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DRAFT ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE CHOCTAWHATCHEE, PERDIDO KEY, AND ST. ANDREW BEACH MICE

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prepared for:

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EXECUTIVE SUMMARY

1. The purpose of this report is to identify and analyze the potential economic impacts associated with the proposed critical habitat designation for the federally listed Perdido Key beach mouse (*Peromyscus polionotus trissyllepsis*), Choctawhatchee beach mouse (*Peromyscus polionotus allophrys*), and St. Andrew beach mouse (*Peromyscus polionotus peninsularis*), collectively known as the three Florida beach mice.

2. In 1985, the Perdido Key and Choctawhatchee beach mice were listed as endangered, and critical habitat was designated for each. The 1985 critical habitat designation (CHD) consisted of primary and secondary dunes and did not include high elevation (scrub dune) habitat. In total, four critical habitat units, totaling approximately 773 acres, were designated for the Choctawhatchee beach mouse, and three critical habitat units, totaling about 1,020 acres, were designated for the Perdido Key beach mouse. In 1998, the St. Andrew beach mouse was listed as endangered, and the designation of critical habitat was found to be not prudent.

3. On December 15, 2005, the U.S. Fish and Wildlife Service (Service) published a proposed CHD revision for the three Florida beach mice. The Service proposed to designate critical habitat for the three Florida beach mice on 6,284 acres in six counties (Baldwin County in Alabama, and Bay, Escambia, Gulf, Okaloosa, and Walton in Florida).[1] The Service also proposed 85 acres for exclusion from CHD in Walton County, Florida. Exhibit ES-1 is a map of the proposed CHD for the three Florida beach mice.

4. Of the 6,284 acres in proposed CHD for the three Florida beach mice, approximately 40 percent are Federal lands (managed by the National Park Service and Department of Defense at Tyndall Air Force Base), and another 42 percent are owned by Florida Division of Recreation and Parks. Of remaining lands, 18 percent are privately owned and less than one percent are locally owned lands.

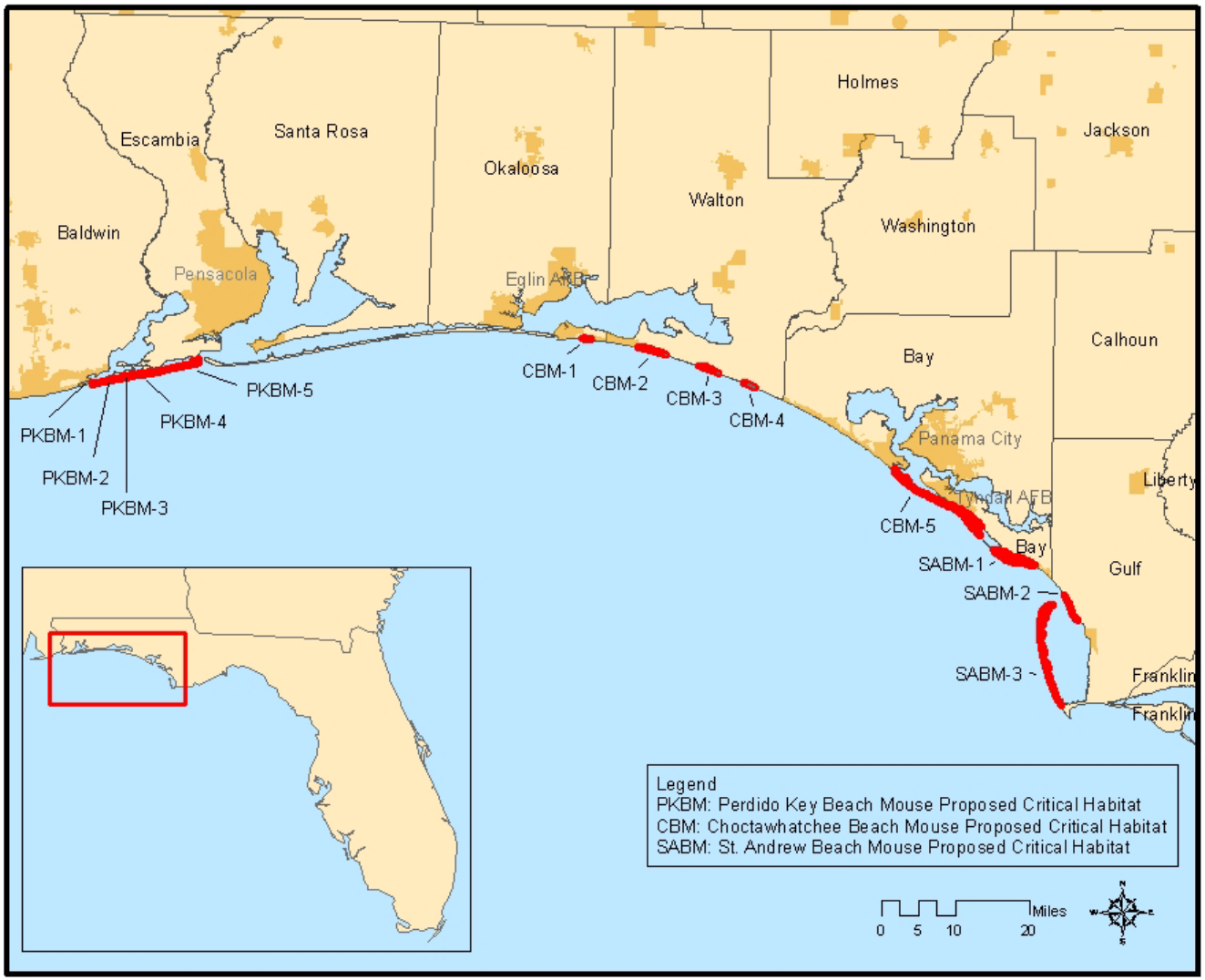
5. This analysis is able to quantify future cost estimates for several economic activities, including residential and commercial development, transportation, military, and species management and habitat protection as well as administrative costs associated with three Florida beach mice conservation efforts. Undiscounted future costs are approximately $60.4 million to $107.7 million over 20 years. Discounted future costs are estimated to be $52.5 to $99.4 million over this same time period (using a real rate of seven percent),

[1] Note that this analysis presents only approximate estimates of land acreage included in critical habitat. Please refer to the Proposed Rule for legal descriptions of proposed CHD.

or $56.3 to $103.3 million (using a real rate of three percent).[2] Almost all of the costs are associated with residential and commercial development (95 to 98 percent). Exhibits ES-2 and ES-3 present total future costs over 20 years numerically and graphically.

[2] Guidance provided by the OMB specifies the use of a real rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 *Federal Register* 5492, Feb. 3, 2003.)

EXHIBIT ES-1 PROPOSED CRITICAL HABITAT FOR THE THREE FLORIDA BEACH MICE



Note: Units are highlighted in this map for illustrative purposes and may appear larger than actual size. Please refer to the Proposed Rule for legal descriptions of proposed CHD.

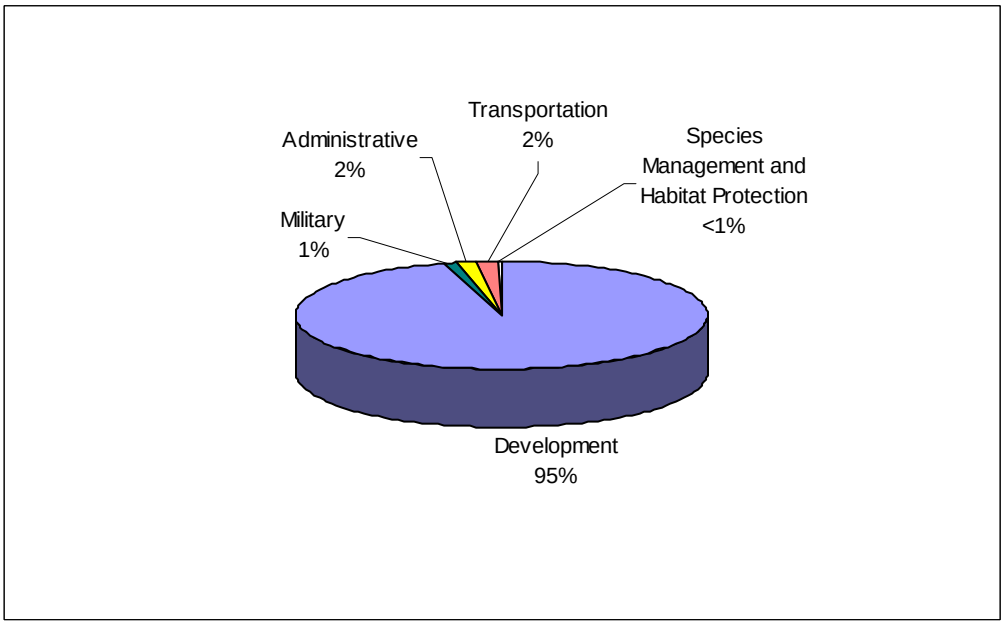
KEY FINDINGS

- **Total Future Impacts**: Quantified economic impacts are estimated to be $60.4 million to $107.7 million over 20 years (undiscounted). Discounted future costs are estimated to be $52.5 to $99.4 million over time same time period ($5.0 to $9.4 million annually) using a real rate of seven percent, or $56.3 to $103.3 million ($3.8 to $6.9 million annually) using a real rate of three percent.
- **Affected Activities:** Costs associated with residential/commercial development comprise 95 to 98 percent of total quantified future impacts. Other quantified impacts include transportation (one to two percent of estimated costs), administrative costs (one to two percent of costs), military (less than one to one percent of costs), and species management and habitat protection costs (less than one percent of costs).
  - Residential/Commercial Development: Future impacts to development activities are estimated to comprise the greatest portion of the total cost of conservation efforts for the three Florida beach mice. As stated above costs associated with residential and commercial development are expected to comprise 95 to 98 percent of total estimated future impacts. Conservation effort costs include land preservation (set-asides), monitoring, and predator control, etc. that may be required of new development activity on private land.
  - Transportation: Transportation costs are estimated to be one to two percent of total estimated future impacts. Costs are associated with efforts to reduce impacts of road construction and maintenance projects on the three Florida beach mice (e.g., planting native grasses and constructing a guardrail/retaining wall).
  - Military: Tyndall Air Force Base falls within proposed critical habitat for the three Florida beach mice. Tyndall Air Force Base expects to undertake dune restoration, law enforcement (including regulating all terrain vehicle use), an onsite biologist, predator control, and monitoring activities for the three Florida beach mice (and other species). Military costs range from less than one to one percent of total estimated future impacts.
  - Species Management and Habitat Protection: The Service and Florida Division of Recreation and Parks expect to undertake dune replanting and predator control efforts for the three Florida beach mice, costs associated with these efforts represent less than one percent of estimated total future impacts.
  - Recreation: Few impacts on recreational beach use or visitation are anticipated as a result of future beach mice conservation efforts. This is because 1) the vegetated dune areas in proposed CHD are frequently traversed by beach users for beach access via formal trails, dune walkovers, or boardwalks, but are not the focus areas for beach recreation; 2) numerous protections already exist that protect dune areas from impacts by beach users, including State laws that prohibit damaging sand dunes or picking vegetation from dunes; and 3) none of the planned projects by recreation managers in proposed CHD areas are anticipated to reduce the amount of beach recreation or beach visitation. A minimal reduction on total estimated costs is expected to result from not quantifying recreation impacts.
  - Tropical Storms and Hurricanes: While future tropical storms and hurricanes may destroy habitat for the three Florida beach mice, estimating resulting beach mice conservation effort costs would require predicting the future locations, intensity, damage, and response to future storms, and is, therefore, not feasible for the purposes of this analysis. Not predicting tropical storms and hurricanes is expected to have a modest downward impact on estimating total cost of conservation efforts for the three Florida beach mice.
  - Dredging and Disposal Operations: Future dredge and disposal operations within proposed CHD may be undertaken in response to tropical storms and hurricanes. Due to the uncertain number of future dredge and disposal operation projects likely to affect proposed CHD this analysis does not estimate future costs of conservation efforts for the three Florida beach mice associated with dredging and disposal operations. Not predicting future three Florida beach mice conservation effort costs for dredging and disposal operations is expected to have a modest downward impact on estimating total costs.
- **Units with Highest Impacts:** The units with the largest projected impacts are SABM-1 (46 to 50 percent of total costs), and SABM-3 (25 to 26 percent) in Gulf and Bay Counties, Florida, estimated at $36.3 to $76.6 million (undiscounted). Discounted costs for these units are approximately $34.9 million to $75.0 million ($3.3 to $7.1 million annually) using a real rate of seven percent, or $35.6 to $75.7 million ($2.4 to $5.1 million annually) using a real rate of three percent. Quantified costs in these units primarily stem from impacts on development activities.

EXHIBIT ES-2. FUTURE QUANTIFIED ECONOMIC IMPACTS BY AFFECTED ACTIVITY, 2006-2025

ACTIVITY	UNDISCOUNTED		PRESENT VALUE 3%		PRESENT VALUE 7%		ANNUALIZED 3%		ANNUALIZED 7%	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Development	$56.7	$102.9	$53.5	$99.7	$50.5	$96.8	$3.6	$6.7	$4.8	$9.1
Military	$0.9	$0.9	$0.7	$0.7	$0.5	$0.5	$0.0	$0.0	$0.0	$0.0
Administrative	$0.8	$1.9	$0.6	$1.4	$0.4	$1.0	$0.0	$0.1	$0.0	$0.1
Transportation	$1.7	$1.7	$1.3	$1.3	$0.9	$0.9	$0.1	$0.1	$0.1	$0.1
Species Management	$0.3	$0.3	$0.2	$0.2	$0.2	$0.2	$0.0	$0.0	$0.0	$0.0
Total	**$60.4**	**$107.7**	**$56.3**	**$103.3**	**$52.5**	**$99.4**	**$3.8**	**$6.9**	**$5.0**	**$9.4**

EXHIBIT ES-3. FUTURE QUANTIFIED ECONOMIC IMPACTS BY AFFECTED ACTIVITY, 2006-2025[3]



BACKGROUND

6. Section 4(b)(2) of the Endangered Species Act (Act) requires the Service to designate critical habitat on the basis of the best scientific data available, after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Service may exclude areas from critical habitat designation when the benefits of exclusion outweigh the benefits of including the areas within critical habitat, provided the exclusion will not result in extinction of the species.[4]

[3] Exhibit ES-3 presents total undiscounted future costs over 20 years by activity. Results using a discount rate of three percent or seven percent do not yield a significantly different relative distribution of costs.

[4] 16 U.S.C. §1533(b)(2).

In addition, this analysis provides information to allow the Service to address the requirements of Executive Orders 12866 and 13211, and the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA).[5] This report also complies with direction from the U.S. 10th Circuit Court of Appeals that, when deciding which areas to designate as critical habitat, the economic analysis informing that decision should include "co-extensive" effects.[6]

7. Executive Order 12866 directs Federal agencies to evaluate regulatory alternatives.[7] The Service proposes 13 units for designation as critical habitat, and proposes two areas for exclusion from CHD. An alternative to the Proposed Rule is the designation of all 15 areas, and the potential impacts of all are estimated in this report. In addition, as discussed in the previous paragraph, section 4(b)(2) of the Act allows the Service to exclude additional areas proposed for designation based on economic impact and other relevant impacts. As a result, the impacts of multiple combinations of essential habitat are also available to the Service.

8. To comply with the 10th Circuit's direction to include all co-extensive effects, this analysis considers the potential economic impacts of efforts to protect the three Florida beach mice and their habitat (hereinafter referred to collectively as "three Florida beach mice conservation efforts") in potential critical habitat. It does so by taking into account the cost of conservation-related measures that are likely to be associated with future economic activities that may adversely affect the habitat within the proposed boundaries. Actions undertaken to meet the requirements of other Federal, State, and local laws and policies may afford protection to the three Florida beach mice and their habitat, and thus contribute to the efficacy of critical habitat-related conservation and recovery efforts. Thus, the impacts of these activities are relevant for understanding the full impact of the proposed designation.

9. This analysis considers both economic efficiency and distributional effects. In the case of habitat conservation, efficiency effects generally reflect the opportunity costs associated with the commitment of resources to comply with habitat protection measures (e.g., lost economic opportunities associated with restrictions on land use). This analysis also addresses how potential economic impacts are likely to be distributed (distributional effects), including the potential effects of conservation activities on small entities and the energy industry. This information can be used by decision-makers to assess whether the effects of the designation might unduly burden a particular group or economic sector.

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[5] Executive Order 12866, "Regulatory Planning and Review," September 30, 1993; Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," May 18, 2001; 5 U.S.C. §§601 *et seq*; and Pub Law No. 104-121.

[6] In 2001, the U.S. 10th Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of proposed critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico Cattle Growers Ass'n v. U.S.F.W.S.*, 248 F.3d 1277 (10th Cir. 2001)).

[7] Executive Order 12866, "Regulatory Planning and Review," September 30, 1993; Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," May 18, 2001.

Also, this analysis looks retrospectively at costs incurred since the date the species was listed and considers those costs that may occur after the designation is finalized.

RESULTS OF THE ANALYSIS

10. The potential economic impacts of three Florida beach mice proposed CHD stem from the current and proposed land uses in these areas. Exhibit ES-4 presents forecast costs by unit anticipated over the next 20 years (undiscounted). The text that follows describes these estimated future costs in more detail, relying on the costs assuming a seven percent discount rate throughout the discussion. Exhibit ES-5 is a map showing the relative magnitudes of total costs by unit. The relative rankings of these units, by cost, do not change significantly when future costs are discounted at three percent or when undiscounted costs are considered. Exhibits ES-6 through ES-8 presents a matrix of total future costs by activity and unit. Exhibit ES-9 provides a qualitative discussion of potential impacts associated with recreation, tropical storms and hurricanes, and dredging and disposal.

EXHIBIT ES-4. FUTURE QUANTIFIED ECONOMIC IMPACTS BY UNIT, 2006-2025

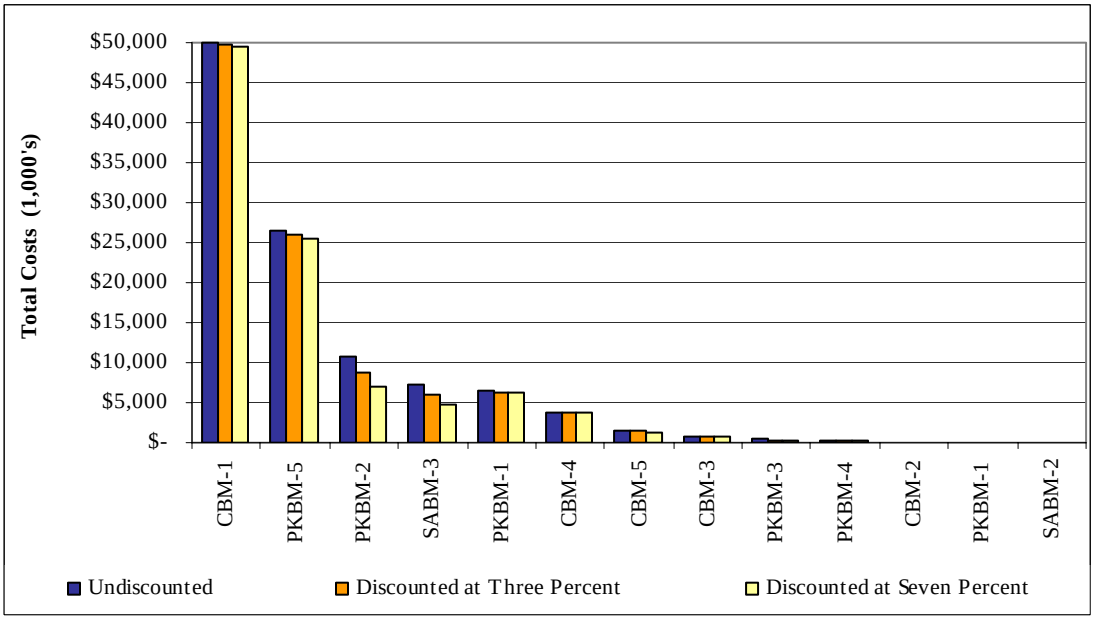
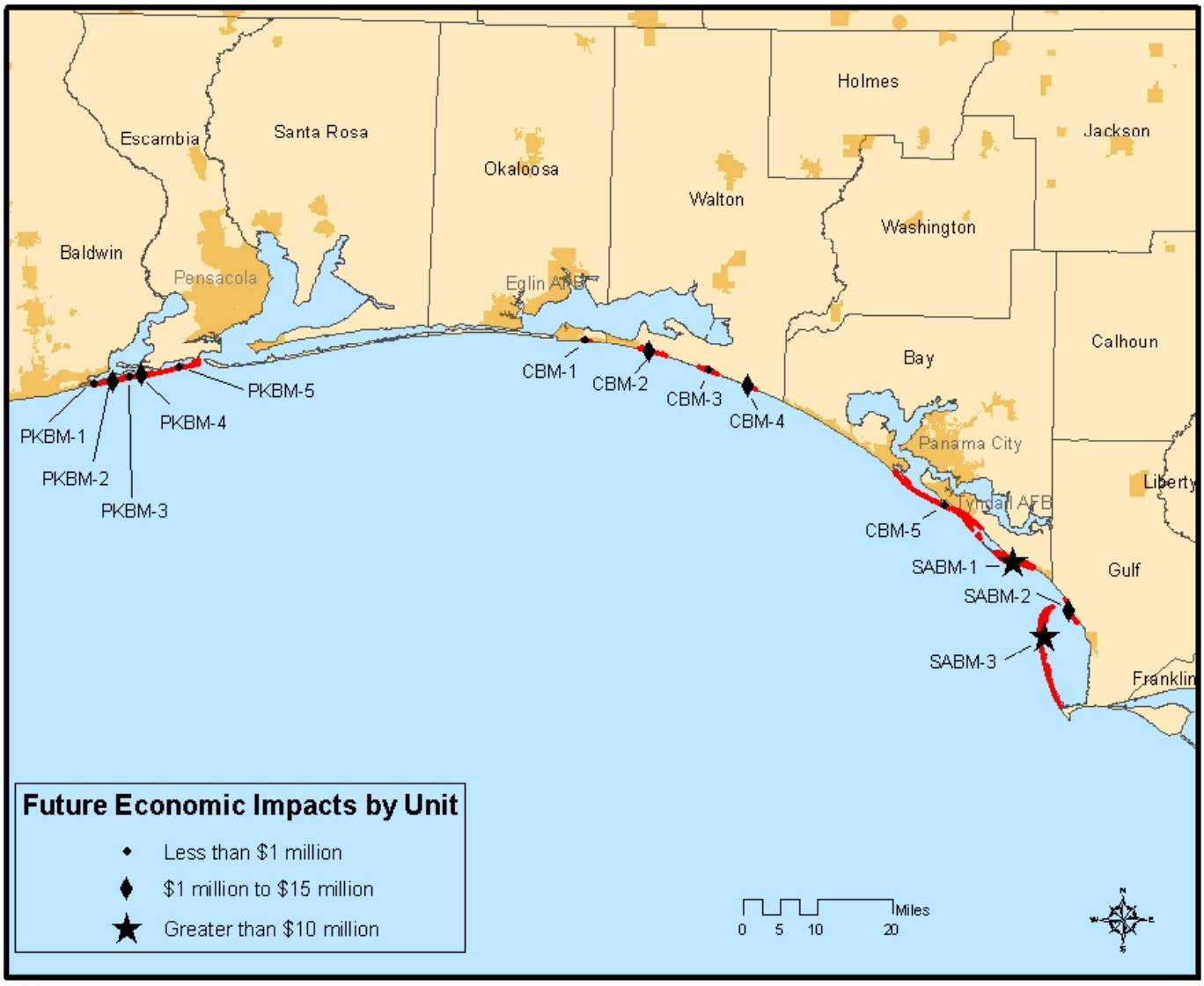


EXHIBIT ES-5. MAP OF FUTURE ECONOMIC IMPACTS BY UNIT, 2006-2025



Note: Units are highlighted in this map for illustrative purposes and may appear larger than actual size. Please refer to the Proposed Rule for legal descriptions of proposed CHD. Costs depicted in the map do not include the costs of critical habitat areas proposed for exclusion.

11. **RESIDENTIAL AND COMMERCIAL DEVELOPMENT** The Proposed Rule states that habitat loss and fragmentation associated with coastal residential and commercial real estate development is the primary factor contributing to the endangered status of the three Florida beach mice. Despite numerous existing land use regulations, coastal development along the Gulf Coast is proceeding quickly as land values rise and the quantity of developable land decreases. Undeveloped private lands in proposed CHD (614 acres) are anticipated to be developed in the next 20 years. The future costs of three Florida beach mice conservation efforts to private development are estimated to range from $56.7 million to $102.9 million (undiscounted). Discounted future costs are estimated at $50.5 million to $96.8 million (using a real rate of seven percent) or $53.5 million to $99.7 million (using a real rate of three percent).

12. This analysis assumes that the conservation activities associated with the three Florida beach mice may result in impacts to landowners by imposing the following costs: (1) increased administrative costs to secure incidental take permits, including associated project delay costs; (2) on-site project modification costs to protect the species; and (3) land value losses associated with development restrictions, i.e. required land setbacks or set-asides. Future development projects on Perdido Key are assumed to make a one-time payment of $100,000 into a conservation fund for each acre of beach mouse habitat impacted as well as an annual payment of $201 per housing unit constructed. Future costs to WaterColor and WaterSound are developed based on HCP requirements and input from the developer of those projects. Future costs to other developable areas (outside of Perdido Key and WaterColor/WaterSound developments) are assumed to consist of conservation set-asides of between five and 11 percent of developable land, as well as additional conservation efforts conducted on a per-acre basis (such as predator control efforts).

13. **TRANSPORTATION** Future conservation efforts for the three Florida beach mice for transportation projects are likely to include habitat protection and planting native vegetation. The total cost of conservation efforts for the three Florida beach mice associated with transportation projects is estimated to be $1.7 million (undiscounted). Discounted costs are estimated at $0.9 million (using a real rate of seven percent) or $1.3 million (using a real rate of three percent).

14. **MILITARY** Tyndall Air Force Base expects to continue conservation efforts including dune restoration, law enforcement (including regulating ATV use), an onsite biologist, predator control, and monitoring for the Choctawhatchee and St. Andrew beach mice over the next 20 years. Tyndall Air Force Base expects to incur approximately $883,000 (undiscounted) in total costs. Discounted costs are expected to be $468,000 (using a real rate of seven percent) or $657,000 (using a real rate of three percent). The costs of future beach mice conservation efforts are split evenly between CBM-5 and SABM-1, for a total cost of $442,000 (undiscounted), $234,000 (discounted at seven percent), or $329,000 (discounted at three percent) in each unit.

15. **SPECIES MANAGEMENT AND HABITAT PROTECTION** Future species management and habitat protection efforts are expected to be undertaken by the Service and Florida Division of Recreation and Parks. The total cost of future species management and habitat protection costs within the proposed CHD is $308,000 (undiscounted). Discounted costs are estimated at $166,000 (using a real rate of seven percent) or $230,000 (using a real rate of three percent). A majority of these costs are expected to be incurred by Florida Division of Parks and Recreation for predator control in Perdido Key State Park (PKBM-3).

16. **RECREATION** While units proposed for CHD and areas proposed for exclusion for the three Florida beach mice include access areas for ten public beaches, few impacts on recreational beach use or visitation are anticipated as a result of future beach mice conservation efforts. This is because 1) the vegetated dune areas in proposed CHD are frequently traversed by beach users for beach access via formal trails, dune walkovers, or boardwalks, but are not the focus areas for beach recreation; 2) numerous protections already exist that protect dune areas from impacts by beach users, including State laws that prohibit damaging sand dunes or picking vegetation from dunes; and 3) none of the planned projects by recreation managers in proposed CHD areas are anticipated to reduce the amount of beach recreation or beach visitation.

17. **TROPICAL STORMS AND HURRICANES** While future tropical storms and hurricanes may destroy habitat for the three Florida beach mice, estimating resulting beach mice conservation effort costs would require predicting the future locations, intensity, damage, and response to future storms, and is, therefore, not feasible for the purposes of this analysis. Not predicting tropical storms and hurricanes is expected to have a downward impact on estimating total cost of conservation efforts for the three Florida beach mice. This analysis recognizes hurricanes have a wide-ranging effect on the economy, impacting the costs of building materials, real estate, etc.; however, this analysis only considers the costs of beach mice conservation efforts related to storm events. Most responses to storm events are baseline and incremental to three Florida beach mice proposed CHD. For example, dune restoration and protection efforts (e.g., rebuilding boardwalks) are a result of the storm event, not the conservation needs of the three Florida beach mice. However, some future beach restoration efforts may occur in proposed CHD areas in response to past storms. Nine beach nourishment feasibility studies are expected to be undertaken in the counties containing proposed CHD, some of which may occur within proposed CHD. Costs of three Florida beach mice conservation efforts associated with these beach nourishment projects are not estimated as the location and scale of these projects have yet to be determined.

18. **DREDGING AND DISPOSAL OPERATIONS** Future dredge and disposal operations within proposed CHD may be undertaken in response to tropical storms and hurricanes and natural filling. The three Florida beach mice conservation efforts associated with these future projects are expected to be similar to past efforts and range from no incremental costs to $36,000 for planting sea oats. Due to the uncertain number of future dredge and disposal operation projects likely to affect proposed CHD, this analysis does not estimate future costs of conservation efforts for the three Florida beach mice associated with dredging and disposal operations.

EXHIBIT ES-6 SUMMARY OF FUTURE IMPACTS BY UNIT AND ACTIVITY IN PROPOSED CHD, 2006-2025 (UNDISCOUNTED)

	DEVELOPMENT		SPECIES MANAGEMENT		TRANSPORTATION		MILITARY		ADMINISTRATIVE		TOTAL	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Critical Habitat Units												
PKBM-1. Gulf State Park	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
PKBM-2. West Perdido Key	$7.0	$7.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.3	$7.1	$7.2
PKBM-3. Perdido Key State Park	$0.0	$0.0	$0.3	$0.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.3	$0.3
PKBM-4. Gulf Beach	$10.3	$10.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2	$0.4	$10.5	$10.7
PKBM-5. Gulf Islands National Seashore	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
CBM-1. Henderson Beach	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
CBM-2. Topsail Hill	$1.7	$3.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$1.8	$3.8
CBM-3. Grayton Beach	$0.3	$0.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.3	$0.7
CBM-4. Deer Lake	$0.6	$1.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.2	$0.7	$1.5
CBM-5. West Crooked Island/ Shell Island	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.4	$0.4	$0.0	$0.0	$0.5	$0.5
SABM-1. East Crooked Island	$22.5	$49.2	$0.0	$0.0	$0.0	$0.0	$0.4	$0.4	$0.2	$0.4	$23.1	$50.0
SABM-2. Palm Point	$2.9	$6.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.2	$3.0	$6.5
SABM-3. St. Joseph Peninsula	$11.4	$24.6	$0.0	$0.0	$1.7	$1.7	$0.0	$0.0	$0.1	$0.3	$13.2	$26.6
Subtotal	$56.7	$102.9	$0.3	$0.3	$1.7	$1.7	$0.9	$0.9	$0.8	$1.9	$60.4	$107.7
Proposed Exclusions												
Stallworth Preserve	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
WaterSound and WaterColor	$1.1	$1.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$1.1	$1.1
Subtotal	$1.2	$1.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$1.2	$1.2

Note: Totals may not sum due to rounding.

EXHIBIT ES-7 SUMMARY OF FUTURE IMPACTS BY UNIT AND ACTIVITY IN PROPOSED CHD, 2006-2025 (DISCOUNTED AT SEVEN PERCENT)

	DEVELOPMENT		SPECIES MANAGEMENT		TRANSPORTATION		MILITARY		ADMINISTRATIVE		TOTAL	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Critical Habitat Units												
PKBM-1. Gulf State Park	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
PKBM-2. West Perdido Key	$4.6	$4.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.1	$4.7	$4.8
PKBM-3. Perdido Key State Park	$0.0	$0.0	$0.2	$0.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2	$0.2
PKBM-4. Gulf Beach	$6.8	$6.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.2	$6.9	$7.0
PKBM-5. Gulf Islands National Seashore	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
CBM-1. Henderson Beach	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
CBM-2. Topsail Hill	$1.7	$3.7	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$1.7	$3.8
CBM-3. Grayton Beach	$0.3	$0.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.3	$0.6
CBM-4. Deer Lake	$0.6	$1.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.6	$1.4
CBM-5. West Crooked Island/ Shell Island	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2	$0.2	$0.0	$0.0	$0.2	$0.2
SABM-1. East Crooked Island	$22.4	$49.0	$0.0	$0.0	$0.0	$0.0	$0.2	$0.2	$0.1	$0.2	$22.7	$49.5
SABM-2. Palm Point	$2.8	$6.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$2.9	$6.3
SABM-3. St. Joseph Peninsula	$11.2	$24.5	$0.0	$0.0	$0.9	$0.9	$0.0	$0.0	$0.1	$0.2	$12.2	$25.5
Subtotal	$50.5	$96.8	$0.2	$0.2	$0.9	$0.9	$0.5	$0.5	$0.4	$1.0	$52.5	$99.4
Annualized	$4.8	$9.1	$0.0	$0.0	$0.1	$0.1	$0.0	$0.0	$0.0	$0.1	$5.0	$9.4
Proposed Exclusions												
Stallworth Preserve	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
WaterSound and WaterColor	$0.6	$0.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.6	$0.6
Subtotal	$0.7	$0.7	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.7	$0.7
Annualized	$0.1	$0.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.1

Note: Totals may not sum due to rounding.

EXHIBIT ES-8 SUMMARY OF FUTURE IMPACTS BY UNIT AND ACTIVITY IN PROPOSED CHD, 2006-2025 (DISCOUNTED AT THREE PERCENT)

	DEVELOPMENT		SPECIES MANAGEMENT		TRANSPORTATION		MILITARY		ADMINISTRATIVE		TOTAL	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
Critical Habitat Units												
PKBM-1. Gulf State Park	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
PKBM-2. West Perdido Key	$5.8	$5.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.2	$5.8	$5.9
PKBM-3. Perdido Key State Park	$0.0	$0.0	$0.2	$0.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.2	$0.2
PKBM-4. Gulf Beach	$8.5	$8.5	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.3	$8.6	$8.8
PKBM-5. Gulf Islands National Seashore	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
CBM-1. Henderson Beach	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
CBM-2. Topsail Hill	$1.7	$3.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$1.8	$3.8
CBM-3. Grayton Beach	$0.3	$0.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.3	$0.6
CBM-4. Deer Lake	$0.6	$1.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.6	$1.4
CBM-5. West Crooked Island/ Shell Island	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.3	$0.3	$0.0	$0.0	$0.3	$0.3
SABM-1. East Crooked Island	$22.5	$49.1	$0.0	$0.0	$0.0	$0.0	$0.3	$0.3	$0.1	$0.3	$22.9	$49.7
SABM-2. Palm Point	$2.9	$6.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.2	$2.9	$6.4
SABM-3. St. Joseph Peninsula	$11.3	$24.5	$0.0	$0.0	$1.3	$1.3	$0.0	$0.0	$0.1	$0.2	$12.7	$26.0
Subtotal	$53.5	$99.7	$0.2	$0.2	$1.3	$1.3	$0.7	$0.7	$0.6	$1.4	$56.3	$103.3
Annualized	$3.6	$6.7	$0.0	$0.0	$0.1	$0.1	$0.0	$0.0	$0.0	$0.1	$3.8	$6.9
Proposed Exclusions												
Stallworth Preserve	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
WaterSound and WaterColor	$0.9	$0.9	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.9	$0.9
Subtotal	$0.9	$0.9	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.9	$0.9
Annualized	$0.1	$0.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.1

Note: Totals may not sum due to rounding.

