coordinate the committee for the conservation fund;
- Develop annual budgets for required HCP programs; and
- Serve as the County's point of contact with State and Federal regulatory agencies regarding all issues related to the HCP and ITP;
- Supervise the Protected Species Specialist (PSS) and HCP Field Manager;

- Assume all roles of the PSS and HCP Field manager in the event that workload does not require these positions to be filled.

If the position of HCP Coordinator is vacated at any time during the 30-year period that the ITP is in effect, Escambia County will use available resources to fulfill the duties of the HCP Coordinator until the position is filled. Escambia County will establish a temporary procedures plan, which will detail how the responsibilities of the HCP Coordinator will be carried out in the event of a vacancy of the position. Escambia County will seek to fill the position immediately upon any vacancy.

14.1.2 Protected Species Specialist

Escambia County will be responsible for maintaining a position (either directly or through contract), which will be titled Protected Species Specialist (PSS). The PSS will be County staff or be able to use the resources of Escambia County government to monitor and manage protected species on Perdido Key. This person will coordinate with the County's HCP Coordinator and appropriate regulatory agencies to accomplish the goals of this HCP. The purpose of this position is to provide professional leadership to all aspects of protected species management on Perdido Key.

Since economic trends will have a direct effect on the amount of take requested on Perdido Key relative to this HCP, the responsibilities and time of the PSS may be accomplished by the HCP Coordinator. Depending on estimated workloads and budget projections, this position may be temporary or maintained as vacant, provided the HCP Coordinator is able to fulfill all responsibilities and duties required in this HCP and the ITP. If a PSS is hired to conduct activities of this HCP, the HCP Coordinator will establish the specific duties the PSS will be responsible for. Any duty assignments under the responsibility of the PSS will be approved by the USFWS. Estimated budget and work load requirements pertaining to needs to fill and maintain this position will be included in reporting requirements of the County for HCP program evaluations submitted to the USFWS in accordance with the ITP conditions.

The PSS may potentially be responsible for the following activities under the HCP:

- Evaluating the activities of PKBM, sea turtle, and piping plovers monitoring personnel to ensure that HCP objectives are achieved;
- Managing and analyzing protected species data;
- Assessing the effectiveness of HCP programs in protecting PKBM, sea turtles, and other listed species;
- Periodically reviewing HCP programs to ensure that they are performed in accordance with current Federal, State, and/or County laws, rules, and regulations pertaining to protected species;

- Assisting the County in developing public education and awareness materials and programs;
- Preparing data reports and HCP program evaluations for submission to the USFWS in accordance with ITP conditions; and
- Providing guidance and oversight of all technical aspects of the HCP.

The person or persons assigned to the role of the PSS shall at a minimum have the following qualifications:

- A minimum of a Bachelor's Degree in the biological sciences or closely related fields and three (3) years of practical experience managing coastal zone species, including beach mice and sea turtles;
- A thorough knowledge and understanding of beach mice, sea turtle, and shorebird biology and conservation and sufficient practical experience to obtain a FFWCC marine turtle permit to conduct nesting surveys and other activities required under the HCP;
- Thorough knowledge and understanding of the HCP, the LDC, the Draft Escambia County Wildlife Lighting Ordinance, and other State and Federal regulations pertaining to the protection of sea turtles on Perdido Key;
- Knowledge of scientific data collection and analysis techniques and practical experience preparing technical reports (must be able to read, comprehend, and/or compose advanced technical material);
- Ability to work out of doors, near salt air and salt water, and in beach sand;
- Ability to operate all terrain vehicles, trucks, pull a trailer behind a vehicle, and possess a valid drivers license;
- Ability to communicate effectively both orally and in writing (must be able to speak, hear, and possess visual acuity, particularly at night); and
- Professionalism and the ability to interface with diverse stakeholder groups.

14.1.3 HCP Field Manager

Escambia County may assign a staff person to serve as Field Manager. This person, if qualified, may also serve in the capacity of PSS. The Field Manager will perform the following tasks, as required, by the PSS and/or HCP Coordinator:

- Manage and/or coordinate the day-to-day activities of PKBM, sea turtle, and shorebird monitoring personnel;
- Conduct and/or coordinate surveys for other protected species, as required by the HCP;
- Receive, review, and summarize monitoring data and related information provided by sea turtle monitoring personnel;
- Manage ancillary data collection activities, such as GPS;
- Oversee entry of sea turtle and related data into the County's database;
- Perform quality assurance measures, as directed by the HCP Coordinator, to ensure reliability of the County's sea turtle database; and
- Relay problems identified by HCP program personnel to the HCP coordinator and/or appropriate County division/department for remedial action and monitor the resulting response to ensure that the problem is adequately resolved.

As applicable, the Field Manager shall maintain close communication with the HCP coordinator and shall consult with the HCP coordinator whenever a situation arises that could affect the County's ability to comply with the ITP or otherwise fulfill its obligations under the HCP.

Since economic trends will have a direct effect on the amount of take requested on Perdido Key relative to this HCP, the responsibilities of the Field Manager may be accomplished by the HCP Coordinator. Depending on estimated workloads and budget projections, this position may be temporary or maintained as vacant, provided the HCP Coordinator is able to fulfill all responsibilities and duties required in this HCP. If a Field Manager is hired to conduct activities of this HCP, the HCP Coordinator will establish the specific duties the Field Manager will be responsible for. Any duty assignments under the responsibility of the Field Manager will be approved by the USFWS. Estimated budget and work load requirements pertaining to needs to fill and maintain this position will be included in reporting requirements of the County for HCP program evaluations submitted to the USFWS in accordance with the ITP conditions.

