



DRAFT ECONOMIC ANALYSIS OF  
CRITICAL HABITAT  
DESIGNATION FOR THE  
ALABAMA BEACH MOUSE

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prepared for:

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## EXECUTIVE SUMMARY

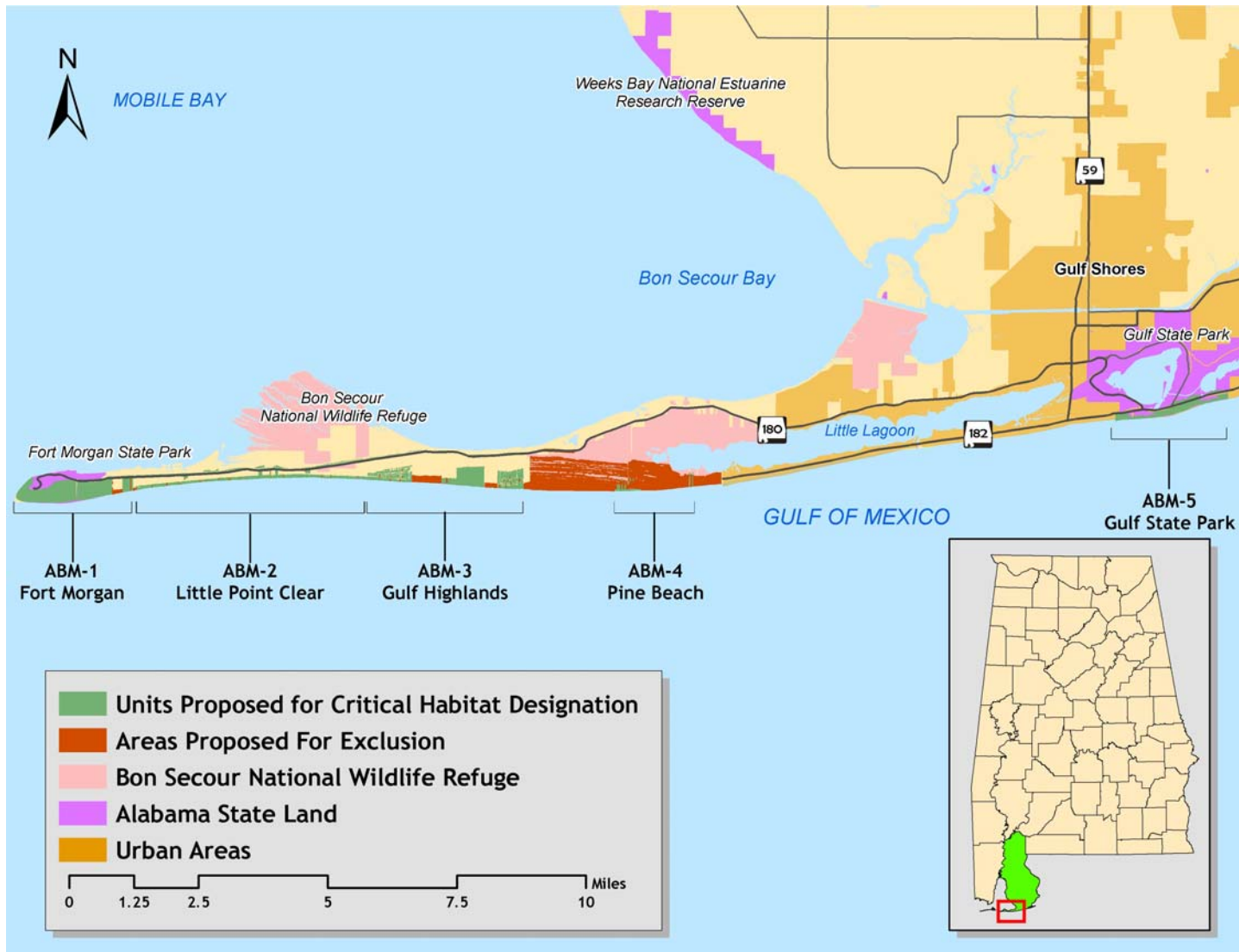
1. The purpose of this report is to identify and analyze the potential economic impacts associated with the proposed CH designation for the federally listed Alabama beach mouse (*Peromyscus polionotus ammobates*), known as the ABM.
2. In 1985, the ABM was listed as endangered, and CH was designated. The 1985 CH designation (CH designation) consisted of primary and secondary dunes and did not include high elevation (scrub dune) habitat. In total, three CH zones (units), totaling approximately 1,034 acres, were designated
3. On February 1, 2006, the U.S. Fish and Wildlife Service (Service) published a proposed CH designation revision for the ABM. The Service proposed 1,298 acres of CH in Baldwin County, Alabama for the ABM.<sup>1</sup> The Service also proposed 1,229 acres for exclusion from CH designation in Baldwin County, Alabama. Exhibit ES-1 is a map of the proposed CH designation for the ABM.
4. Of the 1,298 acres in proposed CH designation for the ABM, approximately six percent are Federal lands (managed by Bureau of Land Management and Service), and another 50 percent are owned by the State of Alabama (Alabama State Historical Commission and Alabama Department of Conservation and Natural Resources). Of remaining lands, 44 percent are privately and locally owned lands.
5. This analysis is able to quantify cost estimates for several economic activities, including residential and commercial development, transportation, species management and habitat protection, and administrative costs associated with ABM conservation efforts. Future costs are estimated to be \$18.3 to \$51.8 million (undiscounted) over 20 years. Discounted future costs are estimated at \$14.2 million to \$41.7 million (using a real rate of seven percent), or \$16.1 to \$46.8 million (using a real rate of three percent) over the same time period.<sup>2</sup> Past costs are estimated to be \$79.9 million (discounted at seven percent) from 1985 to 2006.

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<sup>1</sup>Note that this analysis presents only approximate estimates of land acreage included in CH. Please refer to the proposed rule for legal descriptions of proposed CH designation.

<sup>2</sup>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 ALABAMA BEACH MOUSE



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 CH designation.

#### KEY FINDINGS

- **Total Future Impacts:** Quantified economic impacts are estimated to be \$18.3 million to \$51.8 million over 20 years (undiscounted). Discounted future costs are estimated to be \$14.2 million to \$41.7 million over this same time period (\$1.3 million to \$3.9 million annually) using a real rate of seven percent, or \$16.1 million to \$46.8 million (\$1.1 million to \$3.1 million annually) using a real rate of three percent.
- **Affected Activities:** Costs associated with residential/commercial development represent more than 98 percent of total quantified future impacts. Other quantified impacts include transportation (approximately one percent of estimated costs), and administrative 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 Alabama beach mouse (ABM). Total costs are estimated to be \$18.1 million to \$51.2 million over the next 20 year (undiscounted). Discounted future costs are estimated to be \$14.1 million to \$41.4 million over this same time period using a real rate of seven percent, or \$16.0 million to \$46.3 million using a real rate of three percent. Undeveloped private lands in proposed CH designation (214 to 230 developable residential units on 84 to 89 acres) are anticipated to be developed into single-family and duplex residences. Two permitted, but contested, multi-family developments are expected to result in an additional 973 units built within proposed CH designation. New multi-family development and redevelopment is expected to result in a further 28 to 247 residential units. Costs of conservation efforts that may be recommended for new development activity on private land include costs for land preservation (set-asides), monitoring, constructing dune walkovers, predator control, etc.
  - **Transportation:** Transportation costs are estimated to be \$0.1 million to \$0.5 million (undiscounted) for efforts to reduce impacts of road construction and maintenance projects on the ABM. Discounted costs are estimated at \$0.1 million to \$0.3 million (using a real rate of seven percent) or \$0.1 million to \$0.4 million (using a real rate of three percent).
  - **Other Activities:** Few future impacts are estimated associated with tropical storms and hurricanes, recreation, and species management and habitat protection.
- **Unit with Highest Impacts:** The unit with the largest projected impacts is ABM-3 (97 percent of total costs), estimated at \$16.2 million to \$36.4 million (undiscounted). Discounted costs for this unit are estimated at \$12.8 million to \$31.7 million (\$1.2 to \$3.0 million annually) using a real rate of seven percent, or \$14.4 to \$34.0 million (\$1.0 to \$2.3 million annually) using a real rate of three percent. Quantified costs in this unit primarily stem from impacts on development activities.
- **Past Costs:** Quantified past economic impacts are estimated to be \$63.0 million (undiscounted) from 1985 to 2006. Discounted past costs are estimated at \$79.9 million (using a real rate of seven percent), or \$69.7 million (using a real rate of three percent). Most past costs are associated with residential and commercial development (97 percent). Development projects have proceeded on the Fort Morgan Peninsula by completing a Habitat Conservation Plan (HCP) or formal consultation. Almost all of the developments that completed a HCP are proposed for exclusion from CH. The quantified past economic impacts estimated for areas proposed for exclusion range from \$26.2 million to \$29.5 million (undiscounted). In discounted terms, costs are estimated at \$46.8 million to \$50.1 million (using a real rate of seven percent) or \$33.5 million to \$36.8 million (using a real rate of three percent). Due to the physical characteristics and amount of past development on the Fort Morgan Peninsula, limited developable property remains within proposed CH designation.
- **History of ABM Critical Habitat:** In 1985, the ABM was listed as endangered with 1,034 acres of CH. On February 1, 2006, the Service published a proposed CH designation revision for the ABM, proposing 1,298 acres of CH.

**BACKGROUND**

6. Section 4(b)(2) of the Endangered Species Act (Act) requires the Service to designate CH 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 CH. The Service may exclude areas from CH designation when the benefits of exclusion outweigh the benefits of including the areas within CH, provided the exclusion will not result in extinction of the species.<sup>3</sup> 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).<sup>4</sup> This report also complies with direction from the U.S. 10<sup>th</sup> Circuit Court of Appeals that, when deciding which areas to designate as CH, the economic analysis informing that decision should include “co-extensive” effects.<sup>5</sup>
7. Executive Order 12866 directs Federal agencies to evaluate regulatory alternatives.<sup>6</sup> The Service proposes five units for designation as CH, and proposes nine areas for exclusion from CH designation. An alternative to the proposed rule is the designation of all 14 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 CH 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 ABM and ABM habitat in potential CH. 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 ABM and ABM habitat, and thus contribute to the efficacy of CH-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

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<sup>3</sup> 16 U.S.C. §1533(b)(2).

<sup>4</sup> 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.

<sup>5</sup> In 2001, the U.S. 10<sup>th</sup> Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of proposed CH 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 (10<sup>th</sup> Cir. 2001)).

<sup>6</sup> 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.

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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. 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 ABM proposed CH designation stem from the current and proposed land uses in these areas. Almost all of the costs are associated with residential and commercial development (more than 98 percent). The following exhibits at the end of the executive summary provide detail on the total estimated impacts by activity and the spatial distribution of estimated impacts:
- Exhibit ES-2 presents total future costs over 20 years by activity in undiscounted terms. Results using a discount rate of three or seven percent do not yield a significantly different relative distribution of costs.
  - Exhibit ES-3 presents forecast costs by unit anticipated over the next 20 years in undiscounted terms. The relative rankings of these units, by cost, do not change significantly when future costs are discounted at three percent or seven percent.
  - Exhibit ES-4 is a map showing the relative magnitudes of total costs by unit and parcel. Appendix F contains maps of parcel level impacts for each proposed CH designation unit.
  - Exhibit ES-5 through ES-7 present a matrix of total future costs by activity and unit. Appendix E presents total future costs by activity and unit using a three percent discount rate.
  - Exhibit ES-8 provides a qualitative discussion of potential impacts associated with recreation and tropical storms and hurricanes.
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 ABM. Despite numerous existing land use regulations, coastal development along the Gulf Coast is proceeding quickly as the quantity of developable land decreases. Undeveloped private lands in proposed CH designation (214 to 230 potential residential units on 84 to 89 acres) are anticipated to be developed into single-family and duplex residences. Two permitted, but contested, multi-family developments (i.e., Beach Club West and Gulf Highlands) are expected to result in an additional 973 residential units built within proposed CH designation. New multi-family development and redevelopment is expected to result in a further 28 to 247 residential units constructed within proposed CH.



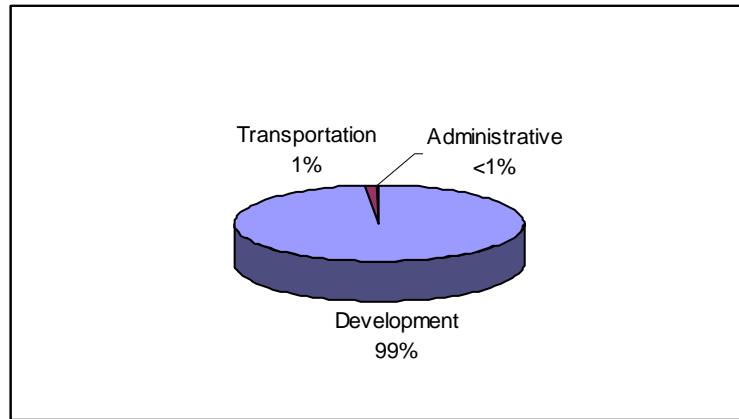
12. Total costs of ABM conservation efforts related to development activities are estimated to be \$18.1 million to \$51.2 million (undiscounted) over the next 20 years. Discounted future costs are estimated to be \$14.1 million to \$41.4 million (using a real rate of seven percent) or \$16.0 million to \$46.3 million (using a real rate of three percent). Note, that much of the overall ABM conservation burden related to development activity is driven by Beach Club West and Gulf Highlands, and most of the conservation costs for these two developments are embedded in the past cost estimate. This is because the analysis considers future costs to be those costs that may be incurred from 2007 to 2026, and past costs are defined as those costs incurred from 1985 to 2006. For example, the Beach Club West 2002 land purchase of off-site set-asides is considered a past cost, while conservation efforts that have yet to be implemented (e.g., an artificial lighting plan) are considered future costs.
13. Due to the rapid development of the Alabama Gulf Coast, the Service has completed a number of formal consultations and issued ITPs for large scale development projects. The main concerns developers of past large scale residential subdivisions have related to ABM conservation are:
- **Regulatory uncertainty.** The Fort Morgan Peninsula regulatory environment for development is uncertain in part due to the ABM. Developers expressed that it is uncertain what ABM conservation efforts will be required, when permits will be issued, and if lawsuits will be filed on issued permits. Developers stated that uncertainty is the issue that most concerns them.
  - **Project delay.** The time it has taken to obtain an ITP and begin construction has ranged from less than one year to eight years and ongoing. The average time it takes to obtain an ITP is 3.5 years. Often projects take longer to begin construction when complicated by litigation.
  - **Changes to project layout configuration.** In the past the Service has requested additional on-site set asides, clustering of structures on-site, removal of amenities to reduce impervious surfaces (e.g., tennis courts), and other project layout changes (e.g., construct parking decks under buildings rather than constructing parking lots). The project changes can increase the construction costs of the project, reduce the total number of housing units built, and impact sales (i.e., it may take longer to sell a unit with fewer amenities or reduce the sales price).
14. The total past costs of ABM conservation efforts to residential and commercial real estate development are estimated at \$60.7 million (undiscounted) for units proposed for CH designation. Discounted costs are estimated at \$77.3 million (using a real rate of seven percent), or \$67.3 million (using a real rate of three percent). These costs largely result from mitigation (both on- and off-site) and carrying costs engendered by delay associated

with Habitat Conservation Plan (HCP) efforts. On-going costs are associated with annual per unit ABM fees and are considered future costs.

15. Due to this long history of development proceeding with conservation efforts for the ABM, this analysis presumes that future development proceeds in the following ways:
- Multi-family development projects currently planned, specifically Beach Club West and Gulf Highlands are constructed. as described in their associated HCPs. This analysis estimates costs associated with the conservation efforts outlined in their respective HCPs.
  - Multi-family developments are constructed on developable parcels that are currently vacant and are currently zoned as multi-family. This analysis estimates conservation efforts costs using average compliance costs for other multi-family developments within proposed CH.
  - Single-family and duplex residences are constructed on developable parcels that are currently vacant, with certain constraints. This analysis assumes landowners within CH obtain permits under the City of Gulf Shores Range-Wide HCP, which requires a mitigation fee and other measures, including construction of dune walkovers for units immediately adjacent to the beach.
  - Redevelopment is assumed to proceed in locations specifically identified as able to support multi-family development, within certain legal and physical constraints. Specifically, redevelopment is possible within proposed CH if 1) contiguous land assembly occurs; 2) existing structures are razed; and 3) zoning is changed. This analysis estimates conservation efforts costs using average per residential unit compliance costs for other multi-family developments within proposed CH.
16. **TRANSPORTATION** Future conservation efforts for the ABM for transportation projects are likely to be associated with widening of the full length State Route 180. ABM conservation efforts are likely to include surveys, clearing, restoring native vegetation, and planting of dunes on the highway right-of-way. The total cost of conservation efforts for the ABM associated with transportation projects is estimated to be \$100,000 to \$500,000 (undiscounted). Discounted costs are estimated at \$62,000 to \$311,000 (using a real rate of seven percent) or \$81,000 to \$407,000 (using a real rate of three percent). Beyond direct costs ALDOT is concerned CH designation may limit its flexibility to update and improve Baldwin County roads in an area with unprecedented residential and commercial growth and correspondingly high traffic volumes.
17. **SPECIES MANAGEMENT AND HABITAT PROTECTION** The Service and Alabama State Parks are expected to undertake species management and habitat protection efforts in the future. Managers for these public lands identified that potential future projects are likely to be associated with dune protection, dune restoration and vegetation, and tropical storms and hurricanes. Gulf State Park and Fort Morgan Historic Site, both managed by Alabama State Parks, anticipate future costs to be modest, based on currently available information.

18. **RECREATION** Proposed CH designation includes access areas for multiple parks and beaches. Few impacts on recreational beach use or visitation are anticipated as a result of future beach mice conservation efforts. This is due to the fact that: 1) the vegetated dune areas in proposed CH designation 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; and 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.
19. **TROPICAL STORMS AND HURRICANES** While future tropical storms and hurricanes may destroy habitat for the ABM, predicting the future locations, intensity, damage, and response to future storms is 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 ABM. Most response to storm events is baseline and incremental to ABM proposed CH designation. For example, dune restoration and protection efforts (e.g., beach nourishment) are a result of the storm event and not the ABM; however, some additional efforts may be required by the proposed CH designation such as conducting a consultation.