EXHIBIT ES-9 SUMMARY OF FUTURE UNQUANTIFIED IMPACTS BY ACTIVITY, 2006-2025

ACTIVITY	POTENTIAL IMPACTS
Recreation	Few impacts on recreational beach use or visitation are anticipated as a result of future beach mice conservation efforts. A minimal reduction on total estimated costs is expected to result from not quantifying recreation impacts.
Tropical storms and hurricanes	Conservation efforts may include: avoiding impacting beach mice food source; not creating a un-vegetated wide beach berm; minimizing wind blown sands; placing equipment outside of beach mice habitat; and re-vegetation. Not predicting tropical storms and hurricanes is expected to have a modest downward impact on estimating total cost of conservation efforts for the three Florida beach mice.
Dredging and disposal	Conservation efforts are expected to be similar to past efforts and may range from none to planting sea oats. Not predicting future three Florida beach mice conservation effort costs for dredging and disposal operations is expected to have a modest downward impact on estimating total costs.

SECTION I | FRAMEWORK FOR ANALYSIS

19. The purpose of this report is to estimate the economic impact of actions taken to protect the federally listed Choctawhatchee beach mouse (CBM), Perdido Key beach mouse (PKBM), and St. Andrew beach mouse (SABM) (collectively referred to as three Florida beach mice) and their habitat. It attempts to quantify the economic effects associated with the proposed designation of critical habitat. It does so by taking into account the cost of conservation-related measures that are likely to be associated with future economic activities that may adversely affect the habitat within the proposed critical habitat boundaries. The analysis looks retrospectively at costs incurred since the three Florida beach mice were listed, and it attempts to predict future costs likely to occur after the 2006 proposed CHD is finalized.

20. This information is intended to assist the Secretary in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.[8] In addition, this information allows the U.S. Fish and Wildlife Service (the Service) to address the requirements of Executive Orders 12866 and 13211, and the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA).[9] This report also complies with direction from the U.S. Court of Appeals for the 10th Circuit that "co-extensive" effects should be included in the economic analysis to inform decision-makers regarding which areas to designate as critical habitat.[10]

21. This section describes the framework for this analysis. First, it describes the general analytic approach to estimating economic effects, including a discussion of both efficiency and distributional effects. Next, this section discusses the scope of the analysis, including the link between existing and critical habitat-related protection efforts and economic impacts. Next, it presents the analytic time frame used in the report. Finally, this section lists the information sources relied upon in this analysis.

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[8] 16 U.S.C. §1533(b)(2).

[9] Executive Order 12866, *Regulatory Planning and Review*, September 30, 1993; Executive Order 13211, *Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*, May 18, 2001; 5. U.S.C. §§601 *et seq*; and Pub Law No. 104-121.

[10] In 2001, the U.S. Court of Appeals for the 10th Circuit instructed the Service to conduct a full analysis of all of the economic impacts of proposed CHD, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico Cattle Growers Ass'n v. U.S.F.W.S.*, 248 F.3d 1277 (10th Cir. 2001)).

1.1 APPROACH TO ESTIMATING ECONOMIC EFFECTS

22. This economic analysis considers both the economic efficiency and distributional effects that may result from efforts to protect the three Florida beach mice and their habitat (hereinafter referred to collectively as "three Florida beach mice conservation efforts"). Economic efficiency effects generally reflect "opportunity costs" associated with the commitment of resources required to accomplish species and habitat conservation. For example, if activities that can take place on a parcel of land are limited as a result of the designation or the presence of the species, and thus the market value of the land is reduced, this reduction in value represents one measure of opportunity cost or change in economic efficiency. Similarly, the costs incurred by a Federal action agency to consult with the Service under section 7 represent opportunity costs of three Florida beach mice conservation efforts.

23. This analysis also addresses the distribution of impacts associated with the designation, including an assessment of any local or regional impacts of habitat conservation and the potential effects of conservation efforts on small entities and the energy industry. This information may be used by decision-makers to assess whether the effects of three Florida beach mice conservation efforts unduly burden a particular group or economic sector. For example, while conservation efforts may have a relatively small impact relative to the national economy, individuals employed in a particular sector of the regional economy may experience relatively greater impacts. The difference between economic efficiency effects and distributional effects, as well as their application in this analysis, are discussed in greater detail below.

1.1.1 EFFICIENCY EFFECTS

24. At the guidance of the Office of Management and Budget (OMB) and in compliance with Executive Order 12866 "Regulatory Planning and Review," Federal agencies measure changes in economic efficiency in order to understand how society, as a whole, will be affected by a regulatory action. In the context of regulations that protect three Florida beach mice habitat, these efficiency effects represent the opportunity cost of resources used or benefits foregone by society as a result of the regulations. Economists generally characterize opportunity costs in terms of changes in producer and consumer surpluses in affected markets.[11]

25. In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, a Federal landowner or manager may enter into a consultation with the Service to ensure that a particular activity will not adversely modify critical habitat. The effort required for the consultation

[11] For additional information on the definition of "surplus" and an explanation of consumer and producer surplus in the context of regulatory analysis, see: Gramlich, Edward M., *A Guide to Benefit-Cost Analysis (2nd Ed.)*, Prospect Heights, Illinois: Waveland Press, Inc., 1990; and U.S. Environmental Protection Agency, *Guidelines for Preparing Economic Analyses*, EPA 240-R-00-003, September 2000, available at http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html.

is an economic opportunity cost because the landowner or manager's time and effort would have been spent in an alternative activity had the parcel not been species habitat. When compliance activity is not expected to significantly affect markets -- that is, not result in a shift in the quantity of a good or service provided at a given price, or in the quantity of a good or service demanded given a change in price -- the measurement of compliance costs can provide a reasonable estimate of the change in economic efficiency.

26. Where habitat protection measures are expected to significantly impact a market, it may be necessary to estimate changes in producer and consumer surpluses. For example, a designation that precludes the development of large areas of land may shift the price and quantity of housing supplied in a region. In this case, changes in economic efficiency (i.e., social welfare) can be measured by considering changes in producer and consumer surplus in the market.

27. This analysis begins by measuring costs associated with measures taken to protect three Florida beach mice and their habitat. As noted above, in some cases, compliance costs can provide a reasonable estimate of changes in economic efficiency. However, if the cost of conservation efforts is expected to significantly impact markets, the analysis will consider potential changes in consumer and/or producer surplus in affected markets. This analysis does not anticipate significant market impacts.

1.1.2 DISTRIBUTIONAL AND REGIONAL ECONOMIC EFFECTS

28. Measurements of changes in economic efficiency focus on the net impact of conservation efforts, without consideration of how certain economic sectors or groups of people are affected. Thus, a discussion of efficiency effects alone may miss important distributional considerations. OMB encourages Federal agencies to consider distributional effects separately from efficiency effects.[12] This analysis considers several types of distributional effects, including impacts on small entities; impacts on energy supply, distribution, and use; and regional economic impacts. It is important to note that these are fundamentally different measures of economic impact than efficiency effects, and thus cannot be added to or compared with estimates of changes in economic efficiency.

Impacts on Small Entities and Energy Supply, Distribution, and Use

29. This analysis considers how small entities, including small businesses, organizations, and governments, as defined by the Regulatory Flexibility Act, might be affected by future three Florida beach mice conservation efforts.[13] In addition, in response to Executive Order 13211 "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," this analysis considers the future impacts of conservation efforts on the energy industry and its customers.[14]

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[12] U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, available at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

[13] 5 U.S.C. § 601 *et seq.*

[14] Executive Order 13211, *Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*, May 18, 2001.

CALCULATING PRESENT VALUE AND ANNUALIZED IMPACTS

For each land use activity, this analysis compares economic impacts incurred in different time periods in present value terms. The present value presents the value of a payment or stream of payments in common dollar terms. That is, it is the sum of a series of past or future cash flows expressed in today's dollars. Translation of economic impacts of past costs to present value terms requires the following: a) past or projected future costs of three Florida beach mice conservation efforts; and b) the specific years in which these impacts have or are expected to be incurred. With these data, the present value of the past or future stream of impacts (PV_c) of three Florida beach mice conservation efforts from year t to T is measured in 2005 dollars according to the following standard formula:[a]

$$PV_c = \sum_{t}^{T} \frac{C_t}{(1+r)^{t-2005}}$$

C_t = forecast cost of three Florida beach mice conservation efforts in year t

r = discount rate[b]

Impacts of conservation efforts for each activity in each unit are also expressed as annualized values. Annualized values are calculated to provide comparison of impacts across activities with varying forecast periods (T). For this analysis, however, all activities employ a forecast period of 20 years, 2006 through 2025. Annualized impacts of future three Florida beach mice conservation efforts (APV_c) are calculated by the following standard formula:

$$APV_c = PV_c \left[\frac{r}{1-(1+r)^{-(N)}} \right]$$

N = number of years in the forecast period (in this analysis, 20 years)

[a] To derive the present value of past conservation efforts for this analysis, t is 1985 and T is 2005; to derive the present value of future conservation efforts, t is 2006 and T is 2025.

[b] To discount and annualize costs, guidance provided by the OMB specifies the use of a real rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 *Federal Register* 5492, Feb. 3, 2003.)

Regional Economic Effects

30. Regional economic impact analysis can provide an assessment of the potential localized effects of conservation efforts. Specifically, regional economic impact analysis produces a quantitative estimate of the potential magnitude of the initial change in the regional economy resulting from a regulatory action. Regional economic impacts are commonly measured using regional input/output models. These models rely on multipliers that represent the relationship between a change in one sector of the economy (e.g., expenditures by recreationists) and the effect of that change on economic output, income, or employment in other local industries (e.g., suppliers of goods and services to recreationists). These economic data provide a quantitative estimate of the magnitude of shifts of jobs and revenues in the local economy.

31. The use of regional input/output models in an analysis of the impacts of species and habitat conservation efforts can overstate the long-term impacts of a regulatory change. Most importantly, these models provide a static view of the economy of a region. That is, they measure the initial impact of a regulatory change on an economy but do not consider long-term adjustments that the economy will make in response to this change. For example, these models provide estimates of the number of jobs lost as a result of a regulatory change, but do not consider re-employment of these individuals over time or other adaptive responses by impacted businesses. In addition, the flow of goods and services across the regional boundaries defined in the model may change as a result of the regulation, compensating for a potential decrease in economic activity within the region.

32. Despite these and other limitations, in certain circumstances regional economic impact analysis may provide useful information about the scale and scope of localized impacts. It is important to remember that measures of regional economic effects generally reflect shifts in resource use rather than efficiency losses. Thus, these types of distributional effects are reported separately from efficiency effects (i.e., not summed). In addition, measures of regional economic impact cannot be compared with estimates of efficiency effects, but should be considered as distinct measures of impact.

1.2 SCOPE OF THE ANALYSIS

33. This analysis identifies those economic activities believed to most likely threaten the listed species and its habitat and, where possible, quantifies the economic impact to avoid, mitigate, or compensate for such threats within the boundaries of the CHD. In instances where critical habitat is being proposed after a species is listed, some future impacts may be unavoidable, regardless of the final designation and exclusions under 4(b)(2). However, due to the difficulty in making a credible distinction between listing

and critical habitat effects within critical habitat boundaries, this analysis considers all future conservation-related impacts to be co-extensive with the designation.[15,16]

34. Coextensive effects may also include impacts associated with overlapping protective measures of other Federal, State, and local laws that aid habitat conservation in the areas proposed for designation. In past instances, some of these measures have been precipitated by the listing of the species and impending designation of critical habitat. Because habitat conservation efforts affording protection to a listed species likely contribute to the efficacy of the CHD efforts, the impacts of these actions are considered relevant for understanding the full effect of the proposed CHD. Enforcement actions taken in response to violations of the Act, however, are not included.

1.2.1 SECTIONS OF THE ACT RELEVANT TO THE ANALYSIS

35. This analysis focuses on activities that are influenced by the Service through sections 4, 7, 9, and 10 of the Act. Section 4 of the Act focuses on the listing and recovery of endangered and threatened species, as well as the CHD. In this section, the Secretary is required to list species as endangered or threatened "solely on the basis of the best available scientific and commercial data."[17] Section 4 also requires the Secretary to designate critical habitat "on the basis of the best scientific data available and after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat."[18] In addition, under section 4, the Service is required to develop a recovery plan that recommends actions necessary to satisfy the biological needs and assure the recovery of the species. The plan serves as guidance for interested parties, including Federal, State, and local agencies, private landowners, and the general public.

36. The protections afforded to threatened and endangered species and their habitat are described in sections 7, 9, and 10 of the Act, and economic impacts resulting from these protections are the focus of this analysis:

- Section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The administrative costs of these consultations, along with the costs of project modifications resulting from

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[15] In 2001, the U.S. Court of Appeals for the 10th Circuit instructed the Service to conduct a full analysis of all of the economic impacts of proposed CHD, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico Cattle Growers Assn v. U.S.F.W.S.*, 248 F.3d 1277 (10th Cir. 2001)).

[16] In 2004, the U.S. Ninth Circuit invalidated the Service's regulation defining destruction or adverse modification of critical habitat (Gifford Pinchot Task Force v. United States Fish and Wildlife Service). The Service is currently reviewing the decision to determine what effect it (and to a limited extent Center for Biological Diversity v. Bureau of Land Management (Case No. C-03-2509-SI, N.D. Cal.)) may have on the outcome of consultations pursuant to section 7 of the Act.

[17] 16 U.S.C. 1533.

[18] 16 U.S.C. 1533.

these consultations, represent compliance costs associated with the listing of the species and CHD.[19]

- Section 9 defines the actions that are prohibited by the Act. In particular, it prohibits the "take" of endangered wildlife, where "take" means to " harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."[20] The economic impacts associated with this section manifest themselves in sections 7 and 10.
- Under section 10(a)(1)(B) of the Act, an entity (i.e., a landowner or local government) may develop a Habitat Conservation Plan (HCP) for an endangered animal species in order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property.[21] The requirements posed by the HCP may have economic impacts associated with the goal of ensuring that the effects of incidental take are adequately minimized and mitigated. The designation of critical habitat does not require completion of an HCP; however, the designation may influence conservation measures provided under HCPs.

1.2.1 OTHER RELEVANT PROTECTION EFFORTS

37. The protection of listed species and habitat is not limited to the Act. Other Federal agencies, as well as State and local governments, may also seek to protect the natural resources under their jurisdiction.[22] For the purpose of this analysis, such protective efforts are considered to be co-extensive with the protection offered by critical habitat, and costs associated with these efforts are included in this report. In addition, under certain circumstances, the CHD may provide new information to a community about the sensitive ecological nature of a geographic region, potentially triggering additional economic impacts under other State or local laws. In cases where these costs would not have been triggered absent the designation of critical habitat, they are included in this economic analysis. Additional economic impacts are not expected to be triggered by this critical habitat designation.

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[19] The Service notes, however, that a recent Ninth Circuit judicial opinion, *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, has invalidated the Service's regulation defining destruction or adverse modification of critical habitat. The Service is currently reviewing the decision to determine what effect it (and to a limited extent *Center for Biological Diversity v. Bureau of Land Management* (Case No. C-03-2509-SI, N.D. Cal.)) may have on the outcome of consultations pursuant to section 7 of the Act.

[20] 16 U.S.C. 1532.

[21] U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning," August 6, 2002, accessed at http://endangered.fws.gov/hcp/.

[22] For example, the Sikes Act Improvement Act (Sikes Act) of 1997 requires Department of Defense (DoD) military installations to develop Integrated Natural Resources Management Plans (INRMPs) that provide for the conservation, protection, and management of wildlife resources (16 U.S.C. §§ 670a - 670o). These plans must integrate natural resource management with the other activities, such as training exercises, taking place at the facility.

1.2.3 ADDITIONAL ANALYTIC CONSIDERATIONS

38. This analysis also considers the potential for other types of economic impacts that can be related to section 7 consultations in general and CHD in particular, including time delay, regulatory uncertainty, and stigma impacts.

Time Delay and Regulatory Uncertainty Impacts

39. Time delays are costs due to project delays associated with the consultation process or compliance with other regulations. Regulatory uncertainty costs occur in anticipation of having to modify project parameters (e.g., retaining outside experts or legal counsel to better understand their responsibilities with regard to CHD).

Stigma Impacts

40. Stigma refers to the change in economic value of a particular project or activity due to negative (or positive) perceptions of the role critical habitat will play in developing, implementing, or conducting that policy. For example, changes to private property values associated with public attitudes about the limits and costs of implementing a project in critical habitat are known as "stigma" impacts.

1.2.4 BENEFITS

41. Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.[23] OMB's Circular A-4 distinguishes two types of economic benefits: direct *benefits and ancillary benefits.* Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemaking.[24]

42. In the context of CHD, the primary purpose of the rulemaking (i.e., the direct benefit) is the potential to enhance conservation of the species. The published economics literature has documented that social welfare benefits can result from the conservation and recovery of endangered and threatened species. In its guidance for implementing Executive Order 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research.[25] *Rather than rely on economic measures, the Service believes that the direct benefits of the Proposed Rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.*

43. Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species specifically by protecting the primary constituent elements on which the species depends. To this end, critical habitat designation can result in

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[23] Executive Order 12866, *Regulatory Planning and Review*, September 30, 1993.

[24] U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, available at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

[25] U.S. Office of Management and Budget, "Circular A-4," September 17, 2003, available at http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf.

maintenance of particular environmental conditions that may generate other social benefits aside from the preservation of the species. That is, management actions undertaken to conserve a species or habitat may have coincident, positive social welfare implications. For example, dune preservation provides protection to manmade structures during storm events. Storm protection benefits may accrue as a result of three Florida beach mice if species specific conservation efforts include dune preservation. While they are not the primary purpose of critical habitat, these ancillary benefits may result in gains in employment, output, or income that may offset the direct, negative impacts to a region's economy resulting from actions to conserve a species or its habitat.

44. It is often difficult to evaluate the ancillary benefits of critical habitat designation. To the extent that the ancillary benefits of the rulemaking may be captured by the market through an identifiable shift in resource allocation, they are factored into the overall economic impact assessment in this report. For example, if decreased off-road vehicle use to improve species habitat leads to an increase in opportunities for other recreational activities within the region, the local economy may experience an associated measurable, positive impact. Where data are available, this analysis attempts to capture the *net* economic impact (i.e., the increased regulatory burden less any discernable offsetting market gains), of species conservation efforts imposed on regulated entities and the regional economy.

1.2.5 GEOGRAPHIC SCOPE OF THE ANALYSIS

45. The geographic scope of the analysis includes areas proposed for CHD and areas proposed for exclusion from CHD. The economic impacts of potential designation are estimated and presented separately for each category. The analysis focuses on activities within or affecting these areas.

1.3 ANALYTIC TIME FRAME

46. The analysis estimates impacts based on activities that are "reasonably foreseeable," including, but not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. This analysis will summarize costs associated with past species conservation efforts since 1985 for the Choctawhatchee and Perdido Key beach mice (year of listing and previous CHD) and since 1998 for the St. Andrew beach mouse (year of listing) within proposed CHD to date and then forecast projected future impacts for the 20 year period from 2006 (the year of the species' final designation) to 2025.

1.4 INFORMATION SOURCES

47. The primary sources of information for this report were communications with and data provided by personnel from the Service, Federal action agencies, affected private parties, and local and State governments within Florida and Alabama. Specifically, the analysis relies on data collected in communication with personnel from the following entities:

- National Park Service (NPS);
- U.S. Army Corps of Engineers (USACE);
- Federal Emergency Management Agency (FEMA);
- Tyndall Air Force Base (AFB);
- U.S. Fish and Wildlife Service (Service);
- State agencies, including departments of recreation and parks, and transportation;
- Various County and City governments; and
- Private stakeholder groups, including, development companies, and others.

48. Publicly available data from the Census Bureau and other Department of Commerce data were relied on to characterize the regional economy. In addition, this analysis relies upon the Service's section 7 consultation records, public comments, and published journal sources. The reference section at the end of this document provides a full list of information sources.

1.5 STRUCTURE OF REPORT

49. The remainder of this report is organized as follows:

- Section 2: Background And Socioeconomic Overview;
- Section 3: Potential Economic Impacts to Residential and Commercial Development;
- Section 4: Potential Economic Impacts to Recreation;
- Section 5: Potential Economic Impacts of Tropical Storms and Hurricanes;
- Section 6: Potential Economic Impacts to Other Activities;
- References;
- Appendix A: Administrative Costs;
- Appendix B: Development Maps; and
- Appendix C: Small Business Impacts and Energy Impacts.

SECTION 2 | SOCIOECONOMIC PROFILE

50. This section provides information on the history of the listing and designation of critical habitat for the three Florida beach mice, relevant biological information on the three Florida beach mice and their habitat, and describes the socioeconomic characteristics in the units proposed for CHD and areas proposed for exclusion. Approximately 6,284 acres are proposed for CHD for the three Florida beach mice; 85 acres have been proposed for exclusion.[26] The areas proposed for CHD fall within Baldwin County, Alabama and Bay, Escambia, Gulf, Okaloosa, and Walton Counties, Florida. The areas proposed for exclusion fall within Walton County, Florida.

2.1 BACKGROUND OF THE THREE FLORIDA BEACH MICE CRITICAL HABITAT DESIGNATION

51. In 1985, the PKBM and CBM were listed as endangered, and critical habitat was designated for each. The 1985 CHD consisted of primary and secondary dunes and did not include high elevation (scrub dune) habitat. In total, four critical habitat units, totaling approximately 773 acres, were designated for the CBM, and three critical habitat units, totaling about 1,020 acres, were designated for the PKBM. A recovery plan was completed for the PKBM and CBM in 1987. In 1998, the SABM was listed as endangered, and the designation of critical habitat was found to be not prudent.

52. Critical habitat for the three Florida beach mice is being revised based on petitions by outside groups and new information on the habitat utilized by the three Florida beach mice. The Service was petitioned to revise critical habitat in 1991 by the Alabama Conservancy, and again in 1999 by the Sierra Club and Biodiversity Legal Foundation. The Service determined these petitions were warranted based on new information that the three Florida beach mice utilized scrub habitat, that had not been designated previously. On December 15, 2005, the Service published the proposed CHD for the three Florida beach mice. The Service is required to submit a final rule designating critical habitat for the three Florida beach mice by September 30, 2006.

[26] U.S. Fish and Wildlife Service, Proposed Designation of Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse, 70 FR 74426, December 15, 2005.

2.1.1 DESCRIPTION OF THE SPECIES AND HABITAT[27]

53. The oldfield mouse (*Peromyscus polionotus*) occurs in northeastern Mississippi, Alabama, Georgia, South Carolina, and Florida. Beach mice are coastal subspecies of the oldfield mouse restricted to coastal dune ecosystems. Beach mice have small bodies, haired tails, relatively large ears, protuberant eyes, and coloration that blends well with the sandy soils and dune vegetation of their habitat.

54. Beach mice historically occurred on both the Atlantic Coast of Florida from St. Johns through Broward Counties and the eastern Gulf of Mexico coast from Gulf County, Florida, to Baldwin County, Alabama.

55. Typical beach mouse habitat generally consists of several rows of sand dunes paralleling the shoreline. The common types of sand dune habitat include primary dunes,[28] secondary dunes,[29] inter and intradunal swales,[30] and scrub dunes.

56. Although beach mice occur on interdunal and intradunal swales, studies of other beach mouse subspecies indicate that, in general, they use this habitat type less frequently when compared to primary and secondary dunes. It is believed that the scrub dunes offer abundant food and cover, and function as refugia during and after storms and as a source for recolonization of storm-damaged dunes.

2.2 PROPOSED CRITICAL HABITAT DESIGNATION

57. Service proposed 6,284 acres for critical habitat designation for the three Florida beach mice in six counties (Baldwin County in Alabama, and Bay, Escambia, Gulf, Okaloosa, and Walton in Florida). An additional 85 acres are proposed for exclusion in Walton County, Florida. Exhibit 2-1 is a map of the proposed CHD for the three Florida beach mice.

58. Exhibit 2-2 provides the unit number, unit name, and acreage by ownership type contained within each unit and area.

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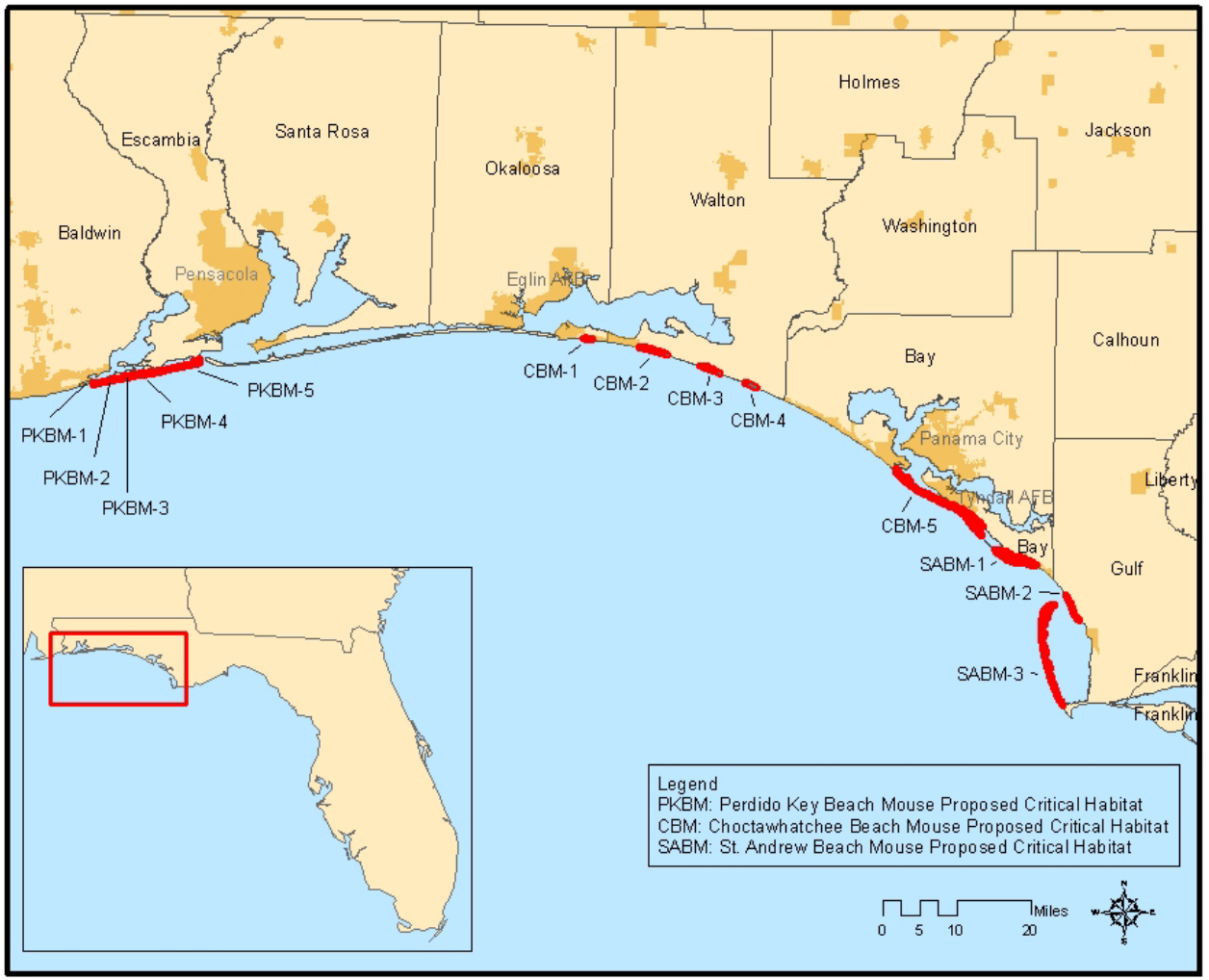
[27] U.S. Fish and Wildlife Service, Proposed Designation of Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse, 70 FR 74426, December 15, 2005.

[28] Primary dunes are those closest to the shoreline, most recently formed, and highly dynamic.

[29] Secondary dunes consist of one or more dune lines landward of the primary dune with a similar, though denser, vegetative cover.

[30] Interdunal swales are wet or dry depressions between primary and secondary dunes, while intradunal swales occur within primary dunes as a result of wave action, storm surges, and wind erosion.

EXHIBIT 2-1. PROPOSED CRITICAL HABITAT FOR THE THREE FLORIDA BEACH MICE



Note: Units are highlighted in this map for illustrative purposes and may appear larger than actual size. Please refer to the Proposed Rule for legal descriptions of proposed CHD.

EXHIBIT 2-2 CRITICAL HABITAT UNITS

UNIT#	UNIT NAME	COUNTY, STATE	OWNERSHIP[A]				
			FEDERAL	STATE	LOCAL	PRIVATE	TOTAL
PROPOSED CRITICAL HABITAT UNITS							
Perdido Key Beach Mouse							
PKBM-1	Gulf State Park	Baldwin, Alabama	-	115	-	-	115
PKBM-2	West Perdido Key	Escambia, Florida Baldwin, Alabama	-	-	-	147	147
PKBM-3	Perdido Key State Park	Escambia, Florida	-	238	-	-	238
PKBM-4	Gulf Beach	Escambia, Florida	-	-	-	162	162
PKBM-5	Gulf Islands National Seashore	Escambia, Florida	602	-	-	-	602
Choctawhatchee Beach Mouse							
CBM-1	Henderson Beach	Okaloosa, Florida	-	95	-	1	96
CBM-2	Topsail Hill	Walton, Florida	-	277	-	35	312
CBM-3	Grayton Beach	Walton, Florida	-	162	1	20	183
CBM-4	Deer Lake	Walton, Florida	-	40	-	80	120
CBM-5	West Crooked Island/ Shell Island	Bay, Florida	1,237	408	23	7	1,675
St. Andrew Beach Mouse							
SABM-1	East Crooked Island	Bay, Florida	649	-	-	321	970
SABM-2	Palm Point	Gulf, Florida	-	-	-	162	162
SABM-3	St. Joseph Peninsula	Gulf, Florida	-	1,280	-	222	1,502
TOTAL PROPOSED			2,488	2,615	24	1,157	6,284
AREAS PROPOSED FOR EXCLUSION							
Stallworth Preserve		Walton, Florida	-	-	-	10	10
WaterSound and WaterColor		Walton, Florida	-	-	-	75	75

Source: U.S. Fish and Wildlife Service, *Proposed Designation of Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse*, 70 FR 74426, December 15, 2005.

[A] Acreages are estimated from Geographic Information System (GIS) data provided by the U.S. Fish and Wildlife Service December 19, 2005. Note, based on additional information received acreages may differ from those in the Proposed Rule.

2.3 SOCIOECONOMIC PROFILE OF THE CRITICAL HABITAT AREA

59. This section summarizes the demographic and economic information for the counties containing critical habitat. Although county level data may not precisely reflect the socioeconomic characteristics of the areas immediately surrounding three Florida beach mice habitat, these data provide context for the broader analysis.

2.3.1 POPULATION CHARACTERISTICS

60. As discussed above, units proposed for CHD and areas proposed for exclusion for the three Florida beach mice occur within five counties in Florida and one in Alabama. Exhibit 2-3 summarizes socioeconomic characteristics of these counties.

61. In Florida, all of the counties containing units proposed for CHD and area proposed for exclusion have a lower per capita income as compared to the State average of $22,000. However, only Okaloosa County has a poverty level lower than the State average. The Florida counties that contain critical habitat comprise less than five percent of the State population. All of the counties, with the exception of Escambia County, have a lower population density than the State average of about 300 persons per square mile.

62. In Alabama, Baldwin County has a higher per capita income of approximately $21,000 as compared to the State average of approximately $18,000, and a poverty level lower than the State average. Baldwin County has a population density of 88 individuals per square mile, which is roughly equal to the State average.

EXHIBIT 2-3 SOCIOECONOMIC PROFILE OF COUNTIES IN CRITICAL HABITAT

STATE	COUNTY	POPULATION DENSITY (PERSONS/ SQ MI)	POPULATION (2000)	% OF STATEWIDE POPULATION	% CHANGE (1990-2000)	PER CAPITA INCOME (1999)	POVERTY RATE (1999)
Florida	State Total	296	15,982,378	100%	24%	$21,557	13%
	Bay	194	148,217	1%	17%	$18,700	13%
	Escambia	445	294,410	2%	12%	$18,641	15%
	Gulf	24	13,332	0%	16%	$14,449	17%
	Okaloosa	182	170,498	1%	19%	$20,918	9%
	Walton	38	40,601	0%	46%	$18,198	14%
Alabama	State Total	88	4,447,100	100%	10%	$18,189	16%
	Baldwin	88	140,415	3%	43%	$20,826	10%

Source: U.S. Census Bureau, Census 2000 and State County QuickFacts, accessed at http://quickfacts.census.gov/qfd

2.3.2 ECONOMIC ACTIVITY

63. Exhibit 2-4 presents the annual payroll for various industries in the six counties containing units proposed for CHD and areas proposed for exclusion. Principal industries, in the context of annual payroll, include manufacturing, construction, retail trade, and services. These industries, particularly as they relate to residential and commercial development, are expected to experience the majority of the impacts of the designation.

EXHIBIT 2-4 ECONOMIC ACTIVITY BY INDUSTRY (2003)

INDUSTRY	ANNUAL PAYROLL ($1,000'S)					
	BALDWIN COUNTY, ALABAMA	BAY COUNTY, FLORIDA	ESCAMBIA COUNTY, FLORIDA	GULF COUNTY, FLORIDA	OKALOOSA COUNTY, FLORIDA	WALTON COUNTY, FLORIDA
Forestry, fishing, hunting, & agricultural support	$2,508	$1,845	$0*	$2,086	$0*	$0*
Mining	$906	$0*	$0*	$0*	$0*	$586
Utilities	$11,650	$20,422	$0*	$2,501	$10,869	$7,869
Construction	$89,627	$139,034	$195,411	$3,992	$93,191	$31,953
Manufacturing	$152,663	$129,122	$256,183	$7,944	$121,145	$16,546
Wholesale Trade	$67,455	$47,706	$125,503	$0*	$26,498	$12,221
Retail Trade	$188,256	$194,925	$325,359	$5,518	$260,837	$37,724
Transportation & Warehousing	$26,291	$26,402	$68,760	$0*	$22,345	$1,155
Information**	$74,487	$35,657	$97,201	$0*	$33,407	$3,360
Finance & Insurance	$54,549	$114,710	$164,710	$3,023	$100,349	$6,255
Real Estate	$38,861	$22,546	$33,325	$0*	$46,453	$22,631
Services ***	$371,373	$599,630	$1,477,410	$17,922	$787,153	$87,403
Other services****	$42,464	$48,375	$90,260	$1,578	$61,417	$9,604
Arts, entertainment, & recreation	$14,883	$12,351	$15,259	$0*	$12,675	$2,135
Unclassified establishments*****	$236	$0*	$0*	$0*	$139	$70

Source: U.S. Census Bureau, County Business Patterns, accessed at http://censtats.census.gov/cbpnaic.shtml
Notes: Some values were represented by a range. For these situations, the mean is calculated and rounded up to the nearest integer.
*In accordance with U.S. Code, Title 13, Section 9, no data are published that would disclose the operations of an individual employer. The number of establishments in an industry classification and the distribution of these establishments by employment-size class are not considered to be disclosures, so this information may be released even though other information is withheld from publication.
** The information sector includes media services, like newspaper & book publishers, cable networks, and telecommunications services
*** Services sector includes professional, scientific, and technical services; management of companies and enterprise; admin, support, waste management, remediation services; educational services; health care and social assistance; accommodation and food services.
**** Other services(excluding public administration) include repair and maintenance, personal and laundry services, and religious, grant making, civic, professional, and similar organizations.
***** Unclassified establishments are unclassified by NAICS codes

64. Exhibit 2-5 provides employment data for counties that contain units proposed for CHD and areas proposed for exclusion. The "employees" column denotes the number of employees available in the county in a specific industry. The "establishments" column represents the number of physical locations in which business activity was performed with one or more paid employees in the year 2003. These figures provide a measure of the average density of commercial and industrial establishments in the region.