Escambia County may have the option of filling both the PSS and Field Manager, or either position singly. At no time shall Escambia County allow for dereliction of duty for responsibilities of the HCP Coordinator.

14.1.4 Sea Turtle Permit Holder

One or more sea turtle permit holder(s) will be responsible for monitoring the beaches of Perdido Key within the plan area of this HCP. These individuals may include staff of municipal, County, State and Federal agencies, members of non-profit organizations, unaffiliated volunteers, and/or professional contractors.

The sea turtle permit holder shall ensure that all personnel listed on his/her Marine Turtle Permit have sufficient training and practical aptitude to conduct their monitoring activities in accordance with the most current FFWCC guidelines and the procedures described in this HCP. The sea turtle permit holder shall also be responsible for ensuring that data collected pursuant to this HCP are accurate, complete, and transmitted to the HCP Coordinator in a timely manner. The sea turtle permit holder will communicate on regularly scheduled basis with the HCP Coordinator to discuss operational matters and will immediately alert the HCP Coordinator to known problems that may possibly undermine the County's ability to meet its obligations under the HCP or ITP.

The sea turtle permit holder may periodically request the HCP Coordinator to provide them with maps, data summaries or other database products to assist in their monitoring activities. To bring unity to the County's sea turtle monitoring program, the HCP Coordinator will meet with the sea turtle permit holder, USFWS, and FFWCC annually, or as otherwise mutually agreed upon, to review HCP programs and discuss PKBM population trends, sea turtle nesting trends and issues affecting piping plovers.

14.1.4.1 Data Management

Methods of collecting PKBM, sea turtle, and shorebird data will be coordinated and/or developed by the HCP Coordinator and managed through the Field Manager. Escambia County will use its capabilities to develop maps and analyses of the data collected, as needed by the HCP Coordinator and/or regulatory agencies, to assess trends or HCP program performance. The HCP Coordinator will analyze data, at least annually, to evaluate the effectiveness of HCP programs and determine if any modifications to procedures are required. The HCP Coordinator will be responsible for preparing annual reports furnished to the USFWS and other data summaries as required/requested by State and Federal regulatory agencies.

14.1.5 Compliance and Permit Enforcement

The HCP Coordinator will be responsible for coordinating the activities of appropriate departments and divisions within Escambia County government who are responsible for the monitoring and reporting of the HCP/ITP conditions, State, and County regulations pertaining to protected species on Perdido Key. The development and standardization of procedures to effectively monitor and enforce pertinent protected species conditions will be coordinated with the HCP Coordinator. The HCP Coordinator will ensure that County enforcement staff is properly educated and organized to effectively carry out their responsibilities under the HCP and that there are effective inter- and intra-departmental lines of communications. The HCP Coordinator will periodically review County regulations, codes, and directives to determine if they require stricter enforcement to ensure HCP objectives and modify accordingly. Escambia County will coordinate with the FFWCC and USFWS, as necessary.

It shall be the responsibility of the HCP Coordinator charged with ensuring compliance with the HCP and ITP to act with due diligence in monitoring for infractions and for taking appropriate enforcement action when infractions are observed.

The provisions of this HCP will be enforced through the terms and conditions of the ITP. Should any development disturbance take place outside the limits set by this HCP, the Federal and State agencies have the ability to enforce provisions of the Endangered Species Act as they relate to the taking of an endangered species with respect to each specific occurrence. If general terms and conditions required under the HCP and the ITP are not carried out in a timely manner, the USFWS may suspend the ITP until all parties agree to a solution.

After issuance of the ITP and prior to the occupancy of land uses within the suitable habitat area, a property owner/developer utilizing this HCP will be required to produce legally binding covenants and restrictions to implement the provisions of this HCP. These will include, but not necessarily be limited to building restrictions, trash, and pest control regulations, as well as funding and enforcement to insure full compliance with the HCP. In the event of a condominium type development utilizing this HCP (in accordance with State of Florida condominium Association requirements) the specific ITP will be transferred to the property owners association at the appropriate time when a majority of the units are no longer owned by an applicant.

14.2 Intergovernmental Agreement

In January 2004, the USFWS and FFWCC trapped a PKBM on a private development site near the PKSP. This trapping confirmed the presence of the PKBM and associated endangered species habitat. Due to the confirmation of PKBM and an increase in development activities, Escambia County, USFWS, and the FFWCC engaged in collaboration to develop an intergovernmental agreement to provide options for mitigating impacts to PKBM habitat. Due to limited mitigation opportunities available on Perdido Key, Escambia County staff has worked with the USFWS and FFWCC to establish a Perdido Key Conservation Management Fund through an intergovernmental agreement as a compensatory in-lieu mitigation fee alternative available for the County, State and Federal mitigation requirements.

Since the County, USFWS, and FFWCC have mutual interests, missions and goals that substantially overlap with regard to regulation of activities that affect the PKBM, the parties have cooperated on the development of a PKBM Conservation Strategy and Agreement; and will continue to cooperate on revising this Strategy as needed in the PKBM conservation effort (see Appendix M).