**EXHIBIT ES-2 FUTURE QUANTIFIED ECONOMIC IMPACTS BY AFFECTED ACTIVITY (HIGH ESTIMATE UNDISCOUNTED), 2007-2026**



**EXHIBIT ES-3 FUTURE QUANTIFIED ECONOMIC IMPACTS BY UNIT, 2007-2026 (HIGH ESTIMATE)**

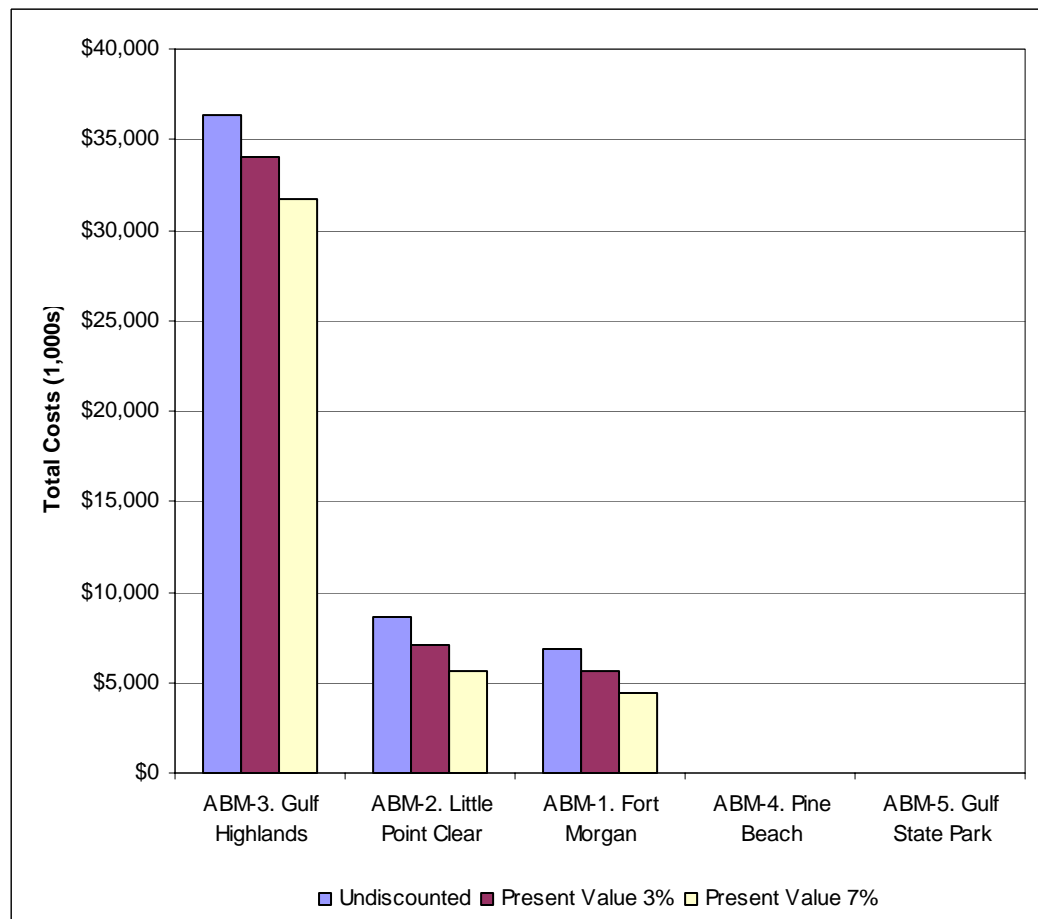
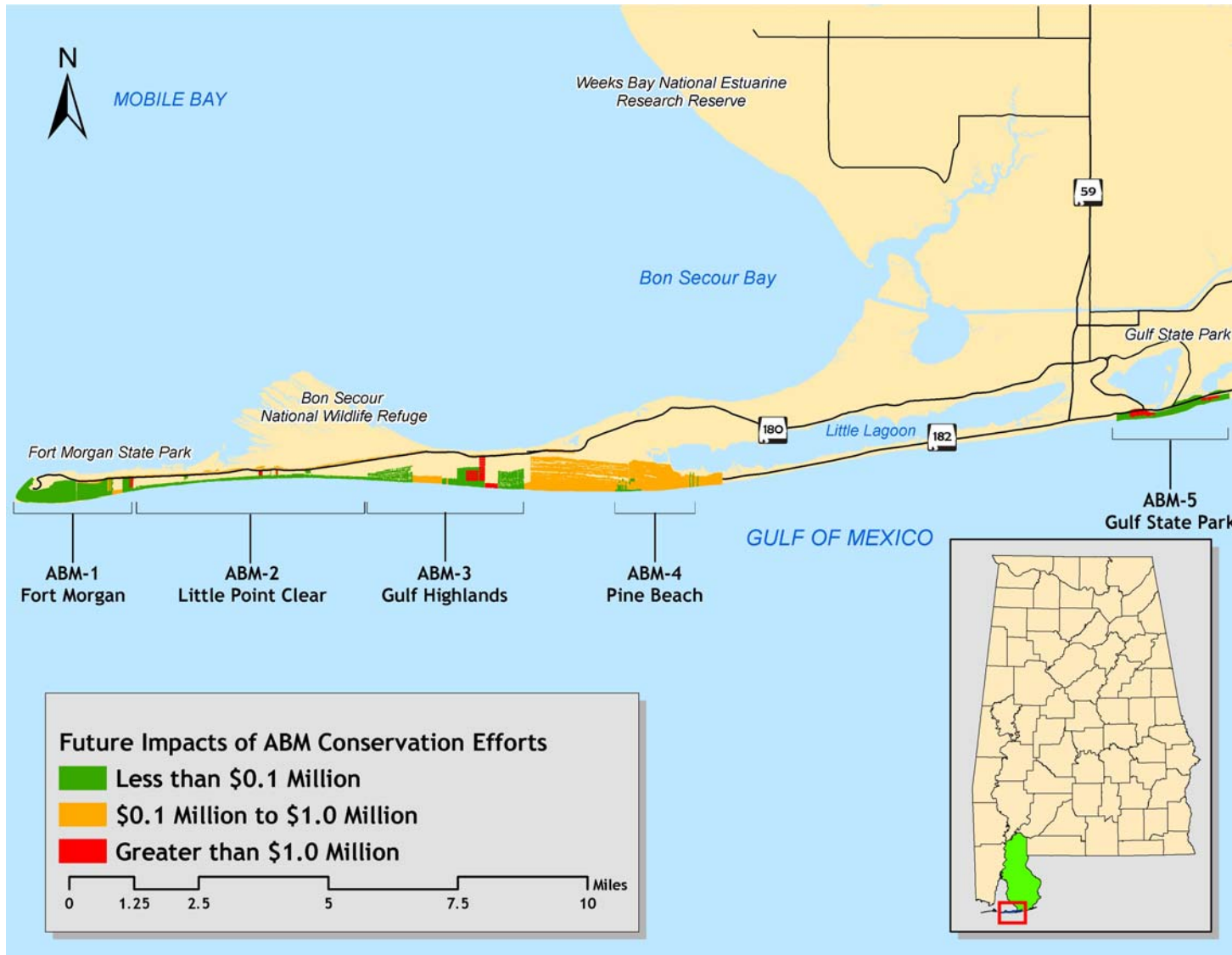


EXHIBIT ES-4 MAP OF POTENTIAL FUTURE ECONOMIC IMPACTS BY UNIT AND PARCEL, 2007-2026 (HIGH ESTIMATE UNDISCOUNTED)



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 CH designation.

**EXHIBIT ES-5 SUMMARY OF FUTURE IMPACTS BY UNIT AND ACTIVITY IN PROPOSED CRITICAL HABITAT DESIGNATION  
(UNDISCOUNTED), 2007-2026**

UNIT	DEVELOPMENT		TRANSPORTATION		SPECIES MANAGEMENT		ADMINISTRATIVE		TOTAL	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Proposed CH</b>										
ABM-1	\$0.20	\$6.69	\$0.02	\$0.11	\$0.00	\$0.00	\$0.01	\$0.02	\$0.23	\$6.82
ABM-2	\$1.76	\$8.35	\$0.05	\$0.23	\$0.00	\$0.00	\$0.01	\$0.02	\$1.82	\$8.60
ABM-3	\$16.11	\$36.14	\$0.03	\$0.16	\$0.00	\$0.00	\$0.04	\$0.06	\$16.18	\$36.36
ABM-4	\$0.03	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.01	\$0.04	\$0.05
ABM-5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.01	\$0.01	\$0.01
<b>Total</b>	<b>\$18.10</b>	<b>\$51.22</b>	<b>\$0.10</b>	<b>\$0.50</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.07</b>	<b>\$0.11</b>	<b>\$18.27</b>	<b>\$51.83</b>
<b>Proposed for Exclusion</b>										
EX-1 The Dunes	\$0.37	\$0.37	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.37	\$0.37
EX-2 Bay to Breakers	\$0.06	\$0.06	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.06	\$0.06
EX-3 Kiva Dunes	\$0.53	\$0.53	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.53	\$0.53
EX-4 Plantation Palms	\$0.41	\$0.41	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.41	\$0.41
EX-5 The Beach Club	\$1.94	\$1.94	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.94	\$1.94
EX-6 Martinique on the Gulf	\$0.39	\$0.39	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.39	\$0.39
EX-7 Perdue Unit, Bon Secour NWR	\$0.50	\$0.50	\$0.00	\$0.00	\$0.50	\$0.50	\$0.00	\$0.00	\$1.00	\$1.00
EX-8 Gulf State Park	\$3.20	\$3.30	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3.20	\$3.30
EX-9 49 Single Family Homes	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total</b>	<b>\$7.40</b>	<b>\$7.50</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.50</b>	<b>\$0.50</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$7.90</b>	<b>\$8.00</b>

Note: Totals may not sum due to rounding.

EXHIBIT ES-6 SUMMARY OF FUTURE IMPACTS BY UNIT AND ACTIVITY IN PROPOSED CRITICAL HABITAT DESIGNATION  
(DISCOUNTED AT SEVEN PERCENT), 2007-2026

UNIT	DEVELOPMENT		TRANSPORTATION		SPECIES MANAGEMENT		ADMINISTRATIVE		TOTAL	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Proposed CH</b>										
ABM-1	\$0.12	\$4.36	\$0.01	\$0.07	\$0.00	\$0.00	\$0.01	\$0.01	\$0.14	\$4.44
ABM-2	\$1.14	\$5.44	\$0.03	\$0.15	\$0.00	\$0.00	\$0.01	\$0.01	\$1.18	\$5.59
ABM-3	\$12.79	\$31.55	\$0.02	\$0.10	\$0.00	\$0.00	\$0.02	\$0.03	\$12.83	\$31.68
ABM-4	\$0.02	\$0.03	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.02	\$0.03
ABM-5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.00	\$0.01
<b>Total</b>	<b>\$14.07</b>	<b>\$41.37</b>	<b>\$0.06</b>	<b>\$0.31</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.04</b>	<b>\$0.06</b>	<b>\$14.17</b>	<b>\$41.74</b>
Annualized	\$1.33	\$3.91	\$0.01	\$0.03	\$0.00	\$0.00	\$0.00	\$0.01	\$1.34	\$3.94
<b>Proposed for Exclusion</b>										
EX-1 The Dunes	\$0.20	\$0.20	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.20	\$0.20
EX-2 Bay to Breakers	\$0.03	\$0.03	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.03	\$0.03
EX-3 Kiva Dunes	\$0.28	\$0.28	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.28	\$0.28
EX-4 Plantation Palms	\$0.22	\$0.22	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.22	\$0.22
EX-5 The Beach Club	\$1.03	\$1.03	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.03	\$1.03
EX-6 Martinique on the Gulf	\$0.21	\$0.21	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.21	\$0.21
EX-7 Perdue Unit, Bon Secour NWR	\$0.27	\$0.27	\$0.00	\$0.00	\$0.27	\$0.27	\$0.00	\$0.00	\$0.53	\$0.53
EX-8 Gulf State Park	\$2.21	\$2.26	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.21	\$2.26
EX-9 49 Single Family Homes	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total</b>	<b>\$4.43</b>	<b>\$4.48</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.27</b>	<b>\$0.27</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$4.70</b>	<b>\$4.75</b>
Annualized	\$0.39	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.39	\$0.40

Note: Totals may not sum due to rounding.



EXHIBIT ES-7 SUMMARY OF FUTURE IMPACTS BY UNIT AND ACTIVITY IN PROPOSED CRITICAL HABITAT DESIGNATION  
(DISCOUNTED AT THREE PERCENT), 2007-2026

UNIT	DEVELOPMENT		TRANSPORTATION		SPECIES MANAGEMENT		ADMINISTRATIVE		TOTAL	
	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>Proposed CH</b>										
ABM-1	\$0.16	\$5.54	\$0.02	\$0.09	\$0.00	\$0.00	\$0.01	\$0.01	\$0.18	\$5.64
ABM-2	\$1.46	\$6.91	\$0.04	\$0.19	\$0.00	\$0.00	\$0.01	\$0.01	\$1.50	\$7.12
ABM-3	\$14.37	\$33.85	\$0.03	\$0.13	\$0.00	\$0.00	\$0.03	\$0.05	\$14.43	\$34.02
ABM-4	\$0.03	\$0.03	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.03	\$0.04
ABM-5	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.01	\$0.00	\$0.01
<b>Total</b>	<b>\$16.01</b>	<b>\$46.33</b>	<b>\$0.08</b>	<b>\$0.41</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.05</b>	<b>\$0.08</b>	<b>\$16.14</b>	<b>\$46.82</b>
Annualized	\$1.08	\$3.11	\$0.01	\$0.03	\$0.00	\$0.00	\$0.00	\$0.01	\$1.08	\$3.15
<b>Proposed for Exclusion</b>										
EX-1 The Dunes	\$0.28	\$0.28	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.28	\$0.28
EX-2 Bay to Breakers	\$0.04	\$0.04	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.04	\$0.04
EX-3 Kiva Dunes	\$0.40	\$0.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.40	\$0.40
EX-4 Plantation Palms	\$0.30	\$0.30	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.30	\$0.30
EX-5 The Beach Club	\$1.44	\$1.44	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1.44	\$1.44
EX-6 Martinique on the Gulf	\$0.29	\$0.29	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.29	\$0.29
EX-7 Perdue Unit, Bon Secour NWR	\$0.37	\$0.37	\$0.00	\$0.00	\$0.37	\$0.37	\$0.00	\$0.00	\$0.74	\$0.74
EX-8 Gulf State Park	\$2.67	\$2.74	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$2.67	\$2.74
EX-9 49 Single Family Homes	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total</b>	<b>\$5.79</b>	<b>\$5.87</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.37</b>	<b>\$0.37</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$6.16</b>	<b>\$6.24</b>
Annualized	\$0.36	\$0.37	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.36	\$0.37

Note: Totals may not sum due to rounding.

EXHIBIT ES-8 SUMMARY OF FUTURE UNQUANTIFIED IMPACTS BY ACTIVITY,  
2007-2026

ACTIVITY	POTENTIAL IMPACTS
Recreation	Few impacts on recreational beach use or visitation are anticipated as a result of future ABM 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 ABM food source; not creating a un-vegetated wide beach berm; minimizing wind blown sands; placing equipment outside of ABM 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 ABM.

## SECTION I | FRAMEWORK FOR ANALYSIS

20. The purpose of this report is to estimate the economic impact of actions taken to protect the federally listed Alabama beach mouse (ABM) and its habitat. It attempts to quantify the economic effects associated with the proposed designation of CH. 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 CH boundaries. The analysis looks retrospectively at costs incurred since the ABM was listed, and it attempts to predict future costs likely to occur after the 2006 proposed CH designation is finalized.<sup>7</sup>
21. 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.<sup>8</sup> 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).<sup>9</sup> 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 CH.<sup>10</sup>
22. 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 CH-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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<sup>7</sup> The Alabama beach mouse was Federally listed as endangered with 1,034 acres of critical habitat on June 6, 1985. U.S. Fish and Wildlife Service, Final Rule Determination of Endangered Status and CH for Three Beach Mice, 50 FR 23872, June 6, 1985.

<sup>8</sup> 16 U.S.C. §1533(b)(2).

<sup>9</sup> 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.

<sup>10</sup> 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 CH 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 (10<sup>th</sup> Cir. 2001)).

## 1.1 APPROACH TO ESTIMATING ECONOMIC EFFECTS

23. This economic analysis considers both the economic efficiency and distributional effects that may result from efforts to protect the ABM and its habitat. 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 ABM conservation efforts.
24. 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 ABM 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

25. 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 ABM 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.<sup>11</sup>
26. 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 CH. The effort required for the consultation 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 included in the designation. When compliance activity is not expected to significantly affect markets --

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<sup>11</sup> 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 (2<sup>nd</sup> 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>.

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.

27. 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.
28. This analysis begins by measuring costs associated with measures taken to protect the ABM and its 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.

### 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 ABM 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 ABM conservation efforts from year  $t$  to  $T$  is measured in 2005 dollars according to the following standard formula:<sup>a</sup>

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

$C_t$  = forecast cost of ABM conservation efforts in year  $t$

$r$  = discount rate<sup>b</sup>

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 ABM 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)

<sup>a</sup> 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.

<sup>b</sup> 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.)

### 1.1.2 DISTRIBUTIONAL AND REGIONAL ECONOMIC EFFECTS

29. 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.<sup>12</sup> 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

30. This analysis considers how small entities, including small businesses, organizations, and governments, as defined by the Regulatory Flexibility Act, might be affected by future ABM conservation efforts.<sup>13</sup> 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.<sup>14</sup>

#### Regional Economic Effects

31. 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.
32. 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

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<sup>12</sup> 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>.

<sup>13</sup> 5 U.S.C. § 601 *et seq.*

<sup>14</sup> Executive Order 13211, *Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*, May 18, 2001.



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.

33. 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

34. 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 CH designation. In instances where CH 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 CH effects within CH boundaries, this analysis considers all future conservation-related impacts to be co-extensive with the designation.<sup>15,16</sup>
35. Co-extensive 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 CH. Because habitat conservation efforts affording protection to a listed species likely contribute to the efficacy of the CH designation efforts, the impacts of these actions are considered relevant for understanding the full effect of the proposed CH designation. 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

36. 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 CH designation. In this section, the Secretary is required to list species as endangered or threatened "solely on the basis of the

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<sup>15</sup> 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 CH designation, 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)).

<sup>16</sup> In 2004, the U.S. Ninth Circuit invalidated the Service's regulation defining destruction or adverse modification of CH (*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.

best available scientific and commercial data."<sup>17</sup> Section 4 also requires the Secretary to designate CH "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 CH."<sup>18</sup> 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.

37. 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 CH. The administrative costs of these consultations, along with the costs of project modifications resulting from these consultations, represent compliance costs associated with the listing of the species and CH designation.<sup>19</sup>
- 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, or collect, or to attempt to engage in any such conduct."<sup>20</sup> 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.<sup>21</sup> 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 CH does not require completion of an HCP; however, the designation may influence conservation measures provided under HCPs.

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<sup>17</sup> 16 U.S.C. 1533.

<sup>18</sup> 16 U.S.C. 1533.

<sup>19</sup> 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 CH. 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.

<sup>20</sup> 16 U.S.C. 1532.

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

### 1.2.1 OTHER RELEVANT PROTECTION EFFORTS

38. 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.<sup>22</sup> For the purpose of this analysis, such protective efforts are considered to be co-extensive with the protection offered by CH, and costs associated with these efforts are included in this report. In addition, under certain circumstances, the CH designation 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 CH, they are included in this economic analysis. Additional economic impacts are not expected to be triggered by this CH designation.

### 1.2.3 ADDITIONAL ANALYTIC CONSIDERATIONS

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

#### Time Delay and Regulatory Uncertainty Impacts

40. 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 CH designation).

#### Stigma Impacts

41. Stigma refers to the change in economic value of a particular project or activity due to negative (or positive) perceptions of the role CH 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 CH are known as "stigma" impacts.

### 1.2.4 BENEFITS

42. Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.<sup>23</sup> 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.<sup>24</sup>

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<sup>22</sup> 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.

<sup>23</sup> Executive Order 12866, *Regulatory Planning and Review*, September 30, 1993.

<sup>24</sup> 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>.

43. In the context of CH designation, 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.<sup>25</sup> *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.*
44. CH designation may also generate ancillary benefits. CH aids in the conservation of species specifically by protecting the primary constituent elements on which the species depends. To this end, CH designation can result in 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 the ABM if species specific conservation efforts include dune preservation. While they are not the primary purpose of CH, 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.
45. It is often difficult to evaluate the ancillary benefits of CH 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

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

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<sup>25</sup> 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>.

### 1.3 ANALYTIC TIME FRAME

47. 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 ABM conservation efforts since 1985 (year of listing and original CH designation) within proposed CH designation and then forecast projected future impacts for the 20 year period from 2007 (the year of the species' final revised designation) to 2026.

### 1.4 INFORMATION SOURCES

48. 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 in 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);
- Bureau of Land Management (BLM);
- Federal Emergency Management Agency (FEMA);
- 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.

49. 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 THE REPORT

50. The remainder of this report is organized as follows:
- Section 2: Socioeconomic Profile of Baldwin County;
  - Section 3: Potential Economic Impacts on Development Activities;
  - Section 4: Potential Economic Impacts on Road Construction and Maintenance;
  - Section 5: Potential Economic Impacts to Tropical Storms and Hurricanes;
  - Section 6: Potential Economic Impacts on Species Management Activities and Recreation;
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- Appendix A: Administrative Costs;
- Appendix B: Small Business Impacts and Energy Impacts;
- Appendix C: Development Methodology;
- Appendix D: Context Maps;
- Appendix E: Potential Residential Development Maps;
- Appendix F: Redevelopment Analysis Maps; and
- Appendix G: Maps of Total Estimated Future Costs by Unit and Parcel.

## SECTION 2 | SOCIOECONOMIC PROFILE OF BALDWIN COUNTY

51. This section summarizes historical information on the listing of the Alabama beach mouse and the original designation of CH, biological information on the species, and socioeconomic information on the areas with proposed revised CH. The Service proposes approximately 1,298 acres for Alabama beach mouse CH. An additional 1,229 acres of habitat are proposed for exclusion from the final designation. All acres are located in Baldwin County, Alabama.<sup>26</sup>

### 2.1 BACKGROUND

52. In 1985, the Alabama beach mouse was listed as an endangered species and CH was designated concurrently.<sup>27</sup> Three units comprise the original 1985 designation, which totals 1,034 acres and consists of primary and secondary dune habitat.
53. The Service proposes to revise CH due to an improved understanding of the importance of scrub dunes to the species' survival. The Service's proposed CH revision for new CH was published on February 1, 2006.