65. The largest sectors of employment within these counties are the services, retail trade, manufacturing, and construction. Employment within these sectors comprises 84 percent of the total employment within these counties. Of total employment, the service industry represents 53 percent of the work force, retail trade represents 17 percent, and construction and manufacturing represent seven percent each.

EXHIBIT 2-5 ECONOMIC ACTIVITY WITHIN COUNTIES CONTAINING HABITAT, INCLUDING NUMBER OF ESTABLISHMENTS AND EMPLOYEES BY INDUSTRY (2003)

INDUSTRY	BALDWIN COUNTY, ALABAMA		BAY COUNTY, FLORIDA		ESCAMBIA COUNTY, FLORIDA		GULF COUNTY, FLORIDA		OKALOOSA COUNTY, FLORIDA		WALTON COUNTY, FLORIDA	
	EMP	ESTA	EMP	ESTA	EMP	ESTA	EMP	ESTA	EMP	ESTA	EMP	ESTA
Forestry, fishing, hunting, & agriculture support	227	21	79	16	999	16	60	5	99	10	19	5
Mining	30	8	19	2	99	11	0*	0*	99	3	21	3
Utilities	277	13	372	13	999	28	56	4	232	18	210	12
Construction	3,397	523	4,025	468	6,789	635	162	39	3,471	536	1,371	211
Manufacturing	5,593	138	3,820	132	6,794	220	221	9	3,246	118	581	33
Wholesale trade	1,605	190	1,483	178	3,802	353	99	7	908	147	392	49
Retail trade	9,779	951	9,690	803	15,728	1,232	359	54	12,740	969	2,114	225
Transportation & Warehousing	899	112	896	111	2,182	183	99	9	850	90	60	23
Information*	1,470	70	1,237	71	2,868	130	249	7	1,153	85	113	15
Finance & Insurance	1,344	236	3,299	243	4,356	419	97	13	2,837	338	184	46
Real Estate	1,667	249	907	250	1,365	348	99	16	2,107	348	717	108
Services **	17,837	1,257	24,231	1,540	60,046	2,334	983	88	29,799	1,751	4,348	329
Other services***	2,521	433	2,947	440	5,337	742	110	30	3,547	539	567	96
Arts, entertainment, & recreation	1,004	60	840	75	1,334	101	99	4	1,038	72	107	12
Unclassified establishments****	12	9	19	10	60	20	0*	0*	10	11	9	8
County Totals	47,662	4,270	53,843	4,352	112,610	6,772	2,285	285	61,546	5,035	10,751	1,175

Source: U.S. Census Bureau, 2002 County Business Patterns (NAICS), accessed at http://censtats.census.gov

Notes: Some values were represented by a range. For these situations, the high end of the range is presented. Totals may not sum due to the use of ranges.

*The information sector includes media services, like newspaper & book publishers, cable networks, and telecommunication services.

** Services sector includes professional, scientific, and technical services; management of companies and enterprises; admin, support, waste management, remediation services; educational services; health care and social assistance; and accommodation and food services, and other services.

*** Other services (excluding public administration) include repair and maintenance, personal and laundry services, and religious, grant making, civic, professional, and similar organizations.

**** Unclassified establishments are unclassified by NAICS codes.

2.4 OVERLAP WITH OTHER ENDANGERED SPECIES

66. Generally, if a consultation is undertaken for any listed species, the consultation process also takes into account the presence of all other listed species known to inhabit areas on or near the project area. As a result, conservation efforts for other threatened and endangered species may benefit the three Florida beach mice as well and vice versa. However, due to the difficulty in apportioning the costs of consultations between various species as well as awareness that a consultation for the three Florida beach mouse would be required, absent consultation for or involving other species, this analysis does not attempt to apportion the consultations and related costs reported by action agencies between the three Florida beach mice and other listed species and assumes that all future section 7 consultations within the extant boundaries of the proposed critical habitat are fully attributable to the presence of the mice and their habitat. At the same time, it should be recognized that these multi-species consultations likely would have occurred absent the beach mice listing. The Service has conducted consultations for the three Florida beach mice with multiple species as demonstrated in Exhibit 2-6.

EXHIBIT 2-6 OTHER LISTED SPECIES IN PAST CONSULTATIONS

SPECIES	STATUS
Alabama beach mouse	Endangered
Piping plover	Threatened
Gulf Sturgeon	Threatened
Green sea turtle	Endangered
Leatherback sea turtle	Endangered
Loggerhead sea turtle	Threatened
Kemp's Ridley sea turtle	Endangered

2.5 TIMELINE OF REGULATIONS AND ACTIVITIES

67. Regulations have been enacted at the Federal, State, local, and county level in order to help ensure the protection of the three Florida beach mice. Exhibit 2-7 summarizes these regulations as well as other notable events that impact the three Florida beach mice, such as coastal hurricanes.

EXHIBIT 2-7 THREE FLORIDA BEACH MICE TIMELINE OF REGULATIONS AND EVENTS

YEAR	EVENT
1961	Shore and Beach Preservation Act enacted.
1969	Beach and Shore Preservation Act (BSPA) enacted.
1970	A 50 foot construction setback from the mean high water line established in the State of Florida.
1971	State of Florida established "coastal construction setback lines."
1976	Florida Endangered Species Act enacted.
1978	Florida "coastal construction setback lines" amended and term coastal construction control lines (CCCL) coined.
1982	Coastal Barrier Resources Act (CBRA) enacted.
1985	Perdido Key beach mouse and Choctawhatchee beach mouse are listed as endangered under the federal Endangered Species Act and critical habitat is designated.
	Coastal Zone Protection Act enacted.
1986	Perdido Key beach mouse and Choctawhatchee beach mouse are listed as endangered under the Florida Endangered Species Act.
1987	Recovery plan completed for Perdido Key beach mouse and Choctawhatchee beach mouse.
1989	St. Andrew beach mouse is listed as endangered under the Florida Endangered Species Act.
1990	CBRA amended, increasing the acreage and geographic scope of the John H. Chafee Coastal Barrier Resources System.
1991	Consultation completed for development of land adjacent to Perdido Pass.
	Walton County, Florida sued over approval for proposed housing development in beach mouse habitat.
	Service receives a petition from the Alabama Conservancy to revise critical habitat for the Perdido Key beach mouse through an emergency rule.
1992	Hurricane Andrew
1993	Service publishes a notice announcing the finding that the petitioned action was warranted, but will be delayed until higher priority actions have been completed.
1995	Consultation completed on Stallworth Preserve, allowing for residential development of seven acres of dune habitat.
	Consultation completed approving the use of dispersants to treat oil spills.
	Hurricane Opal
	Florida purchases Topsail Hill Preserve State Park.
1997	Hurricane Danny
1998	Hurricane Earl
	Hurricane Georges
	St. Andrew beach mouse is listed as endangered under the federal Endangered Species Act.
1999	The Sierra Club and the Biodiversity Legal Foundation petition the Service to revise critical habitat for the Perdido Key beach mouse, the Choctawhatchee beach mouse, and the Alabama beach mouse.
	Service publishes a 90-day finding on February petition.
2000	Consultation completed to issue an ITP permit to the St. Joe company for construction and use of two beach resort and private residential and commercial developments.

YEAR	EVENT
	Consultation completed regarding outer continental shelf oil and gas leasing, exploration, development, production, transportation, and abandonment for the Destin Dome Unit 56.
	Service publishes a 12-month finding that revision of critical habitat for the three subspecies of beach mice is warranted.
	Gulf Islands National Seashore and Perdido Key State Park construct boardwalks and sand fencing to reduce informal access points.
2001	Consultation completed for the East Pass and ITP permits issued for recovery projects.
	Consultation completed for construction of a building at beach site 4, by Coastal Systems Station (CSS) at St. Andrews State Recreation Area State Park.
2002	Consultation amendment completed for the rebuilding of facilities at Perdido Key State Park.
	Consultation amendment completed for the East Pass re-opening project.
	Florida Fish and Wildlife Conservation Commission (FWCC) acquired land in Topsail Hill State Park for the CBM.
	Tropical Storm Isidore
2003	Lawsuit is filed by the Sierra Club and the Center for Biological Diversity alleging that the Service violated the Endangered Species Act by failing to revise critical habitat for the Perdido Key, Choctawhatchee, and Alabama beach mice and that the revision was withheld or unreasonably delayed under the Administrative Procedure Act.
	The Center for Biological Diversity files a lawsuit challenging the "not prudent" determination for St. Andrew mouse.
	Consultation completed for the issuance of Section 10(a)(1)(A) permits for annual recovery purposes.
	FWCC assisted Walton County with the acquisition of land along Grayton Beach for the CBM.
2004	Consultation completed for beach nourishment activity along eleven miles of natural and developed shoreline along the Gulf of Mexico in Baldwin County, Alabama.
	Consultation amendment completed for an individual 10 (a)(1)(A) permit for recovery actions.
	Consultation completed for dune restoration efforts and beach access improvements at Gulf State Park (Florida Point and Gulf Shores), Alabama.
	Service is ordered to publish a new final decision with respect to the designation of critical habitat for the St. Andrew beach mouse.
	Hurricane Ivan
	Service declaration to submit a proposed revision for the Perdido Key beach mouse and the Choctawhatchee beach mouse.
	FWCC conducted an assessment of suitable habitat for the SABM.
2005	Consultation amendment completed for an individual 10 (a)(1)(A) permit for recovery actions.
	Consultation amendment completed for an individual 10 (a)(1)(A) permit for recovery actions.
	Consultation completed on rebuilding of facilities at Perdido Key State Park.
	Consultation completed with FEMA for category B emergency restoration. Consultation amendment completed for rebuilding facilities at Perdido Key State Park.
	Consultation completed for a new residential development, Florencia Village. Consultation completed for the repair and reconstruction of the Park road east of the parking lot and dune crossovers at the Gulf Island National Seashore's Johnson Beach.
	Proposed Rule proposing designation of 6,208 acres of critical habitat for the three Florida beach mice published.

YEAR	EVENT
	Tropical storm Arlene
	Tropical storm Cindy
	Hurricane Dennis
	Hurricane Katrina
	Hurricane Rita
2006	Escambia County approved ordinances that allows for a voluntary method for unified PKBM mitigation for future development on Perdido Key.
	Service required to submit final critical habitat designation for the three Florida beach mice.

2.6 EXISTING REGULATORY MECHANISMS IN PROPOSED CHD AREAS

68. A number of regulations impacting coastal development already exist in proposed critical habitat areas. These regulations aim to protect coastal species, reduce erosion, and protect structures from storm surges, most frequently through setback lines and building and construction standards.

FLORIDA ENDANGERED SPECIES ACT

69. The three Florida beach mice are all currently listed under the Florida Endangered Species Act, which was enacted in 1976. Listing under the Act affords the three Florida beach mice specific legal protections. For example, the Florida Administrative Code states that "no person shall kill, attempt to kill or wound any endangered species."[31] The Florida Administrative Code also contains rules applying to a particular subsection of endangered species, which includes the three Florida beach mice. According to the Code, "no person shall pursue, molest, harm, harass, capture, possess, or sell any of the endangered species included in this subsection, or parts thereof or their nests or eggs except as authorized by specific permit, permits being issued only when the permitted activity will clearly enhance the survival potential of the species."[32]

70. The Florida Endangered Species Act also requires the Florida Wildlife Conservation Commission to prepare a management plan for each species. Actions pursued as part of the Commission's management plan for the three Florida beach mice are described in Section 6.[33]

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[31] "Rules Relating to Endangered or Threatened Species." Florida Administrative Code. Chapter 68A-27.0011. Florida Wildlife and Conservation Commission website. Accessed at http://myfwc.com/imperiledspecies/rules.htm on May 2, 2006.

[32] "Rules Relating to Endangered or Threatened Species." Florida Administrative Code. Chapter 68A-27.003. Florida Wildlife and Conservation Commission website. Accessed at http://myfwc.com/imperiledspecies/rules.htm on May 2, 2006.

[33] "Rules Relating to Endangered or Threatened Species." Florida Administrative Code. Chapter 68A-27.0012. Florida Wildlife and Conservation Commission website. Accessed at http://myfwc.com/imperiledspecies/rules.htm on May 2, 2006.

THE COASTAL BARRIER RESOURCES ACT

71. In 1982, Congress enacted the Coastal Barrier Resources Act (CBRA) to integrate specific undeveloped coastal barriers into the John H. Chafee Coastal Barrier Resources System (CBRS) along the Atlantic, Gulf, and Great Lakes coasts.[34] Areas designated as part of the CBRS are ineligible for direct or indirect Federal financial assistance to support development projects, such as flood insurance and subsidies for road construction, with the exception of emergency life-saving operations and fish and wildlife research.[35] The CBRS contains approximately 3.1 million acres of land and associated aquatic habitat. Of this total, 1.8 million acres are categorized as "otherwise protected areas" that are already conserved.[36] The Act effectively transfers the costs of development in coastal barrier areas from taxpayers (who otherwise fund Federal flood insurance) to individuals who decide to build in these areas.

THE NATIONAL FLOOD INSURANCE PROGRAM (NFIP) [37]

72. The National Flood Insurance Program (NFIP), administered by FEMA, provides low cost flood insurance to individual home and business owners. Individuals are permitted to purchase this insurance as long as the communities in which they reside are members of the program. Communities become program members by mapping their Special Flood Hazard Areas (SFHAs) and by enforcing floodplain management ordinances within these areas. These ordinances specify certain zoning, subdivision, and building requirements, which mitigate flood damage. SFHAs are defined as areas that would be inundated by a flood with a one percent probability of occurrence in any given year. The Federal Emergency Management Agency (FEMA) defines a flood as "the inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is an NFIP policyholder's property)."

73. Certain coastal property owners are unable to purchase NFIP insurance, even if their communities are NFIP program members. For example, coastal owners with properties

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[34] An "undeveloped coastal barrier" is a "... depositional geologic feature that is subject to wave, tidal and wind energies; and protects landward aquatic habitats from direct wave attack. CBRA further defines a coastal barrier as all associated aquatic habitats, including the adjacent wetlands, marshes, estuaries, inlets and nearshore waters, but only if such features and associated habitats contain few man-made structures and these structures, and people's activity associated with them, do not significantly impede geomorphic and ecological processes." In other words, areas with significant existing development were not included in the CBRS. U.S. Fish & Wildlife Service, John H. Chafee Coastal Barrier Resources System, accessed from http://www.fws.gov/habitatconservation/cbra3.htm#undeveloped on November 28, 2005. Another report notes that "[u]ndeveloped coastal barriers had a housing density of less than one unit per five acres of 'fastland,' or land that is considered developable; at least 0.25 miles of shoreline; and no access to potable water supply, roads, electricity, and a wastewater system." U.S. Fish & Wildlife Service, Division of Federal Program Activities, "The Coastal Barrier Resources Act: Harnessing the Power of Market Forces to Conserve America's Coasts and Save Taxpayers' Money" August 2002, page 3.

[35] U.S. Fish & Wildlife Service, "Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service: Coastal Barrier Resources Act" accessed from http://www.fws.gov/laws/lawsdigest/coasbar.html on November 28, 2005.

[36] U.S. Fish & Wildlife Service, John H. Chafee Coastal Barrier Resources System, accessed from http://www.fws.gov/habitatconservation/cbra3.htm#undeveloped on November 28, 2005.

[37] National Flood Insurance Program website accessed at www.floodsmart.gov.

located within the Coastal Barriers Resource System cannot purchase NFIP insurance if their homes were built after 1982.

74. NFIP insurance policies offer varying degrees of building and personal property coverage. An average residential policy costs $400 per year for $100,000 of coverage. Annual premiums depend upon the amount and type of coverage purchased, the flood risk of the building, and the design and age of the building. In coastal areas, premiums also depend upon the ability of the building to endure wave impacts.

THE BEACH AND SHORE PRESERVATION ACT (BSPA)

75. The State of Florida began regulation of coastal areas in 1961 with the inception of the Shore and Beach Preservation Act, the predecessor of the Beach and Shore Preservation Act (BSPA) enacted in 1969 and in operation today with various amendments. The BSPA is a Florida state statute comprised of three primary regulatory mechanisms:

(1) The Coastal Construction Control Line (CCCL)

(2) The 30-Year Erosion Line

(3) The Coastal Zone Protection Act of 1985[38]

The Florida State Department of Environmental Protection has responsibility for regulating, permitting, and enforcing the BSPA. The three primary components of the BSPA are discussed in the paragraphs that follow.

76. To reduce concern over government taking of property under the BSPA, the Act includes a single-family dwelling exemption that authorizes the DEP to grant permits to houses constructed seaward of the thirty-year erosion line, provided that certain statutory requirements are met. These requirements include locating the dwelling landward of the frontal dune structure and as far landward on the parcel as possible without being seaward of or on the frontal dune.[39] The Act also provides exemptions for maintenance and repair activities to existing structures (provided the work is limited to the above-ground structure and the underlying foundation structure is not changed or expanded), and to structures that predate the establishment of the control line.

THE COASTAL CONSTRUCTION CONTROL LINE

77. The CCCL addresses the public and private costs of beach erosion caused by coastal development practices. The CCCL "… protects the beach and dune system from imprudent upland construction which could weaken, damage or destroy the integrity of the system."[40] The CCCL is a jurisdictional line demarcating the landward limit of the Florida Department of Environmental Protection's jurisdiction to regulate construction activities. While new construction and alterations to existing structures seaward of the

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[38] With FL DEP approval, local governments are able to establish their own coastal construction zoning and building codes.

[39] Kenneth E. Spahn, The Beach and Shore Preservation Act: Regulating Coastal Construction in Florida, Stetson Law Review 353, 1994-1995, page 368.

[40] The Florida Department of Environmental Protection, Office of Beaches and Coastal Systems, "The Homeowner's Guide to the Coastal Construction Control Line Program" September 2000.

CCCL are allowed, these activities require a CCCL permit from the DEP. The permits, in turn, require special siting and design criteria for new and existing structures. The location of the CCCL represents the landward limit of significant damage to upland structures from water forces during a one-hundred year coastal storm event.[41]

78. The CCCL requires that major structures are "… located a sufficient distance landward of the beach and frontal dune to permit natural shoreline fluctuations, to preserve and to protect beach and dune system stability and to allow natural recovery to occur following storm-induced erosion."[42] The DEP will not permit structures that "… are designed or sited in such a way as to cause a significant adverse impact to the beach and dune system, that is, the structure significantly interferes with the system's ability to recover from a coastal storm, results in the destabilization of the system, or causes a take of marine turtle habitat."[43] Properties that contain areas landward and seaward of the CCCL only require a permit if the structure on the property is seaward of the line.[44]

79. When a property is sold, the seller is required to disclose to the buyer the location of the property vis-à-vis the CCCL. In other words, the buyer must be aware of whether the property is seaward or landward of the CCCL. In those cases where properties are seaward of the CCCL and have secured a CCCL permit from the Florida DEP, the CCCL permit will expire in three years after the date of the permit, once the permitted activity is complete, or at the time the property is sold and transferred.[45]

The 30-Year Erosion Line

80. The BSPA was amended in 1985 to add the 30-Year Erosion Line to coastal regulations. The 30-Year Erosion Line is determined on a case-by-case basis for each new construction project, in contrast to the CCCL which is a uniform line along the coastal areas of the state. Most construction is prohibited seaward of this line, which is commonly determined as the point seaward of the seasonal high water line within thirty years after the date of the permit application.[46]

THE COASTAL ZONE PROTECTION ACT

81. In 1985, the BSPA was also amended to include the Coastal Zone Protection Act, establishing a coastal building zone in the State. The coastal building zone extends from the seasonal high water line to a line 1,500 feet landward of the CCCL. For coastal barrier islands, this line may extend up to 5,000 feet landward of the CCCL or for the

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[41] Ibid, page 3. Note that CCCLs are periodically reestablished to account for erosion that may move the location of the 100-year storm surge line, new technology, and to redo lines that may have been established for political and not scientific reasons.

[42] Ibid, page 5.

[43] Ibid, page 5.

[44] Personal communication with Fritz Wettstein, Escambia County, on February 6, 2006.

[45] Kenneth E. Spahn, The Beach and Shore Preservation Act: Regulating Coastal Construction in Florida, Stetson Law Review 353, 1994-1995.

[46] Ibid.

entire width of the island, whichever is shorter. Construction regulations for structures within this zone are divided into three categories: major structures, minor structures, and uninhabitable major structures.[47]

82. Within the coastal construction zone, major structures, including houses, hotels, and condominiums, must conform to state building codes, the Standard Building Code, NFIP standards, and be able to withstand winds of 110 miles per hour. Minor structures such as walkover structures, driveways, and tennis courts, must be in compliance with NFIP standards. Uninhabitable major structures, such as swimming pools, parking garages, streets, and bridges, must be constructed to minimize potential damage to the beach and dune system, and must also comply with NFIP and all applicable state and local standards.[48]

[47] Ibid.

[48] Ibid.

SECTION 3 | POTENTIAL ECONOMIC IMPACTS ON PRIVATE DEVELOPMENT ACTIVITIES

83. The Proposed Rule states that "[h]abitat loss and fragmentation associated with residential and commercial real estate development is the primary threat contributing to the endangered status of beach mice. Coastal development has fragmented all the subspecies into disjunct populations."[49] In addition to direct habitat destruction, development activities also introduce other threats to the species, such as artificial lighting, refuse, and free-roaming or feral cats. This section considers the ways in which three Florida beach mice conservation efforts may impact residential and commercial real estate development in units proposed for CHD and areas proposed for exclusion.

3.1 SUMMARY OF ECONOMIC IMPACTS ON PRIVATE DEVELOPMENT ACTIVITIES

3.1.1 PAST ECONOMIC IMPACTS ON PRIVATE DEVELOPMENT ACTIVITIES

84. The past costs of conservation efforts for the three Florida beach mice to private development activities are estimated at $25.0 million in undiscounted dollars ($29.8 million in $2005, assuming a three percent discount rate, or $37.4 million in $2005, assuming a seven percent discount rate). These costs largely result from efforts to restore dune habitat and preserve portions of developable lands as part of Habitat Conservation Plan (HCP) efforts between 1985 and 2005.

3.1.2 FUTURE ECONOMIC IMPACTS ON PRIVATE DEVELOPMENT ACTIVITIES

85. Despite numerous existing land use regulations, coastal development along the Gulf Coast is proceeding quickly as land values rise and the quantity of developable land decreases. Undeveloped private lands in proposed CHD (614 acres) are anticipated to be developed within the next 20 years. The future costs of three Florida beach mice conservation efforts to private development are estimated at between $56.7 million and $102.9 million in undiscounted dollars over 20 years. The present value of estimated future costs to private development is estimated at between $53.5 million and $99.7 million (or $3.6 million to $6.7 million annually), assuming a three percent discount rate, or between $50.5 million and $96.8 million (or $4.8 to $9.1 million annually) assuming a seven percent discount rate. Costs associated with areas proposed for exclusion are

[49] U.S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants, Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse; Proposed Rule, published in the *Federal Register*, Vol. 70, No. 240, on December 15, 2005.

estimated at $1.2 million (undiscounted dollars), or $0.66 million (discounted at seven percent). Annualized costs to the development industry represent between 0.88 and 1.68 percent of construction and real estate earnings across the five counties in proposed CHD, when discounted at seven percent (0.66 and 1.23 discounted at three percent).

86. This analysis assumes that the conservation activities associated with the beach mice may result in impacts to landowners by imposing the following costs: (1) increased administrative costs to secure incidental take permits, including associated project delay costs; (2) on-site project modification costs to protect the species; and (3) land value losses associated with development restrictions, i.e. required land setbacks or set-asides. Future development projects on Perdido Key are assumed to make a one-time payment of $100,000 into a conservation fund for each acre of beach mouse habitat impacted as well as an annual payment of $201 per housing unit constructed. Future costs to WaterColor and WaterSound are developed based on HCP requirements and input from the developer of those projects. Future costs to other developable areas (outside of Perdido Key and WaterColor/WaterSound developments) are assumed to consist of conservation set-asides of between five and 11 percent of developable land, as well as additional conservation efforts conducted on a per-acre basis (such as predator control efforts).

EXHIBIT 3-1. SUMMARY OF FUTURE COSTS OF THREE FLORIDA BEACH MICE CONSERVATION EFFORTS ASSOCIATED WITH PRIVATE DEVELOPMENT, 2006-2025

UNIT	TOTAL COSTS (UNDISCOUNTED DOLLARS)		PRESENT VALUE (3 PERCENT)		PRESENT VALUE (7 PERCENT)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
CRITICAL HABITAT UNITS						
PKBM-1	-	-	-	-	-	-
PKBM-2	$6,957,000	$6,957,000	$5,752,000	$5,752,000	$4,636,000	$4,636,000
PKBM-3	-	-	-	-	-	-
PKBM-4	$10,277,000	$10,277,000	$8,471,000	$8,471,000	$6,806,000	$6,806,000
PKBM-5	-	-	-	-	-	-
CBM-1	-	-	-	-	-	-
CBM-2	$1,744,000	$3,772,000	$1,730,000	$3,758,000	$1,718,000	$3,746,000
CBM-3	$282,000	$609,000	$279,000	$607,000	$277,000	$605,000
CBM-4	$596,000	$1,290,000	$592,000	$1,285,000	$588,000	$1,281,000
CBM-5	-	-	-	-	-	-
SABM-1	$22,540,000	$49,170,000	$22,479,000	$49,108,000	$22,419,000	$49,049,000
SABM-2	$2,876,000	$6,229,000	$2,854,000	$6,207,000	$2,835,000	$6,188,000
SABM-3	$11,396,000	$24,639,000	$11,304,000	$24,546,000	$11,225,000	$24,468,000
Total	$56,668,000	$102,942,000	$53,460,000	$99,734,000	$50,505,000	$96,779,000
			Total (annualized at 3 percent)		$3,593,000 to $6,704,000	
			Total (annualized at 7 percent)		$4,767,000 to $9,135,000	

UNIT	TOTAL COSTS (UNDISCOUNTED DOLLARS)		PRESENT VALUE (3 PERCENT)		PRESENT VALUE (7 PERCENT)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
PROPOSED EXCLUSIONS						
Stallworth Preserve	$28,000	$28,000	$21,000	$21,000	$16,000	$16,000
Water Sound and Water Color	$1,137,000	$1,137,000	$871,000	$871,000	$644,000	$644,000
Total	$1,165,000	$1,165,000	$892,000	$892,000	$660,000	$660,000
			Total (annualized at 3 percent)		$59,000	
			Total (annualized at 7 percent)		$62,000	

Note: Totals may not sum due to rounding.

3.2 ANALYTICAL APPROACH FOR ESTIMATING ECONOMIC IMPACTS ON PRIVATE DEVELOPMENT ACTIVITIES

87. As stated above, the Proposed Rule states that habitat loss and fragmentation associated with coastal residential and commercial real estate development is the primary factor contributing to the endangered status of the three Florida beach mice. Indirect impacts from development activities such as artificial lighting, free-roaming and feral pets, and refuse also threaten the species. Potential modifications to land use projects stemming from beach mice conservation activities can affect landowners, consumers, and real estate markets in general. The total economic impact depends on the scope of beach mice conservation activities, pre-existing land use and regulatory controls in the region, and the nature of regional land and real estate markets.

88. Coastal development began along the Gulf Coast of Florida in the 1950s and continues today. Existing residential structures within units proposed for CHD and areas proposed for exclusion include single-family, multi-family, and high-rise condominium structures, and are owned by a variety of individuals and developers. Due to the severe nature of storms that impact the Gulf Coast, coastal development in counties that contain proposed CHD and areas proposed for exclusion is subject to a variety of regulations, aside from critical habitat requirements, that attempt to discourage development in storm-prone areas. For example, areas of the Gulf Coast are part of the Coastal Barrier Resources System, an amalgam of coastal barrier areas in which development is ineligible for direct or indirect Federal assistance such as insurance and infrastructure subsidies. In addition, Florida's CCCL requires development projects to acquire a CCCL permit from the Department of Environmental Management if construction is to occur seaward of the line. These permits require specific construction criteria to be met prior to construction in the coastal zone. Finally, various county and city regulations affect structure siting and design criteria on a specific parcel. Despite these numerous regulations, however, coastal

development along the Gulf Coast is proceeding quickly as land values rise and the quantity of developable land decreases.[50]

89. In light of the current environment in which residential and commercial development occurs, and past impacts of beach mouse conservation efforts on development projects, this analysis assumes that future conservation activities associated with the beach mouse may result in losses to landowners by imposing the following costs: (1) increased administrative costs to secure incidental take permits, including associated project delay costs; (2) on-site project modification costs to protect the species; and (3) land value losses associated with development restrictions, i.e. required land setbacks or set-asides. In order to estimate losses associated with increased administrative costs and project modifications, area developers and other stakeholders were contacted to obtain cost information that can be applied to existing and potential development activities in units proposed for CHD and areas proposed for exclusion.

90. To estimate welfare losses associated with potential development constraints in designated areas, the analysis attempted to develop a hedonic model of regional property values. Hedonic models measure the influence of amenities, disamenities and regulations on land and housing prices and, in theory, could provide a direct measure of effects associated with proposed CHD arising from demand and supply factors (including the costs described in the previous paragraph). The analysis utilized data on property sale prices, structural, and locational characteristics to develop a model for housing markets in the vicinity of established Perdido Key and Choctawhatchee beach mouse habitats. However, due to data limitations, results from these initial analyses were not sufficiently accurate or reliable for use in this context.

91. Because the hedonic analysis did not yield functional results, this analysis primarily relies on the direct compliance cost approach to quantifying potential impacts to development in proposed CHD areas. Because (1) residential use is the most common land use in proposed CHD areas; (2) estimated compliance costs per acre are relatively small compared to the high value of land in proposed CHD areas; (3) land with similar amenities is scarce; and (4) Florida's population is expected to continue to grow rapidly, it appears reasonable to assume that undeveloped private lands within proposed CHD will eventually be developed for residential development purposes. In fact, on a large portion of undeveloped private lands in proposed CHD, HCPs or agreements have already been created that specifically describe and address beach mice conservation activities as they relate to private development activities (specifically on Perdido Key and WaterColor/WaterSound developments). Relatively few undeveloped acres within proposed CHD fall outside of these areas (339 acres).

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[50] As evidence of this, one biological opinion associated with impacts to the Choctawhatchee beach mouse from a development project notes that private undeveloped parcels in Bay, Okaloosa, and Walton County are extremely valuable to developers because there are few such parcels left in these counties. USFWS, "Biological Opinion for Issuance of an Incidental Take Permit Section 10 (a)(1)(B), The Villages at Seagrove and Camp Creek, St. Joe Company, Walton County, Florida," March 23, 2000, page 24.

92. The analysis of costs to development activities associated with conservation measures for the 3 Florida beach mice involves three components, according to the current development status of each parcel in proposed CHD, and whether the parcel is located (1) on Perdido Key; (2) within the WaterColor or WaterSound development area, or; (3) outside of those areas. The number of developable acres in proposed CHD is summarized in Exhibit 3-2. These developable lands are presented graphically in Appendix B.

EXHIBIT 3-2. DEVELOPABLE LANDS IN PROPOSED CRITICAL HABITAT (ACRES)

UNIT	TOTAL UNIT (AC)	TOTAL PRIVATE (AC)	CURRENTLY DEVELOPED (AC)	OTHER UNDEVELOPABLE PRIVATE LANDS (AC)[1]	DEVELOPABLE LANDS (AC)[2]
PKBM-2	147	147	16	17	114
PKBM-4	162	161	0	0	161
CBM-2	312	35	18	3	15
CBM-3	183	20	14	4	2
CBM-4	120	80	0	75	5
SABM-1	970	321	1	125	195
SABM-2[3]	162	162	3	134	25
SABM-3	1,501	222	18	107	97
Total Acres Proposed	**3,557**	**1,147**	**70**	**465**	**614**
Total Acres Proposed for Exclusion	85	85	0	0	85

[1] Other undevelopable private lands include conservation lands and open space, as well as lands included in HCPs.
[2] There are 339 acres of developable lands outside of Perdido Key units and WaterColor/WaterSound developments.
[3] Land use data for this unit was augmented with comments from Gulf County. Personal communication with the Gulf County Planning/Building Department, on March 3, 2006.
Sources: Land Use and Zoning GIS data from Baldwin, Escambia, Walton, Bay, and Gulf Counties. Baldwin County GIS data is current as of 2005, Escambia County as of July 2004, Walton County as of June 2005, Bay County as of January 12, 2006, and Gulf County as of January 15, 2005.

3.3 BACKGROUND: CHARACTERISTICS OF THE FLORIDA GULF COAST REAL ESTATE MARKET

93. Due to high demand for property along the Florida Gulf Coast, residential and commercial development in and around critical habitat has been strong over the last five years. In the Pensacola metropolitan area, annual housing starts, including both single-family and multi-family construction, increased by 87 percent between 2001 and 2003. Housing starts in 2006 are projected to be down from the 2003 peak of 4,153, yet still

strong.[51] Between 2001 and 2003, annual housing starts in the Fort Walton metropolitan area increased by 83 percent. A decline from the 2003 peak is also expected in the Fort Walton metropolitan area, although 2006 projected housing starts are nonetheless expected to approach 1,500.[52] The Panama City metropolitan area ranked 25th in the nation among metropolitan areas with the highest number of multi-family housing construction permits issued during the first half of 2005. Between January and June 2005, Panama City issued permits for the construction of 2,080 multi-family units.[53]

94. Despite these housing supply increases in the Pensacola, Fort Walton Beach, and Panama City metropolitan areas, housing demand has been still greater, as more and more people seek the amenities of living close to the Gulf. By 2006, the population of the Pensacola metropolitan area will have grown by 8.1 percent compared to 2001. The Panama City metropolitan area will have grown by 9.3 percent, and the Fort Walton Beach metropolitan area by 10.3 percent.[54] Due to this increasing demand for housing, prices have risen rapidly in the housing markets around critical habitat. High prices have in turn stimulated further development in the region. Between 2002 and 2004, average inflation-adjusted single-family housing prices increased by 30 percent in Panama City and 32 percent in the Fort Walton Beach-Destin area.[55] Similarly, between June 2004 and June 2005, the median home sale price in Panama City increased by 50 percent.[56] Many real estate analysts partially attribute the late 2004 to early 2005 boom in prices to Hurricane Ivan, which made landfall in September 2004. The hurricane damaged or entirely destroyed a portion of the housing supply, particularly highly-valued beachfront property. This decrease in supply served to increase the sale prices of surviving beachfront properties.

3.4 PAST ECONOMIC IMPACTS ON PRIVATE DEVELOPMENT ACTIVITIES

95. Despite rapid development of the coastline in beach mouse habitat areas, the Service has not completed a large number of formal consultations for development projects in Florida. This is due in part to the fact that beach mice predominantly inhabit the primary dune areas, where coastal regulations discourage development. The Service has formally consulted on development projects twice for the Choctawhatchee beach mouse and twice for the Perdido Key beach mouse, and participated in the development of HCPs

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[51] Fishkind & Associates, Inc. *Econocast*. Pensacola Metropolitan Statistical Area. January 1, 2004. Accessed at www.fishkind.com/econ/pensmsa.pdf

[52] Ibid.