In keeping with this background and the mutual and overlapping missions and goals, the parties desired to establish a unified administrative mechanism to manage and spend funds generated from various sources for PKBM conservation. The parties agreed that an intergovernmental agreement made the most efficient use of their powers by enabling them to cooperate with each other for mutual advantage and thereby provide services and facilities pursuant to a form of governmental organization that will work with the geographic, economic, and other human factors influencing the needs and development of Perdido Key.

The County agreed to establish and administer a fund for these purposes, with the Escambia County Neighborhood and Environmental Services Department expected to be the County department in charge of the daily operation and decisions regarding this fund.

The purpose of the intergovernmental agreement was to establish the PKBM Conservation Management Fund (CMF) which shall be used for PKBM conservation purposes. It is the responsibility of each party to interpret its own authorities and policies, and make decisions as required under law and policies applicable to each.

14.3 Escambia County Environmental Services Division

The Escambia County Environmental Services Division will be responsible for providing staff, material resources, and logistical support to implement the terms and conditions of the HCP. It will also be responsible for managing the collection, storage, and analysis of data collected under the HCP and for overseeing the transfer of this information to other relevant county divisions or departments. Educational programs and materials germane to implementation of the HCP will be developed and/or distributed under the oversight of this department. The Division Manager of Environmental Services will be responsible for the HCP Coordinator.

14.4 Escambia County Legal Services

The Escambia County Attorney, or his/her designee, will work with the HCP Coordinator to ensure that the County complies with the terms and conditions of its ITP, in accordance with prevailing law, and satisfactorily fulfills the objectives of the HCP. As necessary, the County Attorney will help develop new and/or revise existing regulations to improve protection for federally listed species and their habitat on Perdido Key. Any changes, modifications, or updates to County regulations affecting covered species in the Plan Area will be complimentary to the programs and policies contained in the HCP. At no time shall Escambia County make changes to this HCP which may affect implementation of the HCP or adherence to ITP terms and conditions without approval by the USFWS. Proposed changes in County code or policy affecting HCP implementation or contrary to the terms and conditions of the ITP shall be submitted to the Service for approval prior to adoption, as described in Section 19.0 of this HCP.

In fulfillment of this task, the County Attorney will advise the Escambia County Board of Commissioners of its responsibilities and obligations under the HCP and ITP. The County Attorney will also provide legal advice to all County departments relative to HCP/ITP issues.

14.5 Escambia County Code Enforcement

The Director of Code Enforcement, or his/her designee, will monitor and enforce protected species regulations, such as beachfront lighting regulations, as provided under County Code. Escambia County Code Enforcement may delegate this responsibility to another division/department, such as Environmental Services. If any specific enforcement responsibilities are delegated, the Director of Code Enforcement will work with that department to ensure that proper procedures are followed and will assist in shepherding cases through the appropriate process.

14.6 Escambia County Manager's Office

The Escambia County Administrator, or his/her designee, will coordinate with the appropriate departments and divisions in Escambia County to ensure that the County has dedicated sufficient fiscal and material resources to implement the terms and conditions of this HCP and ITP. The County Administrator's Office will ensure that effective lines of communication and cooperation are maintained among County departments, divisions, and offices involved in HCP implementation and will be responsible for resolve any disputes that may arise concerning responsibilities under this HCP. In the event of reorganization in the County's structure, the County Administrator may periodically reassign responsibilities and/or personnel among County government units to ensure that HCP program management is properly integrated into the County's overall organizational structure; and to ensure that available fiscal and personnel resources are most effectively utilized.

15.0 FUNDING

Escambia County is committed to the success of the HCP and will commit the funds necessary to implement the HCP. The County operates on an October 1 through September 30 - fiscal year (FY) and will appropriate funds on an annual basis. Failure to appropriate funding for the HCP prior to October 1 each year may result in USFWS revocation of the ITP.

To assure a stable, long-term source of funding for the HCP, the County will use monies derived from PKBM Fund (Fund) and other County sources. The Fund as described in section 12.3 is sourced from the option of permittees to pay into the Fund as mitigation for take of PKBM. HCP funding will be authorized on an annual basis from the Fund. Once each year's budget is approved it will be provided to the committee. Within three (3) months of issuance of the ITP, the County will provide the USFWS with a budget for the remainder of the current FY. No requests for development utilizing this HCP may be issued by the County pursuant to this HCP until sufficient resources are in place to comply with the terms and conditions of the ITP.

Components of the first budget prepared by the County may include, but not be limited to, the following:

- Position of HCP Coordinator;
- Position of the PSS;
- Position of the Field Manager;
- Supplies, equipment and office space appropriate to support the HCP Coodinator;
- Development of procedures, database, and supporting materials for monitoring requirements of this HCP;
- PKBM, sea turtle, and shorebird monitoring supplies and logistical support to other PHs;
- Monitoring of construction sites and permanent structures;
- Preparation of an Annual Report;
- Development of a Predator Control Plan and implementation; and
- Enforcement of ITP conditions.

16.0 FORESEEN CIRCUMSTANCES

Foreseen circumstances are those instances such as hurricanes and other severe weather know to occur in the Plan Area. All effort to address foreseen circumstances relative the PKBM, sea turtles and piping plover has been considered and included in this HCP through development of this document and HCP technical meetings with state and federal agency involvement.

