HABITAT CONSERVATION PLAN

For

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Pensacola, Florida

Submitted
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Revised
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By:

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1.0 INTRODUCTION

This Applicant is seeking an incidental take permit (ITP) from the United States Fish and Wildlife Service (USFWS) pursuant to section 10(a)(1)(B) of the Endangered Species Act of 1973 (ESA), as amended, to take the federally and state listed Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis)*.The requested duration of the ITP is 25 years. In 1981, the USFWS listed the Perdido Key beach mouse (PKBM) as an endangered species and designated critical habitat for the species. The proposed take would be incidental to the construction of a 3,600 sq/ft single family residence, driveway and elevated dune walkover to be sited within 7,808 sq/ft (0.179 acre) of designated suitable habitat for the beach mouse (Appendix A).

The parcel is a platted Gulf front lot, located within the central portions of Perdido Key (Appendix A). The activities associated with construction of the residence are expected to permanently impact to 7,808 sq/ft (.179 acre) of PKBM occupied and designated critical habitat (Appendix A).

Although other listed species may occur in the habitats addressed by this Habitat Conservation Plan (HCP), the PKBM is the "trigger" species that has prompted the need for this HCP and the requested ITP. This HCP also includes conservation measures for nesting sea turtles and non-breeding piping plover. Implementation of these measures will preclude take of the species and, therefore, not require the Applicant to seek authorization for their incidental take.

Because the Florida Fish & Wildlife Conservation Commission (FWC) regulates "take" of state-listed species under the Florida Administrative Code 68A-27.003 and is responsible for ensuring that an ITP is issued only when the HCP and permit will clearly enhance the survival potential of the species, the intent of this HCP is to provide the information necessary for the USFWS and the FWC to determine whether to issue their respective permits.

1.1 HCP Development

This HCP is prepared in accordance with Section 10(a)(1)(B) of the Endangered Species Act , the USFWS's implementing regulations at 50 CFR 17.22(b)(1), and the *Habitat Conservation Planning Handbook* (Handbook), published by the USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA-Fisheries)in November 1996. The *Choctawhatchee Beach Mouse, Perdido Key Beach Mouse, and Alabama Beach Mouse Recovery Plan, USFWS* (August 1987) also was used in preparing this HCP.

As required by the ESA and the USFWS's implementing regulations at50CFR 17.22(b)(1) and 17.32 (b)(1), an HCP submitted in support of an incidental take permit application must contain the following information (corresponding section numbers in this HCP are noted in parentheses).

i. Impacts likely to result from the proposed taking of the species for which permit coverage is requested (section 2.1;

ii. Measures the applicant will take to monitor, minimize, and mitigate such impacts, including the funding that will be available to undertake such measures, and the procedures to deal with unforeseen circumstances (section 2.2;

iii. Alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized (section 2.7);

iv. Additional measures required by the USFWS to be necessary or appropriate for purposes of the plan.

The *Habitat Conservation Planning Handbook* identifies the following as four subtasks that fall under the first element listed above:

a. delineation of the HCP boundaries or plan area;
b. collection and synthesis of biological data for species to be covered by the HCP;
c. identification of activities proposed in the plan area that are likely to result in incidental take; and
d. quantification of anticipated take levels.

1.2 Project Location and Delineation of Habitat Boundaries

The Applicant proposes to construct a single family residence within a 1.26 acre Gulf front lot. The residence and driveway impact 7,808sq/ft (.179acre). The Applicant's residence is designed and depicted to be consistent with the scope and quality of other residences in the subdivision.

Landforms and vegetative communities on the Applicant's lot consist of a created primary dune, and secondary scrub habitat, of which is intact suitable habitat for the PKBM. The proposed construction activities are expected to impact approximately 7,808 sq/ft (.179 acre),i.e., 13% of the suitable habitat. The remaining 87% of the lot will remain in a natural condition. The habitat that will be impacted by the construction of Applicant's residence will be located north of the created primary dune habitat, and within secondary dune and coastal scrub habitats. The project location, i.e., the Applicant's lot, and the HCP boundaries are presented in Appendix A. Photographs of the habitat on the Applicant's lot are reflected in Appendix B.

1.2.1 Critical Habitat

Subsequent to the Applicant's purchase of the subject parcel, critical habitat was designated for the PKBM at the time of its listing (50 Code of Federal Regulations [CFR] § 17.95, 50 FR 23872), and revised October 12, 2006 (71 FR 60238). Five units were designated for the PKBM and spaced throughout the species historic range. The location of the units was determined based on the relative fragmentation, size, and health of

habitat, as well as the availability of areas with beach mouse primary constituent elements. The five units are: (1) Gulf State Park Unit, (2) West Perdido Key Unit, (3) Perdido Key State Park Unit, (4) Gulf Beach Unit, and (5) Gulf Islands National Seashore Unit (**Table 1** and **Figure 1**). The Applicant's lot, which contains critical habitat primary constituent elements (PCE), is located in lands designated as critical habitat within the Gulf Beach Unit (Unit 4).