[53] *Housing Facts, Figures and Trends.* National Association of Home Builders. 2005. Accessed at www.nahb.org/fileUpload_details. aspx?contentTypeID=7&contentID=2028

[54] Fishkind & Associates, Inc. *Econocast*. Fort Walton Beach, Pensacola, and Panama City Metropolitan Statistical Areas. January 1, 2004. Accessed at http://www.fishkind.com/msaindex.html

[55] Federal Deposit Insurance Corporation. U.S. Home Prices: Does Bust Always Follow Boom. February 10, 2005. Accessed at http://www.fdic.gov/bank/analytical/fyi/2005/021005fyi.html

[56] Trigaux, Robert. 2005. "Housing market remains hot." St. Petersburg Times. Business Column. July 26. Accessed at http://www.sptimes.com/2005/07/26/Columns/Housing_market_remain.shtml

associated with these consultations. The Service believes that these costs are associated with beach mouse conservation activities under the listing of the species, and would occur regardless of critical habitat designation.[57]

96. Although the Service has conducted four formal consultations on residential and commercial development, as reported in Exhibit 3-3, two of the consultations involved projects outside of proposed critical habitat. The two consultations in proposed CHD involved HCPs for Stallworth Preserve and WaterColor and WaterSound, developments located respectively in CBM-2, CBM-3, and CBM-4. Past administrative costs associated with these two formal consultations are estimated at between $28,000 and $45,000 in undiscounted dollars. Due to the completion of these HCPs, Stallworth Preserve and WaterColor and WaterSound are currently proposed for exclusion from critical habitat.

97. The WaterColor and WaterSound HCP involves conservation efforts totaling $24,801,000 in undiscounted dollars.[58] These costs arose primarily from restoring 1.28 acres of dune habitat and preserving 80.4 acres of land, of which 29.6 were developable. According to St. Joe, the company developing WaterColor and WaterSound, the set-aside of 29.6 acres of developable land resulted in foregone home sales of $24,300,000 in undiscounted dollars, while the dune restoration cost $250,000 in undiscounted dollars. The remaining conservation efforts outlined in the WaterColor and WaterSound HCP are largely annually reoccurring efforts such as species monitoring and predator control. Assuming these annually recurring costs began in 2000, the year the Service completed its Biological Opinion on the HCP, the St. Joe Company spent $341,000 in undiscounted dollars on annual conservation efforts between 2000 and 2005. St. Joe also reports that these projects incurred delays of 2.5 years during the completion of the HCP. The sum of all past beach mouse conservation efforts at WaterColor and WaterSound is $24,801,000 in undiscounted dollars, or $29,585,000 assuming a three percent discount rate, and $37,142,000 assuming a seven percent discount rate.

98. As summarized in Exhibit 3-3, the HCP for Stallworth Preserve specified that construction would not permanently alter more than 4,000 square feet of any lot, nor temporarily alter more than an additional 1,000 square feet of any lot. Specific cost information is available for the conservation efforts in the Stallworth HCP associated with two ongoing activities: species monitoring and annual contributions to a fund for beach mouse conservation. The past costs of these ongoing activities (i.e., those costs incurred between 1995 and 2005) total $155,400 in undiscounted dollars, or $201,000 using a three percent discount rate and $282,000, using a seven percent discount rate.[59]

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[57] Written comments provided by U.S. Fish and Wildlife Service, Panama City Field Office, March 24, 2006 and May 1, 2006.

[58] Written communication from David G. Tillis, Vice President for Regulatory Affairs, The St. Joe Company, on February 10, 2006.

[59] Stallworth Preserve Choctawhatchee Beach Mouse Habitat Conservation Plan. Thomas Reid Associates. October 1994.

99. On Perdido Key, the Palazzo I and II developments each occupy one acre within PKBM proposed critical habitat (0.6 acres of impact), and consist of 15 units on 9 floors each. The developer of this project states that his company has incurred a delay of 20 months because the building permit could not be issued without Service concurrence. The developer also states that his company incurred additional costs related to inland areas (outside of proposed CHD), and states that he has lost 30 buyers due to these delays. [60] The Service notes that, although the developer made initial contact with the Service in August 2004 concerning permitting needs, the company's incidental take permit application was not considered complete until January 2006, and is now being processed.[61]

[60] Personal communication with Dan Savage, Consultant, Pallazo I & II, on February 8, 2006.

[61] Written communication with Service, Southeast Regional Office and Panama City Field Office, March xx 2006.

EXHIBIT 3-3 BIOLOGICAL OPINIONS COMPLETED AND PENDING FOR DEVELOPMENT PROJECTS IMPACTING FLORIDA BEACH MICE SPECIES

DEVELOPMENT PROJECT	DESCRIPTION	SPECIES CONSIDERED	MITIGATION MEASURES AND COSTS
COMPLETED BIOLOGICAL OPINIONS			
Florencia Village Perdido Key, Escambia County Project site is not within CH Interagency consultation with USACE. Biological Opinion Issued May 13, 2005.	Project applicant: Mr. Buddy Breland The proposed action is to construct a 31-slip, 7,097 square foot commercial marina and a multi-family high-rise, ten-story residential condominium with a maximum of 66 units, associated parking areas, tennis courts, a pool, and several walkways and boardwalks on a 4.7 acre parcel. Of the 4.7 acres, 4.5 is suitable Perdido Key Beach Mouse habitat and 3.5 of these acres will be eliminated through development. One acre on-site and 1.77 acres off-site of suitable habitat will be temporarily lost due to construction activities.	Perdido Key Beach Mouse, Gulf Sturgeon, West Indian Manatee, Loggerhead Sea Turtle, Green Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle[a]	(1) Preservation through deed restriction of a 30-foot wide beach mouse travel corridor enhanced and maintained with native vegetation. Small gravel and debris from Hurricane Ivan in this corridor will be removed. (2) Designation of remaining habitat as Conservation Areas with appropriate signage to prevent all activities other than habitat maintenance and restoration. (3) Creation, printing, and distribution of an educational brochure for property owners and their guests at Florencia. (4) One-time endowment of $5,000 made to the Perdido Key Conservation Fund for predator control at Perdido Key State Park. (5) Habitat restoration of all remaining beach mouse habitat on the project site. (6) Boundary fencing using wrought iron of the Florencia Village development such that beach mouse movement is allowed and access by people and pets is controlled. (7) Construction of elevated pedestrian walkways. (8) Landscaping will use mostly native plants. (9) One-time contribution of $8,300 to the Perdido Key Conservation Fund for Escambia County to construct a boardwalk and conduct dune restoration east of Perdido Key State Park. (10) Prohibition of free-roaming pets outside the development and in the Conservation Areas, and prohibition of activities that support feral cat populations. (11) Prohibition of pesticides and/or pest control outside the development that may harm beach mice, and prohibition of herbicides that may harm plants that provide food or cover for beach mice. (12) Restoration of 1.93 acres on the south site of the project site (also owned by Buddy Breland) that will be impacted by construction activities. Small gravel and debris will be sifted and removed from the sand in this location. (13) Installation and use of animal-proof garbage containers.

DEVELOPMENT PROJECT	DESCRIPTION	SPECIES CONSIDERED	MITIGATION MEASURES AND COSTS
The Villages at Seagrove (WaterColor) and Camp Creek (WaterSound) Walton County St. Joe Company Biological Opinion Issued March 23, 2000	Developer: St. Joe Company WaterColor is a proposed 499-acre mixed-use coastal village. The south parcel of the development will be a beach recreational facility, comprised of a 60-room inn, beach club and 10 single-family residences, 50 condominium units, and 15 beach cottages on a total of 23.94 acres (1,400 feet of Gulf of Mexico beachfront) at a density of roughly 2.51 units per acre. 16.32 acres of the south parcel is within Choctawhatchee beach mouse habitat. WaterSound is a proposed 256-acre mixed-use coastal village four miles east of WaterColor. The development will consist of a mix of residential, commercial, and recreational land uses and a resort hotel along 6,000 feet of Gulf of Mexico beachfront. All development except for dune walkovers and connector boardwalks (5 acres) will be located landward of the primary and secondary dune field. None of the project area is within critical habitat for the Choctawhatchee beach mouse.	Choctawhatchee Beach Mouse, Loggerhead Turtle, Green Turtle, Leatherback Turtle	<u>Conservation measures contained within HCP</u>[b]: (1) Restoration of 1.28 acres of dune habitat on-site. $250,000 (2) Protection, management, and maintenance of 7.23 acres of remaining beach mouse habitat on the south parcel of WaterColor and 80.4 acres of remaining habitat at WaterSound. (3) Installation of a 400 foot fence between WaterSound and Deer Lake State Park to control pedestrian access. (4) Consent for future introduction of the beach mouse to 80.4 acres along 6,000 feet of beach mouse habitat at WaterSound. Based on comparable sales, total potential sales on this acreage is estimated at $24,300,000 based on the presence of 29.6 acres of developable coastal land in the conserved area.[c] (5) Installation of sea turtle-compatible lighting at WaterColor and WaterSound. Cost of this lighting above normal lighting on the south parcel of WaterColor is $650,000; cost for WaterColor is TBD. (6) Litter and trash control using wildlife-proof trash receptacles at both sites. $20,000 annually for 30 years. (7) Predator control at both sites. $5,000 annually for 30 years. (8) Leashing of pets when outside of the project areas. (9) Minimization of construction impacts and enforcement of construction boundary violations. (10) Fencing and signage installation to restrict pedestrian access to dune walkovers. (11) Development and implementation of an environmental education program for residents and visitors to both sites. $60,000 (12) Monitoring program for the south parcel site for the duration of the ITP (30 years). $16,000 annually for 30 years. (13) Annual reports to USFWS. $7,500 annually for 30 years. (14) Five-year trapping program. $81,500 (1998 to 2003)[d] (15) Property assessments on individual property owners by the homeowner's association will be conducted to assure the legal, financial, and future management responsibilities for implementing the HCP and ITP. Cost to homeowners is estimated to range from $6.50 to $8.00 annually. <u>Additional measures not contained with HCP</u>: (16) At least one week prior to land clearing on south parcel, beach mouse trapping will be conducted. (17) Planting of native plant species only.

DEVELOPMENT PROJECT	DESCRIPTION	SPECIES CONSIDERED	MITIGATION MEASURES AND COSTS
Stallworth Preserve Walton County Biological Opinion Issued February 1, 1995	The proposed project is development of seven acres of dune habitat into 14 single-family homes. Two of the seven acres would be covered by 14 houses, one road, and 14 driveways.	Choctawhatchee beach mouse	(1) The applicant will ensure that no more than 4,000 square feet of any of the lots are permanently altered, and that no more than an additional 1,000 square feet of each lot will be temporarily altered. (2) Construction of a habitat fence prior to grading of each lot, with associated signage. (3) The developer will hire an independent contractor to assure that grading does not occur in preserved habitat. (4) Driveways cannot exceed 10 feet in width and parking is limited to 20x20 foot area. (5) Access to beach will be limited to five boardwalks across the dunes. (6) Funding for a five-year CBM trapping and radio telemetry study will be provided by individual lot owners, who will each pay $2,000 annually for the duration of the study. (7) Each lot owner will pay an additional $100 annually to fund long-term monitoring of the site. (8) 2,000 copies of a CBM education brochure will be produced and provided to residents of Stallworth Preserve and the school system of Walton County (9) Monitoring of trash receptacles, restriction of free range of house pets, no exterior use of rodenticides.
Caribe Baldwin County, Alabama Biological Opinion Issued July 24, 1991 Project site is not within CH	The proposed project is development of 8.3 acres into a hotel, restaurant, lounge, and parking lot between a constructed bulkhead along the mean high tide elevation and Highway 182, and construction of three piers seaward of the bulkhead. The applicant also proposes development of a "Habitat and Conservation/Relocation Program" for the Perdido Key beach mouse.	Perdido Key beach mouse	The proposed reasonable and prudent measures in the Service's draft biological opinion for this consultation were rejected by the applicant on the grounds that the measures would make the proposed project economically unviable. In addition, it was unclear whether the U.S. Army Corps of Engineers, the Federal agency involved in the proposed action, would have authority to require and enforce the proposed reasonable and prudent measures. For this reason, the final biological opinion did not include any reasonable and prudent measures to protect the Perdido Key beach mouse and an ITP was not issued to the applicant.

DEVELOPMENT PROJECT	DESCRIPTION	SPECIES CONSIDERED	MITIGATION MEASURES AND COSTS

Notes:

(a) The analysis does not disaggregate costs among these species, but rather attributes all costs of consultation to the Perdido Key Beach Mouse, because the other species are not considered within the biological opinion. Rather, they are noted as being present but not adversely affected by the proposed action.

(b) Cost estimates listed were provided by the St. Joe Company and included in the Service's biological opinion for this ITP. See USFWS, Panama City Field Office, Florida, "Biological Opinion for Issuance of an Incidental Take Permit Section 10 (a)(1)(B), The Villages at Seagrove and Camp Creek, St. Joe Company, Walton County, Florida," March 23, 2000.

(c) St. Joe notes that the value of Gulf front properties has increased over time since the preparation of the HCP. Specifically, the current value of the 29.6 acres of developable land at the same densities as WaterSound ranges from $175 to $200 million. Written communication from David G. Tillis, Vice President for Regulatory Affairs, The St. Joe Company, on February 10, 2006.

(d) Expenditures for the 5-year trapping program is distributed as follows: 1998 ($12,550); 1999 ($15,300); 2000 ($15,300); 2001 ($15,300); 2002 ($15,300); 2003 ($7,750). Written communication from David G. Tillis, Vice President for Regulatory Affairs, The St. Joe Company, on February 10, 2006.

3.5 FUTURE ECONOMIC IMPACTS ON PRIVATE DEVELOPMENT ACTIVITIES

100. The number of formal consultations for development projects within beach mouse habitat is expected to increase once post-Ivan construction intensifies.[62] Generally, the Service conducts a site visit for every development permit issuance. If the project site exists within a previously existing project footprint, an HCP is not required. However, where the planned project extends beyond an existing footprint or would create an entirely new footprint within beach mouse habitat, an HCP is required in order to obtain an Incidental Take Permit (ITP).[63]

101. As described above, potential costs associated with specific lands within proposed CHD are estimated according to whether the parcel falls on Perdido Key, within WaterColor/WaterSound, or is located on other developable acres in proposed CHD.

3.5.1 FUTURE COSTS TO PERDIDO KEY UNITS (PKBM-2 AND PKBM-4)

102. Critical habitat for the Perdido Key Beach Mouse (PKBM) has been in place since 1985. The PKBM, a subspecies of the oldfield mouse, only inhabits burrows, which it digs into the primary, secondary, and scrub dunes of Perdido Key, Florida. The mouse impacts development where property owners or developers plan to modify land in a way that will adversely affect the species and/or its habitat.

103. Perdido Key, a barrier island, consists of 2,943 acres of coastal land from Perdido Pass east to Pensacola Bay. Approximately 80 percent of the Key lies in Florida to the east, and 20 percent in Alabama to the west (Unit 1 lies in Baldwin County, Alabama; Unit 2 lies in Baldwin County, Alabama and Escambia County, Florida; Units 3 through 5 lie in Escambia County, Florida). Building structures on private lands include single-family homes, condominiums (low- and high-rise), and commercial properties. The Key also contains three significant public land areas: a portion of Gulf Islands National Seashore on the eastern extent of the Key, Perdido Key State Park in the central area of the Key, and part of Gulf State Park in Alabama on the western extent of the Key. Motor vehicles access the Key using State Route 182 in Alabama and State Route 292 in Florida. The Key is susceptible to tropical storms, of which the most recently destructive was Hurricane Ivan in September 2004. Since the storm, only an estimated 800 of the Key's 2,000 year-round residents had returned to the island by December 2005.[64]

104. Due to its susceptibility to tropical storms and limited exit points to mainland Florida, Perdido Key is within the Coastal High Hazard Area. Consequently, the State of Florida limits the number of dwelling units that can be located on Perdido Key to 7,150 residential dwelling units and 1,000 lodging units despite county zoning regulations, which may allow up to 9,168 units.[65,66,67] According to some, the unit cap is frustrating

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[62] Personal communication with Service, USFWS Panama City Field Office, on January 18, 2006.

[63] Personal communication with Service, USFWS Panama City Field Office, on October 12, 2005.

[64] Brett Norman, "A paradise paralyzed may be poised for rebirth" *Pensacola News Journal*, December 11, 2005.

[65] The cap on housing units in Perdido Key is contained within Escambia County, Escambia County Code of Ordinances, Comprehensive Plan, Future Land Use Element (Chapter 7), accessed from http://library.municode.com on January 9, 2006.

post-Ivan rebuilding efforts by preventing permit issuance for more units on a property than existed before the hurricane struck. As a result, damaged single-family homes and small condo developments have been unable to attract buyers who would want to rebuild more units on the properties.[68] In December 2005, Escambia County commissioners adopted an amendment to Escambia County's growth management plan to increase allowable units on Perdido Key, and submitted it to the Florida State Department of Community Affairs. However, support for eliminating the building cap is not unanimous. For example, the Perdido Key Association, a charitable organization working on development issues on the Key, opposes removal of the cap.[69] This analysis assesses potential impact if buildout occurs to full zoning capacity, implicitly assuming that the building cap is not maintained in the future. If the cap continues to be imposed, some housing units assessed in this analysis may not be built. As a result, estimated costs to these housing units would not occur, and estimated costs in these units would be overstated. However it is unknown to what degree the cap will limit building within proposed CHD.

105. Because of the limited land area and rapid development of Perdido Key, the Escambia County Board of County Commissioners, the Florida Fish and Wildlife Conservation Commission, and the Service have developed a unified mitigation approach, approved in December 2005 by Escambia County commissioners, to facilitate the mitigation process requested of development projects, including the establishment of a Perdido Key Beach Mouse Conservation and Management Fund (CMF). Future development projects on Perdido Key are encouraged to make a one-time payment of $100,000 into the fund for each acre of beach mouse habitat impacted and an annual payment of $201 per housing unit constructed.[70] The Service has entered into a consultation with developers regarding an area known as Magnolia West on PKBM-4.[71] This analysis assumes that conservation activities required under that consultation will not exceed requirements under the CMF.

106. Historically, mitigation for impacts to the PKBM involved complete avoidance of habitat impact, minimization of impacts, or a minimum of 2:1 land preservation (i.e., two or

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[66] Escambia County's Land Development Code defines dwelling unit as "[o]ne or more rooms, designed, occupied or intended for occupancy as separate living quarters, with cooking, sleeping and sanitary facilities provided within the dwelling for the exclusive use of a single household," while in Perdido Key only, a hotel/motel room is referred to as a lodging unit and defined as "[o]ne or more rooms designed, occupied or intended for sleeping purposes by a transient guest." Escambia County, Escambia County Land Development Code, accessed from http://library.municode.com on January 9, 2006.

[67] Perdido Key Land Development Code, http://www.municode.com/services/gateway.asp?sid=9&pid=10700, accessed January 9, 2006.

[68] Brett Norman, "A paradise paralyzed may be poised for rebirth" *Pensacola News Journal*, December 11, 2005.

[69] Perdido Key Association, http://www.perdidokeyassoc.org/new_page_20.htm, accessed January 9, 2006.

[70] Under the mitigation plan, the developer makes a payment of $100,000 per acre of impact at the time of application for the building permit. Once the builder receives a certificate of occupancy, the tax assessor assesses the $201/unit/year fee. However, where the units are not pre-sold, the developer must pay the annual fee until the unit is sold to a private individual. Personal communication with Tim Day, Escambia County Environment Division, on January 17, 2006.

[71] Written communication from U.S. Fish and Wildlife Service Panama City Field Office personnel, April 12, 2006.

more acres of land are protected for every acre of impact to habitat). The proposed unified mitigation approach allows for minimization of beach mouse impacts in lieu of contributions to a conservation fund. Fund resources will be used to implement the PKBM conservation strategy.[72]

107. Estimated contributions to the CMF are based on cost estimates of Escambia County's beach mouse conservation strategy for Perdido Key.[73] Cost components of the strategy include surveying and monitoring, restoration and maintenance of dune habitat, predator control, mitigation actions (including direct acquisition of land or land set-asides following prescribed mitigation ratios,[74] purchase of conservation easements, and educational programs), genetic viability assessment, creation and maintenance of the conservation fund, and research.[75]

108. The future costs to development on Perdido Key are calculated by multiplying the number of developable acres in PKBM-2 and PKBM-4 by the $100,000 per acre conservation fee. This analysis assumes that 33 percent of development on private acres on Perdido Key will affect beach mouse habitat and be required to pay the conservation fee.[76] The analysis assumes that this will occur over the next ten years.[77] The maximum number of housing units allowed by zoning regulations on all developable acres is then multiplied by the annual $201 per unit conservation fee.

109. Units PKBM-2 and PKMB-4 contain a total of 274.6 acres of private developable land. If the current cap on Perdido Key development is increased, the Key's zoning regulations allow a total of 2,033 housing units on these acres. The $100,000 per acre one-time contribution to the Perdido Key Beach Mouse Conservation and Management Fund is applied to 90 acres of developable land in PKBM-2 and PKBM-4. Additionally, the

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[72] U.S. Fish and Wildlife Service, Panama City Field Office, "Perdido Key Beach Mouse Unified Mitigation Approach Frequently Asked Questions" accessed from: http://www.fws.gov/panamacity/species/pdf/QandAforPKBM.pdf on October 26, 2005.

[73] RCF Economic and Financial Consulting, Inc. "Business Plan for the Perdido Key Beach Mouse Conservation Fund" July 1, 2005.

[74] A mitigation ratio is the ratio of acres set aside for the species to developed acres.

[75] The contribution per developed acre to the Fund is calculated as the total cost of the Perdido Key beach mouse conservation strategy divided by the acres of private Perdido Key beach mouse habitat. To estimate the total costs of the Perdido Key beach mouse conservation strategy, the report estimates the present value of annual costs over a 100-year period and discounted using a five percent discount rate, and presents these costs as a range for each of three scenarios: (1) total cost with land acquisitions ($219 to $256 million); (2) total cost with conservation easements ($64 to $123 million); and (3) total cost without land actions ($12 to $34 million). These total costs are then divided by the total number of private acres (240 acres) on Perdido Key to estimate necessary conservation contributions per developed acre.

[76] The Service estimates that full buildout of Perdido Key will affect beach 33 percent of beach mouse habitat on the Key. "Draft Rationale and Decisions for Development Costs Determined to be Necessary to Conserve Perdido Key Beach mouse." Service, Panama City Field Office, 2006.

[77] The Perdido Key Business Plan estimates that areas within the Conservation Strategy Area (which includes proposed CHD) will be "largely developed within seven to 10 years (as of July 2005). Escambia County's Development Monitoring and Tracking System shows that existing units (3,318), units currently under construction (693), units granted permits but not under construction yet (1,081), and units for which applications have been submitted or a Development Order has been signed (2,272) total 7,364 which is over the dwelling units allowed on Perdido Key (7,150). Source: RCF Economic and Financial Consulting, Inc. "Business Plan for the Perdido Key Beach Mouse Conservation Fund" July 1, 2005.

annual $201 contribution per housing unit is applied to the 2,033 housing units allowed on the developable lands. Total future costs across the two units are $17.2 million (undiscounted dollars), or $14.2 assuming a three percent discount rate, and $11.4 assuming a seven percent discount rate. The future costs estimated for Perdido Key are presented in Exhibit 3-4. Because the agreement has now been approved, future delay costs are not anticipated.

EXHIBIT 3-4. FUTURE COSTS IN PERDIDO KEY UNITS, PKBM-2 AND PKBM-4 (2006-2025)

UNITS	DEVELOPABLE ACRES	UNITS ALLOWED	TOTAL (UNDISCOUNTED DOLLARS)	PRESENT VALUE (3 PERCENT)	PRESENT VALUE (7 PERCENT)
PKBM-2	113.7	798	$6,957,000	$5,752,000	$4,636,000
PKBM-4	160.9	1,236	$10,277,000	$8,471,000	$6,806,000
TOTAL	**274.6**	**2,034**	$17,234,000	$14,223,000	$11,442,000

3.5.2 FUTURE COSTS TO WATERCOLOR AND WATERSOUND DEVELOPMENTS (PORTIONS OF CBM-3 AND CBM-4)

110. In 2000, the St. Joe Company completed an HCP for the Villages at Seagrove (WaterColor development) and Seagrove (WaterSound development). WaterColor and WaterSound are mixed-use coastal villages located respectively in CBM-3 and CBM-4. The combined area of the projects covers 755 acres with 75.8 acres lying in proposed critical habitat. Characteristics of these developments are:

- WaterColor: 499 acres mixed-use coastal village, 1,149 home sites, 60 room inn, 100,000 sq ft commercial space, of which 23.9 acres are on the south side of highway 30A in beach mouse CHD;[78]
- WaterSound: 256 acres mixed-use coastal village, 399 units, 270 guest rooms, 10,000 sq ft commercial space.

Detailed information is available on the ongoing and future costs of beach mouse conservation efforts at the WaterColor and WaterSound developments associated with the HCP from the St. Joe Company. The conservation efforts contained in the HCP and the costs of those efforts are outlined in Exhibit 3-5. These measures involve both one-time costs and ongoing annual costs. The one-time costs include mouse trapping (mouse relocation during construction), an environmental education program for residents, restoration of 1.28 acres of dune habitat, and preservation of 80.9 acres of land, of which

[78] Regarding the WaterColor Development, the Biological opinion states: "Although the ITP will cover the entire development, the ITP will directly pertain to the 23.94 acres (9.7 hectares) of the development located on the south side of highway 30A in Section 15, Township 3 South, Range 19 West." However, the total acreage of the development covered under the HCP is 499 acres.

29.6 acres would have been developable. Ongoing annual costs include litter and trash control, predator control, species monitoring, and reports to the Service.

EXHIBIT 3-5. COSTS OF BEACH MOUSE CONSERVATION EFFORTS AT WATERCOLOR AND WATERSOUND, 2000-2025

COST DESCRIPTION	ONE TIME COSTS (20-YEARS) [5]	RECURRING COSTS (ANNUAL) [6]
Dune Restoration (1.28 acres)	-	$8,300
Land Preservation (80.9 acres)[1]	$24,300,000	-
Environmental Education	$60,000	-
Trapping[2]	$81,000	-
Enforcement of HCP	$18,000	-
Litter and trash control[3]	-	$20,000
Predator Control[4]	-	$5,000
Species Monitoring	-	$16,000
Reports to Service	-	$7,500
TOTAL	**$24,460,000**	**$57,000**

[1] As stated in the HCP, total sales on acres that could not be built (29.6) are estimated at $24.3 million.
[2] Mouse relocation during construction.
[3] As outlined in the HCP, $20,000 annually is to be used for "control of litter and trash, including the use of wildlife-proof trash receptacles [that] will be installed and maintained at the south parcel and Camp Creek site.
[4] As outlined in the HCP, $5,000 annually will be used for "control of non-native predator species, such as coyote, red fox, house mice, and feral and free-ranging domestic pets."
[5] One time costs are assumed to have occurred at the time of the HCP issuance, and thus are included in past costs.
[6] These costs are assumed to have been incurred annually since 2000. Costs inclurred from 2000-2005 are included in past costs. Future costs are assumed to include annual costs from 2006-2025.
Source: Written communication from David G. Tillis, Vice President for Regulatory Affairs, The St. Joe Company, on February 10, 2006; USFWS, Panama City Field Office, Florida, "Biological Opinion for Issuance of an Incidental Take Permit Section 10 (a)(1)(B), The Villages at Seagrove and Camp Creek, St. Joe Company, Walton County, Florida," March 23, 2000.

111. To distribute costs associated with WaterColor and WaterSound over time, past costs are assumed to include one-time costs (incurred in 2000, the year the HCP was completed), and annual costs since 2000. Past costs include the lost property value associated with the land preservation requirements, which are assumed to have occurred in 2000. Future costs are assumed to include recurring costs, incurred annually for 20 years.

112. As shown in Exhibit 3-6, the future costs of ongoing annual conservation efforts totals $1,137,000 in undiscounted dollars over twenty years. These annual costs total $871,000 assuming a three percent discount rate, and $644,000 assuming a seven percent discount rate, over 20 years.

EXHIBIT 3-6 FUTURE COSTS AT WATERCOLOR AND WATERSOUND, 2006-2025

	TOTAL (UNDISCOUNTED DOLLARS)	PRESENT VALUE (3 PERCENT)	PRESENT VALUE (7 PERCENT)
TOTAL	**$1,137,000**	**$871,000**	**$644,000**

3.5.3 FUTURE COSTS TO ALL REMAINING ACRES (CBM 2,3,4, SABM 1,2,3)

113. Excluding Perdido Key and the WaterColor and WaterSound developments, 339 acres of developable lands lie within proposed critical habitat (Exhibit 3-7). The third component of the analysis addresses future costs of beach mice conservation efforts associated with these lands.

EXHIBIT 3-7. SUMMARY OF DEVELOPABLE LANDS IN PROPOSED CHD IN CBM AND SABM PROPOSED CHD[1]

UNIT	UNIT NAME	OTHER DEVELOPABLE ACRES[1]
CHBM-2	Topsail Hill	14.9
CHBM-3	Grayton Beach	2.4
CHBM-4	Deer Lake	5.1
SABM-1	East Crooked Island	195.1
SABM-2	Palm Point	24.6
SABM-3	St. Joseph Peninsula	97.0
TOTAL ACRES		**339.0**

[1] Excludes developable lands in proposed CHD that are part of WaterColor and WaterSound developments and Perdido Key. Costs associated with these acres are captured elsewhere in this chapter.

114. Private developable areas are assumed to include vacant private lands which are zoned for residential or commercial development. The extent and location of these lands are determined in the following manner:

- Identify private ownership. Land ownership GIS data is used to identify the overlap of private lands with proposed critical habitat. The area of overlap represents the number of private acres in proposed critical habitat.
- Identify vacant lands. Land vacancy GIS data and aerial photographs are used to determine the number of private acres in proposed critical habitat that currently do not contain structures.

- Identify lands that are landward of the Florida Coastal Construction Control Line (CCCL). Using GIS analysis, the private vacant acres seaward of the CCCL are subtracted from the total vacant private acres in proposed critical habitat.

115. In several past consultations/HCPs, the Service has requested that particular housing footprints be made smaller, or that additional side corridors be left undeveloped to accommodate beach mice. These efforts have resulted in a reduction in developable acres on affected properties of five to eleven percent, as present in Exhibit 3-8. Thus, this analysis assumes for CBM and SABM critical habitat areas (outside of the Perdido Key and WaterColor and WaterSound developments), five to eleven percent of developable acres (i.e. private land acres) are likely to be set aside, i.e. not developed, in order to protect beach mouse habitat.

EXHIBIT 3-8. RECENT CHANGES TO PROPOSED DEVELOPMENTS DUE TO BEACH MICE CONSERVATION

DEVELOPMENT NAME	SITE SIZE (AC)	DEVELOPMENT PROPOSED PRIOR TO BEACH MOUSE CONCERNS (AC)	DEVELOPMENT AFTER INCLUDING BEACH MOUSE CONCERNS (AC)	DIFFERENCE (AC)	PERCENT OF LOT SET-ASIDE FOR BEACH MICE
Retreat	1.3	0.41	0.32	-0.09	-7%
SeaRenity	1.25	0.28	0.21	-0.07	-6%
Palazzo	2.6	0.7	0.58	-0.12	-5%
WaterColor and WaterSound	279.9	n/a	n/a	-29.6	-11%
Assumed Percent Set-Aside due to Beach Mouse Impacts					**-5% to -11%**

Sources: Written communication from David G. Tillis, Vice President for Regulatory Affairs, The St. Joe Company, on February 10, 2006; Written communication from U.S. Fish and Wildlife Service Panama City Field Office personnel, April 12 and 13, 2006; Edmisten & Associates; Habitat Conservation Plan for Issuance of an Endangered Species Section 10(a)(1)(B) permit for the Incidental Take of the Perdido Key Beach Mouse *(Peromyscus polionotus trissyllepsis)* associated with the Retreat and Searenity Condominium Developments on Perdido Key. in Escambia County, Florida, March 2005; Written communication from U.S. Fish and Wildlife Service Panama City Field Office personnel, March 5, 2006; Letter from Craig Martin, Wetland Science Incorporated, to U.S. Fish and Wildlife Service entitled "Palazzo I&II Condominium Perdido Key, Florida," dated September 29, 2005.

116. For developable lands that are anticipated to be set aside, the value of the raw land is assumed to be lost to the landowner. The per-acre value of raw coastal land is assumed to be $2.28 million in proposed CHD areas. This figure was developed using 2005 data for raw land sales in areas located within a quarter mile of the Gulf Coast in Bay, Walton, Gulf and Escambia Counties, Florida.[79]

[79] The Escambia County data used is from 2003. To adjust the 2003 coastal per-acre land value to current dollars, the analysis employs a 12 percent annual appreciation rate, based on the professional judgment of local academic peer-reviewers. This estimate is generally consistent with recent appreciation rates of 10 percent in the Pensacola Metropolitan Statistical Area (MSA) according to the Office of Federal Housing Enterprise Oversight Home Price Index (HPI) (2000-2005). The OFHEO HPI is a broad, repeat-sale index of single-family homes. Data obtained at http://www.ofheo.gov/HPI.asp, 12 April, 2006.

117. The analysis assumes that, on a per-acre basis, mitigation measures undertaken by large developments are a good proxy for the types of mitigation that are likely to be required for other development activity in proposed CHD areas.[80] Thus, $600 per acre (over 20 years) is assumed to be undertaken for trapping efforts (mouse relocation during construction), environmental education efforts, and enforcement activities for the beach mice. In addition, costs of ongoing efforts, such as species monitoring and predator control, are assumed to cost $200 per acre annually. These estimates are based on per-acre costs of these efforts at WaterColor and WaterSound developments as part of their HCP. These per-acre costs of conservation efforts are then applied to the 339 "other" developable acres in order to estimate the future costs to development in these areas. Per-acre costs are summarized in Exhibit 3-9.

EXHIBIT 3-9. ESTIMATING PER-ACRE COSTS OF BEACH MOUSE CONSERVATION EFFORTS FOR DEVELOPABLE ACRES IN CBM and SABM PROPOSED CHD[1]

COST TYPE	ONE-TIME COSTS (20-YEARS)	RECURRING COSTS (ANNUAL)
Property Value Losses, per acre[2]	$2.28 million	-
Other mitigation efforts, per acre[3]	$600	$200
TOTAL COSTS OF BEACH MICE MITIGATION, PER ACRE	**$2.3 million**	**$200**

[1] Excludes developable lands in proposed CHD that are part of WaterColor and WaterSound developments and Perdido Key. Costs associated with these acres are captured elsewhere in this chapter.

[2] This value is applied to a range of five to eleven percent of developable lands in these areas.

[3] These values are applied to all developable acres in these areas.

Sources: Written communication from David G. Tillis, Vice President for Regulatory Affairs, The St. Joe Company, on February 10, 2006; USFWS, Panama City Field Office, Florida, "Biological Opinion for Issuance of an Incidental Take Permit Section 10 (a)(1)(B), The Villages at Seagrove and Camp Creek, St. Joe Company, Walton County, Florida," March 23, 2000; Data for raw land sales in areas located within a quarter mile of the Gulf Coast in Bay, Walton, Santa Rosa, and Escambia Counties, Florida.

118. This approach implicitly assumes the Service will recommend conservation efforts for the remaining developable acres similar to the efforts recommended for WaterColor and WaterSound. It should be noted that some portion of the developable acres that fall outside of Perdido Key and WaterColor and WaterSound developments are likely to occur on parcels that are not part of large developments. By assuming that each landowner will undertake the same proportion of conservation measures as large developments (on a per-acre basis), the analysis may somewhat overestimate costs to

[80] St. Joe Company reports that this assumption should be appropriate for the Bonfire Beach and Windmark Beach developments, although lost land value may not occur. Written communication from Dave Tillus, Vice President for Regulatory Affairs, The St. Joe Company, on February 10, 2006.

these landowners. This is likely be particularly true where small portions of a parcel overlap proposed CHD.