16.1 Hurricanes and Other Severe Weather Events

Passage of tropical storms creates human life and safety issues that must be addressed quickly after a storm. Debris from storms may be strewn on Perdido Key as the result of tropical storms. Vehicles, including heavy equipment, may be necessary to repair damaged structures and/or remove materials from the beach. It is probable that such events will necessitate activities within lands protected through existing conservation easements. As with Emergency Conditions (Section 16.2) the USFWS will be notified within 48 hours of initiating activities that are otherwise explicitly prohibited by a conservation easement. All such activities must be approved, coordinated, and monitored by the HCP coordinator and other emergency response personnel for the County. The HCP coordinator will be responsible for ensuring adequate measures are implemented to not further compromise PKBM habitat, sea turtle habitat, recorded conservation easements and other protected areas of Perdido Key. Management decisions shall be considered to establish special travel corridors, and/or temporarily placing some areas off-limits to vehicular traffic depending on effects from specific events.

In the event that a storm or other natural weather event causes damage to Perdido Key, the following activities will take place as soon as reasonably possible after the crisis of the storm has passed:

- The HCP coordinator and/or sea turtle monitoring personnel will perform an inspection of previously marked nest sites on Perdido Key using the most recent nest inventories;
- At each nest site, the HCP coordinator or designee will make a determination as to whether or not viable eggs are likely to be present;
- At those sites likely to contain viable eggs, nest markers will be repaired or replaced in accordance with guidelines contained in this HCP;
- Written documentation of post-storm inspection results, including the numbers of nests washed out and an updated inventory of remaining nests will be prepared by the HCP coordinator in coordination with the sea turtle permit holder;
- Based on the results of inspections, the HCP coordinator and other County staff will coordinate official public notices relative to this HCP;
- As soon as nests have been reestablished and marked at viable nest sites, normal protective measures, including daily nesting surveys, monitoring of marked nests, and rut removal, will resume; and
- Debris shall be removed from beach mouse habitat so as not to attract feral cats and other predators.

16.2 Emergency Conditions

Authorization of vehicle access to beaches within the Plan Area at times and/or places not otherwise permitted under this HCP may be granted by the HCP Coordinator. An emergency

condition shall be an event, action, or circumstance that poses an imminent threat to human life, health, or property, or to the environment, including protected species. This includes but is not limited to, passage of hurricanes and other severe storms, downing of aircraft along the coastline, grounding of boats on the beach, oil spills, and washing ashore of dangerous or hazardous materials. If an immediate response is required, the HCP Coordinator may act unilaterally in directing appropriate County resources to the site.

The USFWS shall be advised within 48 hours of all emergency conditions resulting in authorization of vehicles on the beach at times and/or places not normally provided under the ITP. Upon completion of vehicular activities on the beach following an emergency condition, the County will furnish a detailed written report of the event to the USFWS, including a description of any related impacts that may have occurred to protected species in the Plan Area.

Emergency conditions may require the County to respond with reestablishing roadway access within the HCP plan area. The following guidelines updated as of 2007 should be followed based on the USFWS and FFWCC *Guidance for Emergency Road Cleanup and Repair in Areas with State and Federally Protected and Other Imperiled Coastal Species in Florida* or guidance issued by FEMA or state agencies.

The USFWS and FFWCC have developed these guidelines to facilitate emergency road repair, clean-up, and reconstruction following tropical storms, hurricanes, and other catastrophic weather events. They do not apply to the construction of new roads or the improvement, realignment, and expansion of existing roads. These guidelines are for coastal roadways within areas containing habitat or occurrences of beach mice, nesting sea turtles, piping plover, perforate reindeer lichen, nesting shorebirds and other state and/or federally protected terrestrial coastal species, in accordance with provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) and F.A.C. 68A-27.003 (SSC), F.A.C. 68A-27.004 (T), and F.A.C. 68A-27.005 (E).

A. Phase I – Initial Road Clearing and Emergency Road Repairs Immediately After the Storm

By adhering to these measures, this phase of cleanup requires no further coordination with the USFWS and FFWCC.

1. Stay within the footprint of the original road.

2. Sand and storm debris shall be deposited as close to the roadway as safely possible.

3. For roadways adjacent to or within public lands with beach and dune habitat, high quality beach sand removed from the road shall be stockpiled to the extent practicable as a source for future dune restoration. Stockpiled sand shall be sifted prior to re-use and any contaminated materials shall be disposed of as appropriate.

4. Staging/storage areas shall be identified for clean up activities and located outside of existing/pre-storm beach and dune habitat, and undeveloped public lands. Areas with

paved, graveled, or other highly disturbed surfaces are preferred for staging. The USFWS or FFWCC shall be contacted immediately if there are questions regarding identification of appropriate staging areas.

5. Parking areas shall be identified for clean up crews and located outside of existing/pre-storm beach and dune habitat, and undeveloped public lands. Areas with paved, graveled, or other highly disturbed surfaces are preferred for parking. The USFWS or FFWCC shall be contacted immediately if there are questions regarding identification of appropriate parking areas.

6. Storm debris shall be removed from the road right-of-way as soon as feasible.

B. Phase II – Permanent Road Repair and Reconstruction Activities

Permanent reconstruction shall be coordinated with both FFWCC and USFWS to ensure that it does not adversely affect protected species. The following general measures are intended to limit damage to coastal habitat and protected species. Additional measures may be needed to address species concerns within the project area. Emergency consultation is available to expedite federal related actions (including funding assistance for clean up) while response efforts are underway when human life and property are at risk.