#### DESCRIPTION OF THE SPECIES AND HABITAT

54. The oldfield mouse (*Peromyscus polionotus*) occurs throughout northeastern Mississippi, Alabama, Georgia, South Carolina, and Florida. As a coastal subspecies of the oldfield mouse, beach mice live in beach and sand dune habitat. The subspecies is characterized by a small body, haired tail, relatively large ears, protuberant eyes, and coloration that blends well with the sandy soils and dune vegetation of its coastal habitat.
55. Beach mice have historically inhabited the Florida Atlantic Coast from St. Johns to Broward Counties and the eastern Gulf Coast from Gulf County, Florida, to Baldwin County, Alabama.
56. 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,<sup>28</sup> secondary dunes,<sup>29</sup> inter and intradunal swales,<sup>30</sup> and scrub dunes.

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<sup>26</sup> U.S. Fish and Wildlife Service, Proposed Designation of Critical Habitat for the Alabama Beach Mouse, 71 FR 5516, February 1, 2006.

<sup>27</sup> U.S. Fish and Wildlife Service, Final Rule Determination of Endangered Status and Critical Habitat for Three Beach Mice, 50 FR 23872, June 6, 1985.

<sup>28</sup> Primary dunes are those closest to the shoreline, most recently formed, and highly dynamic.



57. Although beach mice inhabit interdunal and intradunal swales, studies indicate that they use swales less frequently than frontal and tertiary (scrub) dunes. The scrub dunes may also function as a refuge during and after tropical storms.

**2.2 PROPOSED CRITICAL HABITAT REVISION**

58. The Service proposes 1,298 acres of CH for the Alabama beach mouse in Baldwin County. An additional 1,229 acres in Baldwin County are proposed for exclusion. Land can be excluded from CH when other provisions, such as HCPs, are in place to protect the species and when benefits of exclusion outweigh benefits of designation, provided that such exclusion would not lead to the species' extinction.

59. Exhibit 2-2 provides information on the acreage and ownership of the proposed CH units.

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<sup>29</sup> Secondary dunes consist of one or more dune lines landward of the primary dune with a similar, though denser, vegetative cover.

<sup>30</sup> 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.

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## EXHIBIT 2-2 PROPOSED CH UNITS (ACRES)

UNIT #	UNIT NAME	OWNERSHIP			
		FEDERAL	STATE	LOCAL & PRIVATE <sup>a</sup>	TOTAL
PROPOSED CH UNITS <sup>b</sup>					
ABM-1	Fort Morgan	44	337	63	443
ABM-2	Little Point Clear	16	82	167	266
ABM-3	Gulf Highlands	11	48	330	390
ABM-4	Pine Beach	11	0	20	32
ABM-5	Gulf State Park	0	190	0	190
TOTAL PROPOSED <sup>b</sup>		82	657	580	1320
AREAS PROPOSED FOR EXCLUSION					
Ex-1	The Dunes	-	-	15	15
Ex-2	Bay to Breakers	-	-	3	3
Ex-3	Kiva Dunes	-	-	50	50
Ex-4	Plantation Palms	-	-	12	12
Ex-5	The Beach Club	-	-	15	15
Ex-6	Martinique on the Gulf	-	-	10	10
Ex-7	Perdue Unit, Bon Secour NWR	1,063	-	-	1,063
Ex-8	Gulf State Park	-	44	-	44
Ex-9	49 Single Family Homes	-	-	17	17
TOTAL PROPOSED FOR EXCLUSION		1,063	44	122	1,229
Source: U. S. Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; CH for the Alabama Beach Mouse; Proposed Rule. 50 CFR Part 17. February 1, 2006.					
<sup>a</sup> Using available GIS data, it is difficult to parse out local and private acres.					
<sup>b</sup> Totals may not sum due to rounding.					

## 2.3 SOCIOECONOMIC PROFILE OF BALDWIN COUNTY

60. Although the county level data presented in Exhibit 2-3 may not precisely describe the local areas immediately surrounding CH, these data provide some context for the economic analysis. Per capita income in Baldwin County is \$21,800, which is higher than Alabama's \$18,200. The County's poverty rate of 10 percent is below Alabama's 16 percent, while the County's population density of 88 persons per square mile is the same as Alabama's.

## EXHIBIT 2-3 SOCIOECONOMIC PROFILE OF BALDWIN COUNTY, ALABAMA

AREA	POP. DENSITY (PER./ SQ MI)	POPULATION (2004)	% OF STATE POP.	% CHANGE (90-00)	PER CAPITA INCOME (1999)	POVERTY RATE (1999)
Alabama	87.6	4,530,182	100%	10.1%	\$18,189	16.1%
Baldwin County, AL	88	156,701	3.5%	42.9%	\$20,826	10.1%

Source: U.S. Census Bureau, Census 2000 and State County QuickFacts, accessed at <http://quickfacts.census.gov/qfd/states/01/01003.html> on March 16, 2006.

## ECONOMIC ACTIVITY

61. Exhibit 2-4 presents figures on the number of employees, number of establishments, and annual payroll for various industries in Baldwin County. As measured by annual payroll, the principal industries in the County are services, retail trade, manufacturing, and construction. Again, this may not precisely describe the local areas immediately surrounding CH, but the data provide some context for the economic analysis.
62. The largest employment sectors in Baldwin County are services, retail trade, manufacturing, and construction. Employment in these sectors represents 82 percent of total employment in the County. The service industry represents 43 percent of total employment, retail trade 21 percent, manufacturing 12 percent, and construction seven percent.

EXHIBIT 2-4 SUMMARY OF ECONOMIC ACTIVITY BY INDUSTRY IN BALDWIN COUNTY, ALABAMA (2003)

INDUSTRY	ANNUAL PAYROLL (\$1,000)	EMPLOYEES	ESTABLISHMENTS <sup>31</sup>
Forestry, fishing, hunting, & agricultural support	\$2,508	227	21
Mining	\$906	30	8
Utilities	\$11,650	277	13
Construction	\$89,627	3,397	523
Manufacturing	\$152,663	5,593	138
Wholesale Trade	\$67,455	1,605	190
Retail Trade	\$188,256	9,779	951
Transportation & Warehousing	\$26,291	899	112
Information*	\$74,487	1,470	70
Finance & Insurance	\$54,549	1,344	236
Real Estate	\$38,861	1,667	249
Services**	\$371,373	17,837	1,257
Other services***	\$42,464	2,521	433
Arts, entertainment, & recreation	\$14,883	1,004	60
Unclassified establishments****	\$236	12	9
<b>Total</b>	<b>\$1,136,209</b>	<b>47,662</b>	<b>4,270</b>
<p>Source: U.S. Census Bureau, County Business Patterns, accessed at <a href="http://censtats.census.gov/cbpnaic.shtml">http://censtats.census.gov/cbpnaic.shtml</a></p> <p>Notes: Some values were represented by a range. For these situations, the mean is calculated and rounded up to the nearest integer.</p> <p>* The information sector includes media services, like newspaper &amp; book publishers, cable networks, and telecommunications services</p> <p>** 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; and accommodation and food services.</p> <p>*** Other services(excluding public administration) include repair and maintenance, personal and laundry services, and religious, grant making, civic, professional, and similar organizations.</p> <p>**** Unclassified establishments are unclassified by NAICS codes</p>			

<sup>31</sup> Establishments are defined as physical locations in which business activity was performed with one or more paid employees.

**2.4 OVERLAP WITH OTHER ENDANGERED SPECIES**

63. If a project developer must consult with the Service over any federally listed endangered species, the consultation process typically considers all other listed species in the project area. As a result, CH and related protections for other threatened and endangered species may benefit the Alabama beach mouse. This analysis does not attempt to allocate consultation costs across numerous species. Such an allocation would be extremely difficult. Furthermore, a beach mouse consultation would be required even if other species were not present in the project area.
64. Therefore, all Section 7 consultations on projects in proposed Alabama beach mouse CH are fully attributed to the beach mice. At the same time, it should be recognized that these consultations would probably have occurred, even if the ABM were not a federally listed species with CH designated. Species for which consultations have often produced ancillary benefits for the ABM include the Choctawhatchee beach mouse, Perdido Key beach mouse, Green sea turtle, Kemp's Ridley sea turtle, Loggerhead sea turtle, and piping plover.

**2.5 TIMELINE OF REGULATIONS AND ACTIVITIES**

65. Regulations have been enacted at the Federal, local, and county level in order to help ensure the protection of the Alabama beach mouse. Exhibit 2-5 summarizes these regulations as well as other notable events that impact the Alabama beach mouse, such as coastal hurricanes.

## EXHIBIT 2-5 ALABAMA BEACH MOUSE TIMELINE OF REGULATIONS AND EVENTS

YEAR	EVENT
1969	Hurricane Camille
1979	Hurricane Frederic
1982	Coastal Barrier Resources Act (CBRA) enacted.
1985	Alabama beach mouse listed as endangered and CH designated.
	Hurricane Elena
1990	CBRA amended, increasing the acreage and geographic scope of the John H. Chafee Coastal Barrier Resources System.
1991	Service receives a petition from the Alabama Conservancy to revise CH for the Perdido Key beach mouse through an emergency rule.
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	Hurricane Opal
1996	Service issues ITPs for Beach Club and Martinique and several other multi-family ITPs.
1997	Hurricane Danny
	Lawsuit filed against Service for the issuance of ITPs for the Beach Club and Martinique developments.
1998	Hurricane Earl Hurricane Georges
1999	The Sierra Club and the Biodiversity Legal Foundation petition the Service to revise CH for the Alabama beach mouse, the Perdido Key beach mouse, and the Choctawhatchee beach mouse.
	Service publishes a 90-day finding on February petition.
	Service issues final biological opinion on issuance of ITPs for Beach Club and Martinique.
2000	Service publishes a 12-month finding that revision of CH for the three subspecies of beach mice is warranted. The Service consulted to determine the best method to protect dune barrier habitat while providing visitors with access to the beach.
2001	Consultation completed for issuance of incidental take permits (ITPs) for individual lot developments.
2002	Consultation completed for section 10 (a)(1)(B) permits to be issued to Gulf Highlands Condominiums and Beach Club West to begin residential developments.
	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 CH for the Perdido Key, Choctawhatchee, and Alabama beach mice and that the revision was withheld or unreasonably delayed under the Administrative Procedure Act.
	Amendment completed for the City of Gulf Shores beach restoration project in Baldwin County, Alabama.
2004	Review completed for the City of Gulf Shores beach restoration project in Baldwin County, Alabama.

YEAR	EVENT
	Intra-agency consultation completed for proposed dune restoration efforts and beach access improvements at Gulf State Park.
	Hurricane Ivan
2005	Tropical storm Arlene
	Tropical storm Cindy
	Hurricane Dennis
	Hurricane Katrina
	Hurricane Rita
	Consultation completed for Morgantown Development Company, LLC to construct 28 lots of the Morgantown development in ABM habitat.
	Consultation completed for the proposed issuance of Section 10(a)(1)(A) permits for recovery actions.
	Consultation completed for initial habitat recovery actions to be completed by Bon Secour National Wildlife Refuge
	Consultation completed for Seamist, Inc. to construct a residential subdivision, Laguna Cove.
2006	Proposed rule proposing 1,298 acres of CH for the ABM published.

## 2.6 EXISTING REGULATORY MECHANISMS IN PROPOSED CRITICAL HABITAT DESIGNATION AREAS

66. Coastal regulations aim to reduce erosion and protect structures from storm surges in coastal areas, most frequently through setback lines and building and construction standards. These regulations are briefly explained in the paragraphs that follow.

### THE COASTAL CONSTRUCTION CONTROL LINE

67. The Alabama Department of Environmental Management requires special permitting for construction on land intersected by or seaward of the coastal construction control line (CCCL). Projects requiring this permitting include all building construction as well as smaller items, such as the installation of gazebos and dune walk-overs. The CCCL is defined as running 40 feet landward of the peaks of the primary dune system.<sup>32</sup> Permits for construction seaward of or on the CCCL require special siting and design standards. These standards are intended to prevent projects that "remove primary dune or beach sands and/or vegetation or otherwise alter the primary dune system."<sup>33</sup>

### THE COASTAL BARRIER RESOURCES ACT

68. 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.<sup>34</sup> Areas designated as

<sup>32</sup> Alabama Department of Environmental Management Admin. Code R. 335-8-x-.xx. Revised Effective: April 26, 1995. Accessed at <http://www.adem.state.al.us/Regulations/Div8/Div84261995.pdf> on April 28, 2006.

<sup>33</sup> Ibid.

<sup>34</sup> 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

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.<sup>35</sup> 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.<sup>36</sup> 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)<sup>37</sup>

69. 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)."
70. Certain coastal property owners are unable to purchase NFIP insurance, even if their communities are NFIP program members. For example, coastal owners with properties located within the Coastal Barriers Resource System cannot purchase NFIP insurance, if their homes were built after 1982.
71. 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.

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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.

<sup>35</sup> 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.

<sup>36</sup> 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.

<sup>37</sup> National Flood Insurance Program website accessed at [www.floodsmart.gov](http://www.floodsmart.gov).



## SECTION 3 | POTENTIAL ECONOMIC IMPACTS ON DEVELOPMENT ACTIVITIES

72. This section considers the ways in which ABM conservation efforts may affect residential and commercial real estate development in units proposed for CH designation and areas proposed for exclusion. 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."<sup>38</sup> Conservation efforts to address this threat generally include modifications to a project's layout and footprint, constraints on certain activities within the property, and other monitoring or direct compliance activities. Historically, the consultation process also precipitated regulatory uncertainty and delays related to the development process. This section presents a summary of economic impacts on development, relevant background information, an overview of the analytic approach used to evaluate development activities and associated economic impacts, and results of the analysis presented separately by units proposed for CH designation and areas proposed for exclusion.

### 3.1 SUMMARY OF ECONOMIC IMPACTS ON RESIDENTIAL AND COMMERCIAL REAL ESTATE DEVELOPMENT ACTIVITIES

73. To calculate the past and future impact of ABM conservation efforts on development activities this analysis examines each parcel of vacant land within the proposed CH designation and areas proposed for exclusion.<sup>39</sup> Past economic impacts to development activities are determined by reviewing completed consultations and Habitat Conservation Plans (HCPs). The type of future development activity (i.e., large scale subdivision, single-family, or duplex residences) likely to be affected is determined based on current and likely future zoning.

#### 3.1.1 PAST ECONOMIC IMPACTS ON RESIDENTIAL AND COMMERCIAL REAL ESTATE DEVELOPMENT ACTIVITIES

74. The costs of past (1985 to 2006) ABM conservation efforts associated with residential and commercial real estate development are estimated at \$60.7 million within units proposed for CH designation and \$26.0 million to \$29.2 million within areas proposed for exclusion, in undiscounted dollars. These costs largely result from mitigation (both on-

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<sup>38</sup> U.S. Fish and Wildlife Service, Proposed Designation of Critical Habitat for the Alabama Beach Mouse, 71 FR 5516, February 1, 2006.

<sup>39</sup> Appendix D provides maps of these areas.

and off-site) and carrying costs engendered by delay associated with HCP efforts. For units proposed for CH designation, the present value of past costs is \$67.3 million, assuming a three percent discount rate, or \$77.3 million, assuming a seven percent discount rate. For areas proposed for exclusion, the present value of past costs is \$33.3 million to \$36.6 million, assuming a three percent discount rate, or \$46.6 million to \$49.9 million, assuming a seven percent discount rate.

### 3.1.2 FUTURE ECONOMIC IMPACTS ON RESIDENTIAL AND COMMERCIAL REAL ESTATE DEVELOPMENT ACTIVITIES

75. Coastal development along the Alabama Gulf Coast is proceeding quickly as the quantity of developable land decreases. Undeveloped private lands in proposed CH designation (214 to 230 potential residential units on 94.1 acres) are anticipated to be developed into single-family and duplex residences in the next 20 years. Two permitted, but contested, multi-family developments are expected to result in an additional 973 residential units built within proposed CH designation. New multi-family development and redevelopment is expected to result in a further 28 to 247 residential units constructed within proposed CH. The future costs of ABM conservation efforts within proposed CH designation to development are estimated at \$18.1 million to \$51.2 million in undiscounted dollars over 20 years. The present value of estimated future costs to private development within proposed CH designation is \$16.0 million to \$46.3 million (or \$1.1 million to \$3.1 million annually), assuming a three percent discount rate, or \$14.1 million to \$41.4 million (or \$1.3 million to \$3.9 million annually) assuming a seven percent discount rate. Future economic impacts on development are summarized in Exhibit 3-1.
76. Future costs related to residential and commercial real estate development within the areas proposed for exclusion are associated with ongoing conservation efforts stemming from completed HCPs. Costs associated with the development of the Gulf State Park Hotel and Convention Center are also included in this section. The future costs of ABM conservation efforts within areas proposed for exclusion are estimated at \$7.0 million in undiscounted dollars over 20 years. The present value of estimated future costs to private development within areas proposed for exclusion is \$5.5 million (or \$0.4 million annually), assuming a three percent discount rate, or \$4.2 million (or \$0.4 million annually) assuming a seven percent discount rate.
77. This analysis presumes that future development proceeds in the following ways:
- Multi-family development projects currently planned, specifically Beach Club West, Gulf Highlands, and Gulf State Park Convention Center, are constructed as described in their associated HCPs. This analysis estimates costs associated with the conservation efforts outlined in their respective HCPs.
  - Multi-family developments are constructed on developable parcels that are currently vacant and are currently zoned as multi-family. This analysis estimates conservation efforts costs using average compliance costs for other multi-family developments within proposed CH.

- Single-family and duplex residences are constructed on developable parcels that are currently vacant, with certain constraints. This analysis assumes landowners within CH obtain permits under the City of Gulf Shores Range-Wide HCP, which requires a mitigation fee and other measures, including construction of dune walkovers for units immediately adjacent to the beach.
- Redevelopment is assumed to proceed in locations specifically identified as able to support multi-family development, within certain legal and physical constraints. Specifically, redevelopment is possible within proposed CH if 1) contiguous land assembly occurs; 2) existing structures are razed; and 3) zoning is changed. This analysis estimates conservation efforts costs using average per residential unit compliance costs for other multi-family developments within proposed CH. Due to the uncertain nature of redevelopment occurring, redevelopment is only quantified in the high end estimate.

**EXHIBIT 3-1. SUMMARY OF FUTURE COSTS OF ALABAMA BEACH MOUSE CONSERVATION EFFORTS ASSOCIATED WITH PRIVATE DEVELOPMENT, 2007-2026**

UNIT	TOTAL UNDISCOUNTED DOLLARS		PRESENT VALUE (3%)		PRESENT VALUE (7%)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>CH Units</b>						
ABM-1. Fort Morgan	\$196,000	\$6,692,000	\$156,000	\$5,541,000	\$119,000	\$4,363,000
ABM-2. Little Point Clear	\$1,763,000	\$8,352,000	\$1,456,000	\$6,913,000	\$1,143,000	\$5,439,000
ABM-3. Gulf Highlands	\$16,108,000	\$36,143,000	\$14,371,000	\$33,845,000	\$12,786,000	\$31,547,000
ABM-4. Pine Beach	\$34,000	\$36,000	\$27,000	\$31,000	\$20,000	\$25,000
ABM-5. Gulf State Park	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$18,101,000</b>	<b>\$51,223,000</b>	<b>\$16,010,000</b>	<b>\$46,330,000</b>	<b>\$14,068,000</b>	<b>\$41,374,000</b>
Total Annualized 3 percent					\$1,076,000	\$3,114,000
Total Annualized 7 percent					\$1,328,000	\$3,905,000
<b>Areas Proposed For Exclusion</b>						
EX-1. The Dunes	\$370,000		\$275,000		\$196,000	
EX-2. Bay to Breakers	\$56,000		\$42,000		\$30,000	
EX-3. Kiva Dunes	\$531,000		\$395,000		\$281,000	
EX-4. Plantation Palms	\$408,000		\$304,000		\$216,000	
EX-5. The Beach Club	\$1,940,000		\$1,443,000		\$1,028,000	
EX-6. Martinique on the Gulf	\$390,000		\$290,000		\$207,000	
EX-7. Perdue Unit Bon Secour NWR	\$0		\$0		\$0	
EX-8. Gulf State Park	\$3,303,000		\$2,744,000		\$2,261,000	
EX-9. 49 Single Family Homes	\$0		\$0		\$0	
<b>Total</b>	<b>\$6,998,000</b>		<b>\$5,492,000</b>		<b>\$4,218,000</b>	
Total Annualized 3 percent					\$369,000	\$369,000
Total Annualized 7 percent					\$398,000	\$398,000

Note: Totals may not sum due to rounding.