119. Applying these assumptions to the remaining 339 developable acres yields future cost estimates for these areas of between $39.4 million and $85.7 million in undiscounted dollars. Total future costs are between $39.2 million and $85.5 million using a three percent discount rate, and between $39.1 million and $85.3 million using a seven percent discount rate. Estimated future costs for developable acres are summarized in Exhibit 3-10. It is important to note that property value losses are assumed to occur immediately (2006) because the option to develop the land in the future is removed immediately.[81] Remaining one-time costs ($600 per acre) are assumed to be incurred at a constant rate over the ten-year period between 2006 and 2015, as development occurs. Assuming that development will occur in proposed CHD in the next 10 years is not unreasonable considering the current pace of real estate development along the Florida Gulf Coast.

EXHIBIT 3-10. FUTURE DEVELOPMENT-RELATED COSTS IN CBM and SABM PROPOSED CHD, 2006-2025[1]

UNIT	ACRES OF SET-ASIDE		TOTAL (UNDISCOUNTED DOLLARS)		PRESENT VALUE (3 PERCENT)		PRESENT VALUE (7 PERCENT)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
CBM-2	0.7	1.6	$1,744,000	$3,772,000	$1,730,000	$3,758,000	$1,718,000	$3,746,000
CBM-3	0.1	0.3	$282,000	$609,000	$279,000	$607,000	$277,000	$605,000
CBM-4	0.3	0.6	$596,000	$1,290,000	$592,000	$1,285,000	$588,000	$1,281,000
SABM-1	9.8	21.5	$22,540,000	$49,170,000	$22,479,000	$49,108,000	$22,419,000	$49,049,000
SABM-2	1.2	2.7	$2,876,000	$6,229,000	$2,854,000	$6,207,000	$2,835,000	$6,188,000
SABM-3	4.9	10.7	$11,396,000	$24,639,000	$11,304,000	$24,546,000	$11,225,000	$24,468,000
TOTAL	**16.9**	**37.3**	**$39,435,000**	**$85,709,000**	**$39,237,000**	**$85,512,000**	**$39,063,000**	**$85,337,000**

[1] Excludes developable lands in proposed CHD that are part of WaterColor and WaterSound developments and Perdido Key. Costs associated with these acres are captured elsewhere in this chapter.

3.5.4 REGIONAL REAL ESTATE MARKET IMPACTS

120. Economic impacts of beach mice conservation are likely to extend beyond the regulated landowners and affect the real estate market, real estate consumers, and the regional economy if: (1) the amount of land set-aside (i.e., land not developed as a result of beach mice conservation activities) is high relative to the total developable land in the region, and/or (2) other compliance costs are high relative to real estate development value and cover a significant proportion of developable land. In these cases, landowners and developers may pass on the costs to real estate consumers in the form of higher prices. However, neither of these conditions appears to be true in the case of the beach mice.

[81] It should be noted that an annual appreciation rate is not applied to the 2005 land value of $2.28 million over these ten years, although the value is adjusted for inflation. To the extent that property values appreciate at a rate faster than inflation, property value estimates may be understated.

121. This analysis assumes that most property value losses that occur within proposed CHD will result from on-site set-asides, or reductions in proposed housing footprint expansions. In these cases, few housing units would be foregone within proposed CHD. In some cases, such as occurred as a result of the WaterColor and WaterSound HCP, lands may be set aside and the number of housing units may be reduced in proposed CHD areas. However, because the amount of affected land in proposed CHD is anticipated to be small relative to the amount of land available for development in the region, this analysis assumes that substitute land exists for development that would otherwise occur within habitat within regional housing markets.

122. Assuming that substitute sites exist within the regional real estate market, any displaced development would be expected to shift to less preferred sites (e.g., areas that were previously farther out in time on the development horizon or that were not anticipated to be developed within the next twenty years). Costs associated with beach mice conservation activities, such as on-site conservation, would be expected to be passed on from the developer to the existing landowner in the form of reduced prices paid for raw land.

123. The compliance costs associated with beach mice conservation represent a small fraction of the local building industry earnings in any one year in affected counties. Total earnings by the real estate construction and real estate industries across the five counties containing proposed CHD were $543,140,000 in 2003 (expressed in 2005 dollars).[82] Annualized costs to the development industry represent between 0.88 and 1.68 percent of construction and real estate earnings across the five counties, when discounted at seven percent (0.66 and 1.23 discounted at a three percent).

[82] Industries in the real estate NAICS subsector include establishments that are primarily engaged in renting or leasing real estate to others; managing real estate for others; selling, buying, or renting real estate for others; and providing other real estate related services, such as appraisal services. The Construction of Buildings NAICS subsector includes establishments primarily responsible for the construction of buildings. The work performed may include new work, additions, alterations, or maintenance and repairs. The on-site assembly of precut, panelized, and prefabricated buildings and construction of temporary buildings are included in this subsector. Part or all of the production work for which the establishments in this sector have responsibility may be subcontracted to other construction establishments-usually specialty trade contractors. Bureau of Economic Analysis. Regional Economic Accounts. Detailed earnings by industry. Accessed at http://www.bea.gov/bea/regional/reis/ on April 14, 2006.

SECTION 4 | POTENTIAL ECONOMIC IMPACTS TO RECREATION

124. The Proposed Rule states "[p]rotection, management, and conservation of beach mice on public areas have been complicated by increased recreational use by humans as public lands are rapidly becoming the only natural areas left on the coast."[83] The Proposed Rule goes on to say the threats that may require special management considerations include "recreational use that may result in soil compaction, damage to dunes, and/or a decrease in habitat quality." Past consultations have occurred for projects that facilitate recreation such as establishing elevated boardwalks to control access.

4.1 SUMMARY OF IMPACTS TO RECREATION

125. While units proposed for CHD and areas proposed for exclusion include access areas for ten public beaches, few impacts on recreational beach use or visitation are anticipated as a result of future beach mice conservation efforts. This outcome is due to the fact that: 1) the vegetated dune areas in proposed CHD are frequently traversed by beach users for beach access via formal trails, dune walkovers, or boardwalks, but are not the focus areas for beach recreation; 2) numerous protections already exist that protect dune areas from impacts by beach users, including State laws that prohibit damaging sand dunes or picking vegetation from dunes;[84] and 3) none of the planned projects by recreation managers in proposed CHD areas is anticipated to reduce the amount of beach recreation or beach visitation.

4.2 BACKGROUND INFORMATION ON BEACH RECREATION

126. Proposed CHD for the three Florida beach mice includes primary, secondary, and scrub dune habitat.[85] As such, areas generally used for beach recreation do not contain the primary constituent elements needed for the three Florida beach mice. However, beach users frequently traverse the vegetated dune areas in proposed CHD for beach access via formal trails, dune walkovers, or boardwalks. Most of the beach habitat considered in this analysis (nine out of 13 proposed critical habitat units) potentially provides recreational opportunities for public beach use. Beach users include local residents of the

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[83] U.S. Fish and Wildlife Service, Proposed Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse, 70 FR 74426, December 15, 2005.

[84] Florida Statute Title 11 Chapter 161 Section 53; Florida Statute Title 11 Chapter 161 Section 242.

[85] U.S. Fish and Wildlife Service, Proposed Critical Habitat for the Perdido Key Beach Mouse, Choctawhatchee Beach Mouse, and St. Andrew Beach Mouse, 70 FR 74426, December 15, 2005.

areas adjacent to the coast and inland residents of Florida and Alabama, as well as tourists from across the United States and foreign countries. This section provides a general discussion of the importance of beach recreation and tourism to the economies of Florida and Alabama, again, the three Florida beach mice are not expected to impact beach tourism. Exhibit 4-1 presents a tourism industry profile by county for all counties containing units proposed for CHD and areas proposed for exclusion.

4.2.1 FLORIDA

127. Tourism in Florida contributed $57 billion to Florida's economy, with 76.8 million visitors in 2004.[86] Approximately 69 percent of this economic impact resulted from 62.2 million beach visitors to the State's 825 miles of beaches.[87] The economic impact of regional beach tourism in northwest Florida in 2003 was $5.7 billion with 14.2 million tourist trips.[88] The following discussion provides detailed information on beach recreation by county containing units proposed for CHD and areas proposed for exclusion.

Bay County

128. The beaches of Bay County receive an estimated seven million visitors annually.[89] Over four million of these visitors stay overnight, for an average stay of four days. Beach visitors spend an estimated $547 million annually in Bay County. The total economic impact on the local economy of these expenditures is about $1.5 billion and 14,000 jobs annually. The tourism industry employs more people in Bay County than any other local industry.

Escambia County

129. Annually Escambia County receives approximately three million overnight visitors. These visitors spend an estimated $1.2 billion each year. Tourist spending generates approximately $92 million in tax revenue, and 20,000 local jobs.[90]

Gulf County

130. Gulf County visitation information is not currently available. The Haas Center tracks bed tax revenues as an indicator of the number of tourists visiting Northwest Florida.[91] Few, if any, beach hotels are located in the Gulf County beach areas. As described in the Gulf County Tourism Development Council media materials, the area is low in density,

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[86] State of Florida. Florida Quick Facts. Accessed at http://www.stateofflorida.com/Portal/DesktopDefault.aspx?tabid=95 on February 21, 2006.

[87] Murely, James, Lenore Alpert, William Stronge, and Roxane Dow. Tourism in Paradise: The Economic Impact of Florida's Beaches. Proceedings of the 14th Biennial Costal Zone Conference. New Orleans, Louisiana. July 17 to 21, 2005.

[88] Northwest Florida is defined as Escambia, Santa Rosa, Okaloosa, Walton, Bay, Gulf, Franklin, and Wakulla Counties.

[89] Bay County Economic Development Alliance. *2004 Community Overview Bay County, Florida.* 2004.

[90] Schroeder, Ed. Pensacola Area Chamber Tourism Viewpoint. Accessed at http://www.pensacolachamber.com/news/viewpoint-tourism.htm on December 30, 2005.

[91] Klein, Julie. Third Quarter Bed Taxes. Northwest Florida Economy. Winter 2005.

featuring mainly single-family homes.[92] The Gulf County Tourism Development Council also describes local beaches as free of crowds.

Okaloosa County

131. An estimated 4.5 million people visit Okaloosa County annually.[93] These visitors generate $2.8 million per day, or over $1 billion annually. Every dollar spent in Okaloosa County from tourism is estimated to generate $1.80 in additional economic output. Over 35,000 local residents are employed in tourism related positions in Okaloosa.

Walton County

132. Tourism activity in Walton County is the leading source of employment for local residents, of sales for local businesses, and tax revenues for local government.[94] Roughly half a million overnight visits occurred in Walton County from the fall of 2002 to summer of 2003. Overnight tourism generates approximately $684.9 million in total sales (retail plus business-to-business sales) and supports 10,275 jobs directly and indirectly, generating local income and wages of approximately $257 million annually and annual tax revenues of about $49 million. There has been growth in tourism in Walton County over the past few years.

4.2.2 ALABAMA

133. The tourism industry in Alabama generated $3.1 billion in 2004 from approximately 20.6 million visitors.[95] Alabama's 50 miles of Gulf beach and 70 miles of bay beach are a major tourist attraction. Perdido Key beach mouse proposed critical habitat occurs on two to three miles of Alabama's beaches. The annual number of visitors to the Alabama Gulf Coast in Fiscal Year 2004 was 1.4 million, with most visitation occurring in the summer months (i.e., June to August).[96] Annual tourist expenditures for that period totaled $507.8 million. Annual tourist expenditures in 2004 for the Gulf Coast Region totaled $2.6 billion.[97] Travel-related earnings for the Gulf Coast region in 2004 were $1.1 billion. Total travel-related employment (both direct and indirect) in 2004 in the Gulf Coast region was 57,034 jobs. County-level data for beach tourism in Baldwin County are not available.

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[92] Gulf County Tourism Development Council. Discover Old Florida Visit Gulf County Media Packet. Accessed at http://www.visitgulf.com/TDCMediaKit.pdf on January 3, 2006.

[93] Economic Development Council of Okaloosa County, Florida. Tourism is the second largest economic contributor for Okaloosa County. Accessed at http://www.florida-edc.org/Tourism.htm on January 4, 2006.

[94] Neal, Melissa. The Economic Impact of Tourism on the Walton County Economy. Haas Center for Business Research and Economic Development at the University of West Florida. August 4, 2004.

[95] Hurricane Ivan occurred in 2004, it is unclear if it impacted tourism in Alabama.

[96] Klages, Walter J. *2004 Visitor Profile Alabama Gulf Coast Convention and Visitors Bureau*. Prepared by Evans-Klages, Inc. for Alabama Gulf Coast Convention and Visitors Bureau. November 2004.

[97] Deravi, M. Keivan, and Pam Smith. Economic Impact Alabama Travel Industry 2004. Submitted to Lee Sentell, Director Alabama Bureau of Tourism and Travel. April 15, 2005.

EXHIBIT 4-1 BEACH TOURISM INDUSTRY PROFILE BY COUNTY CONTAINING CRITICAL HABITAT FOR THE THREE FLORIDA BEACH MICE

GEOGRAPHIC AREA	ANNUAL VISITORS (MILLIONS)	ANNUAL TOURIST SPENDING (BILLIONS)	TOTAL ECONOMIC IMPACT (BILLIONS)	JOBS SUPPORTED
Alabama Gulf Coast	1.4 [a]	$2.0 [b]	$3.7 [b]	57,034 [b]
Florida [c]	62.2	$19.3	$39.2	536,000
Bay County [d]	7.0	$0.5	$1.5	14,000
Escambia County [e]	3.0	$1.2	unknown	20,000
Gulf County [f]	unknown	unknown	unknown	unknown
Okaloosa County [g]	4.5	$1.0	$2.8	35,000
Walton County [h]	0.5	$0.7	unknown	10,275

[a] Klages, Walter J. *2004 Visitor Profile Alabama Gulf Coast Convention and Visitors Bureau*. Prepared by Evans-Klages, Inc. for Alabama Gulf Coast Convention and Visitors Bureau. November 2004.

[b] Deravi, M. Keivan, and Pam Smith. Economic Impact Alabama Travel Industry 2004. Submitted to Lee Sentell, Director Alabama Bureau of Tourism and Travel. April 15, 2005.

[c] Murely, James, Lenore Alpert, William Stronge, and Roxane Dow. Tourism in Paradise: The Economic Impact of Florida's Beaches. Proceedings of the 14th Biennial Costal Zone Conference. New Orleans, Louisiana. July 17 to 21, 2005. Note: these figures represent beach tourism only.

[d] Bay County Economic Development Alliance. *2004 Community Overview Bay County, Florida.* 2004. Bay County Economic Development Alliance.

[e] Schroeder, Ed. Pensacola Area Chamber Tourism Viewpoint. Accessed at http://www.pensacolachamber.com/news/viewpoint-tourism.htm on December 30, 2005.

[f] Gulf County Tourism Development Council. Discover Old Florida Visit Gulf County Media Packet. Accessed at http://www.visitgulf.com/TDCMediaKit.pdf on January 3, 2006.

[g] Economic Development Council of Okaloosa County, Florida. Tourism is the second largest economic contributor for Okaloosa County. Accessed at http://www.florida-edc.org/Tourism.htm on January 4, 2006.

[h] Neal, Melissa. The Economic Impact of Tourism on the Walton County Economy. Haas Center for Business Research and Economic Development at the University of West Florida. August 4, 2004.

4.3 PAST ECONOMIC IMPACTS TO RECREATION ACTIVITIES

134. Four consultations completed since 1985 address recreational activities, three of which also included tropical storm and hurricane activities. Exhibit 4-2 shows that past consultations on recreation activities addressed habitat protection (e.g., boardwalk construction and dune restoration), beach nourishment to improve recreation, and facilities reconstruction. The administrative costs of consultation are quantified in Appendix A. Storm protection and related restoration activity projects and related conservation efforts are quantified in Section 5. Dune habitat protection and restoration project activity conservation efforts are quantified in Section 6. Representatives from the Gulf Islands National Seashore (GINS) and affected State parks agree that conservation efforts associated with recreation for the three Florida beach mice have not changed visitation to public lands to date.[98]

[98] Personal communication with Jerry Eubanks, Superintendent of Gulf Islands National Seashore, January 17, 2006. Personal communication with Harold Mitchell, Bureau Of Parks District 1, Division of Recreation and Parks, Florida Department of Environmental Protection, January 12, 2006. Written communication Kelly Reetz, Gulf State Park, Alabama State Parks, Alabama Department of Conservation and Natural Resources, February 7, 2006. Personal communication Kelly Reetz, Gulf State Park, Alabama State Parks, Alabama Department of Conservation and Natural Resources, February 9, 2006.

EXHIBIT 4-2 SUMMARY OF PAST CONSULTATIONS REGARDING RECREATION FOR THE THREE FLORIDA BEACH MICE

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Habitat protection including construction of boardwalks GINS	2000	NPS	PKBM-5	▪ Conduct surveys prior to construction to avoid Perdido Key beach mouse burrows. ▪ Do not use heavy construction equipment to construct boardwalks. Install fences using hand labor and tools. ▪ Conduct an evaluation of the effectiveness of the project in protecting Perdido Key beach mouse habitat. ▪ All work shall be conducted in daylight. ▪ Boardwalks will be spaced so that few parking spots are located farther than 0.1 miles from the beach access.
Dune restoration and beach access improvements Gulf State Park[a]	2004	Service	PKBM-1	▪ Border construction areas with silt fencing to keep Perdido Key beach mice out of the impact area. ▪ Equipment and supplies used for the construction of the beach access, restoration of the existing access points and degraded dunes and washouts, and construction of restroom facilities, parking lots, fencing, and kiosks may not be parked within the access corridors. ▪ Restore the existing beach access by grading the same to resemble adjacent dunes, install sand fencing, fertilizing the dune, and plant native dune vegetation. ▪ Minimize permanent outdoor lighting.
Nourish the wet beach area for storm protection and recreational amenity [b]	2004	USACE	PKBM-1 and PKBM-2	▪ Construction equipment, and pipes must be located off the beach and outside of the beach access corridors. ▪ Minimize lighting through reduction, shielding, lowering, and placement to reduce the probability of disturbing foraging. ▪ Complete a project report. ▪ Plant native salt-resistant dune vegetation on restored dunes. ▪ Provide educational materials to residents and tourists.
Post hurricane Ivan facilities rebuild Perdido Key State Park [c]	2005	FDOT, FHWA, FEMA	PKBM-3	▪ Monitor all work. ▪ Restrict staging and storage locations to existing disturbed areas (e.g., paved parking areas, building foundations, boardwalks, and pavilions). ▪ Prevent parking along the FDOT right-of-way. ▪ Use Best Management Practices (BMPs) for the coastal environment (e.g., do not use clay materials during construction or place or remove fill material from vegetated areas). ▪ Restrict the work area to a 20-foot corridor around the proposed footprint. ▪ Minimize impacts to dune habitat. ▪ Restore habitat to pre-hurricane conditions. ▪ Use silt fencing to prevent Perdido Key beach mouse from entering the work area. ▪ Use proper trash disposal and structures to discourage nuisance species and potential predators. ▪ Educate construction personnel on the presence of beach mice and proper measures to minimize impacts.

[a] U.S. Fish and Wildlife Service. *Biological Opinion for Perdido Key Beach Mouse Habitat Protection, Johnson Beach Area, Perdido Key Area, Gulf Islands National Seashore*. September 20, 2000.
[a] U.S. Fish and Wildlife Service. *Biological Opinion for Intra-Agency Consultation on Proposed Dune Restoration Efforts and Beach Access Improvements at Gulf State Park (Florida Point and Gulf Shores)*. June 9, 2004.
[b] U.S. Fish and Wildlife Service. *Biological Opinion for City of Gulf Shores, City of Orange Beach, and Gulf State Park Proposal to Excavate 7 Million Cubic Yards of Sand From the Gulf of Mexico and Place 4.75 Million Cubic Yards Along 11 Miles of Beach Shoreline in Baldwin County, Alabama*. April 1, 2004. Note, wet beach is not beach mouse habitat.
[c] U.S. Fish and Wildlife Service. *Biological Opinion Perdido Key State Park Structure Rebuild Hurricane Ivan Recovery Efforts*. March 8, 2005.

4.4 FUTURE ECONOMIC IMPACTS TO RECREATION ACTIVITIES

135. Ten publicly owned or managed areas in proposed beach mice habitat allow public beach access.[99] Exhibit 4-3 characterizes the recreational amenities for these ten public areas. As detailed in Exhibit 4-4, numerous protections currently exist for dune areas. Existing regulations protect dune habitat through prohibiting collection or damaging of native vegetation (e.g., sea oats) and restrictions on beach access (e.g., persons are prohibited from damaging sand dunes or the vegetation thereon), beach driving, and pet access. Both State and Federal beach managers have implemented, or plan to implement, measures to reduce dune erosion and keep foot traffic out of beach mice habitat areas in order to comply with existing State laws. Managers for these public lands identified the following potential future projects that are likely to occur within proposed CHD areas:

- **Dune protection**: The parks may place signs informing visitors not to enter the dune area (Figure 4-1), construct and/or maintain boardwalks, construct and/or maintain fencing to reduce illegal trails through the dunes. Dune protection efforts are undertaken to protect the fragile dune ecosystem, though they are likely to also benefit the three Florida beach mice.[100] No efforts are expected to be undertaken for the three Florida beach mice; therefore, no estimated costs are associated with future dune protection efforts on public lands within proposed CHD.
- **Dune restoration**: The parks may undertake efforts to promote dune growth, plant sea oats, dune plant fertilization, and conduct beach nourishment. See Section 6 for further discussion of dune restoration activities.
- **Species management**: The Florida Division of Recreation and Parks, Alabama State Parks, and the Service are planning some supplemental feeding, predator control, and beach mouse relocation activities. Costs associated with these activities are included in Section 6.
- **Tropical storms and hurricanes**: NPS, Florida Division of Parks and Recreation, and Alabama State Parks may undertake facility re-construction projects after tropical storms and hurricanes. See Section 6 for further discussion of tropical storm and hurricane activities.

136. None of the planned projects by recreation managers in proposed CHD areas are anticipated to reduce the amount of beach recreation or beach visitation. According to public beach managers of three Florida beach mice proposed critical habitat areas, conservation measures for the three Florida beach mice will not affect visitation.[101] In the

[99] Tyndall Air Force Base beaches are generally open to military personnel and their families, public access is not allowed. U.S. Fish and Wildlife Service. *East Pass Re-Opening St. Andrew Bay, Bay County, Florida*. January 4, 2001.

[100] Personal communication with Harold Mitchell, Bureau Of Parks District 1, Division of Recreation and Parks, Florida Department of Environmental Protection, January 12, 2006.

[101] Personal communication with Jerry Eubanks, Superintendent of Gulf Islands National Seashore, January 17, 2006. Personal communication with Harold Mitchell, Bureau Of Parks District 1, Division of Recreation and Parks, Florida Department of Environmental Protection, January 12, 2006. Written communication Kelly Reetz, Gulf State Park, Alabama State Parks, Alabama Department of Conservation and Natural Resources, February 7, 2006. Personal communication Kelly Reetz, Gulf State Park, Alabama State Parks, Alabama Department of Conservation and Natural Resources, February 9, 2006.

case of Florida Division of Recreation and Parks, access restrictions and protection efforts are undertaken solely to protect the fragile dune ecosystem and also happen to benefit the three Florida beach mice.[102] At Gulf State Park in Alabama, dune access restrictions are in place similar to those at Florida State Parks.[103] Gulf State Park encourages visitors to use boardwalks to access the beach and posts signs to prevent wandering in the dunes to protect against dune blowouts during storm events. Dune protection efforts in 2000 at GINS to protect three Florida beach mice habitat did not impact visitation, and are not expected to in the future.[104]

FIGURE 4-1 DUNE PROTECTION SIGN

Sign at Topsail Road entrance at Topsail Hill Preserve State Park, Florida

[102] Personal communication with Harold Mitchell, Bureau Of Parks District 1, Division of Recreation and Parks, Florida Department of Environmental Protection, January 12, 2006.

[103] Written communication Kelly Reetz, Gulf State Park, Alabama State Parks, Alabama Department of Conservation and Natural Resources, February 7, 2006. Personal communication Kelly Reetz, Gulf State Park, Alabama State Parks, Alabama Department of Conservation and Natural Resources, February 9, 2006.

[104] Personal communication with Jerry Eubanks, Superintendent of Gulf Islands National Seashore, January 17, 2006.

EXHIBIT 4-3 PUBLIC LANDS AVAILABLE TO THE PUBLIC WITHIN PROPOSED CHD

UNIT	PARK	LAND MANAGER/OWNER	AMENITIES AVAILABLE
PKBM-1	Gulf State Park	Alabama State Parks	
PKBM-3	Perdido Key State Park	Florida Division of Recreation and Parks	
PKBM-5	Gulf Islands National Seashore	NPS	
CBM-1	Henderson Beach State Park	Florida Division of Recreation and Parks	
CBM-2	Topsail Hill Preserve State Park	Florida Division of Recreation and Parks	
CBM-3	Grayton Beach State Park	Florida Division of Recreation and Parks	
CBM-4	Deer Lake State Park	Florida Division of Recreation and Parks	
CBM-5	St. Andrews State Park	Florida Division of Recreation and Parks	
SABM-3	St. Joseph Peninsula State Park	Florida Division of Recreation and Parks	
	Eglin Air Force Base	DoD	

Key

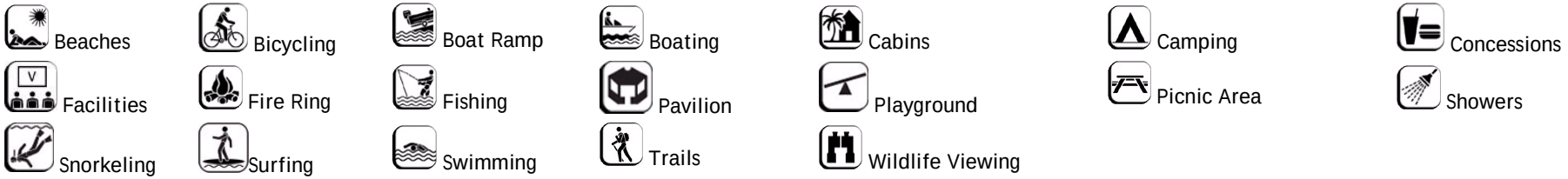

EXHIBIT 4-4 CURRENT BEACH REGULATIONS WITHIN THREE FLORIDA BEACH MICE CRITICAL HABITAT

JURISDICTION	REGULATION
BEACH ACCESS	
Florida	Persons are prohibited from damaging or cause to be damaged sand dunes or the vegetation growing thereon. [a]
Escambia County	Prevent beach pedestrian traffic from destroying native vegetation by providing boardwalks and dune walkover structures. Limit or provide alternate routes or public access in environmentally sensitive beach dune areas (i.e., dunes undergoing restabilization). [b]
BEACH DRIVING	
Alabama	It is unlawful to operate a motor vehicle, motorcycle, or motor driven cycle on beaches and sand dunes.[c]
Florida	Vehicular driving on, over, or across any sand dunes or native stabilizing vegetation of the dune system of coastal beaches is prohibited. [d]
Tyndall AFB	Base Instruction 32-7001 prohibits driving on the dunes or dune vegetation. Authorization is required from 325 Civil Engineer Squadron, Natural Resource Flight prior to accessing Tyndall AFB beaches by vehicle. [e]
Gulf County	Driving allowed in select areas with a valid permit. [f]
Walton County	It is unlawful for any person to drive or cause to be driven an unauthorized vehicle on beaches of the county. [g]
Escambia County	Prevent motor vehicle traffic on beaches and dune areas excluding publicly authorized vehicles. [b]
PETS	
Florida State Parks	Pets are permitted in designated day-use areas (e.g., not on the beach), they must be kept on a hand-held leash that is six-feet or shorter and be well-behaved at all times. [h]
Walton County	Dogs are prohibited from public beaches. [i]
Bay County	Dogs are prohibited from public beaches.
Okaloosa County	Dogs are prohibited from public beaches.
NATIVE VEGETATION	
Florida	It is unlawful for any purpose to cut, harvest, remove, or eradicate any of the grasses commonly known as sea oats or *Uniola paniculata* and *Coccolobis uvifera* from any public or private land.[j]
Alabama	Picking sea oats is prohibited. [k]

[a] Florida Statute Title 11 Chapter 161 Section 53.

[b] Escambia County, Code of Ordinances Chapter 12 Policy 12.A.2.5: Coastal Land Use Category Restrictions.

[c] Code of Alabama Section 32-1-7.

[d] Florida Statute Title 11 Chapter 161 Section 58.

[e] U.S. Fish and Wildlife Service. Biological Opinion on The Reopening of The Historic East Pass Between the Gulf of Mexico and St. Andrew Bay on Shell Island. January 4, 2001.

[f] Gulf County Code of Ordinances Number 97-02.

[g] Walton County Code of Ordinances Section 22-32.

[h] Florida State Parks. State Park Pet Rules. Accessed at http://www.floridastateparks.org/information/petpolicy.cfm on January 4, 2006.

[i] Walton County Code of Ordinances Section 5-32

[j] Florida Statute Title 11 Chapter 161 Section 242.

[k] "Alabama and Florida have statutes which generally protect sea oats against picking, but these laws provide no protection against loss from land conversion activities." U.S. Fish and Wildlife Service. Perdido Key Beach Mouse Species Accounts. Accessed at http://www.fws.gov/endangered/i/a/saa8f.html on January 6, 2006.

SECTION 5 | POTENTIAL ECONOMIC IMPACTS OF TROPICAL STORMS AND HURRICANES

137. Tropical storms and hurricanes can reduce population densities and destroy habitat of the three Florida beach mice. Following storm events, costs may be incurred by Federal, State, and local agencies to restore three Florida beach mice habitat. This section describes the past economic impacts of conservation efforts for the three Florida beach mice related to tropical storms and hurricane events in proposed CHD areas. Next, the section discusses future beach protection projects that may be undertaken in order to protect properties from future storm damage. The data requirements for estimation of economic impacts of conservation efforts associated with future tropical storm and hurricane events are also discussed in this section. This analysis recognizes hurricanes have a wide-ranging effect on the economy, impacting the costs of building materials, real estate, etc., however, this analysis only considers the costs of beach mice conservation efforts related to storm events.

5.1 SUMMARY OF ECONOMIC IMPACTS RELATED TO TROPICAL STORMS AND HURRICANES

138. While future tropical storms and hurricanes may destroy habitat for the three Florida beach mice, predicting the future locations, intensity, damage, and response to future storms is not feasible for the purposes of this analysis. Some future beach restoration efforts may occur in proposed CHD areas in response to past storms, however, generally the majority of beach nourishment does not occur in beach mouse habitat. Nine beach nourishment feasibility studies are expected to be undertaken in the counties containing proposed CHD, some of which may occur within proposed CHD. This analysis assumes one formal consultation will be completed for each of these nine feasibility studies; the administrative cost consultations are included in Appendix A. Costs of three Florida beach mice conservation efforts associated with these beach nourishment projects are not estimated as the location and scale of these projects have yet to be determined.

5.2 PAST IMPACTS OF TROPICAL STORMS AND HURRICANES

139. Tropical storms and hurricanes have affected the population and habitat of the three Florida beach mice in the past, in particular hurricanes Opal (1995), Danny (1997), Earl (1998), Georges (1998), Ivan (2004), Dennis (2005), Katrina (2005), and Rita (2005), and tropical storm Isadore (2002). This section examines past economic impacts resulting from conservation efforts for the three Florida beach mice resulting from tropical storm and hurricane events.

140. Five consultations regarding tropical storms and hurricanes for the three Florida beach mice have occurred. As demonstrated in Exhibit 5-1, these consultation efforts addressed restoration and clean-up efforts (i.e., rebuilding of facilities and infrastructure), and storm protection (i.e., construction of protective berms and beach nourishment).

EXHIBIT 5-1 SUMMARY OF PAST CONSULTATIONS REGARDING TROPICAL STORMS AND HURRICANES FOR THE THREE FLORIDA BEACH MICE

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Construction of emergency storm berm [a]	2003	FEMA	PKBM-1 and PKBM-2	▪ A new vehicle and equipment access corridor will be constructed on the edge of Perdido Key beach mouse habitat. ▪ The current vehicle access path will be abandoned and restored to dune contours and replanted with native dune vegetation. ▪ No fueling equipment will be placed within Perdido Key beach mouse habitat.
Nourish the wet beach area for storm protection and recreational amenity [b]	2004	USACE	PKBM-1 and PKBM-2	▪ Construction equipment, and pipes must be located off the beach and outside of the beach access corridors. ▪ Minimize lighting through reduction, shielding, lowering, and placement to reduce the probability of disturbing foraging. ▪ Complete a project report. ▪ Plant native salt-resistant dune vegetation on restored dunes. ▪ Provide educational materials to residents and tourists.
Post hurricane Ivan road rebuild Gulf Islands National Seashore [c]	2005	NPS	PKBM-5	▪ Minimize impacts to the Perdido Key beach mouse. ▪ Monitor the road re-building work and subsequent use of the road. ▪ Submit report on project impacts to the Perdido Key beach mouse to the Service. ▪ Incorporate consideration of removing the eastern 0.5 miles of the park road and restoration of PKBM habitat into the GINS Management Plan. ▪ Construct dune crossovers. ▪ Minimize construction footprint. ▪ Do not deposit or remove fill material on vegetated or over wash areas. ▪ Restore dune habitat with native vegetation.
Construction of emergency berms [d]	2005	FEMA	CBM-2, CBM-3, CBM-4, SABM-1, PKBM-2, and PKBM-4	▪ Berms must mimic the natural dune system to the maximum extent practicable including berm material quality, configuration, shape, and location. ▪ Beach access and construction equipment and materials must be staged and stored in a manner that will minimize impacts to beach mice. ▪ Minimize lighting to reduce the possibility of disrupting beach mouse activities. ▪ Plant dune vegetation to accelerate the berm stabilization and restore Perdido Key beach mouse habitat.

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Post hurricane Ivan facilities rebuild Perdido Key State Park [e]	2005	FDOT, FHWA, FEMA	PKBM-3	▪ Monitor all work. ▪ Restrict staging and storage locations to existing disturbed areas (e.g., paved parking areas, building foundations, boardwalks, and pavilions). ▪ Prevent parking along the FDOT right-of-way. ▪ Use Best Management Practices (BMPs) for the coastal environment (e.g., do not use clay materials during construction or place or remove fill material from vegetated areas). ▪ Restrict the work area to a 20-foot corridor around the proposed footprint. ▪ Minimize impacts to dune habitat. ▪ Restore habitat to pre-hurricane conditions. ▪ Use silt fencing to prevent Perdido Key beach mouse from entering the work area. ▪ Use proper trash disposal and structures to discourage nuisance species and potential predators. ▪ Educate construction personnel on the presence of beach mice and proper measures to minimize impacts.

[a] U.S. Fish and Wildlife Service. *Biological Opinion for City of Orange Beach Construction of an Emergency Storm Berm*. November 21, 2003.
[b] U.S. Fish and Wildlife Service. *Biological Opinion for City of Gulf Shores, City of Orange Beach, and Gulf State Park Proposal to Excavate 7 Million Cubic Yards of Sand From the Gulf of Mexico and Place 4.75 Million Cubic Yards Along 11 Miles of Beach Shoreline in Baldwin County, Alabama*. April 1, 2004. Note, wet beach is not beach mouse habitat.
[c] U.S. Fish and Wildlife Service. *Post Hurricane Ivan East Road Full Rebuild Gulf Islands National Seashore Johnson Beach- Perdido Key Unit Biological Opinion*. May 31, 2005.
[d] U.S. Fish and Wildlife Service. *Category B Emergency Beach Restoration Biological Opinion*. April 8, 2005.
[e] U.S. Fish and Wildlife Service. *Biological Opinion Perdido Key State Park Structure Rebuild Hurricane Ivan Recovery Efforts*. March 8, 2005.