1. Within beach and coastal strand habitat, no soil materials shall be used in reconstruction of the road and its subgrade that are incompatible with, and may result in permanent discoloration of, white beach sand unless approved by the USFWS or FFWCC. Examples of unsuitable materials are red and yellow clays.

2. No fill material shall be deposited on or removed from existing and pre-storm beach and dune habitat. No fill material shall be deposited into low lying washover areas, mudflats, or sandflats outside of the road corridor. The post-storm road elevation shall not exceed its pre-storm value. Fill material and hay bales must be clean of noxious weeds. No fertilizer or lime shall be applied. No hay bales shall be used in dune habitats.

3. Within beach and coastal strand habitat, materials used for road shoulder stabilization shall be compatible with the coastal environment and minimize the risk of habitat damage from future storms. Preferred options for shoulders include white Bahama rock, native vegetation, pervious surface pavers, and additional paved shoulder. The use of gray aggregate rock shall be avoided and minimized in coastal habitat as FDOT, USFWS, and FFWCC work toward improving available options.

4. Non-vegetative road shoulder stabilization materials shall be placed no further than 3 feet from the edge of paved shoulder to reduce habitat loss and minimize the risk of dispersal into adjacent coastal habitat.

5. Within beach and coastal strand habitat, stabilization of road shoulders with native coastal vegetation is preferred. When needed to stabilize adjacent slope and limit erosion, only native coastal vegetation shall be used. Non-native turf grass and/or sod

shall not be used in beach and coastal strand habitat. Low lying washover areas, mudflats, sandflats, and inlets shall not be planted with any vegetation. Information on appropriate coastal plants and planting specifications are available from the USFWS.

6. All trash shall be disposed of properly in predator-proof trash receptacles.

7. Storm-related road debris (gravel, asphalt, old base) shall be removed to the greatest extent practicable. Removal methods shall minimize additional disturbance to the environment.

8. No road debris shall be buried in place.

17.0 CHANGED CIRCUMSTANCES

In preparing an HCP, an applicant for an ITP is required to consider circumstances that could result in foreseeable change over the life of the ITP and thereby increase the scope and/or extent of impacts to listed species within the Plan Area. Changed circumstances are discussed below.

Changed circumstances are defined as changes in circumstances affecting a species or geographic area covered by the HCP that can reasonably be anticipated by HCP developers and the USFWS, and that can be planned for. Changed circumstances may become apparent either to the County, authorized agents or to personnel of the USFWS.

The County and the USFWS acknowledge that even with the above detailed provisions for mitigating and/or minimizing impacts to the covered species, changes in circumstances could arise which were not fully anticipated by this permit and which may result in substantial and adverse change in the status of the covered species. The USFWS's policy regarding changed and unforeseen circumstances is contained in the final "No Surprises" rule published on December 10, 2004, (69 FR 71723) and codified at 50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5), 222.22(g).

Potential future changes to the County's comprehensive plan may result in various changes reflecting how development and growth on Perdido Key is regulated. Future potential changes to the comprehensive plan may affect current zoning districts, building caps, and public infrastructure elements to list a few. Any future changes to the comprehensive plan affecting Perdido Key development and/or provisions of this HCP will be addressed by the County and coordinated with the USFWS.

Potential future changes to the County's zoning districts on Perdido Key may be implemented. Any future changes to the Perdido Key zoning districts affecting Perdido Key development and/or provisions of this HCP will be addressed by the County and coordinated with the USFWS.

17.1 Underestimate of Take

The principal issue of concern to the USFWS is whether the level of take estimated by the County in this HCP is reasonably accurate.

An underestimate of take could occur if:

- The frequency and intensity of storms and related impacts exceed historical averages and
- The populations of PKBM on Perdido Key increase, thus increasing density of PKBM within project limits; and/or there are significant increases in nesting of sea turtles over the period that the ITP is in effect.

The County believes that it has used conservative assumptions in estimating take, and therefore even if the changed circumstances listed above are realized, actual take is not likely to exceed that estimated in Section 8.0 of this HCP. The County, USFWS, and FFWCC have coordinated to determine the take expected. Furthermore, the USFWS has indicated its intent to limit the total amount of take authorized under the ITP to that estimated in this HCP.

The County will maintain a record of cumulative take occurring as a result of implementation of this HCP. To the extent permitted, the assumptions used to estimate take of PKBM, sea turtles and piping plovers will be replaced with actual data collected through assessing individual development requests and proposed County infrastructure improvements through the monitoring programs contained in the HCP.

The County will also calculate cumulative take for all impacts permitted relative to this HCP and ITP along with other impacts recorded occurring on Perdido Key. This information, as well as all data upon which the calculations were based will be tabulated for inclusion in the Annual Report (see Section 19.7 of this HCP). At any point that the amount of take projected over the life of the ITP exceeds the amount of take authorized by the ITP, the USFWS shall be notified immediately. From that point forward, no take shall be issued by Escambia County unless explicitly authorized by the USFWS.

17.2 Delisting and/or Listing of New Species

Should at any time during the life of the ITP, a species covered under the HCP be delisted, or a currently non-listed species inhabiting or utilizing the HCP plan area be proposed or listed as a threatened or endangered species under the ESA, the County will consult with the USFWS to determine if modifications to the HCP are warranted and/or required.