Table 1: Critical Habitat Units for the Perdido Key Beach Mouse

Critical Habitat Unit	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

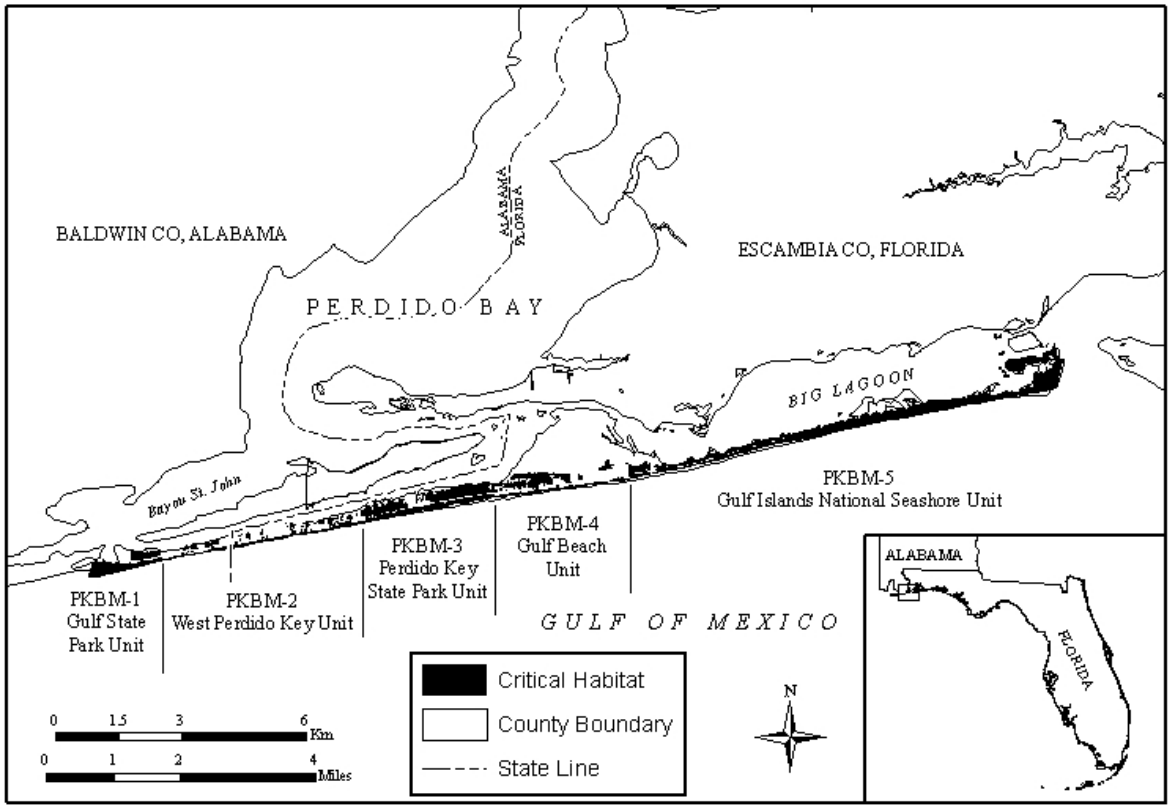


Figure 1. Designated Critical Habitat Units for the Perdido Key Beach Mouse

1.2.3 Coastal Scrub

The scrub community can typically be characterized as a closed to open canopy forest of sand pines with dense clumps or vast thickets of scrub oaks and other shrubs dominating the understory. Vegetation within this community consists mainly of sand-live oak (*Quercus virginana geminata*) with Chapmans oak (*Q. chapmanii*) interspersed and sand pine (*Pinus clausa*). Ground cover within the subject parcel is largely dominated by saw palmetto (*Seneroa repens*) and beach rosemary (*Ceratiola eriocoides*) with the herbaceous vegetative stratum sparse but sometimes includes sea purslane (*Sesuvium portulacastrum*) and sea rocket (*Cakile edentula*). Typical animals found within the coastal scrub habitat include ghost crab (*Ocypode* spp.), sixlined racerunner (*Cnemidophorus sexlineatus*), red-winged blackbird (*Agelaius phoeniceus*), raccoon (*Procyon lotor*) and PKBM.

1.3 Biological Overview of Species Addressed by this Plan

The habitat that is the primary focus of this HCP is the primary and secondary dune system. These areas constitute suitable habitat for the PKBM because they provide cover and foraging habitat for the species. A biological overview for PKBM is provided in the following sections.

1.3.1 Perdido Key beach mouse

The Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis)* is a subspecies of the old field mouse (*Peromyscus polionotus*) and is endemic to Florida (Humphrey 1992). The Perdido Key beach mouse is one of several subspecies of beach mouse that inhabit the coastal areas and barrier islands of Alabama and Florida. The various subspecies differ from the old field mouse in color, markings, and size. The historic range of the Perdido Key beach mouse included coastal dunes extending from Alabama Point to the eastern terminus of Johnson's Beach Escambia County.

Populations of the Perdido Key beach mouse have historically occurred throughout the coastal regions of Perdido Key, Florida. Small, isolated populations of Perdido Key beach mice may occur on privately owned, developed and undeveloped areas within the historic range. Critical habitat was revised October 12, 2006 (71 FR 60238).

1.3.1.1 Life History

The Perdido Key beach mouse is primarily a granivore, foraging mainly on seeds and fruits of bluestem, sea oats, and evening primrose (*Oenothera humifusa*); 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 (*Procyon lotor*), herons, and coyotes (*Canis latrans*), as well as domestic cats (*Felis cattus*). PKBM are nocturnal foragers, in part to avoid predation.

The PKBM constructs intricate burrows. 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. 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.