141. Beach and dune protection, restoration, and maintenance projects within the units proposed for critical habitat and areas proposed for exclusion that did not result in consultation have also occurred. Following Hurricane Ivan, restoration efforts including dune reconstruction, replanting of native vegetation, and rebuilding of boardwalks were undertaken.[105] Exhibit 5-2 presents actual and projected costs of these dune restoration efforts in response to Hurricane Ivan on Perdido Key between 2004 and 2005, undertaken to protect developed property. When Hurricane Opal caused erosion throughout the Florida Panhandle coast in 1995, beach and dune restoration was undertaken where upland developed property was left vulnerable to storms.[106] Sand berms were constructed and stabilized with sand fencing and sea oats. Full recovery did not occur before Hurricane Georges impacted the area again in 1998. Additional damage caused by Hurricane Georges required dune and beach restoration of the most eroded developed areas. It is important to remember that these projects were not undertaken specifically for the three Florida beach mice, rather to protect developed property; however, the projects did benefit the species.

[105] Hurricane Ivan made landfall in Baldwin County, Alabama as a lower-speed category-3 storm. Hurricane Ivan's storm surge was very strong and extensively damaged habitat.

[106] Florida Department of Environmental Protection. *Strategic Beach Management Plan Panhandle Gulf Coast Region*. Office of Beaches and Coastal Systems. October 2, 2000.

EXHIBIT 5-2 ACTUAL AND PROJECTED COSTS ASSOCIATED WITH DUNE PROTECTION, RESTORATION, AND MAINTENANCE TO PROTECT PRIVATE PROPERTY FOLLOWING STORM EVENTS

ACTIVITY	LOCATION	COST	SOURCE
ACTUAL COSTS			
Dune reconstruction (300 linear feet)	Perdido Key, Escambia County	$46,000	Service [a]
Dune reconstruction	Perdido Key, Escambia County	$5,623,000	Florida Department of Environmental Protection [b]
Dune replanting (75 acres)	Perdido Key, Escambia County	$637,000	Escambia County [b]
Dune reconstruction (28 acres)	Perdido Key, Escambia County	$2,661,000	Escambia County [b]
Rebuilding boardwalks (1,000 linear feet)	Walton County	$225,000	Walton County [b]
PROJECTED COSTS			
Beach nourishment (1 mile)	Walton County	$4,007,000 - $4,580,000	USACE [c]
Dune restoration (1 mile)	Walton County	$601,000 - $687,000	USACE [c]

Sources:
[a] U.S. Fish and Wildlife Service. 2006. Draft Rational and Decisions for Development Costs Determined to be Necessary to Conserve Perdido Key Beach Mouse.
[b] RCF Economic and Financial Consulting, Inc. *Business Plan for the Perdido Key Beach Mouse Conservation Fund*. July 1, 2005.
[c] U.S. Army Corps of Engineers. *Reconnaissance Report Section 905(b) Analysis Walton, County, Florida, Shore Protection*. June 2003.

5.2.1 ESTIMATING PAST CONSERVATION EFFORT COSTS

142. While the three Florida beach mice benefit from dune protection, restoration, and maintenance activities these efforts were not undertaken for the conservation of the beach mice. For each of the five formal consultations for tropical storms and hurricanes, the Service recommended some form of dune habitat reconstruction that included restoration and/or planting native vegetation for the three Florida beach mice. The USACE estimates dune restoration projects cost about $130 per linear foot (based on 15 cubic yards of sand per linear foot of beach habitat and include vegetation and dune stabilization structures).[107] Costs of past conservation efforts per project are calculated by multiplying the length of the project (in linear feet) by the per unit cost of $130. The total cost of dune restoration for the three Florida beach mice associated with tropical storms and hurricane response projects is estimated to be $6.6 million, presented in Exhibit 5-3.

[107] U.S. Army Corps of Engineers. *Reconnaissance Report Section 905(b) Analysis Walton, County, Florida, Shore Protection*. June 2003.

EXHIBIT 5-3 ESTIMATED PAST COSTS OF THREE FLORIDA BEACH MICE CONSERVATION EFFORTS OF TROPICAL STORMS AND HURRICANES, 2003 TO 2005

UNIT	EFFORT	APPROXIMATE PROJECT SIZE (LINEAR FEET)	COST PER LINEAR FOOT	TOTAL COST
PKBM-1	Construction of emergency storm berm	50	$130	$7,000
	Beach nourishment	5,510	$130	$716,000
	Subtotal			$723,000
PKBM-2	Construction of emergency storm berm	50	$130	$7,000
	Beach nourishment	6,065 [a]	$130	$788,000
	Construction of emergency berm	12,475	$130	$1,622,000
	Subtotal			$2,417,000
PKBM-3	Facilities rebuild	334	$130	$43,000
PKBM-4	Construction of emergency berm	10,750 [a]	$130	$1,398,000
PKBM-5	Construction of emergency berm	1,900 [a]	$130	$247,000
CBM-2	Construction of emergency berm	2,745 [a]	$130	$357,000
CBM-3	Construction of emergency berm	4,000 [a]	$130	$520,000
CBM-4	Construction of emergency berm	1,285 [a]	$130	$167,000
SABM-1	Construction of emergency berm	5,900 [a]	$130	$767,000
Total				**$6,638,000**

[a] Approximate project size was estimated as the linear extent of proposed critical habitat minus the linear extent of public lands. FEMA funds are used to construct Category B emergency berms to protect lives or developed properties from waves and flooding and do not apply to public lands.
U.S. Fish and Wildlife Service. *Category B Emergency Beach Restoration Biological Opinion*. April 8, 2005.
Service, GIS data, December 2005.

5.3 FUTURE BEACH PROTECTION EFFORTS

143. Future beach protection and restoration efforts are likely to occur in units proposed for critical habitat and areas proposed for exclusion over the next 20 years following storm events. State planning documents and Federal agencies identify beach protection efforts as likely to occur in units proposed for critical habitat and areas proposed for exclusion in the next 20 years.

Florida's Strategic Beach Management Plan

144. The State of Florida's Strategic Beach Management Plan developed by the Department of Environmental Protection is a multiyear repair and maintenance strategy of beach erosion control, beach preservation, restoration, and nourishment, and storm and hurricane protection to:

- Encourage regional approaches to ensure the geographic coordination and sequencing of prioritized projects;
- Reduce equipment mobilization and demobilization costs;

- Maximize the infusion of beach-quality sand into the system;
- Extend the life of beach nourishment projects and reduce the frequency of nourishment;
- Promote inlet sand bypassing to replicate the natural flow of sand interrupted by improved, modified or altered inlets and ports; and
- Implement those projects that contribute most significantly to addressing the State's beach erosion problems.[108]

The Florida Bureau of Beaches and Coastal Systems estimates that $67 million in Federal, State, and local spending will be required in the Panhandle Gulf Coast region from fiscal year 2005 to 2015 for beach protection efforts to implement the State's Strategic Beach Management Plan.[109]

U.S. Army Corps of Engineers

145. USACE states that the number and severity of tropical storms and hurricanes in the Florida panhandle and Baldwin County, Alabama, in the last ten years have prevented natural dune restoration.[110] These areas are now ready for feasibility studies on beach nourishment.[111] USACE estimates that nine beach nourishment feasibility studies will be undertaken in the counties containing units proposed for critical habitat and areas proposed for exclusion during the next 20 years, some of which may occur in proposed CHD.[112] Each feasibility study will attempt to identify source sites with suitable sand in sufficient quantities to meet project requirements for beach nourishment and determine if the beach nourishment project demonstrates a positive cost to benefit ratio. USACE will complete a formal consultation at the end of each feasibility study. Conservation efforts likely to be undertaken for the three Florida beach mice include:

- Avoid impacting three Florida beach mice food source;
- Do not create a un-vegetated wide beach berm;[113]
- Minimize wind blown sands;
- Place equipment outside of three Florida beach mice habitat; and
- Re-vegetation.

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[108] Florida Department of Environmental Protection. *State of Florida Strategic Beach Management Plan*. October 2, 2000.

[109] Florida Bureau of Beaches and Coastal Systems. *Florida Beach Management Program: Long Range Budget Plan - FY 2005/06*. Florida Department of Environmental Protection. August 23, 2005.

[110] Personal communication with Dr. Susan Rees, Mobile District, U.S. Army Corps of Engineers, January 26, 2006.

[111] Federal beach nourishment projects must meet two requirements. The first is the beach nourishment must be performed on publicly accessible beaches. The second is the beach nourishment project must demonstrate a positive cost to benefit ratio.

[112] It is likely 1.5 feasibility studies will be undertaken in each county within units proposed for critical habitat and areas proposed for exclusion over the next 20 years.

[113] That is, do not create a wide non-vegetated beach area.

The cost of these conservation efforts for the three Florida beach mice is expected to be minimal for beach nourishment projects, especially in comparison to total project costs -- beach nourishment projects cost on average $2.5 million per mile.[114] Costs of recent beach nourishment projects have ranged from $1 million to $35 million. Again, beach mice will benefit from beach nourishment projects, but they are not the focus of these efforts.

Federal Emergency Management Agency

146. The number of FEMA emergency dune restoration and facility rebuilding projects in units proposed for critical habitat and areas proposed for exclusion over the next 20 years will be determined by the number of tropical storms and hurricanes that affect the area over that time period.[115] Because the frequency of future storms is not known, it is not possible to accurately predict how many FEMA projects will occur over the next 20 years. However, FEMA estimates that one to two projects a year is possible.[116] Future conservation efforts will also depend on the type and scope of the project. It is likely the conservation efforts will represent the implementation of best management practices. Best management practices include:

- Predator-proof trash receptacles;
- Construction and maintenance of boardwalks;
- Use of native vegetation in landscaping; and
- Prohibiting feral cats.[117]

Since FEMA Public Assistance is a reimbursement program, no costs in addition to the administrative cost of consultation would be incurred.[118] In addition, conservation efforts will be minimal if the local or State government is able to implement the project before the three Florida beach mice move back into the dune areas.

147. Lastly, FEMA often leads emergency road repair projects following hurricanes. Due to the urgency of these projects, the Service does not comment on them extensively, usually recommending minimal conservation efforts, such as the following best management practices:[119]

- Stage equipment and materials away from beach mouse habitat;
- Locate parking areas for the construction crew away from beach mouse habitat;

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[114] Personal communication with Dr. Susan Rees, Mobile District, U.S. Army Corps of Engineers, January 26, 2006.

[115] Written communication from Brett Bowen, Federal Emergency Management Agency, February 25, 2006.

[116] Written communication from Brett Bowen, Federal Emergency Management Agency, February 25, 2006.

[117] Written communication from Panama City, Florida Field Office Personnel, February 28, 2006.

[118] Written communication from Brett Bowen, Federal Emergency Management Agency, February 25, 2006.

[119] Personal communication with personnel of US Fish and Wildlife Service Regional Field Office in Panama City on March 30, 2006.

- Use white Bahama rock for road shoulders;
- Limit road shoulders to three feet in width;
- Plant native grasses in road shoulder areas;
- Properly dispose of trash and debris off-site;
- Avoid using clay for the road base;
- Avoid using fertilizer or lime;
- Avoid depositing fill material in or removing fill material from beach mouse habitat; and
- Avoid using hay bales in beach mouse habitat.

Given the uncertainty surrounding future storm events and related activities that may affect the three Florida beach mice, this analysis does not estimate future costs of conservation efforts for the beach mice that may be incurred by FEMA.

5.4 FUTURE STORM DAMAGE TO HABITAT

148. In order to accurately estimate costs of three Florida beach mice conservation efforts related to storm events, a series of assumptions must be made about future storm activity and human response to the damage (e.g., would structures be rebuilt or replaced). These assumptions would include predicting strike locations and intensity of future storms, the magnitude of damage likely to be caused, and the likely human response to the damage. The analysis would then need to determine the conservation efforts that would be recommended for the three Florida beach mice. The Service states the three Florida beach mice are adapted to the effects of tropical storms and hurricanes, and storm events alone can be beneficial to beach mice as they maintain costal habitat at an early successional stage.[120] Because of the high level of uncertainty associated with predicting future storm events, this analysis does not quantify costs of conservation efforts resulting from future storm damage.

149. Some information is available to predict storm events and related damage, however, information is not available to predict the likely human response to damage and the conservation efforts for the three Florida beach mice likely to be recommended for these storm response activities. Models are available that estimate the annual probabilities of hurricane landfall for the counties containing proposed CHD, such as the Colorado State University, United States Landfalling Hurricane Probability Project.[121] A general estimate of the number of structures that may be impacted by various levels of future storm events is also available, the USACE developed a preliminary estimate of the

[120] Written communication from U.S. Fish and Wildlife Service Personnel, March 24, 2006.

[121] Gray, William, Colorado State University, United States Landfalling Hurricane Probability Project. Available at http://www.e-transit.org/hurricane/welcome.html Accessed January 17, 2006.

percent of existing structures that would be likely be impacted by various future storm events in Walton County, Florida.[122]

150. Not predicting tropical storms and hurricanes is expected to have a downward impact on estimating total cost of conservation efforts for the three Florida beach mice. Most response to storm events is baseline and incremental to three Florida beach mice proposed CHD. For example, dune restoration and protection efforts (e.g., beach nourishment, and debris cleanup) are a result of the storm event not the three Florida beach mice, however, some additional efforts may be required by the proposed CHD such as conducting a consultation.

[122] U.S. Army Corps of Engineers. Reconnaissance Report Section 905(b) Analysis Walton, County, Florida, Shore Protection. June 2003.

SECTION 6 | POTENTIAL ECONOMIC IMPACTS ON OTHER ACTIVITIES

151. This section discusses impacts of three Florida beach mice conservation efforts on dredging and disposal operations, species management and habitat protection, road construction and maintenance, and military activities. The first section provides a summary of all of the impacts of the above-mentioned activities. The sections that follow provide more detailed information for each activity.

6.1 SUMMARY OF ECONOMIC IMPACT ON OTHER ACTIVITIES

152. This section summarizes the economic impact of three Florida beach mice conservation efforts on dredging and disposal operations, species management and habitat protection, road construction and maintenance, and military activities.

6.1.1 PAST ECONOMIC IMPACTS ON OTHER ACTIVITIES

153. The past costs of conservation efforts for the three Florida beach mice associated with dredging and disposal operations, species management and habitat protection, road construction and maintenance, and military activities are estimated to be $2.8 million in undiscounted dollars. The present value of these past costs are approximately $3.1 million using a three percent discount rate, or $3.6 million using a seven percent discount rate. Exhibit 6-1 summarizes the past costs of these other activities by each unit and activity. Most past costs (75 percent) are related to species management and habitat protection activities undertaken by public land managers.

6.1.2 FUTURE ECONOMIC IMPACTS ON OTHER ACTIVITIES

154. Based on a projection of reasonably foreseeable activities, the future costs of conservation efforts for the three Florida beach mice within proposed critical habitat equal approximately $2.9 million in undiscounted dollars for dredging and disposal operations, species management and habitat protection, road construction and maintenance, and military activities. The present value of potential future costs is approximately $2.2 million using a three percent discount rate, or $1.6 million using a seven percent discount rate. Exhibit 6-2 summarizes expected future costs of these other activities by unit and activity. Most future costs (59 percent) are expected to be associated with road construction and maintenance activities.

EXHIBIT 6-1 SUMMARY OF ESTIMATED PAST THREE FLORIDA BEACH MICE CONSERVATION EFFORTS FOR OTHER ACTIVITIES

UNIT	DREDGING & DISPOSAL OPERATIONS	SPECIES MANAGEMENT	TRANSPORTATION	MILITARY	TOTAL UNDISCOUNTED DOLLARS	PRESENT VALUE (3%)	PRESENT VALUE (7%)
PKBM-1	$0	$541,000	$0	n/a	$541,000	$584,000	$655,000
PKBM-2	$0	$94,000	$0	n/a	$94,000	$109,000	$133,000
PKBM-3	$36,000	$167,000	$0	n/a	$203,000	$225,000	$260,000
PKBM-4	$0	$94,000	$0	n/a	$94,000	$109,000	$133,000
PKBM-5	$0	$904,000	$25,000	n/a	$929,000	$1,073,000	$1,295,000
CBM-1	$0	$31,000	$0	n/a	$31,000	$38,000	$50,000
CBM-2	$0	$31,000	$0	n/a	$31,000	$38,000	$50,000
CBM-3	$0	$31,000	$0	n/a	$31,000	$38,000	$50,000
CBM-4	$0	$31,000	$0	n/a	$31,000	$38,000	$50,000
CBM-5	$0	$46,000	$0	$104,000	$150,000	$168,000	$196,000
SABM-1	$0	$42,000	$0	$104,000	$146,000	$164,000	$192,000
SABM-2	$0	$27,000	$0	n/a	$27,000	$34,000	$47,000
SABM-3	$0	$31,000	$416,000	$0	$447,000	$454,000	$466,000
Total	**$36,000**	**$2,070,000**	**$441,000**	**$208,000**	**$2,755,000**	**$3,073,000**	**$3,579,000**

Note: Totals may not sum due to rounding.

EXHIBIT 6-2 SUMMARY OF ESTIMATED FUTURE THREE FLORIDA BEACH MICE CONSERVATION EFFORTS FOR OTHER ACTIVITIES

UNIT	DREDGING & DISPOSAL OPERATIONS	SPECIES MANAGEMENT	TRANSPORTATION	MILITARY	TOTAL UNDISCOUNTED DOLLARS	PRESENT VALUE (3%)	PRESENT VALUE (7%)
PKBM-1	$0	$8,000	$0	n/a	$8,000	$7,000	$7,000
PKBM-2	$0	$0	$0	n/a	$0	$0	$0
PKBM-3	$0	$300,000	$0	n/a	$300,000	$223,000	$159,000
PKBM-4	$0	$0	$39,000	n/a	$39,000	$37,000	$29,000
PKBM-5	$0	$0	$0	n/a	$0	$0	$0
CBM-1	$0	$0	$0	n/a	$0	$0	$0
CBM-2	$0	$0	$0	n/a	$0	$0	$0
CBM-3	$0	$0	$0	n/a	$0	$0	$0
CBM-4	$0	$0	$0	n/a	$0	$0	$0
CBM-5	$0	$0	$0	$442,000	$442,000	$329,000	$234,000
SABM-1	$0	$0	$0	$442,000	$442,000	$329,000	$234,000
SABM-2	$0	$0	$0	n/a	$0	$0	$0
SABM-3	$0	$0	$1,662,000	$0	$1,662,000	$1,267,000	$920,000
Total	**$0**	**$308,000**	**$1,701,000**	**$884,000**	**$2,892,000**	**$2,191,000**	**$1,583,000**
Annualized						**$147,000**	**$149,000**

Note: Totals may not sum due to rounding.

6.2 DREDGING AND DISPOSAL OPERATIONS

155. Dredging and disposal operation are identified in the Proposed Rule as an activity that may alter dune structure and stability, soil compaction levels, and substrate characteristics. There has been one consultation and an amendment to that consultation regarding dredging and disposal operations for the East Pass Navigational Channel between St. Andrew Bay and the Gulf of Mexico for the three Florida beach mice. An additional dredge and disposal operation has been impacted by conservation efforts for the three Florida beach mice in the past, the East Perdido Key Pass Navigational Channel.

East Pass Navigational channel

156. In 2001, the USACE proposed reopening the historical East Pass inlet between Shell Island, Tyndall AFB and West Crooked Island connecting the Gulf of Mexico and St. Andrew Bay.[123] The project proposed excavating sand and depositing it by pump on the beach, creating rows of dunes between the existing dune line and the water's edge. After consultation with the Service, a five year permit was issued. In 2002, the consultation was amended to plant sea oats outside of the permitted time frame (i.e., during sea turtle nesting season).

157. Exhibit 6-3 presents the conservation efforts associated with these two consultations for this project. The total cost of planting 80,000 sea oats is $36,000.[124] Total predator control efforts undertaken by Tyndall Air Force Base (AFB) from 2001 to 2005 cost about $18,000.[125] The costs of predator control are included in the military activities section below because Tyndall AFB expects to continue these efforts in the future unrelated to dredging and disposal operations; therefore, the total past costs for dredging and disposal operation at East Pass inlet related to mice conservation efforts are $36,000.

158. Future dredging and disposal operations at East Pass three Florida beach mice conservation efforts are expected to be similar to past efforts (i.e., planting of sea oats). The future cost of planting sea oats is $36,000 per effort. The number of future dredging and disposal operations at East Pass are uncertain and therefore not estimated in this analysis.

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[123] U.S. Fish and Wildlife Service. East Pass Re-Opening St. Andrew Bay, Bay County, Florida. January 4, 2001.

[124] The retail cost of a sea oat plant is $0.45. Native Plant Growers, Inc. Accessed at http://www.nativeplantgrowers.com/specials.asp on February 28, 2006.

[125] Written communication from Tyndall Air Force Base Personnel, March 3, 2006.

EXHIBIT 6-3 SUMMARY OF PAST CONSULTATIONS REGARDING DREDGING AND DISPOSAL OPERATIONS FOR THE THREE FLORIDA BEACH MICE

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
East Pass Re-Opening [a]	2001	USACE	CBM-5	▪ Pre- and post-project trapping for beach mice in the project area and relocation if appropriate. ▪ All placement of the disposal materials for dune restoration will be seaward of the existing primary dune and other extensive area of vegetation. ▪ The dunes will be planted with appropriate species of dune vegetation. ▪ Control of non-native predators.
East Pass Re-Opening Amendment [b]	2002	USACE	CBM-5	▪ No additional conservation measures are recommended for the planting of 80,000 sea oats.

[a] U.S. Fish and Wildlife Service. *East Pass Re-Opening St. Andrew Bay, Bay County, Florida*. January 4, 2001.
[b] U.S. Fish and Wildlife Service. *Amendment No. 1 to Biological Opinion East Pass Re-Opening St. Andrew Bay, Bay County, Florida*. May 8, 2002.

East Pass Navigational channel

159. The USACE routinely conducts channel dredging and disposal operations on East Perdido Key Pass adjacent to PKBM-1.[126] Normal operations do not deposit dredged materials in PKBM habitat, but rather to the west of habitat. Following Hurricane Ivan the Service requested the USACE deposit dredge materials in Gulf State Park (PKBM-1) to restore dunes in PKBM habitat. The project benefited both the PKBM and the USACE as the previously designated disposal site was too small for large volume of material dredged. Additional coordination efforts between USACE, State agencies, the Service, and Gulf State Park were required to place dredge spoils outside of the previously designated area; however, it also provided a level of convenience to the USACE by allowing the placement of dredge spoils adjacent to the navigational channel. Therefore, no additional costs of conservation efforts for the three Florida beach mice were incurred by the USACE.

160. It is possible the USACE will use Gulf State Park as a site for placing dredge spoils in the future following storm events if the Service requests such a project. Past efforts were mutually beneficial and did not engender incremental costs for conservation efforts, this analysis assumes future efforts similarly do not engender incremental costs.

6.2.2 SUMMARY OF DREDGING AND DISPOSAL OPERATION COSTS

161. In the past, there have been two dredge and disposal operations that have been affected by conservation efforts for the three Florida beach mice. The total cost of these past conservation efforts is $36,000.

162. Future dredge and disposal operations within proposed CHD may be undertaken in response to tropical storms and hurricanes. The three Florida beach mice conservation efforts associated with these future projects are expected to be similar to past efforts and

[126] Personal communication with Larry Parsons, Mobile District, U.S. Army Corps of Engineers, January 12, 2006.

range from no incremental costs to $36,000 for planting sea oats. Due to the uncertain number of future dredge and disposal operation projects likely to affect proposed CHD, this analysis does not estimate future costs of conservation efforts for the three Florida beach mice associated with dredging and disposal operations.

6.3 SPECIES MANAGEMENT AND HABITAT PROTECTION

163. This section analyzes past and future economic impacts associated with three Florida beach mice management activities. First, the costs of existing and proposed species and habitat management are described by management entity. Next, this section summarizes the total costs of past and future species management and habitat protection.

6.3.1 SPECIES MANAGEMENT AND HABITAT PROTECTION BY LAND MANAGER

164. Three consultations have been conducted for species management and habitat protection (Exhibit 6-4). In 2000, NPS completed a consultation to install boardwalks at GINS (PKBM-5) to protect PKBM habitat. In 2001, the Service completed a consultation on reestablishment efforts. In 2003, the Service completed an intra-agency consultation on issuing permits for three Florida beach mice surveying. Each of these efforts are discussed below by manager.

EXHIBIT 6-4 SUMMARY OF PAST CONSULTATIONS REGARDING SPECIES MANAGEMENT AND HABITAT PROTECTION FOR THE THREE FLORIDA BEACH MICE

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Perdido Key Beach Mouse Habitat Protection, Johnson Beach Area, Perdido Key Area, Gulf Islands National Seashore	2000	NPS	PKBM-5	▪ GINS shall evaluate the effectiveness of the proposed action on protecting PKBM habitat. ▪ The GINS shall incorporate into their GINS-Perdido Key Area management plan the potential need to remove the eastern 0.5 mile of the park road to all traffic and restore PKBM habitat. ▪ A PKBM management program shall continue to be implement and/or developed on GINS-Perdido Key Area. ▪ GINS shall ensure that the monitoring, management, protection, and public outreach programs for PKBM are satisfactorily completed. ▪ GINS shall ensure their staff or contractors conducting work at GINS-Perdido Key understand the protection of PKBM in accordance with the ESA, and the specific requirement contained herein for the proposed action.
Reestablishment	2001	Service	PKBM-3 and PKBM-5	▪ All work conducted for this project shall conform and follow standard protocol for trapping, capturing, handling, holding, transporting, and releasing PKBM. ▪ The status of the populations at GINS and PKSRA shall be determined prior to the translocation supplementation. ▪ The number of PKBM, if any, to be translocated from GINS to PKSRA shall be determined with consensus by the interagency PKBM team. ▪ Post-translocation evaluation and monitoring at GINS and PKSRA shall be completed.
Surveying	2003	Service	All	▪ Guidelines to assure standardized data collection and minimization of mortality (e.g., two traps per trapping station are desirable, but one trap is acceptable).

[a] U.S. Fish and Wildlife Service. *Post Hurricane Ivan East Road Full Rebuild Gulf Islands National Seashore Johnson Beach- Perdido Key Unit Biological Opinion*. May 31, 2005.
[b] U.S. Fish and Wildlife Service. *Category B Emergency Beach Restoration Biological Opinion*. April 8, 2005.
[c] U.S. Fish and Wildlife Service. *Biological Opinion Perdido Key State Park Structure Rebuild Hurricane Ivan Recovery Efforts*. March 8, 2005.

U.S. Fish and Wildlife Service

165. The Service has undertaken three Florida beach mice management and habitat protection efforts and funded outside entities' efforts since 1985.[127] These efforts and related costs are presented in Exhibit 6-5. The total cost of past species management and habitat protection efforts undertaken by the Service in proposed CHD is $960,000.

EXHIBIT 6-5 PAST SPECIES MANAGEMENT AND HABITAT PROTECTION UNDERTAKEN BY THE SERVICE

CONSERVATION EFFORT	UNIT(S)	YEAR(S)	PROJECT COST
Habitat restoration [a]	SABM-1, CBM-5	1997	$30,000
Translocation and surveys [a]	All	1994 to 1999	$305,000
Burrow research [a]	All	2002 to 2003	$50,000
Hurricane research [b]	PKBM-1, PKBM-2, PKBM-3, PKBM-4, PKBM-5	2005	$76,000
Dune restoration and beach access improvements Grant [c]	PKBM-1	2001 to 2005	$248,000
Predator control [d]	PKBM-1	1996 to 2005	$250,000
Total			$960,000

Sources:
[a] Written communication with Panama City Field Office Personnel, U.S. Fish and Wildlife Service, February 23, 2006.
[b] U.S. Fish and Wildlife Service. 2005. *Collaborative Agreement Between U.S. Department of the Interior Fish and Wildlife Service and University of South Alabama Department of Civil Engineering*.
[c] Personal communication with Forrest Bailey, Alabama State Parks, March 2, 2006.
[d] Written communication with Panama City Field Office Personnel, U.S. Fish and Wildlife Service, March 30, 2006.

166. In 2006, Gulf State Park will plant bitter panic grass, blue stem, and sea oats, and conduct dune fertilization in PKBM-1 using a Service grant.[128] The total cost of all these efforts is expected to be $7,500. The Service plans on completing a translocation project for the CBM this year.[129] No additional species management or habitat protection projects are planned; most future species management and habitat protection efforts are likely to be undertaken by State or counties. In the case of a severe storm event, the Service may undertake some habitat restoration. In total, the future cost of Service conservation efforts for the three Florida beach mice is $7,500.

[127] Written communication Panama City Field Office, U.S. Fish and Wildlife Service, February 23, 2006.

[128] Personal communication with Forrest Bailey, Alabama State Parks, March 2, 2006.

[129] Written communication, Panama City Field Office, U.S. Fish and Wildlife Service Personnel, March 3, 2006.

National Park Service[130]

167. NPS manages GINS within PKBM-5. In 2000, NPS completed a consultation to install ten boardwalks approximately a quarter mile apart over a two mile stretch in Johnson Beach-Perdido Key Area of GINS (PKBM-5) to protect PKBM habitat (Exhibit 6-4). Each of the ten boardwalks cost $80,000 to construct, for a total of $800,000 in boardwalk construction costs.[131] In addition, half a mile of road was closed to parking and sand fencing was constructed in this area to prevent illegal access. Sand fencing cost approximately $9,600 to construct over two miles.[132] As discussed in Section 4, recreational use and visitation were not affected by the construction of boardwalks and sand fencing.[133] The total past cost of conservation efforts for the three Florida beach mice is estimated to be $810,000.

168. No new boardwalk construction is anticipated unless boardwalks are destroyed in the future by storm events. Boardwalk replacement as a result of future storm events is considered a conservation effort for three Florida beach mice in GINS because boardwalks were built specifically to protect beach mice. Costs of boardwalk replacement related to future storm events are not estimated by this analysis due to the speculative nature of predicting future storm events.

Florida Division of Recreation and Parks

169. Florida Division of Recreation and Parks manages seven State Parks within proposed critical habitat for the three Florida beach mice.[134] For further discussion of these parks refer to Section 4. Past Florida Division of Recreation and Parks species management efforts have mostly been directed towards the PKBM at Perdido Key State Park (PKBM-3). Past PKBM management efforts by Florida Division of Recreation and Parks include predator control, reintroduction, and supplement feeding. The costs of past species management undertaken by Florida Division of Recreation and Parks is shown in Exhibit 6-7.

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[130] An information request letter was sent to the Superintendent of GINS on January 18, 2006. No information has been received as of February 24, 2006.

[131] In 2002 Florida Recreation and Parks constructed two boardwalks in adjacent Perdido Key State Park at a total cost of $160,000. Personal communication Harold Mitchell, Florida Recreation and Parks, January 12, 2006.

[132] Sand fencing for Gulf State Park cost $26.90 per 50 foot roll. Each roll requires ten posts, each post costs $1.85. Personal communication with Daphne Field Office Personnel, U.S. Fish and Wildlife Service, February 28, 2006.

[133] Personal communication with Jerry Eubanks, Superintendent of Gulf Islands National Seashore, January 17, 2006.

[134] These seven State Parks include: Perdido Key State Park; Henderson Beach State Park; Topsail Hill Preserve State Park; Grayton Beach State Park; Deer Lake State Park; St. Andrew State Park; and St. Joseph Peninsula State Park.

EXHIBIT 6-7 PAST SPECIES MANAGEMENT AND HABITAT PROTECTION UNDERTAKEN BY THE FLORIDA DIVISION OF RECREATION AND PARKS

CONSERVATION EFFORT	UNIT(S)	YEAR(S)	PROJECT COST
Predator control [a]	PKBM-3	2002 to 2005	$60,000
Reintroduction [b]	PKBM-3	2000	$9,000
Supplemental feeding [c]	PKBM-3, CBM-1, CBM-2, CBM-3, CBM-4, CBM-5, SABM-3	2004 to 2005	$25,000
Total			$94,000

Sources:
[a] Personal communication Harold Mitchell, Florida Recreation and Parks, November 8, 2005.
[b] Florida Recreation and Parks estimates each introduction effort requires about 64 hours of staff time. Personal communication Harold Mitchell, Florida Recreation and Parks, November 8, 2005. The average wage rate is based on data from the Federal Government General Schedule Rates, Office of Personnel Management, 2002.
[c] Supplemental feeding generally takes a staff person a few of hours to distribute the seed every two weeks. Written communication from U.S. Fish and Wildlife Service Panama City Field Office, February 23, 2006. The average wage rate is based on data from the Federal Government General Schedule Rates, Office of Personnel Management, 2002.

170. Florida Division of Parks and Recreation expects to continue predator control efforts Perdido Key State Park (PKBM-3). The annual cost of predator control efforts is $15,000, for a total cost of $300,000. In addition, supplemental three Florida beach mice feeding may occur in the future in the event of tropical storms or hurricanes. The total cost of future conservation efforts likely to be undertaken is $300,000.

Florida Wildlife Conservation Commission

171. The Florida Fish and Wildlife Conservation Commission (FWCC) has undertaken conservation efforts for the three Florida beach mice since their listing under the State of Florida Endangered Species Act. The PKBM and CBM were declared endangered under this Florida legislation in 1986, while the SABM was declared endangered in 1989. The FWCC carried out intermittent conservation efforts for the three species throughout the late 1980's and 1990's. More recently, the FWCC has undertaken a number of population surveys and land acquisitions for the beach mice. Efforts included:

- In 2002, the FWCC acquired land in Topsail Hill State Park for the CBM. The Service funded this land purchase.[135]
- In 2003, the FWCC assisted Walton County with the acquisition of land along Grayton Beach for the CBM. The Service provided funding for this acquisition also.[136]

[135] FY 2001-2002 Progress Report on Activities of the Florida Fish and Wildlife Conservation Commission. Endangered/Threatened Species Management and Conservation Plan. Accessed at http://myfwc.com/imperiledspecies/reports.htm on April 14, 2006.

- Since 2004, the FWCC has been developing and testing a method for estimating the size of three Florida beach mice populations through measurement of the frequency and distribution of mouse tracks.[137] FWCC is currently employing its new tracking-based population survey method to study the effects of hurricanes on beach mice population distribution.
- Prior to Hurricane Ivan, FWCC trapped eight PKBM and transferred them temporarily to a genetic stock center at the University of South Carolina to be used to re-establish the population in the event that Hurricane Ivan entirely destroyed the remaining population on Perdido Key. Some PKBM individuals did survive Hurricane Ivan, and the trapped PKBM were not returned to Perdido Key.
- In 2004, the FWCC conducted an assessment of suitable habitat for the SABM with monies from the Service. The assessment also examined the current distribution of the SABM throughout existing suitable habitat.

172. The costs of these management and protection efforts are not known at this time; and therefore, they are not included in the summary of past costs presented in Exhibit 6-8.

Alabama State Parks

173. Alabama State Parks manages Gulf State Park, which falls within PKBM-1. Past management efforts by Alabama State Parks for the PKBM have included planting of sea oats seeds and dune-building efforts.[138] As discussed above, the Service provided a grant to Gulf State Park in 2004 in the amount of $373,000 for restoration, and $248,000 has been spent in PKBM-1 for the PKBM (all other monies were spent on the Alabama beach mouse and are not included in this analysis). Future efforts will include planting bitter panic grass, blue stem, and sea oats, and dune fertilization. The total cost of these future planting efforts is expected to be $7,500, all funded by the Service grant. Other likely future projects include small scale dune-building efforts; the cost of these efforts is expected to be modest. Other potential future projects include supplemental feeding programs after storm events.

Escambia County

174. Escambia County participated in a two-year information program on PKBM called "Got Habitat" Perdido Key Growth, Development and Habitat Project in 2000 and 2001. The project focused on the impacts of population growth and development on Perdido Key and the PKBM. The project included a video, theater public service announcements,

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[136] FY 2003-2004 Progress Report on Activities of the Florida Fish and Wildlife Conservation Commission. Endangered/Threatened Species Management and Conservation Plan. Accessed at http://myfwc.com/imperiledspecies/reports.htm on April 14, 2006.