17.3 Intergovernmental Agreement

Should at any time during the life of the ITP, the mitigation needs and requirements change, the County will consult with the USFWS and the FFWCC to determine if modifications to the intergovernmental agreement are warranted and/or required.

17.4 Changes In Conservation Corridor Requirements.

As research is conducted, new information may result in the need to change proposed conservation corridor sizes and locations. Maintaining connectivity of habitat is one of the primary goals of the HCP.

18.0 UNFORESEEN CIRCUMSTANCES

Unforeseen circumstances are those events, conditions, or situations that are completely unanticipated at the time of preparation of this HCP. If, during the implementation of this HCP, an unforeseen circumstance occurs that could have a significant negative impact on PKBM, sea turtles, piping plovers, or other protected species in the HCP Plan Area or could affect the ability of Escambia County to effectively manage activities under this HCP, the County will promptly contact the USFWS.

Should either unforeseen or changed circumstances arise, the County shall contact the office of the USFWS and meet within twenty (20) working days following contact. The County and the USFWS shall together agree upon appropriate and reasonable measures for addressing such circumstances, within the rule of applicable law, and the Applicant shall implement appropriate and reasonable measures within an additional thirty (30) working days, unless a longer period of time is agreed to by the USFWS.

The HCP proposes all reasonable and demonstrated methods for protecting listed species and species of concern, including the PKBM, sea turtles, and piping plover. Protection measures for the PKBM may include introduction of beach mouse populations into a specific HCP project area if deemed appropriate by the agencies. Provisions for sea turtle protection include all measures recommended by the USFWS and FFWCC, including appropriate lighting measures, nest protection, and proper storage of beach equipment.

Even though the County has agreed to implement all necessary provisions for minimizing and mitigating impacts to the PKBM and sea turtles as identified by the USFWS and set forth in this HCP, unanticipated circumstances may arise. If unanticipated incidental take of any of these species occurs and/or an unforeseen circumstance arises, the County and wildlife agencies (USFWS/FFWCC) will review the available data and work together to determine the cause of such an incidental take and whether additional protective measures would be appropriate for the species in question.

19.0 INCIDENTAL TAKE PERMIT REPORTING

Escambia County will monitor the performance of the HCP in minimizing impacts to PKBM, sea turtles, and piping plovers causally related to private development and County infrastructure improvements in achieving its biological goals of increasing the productivity of Perdido Key as habitat for listed species. HCP program evaluations will be provided to the USFWS through Annual Reports, formal reviews, and periodic communications, as described below.

19.1 Perdido Key Beach Mouse

At the end of each calendar year, the HCP Coordinator will be responsible for compiling and analyzing PKBM data collected under this HCP. This data will be summarized in a manner that allows an assessment of natural and human related impacts to PKBM on Perdido Key. Direct, indirect, and cumulative impacts to PKBM causally related to private development activities and County infrastructure improvements will be identified. Mitigation benefits of the County's predator control program will also be calculated to ensure that targeted goals are being met. Known deficiencies with HCP programs will be identified and potential remedial actions proposed.

At the end of each calendar year, the HCP Coordinator will be responsible for compiling and analyzing sea turtle and ancillary data collected under this HCP. This data will be summarized in a manner that allows an assessment of natural and human related impacts to sea turtles on Perdido Key. Direct, indirect, and cumulative impacts to sea turtles causally related to private development activities and County infrastructure improvements will be identified. Mitigation benefits of the County's predator control program will also be calculated to ensure that targeted goals are being met. Known deficiencies with HCP programs will be identified and potential remedial actions proposed.

At the end of each calendar year, the HCP Coordinator will be responsible for compiling and analyzing piping plover data collected under this HCP. This data will be summarized in a manner that allows an assessment of natural and human related impacts to piping plovers on Perdido Key. Direct, indirect, and cumulative impacts to piping plovers causally related to private development activities and County infrastructure improvements will be identified. Mitigation benefits of the County's predator control program will also be calculated to ensure that targeted goals are being met. Known deficiencies with HCP programs will be identified and potential remedial actions proposed.

The above information will be incorporated into an Annual Report that will be submitted to the USFWS by January 31 of each year. During the first three (3) years that the ITP is in effect, the County will meet annually with the USFWS and FFWCC to review HCP performance and discuss the County's monitoring program. As needed, adjustments to monitoring protocol and nest protection measures will be implemented. Thereafter, every five (5) years that the ITP is in effect, the USFWS and the County will meet formally to review HCP program performance and discuss adjustments to policies, procedures, and/or mitigation needed in response to changes in organizational structure, beach conditions, piping plover trends, and/or the level of take occurring on Perdido Key. However, at any time during the 5-year interval, the USFWS or the County may request a program assessment meeting, if needed.

19.2 HCP Program Documentation

Data will be collected and maintained by the HCP Coordinator to demonstrate that minimization and mitigation measures required under this HCP are being implemented in accordance with the terms and conditions of the ITP. This information may include, but is not limited to, the following:

- Records of authorization for private development and County infrastructure improvements, including but not limited to all information indicated in Section 14.0 of this HCP;
- Correspondence pursuant to the terms and conditions of the Intergovernmental Agreement (Appendix M);
- Dates, groups, and content of training classes and other meetings with County staff, sea turtle permit holders, developers and the general public;
- Documentation to show that all Perdido Key listed species are being surveyed in accordance with the terms and conditions of the ITP;
- Copies of any public education/awareness materials developed by the County pursuant to this HCP; and
- A summary of activities related to implementation of the Predator Control Plan.