1.3.1.2 Habitat

Optimal habitat for the Perdido Key beach mouse consists of rolling, stabilized, inland and high frontal sand dunes which support vegetation communities of sea oats, grasses, herbs, and small shrubs. Optimal beach mouse habitat, as defined in the Biological Opinion for the Alabama beach mouse (1999) added primary, secondary, scrub dunes, and interdunal areas to optimal habitat previously described by the USFWS Recovery Plan (1987). Data has indicated the presence of beach mice in interior areas beyond the traditional areas (primary, secondary, scrub dunes approximately 700-1000 feet inland). Optimal habitat may also include connecting corridors between other habitats. Based on trapping data through 1999, optimal beach mouse habitat is characterized by:

- primary, and secondary and interdunal areas;
- high maximum elevation of the coastal sand dunes;
- relatively great difference between maximum dune height and minimum interdunal elevation;
- close proximity of forest;
- sparse cover of ground vegetation with moderate number (average 3.5) of plant species; and
- relatively low cover of sea oats.

The habitat types described above for the Alabama beach mouse are found in coastal dune habitats of northwest Florida along Perdido Key and extend to Money Bayou in Gulf County. The habitat description is consistent with optimal habitats of the Perdido Key subspecies.

1.3.1.3 Local Populations

Currently, it is theorized that potentially three core populations of the PKBM may exist along an estimated 10 to 12 miles of coastline (Figure 2). Each of these core populations is described below. The applicants parcel exists adjacent to the Gulf Islands National Seashore core population.

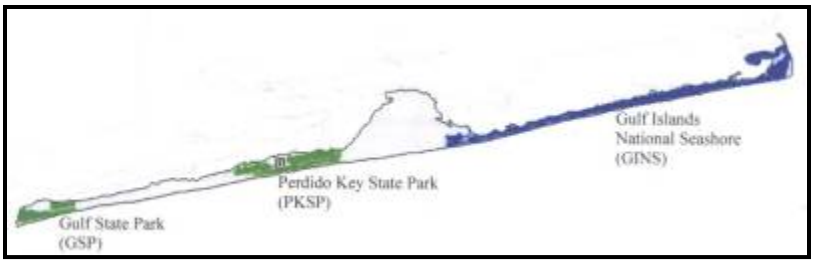


Figure 2. Map of public lands on Perdido Key.

The Gulf State Park (GSP) population is located in the extreme western section of Perdido Key within Baldwin County Alabama, approximately 3 miles west of the Applicant's parcel. This 115-acre State Park has 1.1 miles of shoreline on the Gulf of Mexico with a bank of primary, secondary, and scrub dunes, paralleling the coast. The PKBM population at GSP was believed to be the only remaining population in the early 1980s. Mice from GSP were reintroduced to Gulf Islands National Seashore in 1986, but have since suffered the effects of hurricane Opal and a problematic feral cat population. The population at GSP may be extirpated, though trapping to determine absence has not been conducted.

The Perdido Key State Park (PKSP) consists of 1.5 miles of Gulf of Mexico frontage with considerable back dune acreage the width of the Key. This area is located approximately 1 mile west of the Applicant's parcel. The PKBM population at PKSP was thought to be extirpated in the early 1980s. Reintroduction efforts occurred in 2000 and 2001, and until the passage of hurricane Ivan, indication was that the population was doing well. Personal communications with the USFWS (2006) indicate that the beach mouse is currently present within both the Gulf front section of land as well as the scrub dunes north of SR 292.

The Gulf Islands National Seashore (GINS) population is located along the easternmost section of Perdido Key. This section of habitat extends for 7 miles of Gulf frontage and maintains a mosaic of habitats from tidal marsh to primary dune systems. This population was thought to be extirpated in the early 1980's, but reintroduction efforts in 1986 yielded a healthy population. Since hurricane Ivan, and the numerous tropical storms in 2005, the population and its habitat had been severely impacted. However, the most recent tracking data in GINS (August 2009) has suggested a significant rebound in population abundance and distribution (Mitchell 2009). This trend is likely the result of habitat conditions within GINS finally improving after being set back by repeated storm events following the hurricanes of 2004 and 2005. The Applicant's parcel is located adjacent to the western boundary of GINS

2.0 PROPOSED ACTIVITIES

The proposed activities include the construction and occupation of a single family residence on the Applicant's 1.26 acre-acre property. These activities that are anticipated to result in incidental take of the PKBM within the project area. The applicant proposes the construction of a single family residence with a footprint encompassing 3,600 sq/ft and a 4,208 sq/ft driveway, The applicant maintains all

appropriate front, rear and side setbacks. The residence location minimizes impacts to intact dune and scrub habitat and is generally situated within an unvegetated area within the subject lot.

The construction activities are expected to permanently impact 7,808sq/ft (.179 acre) of habitat occupied by the PKBM. (See Appendix A). The remaining habitat will not be impacted.

2.1 Impacts Likely to Result in Take

Quantifying the anticipated take of the Perdido Key beach mouse on the Applicant's parcel is directly dependent upon impacts to the habitat that is occupied by PKBM. Thus, the anticipated incidental take has been quantified in measures of habitat and is presented below.

The project site consists primarily of intact coastal scrub habitat. This habitat provides food, shelter and areas foraging for the PKBM. The Applicant's parcel is comprised of 0.11 acre of such habitat. Approximately 0.07 acre (2,985 sq/ft or 51%) will be permanently impacted by the proposed activities. The Applicant will, however, retain habitat within all areas outside the core of the footprint of the residence, where possible, augment such habitat with native landscaping.