### 3.2 BACKGROUND

78. The Alabama Gulf Coast remained relatively undiscovered as a vacation resort area until 1979.<sup>40</sup> Following Hurricane Frederic, in 1979, *The Atlanta Journal-Constitution* identified the development potential of the area in an article, attracting investors to take advantage of post storm redevelopment opportunities.<sup>41</sup> The development trend in the early 1980's was single family residences.<sup>42</sup>
79. When the Service listed the ABM as endangered and designated three zones (units) of CH in 1985, the major threat identified was human destruction of the coastal sand dune ecosystems for commercial and residential development.<sup>43</sup> After 1985, development of the area continued and portions shifted from single family residences to motels and high density condominiums.<sup>44</sup> Much of the high density development in the City of Gulf Shores occurred at this time.
80. The Fort Morgan Peninsula came under the planning and zoning authority of the Baldwin County Commission in 1992.<sup>45</sup> By 1996, approximately 39 percent of the coastal area of Baldwin County had been developed as condominiums and hotels, accomplished by converting undeveloped and single family home areas. Most of the remaining undeveloped area was and continues to be under public ownership within the Bon Secour National Wildlife Refuge and Fort Morgan State Historic Site.
81. Since 2003, property owners on the Fort Morgan Peninsula have been required to either gain written verification from the Service that their project is not likely to result in take of ABM or to obtain an ITP for the project. This requirement is a result of FEMA's request that Baldwin County ensure compliance with the Act for any project that could result in take of the ABM. Therefore, each project that may affect ABM is considered for adverse impact prior to construction. When the Service determines whether the project is likely

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<sup>40</sup> The Alabama Gulf Coast area falls between Fort Morgan and the Florida/Alabama state line. Source: South Alabama Regional Planning Commission. Fort Morgan Peninsula Resource Assessment, March 2001.

<sup>41</sup> Following the Atlanta Journal-Constitution article beachfront prices reportedly increased from \$1,500 to \$6,000 per foot virtually overnight.

<sup>42</sup> While a majority of the beachfront continued to be undeveloped in 1983 (57 percent), 33 percent of the area was developed as single family homes (condominiums and hotels make up the remaining 10 percent).

<sup>43</sup> The Final Rule also stated residential and commercial development isolates small areas of ABM habitat. Low-density development does not necessarily create isolation of habitat, but high density development can act as a barrier to migrating populations. Development must be situated inland from ABM habitat, protecting the dunes and interdunal areas and associated grasses and shrubs. The Proposed Rule explains that in 1985, it was not well understood ABM also utilized the scrub dunes. U.S. Fish and Wildlife Service, Proposed Designation of Critical Habitat for the Alabama Beach Mouse, 71 FR 5516, February 1, 2006.

<sup>44</sup> In 1996, 39 percent of the area was in condominiums and hotels, and 22 percent was single family homes, and 39 percent of the area remained undeveloped (the majority of which includes beachfront located within the Bon Secour National Wildlife Refuge and the Fort Morgan Historic Site).

<sup>45</sup> The Fort Morgan Peninsula extends westward from the Gulf Shores area for approximately 15 miles, terminating at Fort Morgan State Historic Site.

to jeopardize the ABM, the Service considers the projects impact on habitat, not the take of individuals.<sup>46</sup>

82. Today, areas from the Florida-Alabama State line west to the City of Gulf Shores are more intensively developed than areas of the Fort Morgan Peninsula. Low- to moderate-density single-family residences, many of which are rented to vacationers or seasonal residents, are still the dominant developmental feature of the Fort Morgan Peninsula shoreline. Within the Cities of Gulf Shores and Orange Beach, much of the Gulf of Mexico frontage south of Highway 182 contains multi-family, multi-story residential units, while the area north of Highway 182 is highly developed with an emphasis on single-family dwellings, retail stores, and restaurants.
83. Limited vacant developable land remains on the Fort Morgan Peninsula. As the amount of developable beachfront in the Cities of Gulf Shores and Orange Beach has shrunk, development pressure has shifted west to the Fort Morgan Peninsula. The development trend along the Fort Morgan Peninsula has been planned residential developments with clusters of lower density single family and duplex residences and high density condominium towers with views of the Gulf of Mexico. Few large undeveloped privately owned beachfront tracts remain on the Fort Morgan Peninsula.<sup>47</sup> Based on an analysis conducted by Volkert and Associates, three sites on the Fort Morgan Peninsula are capable of supporting high density multi-family development, other areas are constrained by physical (e.g., wetlands) and legal (e.g., deed restrictions) constraints.<sup>48</sup>
84. There are constraints on development along the Alabama Gulf Coast in addition to ABM protections. Due to the severe nature of storms that affect the Gulf Coast, coastal development in Baldwin County is subject to a variety of regulations, aside from CH 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, Alabama's Coastal Construction Control Line (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 that can offer additional protection to the structure in the event of a storm. Finally, various County and City regulations affect structure siting and design criteria on a specific parcel. Despite these regulations, however, coastal development along the Gulf Coast is proceeding quickly, as the quantity of developable land decreases.

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<sup>46</sup> Based on a review of past Habitat Conservation Plans (HCPs), biological opinions, and Incidental Take Permits (ITPs).

<sup>47</sup> U.S. Fish and Wildlife Service. Interim Revised Cumulative Impact Assessment for the Alabama Beach Mouse. Prepared by Dial Cordy and Associates Inc. and Personnel with the Southeast Regional Office and Daphne Field Office, U.S. Fish and Wildlife Service. February 2005.

<sup>48</sup> Volkert & Associates, Inc. 2003. Permitted or Potential Future Gulf-Front Multi-Family Development Locations, Fort Morgan Peninsula. Gulf Shores, Alabama.

### 3.3 ANALYTIC APPROACH FOR ESTIMATING IMPACTS

85. The proposed rule states that habitat loss and fragmentation associated with coastal residential and commercial real estate development are the primary factors contributing to the endangered status of the ABM. 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. Potential modifications to land use projects stemming from ABM conservation activities can affect landowners, consumers, and real estate markets in general. The total economic impact depends on the scope of ABM conservation activities, pre-existing land use and regulatory controls in the region, and the nature of regional land and real estate markets.
86. In light of the current environment in which residential and commercial development occurs, and given past impacts of beach mouse conservation efforts on development projects, the conservation activities associated with the beach mouse may result in losses to developers and individual landowners by imposing the following costs: (1) increased administrative costs to secure incidental take permits (ITPs), including associated project delay costs; (2) on-site project modification costs to protect the ABM; and (3) land value losses associated with development restrictions, i.e. required land setbacks or set-asides.
87. To estimate welfare losses associated with potential development constraints in designated areas, this analysis primarily relies on the direct compliance cost approach to quantifying potential impacts of ABM conservation on development in proposed CH. 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 CH designation and areas proposed for exclusion. Data were obtained from developers of larger-scale projects to determine how the ABM has affected their projects. Rather than attempt to contact all ITP holders for single family and duplex residence construction a 15 individuals were contacted. This analysis also utilized the proposed range wide HCP being developed by the City of Gulf Shores to estimate impacts to landowners engaging in construction of single family and duplex residence construction (discussed further in Section 3.4.2.2).
88. The following text box presents a sample calculation of compliance costs for a generic multi-family condominium development. This example is provided to illustrate how various conservation efforts are quantified and distributed through time.

#### EXAMPLE CALCULATION OF IMPACTS ASSOCIATED WITH A MULTI-FAMILY DEVELOPMENT

The following is an example calculation for a generic multi-family development within Alabama beach mouse (ABM) proposed critical habitat. Relevant characteristics of the multi-family development include:

- The development has 400 residential units.
- The developers purchased the land for the project in 1999 for \$10 million.
- A Habitat Conservation Plan (HCP) was developed and an Incidental Take Permit (ITP) was applied for in 2000.
- The Service issued an ITP for the project in 2003, and construction began immediately.
- Construction was completed in 2004.
- All residential units were sold in 2005.

Because the ITP application was submitted in 2000, but was not approved until 2003, this analysis includes costs associated with this three year delay.<sup>a</sup> In addition, in the HCP, the developer agreed to implement the following ABM conservation efforts:

- Assess a \$100 per residential unit fee for 30 years to fund ABM habitat acquisition, enhancement, and management;
- Purchase 10 acres for off-site mitigation; and
- Develop and implement a lighting plan.

In this example, total past costs for the example multi-family development project would be \$8.9 million, and total future costs for the project would be \$800,000 (undiscounted).

#### TIMELINE OF COMPLIANCE COSTS FOR EXAMPLE DEVELOPMENT (UNDISCOUNTED COSTS)

YEAR	CONSERVATION EFFORT	COST
2000	Cost of delayed ITP issuance [land purchase price (\$10 million) x cost of capital (10.6%)]	\$1.1 million
2001	Cost of delayed ITP issuance	\$1.1 million
2002	Cost of delayed ITP issuance	\$1.1 million
2003	Off-site mitigation (10 acres)	\$5.0 million
2004	Lighting plan	\$0.5 million
2005	ABM Fee (\$100 per residential unit)	\$40,000
2006	ABM Fee	\$40,000
<b>Total Past Costs</b>		<b>\$8.9 million</b>
2007-2026	ABM Fee (annually for 20 years)	\$40,000
<b>Total Future Costs</b>		<b>\$800,000</b>

Notes:

<sup>a</sup> Delay costs are calculated as the Weighted Average Cost of Capital for Standard Industrial Classification (SIC) Code 153 (Operative Builders). The average weighted average cost of capital for 1995 to 2005 is 10.6 percent. Ibbotson Associates. Cost of Capital Quarterly Yearbooks for years 1995 to 2005.

### 3.4 ECONOMIC IMPACTS ON RESIDENTIAL AND COMMERCIAL REAL ESTATE DEVELOPMENT WITHIN PROPOSED CRITICAL HABITAT UNITS

89. This section estimates the past and future costs of ABM conservation efforts related to residential and commercial real estate development within units proposed for CH designation. Past and future costs are further separated into impacts associated with construction of large scale subdivisions and single-family and duplex residences.

#### 3.4.1 PAST ECONOMIC IMPACTS ON DEVELOPMENT ACTIVITIES

##### 3.4.1.1 Large Scale Subdivisions

90. Due to the rapid development of the Alabama Gulf Coast, the Service has completed a number of formal consultations and issued ITPs for large scale development projects in Alabama. Within proposed CH (ABM-3) two Incidental Take Permits (ITP) have been issued associated with HCPs, and one formal consultation has been completed for large scale subdivision projects. The three projects are Gulf Highlands, Beach Club West, and Morgantown. Of these, Gulf Highlands and Beach Club West are on hold due to ongoing litigation. Exhibit 3-2 presents the project descriptions, ABM conservation efforts, and costs for each conservation effort associated with these projects. For clarity, Exhibit 3-2 identifies costs expected to be incurred in the future (all ongoing and future costs are noted in parentheses). This analysis considers past costs to be those incurred prior to the species final designation (i.e., January 15, 2007). Costs are considered ongoing if they began in the past and continue beyond 2007 (e.g., annual surveying and monitoring for 30 years). Lastly, ABM conservation effort costs are considered future if they will be incurred entirely in the future.



#### PAST ALABAMA BEACH MOUSE IMPACTS ON LARGE SCALE SUBDIVISIONS

Residential and commercial development projects have proceeded on the Fort Morgan Peninsula since the 1985 listing and CH designation for the ABM. Since listing, most large scale subdivision projects have completed a HCP or formal consultation. Local building permitting entities require developers obtain a letter from the Service stating the project is not likely to result in take of the ABM or obtain an ITP, the Service issues ITPs for completing a formal consultation or developing an approved HCP.

The main concerns developers of large scale residential subdivisions have related to ABM conservation are project delay, regulatory uncertainty, and changes to project layout configuration.

- **Regulatory uncertainty.** The Fort Morgan Peninsula regulatory environment for development is uncertain in part due to the ABM. Developers expressed that it is uncertain what ABM conservation efforts will be required, when permits will be issued, and if lawsuits will be filed on issued permits. Developers stated that uncertainty is the issue that most concerns them.
- **Project delay.** The time it has taken to obtain an ITP and begin construction has ranged from less than one year to eight years and ongoing. The average time it takes to obtain an ITP is 3.5 years. Older developments generally obtained permits faster than more recent projects. Often projects take longer to begin construction when complicated by litigation.
- **Changes to project layout configuration.** In the past the Service has requested additional on-site set asides, clustering of structures on-site, removal of amenities to reduce impervious surfaces (e.g., tennis courts), and other project layout changes (e.g., parking decks under buildings rather than surface parking lots). The project changes can increase the construction costs of the project, reduce the total number of housing units built, and impact sales (i.e., it may take longer to sell a unit with fewer amenities or reduce the sales price).

Sources: Personal communication with Nick Wilmott, Weichert, Realtors - Sea-N-Shore, Rick Horder, Kilpatrick Stockton LLP, Ed Schwartz, Law Office of Edwin Schwartz, LLC, and Daphne Day, Merrill Land Company, on March 28, 2006. Personal Communication with Jim Edgemon, Kiva Dunes, March 28, 2006. Personal communication with David Head, Sr. Head Companies, David Head, Jr., President Head Companies, David Leffard, CFO, Head Companies, and Jeffrey Schock, Director of Finance Head Companies. Personal communication with Ken Striplin, The Dunes, on March 27, 2006. Personal communication with Steve Thompkins, Vice President, Aronov Realty Management, Incorporated, on April 3, 2006.

EXHIBIT 3-2 HABITAT CONSERVATION PLANS AND BIOLOGICAL OPINIONS COMPLETED FOR DEVELOPMENT PROJECTS IMPACTING ALABAMA BEACH MOUSE

DEVELOPMENT	APPLICANT	DATE	CH UNIT	DESCRIPTION	CONSERVATION EFFORTS	COSTS
Gulf Highlands <sup>a</sup>	Gulf Highlands Condominiums Limited Liability Corporation	2002	ABM-3	Four 20 story condominium towers of 125 residential units each (500 units), a clubhouse, parking, an access road, four swimming pools, and 11 tennis courts.	Relocate ABM from construction area (future)	\$5,000
					Storage of building materials is not allowed outside of planned development footprint (future)	Minimal
					Fence limits of construction area (future)	\$18,000
					Educate construction personnel (future)	Modest
					Rodent and scavenger proof containers (future)	\$12,000 annually
					No free-roaming house cats (future)	Modest
					Install dune walkovers to prevent pedestrian damage to dune vegetation and topography (future)	\$125,000
					Implement dune management, protection, and enhancement program (future)	\$70,000 annually
					Enhance ABM habitat through selective canopy and understory clearing and root removal on at least 105 acres of conservation land (future)	Unknown
					Beach mouse fees to be use for monitoring, acquisition, enhancement, and management of ABM habitat (future)	\$50,000 annually
					Mitigation fee	\$50,000
					50 acres on-site mitigation	\$10.0 million
					Delay	\$23.5 million
					18 acres of off-site mitigation (future)	\$9.1 million
Construct parking deck (future)	\$10.0 million					
Minimize artificial lighting (future)	\$500,000					
Construct dune walkovers (future)	\$125,000					
Beach Club West <sup>b</sup>	Head Companies	2002	ABM-3	Two 20 story condominium towers with 473 units and amenities.	Mitigation fee	\$50,000
					On-site mitigation (52.3 acres)	\$10.4 million
					Legal fees	\$3.0 million
					Engineering fees	\$504,200
					Other consulting fees	\$119,700

DEVELOPMENT	APPLICANT	DATE	CH UNIT	DESCRIPTION	CONSERVATION EFFORTS	COSTS
					Delay costs	\$6.5 million
					Beach mouse fees to be use for acquisition, enhancement, and management of ABM habitat (future)	\$47,300 annually
					2-deck parking garage (future)	\$10 million
					Purchase 17 acres of off-site mitigation (future)	\$3.4 million
					Relocate ABM from construction area (future)	\$5,000
					Storage of building materials is not allowed outside of planned development footprint (future)	Modest
					Fence limits of construction area (future)	\$18,000
					Educate construction personnel (future)	Modest
					Rodent and scavenger proof containers (future)	\$12,000 annually
					No free-roaming house cats (future)	Modest
					Install dune walkovers to prevent pedestrian damage to dune vegetation and topography (future)	\$125,000
					Implement dune management, protection, and enhancement program (future)	\$70,000 annually
					Minimize artificial lighting (future)	\$500,000
Morgantown <sup>c</sup>	Morgantown Development Company, LLC	2005	ABM-3	Construction of an additional 28 single family residences on 21.19 acres. This is Phase VIII of the Morgantown development.	Maintain undeveloped areas in a natural state	Modest
					Set aside 0.72 acres on-site	\$365,000
					Delay	\$2.1 million
					Live trapping and permitting	\$30,000
					Pickup construction debris daily	Modest
					Use county waste disposal services	Modest
					Cats prohibited	Modest
					Develop lighting plan	\$500,000

DEVELOPMENT	APPLICANT	DATE	CH UNIT	DESCRIPTION	CONSERVATION EFFORTS	COSTS
<p>Sources:</p> <p><sup>a</sup> U.S. Fish and Wildlife Service Incidental Take Permit for Gulf Highlands, dated April 19, 2002. U.S. Fish and Wildlife Service. <i>Biological Opinion for Gulf Highlands Limited Liability Corporation and Beach Club West Incidental Take Permits from the Service Pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as Amended for the Incidental Take of the Alabama Beach Mouse (Peromyscus polionotus ammobates), piping plover (Charadrius melodus), loggerhead sea turtle (Caretta caretta), green sea turtle (Chelonia mydas), and Kemp's Ridley sea turtle (Lepidochelys kempii)</i>. Issued April 16, 2002. Meeting with Nick Wilmott, Weichert, Realtors - Sea-N-Shore, Rick Horder, Kilpatrick Stockton LLP, Ed Schwartz, Law Office of Edwin Schwartz, LLC, and Daphne Day, Merrill Land Company, on March 28, 2006. Weighted Average Cost of Capital for SIC Code 153 (Operative Builders). Ibbotson Associates. Cost of Capital Quarterly Yearbooks for years 1995 to 2005. The average weighted average cost of capital for 1995 to 2005 is 10.6 percent.</p> <p><sup>b</sup> U.S. Fish and Wildlife Service Incidental Take Permit for Beach Club West, dated April 19, 2002. U.S. Fish and Wildlife Service. <i>Biological Opinion for Gulf Highlands Limited Liability Corporation and Beach Club West Incidental Take Permits from the Service Pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as Amended for the Incidental Take of the Alabama Beach Mouse (Peromyscus polionotus ammobates), piping plover (Charadrius melodus), loggerhead sea turtle (Caretta caretta), green sea turtle (Chelonia mydas), and Kemp's Ridley sea turtle (Lepidochelys kempii)</i>. Issued April 16, 2002. Written communication provided by Head Companies at March 27, 2006 meeting with David Head, Sr. Head Companies, David Head, Jr., President Head Companies, David Leffard, CFO, Head Companies, and Jeffrey Schock, Director of Finance Head Companies.</p> <p><sup>c</sup> U.S. Fish and Wildlife Service. Biological Opinion: U.S. Army Corps of Engineers Application Number AL04-00046-L for Morgantown Phase VIII, Applicant Morgantown Development Company, Issued January 6, 2005.</p>						

## 3.4.1.2 Single Family and Duplex Residences

91. Due to local permitting requirements, many landowners on the Fort Morgan Peninsula obtained ITPs for the ABM to construct new single-family and duplex residences. Properties covered by those ITPs that would otherwise fall within proposed CH are proposed for exclusion; past costs for areas proposed for exclusion are discussed in Section 3.5.1.2. Therefore, no past costs are estimated for ABM conservation efforts associated with the construction of single-family and duplex residences within the geographic boundaries of proposed CH.

## 3.4.1.3 Summary of Past Impacts on Residential and Commercial Development

92. The past cost of conservation efforts for the ABM are estimated in Exhibit 3-3 and presented by CH unit. The past costs of ABM conservation efforts to residential and commercial real estate development are estimated at \$60.7 million (undiscounted) for units proposed for CH designation. The present value of past costs is \$67.3 million, assuming a discount rate of three percent, or \$77.3 million assuming a seven percent discount rate. These costs largely result from mitigation (both on- and off-site) and carrying costs engendered by delay associated with HCP efforts. Most of the past costs within proposed CH designation are associated with the Beach Club West and Gulf Highlands developments. This is because the analysis considers future costs to be those costs that may be incurred from 2007 to 2026, and past costs are defined as those costs incurred from 1985 to 2006. For example, for the Beach Club West 2002 land purchase of off-site set-asides are considered past costs, while conservation efforts that have yet to be implemented (e.g., an artificial lighting plan) are considered future costs. Beach Club West and Gulf Highlands obtained ITPs in 2002 but due to litigation have not begun construction; each is discussed in further detail below.

**EXHIBIT 3-3 TOTAL COST OF PAST ALABAMA BEACH MOUSE CONSERVATION EFFORTS FOR RESIDENTIAL AND COMMERCIAL DEVELOPMENT WITHIN PROPOSED CRITICAL HABITAT**

UNIT		TOTAL UNDISCOUNTED DOLLARS	PRESENT VALUE (3%)	PRESENT VALUE (7%)
ABM-3	Beach Club West	\$24,091,000	\$26,131,000	\$29,117,000
	Gulf Highlands	\$33,544,000	\$37,912,000	\$44,654,000
	Morgantown	\$3,065,000	\$3,260,000	\$3,532,000
	Total	\$60,700,000	\$67,303,000	\$77,303,000

Note: Totals may not sum due to rounding.