The above information will be provided to the USFWS upon request and will be summarized each year in tabular form for inclusion in the Annual Report.

19.3 Documentation of Take and Mitigation Benefits

The County will maintain a record of cumulative take occurring as the result of ITP activities, as described in Section 10.5 of this HCP. This information, as well as all data upon which the calculations of take are based, will be tabulated for inclusion in the Annual Report. The annual reports will describe activities and provide an analysis of whether the terms of the HCP were met for the reporting period. The responsible party during construction will be the applicant (i.e. County or property owner/developer) depending on the project. If a project is County based, then the County will be the party responsible for ensuring PKBM monitoring is being accomplished after construction.

At any point that the amount of take projected over the life of the ITP exceeds the amount of take authorized by the ITP, the USFWS shall be notified immediately. From that point forward, no additional take authorizations shall be issued by Escambia County unless explicitly authorized by the USFWS.

The County will maintain records quantifying the benefit of its predator control program, as described in Section 10.5 of this HCP. This information, as well as all data upon which the calculations of mitigation benefit are based, will be tabulated for inclusion in the Annual Report. If the County cannot meet an established, targeted goal of reducing predation rates relative an agreed upon timeframe from the issuance of the ITP and/or the time a Control Plan is in effect, the County, upon consultation with the USFWS, may have to implement additional predator control measures and/or develop alternative mitigation measures.

19.4 Enforcement Data

The HCP Coordinator will be responsible for coordinating the activities of appropriate departments and divisions within Escambia County government who are responsible for the enforcement of Federal, State, and County regulations pertaining to protected species on County

Beaches. The HCP Coordinator will ensure that County enforcement staff is properly educated and organized to effectively carry out their responsibilities under the HCP and that there are effective inter- and intra-departmental lines of communications. The HCP Coordinator will periodically review County regulations, codes, and directives to determine if they require change or stricter enforcement to achieve HCP objectives. Escambia County will coordinate enforcement of State and Federal protected species laws with outside agencies, such as the FFWCC and USFWS, as necessary.

19.5 Reporting

PKBM, sea turtle, and piping plover data, as well as information relating to HCP performance and enforcement will be incorporated into an Annual Report that will be submitted to the USFWS and FFWCC by January 31 of each year. To the extent practicable, this information will be provided in tabular format along with brief interpretative text, as necessary, to clarify presented data. Identified program deficiencies and documented impacts to covered species, will be summarized. The intent of the Annual Report is to provide the USFWS with a broad assessment of the adequacy of HCP programs, procedures, and policies in achieving their intended biological goal. As applicable, recommendations will be made for improving HCP performance. Following review of the report, the County and the USFWS will discuss any issues requiring immediate attention.

19.6 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, if necessary. The USFWS and County will communicate regularly to review and assess the extent to which the HCP is achieving its biological goal. Additionally, the USFWS may make unannounced inspections of Perdido Key to ensure compliance with the ITP.

The USFWS and County will meet formally to assess HCP performance and discuss any needed adjustments to policies, procedures, and/or mitigation in response to changes in Escambia County's organizational structure, development activities, beach conditions, vehicular use, sea turtle nesting trends, and other take occurring on Perdido Key.

19.7 Changes to the HCP and ITP

The HCP Coordinator may from time to time request changes to the HCP and/or ITP to improve HCP performance, streamline permit administration, and/or eliminate unnecessary restrictions on take activities that are demonstrated to provide no conservation benefit. These changes would be considered as administrative changes. The USFWS must approve in writing within 120 days any requested administrative changes or a determination that the change would require a permit amendment. These requests must be submitted to the USFWS in writing with appropriate

supporting data. Over the 30-year life of the ITP, administrative changes to the ITP may be requested at any time.

19.8 Interpretation of the HCP and ITP

Interpretation of the intent of the HCP and ITP is the responsibility of the Escambia County Attorney's Office in consultation with the USFWS. As necessary, the HCP Coordinator may request clarification from the USFWS. It is understood that the USFWS is the legal guardian of the ITP and, therefore, has the final word in resolving differences of interpretation.

19.9 Coordination With Regulatory Agencies

Escambia County will work with the ACOE, FDEP, and FFWCC to identify appropriate methods for allowing County input into permitting decisions for projects on Perdido Key. The HCP Coordinator will take the lead role in this interagency coordination effort.

19.10 Non-Compliance

The USFWS may revoke Escambia County's ITP at its discretion if actions, or the lack thereof, on the part of Escambia County are deemed in substantial non-compliance with the HCP or ITP and appropriate remedial actions directed by the USFWS are not satisfactorily implemented.

GLOSSARY

Artificial Light—Any source of temporary, fixed, or movable light emanating from a man-made device, including, but not limited to, incandescent mercury vapor, metal halide, or sodium lamps, spotlights, streetlights, construction or security lights.

Beach—The area between the mean low tide mark and the seaward edge of the first permanent vegetation zone on the dunes.

Clutch – The collective number of eggs laid in a nest by a sea turtle.