Table 2. Amount of PKBM habitat before and after the proposed project.

	Current Condition	Proposed Condition
PKBM Habitat	1.26 acre	1.08 acre
Developed/Disturbed	0.0	0.179 acre
Parcel Total	1.26 acre	1.26 acre

2.2 Conservation Intent, Minimization and Mitigation

2.2.1 Conservation Intent

The conservation intent of this HCP includes the following components:

- Conservation of designated critical habitat on the parcel;
- Recordation of a conservation easement on a portion of the parcel;
- Restoration of scrub area degraded by previous impacts to the parcel;
- Development of appropriate covenants and restrictions on the parcel; and
- Implementation of a prescriptive management program (described in section 2.2.2.2.1, below).

Each of these components is intended to conserve and manage habitat for the Perdido Key beach mouse and benefit other species with similar habitat requirements.

2.2.2 Minimization and Mitigation Measures

The project has been designed to minimize impacts to the PKBM and its habitat and to provide for the long term protection and maintenance of existing suitable habitat on the parcel that will not be permanently impacted. Measures also will be employed to mitigate for impacts to the PBKM from the proposed action and benefit the species. The minimization and mitigation portion of this HCP contains the following three parts, which are more specifically described below:

- Management and conservation of remaining natural area (approximately 1.08 acres);
- Restoration of scrub habitat impacted by Hurricane debris
- Implementation of measures approved by the USFWS and the FWC, including trapping, relocation, monitoring, and management efforts; and
- Planting and maintaining native scrub vegetation on the parcel.

2.2.2.1 Minimization Measures

2.2.2.1.1 Restoration

Minimization of impacts associated with the project includes removal of hurricane debris within the secondary dune system, alignment of the driveway within previously disturbed areas, and placement of the residence within a unvegetated portion of the lot.

2.2.2.1.2 Control or Removal of Pests and/or Predators

The Applicant shall not permit domestic cats to be kept on or allowed to come onto the parcel. The county or state employs animal control for stray and feral cats, and often trap nuisance, stray or feral animals on a regular basis. The Applicant will grant County and State animal control personnel to access the parcel to remove such animals. The Applicant also will provide for such access in a conservation easement. Dogs will be permitted outdoors on the parcel only on a leash.

2.2.2.1.3 Litter and Trash Control

A trash and rubbish control program will be incorporated into daily operating procedures. During the construction activities, the Applicant, its contractors and their subcontractors will ensure that litter and rubbish are controlled and disposed of.

2.2.2.2 Mitigation Measures

2.2.2.2.1 Prescriptive Management Program

The prescriptive management program (PMP) (USFWS 1996) addresses the protection and management of the coastal beaches and secondary and primary dune habitat such as

that located on the Applicant's parcel. Design and habitat management activities will be accomplished through appropriate:

- operation, including long-term management of the project area.

The Applicant will implement measures from the PMP, including restoration of marginal habitat, mitigation for impacted habitat, and installation of appropriate lighting compatible with management for coastal beach and dune habitat. Finally, there will be allocation of responsibilities to the Applicant/Permittee. The activities required for the management of remaining habitat on the Applicant's parcel as well as the entities responsible for the management, are specifically addressed in the following sections.

2.2.2.2.2 Revegetation of Temporarily Disturbed Areas

Areas designed for habitat protection that can benefit from active management shall have hurricane debris removed (Siding, decking, house hold items) to ensure habitat conditions compatible with the Perdido Key beach mouse. Also. areas which would benefit from re-vegetation provision include side setbacks, front degraded areas and rear property disturbance, and natural areas impacted by construction or natural causes. Plants to be installed in these natural areas shall include only species native to coastal Escambia County.

2.2.2.2.3 Conservation Easement and Deed Restrictions

Conservation of lands on the parcel shall be accomplished through a conservation easement encumbering undeveloped portions of the parcel. These measures will insure that the property is protected in perpetuity and that any future owners of the parcel are aware and comply with the conditions of the HCP and ITP on the parcel. A copy of the proposed conservation easement and deed restrictions are attached hereto as Appendix D.

2.2.2.2.4 Management Activities

The Applicant proposes to undertake the following management and conservation activities:

- implement management actions designed to avoid impacts and to maintain and enhance the ecological integrity of habitat in the project area; and
- consent to future trapping and recovery efforts of beach mice undertaken by the USFWS and\or FWC and to provide for such in the conservation easement.

2.2.2.2.5 Habitat Restoration

Because dune restoration requires natural accretion of sand, it cannot be conditioned as a single event. Restoration of disturbed areas within the preserved habitat area will occur

as described previously. All plants used in the restoration of the dunes shall be native to coastal Escambia County.

2.2.2.2.6 Control or Removal of Pests and/or Predators

No domestic cats shall be allowed to be kept on the parcel. The county or state employs animal control for feral cats. The Applicant will grant access to county and\or state animal control personnel and authorize the right to such access in conservation easement. Dogs will be permitted outdoors on the parcel only on a leash.

2.2.2.2.7 Litter and Trash Control

A trash and rubbish control program will be incorporated into daily operating procedures. The Applicant will include provisions in the conservation easement and deed restrictions regarding litter and trash control measures.