### 3.4.2 FUTURE ECONOMIC IMPACTS ON DEVELOPMENT ACTIVITIES

#### 3.4.2.1 Large Scale Subdivisions

##### Gulf Highlands

93. Gulf Highlands, as previously permitted, is a high density residential development with four 20-story condominium towers of 125 units each, for a total of 500 residential units.<sup>49</sup> The plan also includes a clubhouse, parking, an access road, four swimming pools, and 11 tennis courts. The Gulf Highlands project is within CH unit ABM-3.
94. The applicants for the Gulf Highlands project have been working with the Service on ABM concerns for almost 10 years. In late December 1997, discussion began between the Service and the applicant on the proposed development. In 2000, Gulf Highlands and Beach Club West submitted a joint HCP. The ITP associated with that HCP was issued by the Service in 2002. Shortly after the permit was issued, Sierra Club and Friends of the Earth, Inc. filed an action in the United States District Court for the Southern District of Alabama claiming the Service's decision to issue the ITP without preparing an environmental impact statement (EIS), as required under the National Environmental Policy Act of 1969 (NEPA), was arbitrary and capricious, contrary to law, and a clear error in judgment. Later in 2002, the Court granted a Service request for voluntary remand for further consideration and preparation of an EIS. The notice of availability of the draft EIS associated with the developments was published in the Federal Register April 28, 2006.<sup>50</sup> As estimated in Exhibit 3-2, to date the applicants have incurred \$33.5 million in mitigation and carrying costs associated with ABM.
95. Future costs of conservation efforts for the ABM likely to be undertaken for the Gulf Highlands development are outlined in Exhibit 3-4. Additional project changes have resulted from ABM conservation. These changes are discussed qualitatively here. The site plans for the project have gone through multiple iterations.<sup>51</sup> The original plans called for five low rise (seven story) buildings across the beachfront supplemented with single family residences. The previously permitted project reduced the project footprint and preserved ABM habitat by clustering four high rise (20 story) buildings next to Beach Club West. The draft EIS presents another alternative, where four 20-story condominium towers of 120 residential units each, and a fifth tower with 72 residential units would be

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<sup>49</sup> U.S. Fish and Wildlife Service. *Biological Opinion for Gulf Highlands Limited Liability Corporation and Beach Club West Incidental Take Permits from the Service Pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as Amended for the Incidental Take of the Alabama Beach Mouse (Peromyscus polionotus ammobates), piping plover (Charadrius melodus), loggerhead sea turtle (Caretta caretta), green sea turtle (Chelonia mydas), and Kemp's Ridley sea turtle (Lepidochelys kempii)*. Issued April 16, 2002.

<sup>50</sup> U.S. Fish and Wildlife Service. Notice of Availability Draft Environmental Impact Statement on the Proposed Reaffirmation of Incidental Take Permits (ITPs) That Were Previously Issued To Allow Incidental Take of the Endangered Alabama Beach Mouse and Announcement of a Public Meeting, 71 FR 25221, April 28, 2006.

<sup>51</sup> Meeting with Nick Wilmott, Weichert, Realtors - Sea-N-Shore, Rick Horder, Kilpatrick Stockton LLP, Ed Schwartz, Law Office of Edwin Schwartz, LLC, and Daphne Day, Merrill Land Company, on March 28, 2006.

constructed with a parking deck located beneath the structures. The total future cost that may be incurred for the Gulf Highlands development range from \$12.4 to \$22.4 million (undiscounted), assuming construction begins in 2007,.

96. The developer stated some costs (e.g., increased costs associated with building a concrete structure rather than a wooden structure) will be offset by building additional residential units.<sup>52</sup> The goal of this analysis is to accurately characterize the incremental costs associated with ABM conservation efforts. It is difficult to fully deconstruct the site planning history and process into those changes related to ABM protection only. This analysis assumes that, given the evolving housing market and consumer preferences over this time period, the project would have been similarly redesigned from low rise to high rise structures, absent the ABM. This analysis further assumes direct compliance costs are a reasonable measure of ABM conservation costs incurred by the developer. To the extent the developer offsets compliance costs by constructing additional residential units, this analysis may overstate impacts. However, the applicants have also reduced on-site amenities (e.g., tennis courts) to preserve additional habitat for the ABM. Reduction in on-site amenities may impact future sales (i.e., it may take longer to sell a unit with fewer amenities or reduce the sales price).

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<sup>52</sup> Meeting with Nick Wilmott, Weichert, Realtors - Sea-N-Shore, Rick Horder, Kilpatrick Stockton LLP, Ed Schwartz, Law Office of Edwin Schwartz, LLC, and Daphne Day, Merrill Land Company, on March 28, 2006.

**EXHIBIT 3-4 GULF HIGHLANDS ESTIMATED FUTURE COSTS OF ALABAMA BEACH  
MOUSE CONSERVATION EFFORTS**

COST CATEGORY	COST	
	LOW	HIGH
18 Acre Off-Site Mitigation <sup>a</sup>	\$9,122,000	\$9,122,000
Parking Deck <sup>b</sup>	\$0	\$10,000,000
Per Unit Mitigation Fee <sup>c</sup>	\$1,000,000	\$1,000,000
Dune Walkovers <sup>d</sup>	\$125,000	\$125,000
Clearly mark limits of the construction area with fencing and signs <sup>e</sup>	\$18,000	\$18,000
Manage solid waste	\$240,000	\$240,000
Relocate trapped mice prior to construction	\$5,000	\$5,000
Minimize artificial lighting	\$500,000	\$500,000
Dune monitoring	\$400,000	\$400,000
Dune maintenance	\$1,000,000	\$1,000,000
<b>Total</b>	<b>\$12,410,000</b>	<b>\$22,410,000</b>

Sources:

<sup>a</sup> The value of the set-asides is assumed to be \$506,800 per acre. Baldwin County, Alabama, Geographic Information Systems Data of 2005 Parcel Information, Baldwin County, Alabama. Provided by U.S. Fish and Wildlife Service, on October 27, 2005. U.S. Fish and Wildlife Service. Biological Opinion for Gulf Highlands Limited Liability Corporation and Beach Club West Incidental Take Permits from the Service Pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as Amended for the Incidental Take of the Alabama Beach Mouse (*Peromyscus polionotus ammobates*), piping plover (*Charadrius melodus*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), and Kemp's Ridley sea turtle (*Lepidochelys kempii*). Issued April 16, 2002.

<sup>b</sup> Meeting with Nick Wilmott, Weichert, Realtors - Sea-N-Shore, Rick Horder, Kilpatrick Stockton LLP, Ed Schwartz, Law Office of Edwin Schwartz, LLC, and Daphne Day, Merrill Land Company, on March 28, 2006.

<sup>c</sup> U.S. Fish and Wildlife Service Incidental Take Permit for Gulf Highlands, dated April 19, 2002.

<sup>d</sup> Dune walkovers are \$50,000 per effort. Between Gulf Highlands and Beach Club West five dune walkovers will be constructed, this analysis assumes Beach Club West constructs half of them (a 50/50 split). Written communication from Terry Boyd, Chief of Engineering Section, Alabama Department of Conservation and Natural Resources, April 26, 2006.

<sup>e</sup> Written communication from Terry Boyd, Chief of Engineering Section, Alabama Department of Conservation and Natural Resources, April 26, 2006.

Note: Totals may not sum due to rounding.

**Beach Club West**

97. **Beach Club West**, as previously permitted, is a high density residential development that consists of two 20 story condominium towers with 437 residential units within ABM-3.<sup>53</sup>

<sup>53</sup> U.S. Fish and Wildlife Service. *Biological Opinion for Gulf Highlands Limited Liability Corporation and Beach Club West Incidental Take Permits from the Service Pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as Amended for the Incidental Take of the Alabama Beach Mouse (*Peromyscus polionotus ammobates*), piping plover (*Charadrius melodus*), loggerhead sea turtle (*Caretta caretta*), green sea turtle (*Chelonia mydas*), and Kemp's Ridley sea turtle (*Lepidochelys kempii*).* Issued April 16, 2002.



The Beach Club West property was acquired by the Head Companies (Fort Morgan Paradise Joint Venture) in 2000.<sup>54</sup> In July 2000, Beach Club West and Gulf Highlands submitted a joint HCP to the Service. An ITP was issued by the Service for the Beach Club West project in April 2002, and construction on the project began. As described above The Sierra Club and Friends of the Earth, Inc. filed a suit on the Service's decision to issue the ITP without preparing an EIS. Later in 2002, the Court granted a Service request for voluntary remand for further consideration and preparation of an EIS, and an injunction was granted against Beach Club West construction. In October of that year, the Service began the EIS for the project. The notice of availability for the draft EIS was published April 28, 2006.

98. Based on the draft EIS and past planning documents the analysis assumes the applicant will implement the conservation efforts outlined in Exhibit 3-5 during and after project construction. In addition, in the absence of the ABM, the applicant would construct additional amenities, such as additional alternative dune walkovers, more lighting, and food and entertainment options.<sup>55</sup> A reduction in on-site amenities may impact future sales (i.e., it may take longer to sell a unit with fewer amenities or reduce the sales price). Future construction techniques and processes are also likely to be impacted by ABM. For example, but for the ABM the applicant would not erect mouse fencing during construction, limit the construction area, restrict night traffic that slows construction, or restrict construction traffic in certain areas. In summary, the total future cost of conservation efforts for the ABM likely to be undertaken for the Beach Club West development project may be \$3.2 million to \$13.2 million over the next 20 years, assuming construction begins in 2007.
99. As discussed above, the goal of this analysis is to accurately characterize the incremental costs associated with ABM conservation efforts. It is difficult to fully deconstruct the site planning history and process into those changes related only to ABM protection. Because Gulf Highlands, was proposed first and underwent project changes associated with ABM protection it is unknown what impacts it had on the Beach Club West project plans. The different characteristics of the Beach Club West and Gulf Highlands developments result in different cost estimates.

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<sup>54</sup> Written communication provided by Head Companies at March 27, 2006 meeting.

<sup>55</sup> Written communication provided by Head Companies at March 27, 2006 meeting with David Head, Sr. Head Companies, David Head, Jr., President Head Companies, David Leffard, CFO, Head Companies, and Jeffrey Schock, Director of Finance Head Companies.

**EXHIBIT 3-5 BEACH CLUB WEST ESTIMATED FUTURE COSTS OF ALABAMA BEACH  
MOUSE CONSERVATION EFFORTS IN PROPOSED CRITICAL HABITAT**

CONSERVATION EFFORT	TOTAL COST	
	LOW	HIGH
Per unit fee (\$100 per unit annually) <sup>a</sup>	\$946,000	\$946,000
Dune Walkovers <sup>b</sup>	\$125,000	\$125,000
Clearly mark limits of the construction area with fencing and signs <sup>c</sup>	\$18,000	\$18,000
Manage solid waste <sup>c</sup>	\$240,000	\$240,000
Relocate trapped mice prior to construction <sup>c</sup>	\$5,000	\$5,000
Minimize artificial lighting <sup>c</sup>	\$500,000	\$500,000
Dune monitoring <sup>c</sup>	\$400,000	\$400,000
Dune maintenance <sup>c</sup>	\$1,000,000	\$1,000,000
2-Deck parking garage	\$0	\$10,000,000
<b>Total</b>	<b>\$3,234,000</b>	<b>\$13,234,000</b>
Sources:		
<sup>a</sup> U.S. Fish and Wildlife Service Incidental Take Permit for Beach Club West, dated April 10, 2002.		
<sup>b</sup> Dune walkovers are \$50,000 per effort. Between Gulf Highlands and Beach Club West five dune walkovers will be constructed, this analysis assumes Beach Club West constructs half of them. Written communication from Terry Boyd, Chief of Engineering Section, Alabama Department of Conservation and Natural Resources, April 26, 2006.		
<sup>c</sup> Written communication from Terry Boyd, Chief of Engineering Section, Alabama Department of Conservation and Natural Resources, April 26, 2006.		
Note: Totals may not sum due to rounding.		
<sup>d</sup> In addition to those conservation efforts outlined in the HCP, the draft EIS indicates a two-deck parking garage may be constructed to minimize the impact of parking. U.S. Fish and Wildlife Service, Draft Environmental Impact Statement Incidental Take Permits for the Construction and Occupancy of the Gulf Highlands Condominium and Beach Club West Residential/Recreational Condominiums Projects, Baldwin County, Alabama, April 18, 2006. Cost of parking deck provided in meeting with Nick Wilmott, Weichert, Realtors - Sea-N-Shore, Rick Horder, Kilpatrick Stockton LLP, Ed Schwartz, Law Office of Edwin Schwartz, LLC, and Daphne Day, Merrill Land Company, on March 28, 2006.		

#### Other Locations

100. Given the legal and physical constraints on future high density multi-family development on the Fort Morgan Peninsula, local planning analyses indicate there are only three potential future locations that can support multi-family development.<sup>56</sup> Two of those locations are within proposed CH units ABM-1 and ABM-2, and the third is outside of proposed CH. Within CH unit ABM-2, there is one vacant parcel currently zoned for multi-family development. Any other new multi-family construction at each of these potential locations would require contiguous land assembly, zoning changes, and razing existing structures, as each have existing single-family residences built upon them. Given the high demand for Gulf Front property in Alabama and the likely increase in property value, this analysis assumes some redevelopment may occur in the two locations identified over the next 20 years. Therefore, this analysis estimates costs of conservation efforts for the ABM in these two locations associated with redevelopment as multi-family.
101. The one parcel within proposed CH currently zoned for multi-family development could support 28 residential units under current Baldwin County zoning, and 76 residential units under future City of Gulf Shores zoning. Additional multi-family residential units are possible if redevelopment occurs within proposed CH assuming 1) contiguous land assembly occurs; 2) any existing structures are razed; and 3) zoning is changed to the maximum allowable density of 15 residential units per acre. Exhibit 3-6 presents the number of additional potential multi-family residential units possible if redevelopment occurs within proposed CH. This analysis estimates zero to 177 potential residential units may be built within proposed CH, depending on the extent of redevelopment. Therefore, this analysis estimates 28 to 247 multi-family residential units may be built within proposed CH. Appendix F contains maps of the potential redevelopment locations.

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<sup>56</sup> Legal limitations include deed restrictions prohibiting multifamily development and right-of-way easements that cannot be terminated. Physical limitations include Alabama Department of Environmental Management coastal set back lines, wetlands, and minimum site size. Volkert & Associates, Inc. 2003. Permitted or Potential Future Gulf-Front Multi-Family Development Locations, Fort Morgan Peninsula. Gulf Shores, Alabama.

**EXHIBIT 3-6 ESTIMATE OF THE NUMBER OF MULTI-FAMILY RESIDENTIAL UNITS  
POSSIBLE IF REDEVELOPMENT OCCURS WITHIN PROPOSED ALABAMA  
BEACH MOUSE CRITICAL HABITAT**

CH UNIT	POTENTIAL RESIDENTIAL UNITS	
	LOW	HIGH
<b>CURRENTLY VACANT PARCELS ZONED MULTI-FAMILY</b>		
ABM-1	0	0
ABM-2	28	70
Subtotal	28	70
<b>CURRENTLY VACANT PARCELS WITH POTENTIAL TO BE REZONED MULTI-FAMILY</b>		
ABM-1	0	74
ABM-2	0	32
Subtotal	0	106
<b>BUILT PARCELS WITH POTENTIAL TO BE REDEVELOPED MULTI-FAMILY</b>		
ABM-1	0	35
ABM-2	0	36
Subtotal	0	71
<b>Total</b>	<b>28</b>	<b>247</b>
Sources: Volkert & Associates. Geographic Information Systems Data assembled for the study, "Permitted or Potential Future Gulf-Front Multi-family Development Locations, Fort Morgan Peninsula." Provided by Jay Dickson, Volkert & Associates, on April 11, 2006. Volkert & Associates, Inc. 2003. Permitted or Potential Future Gulf-Front Multi-Family Development Locations, Fort Morgan Peninsula. Gulf Shores, Alabama. Appendix C presents the methodology used to estimate the number of potential residential units allowed if redevelopment occurs within proposed CH.		

102. Conservation efforts for the ABM are expected to be similar to those undertaken for the Beach Club West and Gulf Highlands development projects. Exhibit 3-7 presents the average cost of conservation efforts for multi-family development, and estimates the average cost per residential unit. The average cost of conservation efforts for the ABM are estimated to be \$60,000 per multi-family residential unit. Total future costs of redevelopment may range from \$1.7 million to \$14.8 million, undiscounted.

**EXHIBIT 3-7 ESTIMATE OF THE COSTS OF CONSERVATION EFFORTS ASSOCIATED  
WITH MULTI-FAMILY REDEVELOPMENT WITHIN PROPOSED ALABAMA  
BEACH MOUSE CRITICAL HABITAT**

CATEGORY	GULF HIGHLANDS	BEACH CLUB WEST	AVERAGE
Total Development Impact	\$31,772,000	\$26,458,000	\$29,115,000
Residential Units	500	473	487
Cost Per Residential Unit	\$63,500	\$55,900	\$59,700
Number of Redevelopment Units	28 to 247		
Cost Range	\$1.7 million to \$14.8 million		
Sources: Meeting with Nick Wilmott, Weichert, Realtors - Sea-N-Shore, Rick Horder, Kilpatrick Stockton LLP, Ed Schwartz, Law Office of Edwin Schwartz, LLC, and Daphne Day, Merrill Land Company, on March 28, 2006. Written communication provided by Head Companies at March 27, 2006 meeting with David Head, Sr. Head Companies, David Head, Jr., President Head Companies, David Leffard, CFO, Head Companies, and Jeffrey Schock, Director of Finance Head Companies. Written communication from Terry Boyd, Chief of Engineering Section, Alabama Department of Conservation and Natural Resources, April 26, 2006.			

3.4.2.2 Single Family and Duplex Residences

City of Gulf Shores Habitat Conservation Plan

103. The City of Gulf Shores is in the process of developing a Range-Wide Habitat Conservation Plan (RWHCP) for the ABM and nesting sea turtles.<sup>57</sup> The RWHCP is being developed mainly for the ABM and encompasses the City of Gulf Shores and the Fort Morgan Peninsula.<sup>58</sup> The RWHCP will provide the basis for the issuance of an ITP to the City, and the subsequent issuance of Certificates of Inclusion by the City for single-family and duplex developments.<sup>59</sup> The RWHCP is designed to provide landowners a voluntary, efficient, and cost-effective way to comply with the Act.<sup>60</sup> The average time to obtain an ITP for single-family or duplex residence construction has historically been 1.7 years; the RWHCP is expected to reduce that time. The City of Gulf Shores expects that more than 50 currently vacant lots would enroll and be developed annually under the RWHCP.
104. According to the RWHCP, in the City of Gulf Shores there are 80 vacant lots occupying approximately 40 acres of ABM habitat. On the Fort Morgan Peninsula there are about 685 vacant single-family and duplex lots occupying 451 acres of ABM habitat. In total, 491 acres of ABM habitat occurs on vacant single-family and duplex lots within the City

<sup>57</sup> The City of Gulf Shores. Habitat Conservation Plan City of Gulf Shores, Gulf Shores, Alabama. Prepared by Endangered Species Act Consulting Services LLC, and Ebbin Moser and Skaggs LLP. January 2006.

<sup>58</sup> Personal communication with Carolyn Doughty, Mayor Pro Tem City of Gulf Shores, March 28, 2006.

<sup>59</sup> The City of Gulf Shores. Habitat Conservation Plan City of Gulf Shores, Gulf Shores, Alabama. Prepared by Endangered Species Act Consulting Services LLC, and Ebbin Moser and Skaggs LLP. January 2006.

<sup>60</sup> The City of Gulf Shores. Habitat Conservation Plan City of Gulf Shores, Gulf Shores, Alabama. Prepared by Endangered Species Act Consulting Services LLC, and Ebbin Moser and Skaggs LLP. January 2006.

of Gulf Shores and Fort Morgan Peninsula. Approximately 18 percent, or 89 acres, are within proposed CH.<sup>61</sup> Exhibit 3-8 presents the number of vacant parcels, acres of vacant land, and potential developable units within proposed CH expected to be enrolled in the RWHCP. Appendix C presents the methodology used to estimate the number of potentially developable parcels within proposed CH. This analysis estimates 214 to 230 single-family and duplex residences will be constructed in proposed CH under the RWHCP.