Coastal Construction Control Line (CCCL)—The Escambia County Coastal Construction Control Line established by the State of Florida Department of Environmental Protection, Office of Beaches and Coastal Systems, to define that portion of the beach and dune system which is subject to severe fluctuations based on a 100-year storm surge, storm-induced waves or other predicted weather conditions.

Comprehensive Plan—The "Escambia County Comprehensive Plan" adopted by the County Council pursuant to Ordinance No. 93-20, It is the intent of this article to provide orderly growth management for those areas identified in section 78-122. This article is not intended to terminate growth but rather to provide mechanisms for growth management in order to serve the citizens, visitors and property owners of the county. Implementation of this article is designed to maintain and improve the quality of life for all citizens of the county.

Beach Renourishment—The process of adding sand to a beach area to compensate for the effects of erosion.

Bulkhead—A rigid armoring structure or partition to prevent upland property from being lost to erosion.

Concessionaire—A business operation licensed by Escambia County to provide recreation, food and beverage or merchandise services on the beach.

County Manager—Manager appointed by the Escambia County Board of County Commissioners to be the head of the administrative branch of County government and responsible to the Escambia County Board of County Commissioners for the proper administration of all affairs of the County.

Crawl—The distinctive tracks left by a turtle on the beach at night.

Disorientation—The alteration of the natural behavior of hatchling sea turtles when they are not able to set a particular course and wander aimlessly, typically as the result of artificial light.

Dune—A mound or ridge of loose sediment, usually sand-sized, lying upland of the beach or shore, deposited by any natural or artificial mechanism. The term may also include a beach ridge, dune ridge, chenier, or similar topographic feature.

Emergency Shoreline Protection—Projects permitted by the Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems, which are undertaken to combat acute erosion events caused by storms or unusual weather events that threaten qualified upland structures.

Emergency Vehicle—Vehicles used in responding to emergencies, such as police, fire

Emergency—An event, action, or circumstance that poses an imminent threat to human, life, health, or property or to the environment. Includes rescue services and ambulances, used by County and/or municipal public safety agencies.

False Crawl—An emergence by an adult female sea turtle onto the beach and back to the ocean that does not include digging a complete nest cavity and depositing eggs.

Harass—An intentional or negligent act or omission which creates the likelihood of injury to listed wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, and sheltering.

Harm—An act which actually kills or injures listed wildlife and may include significant habitat modification or significant impairing of essential behavioral patterns, including breeding, feeding, or sheltering.

Hatching Success—The percentage of all eggs in a clutch that successfully extricated themselves from their egg shells.

Hatchling—A newly hatched sea turtle.

In situ—In the natural or original position.

Incidental Take—Take of any federally listed wildlife species that is incidental to, but not the purpose of, otherwise lawful activities (see Take).

Mean High-Water Line— The boundary line along navigable waters between submerged lands including the foreshore, owned by the State in its sovereign capacity, and uplands subject to private ownership.

Misorientation—The alteration of natural sea turtle behavior by traveling along a consistent course usually towards an artificial light source.

Mitigation—Actions and compensation for unavoidable impacts or losses, required to be taken to offset environmental impacts of permitted activities.

Motorized Vehicle—Any vehicle which is self propelled, including golf carts and any rented concession vehicle, but not including human-powered bicycles.

National Geodetic Vertical Datum (NGVD)—As corrected in 1929, is a vertical control used as a reference for establishing varying elevations within the floodplain.

Nesting Season—The period from May 1 through October 31 of each year.

Nesting Success—Calculated by dividing the number of nests by the total number of crawls (including both crawls that resulted in nests and false crawls).

Primary Dune—The first natural or manmade mound or bluff of sand which is located landward of the beach which has substantial vegetation, height, continuity and configuration.

Reproductive Cost—The decrease in annual egg production suffered by an individual as a result of increasing energy expenditures during nesting.

Seawall—A structure separating land from water areas, primarily designed to prevent loss of upland property

Nest—An area where sea turtle eggs have been naturally deposited or subsequently relocated.

Plan Area—The area for which take has been requested under the Incidental Take Permit extending from the Florida/Alabama State line east to the Gulf Islands National Seashore, excluding Perdido Key State Parka and Gulf Islands National Seashore.

Public Safety Vehicles—Trucks, cars, all-terrain vehicles (ATVs) and other motorized vehicles involved in routine or emergency public safety operations, such as those used by law enforcement, lifeguards, and County fire/rescue personnel.

Special Events—Activities or events organized and promoted to attract, people to a certain place on the beach at a certain time under circumstances that are likely to interfere with the public's right of access and use the beach or create a need for additional police, lifesaving or other services, and any activity or event on the beach that is promoted or sponsored by commercial interests and will advertise or promote private commercial interests.

Stranding—A marine mammal or sea turtle which has been washed up on the beach either dead, injured, ill or weak.

Unauthorized Take—Take of federally listed species not covered under a Federal Incidental Take Permit or incidental take statement from a Biological Opinion issued by the USFWS pursuant to the ESA section 7 consultation process.

Vehicular Access—Access to beaches of Perdido Key by trucks, concessionaires, public safety vehicles and beach maintenance equipment.

Take—To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct with regard to federally listed endangered and threatened wildlife species (See harass, harm).

Washback hatchling—A hatchling sea turtle that left its nesting beach and may have been at sea for several weeks or months before being brought back onto shore by heavy winds and surf.

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APPENDICES