2.2.2.2.8 Contribution to Conservation Fund

To further mitigate for impacts to the .179 acre, the Applicant will contribute $17,900.00 to the conservation fund that is currently being set up by Escambia County, state and federal agencies. In addition to the initial contribution, each year thereafter the Applicant will make an annual contribution to the conservation fund in the amount of $201.00. The funds in the conservation fund will be spent in accordance with the conservation strategy prepared for the PKBM (FWC, et al. 2005). The prioritization of annual conservation effort priorities would be determined by an interagency committee including the USFWS.

2.2.2.2.9 Lighting Guidelines to Reduce Impacts to Sea Turtles and Beach Mice

General Information. The negative effects of lighting on sea turtle hatchlings and nesting females and beach mice are well documented. Hatchlings emerge during hours of darkness, allowing them to make their journey to the sea when sand temperatures are low and terrestrial, avian, and aquatic predators are comparatively few. Proper hatchling orientation depends largely on a visual response to light. Under natural conditions, the ocean presents the brightest and most open horizon, and this serves as a cue to hatchlings in their new ocean finding behavior. Beach mice forage less often and are more susceptible to predation as ambient light increases

Artificial lights disrupt this behavior and attract hatchlings as they emerge from their nests. Both visible light sources and the reflection or “glow” resulting from the cumulative effects of coastal lights contribute to this problem. Instead of making their way to the ocean, hatchlings become disoriented and may wander extensively on the beach. Even for those hatchlings that eventually reach the ocean, unnecessary wandering increases their vulnerability to predation and causes them to expend limited energy stores. In addition, hatchlings may wander landward through beachfront property or across parking lots and highways towards other light sources. Most hatchlings die from desiccation, direct exposure to the morning sun or by contact with vehicles.

Beachfront lighting has been documented to negatively affect nesting females and often results in reduced or abnormal nesting activity.

General Guidelines. To prevent hatchling disorientation and adverse impacts to nesting Turtles and beach mice, all exterior lighting visible from a nesting area located on and adjacent to the waterway to the south of the property will be "turtle friendly", and tinted glass or window film that meets a transmittance value of 40% or less (inside to out transmittance) shall be used on all windows and glass doors visible from any point in a nesting area located on and adjacent to the waterway to the south of the property. Any pole mounted fixtures will be no higher than 15' feet tall. The light fixtures will be shielded from line of sight to the beach and remaining PKBM habitat on and off site. The bulbs will be long wavelength light sources such as low pressure sodium.

2.3 Monitoring

The Service's implementing regulations at 50 CFR 17.22(b)(1)(iii)(B) require that an HCP specify the measures the Applicant will take to "monitor" the impacts of the taking resulting activities.

The Applicant agrees to allow USFWS and\or FFWCC representatives and personnel to come onto the parcel to conduct activities to monitor for beach mice and engage in monitoring to ensure that the parcel is managed and protected in compliance and accordance with the HCP, ITP, conservation easement and deed restrictions. The conservation easement that the Applicant will grant in accordance with this HCP will contain provisions allowing for such.

2.4 Reporting

The Applicant agrees to submit an activities report to the USFWS and the FFWCC by 31 January of each year after issuance of the ITP. The report shall be prepared by the Applicant or an approved representative. The report shall contain a summary of development activities that took place on the project area during the preceding year and other information relevant to preservation of the habitat for the PKBM

2.5 Funding

The applicant/permittee is responsible for the adherence to the conditions and funding the conditions set forth within the Habitat Conservation Plan.

2.6 Unforeseen Circumstances

In the event of unforeseen circumstances, the proposed development footprint will remain, and appropriate native coastal plants will be re-established

2.7 Alternative Actions

Alternative actions considered included:

- no development (no action alternative); and
- on site and offsite mitigation (proposed action), as conditioned by this HCP.

2.7.1 No Action Alternative

Under the No Action Alternative, the Applicant would not construct the residence on the parcel or perform any of the conservation and mitigation measures set forth in the HCP. The Applicant has the right to develop the property consistent with high end residential facilities located within the subdivision. It is not the intention of the ESA to take property rights away from individuals proposing to develop their properties consistent with Federal, State, and County mandates. The No Action alternative would be appropriate if the State were to purchase the Applicant's parcel for current market value. This is not anticipated, however. Under the No Action alternative, the habitat on the parcel would be expected to remain as PKBM habitat.

2.72 Proposed Action Alternative

The proposed action is the development of the Applicant's residence with on-site and off-site mitigation as well as the implementation of measures to minimize impacts to PKBM, Under the proposed action, the Applicant will:

- Enhance, maintain, and protect habitats by the installation of appropriate forage and cover plant species;
- Consent to allow trapping for the PKBM and other conservation measures, including recovery efforts, deemed appropriate by the USFWS and\or the FWC to occur on the parcel and grant a conservation easement authorizing such activities.

These actions will result in the restoration and perpetual maintenance of 1.06 acre of dune and scrub habitat. The undeveloped 1.06 acre will be managed to provide high quality suitable habitat for the PKBM and other listed species. Management will also include the proposed action described in this HCP and any habitat impacted during construction.

After issuance of the requested ITP but prior to beginning construction activities on the parcel, the Applicant will execute and record legally binding deed restrictions and a conservation easement in accordance with Florida law on the parcel These will include, among other things, building restrictions, trash and pest control, sea turtle lighting requirements, and other matters set forth in this HCP.