**EXHIBIT 3-8 ESTIMATE OF THE NUMBER OF VACANT PARCELS, VACANT LAND, AND POTENTIAL DEVELOPABLE UNITS WITHIN PROPOSED ALABAMA BEACH MOUSE CRITICAL HABITAT**

UNIT	NUMBER OF VACANT PARCELS <sup>A</sup>	ACRES OF VACANT LAND <sup>B</sup>	POTENTIAL RESIDENTIAL UNITS BALDWIN COUNTY ZONING <sup>C</sup>	POTENTIAL RESIDENTIAL UNITS GULF SHORES ZONING <sup>D</sup>
ABM-1	8	9	59	53 <sup>E</sup>
ABM-2	9	13	17	24
ABM-3	113	64	131	145
ABM-4	7	3	7	8
ABM-5	0	0	0	0
<b>Total</b>	<b>137</b>	<b>89</b>	<b>214</b>	<b>230</b>

Sources:

<sup>A</sup> Baldwin County, Alabama, Geographic Information Systems Data of 2005 Parcel Information, Baldwin County, Alabama. Provided by United States Fish and Wildlife Service, on October 27, 2005. Baldwin County, Alabama, Geographic Information Systems Data of 2005 Zoning Information, Baldwin County, Alabama. Provided by United States Fish and Wildlife Service, on October 27, 2005.

<sup>B</sup> Volkert & Associates. Geographic Information Systems Data assembled for the study, "Permitted or Potential Future Gulf-Front Multi-family Development Locations, Fort Morgan Peninsula." Provided by Jay Dickson, Volkert & Associates, on April 11, 2006.

<sup>C</sup> Baldwin County, Alabama, Geographic Information Systems Data of 2005 Parcel Information, Baldwin County, Alabama. Provided by United States Fish and Wildlife Service, on October 27, 2005. Baldwin County, Alabama, Geographic Information Systems Data of 2005 Zoning Information, Baldwin County, Alabama. Provided by United States Fish and Wildlife Service, on October 27, 2005.

<sup>D</sup> City of Gulf Shores. Final Draft Fort Morgan Peninsula Land Use Plan. October 10, 2005.

<sup>E</sup> There are fewer potential residential units within CH unit ABM-1 under the City of Gulf Shores zoning than Baldwin County zoning because parcels within ABM-1 are identified for possible re-zoning as mutli-family have been removed to avoid double counting. Under expected City of Gulf Shores zoning an additional six residential units could be constructed in CH unit ABM-1, 36 residential units could possibly be constructed if re-zoning occurred in the future.

<sup>61</sup> Volkert & Associates. Geographic Information Systems Map of Vacant Lands Developed for City of Gulf Shores Range-Wide Habitat Conservation Plan. Provided by Volkert & Associates.

105. The City of Gulf Shores will collect a conservation fee from landowners that participate in the RWHCP. A fee of \$2,500 will be assessed for each single-family residence, \$5,000 for each duplex residence, and \$1,500 for each expansion.<sup>62</sup> At maximum participation, the City of Gulf Shores will collect \$2.2 million to fund ABM conservation efforts on city, county, State, and private lands. Conservation efforts that may be funded include:
- Boardwalk construction for public access areas;
  - Augmentation of plant species used by ABM;
  - Community education;
  - Invasive species control; and
  - ABM habitat restoration.
106. In addition to the conservation fee landowners will be required to:
- Reduce the impervious area by placing parking beneath the dwellings;
  - Reduce the size and alignment of driveways, and use approved materials;
  - On lots immediately adjacent to the beach construct dune walkovers;
  - Protect natural habitat on-site; and
  - Return areas disturbed by construction to natural topographic features and indigenous vegetation.
107. Exhibit 3-9 estimates the total conservation fees likely to be collected within CH by Gulf Shores for new single-family and duplex construction assuming maximum build out allowed under current zoning (Baldwin County) and likely future zoning when the City of Gulf Shores annexes the Fort Morgan Peninsula (Gulf Shores). The total estimated RWHCP conservation fees may range from \$535,000 to \$575,000. Exhibit 3-10 estimates the cost associated with lots adjacent to the beach constructing dune walkovers, the costs associated with other conservation efforts outlined above are expected to be modest, at \$248,000. Therefore, the total cost of ABM conservation efforts for single-family and duplex development may be \$783,000 to \$823,000 over the next 20 years.

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<sup>62</sup> This analysis does not have the data required to estimate the number of units that will be expanded within CH over the next 20 years. Reconstruction of a structure outside of the existing footprint following a hurricane may require the landowner to obtain an ITP if the structure expansion occurs within ABM habitat. Conservation efforts are expected to be similar to expansions covered under the RWHCP.

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**EXHIBIT 3-9 ESTIMATED RANGE-WIDE HABITAT CONSERVATION PLAN  
CONSERVATION FEES COLLECTED WITHIN PROPOSED CRITICAL  
HABITAT**

UNIT	POTENTIAL DEVELOPABLE UNITS BALDWIN COUNTY ZONING	POTENTIAL DEVELOPABLE UNITS GULF SHORES ZONING	RWHCP PER UNIT FEE	COST BALDWIN COUNTY ZONING SCENARIO	COST GULF SHORES ZONING SCENARIO
ABM-1	59	53	\$2,500	\$147,500	\$132,500
ABM-2	17	24	\$2,500	\$42,500	\$60,000
ABM-3	131	145	\$2,500	\$327,500	\$362,500
ABM-4	7	8	\$2,500	\$17,500	\$20,000
ABM-5	0	0	\$2,500	\$0	\$0
Total	214	230		\$535,000	\$575,000

**EXHIBIT 3-10 ESTIMATED COSTS OF CONSTRUCTING DUNE WALKOVERS IN  
PROPOSED CRITICAL HABITAT**

UNIT	LOTS ADJACENT TO BEACH	RWHCP PER UNIT FEE	COST OF CONSTRUCTING DUNE WALKOVERS
ABM-1	6	\$8,000	\$48,000
ABM-2	6	\$8,000	\$48,000
ABM-3	17	\$8,000	\$136,000
ABM-4	2	\$8,000	\$16,000
ABM-5	0	\$8,000	\$0
Total	31		\$248,000

**3.5 ECONOMIC IMPACTS ON RESIDENTIAL AND COMMERCIAL REAL ESTATE DEVELOPMENT WITHIN AREAS PROPOSED FOR EXCLUSION**

**3.5.1 PAST ECONOMIC IMPACTS ON DEVELOPMENT ACTIVITIES**

3.5.1.1 Large Scale Subdivisions

108. The Service has completed seven formal consultations and ITPs for large scale development projects in the areas proposed for exclusion since 1985. Exhibit 3-11 presents the project descriptions, conservation measures recommended, and costs for each conservation measure associated with these projects. For clarity, Exhibit 3-2 makes reference to costs that are future and ongoing; all future costs are noted in parentheses. As discussed previously, costs are considered ongoing if they began in the past and continue beyond 2007 (e.g., annual surveying and monitoring for 30 years), and are considered future if they will be incurred entirely in the future.



**EXHIBIT 3-11 HABITAT CONSERVATION PLANS AND BIOLOGICAL OPINIONS COMPLETED FOR DEVELOPMENT PROJECTS IN AREAS PROPOSED FOR EXCLUSION**

DEVELOPMENT	APPLICANT	DATE	EXCLUSION AREA	DESCRIPTION	CONSERVATION EFFORTS	COSTS
The Beach Club <sup>a</sup>	For Morgan Paradise Joint Venture	1996	Ex-5	A 86.3 acre residential and commercial subdivision consisting of 753 units of duplex, triplex, quadplex, and condominium residences.	Mitigation fund	\$150,000
					Legal and consulting fees	\$1,000,000
					ABM research	\$50 per unit or \$37,650 annually
					ABM monitoring (past and ongoing)	\$30,000 annually
					Sea oat fertilization	Unknown
					Minimize predators (past and ongoing)	\$5,000 annually
					Implement lighting plan	\$500,000
The Dunes <sup>b</sup>	Sage Development Company LLC	1997	Ex-1  Within original CH designation.	35.27 acre residential development consisting of 50 single family residences, and four condominium buildings with 135 units. The project also includes swimming pools, tennis courts, roads, and associated infrastructure.	Rodent and scavenger proof trash containers (past and ongoing)	\$12,000 annually
					Prohibit cats	Modest
					Scavenger and rodent proof trash containers (past and ongoing)	\$12,000 annually
					Construct dune walkovers	\$40,000
					Landscape with native plants	Unknown
					ABM monitoring and reporting (past and ongoing)	\$100 per unit, or \$18,500 annually.
					Off-site mitigation for impact to 2.37 acres of scrub dunes	\$50,000
					Signs denoting CH and describing ABM	Modest
					Construction fencing	\$18,000
					Prohibit construction, storage, and recreation in CH	Modest
Produce educational materials	Modest					

DEVELOPMENT	APPLICANT	DATE	EXCLUSION AREA	DESCRIPTION	CONSERVATION EFFORTS	COSTS
					Restore dunes and construction footprint with native vegetation	\$250,000
Kiva Dunes <sup>c</sup>	Jim Edgemon	1997	Ex-3 Within original CH designation.	A residential real estate development on 252 acres on the Fort Morgan Peninsula will occupy 91 acres. The resort also features a gulf course.	Prohibit cats	Modest
					Dune restoration/beach renourishment	\$120,000
					Construct dune walkovers	\$100,000
					Approximately 55 percent of the area lying between the proposed east-west roadway and the CH line will be permanently preserved-reduction in the number of units built (30)	\$0 to \$2.7 million
					ABM monitoring (past and ongoing)	\$50 per unit or \$26,550 annually.
					Lighting plan	\$500,000
					Educational materials	Modest
					Construct signage describing ABM and its habitat	Modest
					Delay	\$3.9 million
Gulf State Park Convention Center <sup>d</sup>	Alabama Department of Conservation and Natural Resources	2004	Ex-8 Within original CH designation.	The proposed project consists of a seven story hotel (total of 311 rooms), a beach inn (total of 100 rooms), four beachside cottages (total of 16 rooms), a new beach pavilion, executive conference center, a wedding pavilion, swimming pools, a health spa, an amphitheater, restaurants, a retail village, and a beach boardwalk.	Design development to minimize impacts and enhance restoration (including development of HCP)	\$100,000
					Monitoring (future)	\$20,000 annually
					Predator control (future)	Minimal
					Clearly mark limits of construction (future)	\$18,000
					Control solid waste generated onsite during construction (future)	Minimal
					Store construction materials only in development footprint (future)	Minimal
					Rodent and scavenger proof refuse containers (future)	\$12,000
					Trap and relocate ABM prior to and during construction (future)	\$5,000
					Construct seven dune walkovers, use a top down construction approach (future)	\$350,000
					Ensure foot traffic uses dune walkovers by installing signage (future)	\$140,000
					Lighting plan (future)	\$500,000

DEVELOPMENT	APPLICANT	DATE	EXCLUSION AREA	DESCRIPTION	CONSERVATION EFFORTS	COSTS
					Any fence(s) installed shall allow unimpeded movement of ABM (future)	Minimal
					No domestic or free-roaming/feral cats shall be allowed (future)	Minimal
					Control house mice (future)	Minimal
					Restore three acres of dune habitat (future)	\$250,000
					Implement a program for monitoring, protecting, enhancing, and maintaining dunes (future)	\$70,000 annually
Plantation Palms <sup>e</sup>	Plantation Palms LLC and Hunt Properties	1996	Ex-4 Within original CH designation.	A 4 acre residential development with a 84 unit condominium complex.	Construct boardwalk	\$40,000
					Cats prohibited	Modest
					Rodent- and scavenger-proof refuse containers	Modest
					ABM monitoring (past and ongoing)	\$8,400 annually
					Lighting plan	Modest
Bay to Breakers <sup>f</sup>	Collins-Miller Development, Inc.	1996	Ex-2 Portion within original CH designation.	11.2 acre residential subdivision with 14 duplex units.	Avoid storing construction materials in habitat	Modest
					Notify contractors of ABM restrictions	Modest
					Site units to minimize impact	Modest
					Dune protection, enhancement, and management south of the CCL	Modest
					Control cats, exterior lights, and garbage	Modest
					Produce educational materials	Modest
					Monitor and restore any dune damage caused by pedestrian or recreational use	Modest
					Assess an annual unit fee to fund monitoring and reporting of ABM, house mice and cats (past and ongoing)	\$2,800 annually
Martinique on the Gulf <sup>g</sup>	Aronov Realty Management, Inc.	1996 & 1999	Ex-6	52 acre residential development including 145 multi-family and single-family units.	Habitat acquisition, conservation easements, and dune restoration	\$60,000
					ABM monitoring and reporting (past and ongoing)	\$100 per unit, or \$14,500 annually.
					Reduction in number of residential units (36)	\$3.3 million
					Delay	\$5.2 million
					ABM research	Modest
					Sea oat fertilization	Modest

DEVELOPMENT	APPLICANT	DATE	EXCLUSION AREA	DESCRIPTION	CONSERVATION EFFORTS	COSTS
					Control predators (past and ongoing)	\$5,000 annually
					Construct dune walkovers	\$40,000
					Lighting plan	\$500,000
					Rodent- and scavenger-proof refuse containers	Minimal

## Sources:

<sup>a</sup> U.S. Fish and Wildlife Service. Biological Opinion: Fort Morgan Paradise Joint Venture Request for an Incidental Take Permit for the Endangered Alabama Beach Mouse (*Peromyscus polionotus ammobates*) in Baldwin County, Alabama. Issued December 6, 1996. Written communication provided by Head Companies at March 27, 2006 meeting with David Head, Sr. Head Companies, David Head, Jr., President Head Companies, David Leffard, CFO, Head Companies, and Jeffrey Schock, Director of Finance Head Companies. Ibbotson Associates. Cost of Capital Quarterly Yearbooks for years 1995 to 2005. The average weighted average cost of capital for 1995 to 2005 is 10.6 percent.

<sup>b</sup> U.S. Fish and Wildlife Service. Biological Opinion: Sage Development Company Request for an Amendment to PRT-811416 Incidental Take Permit for the Endangered Alabama Beach Mouse (*Peromyscus polionotus ammobates*) in Baldwin County, Alabama. Issued December 6, 1996. Personal communication with Ken Striplin, Sage Development Company, March 27, 2006.

<sup>c</sup> U.S. Fish and Wildlife Service. Incidental Take Permit Issued to D&E Investments, Limited for the Kiva Dunes Development, December 12, 1997. Crowder, John. Amended Habitat Conservation Plan for Kiva Dunes Residential Subdivision. July 18, 2003. Personal Communication with Jim Edgemon, Kiva Dunes, March 28, 2006.

<sup>d</sup> U.S. Fish and Wildlife Service. Incidental Take Permit Issued to the Alabama Department of Conservation and Natural Resources for the Gulf State Park Hotel and Convention Center. Issued April 8, 2004. U.S. Fish and Wildlife Service. Biological Opinion for the Issuance of an Incidental Take Permit Pursuant to Section 10(a)(1)(B) of the Endangered Species Act of 1973, as amended, for Gulf State park Hotel and Convention Center Demolition and Reconstruction between Gulf Shores and Orange Beach, Baldwin County, Alabama (TE-072831-0), Issued December 22, 2004. Personal communication with Terry Boyd, Alabama Department of Conservation and Natural Resources, March 17, 2006. Written communication from Terry Boyd, Chief of Engineering Section, Alabama Department of Conservation and Natural Resources, April 26, 2006.

<sup>e</sup> U.S. Fish and Wildlife Service. Biological Opinion: Plantation Palms, L.L.C., Request for an Incidental Take Permits for the Endangered Alabama Beach Mouse (*Peromyscus polionotus ammobates*) in Baldwin County, Alabama, Issued November 27, 1996. Incidental Take Permit Issued to Plantation Palms, L.L.C. November 29, 1996.

<sup>f</sup> U.S. Fish and Wildlife Service. Biological Opinion: Collins-Miller Development, Inc., Request for an Incidental Take Permits for the Endangered Alabama Beach Mouse (*Peromyscus polionotus ammobates*) in Baldwin County, Alabama, Issued November 7, 1996.

<sup>g</sup> U.S. Fish and Wildlife Service. Biological Opinion: Reinitiation for Martinique on the Gulf LLC (Martinique) and Fort Morgan Paradise Joint Venture (Beach Club), Request for Two Incidental Take Permits for the Endangered Alabama Beach Mouse (*Peromyscus polionotus ammobates*) in Baldwin County, Alabama, Issued July 15, 1999. U.S. Fish and Wildlife Service. Biological Opinion: Aronov Realty Management, Inc. Request for an Incidental Take Permits for the Endangered Alabama Beach Mouse (*Peromyscus polionotus ammobates*) in Baldwin County, Alabama, Undated. Personal communication with Steve Thompkins, Vice President, Aronov Realty Management, Incorporated, on April 3, 2006.

## 3.5.1.2 Single Family and Duplex Residences

109. Due to local permitting requirements, many landowners on the Fort Morgan Peninsula obtained ITPs for the ABM to construct new single-family and duplex residences. The Service issued 23 ITPs in 2003 and another 54 ITPs in 2004 for a total of 77 permits in Baldwin County, Alabama. Of the 77 permits proposed for individual lot development, 62 were for the construction of single family dwellings (81 percent), 10 for a duplex or multiple duplexes (13 percent), three for lots with two single family homes (four percent), and two for building additions onto an existing house (two percent). A total of 49 of these properties are proposed for exclusion; the remaining 28 properties are outside of the geographic boundaries of proposed CH designation.

**PAST ALABAMA BEACH MOUSE IMPACTS ON SINGLE FAMILY AND DUPLEX RESIDENCES**

A random sample of ITP holders for single-family and duplex residence construction were contacted for this analysis. Of those contacted, most have not built on their property since they purchased the land and none have completed their projects. Construction delays are a result of a combination of factors including ABM permitting and storm events. Approximately one-third of the individuals who requested an ITP sold their land before or just shortly after receiving their permit due to these delays. The remaining individuals intend to build now that they have received their permit or are waiting due to concerns of future storm events. No one contacted experienced constraints from the reduction in footprint structure required to protect ABM habitat. The most significant limitation expressed was due to delays in receiving their ITPs.

110. Based on conversations with landowners, the ABM conservation measures contained in Exhibit 3-12 were identified. The per project cost of ABM conservation efforts range from \$32,000 to \$44,000 for single-family and duplex residences. Most of these past costs are associated with delays related to obtaining the ITP; on average it took 1.7 years from permit application to issuance.<sup>63</sup> A total of 49 ITP holders are proposed for exclusion. The total past costs of conservation efforts for the ABM on these 49 properties range from \$1.6 million to \$2.1 million.

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<sup>63</sup> Batch I and Batch II Biological Opinions.

**EXHIBIT 3-12 PER PROJECT COSTS OF PAST ALABAMA BEACH MOUSE  
CONSERVATION EFFORTS FOR SINGLE-FAMILY AND DUPLEX  
RESIDENCES**

CONSERVATION EFFORTS	COST	
	LOW	HIGH
Carrying costs of property tax on undeveloped land (1.7 years)	\$1,200	\$3,000
Application for ITP costs: Live trapping study, surveying after land purchase	\$400	\$600
Interest Carry (1.7 years) <sup>a</sup>	\$30,200	\$30,200
Planting native vegetation	\$0	\$250
Construction of dune walkovers	\$0	\$8,000
Erecting fencing	\$0	\$1,000
Hire landscaper to detect ABM habitat	\$0	\$500
<b>Total</b>	<b>\$31,800</b>	<b>\$43,550</b>
Sources: Personal communication with individual permit holders in March and April of 2006. <sup>a</sup> Holding costs are calculated based on average lot size, vacant land values, and permit delay for the Fort Morgan Peninsula. The average single-family residence lot size is half an acre, with a purchase price of \$506,800 per acre of vacant coastal land (or \$253,400 per half acre vacant lot). The average time from permit application to permit issuance was 1.7 years. This analysis assumes an interest rate of seven percent. Office of Management and Budget indicates that a seven percent rate "is an estimate of the average before-tax rate of return to private capital in the US" and that it is a "broad measure that reflects the returns to real estate and small business capital." Office of Management and Budget, Circular A-4, September 17, 2003.		

3.5.1.3 Summary of Past Impacts on Residential and Commercial Development Within Areas Proposed For Exclusion

111. The past cost of conservation efforts for the ABM are estimated in Exhibit 3-13 and presented by unit and area. The past costs of ABM conservation efforts to residential and commercial real estate development are estimated at \$26.0 million to \$29.3 million for areas proposed for exclusion, in undiscounted dollars. For areas proposed for exclusion the present value of past costs is \$33.3 million to \$36.6 million, assuming a three percent discount rate, or \$46.6 million to \$49.9 million, assuming a seven percent discount rate. These costs largely result from carrying costs engendered by delay associated with HCP efforts and mitigation (both on- and off-site).