[137] FY 2004-2005 Progress Report on Activities of the Florida Fish and Wildlife Conservation Commission. Endangered/Threatened Species Management and Conservation Plan. Accessed at http://myfwc.com/imperiledspecies/reports.htm on April 14, 2006.

[138] Written communication from Kelly Reetz, Gulf State Park, Alabama State Parks, February 7, 2006.

volunteer training program, and community workshops. The annual cost of this program to Escambia County was $53,500, or $107,000 total.[139] Escambia County also received a grant in the amount of $100,000 from the Florida Fish and Wildlife Commission Advisory Council on Environmental Education.[140]

6.3.2 SUMMARY OF PAST SPECIES MANAGEMENT AND HABITAT PROTECTION

175. Past species management and habitat protection efforts have been undertaken and/or funded by the Service, NPS, Florida Division of Recreation and Parks, Alabama State Parks, and Escambia County, Florida. Exhibit 6-8 shows the total cost of past species management and habitat protection costs within the proposed CHD is $2.1 million, in undiscounted dollars. The highest per unit costs have been incurred by NPS for habitat protection in PKBM-5.

EXHIBIT 6-8 SUMMARY OF ESTIMATED PAST THREE FLORIDA BEACH MICE CONSERVATION EFFORTS FOR SPECIES MANAGEMENT AND HABITAT PROTECTION

UNIT	SERVICE	NPS	FLORIDA DIV. OF PARKS AND RECREATION	ESCAMBIA COUNTY	ALABAMA STATE PARKS	TOTAL UNDISCOUNTED DOLLARS
PKBM-1	$541,000	n/a	n/a	n/a	$0	$541,000
PKBM-2	$43,000	n/a	n/a	$52,000	n/a	$95,000
PKBM-3	$43,000	n/a	$72,000	$52,000	n/a	$167,000
PKBM-4	$43,000	n/a	n/a	$52,000	n/a	$95,000
PKBM-5	$43,000	$810,000	n/a	$52,000	n/a	$905,000
CBM-1	$27,000	n/a	$4,000	n/a	n/a	$31,000
CBM-2	$27,000	n/a	$4,000	n/a	n/a	$31,000
CBM-3	$27,000	n/a	$4,000	n/a	n/a	$31,000
CBM-4	$27,000	n/a	$4,000	n/a	n/a	$31,000
CBM-5	$42,000	n/a	$4,000	n/a	n/a	$46,000
SABM-1	$42,000	n/a	n/a	n/a	n/a	$42,000
SABM-2	$27,000	n/a	n/a	n/a	n/a	$27,000
SABM-3	$27,000	n/a	$4,000	n/a	n/a	$31,000
Total	**$959,000**	**$810,000**	**$96,000**	**$208,000**	**$0**	**$2,073,000**

[139] RCF Economic and Financial Consulting, Inc. Business Plan for the Perdido Key Beach Mouse Conservation Fund. July 1, 2005.

[140] Florida Fish and Wildlife Commission, Florida's Environmental Education Grants Program: Projects Funded FY 2000-2001. Accessed at http://myfwc.com/educator/acee/projects00-01.htm on February 28, 2006.

6.3.3 SUMMARY OF FUTURE SPECIES MANAGEMENT AND HABITAT PROTECTION

176. The Service and Florida Division of Recreation and Parks are expected to undertake future species management and habitat protection efforts. As shown in Exhibit 6-9, the total cost of future species management and habitat protection costs within the proposed CHD is $308,000, in undiscounted dollars. A majority of these costs are expected to be incurred by Florida Division of Parks and Recreation for predator control in Perdido Key State Park (PKBM-3). Additional PKBM management and habitat protection efforts associated with the Perdido Key Beach Mouse Conservation and Management Fund are discussed and quantified in Section 3.

EXHIBIT 6-9 SUMMARY OF ESTIMATED FUTURE THREE FLORIDA BEACH MICE CONSERVATION EFFORTS FOR SPECIES MANAGEMENT AND HABITAT PROTECTION

UNIT	SERVICE	FLORIDA DIV. OF PARKS AND RECREATION	TOTAL UNDISCOUNTED DOLLARS
PKBM-1	$8,000	n/a	$8,000
PKBM-3	$0	$300,000	$300,000
Total	**$8,000**	**$300,000**	**$308,000**

6.4 ROAD CONSTRUCTION AND MAINTENANCE

177. This section examines the potential economic impacts of three Florida beach mice conservation efforts on road construction and maintenance projects. Road projects in Escambia and Gulf Counties have incurred past costs associated with the 1985 critical habitat designation. Projects in these counties are expected to incur additional costs in the future as a result of currently proposed critical habitat.

6.4.1 PAST ECONOMIC IMPACTS ON ROAD CONSTRUCTION AND MAINTENANCE

178. Since the listing and critical habitat designation for the PKBM and CBM in 1985 and the listing of the SABM in 1998, the Service has completed one formal consultation with NPS and one informal consultation with the Florida Department of Transportation (FDOT) regarding transportation projects. Aside from these consultations, past critical habitat has affected two additional FDOT projects.

National Park Service (NPS)

179. In May 2005, the NPS consulted with the Service about the reconstruction of the East Road in GINS. In 2004, Hurricane Ivan severely damaged the East Road, which provides access to Johnson Beach and passes through PKBM-5. The consultation with the Service resulted in several measures to prevent impacts to the PKBM. These measures included: staging equipment and materials away from dune habitat, containing demolition and debris removal within the original road footprint, planting native vegetation where

necessary, avoiding nighttime work, constructing dune crossovers from the road to the beach, and installing fencing along the road.[141] Planting native vegetation in the work area cost approximately $15,500.[142] Installing fence along the two miles of road within PKBM-5 cost approximately $9,600.[143] Thus, the total costs of conservation efforts undertaken by NPS associated with the East Road consultation were $25,100.

Florida Department of Transportation (FDOT)

180. FDOT consulted informally with the Service in November 2003 regarding parking along Perdido Key Drive (State Road 292). The roadside parking was causing severe erosion and impacting PKBM-2, PKBM-3, and PKBM-4. Therefore, signs prohibiting parking along Perdido Key Drive were erected.[144] Additionally, Perdido Key State Park built a fence along the stretch of Perdido Key Drive abutting the park in order to discourage roadside parking. The signs, fencing, and some associated plantings of native vegetation are estimated to have cost approximately $380,000. However, a majority of the costs are not attributable to the three Florida beach mice, and therefore, they are not reported in the past costs summarized in Exhibit 6-10. Specifically, the signs prohibiting parking were mainly erected because roadside parking on Perdido Key Drive was a danger to public safety considering the pace of traffic on the road. Secondly, the fence was built primarily to prevent illegal entry into Perdido Key State Park by individuals seeking to avoid the park's entrance fee. In short, both the signs and the fence would have been built even in the absence of critical habitat for the three Florida beach mice.

181. Apart from this informal consultation, FDOT has incurred additional expenses in the past associated with three Florida beach mice conservation efforts. In 2005, FDOT selected a more expensive route for a pedestrian/bike path on St. Joseph Peninsula in order to avoid critical habitat in SABM-3. The rerouting along with installing a guardrail and retaining walls to protect habitat cost an additional $400,000. After resurfacing a stretch of Cape San Blas Road (SR 30E) in 2005, FDOT also planted native grasses along the road, which passes through SABM-3. Planting the native grasses cost $15,500.

6.4.2 SUMMARY OF PAST ROAD CONSTRUCTION AND MAINTENANCE COSTS

182. Past costs associated with these three consultations are summarized in Exhibit 6-10. Prior to 2006, total costs to transportation projects were approximately $441,000 in undiscounted dollars. The present value of past costs is approximately $441,000 assuming a three percent discount rate, and $442,000 assuming a seven percent discount

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[141] U.S. Fish and Wildlife Service Biological Opinion. Post Hurricane Ivan East Road Full Rebuild, Gulf Islands National Seashore, Johnson Beach-Perdido Key Unit. May 31, 2005.

[142] Planting native vegetation by the National Park Service in Gulf Islands National Seashore is assumed to be other road projects undertaken by Florida Department of Transportation. Planting native vegetation costs on average $15,500. Personal communication with Colby Cleveland, Florida Department of Transportation, Chipley Office, on February 16, 2006.

[143] Sand fencing for Gulf State Park cost $26.90 per 50 foot roll. Each roll requires ten posts, each post costs $1.85. Personal communication with Daphne Field Office Personnel, U.S. Fish and Wildlife Service, February 28, 2006.

[144] Personal communication with Colby Cleveland, Florida Department of Transportation, Chipley Office, on February 16, 2006.

rate. Past road construction and maintenance costs were not incurred in the critical habitat units not included in Exhibit 6-10 (i.e., SABM-1, SABM-2, CBM-1, CBM-2, CBM-3, CBM-4, CBM-5, PKBM-1, PKBM-2, PKBM-3, and PKBM-4).

EXHIBIT 6-10 PAST COSTS OF THREE FLORIDA BEACH MICE CONSERVATION EFFORTS ASSOCIATED WITH TRANSPORTATION, 1985 TO 2006

UNIT	COUNTY	COST DESCRIPTION	YEAR	UNDISCOUNTED DOLLARS	PRESENT VALUE (3%)	PRESENT VALUE (7%)
SABM-3	Gulf	Planting native grasses	2005	$16,000	$16,000	$16,000
SABM-3	Gulf	Guardrail/ retaining wall	2005	$400,000	$400,000	$400,000
Subtotal				$416,000	$416,000	$416,000
PKBM-5	Escambia	Planting native grasses	2004	$16,000	$16,000	$17,000
		Sand fencing	2004	$10,000	$10,000	$10,000
Subtotal				$25,000	$26,000	$27,000
Total				**$441,000**	**$441,000**	**$442,000**

Note: Totals may not sum due to rounding.

6.4.3 FUTURE ECONOMIC IMPACTS ON ROAD CONSTRUCTION AND MAINTENANCE

Projects Planned Through 2010

183. FDOT is presently involved in a formal consultation with the Service regarding the addition of turn lanes to Perdido Key Drive (State Road 292) at the River Road intersection. This project, slated to begin in 2009, falls within PKBM-4. As the Service has requested, FDOT will plant native grasses along the new turn lanes at a cost of $15,500.[145] The administrative cost of the formal consultation is accounted for in Appendix A.

184. FDOT's work plan through 2010 includes projects in Escambia and Gulf Counties that will require additional expenditures for three Florida beach mice conservation efforts. These conservation efforts include a more expensive route for a planned bike and pedestrian path along the Cape San Blas Road (SR 30E) in Gulf County. FDOT will also build retaining walls and a guardrail along the path in order to protect adjacent SABM-3. These conservation efforts will cost $400,000. Furthermore, FDOT will plant native grasses along a portion of Cape San Blas Road (SR 30E), which the Department intends to resurface in 2008. Planting native grasses will cost $15,500. Finally, FDOT expects to enter into a formal consultation with the Service regarding a project development and

[145] Written communication from Blair Martin, District Environmental Management Engineer, Florida Department of Transportation, Chipley Office on January 26, 2006.

environmental study (PD&E) for the bridging of a revetment area also located on Cape San Blas Road (SR 30E). The cost of this expected consultation is accounted for in Appendix A on the administrative costs of proposed critical habitat.

Estimating Projects Beyond the 2010 Planning Horizon

185. As FDOT's approved work plan extends only through 2010, future costs beyond that year are estimated by assuming that the frequency and types of road projects occurring in proposed critical habitat in the future will be similar to the frequency and types of road projects that occurred in critical habitat in the past. In other words, the costs of conservation efforts on road projects over the 10-year period from 2011 to 2020 are assumed to be equal to the costs of conservation efforts on road projects over the ten-year period from 2001 to 2010. The costs over the five-year period from 2021 to 2025 are assumed to be half the costs over the period from 2001 to 2010. Estimated future costs to transportation projects are shown in Exhibit 6-8.

Projects Potentially Affected by Three Florida beach mice

186. Due to increasing development on Perdido Key, Escambia County plans to add two additional lanes to Perdido Key Drive (SR 292), which traverses the island. Perdido Key Drive is currently a two-lane road bordering PKBM-2, PKBM-3, and PKBM-4. An approximately 30-foot buffer of FDOT land on both sides of the roadway separates Perdido Key Drive from proposed critical habitat. Escambia County recently acquired $3.6 million from FDOT to fund a PD&E study. The PD&E study, which will involve public hearings and meetings with the Service, will likely be completed by early 2008. Escambia County has already submitted a request for $9.8 million from the State of Florida to fund the project design of the road widening along Perdido Key Drive, Sorrento Road, and Blue Angel Parkway. Escambia County intends to request an additional $10 million in the future in order to finance the actual construction work, which would be completed tentatively by 2012.[146]

187. According to the Service, the added lanes would encroach on proposed critical habitat.[147] Each lane would be 12 feet wide. A 20-foot median would also be constructed to allow faster traffic flows on the expanded road. The State may grant Escambia County a waiver allowing a narrower median.[148] Yet, regardless of the width of the median, the Service believes the expanded roadway will partially overlap with proposed critical habitat. Therefore, a widening of Perdido Key Drive would require a formal consultation with the Service. According to the Service, such a consultation would recommend best

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[146] Community Budget Issue Request 1682. Submitted by Escambia County Commissioner Bill Dickson on January 11, 2006 to the Florida Senate Appropriations Committee. Accessed at http://www.flsenate.gov/Publications/2006/Senate/reports/budget_issues/SENReq1682FY0506.htm

[147] Personal communication with personnel of US Fish and Wildlife Service Regional Field Office in Panama City on March 30, 2006.

[148] Personal communication with Larry Newsom, Chief of Traffic Operations and Engineering, Escambia County, and Regina Battles, FDOT District 3 Work Program Manager, Chipley Office, on February 15, 2006.

management practices similar to those the Service currently recommends for road repairs in areas with endangered species.

188. Those best management practices include the following:[149]

- Stage equipment and materials away from beach mouse habitat;
- Locate parking areas for the construction crew away from beach mouse habitat;
- Use white Bahama rock for road shoulders;
- Limit road shoulders to three feet in width;
- Plant native grasses in road shoulder areas;
- Properly dispose of trash and debris off-site;
- Avoid using clay for the road base;
- Avoid using fertilizer or lime;
- Avoid depositing fill material in or removing fill material from beach mouse habitat; and
- Avoid using hay bales in beach mouse habitat.

189. Due to the uncertainty regarding if and when the Perdido Key Drive widening will occur, the analysis of future costs does not include any estimates for conservation efforts associated with the road widening.

6.4.4 SUMMARY OF FUTURE ROAD CONSTRUCTION AND MAINTENANCE COSTS

190. Exhibit 6-11 shows total future costs are estimated to be $1,701,000 in undiscounted dollars. In present value terms, future costs are $1,304,000 assuming a three percent discount rate, or $949,000 assuming a seven percent discount rate. Future costs to transportation projects are not expected in the critical habitat units not included in Exhibit 6-11 (i.e., SABM-1, SABM-2, CBM-1, CBM-2, CBM-3, CBM-4, CBM-5, PKBM-1, PKBM-2, PKBM-3, and PKBM-5).

[149] Personal communication with personnel of US Fish and Wildlife Service Regional Field Office in Panama City on March 30, 2006.

EXHIBIT 6-11 FUTURE COSTS OF THREE FLORIDA BEACH MICE CONSERVATION EFFORTS ASSOCIATED WITH TRANSPORTATION, 2006-2025

UNIT	COUNTY	UNDISCOUNTED DOLLARS 2001-2010	UNDISCOUNTED DOLLARS 2011-2025	TOTAL UNDISCOUNTED DOLLARS 2006-2025	PRESENT VALUE 2006-2025	
					3%	7%
PKBM-4	Escambia	$15,500	$23,300	$38,800	$36,800	$28,700
SABM-3	Gulf	$831,000	$1,246,500	$1,662,000	$1,267,000	$920,100
TOTAL				**$1,700,800**	**$1,303,800**	**$948,800**
				Total Annualized	**$87,600**	**$89,600**

Source: Written communication from Blair L. Martin, District Environmental Management Engineer, Florida Department of Transportation on January 26, 2006.
Note: Totals may not sum due to rounding.

6.5 MILITARY ACTIVITIES

191. This section considers how conservation efforts for the three Florida beach mice may affect military activities at Tyndall AFB in Florida. The section first provides background information on natural resources and natural resource management at Tyndall. Next, the analysis estimates past and future costs of beach mice conservation efforts. *Note that this analysis does not attempt to quantify the impact to military readiness that could result from beach mice conservation efforts.*

6.5.1 BACKGROUND

192. Tyndall is located on nearly 30,000 acres of land 13 miles east of Panama City, Florida on the Gulf of Mexico. Tyndall is bordered to the north and west by East Bay and to the south by St. Andrew Bay and St. Andrew Sound. The primary mission activities at Tyndall AFB are training and evaluating personnel and weapons.[150]

193. The vast majority of the land at Tyndall AFB is unimproved or undeveloped. Specifically, about 23,400 of Tyndall AFB's 30,000 acres are unimproved, about 4,700 is developed military land, and about 1,900 is undeveloped military activity land.[151] Most of Tyndall AFB's land was, however, cleared of its native vegetation and converted to

[150] Tyndall Air Force Base, Panama City, Florida, Natural Resources Branch, Integrated Natural Resources Management Plan, Final Draft, August 2005, p. 2-6.

[151] Tyndall Air Force Base, Panama City, Florida, Natural Resources Branch, Integrated Natural Resources Management Plan, Final Draft, August 2005, p. 2-11.

pine plantations in the late 18th and early 19th century. Modern methods of forestry are now being used to correct damage to the natural ecosystem.[152]

194. Tyndall AFB currently operates under an Integrated Natural Resource Management Plan (INRMP) that provides guidelines for natural resource management, including endangered or threatened species management. The final version of the INRMP is being completed. Based upon the final draft from August 2005, 48 taxa of federally listed threatened or endangered species, including CBM and SABM, are located on or immediately surrounding the base. Tyndall AFB lands include proposed CHD areas for CBM and SABM. Tyndall AFB lands are contained within CBM-5 and SABM-1. PKBM are not present on Tyndall AFB.[153] The only beach mice-specific future conservation effort identified in the INRMP is future monitoring. General management provisions for all listed species are also identified and include a dune restoration program and hiring of a new conservation officer to maintain a law enforcement presence.[154]

6.5.2 SUMMARY OF PAST MILITARY COSTS

195. Tyndall AFB spent between $31,500 and $55,200 on beach mice conservation efforts over 2001 to 2005, or $208,000 total (Exhibit 6-9).[155] These conservation efforts include dune restoration, law enforcement (including regulating all terrain vehicle (ATV) use), an onsite biologist, predator control, and monitoring. Certain activities were funded and performed by Tyndall personnel, while the base funded the Service to perform other activities such as CBM and SABM surveys. Over the years 2001 through 2003, Tyndall funded the Service in the amount of $22,000 to perform monitoring in CBM-5 and SABM-1 (Exhibit 6-12). Costs of beach mice conservation efforts are split evenly between CBM-5 and SABM-1, for a total cost of $104,000 in each unit.

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[152] Tyndall Air Force Base, Panama City, Florida, Natural Resources Branch, Integrated Natural Resources Management Plan, Final Draft, August 2005, p. 4-3.

[153] Tyndall Air Force Base, Panama City, Florida, Natural Resources Branch, Integrated Natural Resources Management Plan, Final Draft, August 2005, Individual Resources Management Tabs pp. 5-16, 5-17.

[154] Tyndall Air Force Base, Panama City, Florida, Natural Resources Branch, Integrated Natural Resources Management Plan, Final Draft, August 2005, Individual Resources Management Tabs p. 3-4.

[155] This section omits species management and habitat protection activities funded by the Service (discussed above).

EXHIBIT 6-12 SUMMARY OF TYNDALL EXPENDITURES ON BEACH MICE CONSERVATION EFFORTS

CONSERVATION EFFORT	2001	2002	2003	2004	2005	TOTAL
Dune Restoration	$12,000	$18,000	$18,000	$18,000	$16,000	**$82,000**
Law Enforcement	$11,500	$11,200	$11,200	$11,200	$11,200	**$56,300**
Biologist	$3,000	$3,000	$3,000	$3,000	$3,000	**$15,000**
ATV use, etc.	$3,000	$3,000	$3,000	$3,000	$3,000	**$15,000**
Predator control	$0	$5,000	$5,000	$3,000	$5,000	**$18,000**
Monitoring /1	$2,047	$14,993	$5,000	$0	$0	**$22,040**
Total	**$31,547**	**$55,193**	**$45,200**	**$38,200**	**$38,200**	**$208,340**

Note: These activities also impact other threatened and endangered species.
Source:
Written Communication with Tyndall Air Force Base Personnel, March 3, 2006.
1/Tyndall funded FWS to perform beach mouse monitoring: Written Communication with Panama City Field Office Personnel, U.S. Fish and Wildlife Service, February 23, 2006.

6.5.3 SUMMARY OF FUTURE MILITARY COSTS

196. CBM and SABM conservation efforts including dune restoration, law enforcement (including regulating ATV use), an onsite biologist, predator control, and monitoring are likely to continue in the future. Conservation effort costs are expected to be similar to the past on average with the exception of monitoring which is anticipated to increase in the future by $2,000 to $3,000 annually.[156] The average annual cost of three Florida beach mice conservation efforts undertaken by Tyndall AFB is estimated to be $44,200, or $883,400 total. The costs of future three Florida beach mice conservation efforts are split evenly between CBM-5 and SABM-1, for a total cost of $441,700 in each unit.

[156] Written Communication with Jack Mobley, Tyndall Air Force Base, March 3, 2003.

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APPENDIX A

ADMINISTRATIVE COSTS

197. This Appendix presents administrative costs of actions taken under section 7 of the Act associated with the geographic extent of units proposed for critical habitat and areas proposed for exclusion for the Choctawhatchee, Perdido Key, and St. Andrew beach mice (three Florida beach mice). First, this Appendix defines the types of administrative costs likely to be associated with the units proposed for critical habitat and areas proposed for exclusion. Next, the Appendix presents estimates of the number of technical assistance efforts and consultations likely to result from the designation of critical habitat for the three Florida beach mice, as well as the per-unit costs of each of these activities. Based on this analysis, estimates of past and future administrative costs are derived.

A.1 CATEGORIES OF ADMINISTRATIVE COSTS

198. The following section provides an overview of the categories of administrative cost impacts that rise due to the implementation of section 7 in the geographic extent of units proposed for critical habitat and areas proposed for exclusion.

TECHNICAL ASSISTANCE

199. Frequently, the Service responds to requests for technical assistance from State agencies, local municipalities, and private landowners and developers who may have questions regarding whether specific activities may affect critical habitat. Technical assistance costs represent the estimated economic costs of informational conversations between these entities and the Service regarding the designation of critical habitat for the three Florida beach mice. Most likely, such conversations will occur between municipal or private property owners and the Service regarding lands designated as critical habitat or lands adjacent to critical habitat. The Service's technical assistance activities are voluntary and generally occur in instances where a Federal nexus does not exist.

SECTION 7 CONSULTATIONS

200. Section 7(a)(2) of the Act requires Federal agencies (Action agencies) to consult with the Service whenever activities that they undertake, authorize, permit, or fund may affect a listed species or designated critical habitat. There are two scenarios under which the designation of critical habitat can result in section 7 consultations with the Service beyond those required by the listing. These include:

- New consultations, which can occur when activities involving a Federal nexus are proposed in critical habitat not thought to be currently occupied by the species; and
- Re-initiations of consultations, which result when consultations that previously occurred under the listing are re-initiated due to new information or circumstances generated by the designation.

In some cases, consultations will involve the Service and another Federal agency only, such as the U.S. Forest Service. More often, they will also include a third party involved in projects on non-Federal lands with a Federal nexus, such as state agencies and private landowners.

201. During a consultation, the Service, the Action agency, and the landowner manager applying for Federal funding or permitting (if applicable) communicate in an effort to minimize potential adverse effects to the species and/or to the proposed critical habitat. Communication between these parties may occur via written letters, phone calls, in-person meetings, or any combination of these. The duration and complexity of these interactions depends on a number of variables, including the type of consultation, the species, the activity of concern, and the potential effects to the species and designated critical habitat associated with the activity that has been proposed, the Federal agency, and whether there is a private applicant involved.

202. Section 7 consultations with the Service may be either informal or formal. *Informal consultations* consist of discussion between the Service, the Action agency, and the applicant concerning an action that may affect a listed species or its designated critical habitat. The process is designed to identify and resolve potential concerns at an early stage in the planning process. By contrast, a *formal consultation* is required if the Action agency determines that its proposed action may or will adversely affect the listed species or designated critical habitat in ways that cannot be resolved through informal consultation. The formal consultation process results in the Service's determination in its Biological Opinion of whether the action is likely to jeopardize a species or adversely modify critical habitat, and recommendations to minimize those impacts. Regardless of the type of consultation or proposed project, section 7 consultations can require substantial administrative effort on the part of all participants.

A.2 ESTIMATED COSTS OF CONSULTATIONS AND TECHNICAL ASSISTANCE

203. Estimates of the cost of an individual consultation and technical assistance request were developed from a review and analysis of historical section 7 files from a number of Service field offices around the country conducted in 2002. These files addressed consultations conducted for both listings and critical habitat designations. Cost figures were based on an average level of effort of low, medium, or high complexity, multiplied by the appropriate labor rates for staff from the Service and other Federal agencies.

204. The administrative costs estimates presented in this section take into consideration the level of effect of the Service, the Action agency, and the applicant, as well as the varying complexity of the consultation or the technical assistance request. Costs associated with these consultations include the administrative costs associated with conducting the consultations, such as the costs of time spent in meetings, preparing letters, and the development of a biological opinion. Exhibit A-1 provides a summary of the estimated administrative costs of consultations and technical assistance requests.

EXHIBIT A-1. ESTIMATED ADMINISTRATIVE COSTS OF CONSULTATION AND TECHNICAL ASSISTANCE EFFORTS (PER EFFORT)

CONSULTATION TYPE	SERVICE	ACTION AGENCY	THIRD PARTY	BIOLOGICAL ASSESSMENT
Technical Assistance	$260-$680	N/A	$600-$1,500	N/A
Informal Consultation	$1,000-$3,100	$1,300-$3,900	$1,200-$2,900	$0-$4,000
Formal Consultation	$3,100-$6,100	$3,900-$6,500	$2,900-$41,00	$4,000-$5,600

Source: IEc analysis based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2002, a review of consultation records from several Service field offices across the country. Confirmed by local Action agencies.
Note: Low and high estimates primarily reflect variations in staff wages and time involvement by staff.

A.3 SUMMARY OF PAST ADMINISTRATIVE COSTS

205. Since the listing of the Choctawhatchee and Perdido Key beach mice in 1985, and the listing of the St. Andrew beach mouse in 1998, there have been 18 formal section 7 consultations, and about 250 technical assistance efforts in the geographic extent of units proposed for critical habitat and areas proposed for exclusion for the three Florida beach mice.

206. As shown in Exhibit A-2, past administrative costs are estimated at $465,000 to $946,000. Exhibit A-3 provides the present value of past administrative costs, for discount rates of three and seven percent.

A.4 SUMMARY OF FUTURE ADMINISTRATIVE COSTS

207. Approximately 14 formal consultations are expected regarding the three Florida beach mice over the next 20 years. Section 5 estimates nine formal consultation may be completed on beach nourishment studies in response to the effects of past tropical storms and hurricanes. Section 6 estimates five formal consultations may be completed for transportation projects. An additional 760 technical assistance effort for development activities are anticipated.

208. As shown in Exhibit A-4, future administrative costs are estimated at $814,000 to $1.9 million. Assuming a seven percent discount rate over 20 years, the present value of administrative costs are $430,000 to $996,000, annualized costs are estimated at $41,000 to $94,000. (See Exhibit A-5).

A.5 CAVEATS

209. The number of consultations and technical assistance efforts to be undertaken in the future for activities within a given complex is highly uncertain. The frequency of such efforts will be related to the level of economic activity, the presence of HCP's or other regional plans that obviate the need for consultation, and the extent to which economic activity overlaps with critical habitat. To the extent that this analysis over or underestimates the number of these efforts in the future, estimated costs will be over or understated.

EXHIBIT A-2 PAST ADMINISTRATIVE COSTS BY UNIT AND ACTIVITY, 1985-2005, $2005

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
	Formals		1				1			2	$28,000	$45,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
PKMB-1									**Subtotal**	**2**	**$28,000**	**$45,000**
	Formals	1					1			2	$30,000	$48,000
	Informals									0	$0	$0
	Technical Assistance	11								11	$10,000	$24,000
PKBM-2									**Subtotal**	**13**	**$40,000**	**$72,000**
	Formals	1			1.5		1			4	$49,000	$78,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
PKBM-3									**Subtotal**	**4**	**$49,000**	**$78,000**
PKBM-4	Formals						0			0	$2,000	$4,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
									Subtotal	**0**	**$2,000**	**$4,000**
	Formals		1		1.5	1	1			5	$63,000	$100,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
PKBM-5									**Subtotal**	**5**	**$63,000**	**$100,000**
	Formals									0	$0	$0
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
CBM-1									**Subtotal**	**0**	**$0**	**$0**
	Formals						0			0	$2,000	$4,000
	Informals									0	$0	$0
	Technical Assistance	33								33	$28,000	$71,000
CBM-2									**Subtotal**	**33**	**$30,000**	**$75,000**
	Formals						0			0	$2,000	$4,000
	Informals									0	$0	$0
	Technical Assistance	26								26	$22,000	$57,000
CBM-3									**Subtotal**	**26**	**$24,000**	**$61,000**

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
	Formals						0			0	$2,000	$4,000
	Informals									0	$0	$0
	Technical Assistance	139								139	$120,000	$304,000
CBM-4									**Subtotal**	**140**	**$122,000**	**$308,000**
	Formals			2						2	$28,000	$45,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
CBM-5									**Subtotal**	**2**	**$28,000**	**$45,000**
	Formals						0			0	$2,000	$4,000
	Informals									0	$0	$0
	Technical Assistance	2								2	$2,000	$4,000
SABM-1									**Subtotal**	**2**	**$4,000**	**$8,000**
	Formals									0	$0	$0
	Informals									0	$0	$0
	Technical Assistance	6								6	$5,000	$12,000
SABM-2									**Subtotal**	**0**	**$5,000**	**$12,000**
SABM-3	Formals									0	$0	$0

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
	Informals									0	$0	$0
	Technical Assistance	33								33	$29,000	$73,000
									Subtotal	**0**	**$29,000**	**$73,000**
	Formals				1				2	3	$42,000	$67,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
Unknown									**Subtotal**	**3**	**$42,000**	**$67,000**
	Formals	2	2	2	4	1	5	0	2	18	**$250,000**	**$401,000**
	Informals	0	0	0	0	0	0	0	0	0	**$0**	**$0**
Total	Tech Assistance	250	0	0	0	0	0	0	0	250	**$215,000**	**$545,000**
Total Costs Low		**$243,000**	**$28,000**	**$28,000**	**$56,000**	**$14,000**	**$70,000**	**$0**	**$28,000**	**$465,000**		
Total Costs High		**$590,000**	**$45,000**	**$45,000**	**$89,000**	**$22,000**	**$112,000**	**$0**	**$45,000**	**$946,000**		

EXHIBIT A-3 TOTAL PAST ADMINISTRATIVE COSTS, 1986-2005, $2005

UNIT	TOTAL UNDISCOUNTED DOLLARS		PRESENT VALUE (3%)		PRESENT VALUE (7%)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
PKBM-1	$28,000	$45,000	$28,000	$45,000	$28,000	$45,000
PKBM-2	$40,000	$72,000	$40,000	$72,000	$40,000	$72,000
PKBM-3	$49,000	$78,000	$49,000	$78,000	$49,000	$78,000
PKBM-4	$2,000	$4,000	$2,000	$4,000	$2,000	$4,000
PKBM-5	$63,000	$100,000	$63,000	$100,000	$63,000	$100,000
CBM-1	$0	$0	$0	$0	$0	$0
CBM-2	$30,000	$75,000	$30,000	$75,000	$30,000	$75,000
CBM-3	$24,000	$61,000	$24,000	$61,000	$24,000	$61,000
CBM-4	$122,000	$308,000	$122,000	$308,000	$122,000	$308,000
CBM-5	$28,000	$45,000	$28,000	$45,000	$28,000	$45,000
SABM-1	$4,000	$8,000	$4,000	$8,000	$4,000	$8,000
SABM-2	$5,000	$12,000	$5,000	$12,000	$5,000	$12,000
SABM-3	$29,000	$73,000	$29,000	$73,000	$29,000	$73,000
Total	**$424,000**	**$881,000**	**$424,000**	**$881,000**	**$424,000**	**$881,000**

Note(s):
1/ Consultations with unknown units are not included in this exhibit.
2/ Totals may not sum due to rounding.
3/ Administrative costs with unknown units total $42,000 to $67,000 for three formal consultations.

A-4 FUTURE ADMINISTRATIVE COSTS BY UNIT AND BY ACTIVITY (2006-2025),$2005

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
	Formals						1			1	$10,000	$17,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
PKMB-1									**Subtotal**	**1**	**$10,000**	**$17,000**
	Formals						1			1	$16,000	$25,000
	Informals									0	$0	$0
	Technical Assistance	109								109	$94,000	$238,000
PKBM-2									**Subtotal**	**111**	**$110,000**	**$263,000**
	Formals						0.375			0	$5,000	$8,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
PKBM-3									**Subtotal**	**0**	**$5,000**	**$8,000**
PKBM-4	Formals					2.5	0.375			3	$40,000	$64,000
	Informals									0	$0	$0

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
	Technical Assistance	138								138	$118,000	$300,000
									Subtotal	**140**	**$158,000**	**$364,000**
	Formals						0.375			0	$5,000	$8,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
PKBM-5									**Subtotal**	**0**	**$5,000**	**$8,000**
	Formals						2			2	$21,000	$33,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
CBM-1									**Subtotal**	**2**	**$21,000**	**$33,000**
	Formals						1			1	$7,000	$11,000
	Informals									0	$0	$0
	Technical Assistance	28								28	$24,000	$60,000
CBM-2									**Subtotal**	**1**	**$31,000**	**$71,000**
CBM-3	Formals						1			1	$7,000	$11,000
	Informals									0	$0	$0

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
	Technical Assistance	17								17	$15,000	$37,000
									Subtotal	**1**	**$22,000**	**$48,000**
	Formals						1			1	$7,000	$11,000
	Informals									0	$0	$0
	Technical Assistance	68								68	$59,000	$149,000
CBM-4									**Subtotal**	**1**	**$66,000**	**$160,000**
	Formals						0.75			1	$10,000	$17,000
	Informals									0	$0	$0
	Technical Assistance									0	$0	$0
CBM-5									**Subtotal**	**1**	**$10,000**	**$17,000**
	Formals						1			1	$10,000	$17,000
	Informals									0	$0	$0
	Technical Assistance	167								167	$143,000	$364,000
SABM-1									**Subtotal**	**1**	**$153,000**	**$381,000**
SABM-2	Formals						0.75			1	$10,000	$17,000
	Informals									0	$0	$0

UNIT	TYPE OF CONSULT	DEVELOP-MENT	RECREATION	DREDGING	SPECIES MANAGE-MENT	TRANSPORTA-TION	TROPICAL STORMS	MILITARY	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
	Technical Assistance	96								96	$82,000	$209,000
									Subtotal	**1**	**$92,000**	**$226,000**
	Formals					2.5	0.75			3	$45,000	$72,000
	Informals									0	$0	$0
	Technical Assistance	98								98	$84,000	$213,000
SABM-3									**Subtotal**	**3**	**$129,000**	**$285,000**
	Formals	0	0	0	0	5	9	0	0	14	**$195,000**	**$312,000**
	Informals	0	0	0	0	0	0	0	0	0	**$0**	**$0**
Total	Tech Assistance	0	0	0	0	0	0	0	0	0	**$619,000**	**$1,570,000**
Total Costs Low		**$619,000**	**$0**	**$0**	**$0**	**$70,000**	**$125,000**	**$0**	**$0**	**$814,000**		
Total Costs High		**$1,570,000**	**$0**	**$0**	**$0**	**$112,000**	**$201,000**	**$0**	**$0**	**$1,882,000**		

Note: Totals may not sum due to rounding.