2.8 Minor Construction Boundary Adjustments

To accommodate conditions encountered during construction, an explicit provision is made for minor construction boundary adjustments. Upon request by the landowner, the USFWS and the FWC shall consider the construction boundary fence to be moved if there is a compelling reason to do so. The USFWS and FWC shall determine the appropriateness of fence movement on a case by case basis. Minor boundary adjustments cannot increase the cumulative extent of temporary disturbance of habitat. Construction boundary adjustments would not result in a change in the permanent development footprint.

2. 9 Construction

All restored/protected suitable habitat will be restored upon loss caused by hurricanes or other natural disasters. Once construction is completed, no further construction or activity may occur in the restored\conserved areas that is not in compliance with the conservation easement or otherwise permitted by the ITP.

2.10 Other Measures Required by the USFWS

Section 10(a)(2)(A)(iv) of the ESA and 50 CFR 17.22(b)(iii)(D) of the USFWS's implementing regulations provide that the USFWS may require that the HCP include such other measures as may be necessary or appropriate for purposes of the plan. Based on prior conversations, it is the Applicant's best interest that no other measures are required by the USFWS.

2.10.1 Amendment Procedures

The HCP includes a wide range of management efforts designed to limit and mitigate take of the endangered Perdido Key beach mouse and develop the residential lot in a manner consistent with Escambia County land use policies. If, over the usual thirty year life of the permit, there are unforeseen circumstances which change development or other conditions, HCP amendments may be needed. Amendments which may be included are listed and described below.

2.10.2 Administrative Amendments

Changes which would not appreciably alter the extent of incidental take, the mitigation prescribed for take, or the funding of the HCP, are primarily administrative and can be accomplished by amending the HCP text without modifying the underlying Section 10(a)(1)(B) permit. The determination of the administrative status of a change will be made by the USFWS and/or FWC with concurrence by other parties, and must take into account the cumulative effect of the proposed change and all preceding or pending administrative changes.

2.10.3 Permit Amendments

Changes which may appreciably alter the extent of the incidental take, the mitigation prescribed for take, and the funding of the HCP will require an amendment to the Section 10(a)(1)(B) permit as well as to the HCP text. Only the permittee can request a permit amendment, and the request is processed by the USFWS and the FWC.

3.0 LITERATURE REVIEW

Amos, W.H. and S.H. Amos. 1985. Atlantic and Gulf Coasts. Chanticleer Press, Inc., New York. 670 pp.

American Ornithological Union. 1975. Check-list of North American Birds. Fifth Edition. A.O.U. Pub. 691 pp.

Behler, J.L. The Audubon Society Field Guide to North American Reptiles and Amphibians. Alfred A Knopf, New York. 719 pp.

Castro, G. and J. P. Myers. 1988. Snowy plover (Charadrius alexandrinus) records from Panama. Am. Birds. Fall 1988. p. 374.

Collazo, J.A., B.A. Harrington, J.S. Grear, and J.A. Colon. 1995. Abundance and distribution of shorebirds at the Cabo Rojo salt flats, Puerto Rico. J. Field Ornithol. 66(3): 424-438.

Florida Fish and Wildlife Conservation Commission, Escambia County Board of County Commissioners, U.S. Fish and Wildlife Service. 2005. Perdido Key Beach Mouse Conservation Strategy. 8pp.

Gore, J.A., and C.A. Chase, III. 1989. Snowy plover breeding distribution: final performance report. Nongame Wildlife section. Division of Wildlife. FGFWFC. Tallahassee, FL.

Humphrey, S.R. 1992. Mammals. Volume 1 of Rare and Endangered Biota of Florida. University Presses of Florida, Gainesville, FL. 392 pp.

Kale, H.W. 1978. Birds. P.C. Pritchard, Ed., Volume two of Rare and Endangered Biota of Florida. University Presses of Florida, Gainesville, FL. 121 pp.

Loggins, R. 2007. Personal communication about Perdido Key beach mouse trapping tube data from Florida Fish and Wildlife Conservation Commission biologist to Sandra Sneckenberger, U.S. Fish and Wildlife Service, Panama City, Florida.

McDiarmid, R.W. 1978. Amphibians and Reptiles. P.C. Pritchard, Ed., Volume three of Rare and Endangered Biota of Florida. University Presses of Florida, Gainesville, FL. 74 pp.

Mitchell, H. 2009. Personal communication about Perdido Key beach mouse tracking recovery progress to Ben Frater, U.S. Fish and Wildlife Service, Panama City, Florida.

Moler, P.E. 1992. Amphibians and Reptiles. P.C. Pritchard, Ed., Volume three of Rare and Endangered Biota of Florida. University Presses of Florida, Gainesville, FL. 291 pp.

Peterson, R.T. 1980. A field guide to the birds. Houghton Mifflin Co. Boston, MA. 384pp.

Reilly, E.M. Jr. 1968. The Audubon Illustrated Handbook of American Birds. Mcgraw-Hill Book Co. 524 pp.

Richards, A. 1988. Shorebirds: A complete guide to their behavior and migration. W.H. Smith Publishers, Inc. New York, NY. 224 pp.

Toups, J.A. and J.A. Jackson. 1987 Birds and birding on the Mississippi coast. Mississippi-Alabama Seagrant Publication MASGP-86-031. 303 pp.