**EXHIBIT 3-13 TOTAL COST OF PAST ALABAMA BEACH MOUSE CONSERVATION EFFORTS FOR RESIDENTIAL AND COMMERCIAL DEVELOPMENT WITHIN AREAS PROPOSED FOR EXCLUSION**

UNIT	TOTAL UNDISCOUNTED DOLLARS		PRESENT VALUE (3%)		PRESENT VALUE (7%)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
EX-1 The Dunes	\$1,011,000	\$1,010,000	\$1,284,000	\$1,284,000	\$1,764,000	\$1,764,000
EX-2 Bay to Breakers	\$31,000	\$31,000	\$36,000	\$36,000	\$44,000	\$44,000
EX-3 Kiva Dunes	\$5,425,000	\$8,162,000	\$7,621,000	\$10,357,000	\$12,052,000	\$14,789,000
EX-4 Plantation Palms	\$764,000	\$764,000	\$987,000	\$987,000	\$1,384,000	\$1,384,000
EX-5 The Beach Club	\$7,922,000	\$7,922,000	\$10,182,000	\$10,182,000	\$14,137,000	\$14,137,000
EX-6 Martinique on the Gulf	\$9,146,000	\$9,146,822	\$11,475,000	\$11,475,000	\$15,443,000	\$15,443,000
EX-7 Perdue Unit, Bon Secour NWR	\$0	\$0	\$0	\$0	\$0	\$0
EX-8 Gulf State Park	\$100,000	\$100,000	\$106,000	\$106,000	\$114,000	\$114,000
EX-9 49 Single Family Homes	\$1,556,000	\$2,132,000	\$1,582,000	\$2,158,000	\$1,617,000	\$2,193,000
<b>Total</b>	<b>\$25,956,000</b>	<b>\$29,268,000</b>	<b>\$33,273,000</b>	<b>\$36,586,000</b>	<b>\$46,556,000</b>	<b>\$49,868,000</b>

Note: Totals may not sum due to rounding.

**3.5.2 FUTURE ECONOMIC IMPACTS ON DEVELOPMENT ACTIVITIES WITHIN AREAS PROPOSED FOR EXCLUSION**

**3.5.2.1 Large Scale Subdivisions**

**Gulf State Park Hotel and Convention Center**

112. In December 2004, the Service issued an ITP to the Alabama Department of Conservation and Natural Resources for the demolition, replacement, occupancy, use, operation, and maintenance of the Gulf State Park Hotel and Convention Center.<sup>64</sup> The Gulf State Park Hotel and Convention Center, as planned, will consist of lodging facilities, a beach pavilion, amphitheater, and parking area on 137.8 acres. The area associated with the Gulf State Park Hotel and Convention Center HCP is proposed for exclusion (referred to as Ex-8). Future costs of conservation efforts for the ABM likely to be undertaken by the Alabama Department of Conservation and Natural Resources for Gulf State Park Hotel and Convention Center are outlined in Exhibit 3-14. The total future costs of ABM conservation efforts for Gulf State Park Hotel and Convention Center are estimated to be \$3.2 million (undiscounted) over the next 20 years assuming construction begins in 2007.

<sup>64</sup> The project has been delayed since December 2004 for reasons other than the ABM. Personal communication with Terry Boyd, Gulf State Park, March 17, 2006.

**EXHIBIT 3-14 GULF STATE PARK HOTEL AND CONVENTION CENTER ESTIMATED  
FUTURE COSTS OF ALABAMA BEACH MOUSE CONSERVATION  
EFFORTS**

COST CATEGORY	COST
Monitoring <sup>a</sup>	\$300,000
Predator control <sup>a</sup>	Minimal
Clearly mark limits of the construction area with fencing and signs <sup>b</sup>	\$18,000
Manage solid waste <sup>b</sup>	\$240,000
Relocate trapped mice prior to construction <sup>b</sup>	\$5,000
Install signs directing people to dune walkovers <sup>b</sup>	\$140,000
Construct seven dune walkovers <sup>b</sup>	\$350,000
Minimize artificial lighting <sup>b</sup>	\$500,000
Dune monitoring <sup>b</sup>	\$400,000
Dune maintenance <sup>b</sup>	\$1,00,000
Restore and enhance three acres of dune habitat <sup>b</sup>	\$250,000
<b>Total</b>	<b>\$3,203,000</b>
Sources:	
<sup>a</sup> Personal communication with Terry Boyd, Gulf State Park, March 17, 2006.	
<sup>b</sup> Written communication from Terry Boyd, Chief of Engineering Section, ADCNR, April 26, 2006.	
Note: Totals may not sum due to rounding.	

**Kiva Dunes**

113. In July 2003, D&E Investments applied for an amendment to the existing ITP associated with the completed HCP for the Kiva Dunes development. The applicant seeks to modify the existing permit such that a multi-story condominium building will be built in place of the approved four single-family homes.<sup>65</sup> The permit modification application is currently under review by the Service.<sup>66</sup> The proposed project is a 12 story condominium with 96 residential units.<sup>67</sup> The applicant has agreed to limit disturbance to 45 percent of the existing vegetation between the original critical habitat line and existing road. No conservation efforts for the ABM are anticipated in addition to those included in the HCP, quantified in Exhibit 3-11. Therefore, this analysis estimates costs of conservation efforts for the ABM in Ex-3. Kiva Dunes to be \$531,000 over the next 20 years.

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<sup>65</sup> Federal Fish and Wildlife License/Permit Application Form submitted for Kiva Dunes by James Edgemon representing D&E Investments L.L.C. to the U.S. Fish and Wildlife Service July 22, 2003.

<sup>66</sup> Written and personal communication with Regional HCP Coordinator, U.S. Fish and Wildlife Service, May 24, 2006.

<sup>67</sup> Personal Communication with Jim Edgemon, Kiva Dunes, March 28, 2006.

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#### 3.5.2.2 Single Family and Duplex Residences

114. There are 49 single-family homes with ITPs proposed for exclusion from CH (referred to as Ex-9). As discussed in Section 3.5.1.2, this analysis estimates \$1.6 million to \$2.1 million in costs of past conservation efforts for the ABM (e.g., carrying costs of property taxes and interest, and permit application costs). No future costs are estimated as no new single-family or duplex construction by these landowners is expected in areas proposed for exclusion.

### 3.6 REGIONAL REAL ESTATE MARKET IMPACTS

115. Economic impacts of ABM 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 ABM conservation efforts) 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.
116. This analysis assumes that most property value losses occurred in the past resulting from on-site set asides. In these cases, fewer housing units were built than would have been absent the ABM. Within proposed CH designation, the Gulf Highlands and Beach Club West projects have set-aside a combined total of 102 acres of on-site and 17 acres of off-site mitigation lands. Gulf Highlands will purchase an additional 18 acres off-site for ABM conservation in the future. Any new multi-family development associated with redevelopment is also assumed to result in set-asides.
117. Conservation activities for the ABM may maintain or generate amenity values to adjacent property owners and residents. Amenity values are defined as beneficial impacts affiliated with open space, visual amenities, and an aesthetically pleasing ecosystem, which the lands being proposed as CH may be able to provide in an unaltered state. In general, amenities values will be greater for CH located in developed areas with relatively less open space providing such amenity services. The land proposed for CH designation for the ABM is highly developed beach vacation resort area, where open space and natural amenities have appeal. Due to the lack of close substitutes for the area proposed for CH designation in Alabama, conservation efforts associated with the designation may generate some amenity benefit to the extent they provide open space, visual amenities, or an aesthetically pleasing ecosystem. However, this analysis does not quantify amenity value as a component of economic impacts associated with proposed CH for the ABM due to lack of sufficient data.

### ECONOMIC STUDY SUBMITTED BY DEVELOPMENT INTERESTS

Private and public entities with an interest in development activities on the Fort Morgan peninsula commissioned a study to estimate the combined economic impacts on the local economies of Baldwin County and Gulf Shores, Alabama generated by development of developable properties on the Fort Morgan Peninsula potentially affected by the proposed CH designation for the ABM.<sup>a</sup> These entities include Fort Morgan Paradise Joint Venture, City of Gulf Shores, Gulf Shores Utilities Board, Alabama Gulf Coast Area Chamber of Commerce, Alabama Gulf Coast Convention and Visitors Bureau, Baldwin County Economic Development Alliance, Meyer Real Estate, and Merrill Land Co., LLC. This report (the "Klages study"), was submitted as part of the initial public comment period for the proposed CH designation. In addition, the National Association of Homebuilders (NAHB) submitted comments related to the Klages study and development impacts.<sup>b</sup>

The Klages study provides useful context for development activity along the peninsula. In addition, both the Klages study and this economic analysis rely upon the same information concerning the extent of developable properties and the type of development that may occur on them. The Klages study and this economic analysis differ, however, in certain base assumptions and methods for quantifying impacts. Most significantly, the Klages study posits that no development will occur on vacant parcels within proposed CH designation, and then employs a form of input-output modeling to measure the revenue and other effects of this foregone development (see Section 1.1.2 for an overview of this type of modeling approach). The economic analysis presented in this report assumes that development will proceed, but that ABM conservation efforts will cause incremental delays, result in certain land set-asides or a lower number of units, and engender other direct costs. Another important difference may be the study area used in the Klages study; it is unclear what specific properties are determined to be precluded from development, therefore, the magnitude of this difference is unknown.

These differences promulgate the following effects on the impact estimates. First, the impacts identified in the Klages study are higher than those presented in this economic analysis. NAHB comments on this issue, noting that, while impacts are significant, it is unlikely that all activity would be prohibited within the bounds of CH, and that therefore the direct cost estimate provided in the Klages Study represents an upper bound. Despite these differences in absolute impacts, however, the study and this economic analysis are consistent with respect to "relative" impacts across different parcels and different types of development. That is, development locations identified as experiencing high impacts in the Klages study also experience high impacts in this economic analysis. The same result holds for locations identified as having relatively low impacts.

#### Sources:

<sup>a</sup> The report is titled: Klages, Walter. Updated Beach Club West, Gulf Highlands, Kiva Dunes, and "Location 2" Fort Morgan Multi Family Development and Single Family Development Economic Impacts and Community Benefits. Prepared by Research Data Services, Inc. and Evans Klages, Inc. March 31, 2006.

<sup>b</sup> Public comment letter submitted by Susan Asmus, Staff Vice President, Regulatory Affairs, on behalf of the National Association of Home Builders, Proposed Revision of CH for the Alabama Beach Mouse. March 31, 2006.

## SECTION 4 | POTENTIAL ECONOMIC IMPACTS ON ROAD CONSTRUCTION AND MAINTENANCE

118. This section examines the potential economic impacts of ABM conservation efforts on road construction and maintenance projects. Road projects in Baldwin County have incurred past costs associated with ABM conservation efforts since 1985. One future road widening project is expected to incur additional costs in the related to ABM conservation efforts.

### 4.1 PAST ECONOMIC IMPACTS ON ROAD CONSTRUCTION AND MAINTENANCE

119. Since the listing and CH designation for the ABM in 1985, the Service has completed one formal consultation and one informal consultation with the Alabama Department of Transportation (ALDOT) regarding transportation projects. Aside from these consultations, one additional ALDOT project has been affected by ABM conservation efforts.

#### ALABAMA DEPARTMENT OF TRANSPORTATION

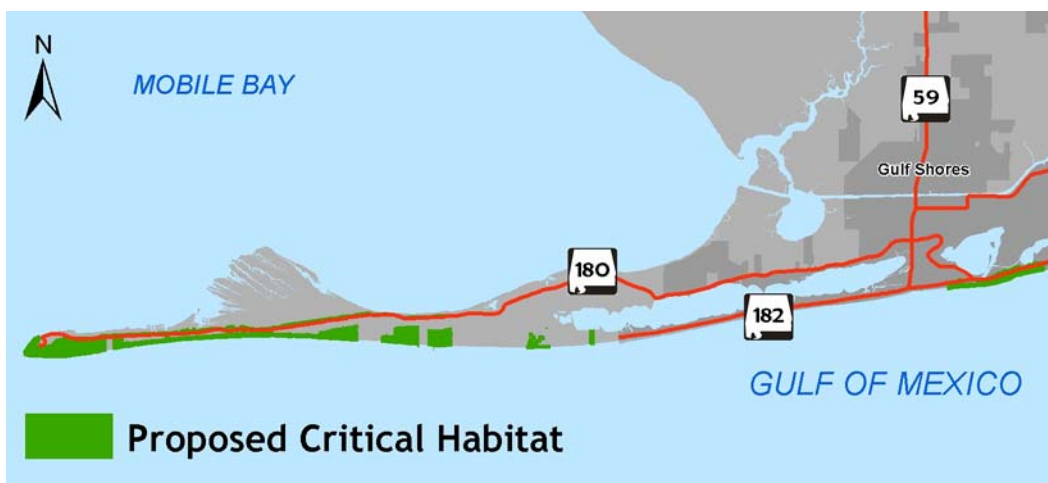
120. ALDOT entered into a formal consultation with the Service in March of 2002 concerning proposed curve realignments for State Route-180 (SR-180) near Fort Morgan in Baldwin County. The proposed project affected approximately 0.86 acres of ABM habitat on secondary dunes and 0.32 acres of ABM scrub habitat.<sup>68</sup> To avoid CH, ALDOT decreased the size of the proposed project area, limited construction hours, and straightened fewer road curves on the west end of SR-180. Because the project size was reduced but no additional modification was necessary, ALDOT reports no cost for conservation efforts for the ABM on this project.<sup>69</sup>

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<sup>68</sup> U.S. Fish and Wildlife Service. Proposed Curve Realignments for SR-180 near Fort Morgan, Baldwin County Biological Opinion. June 21, 2002.

<sup>69</sup> Personal communication with John Shield, Assistant Coordinator, Alabama Department of Transportation, Montgomery Office on March 22, 2006.

**EXHIBIT 4-1 MAJOR ROADS WITHIN CRITICAL HABITAT DESIGNATION ON FORT MORGAN PENINSULA, BALDWIN COUNTY**



121. ALDOT has also participated in an informal consultation during February 2002 regarding dune restoration. As part of this effort, ALDOT replaced sand dunes and participated in the plant removal, relocation, and replanting of native shrub habitat to the right-of-ways on SR-180 and State Route-182 (SR-182) in Fort Morgan. In addition, ALDOT installed a sand fence along SR-182 in 2005. Total costs for these conservation efforts were approximately \$25,000 to \$30,000, in undiscounted dollars.<sup>70</sup>
122. Apart from these consultations, ALDOT has incurred additional expenses in the past associated with the ABM conservation efforts. In 1990 during the widening of SR-182, these efforts included ABM monitoring and live-trapping, causing a project delay of two years.<sup>71</sup> ALDOT reports that several other projects had been delayed from forty-five days up to six months.<sup>72</sup> Because the increase in project costs during the delay period were unknown or unrecorded, delay costs for past transportation projects are not quantified in this analysis.

**4.2 SUMMARY OF PAST ROAD CONSTRUCTION AND MAINTENANCE COSTS**

123. Prior to 2006, total costs to transportation projects beyond administrative expenses ranged from \$25,000 to \$30,000 in undiscounted dollars.<sup>73</sup> The present value of past costs is

<sup>70</sup> Personal communication with Nick Amberger, 9<sup>th</sup> Division Maintenance Engineer, Alabama Department of Transportation on April 17, 2006.

<sup>71</sup> Personal communication with John Shield, Assistant Coordinator, Alabama Department of Transportation, Montgomery Office on May 31, 2006.

<sup>72</sup> Personal communication with John Shield, Assistant Coordinator, Alabama Department of Transportation, Montgomery Office on March 22, 2006.

<sup>73</sup> Personal communication with Nick Amberger, 9<sup>th</sup> Division Maintenance Engineer, Alabama Department of Transportation on April 17, 2006. Administrative costs associated with these consultations are detailed in Appendix A.

approximately \$26,059 to \$31,209 assuming a three percent discount rate, and \$27,499 to \$32,849 assuming a seven percent discount rate. Costs incurred include dune restoration efforts made in 2004 and delay costs of two years for the widening of State Route 182. Additional past costs were limited due to little or no need for project modification for ABM conservation and protection.<sup>74</sup>

**EXHIBIT 4-2 PAST COSTS OF ABM CONSERVATION EFFORTS ASSOCIATED WITH TRANSPORTATION, 1985 TO 2006**

UNIT	COUNTY	COST DESCRIPTION	YEAR	UNDISCOUNTED DOLLARS	PRESENT VALUE (3%)	PRESENT VALUE (7%)
ABM-1	Baldwin	Dune Restoration	2004	\$1,667	\$1,768	\$1,908
ABM-2	Baldwin	Dune Restoration	2004	\$1,667	\$1,768	\$1,908
ABM-3	Baldwin	Dune Restoration	2004	\$1,667	\$1,768	\$1,908
ABM-5	Baldwin	Dune Restoration	2004	\$5,000	\$5,305	\$5,725
ABM-5	Baldwin	Installation of Sand Fence	2005	\$15,000- \$20,000	\$15,450- \$20,600	\$16,050- \$21,400
<b>Total</b>				<b>\$25,000- \$30,000</b>	<b>\$26,059- \$31,209</b>	<b>\$27,499- \$32,849</b>
Source: Personal communication with Nick Amberger, 9 <sup>th</sup> Division Maintenance Engineer, Alabama Department of Transportation, on April 17, 2006.						
Note: Totals may not sum due to rounding.						

**4.3 FUTURE ECONOMIC IMPACTS ON ROAD CONSTRUCTION AND MAINTENANCE**

**PROJECTS PLANNED THROUGH 2026**

124. ALDOT's work plan through 2010 does not include any projects within proposed CH designation for the ABM.<sup>75</sup> Beyond the 2010 planning horizon, ALDOT will initiate a formal consultation with the Service to widen the full length of SR-180 west of SR-59 into a five-lane highway.<sup>76</sup> The direct costs of this project are listed in Exhibit 4-4; the consultation cost is accounted for in Appendix A. No other projects are anticipated over the next twenty years (until 2026) that would occur on ABM proposed CH designation.

<sup>74</sup> Personal communication with John Shield, Assistant Coordinator, Alabama Department of Transportation, Montgomery Office on March 22, 2006.

<sup>75</sup> Alabama Department of Transportation Five Year Plan for Plan 2006, from 10/1/2005 Through 9/30/2010, accessed at: <http://www.dot.state.al.us/TransPlanning/FYPlan/FYPlan.aspx?County=2>

<sup>76</sup> Personal communication with John Shield, Assistant Coordinator, Alabama Department of Transportation, Montgomery Office on March 22, 2006.

**ALDOT CONCERNS**

125. The largest concern for ALDOT is that CH designation may constrain its ability to handle increased traffic, thus limiting the economic activity of Baldwin county.<sup>77</sup> ALDOT reports that unprecedented residential and commercial growth along the Fort Morgan Peninsula has resulted in the need to add capacity to the Alabama State Highway 180 for safety purposes, and that traffic volumes in certain areas of proposed CH designation already exceed 10,000 vehicles per day.<sup>78</sup> With this projected development and need for expansion of the roads, ALDOT expressed the desire for flexibility to update and improve Baldwin roads in a complete and efficient manner. The Service states that based on recent conversations with ALDOT, it is likely SR-180 can be widened within the existing right-of-way on the north side of the road with limited or no impact on proposed ABM CH designation, except along one quarter mile to a half mile of road where proposed ABM CH designation may be impacted.<sup>79</sup> Because the consultation will not occur for a few more years, it is not yet certain what the cost implications will be for ALDOT to make these modifications. As shown in Exhibit 4-3, CH generally falls just to the south of SR-180.
126. As shown in Exhibit 4-4, direct costs are likely to range from \$100,000 to \$500,000. The direct costs of project modifications for the ABM represent a relatively small proportion of overall project costs. ALDOT's main concern remains its ability to meet future transportation needs.<sup>80</sup>

**4.4 SUMMARY OF FUTURE ROAD CONSTRUCTION AND MAINTENANCE COSTS**

127. Exhibit 4-4 shows total future costs are estimated to range from \$100,000 to \$500,000 in undiscounted dollars. In present value terms, future costs are \$81,300 to \$406,500 assuming a three percent discount rate, or \$62,300 to \$311,400 assuming a seven percent discount rate.

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<sup>77</sup> Personal communication with Donald Vaughn, Administrative Engineer, Alabama Department of Transportation, on April 10, 2006.