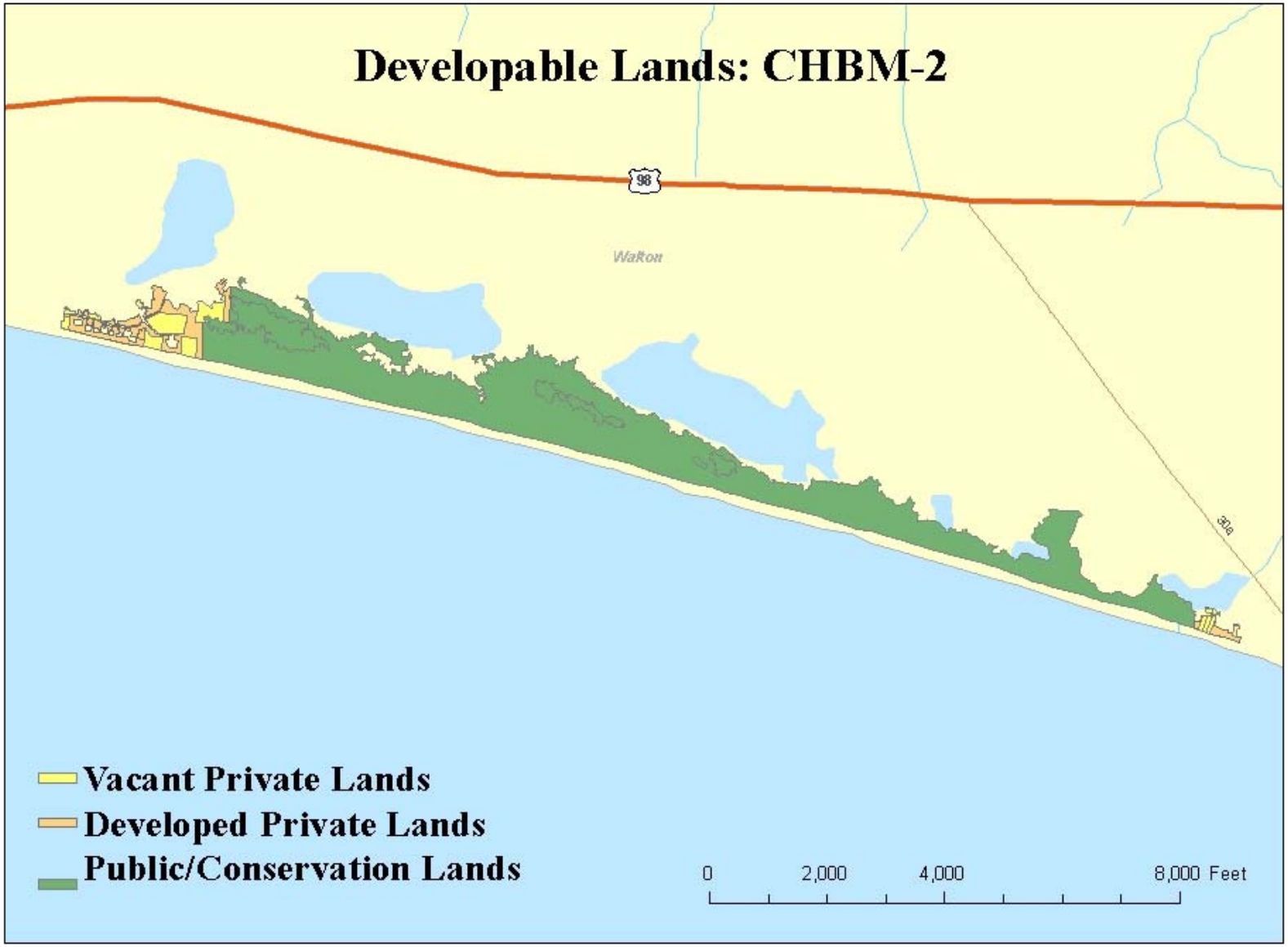
EXHIBIT A-5 TOTAL AND ANNUALIZED FUTURE ADMINISTRATIVE COSTS, 2006-2025, $2005

UNIT	TOTAL UNDISCOUNTED DOLLARS		PRESENT VALUE (3%)		PRESENT VALUE (7%)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
PKBM-1	$10,000	$17,000	$7,000	$13,000	$5,000	$9,000
PKBM-2	$110,000	$263,000	$82,000	$196,000	$58,000	$139,000
PKBM-3	$5,000	$8,000	$4,000	$6,000	$3,000	$4,000
PKBM-4	$158,000	$364,000	$118,000	$271,000	$84,000	$193,000
PKBM-5	$5,000	$8,000	$4,000	$6,000	$3,000	$4,000
CBM-1	$21,000	$33,000	$16,000	$25,000	$11,000	$17,000
CBM-2	$31,000	$71,000	$23,000	$53,000	$16,000	$38,000
CBM-3	$22,000	$48,000	$16,000	$36,000	$12,000	$25,000
CBM-4	$66,000	$160,000	$49,000	$119,000	$35,000	$85,000
CBM-5	$10,000	$17,000	$7,000	$13,000	$5,000	$9,000
SABM-1	$153,000	$381,000	$114,000	$283,000	$81,000	$202,000
SABM-2	$92,000	$226,000	$68,000	$168,000	$49,000	$120,000
SABM-3	$129,000	$285,000	$96,000	$212,000	$68,000	$151,000
Total	**$814,000**	**$1,882,000**	**$604,000**	**$1,399,000**	**$430,000**	**$996,000**
Annualized			**$41,000**	**$94,000**	**$41,000**	**$94,000**

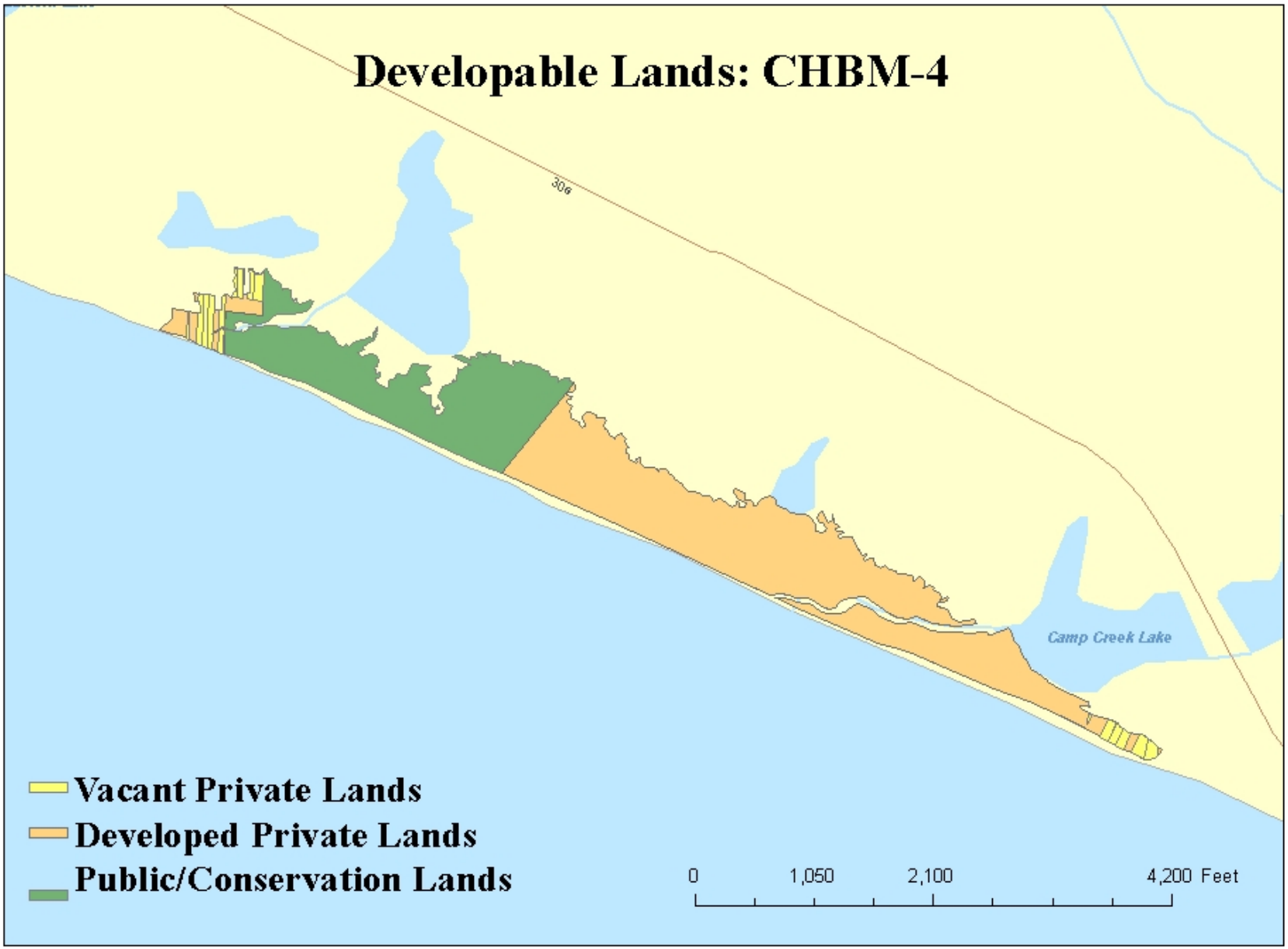
Note: Totals may not sum due to rounding.

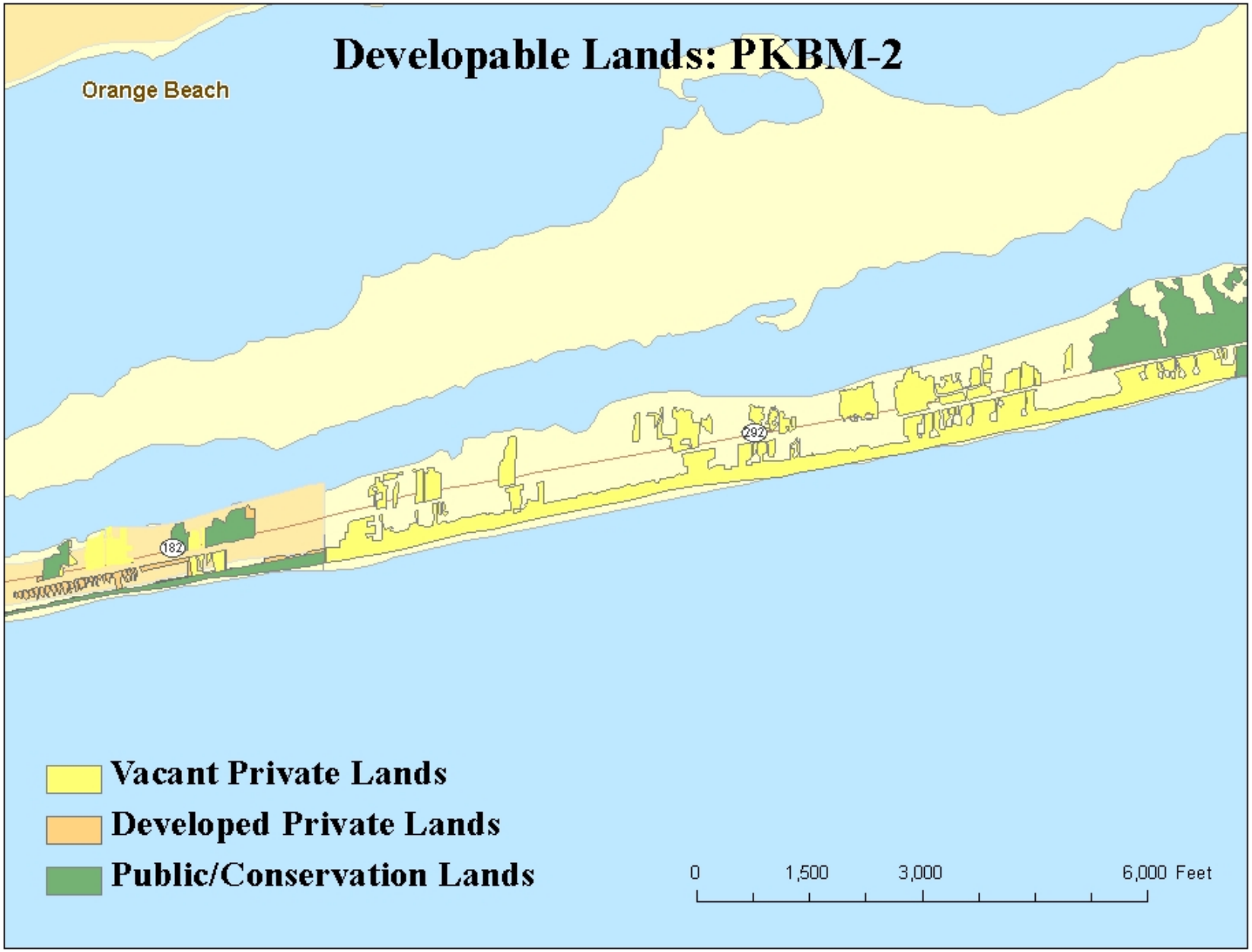
APPENDIX B

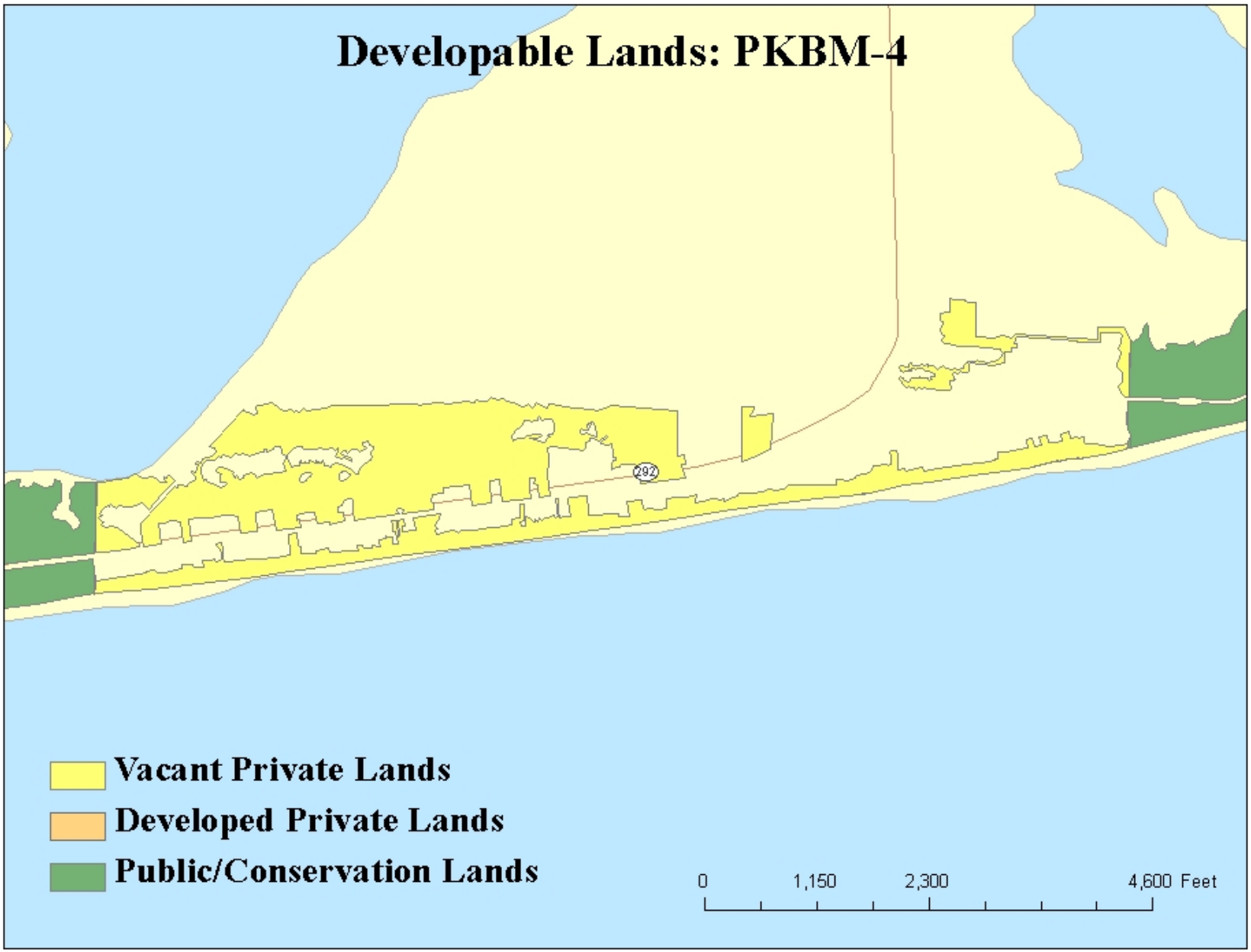
DEVELOPMENT MAPS

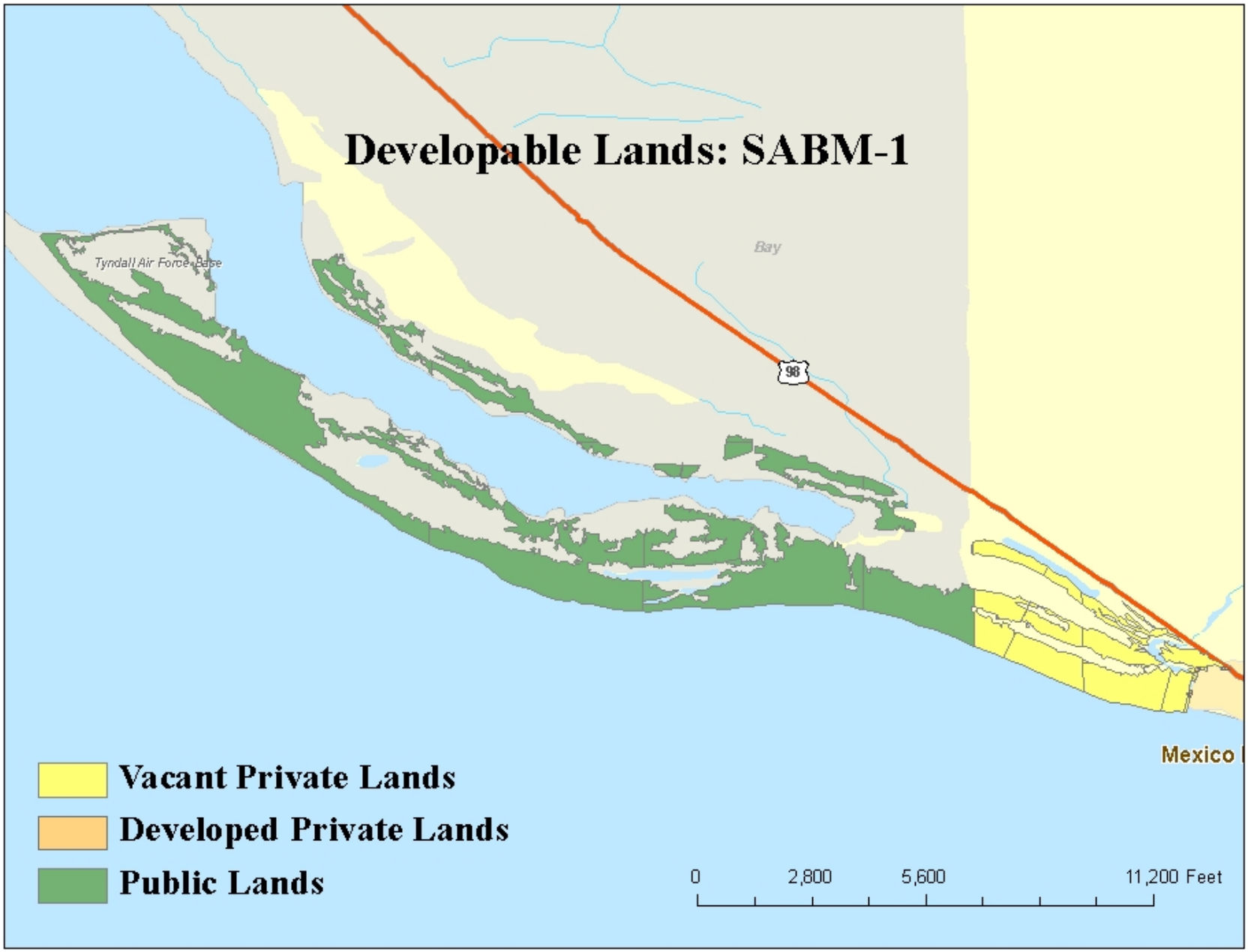

Developable Lands: CHBM-2
98
Walton
Vacant Private Lands
Developed Private Lands
Public/Conservation Lands
0
2,000
4,000
8,000 Feet


Developable Lands: CHBM-3
289
309
Vacant Private Lands
Developed Private Lands
Public/Conservation Lands
0
1,550
3,100
6,200 Feet

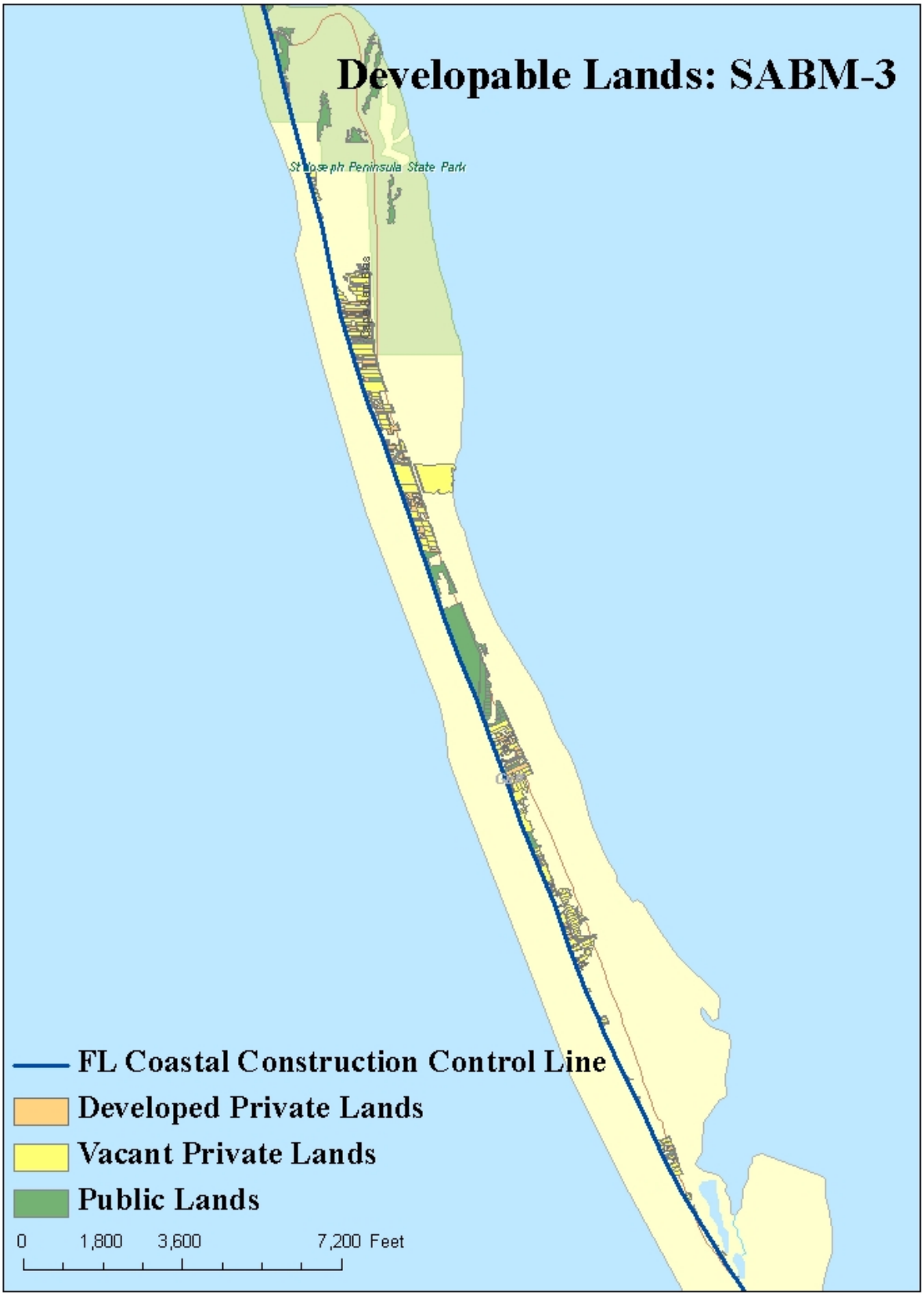

Developable Lands: CHBM-4
306
Camp Creek Lake
Vacant Private Lands
Developed Private Lands
Public/Conservation Lands
0
1,050
2,100
4,200 Feet


Developable Lands: PKBM-2
Orange Beach
182
292
Vacant Private Lands
Developed Private Lands
Public/Conservation Lands
0
1,500
3,000
6,000 Feet


Developable Lands: PKBM-4
292
Vacant Private Lands
Developed Private Lands
Public/Conservation Lands
0
1,150
2,300
4,600 Feet


Developable Lands: SABM-1
Tyndall Air Force Base
Bay
98
Mexico
Vacant Private Lands
Developed Private Lands
Public Lands
0
2,800
5,600
11,200 Feet


Developable Lands: SABM-2
98
Developed Private Lands
Vacant Private Lands
Public or Conservation Lands
0
1,200
2,400
4,800 Feet


Developable Lands: SABM-3
St Joseph Peninsula State Park
FL Coastal Construction Control Line
Developed Private Lands
Vacant Private Lands
Public Lands
0
1,800
3,600
7,200 Feet

APPENDIX C

SMALL BUSINESS IMPACTS AND ENERGY IMPACTS

210. This Appendix considers the extent to which the analytic results presented in the previous Sections reflect potential future impacts to small businesses and the energy industry. The small business analysis presented in this appendix is conducted pursuant to the RFA as amended by the SBREFA in 1996. Information was gathered from the Small Business Administration, and U.S. Census Bureau. The energy analysis in Section C.2 is conducted pursuant to Executive Order No. 13211.

C.1 SBREFA ANALYSIS

211. In accordance with SBREFA, when a Federal agency publishes a notice of rulemaking for any proposed or final rule, it must make available for public comments a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions).[157] No regulatory flexibility analysis is required, however, if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.[158] SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have significant economic impact on a substantial number of small entities.

212. To assist in this process, the following represents a screening level analysis of the possible effects of the designation of conservation activities for the three Florida beach mice on small entities. This analysis presents activities with potential impacts associated with the proposed rulemaking, describes the industries that may experience small business impacts due to three Florida beach mice conservation activities, and then details and quantifies the specific impacts to potentially affected small businesses.

C.1.1 IDENTIFICATION OF ACTIVITIES THAT MAY INVOLVE SMALL ENTITIES

213. This analysis estimates prospective economic impacts due to implementation of three Florida beach mice conservation efforts in seven categories:

1. Private development activities;
2. Recreation;
3. Tropical storms and hurricanes;
4. Dredging and disposal operations;
5. Species management and habitat protection activities;
6. Road construction and maintenance; and
7. Military activities.

[157] 5 U.S.C. 601 et seq.

[158] Thus, for a regulatory flexibility analysis to be required, impacts must exceed a threshold for "significant impact" and a threshold for a "substantial number of small entities." 5 U.S.C. 605(b).

In six of these seven categories, impacts of three Florida beach mice conservation are not anticipated to impact small businesses for the following reasons:

- *Recreation:* Section 4 of this analysis discusses the potential impacts of three Florida beach mice conservation efforts on recreation that may be affected by the proposed CHD. As discussed in Section 4, few impacts on recreational beach use or visitation are anticipated as a result of future beach mice conservation efforts. This is because 1) the vegetated dune areas in proposed CHD are frequently traversed by beach users for beach access via formal trails, dune walkovers, or boardwalks, but are not the focus areas for beach recreation; 2) numerous protections already exist that protect dune areas from impacts by beach users, including State laws that prohibit damaging sand dunes or picking vegetation from dunes; and 3) none of the planned projects by recreation managers in proposed CHD areas are anticipated to reduce the amount of beach recreation or beach visitation. Therefore, small entities in the recreation industry sector are not expected to be affected by three Florida beach mice conservation efforts.
- *Tropical storms and hurricanes:* Section 5 of this analysis discusses the potential impacts of three Florida beach mice conservation efforts on tropical storm and hurricane response activities that may be affected by the proposed CHD. As discussed in Section 5, this analysis does not estimate the costs of three Florida beach mice conservation efforts associated with storm events, as it is not feasible to predict the future locations, intensity, damage, and human response to future storms. Most storm event response actions would likely be undertaken by FEMA and the USACE, not affecting small entities.
- *Dredging and disposal operations:* Section 6 of this analysis discusses potential future costs of three Florida beach mice conservation efforts associated with dredging and disposal operations. Any future costs are expected to be borne by the USACE; therefore, this category of impacts is not expected to affect small entities.
- *Species management and habitat protection:* Section 6 of this analysis presents the potential costs of three Florida beach mice specific management and habitat protection activities. As the Service, NPS, Florida Division of Recreation and Parks, and Alabama State Parks are expected to bear these costs, no impacts on small entities are anticipated for this category.
- *Road construction and maintenance:* Section 6 of this analysis presents the potential costs to transportation activities. These costs are expected to be borne by FDOT. Therefore, this category of impacts is not expected to affect small entities.
- *Military activities:* Section 6 of this analysis presents the potential costs of three Florida beach mouse conservation efforts undertaken by Tyndall AFB. This category of impacts is not expected to affect small entities.

214. The remainder of this section addresses the potential economic impacts to private development activities, and how those impacts may affect small entities.

C.1.2 ANALYSIS OF IMPACTS TO PRIVATE DEVELOPMENT

215. Section 3 of this analysis details the potential impacts of three Florida beach mice conservation efforts on private development. This analysis assumes that project modification costs associated with three Florida beach mice conservation efforts (e.g., on-site set-asides, predator control, and dune restoration) will be passed on from the land developer to the existing landowner in the form of reduced prices paid for raw land.[159] In other words, the costs of three Florida beach mice conservation efforts primarily consist of the reduced value of land associated with development activities, and these costs are assumed to be incurred by the present landowner. Many of these landowners may be individuals or families that are not registered businesses. No North American Industry Classification System (NAICS) code exists for landowners, and SBA does not provide a definition of small landowner. This analysis therefore assumes that, in general, landowners in proposed beach mice habitat are not developers but private citizens who are not small businesses. However, recognizing that it is possible that some landowners may also be small entities, this analysis provides information about the number of landowners potentially affected, and the size of the impact on each.

216. To estimate the number of landowners potentially impacted by three Florida beach mice conservation efforts, the analysis estimates the number of privately owned developable parcels (or lots) that intersect proposed CHD (Exhibit D-1).[160] Approximately 562 individual landowners may be impacted by three Florida beach mice conservation efforts, assuming that each parcel is owned by a unique landowner. To the extent that there are fewer individual landowners than the number of privately owned developable parcels within proposed CHD, this analysis may overstate the number of landowners that may be impacted. It should also be noted that the analysis identified two developers, St. Joe Company and WCI, as current landowners that may experience a reduction in the value of their land in proposed CHD areas. Neither of these entities are considered small entities.[161]

217. As shown in Exhibit C-1, 614 acres within proposed CHD are anticipated to be developed over the next 20 years. This analysis assumes five to 11 percent of each acre will be set-aside for the three Florida beach mice. Other conservation efforts are estimated to cost $600 per acre in one-time fees, and an additional $200 annually per acre. The per-acre conservation costs (excluding land set-aside) represent approximately 0.2 percent of raw land value ($2.28 million per acre). With 562 landowners sharing 614 acres of developable land, each is anticipated to affect, on average, 1.1 acres of beach mice habitat. If each landowner sets aside five to 11 percent of his affected property for mice

[159] Two exceptions at the St. Joe and WCI companies, which are current landowners and developers, thus are unable to pass on costs three Florida beach mice conservation efforts in the form of reduced prices paid for raw land. Neither of these two companies are considered small businesses, as discussed below.

[160] That is, a parcel may fall entirely or partially in proposed CHD to be counted.

[161] In 2004, the St. Joe Company had revenues of $952 million. St. Joe Company. 2005. The St. Joe Company 2004 Annual Report. In 2004, WCI Communities had revenues of $1.8 billion. WCI Communities. 2005. WCI Communities 2004 Annual Report. The Small Business Administration defines developers (e.g., New Single-Family Housing Construction (except operative builders) and New Multi-Family Housing Construction (except operative builders)) as small entities as those who earn less than $31 million in annual revenues.

habitat, then each landowner would be expected to set aside 0.05 to 0.12 acres, at a value of approximately $124,500 to $274,000. In addition, landowners would incur an annual cost of approximately $200 in conservation fees. This would represent a loss of five to 11 percent of the value of these properties in proposed CHD.

218. As stated above, this analysis assumes that in general, landowners are not developers but private citizens. The two known developers that own property within proposed CHD areas are not small entities. Thus, while an estimated 562 landowners may be affected by proposed CHD, few are anticipated to be small entities.

EXHIBIT C-1 ESTIMATED LANDOWNER IMPACT IN THREE FLORIDA BEACH MICE CHD

UNIT	COUNTY	PROJECTED ACRES OF DEVELOPMENT	NUMBER OF PRIVATELY OWNED DEVELOPABLE PARCELS
PKBM-2	Escambia	114	155
PKBM-4	Escambia	161	126
CHBM-2	Walton	15	14
CHBM-3	Walton	2	11
CHBM-4	Walton	5	14
SABM-1	Bay	195	2
SABM-2	Gulf	25	81
SABM-3	Gulf	97	59
Total		**614**	**562**
Sources: Land Use and Zoning GIS data from Baldwin, Escambia, Walton, Bay, and Gulf Counties.			

C.2 POTENTIAL IMPACTS TO THE ENERGY INDUSTRY

219. Pursuant to Executive Order No. 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use," issued May 18, 2001, Federal agencies must prepare and submit a "Statement of Energy Effects" for all "significant energy actions." The purpose of this requirement is to ensure that all Federal agencies "appropriately weigh and consider the effects of the Federal Government's regulations on the supply, distribution, and use of energy."[162] The OMB's guidance for implementing this Executive Order outlines nine outcomes that may constitute "a significant adverse effect" as compared to a scenario without the regulatory action under consideration:

- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;

[162] Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance For Implementing E.O. 13211, M-01-27, Office of Management and Budget, July 13, 2001, http://www.whitehouse.gov/omb/memoranda/m01-27.html.

- Reductions in natural gas production in excess of 25 million Mcf per year;
- Reductions in electricity production in excess of 1 billion kilowatts-hours per year or in excess of 500 megawatts of installed capacity;
- Increases in energy use required by the regulatory action that exceed the thresholds above;
- Increases in the cost of energy production in excess of one percent;
- Increases in the cost of energy distribution in excess of one percent; or
- Other similarly adverse outcomes.[163]

As none of these criteria is relevant to this analysis, energy-related impacts associated with three Florida beach mice conservation activities efforts the proposed CHD are not expected.

[163] Ibid.