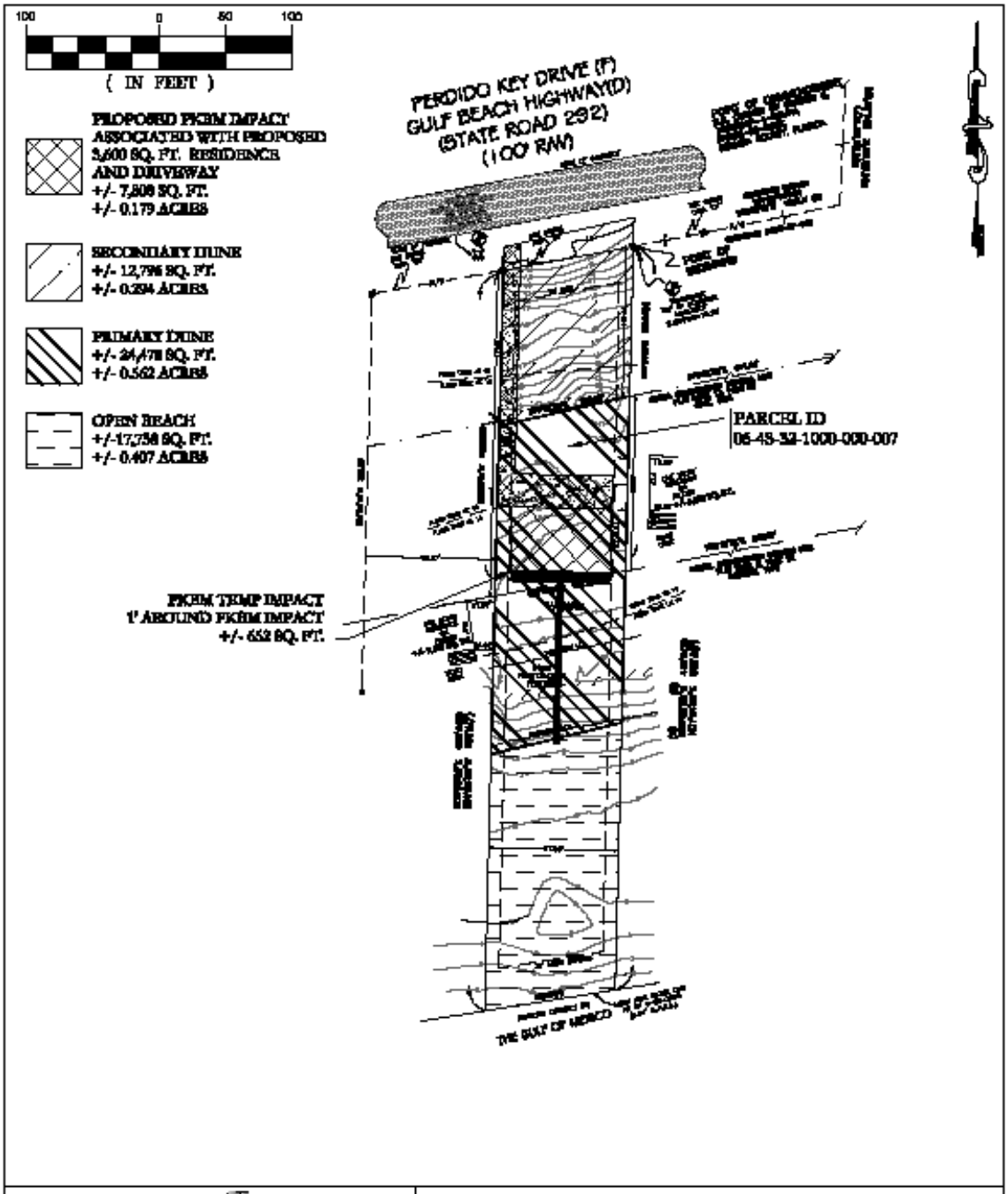
U.S. Department of the Interior, Fish and Wildlife Service. 1987. Recovery Plan for the Alabama beach mouse (*Peromyscus polionotus ammobates*), Perdido Key beach mouse (*P.p. trissyllepsis*), and Choctawhatchee beach mouse (*P.p. allophrys*). Southeast Region, Atlanta, Georgia.

U.S. Department of the Interior Fish and Wildlife Service and National Marine Fisheries Service. 1996. Endangered Species Habitat Conservation Planning Handbook. Washington D.C.

Woodrey, M.S. 1996. Status of potentially endangered species and populations of coastal birds. Report presented at the workshop on the identification of potentially endangered species in the Gulf of Mexico and determination of research needs for these species. Gulf Coast Research Laboratory. April, 1996.

APPENDIX A

Site plan depicting development details and habitat typology


100 0 50 100
(IN FEET)
PROPOSED FKHM IMPACT
ASSOCIATED WITH PROPOSED
5,600 SQ. FT. RESIDENCE
AND DRIVEWAY
+/- 7,808 SQ. FT.
+/- 0.179 ACRES
SECONDIARY DUNE
+/- 12,796 SQ. FT.
+/- 0.294 ACRES
PRIMARY DUNE
+/- 24,478 SQ. FT.
+/- 0.562 ACRES
OPEN BEACH
+/-17,758 SQ. FT.
+/- 0.407 ACRES
PERDIDO KEY DRIVE (F)
GULF BEACH HIGHWAY(D)
(STATE ROAD 292)
(100' R/W)
PARCEL ID
06-4S-32-1000-000-007
FKHM TEMP IMPACT
1' AROUND FKHM IMPACT
+/- 652 SQ. FT.
WETLAND SCIENCES INCORPORATED
OVERALL SITE PLAN
PROJECT # 2008-053
DATE: NOVEMBER 18, 2008
DRAWN BY: KJM
SCALE: 1"= 100'

APPENDIX B
Site Photographs

Photo taken along northern limits of property. Intact scrub habitat adjacent to SR 292

Photo taken with southward orientation exhibiting typically occurring habitat conditions.

Approximate location of proposed residence with adjacent residence depicted

Photo taken depicting the western residence orientation, and adjacent development

South view of subject lot with hurricane debris in foreground and adjacent single family development

View north depicting subject parcel, primary dune planting located in foreground. Debris field apparent within dune field in the background.

APPENDIX C

DUNE RESTORATION THROUGH SEA OATS PLANTING

Dune Restoration - Sea Oats Plantings

The restoration portion of the HCP includes restoration of a beach dune in the event of overwash impacts to the existing dune. Restoration involves planting and other activities which allow for the natural and gradual rebuilding of the dune by:

- restoration of the historic elevation of the dune with sand
- acquiring sea oats for re-vegetation which are of sufficient quality, health, and genetic integrity
- installing the plants in a way which ensures their success
- maintenance of the plants to ensure their continued success
- protection of the plants to avoid disturbance from human activities

The component parts of the restoration effort are addressed specifically and in detail in the following sections. These parts include:

- plant quality
- source materials
- propagation methods
- plant preparation and shipping
- plant size, age and condition
- planting season and delivery date
- planting zone profile
- planting depth and spacing
- irrigation
- fertilization
- signs and fencing
- success criteria

1.1 Plant Quantity

Planting Unit Definition- For the purpose of this restoration effort, the term "planting unit" refers to an individual nursery grown plant (as specified below) of sea oats (*Uniola paniculata*). No other plant species will be accepted as substitutes under this bid.

Required Number of Planting Units- The Contractor shall provide a total number of planting units (sufficient to cover the designated dune restoration area at a density of 18" on center). All planting units must be grown from acceptable source material, and delivered in an acceptable size, age and condition, as described below.

1.2 Source Materials

Planting Unit Sources- The source material for all planting units delivered under this bid shall be limited to seeds and propagated plants collected from Panhandle Florida,

including the counties of Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf and Franklin. Source material collected from areas other than Panhandle Florida (e.g. the Atlantic coast, the Gulf peninsula of Florida, or the Caribbean) shall be rejected under this bid.

1.3 Propagation Methods

Seed Preparation- All seed material used in the production of planting units delivered under this bid shall be subjected to cold treatment within one week prior to being seeded in liners. Cold treatment shall constitute exposure to temperatures of 3 to 5 degrees Celsius for a minimum of no less than 10 days.

Liners- All planting units shall be grown in multi well trays (liners) not to exceed a size of approximately 1.5" wide by 1.5" long; and not less than 2.5", or more than 3" in depth.

Seed Number per Liner- The number of seeds placed in each liner shall be determined through germination experiments by the Contractor such that deliverable planting units with 2 to 4 stems, on average are produced.

Soil Matrix- The Contractor shall use an appropriate soil matrix in each liner such that germination success and survival are optimized. Prior to shipping, roots should fill the entire volume of the liner but should not be root bound.

Irrigation and Disease Control- the Contractor shall spray irrigate the planning units during nursery propagation at such a rate that root health is maximized and the pathogenic loss is minimized.

Micropropagation- Planting units frown from approved sources via micropropagation techniques may be accepted under this bid. Plants produced from cuttings or the division of larger plants may be used if the material is derived from Panhandle Florida sources and meets all of the specification for seed produced planting units. However, planting units derived from micropropagation techniques shall no exceed 25% of the total number of planting units delivered under this bid.

Inspections- The Contractor shall provide access to all nursery operations to the Owner's Representative, in the manner and timeframe requested, for the purpose of compliance inspection of the propagation methods being used by the Contractor.

1.4 Plant Preparation and Shipping

Plant Preparation- All deliverable planting units shall be removed from their liners and stacked in waxed cardboard boxes immediately prior to shipping. The root ball shall be properly moistened to prevent desiccation. All planting units shall be handled and packed in such a manner as to ensure protection against desiccation,

thermal stress or physical damage. Plants deemed to have been improperly handled may be rejected by the Owner's Representative upon delivery.

Shipping Time- The total shipping time, or time from when planting units are packed in shipping boxes until they are delivered to the installation site, shall not exceed 3 days.

On-Site Holding Time- No deliverable planting units shall be stored in shipping boxes any longer than 2 days upon receipt at the installation site. At no time shall planting units be exposed to direct sunlight except while actually being installed. Shipping boxes must be shaded while plants are being staged for installation.

Total Handling Time- The total handling time, or the time from when planting units are packed in shipping boxes until they are installed, shall not exceed 5 days, unless authorized in advance by the Owner's Representative.

1.5 Plant Size, Age and Condition

Plant Size- Deliverable planting units shall be no less than 8", and no more than 12", in height, as measured from the top of the root ball to the apical meristem.

2. Dune Restoration – Plantings of other species within frontal dunes

Please see section 2.3.1 for general information concerning vegetation planting of land seaward of the proposed development. Detailed plans will be reviewed by the Service prior to planting