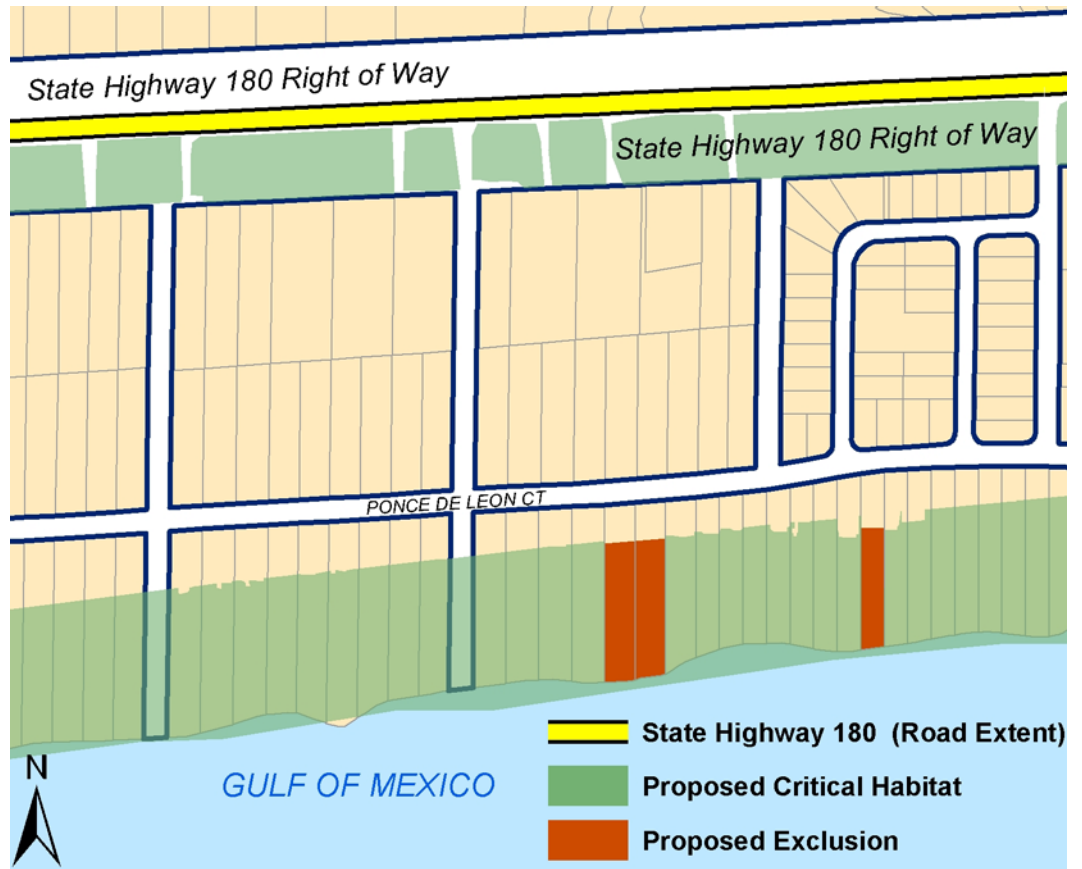
<sup>78</sup> ALDOT Proposed CH Rule for the ABM Public Opinion, D.J. McInnes, Transportation Director for ALDOT, March 3, 2006.

<sup>79</sup> Personal communication with Robert Tawes and Darren LeBlanc, U.S. Fish and Wildlife Service, April 26, 2006.

<sup>80</sup> Personal communication with John Shield, Assistant Coordinator, Alabama Department of Transportation, Montgomery Office on March 22, 2006. Personal communication with Donald Vaughn, Administrative Engineer, Alabama Department of Transportation, on April 10, 2006.

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EXHIBIT 4-3 GENERAL LOCATION OF CRITICAL HABITAT DESIGNATION ALONG STATE ROUTE 180



## EXHIBIT4-4 FUTURE COSTS OF ABM CONSERVATION EFFORTS ASSOCIATED WITH TRANSPORTATION, 2007-2026

CH UNIT	PROJECT DESCRIPTION	CONSERVATION EFFORTS	TOTAL UNDISCOUNTED DOLLARS		PRESENT VALUE (3%)		PRESENT VALUE (7%)	
			LOW	HIGH	LOW	HIGH	LOW	HIGH
ABM-1	Widening SR-180 into a five-lane highway	Surveys, clearing, restoring native vegetation, planting of dunes on the highway right-of-ways	\$21,700	\$108,400	\$17,600	\$88,200	\$13,500	\$67,500
ABM-2	Widening SR-180 into a five-lane highway	Surveys, clearing, restoring native vegetation, planting of dunes on the highway right-of-ways	\$46,600	\$233,100	\$37,900	\$189,500	\$29,000	\$145,100
ABM-3	Widening SR-180 into a five-lane highway	Surveys, clearing, restoring native vegetation, planting of dunes on the highway right-of-ways	\$31,700	\$158,500	\$25,800	\$128,900	\$19,700	\$98,700
ABM-4	None	None	\$0	\$0	\$0	\$0	\$0	\$0
ABM-5	None	None	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total</b>			<b>\$100,000</b>	<b>\$500,000</b>	<b>\$81,300</b>	<b>\$406,500</b>	<b>\$62,300</b>	<b>\$311,400</b>
<p>Sources: Alabama Department of Transportation Five Year Plan for Plan 2006, from 10/1/2005 Through 9/30/2010, accessed at: <a href="http://www.dot.state.al.us/TransPlanning/FYPlan/FYPlan.aspx?County=2">http://www.dot.state.al.us/TransPlanning/FYPlan/FYPlan.aspx?County=2</a></p> <p>Verbal communication with John Shield, Assistant Coordinator, Alabama Department of Transportation on March 22, 2006.</p> <p>Verbal communication with Donald W. Vaughn, Administrative Engineer, Alabama Department of Transportation on April 10, 2006.</p> <p>Note: Totals may not sum due to rounding.</p>								



## SECTION 5 | POTENTIAL ECONOMIC IMPACTS OF TROPICAL STORMS AND HURRICANES

128. Tropical storms and hurricanes can reduce population densities and destroy habitat of the ABM. Following storm events, costs may be incurred by Federal, State, and local agencies to restore species habitat. This section describes the past economic impacts of conservation efforts for the ABM related to tropical storms and hurricane events in proposed CH designation areas. Next, the section discusses future projects that may be undertaken in order to protect beach land from future storm damage.

### 5.1 SUMMARY OF ECONOMIC IMPACTS RELATED TO TROPICAL STORMS AND HURRICANES

129. Beach and dune restoration, vegetation, protection and maintenance projects are typically undertaken following major storm events. While the ABM benefit from these efforts, they are not undertaken specifically for the beach mice. The cost of these projects is typically high in comparison to incremental costs to protect ABM habitat. This analysis estimates that the additional costs associated with ABM habitat restoration and protection resulting from storm and hurricane events from 1986 to 2006 are approximately \$2.03 million in undiscounted dollars.

130. Restoration and protection measures for ABM habitat are likely to be undertaken in the future due to storm events. However, predicting the locations, intensity, damage, and response to future storms is not feasible for the purposes of this analysis. As such, costs related to future storm events are not included, which will likely have a modest downward impact on estimating the total future cost of conservation for the ABM.

### 5.2 PAST IMPACTS OF TROPICAL STORMS AND HURRICANES

131. Tropical storms and hurricanes have affected the population and habitat of the ABM in the past, including: Elena (1985), 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 ABM resulting from tropical storm and hurricane events.

132. As a result of these tropical storms and hurricanes, eight consultations for the ABM have occurred. As summarized in Exhibit 5-1, these consultations 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 ABM

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Emergency sand removal following Hurricane Isadore <sup>a</sup>	2002	FEMA	ABM-1	<ul style="list-style-type: none"> <li>▪ Pavement of driveways by property owners to prevent the upheaval of gravel during storms (which would accompany application for an Incidental Take Permit)</li> <li>▪ Filter of concrete, asphalt, and other pavement materials after storm</li> <li>▪ Minimize driveway size</li> </ul>
Beach Nourishment <sup>b</sup>	2003	FEMA	Outside of CH designation. <sup>c</sup>	<ul style="list-style-type: none"> <li>▪ Construct barriers to prevent ABM access to the entry corridors.</li> <li>▪ Any construction equipment, pipes, vehicles, or fueling equipment is prohibited from being stored in the access corridors except for the allowed pipeline corridor.</li> <li>▪ Once beach nourishment is completed, the project area shall be restored to their pre-project conditions.</li> <li>▪ Any take should be reported to FWS at once.</li> </ul>
Post hurricane Ivan Driveway construction <sup>d</sup>	2003-2005	FEMA; City of Gulf Shores	ABM-5	<ul style="list-style-type: none"> <li>▪ Pavement of driveways by property owners to prevent the upheaval of gravel during storms (which would accompany application for an Incidental Take Permit)</li> <li>▪ Filter of concrete, asphalt, and other pavement materials after storm</li> <li>▪ Minimize driveway size</li> </ul>
Emergency Berm Construction <sup>a</sup>	2004	FEMA	Outside of CH designation. <sup>c</sup>	<ul style="list-style-type: none"> <li>▪ Built separate access road to avoid ABM habitat destruction.</li> </ul>
Nourish the wet beach area for storm protection and recreational amenity <sup>e</sup>	2004	USACE	ABM-5	<ul style="list-style-type: none"> <li>▪ Construction equipment, and pipes must be located off the beach and outside of the beach access corridors.</li> <li>▪ Minimize lighting through reduction, shielding, lowering, and placement to reduce the probability of disturbing foraging.</li> <li>▪ Complete a project report.</li> <li>▪ Plant native salt-resistant dune vegetation on restored dunes.</li> <li>▪ Provide educational materials to residents and tourists.</li> </ul>
Post Hurricane Ivan Clean up and debris removal <sup>f</sup>	2005	Service	Exclusion Area (NWR)	<ul style="list-style-type: none"> <li>▪ Remove debris in high priority areas for the ABM and public use</li> <li>▪ Repair damaged structures including dune walkover, gates and parking lots</li> <li>▪ Restore habitat by installing sand and fencing, planting native vegetation, and applying fertilizer to existing vegetated areas</li> </ul>

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Post Hurricane Reconstruction and occupancy of existing structures <sup>g</sup>	2005	City of Gulf Shores	All	<ul style="list-style-type: none"> <li>▪ Reduce replacement driveways to minimum width necessary</li> <li>▪ Utilize county waste disposal service for household garbage</li> <li>▪ Limit refuse that would attract rodents</li> <li>▪ Disposal of refuse using refuse container that is rodent and scavenger proof</li> <li>▪ Prevent lumber, metals, or bulk materials from being kept, stored, or accumulated on property except for building materials used during construction</li> <li>▪ Minimize areas used for staging building materials</li> <li>▪ Place construction debris in allocated dumpsters</li> <li>▪ Maintain all undeveloped areas of lot using native vegetation</li> <li>▪ Prevent installation of sod within areas mapped as ABM habitat</li> <li>▪ Construct elevated wooden boardwalk in lots immediately adjacent to the beach</li> <li>▪ Maintain integrity of the dune system</li> <li>▪ No additional exterior lighting used seaward of the Coastal Construction Line</li> <li>▪ Replacement windows tinted to reduce the impact of interior lighting</li> <li>▪ Report any observations of free-roaming (stray) cats</li> <li>▪ Plant indigenous species approved by the Service for landscaping</li> </ul>
Remove Hurricane Debris from State Owned Lands <sup>h</sup>	2006	USACE	ABM - 1	<ul style="list-style-type: none"> <li>▪ Initiate storm debris cleanup</li> <li>▪ Use of existing roads, trails, and wet beach</li> <li>▪ Equipment and contractor staging, access, and parking</li> <li>▪ Remove hurricane debris located within vegetated areas by hand</li> <li>▪ Mechanically rake unvegetated shoreline with root rake</li> <li>▪ Collect debris waterward of vegetation with skid steerer and load onto trailers for transport to a local landfill</li> <li>▪ Mechanically remove debris from area adjacent to the old sea wall</li> <li>▪ Stage equipment in paved or open dirt areas outside Fort Morgan</li> <li>▪ Native woody debris left in place to assist in stabilization and formation of dunes</li> <li>▪ Use of only low-impact equipment (i.e. bobcats and ATVs with small trailers) on unvegetated beach</li> <li>▪ No mechanical equipment used in vegetated dunes</li> </ul>

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
<p><sup>a</sup> Personal communication with Brent Bowen, FEMA, April 18, 2006.</p> <p><sup>b</sup> U.S. Fish and Wildlife Service, Biological Opinion for FEMA, Gulf Shores Beach Nourishment Project, June 9, 2004. Project is along West Beach and Little Lagoon, which is outside the CH area.</p> <p><sup>c</sup> Costs associated with units outside of CH are not considered in this analysis.</p> <p><sup>d</sup> U.S. Fish and Wildlife Service, Biological Opinion for City of Gulf Shores. Personal communication with Brent Bowen, FEMA, April 18, 2006.</p> <p><sup>e</sup> 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. Note that the main concern for beach nourishment projects is impacts to sea turtles.</p> <p><sup>f</sup> U.S. Fish and Wildlife Service, Biological Opinion for Bon Secour National Wildlife Refuge, Post-Hurricane Ivan Recovery Actions, May 9, 2005.</p> <p><sup>g</sup> U.S. Fish and Wildlife Service, Consent for Property Owners Proposing to Repair Structures Damaged by Hurricane Ivan, February 21, 2005. No costs associated with consultation.</p> <p><sup>h</sup> U.S. Fish and Wildlife Service, Biological Opinion for USACE, Proposal to Remove Hurricane Debris at Fort Morgan State Historic Site, March 17, 2006.</p>				

### 5.2.1 ESTIMATING PAST CONSERVATION EFFORT COSTS

133. FEMA completed two consultations with the Service, which required some form of dune habitat protection and restoration for the ABM. FEMA estimates these costs totaled between \$12,000 and \$13,000 for emergency sand removal in ABM habitat areas and between \$106,000 and \$107,000 for driveway paving to prevent further damage to ABM habitat during storm and hurricane events.<sup>81</sup>
134. USACE initiated two beach nourishment projects requiring consultation for the ABM. Beach and dune restoration, vegetation, protection and maintenance projects are typically undertaken following major storm events. While the ABM benefit from these efforts, they are not undertaken specifically for the beach mice. The total cost of these projects is typically high in comparison to incremental costs to protect ABM habitat. Although actual dune restoration costs for ABM protection are not available, the USACE estimates dune restoration in ABM habitat areas, conducted as part of beach nourishment projects, costs about \$130 per linear foot (based on 15 cubic yards of sand per linear foot of beach habitat).<sup>82</sup> These restoration efforts include vegetation and dune stabilization (e.g., sand fencing).<sup>83</sup> The total cost of past dune restoration efforts is estimated by multiplying the length of the project (in linear feet) by the per unit cost of \$130. This results in a total project cost of \$299,000 in ABM-1 and \$1,538,900 in ABM-5 for ABM habitat restoration and protection.
135. The Service in collaboration with the University of South Alabama, has undertaken a project to quantify the impact to ABM habitat resulting from storm surges during hurricane events. This project should be completed in 2006 at a total cost of \$76,000.<sup>84</sup>
136. In addition, for Bon Secour National Wildlife Refuge, a proposed exclusion area (Ex-7. Perdue Unit Bon Secour National Wildlife Refuge), the Service undertook dune clean-up and restoration activities in 2005 for approximately \$110,000. These costs included equipment, sand fencing, and personnel costs.<sup>85</sup>
137. The total cost of dune restoration in the proposed critical habitat areas for the ABM associated with tropical storms and hurricane response projects is estimated to be approximately \$2.03 million in undiscounted dollars. In addition, the total costs associated with ABM protection in the exclusion area is estimated at \$110,000 in undiscounted dollars, presented in Exhibit 5-2.

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<sup>81</sup> Personal communication with Brent Bowen, FEMA, April 18, 2006.

<sup>82</sup> U.S. Army Corps of Engineers. *Reconnaissance Report Section 905(b) Analysis Walton, County, Florida, Shore Protection*. June 2003.

<sup>83</sup> U.S. Army Corps of Engineers. *Reconnaissance Report Section 905(b) Analysis Walton, County, Florida, Shore Protection*. June 2003.

<sup>84</sup> 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.

<sup>85</sup> Personnel communication with Jereme Philips, Wildlife Biologist, Bon Secour National Wildlife Refuge, U.S. Fish and Wildlife Service, May 31, 2006.

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**EXHIBIT 5-2 ESTIMATED PAST COSTS OF ABM CONSERVATION EFFORTS OF  
TROPICAL STORMS AND HURRICANES, 1985 TO 2006**

UNIT	EFFORT	APPROXIMATE PROJECT SIZE (LINEAR FEET)	COST PER LINEAR FOOT	TOTAL COST
<b>Proposed Critical Habitat Units</b>				
ALL	Hurricane Research <sup>a</sup>	NA	NA	\$76,000
ABM-1	Emergency sand removal <sup>b</sup>	NA	NA	\$12,000 to \$13,000
	Removal Hurricane Debris, Restoration <sup>c</sup>	2,300	\$130	\$299,000
	Subtotal			\$311,000 to \$312,000
ABM-5	Driveway construction <sup>b</sup>	NA	NA	\$106,000 to \$107,000
	Beach nourishment <sup>d</sup>	11,838	\$130	\$1,538,900
	Subtotal			\$1,644,900 to \$1,645,900
<b>Total</b>				<b>\$2,031,900 to \$2,033,900</b>
<b>Areas Proposed for Exclusion</b>				
Perdue Unit (Exc-7)	Hurricane Clean-up and Fencing <sup>e</sup>	NA	NA	\$110,000
<sup>a</sup> U.S. Fish and Wildlife Service. 2005. <i>Collaborative Agreement Between U.S. Department of the Interior Fish and Wildlife Service and University of South Alabama Department of Civil Engineering.</i> <sup>b</sup> Personal communication with Brent Bowen, FEMA, April 18, 2006. <sup>c</sup> U.S. Fish and Wildlife Service, Biological Opinion for U.S. ACE, March 17, 2006. <sup>d</sup> U.S. Fish and Wildlife Service, Biological Opinion for U.S. ACE, April 1, 2004. Linear extent represents length of waterfront in Unit 5 estimated using GIS analysis. <sup>e</sup> Personnel communication with Jereme Philips, Wildlife Biologist, Bon Secour National Wildlife Refuge, U.S. Fish and Wildlife Service, May 31, 2006. Note: Totals may not sum due to rounding.				

**5.3 FUTURE BEACH PROTECTION EFFORTS**

138. Future beach protection and restoration efforts are likely to occur in units proposed for CH and areas proposed for exclusion over the next 20 years following storm events. This section summarizes these efforts as reported in State planning documents and by Federal agencies.

*Alabama's Coastal Area Management Plan*

139. The State of Alabama's Coastal Area Management Program developed by the Department of Environmental Management is a multiyear repair and maintenance strategy of beach erosion control, beach preservation, restoration, nourishment, and storm and hurricane protection.<sup>86</sup> Specific guidelines that also serve to protect ABM habitat include:

<sup>86</sup> Alabama Department of Environmental Management, Coastal Area Management Program, April 26, 1995 (Division 335-8).

- Prohibiting the removal of primary dune or beach sands and vegetation that would alter the dune system;
- Limiting the operation of vehicles on the beach or dune systems; and
- Limiting construction and dredging and filling operations on the beach front.

#### U.S. Army Corps of Engineers

140. USACE states that the number and severity of tropical storms and hurricanes in Baldwin County, Alabama, over the last ten years have prevented natural dune restoration.<sup>87</sup> These areas are now ready for feasibility studies on beach nourishment.<sup>88</sup> USACE estimates that two beach nourishment feasibility studies will be undertaken in Baldwin County during the next 20 years.<sup>89</sup> Each feasibility study will attempt to (1) identify source sites with suitable sand in sufficient quantities to meet project requirements for beach nourishment, and (2) 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.<sup>90</sup> Conservation efforts likely to be undertaken for the ABM include:

- Avoid impacting the food source for ABM;
- Not creating a wide un-vegetated beach berm;<sup>91</sup>
- Minimizing wind blown sands;
- Placing equipment outside of ABM habitat; and
- Revegetating dune areas.

141. The cost of these conservation efforts for the ABM are 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.<sup>92</sup> Costs of recent beach nourishment projects have ranged from \$1 million to \$35 million. Again, beach mice will benefit from nourishment projects, but they are not the focus of these efforts.

142. In addition, USACE may undertake dredge and disposal activities in Fort Morgan in the future as a result of recent hurricane activity. These activities are identified in the proposed rule as an activity that may alter dune structure and stability, soil compaction levels, and substrate characteristics. Due to the uncertain number of future dredge and

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<sup>87</sup> Personal communication with Dr. Susan Rees, Mobile District, U.S. Army Corps of Engineers, January 26, 2006.

<sup>88</sup> 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.

<sup>89</sup> Personal communication, Susan Rees, USACE, April 24, 2006.

<sup>90</sup> The administrative cost associated with these consultations are included in Appendix A.

<sup>91</sup> That is, do not create a wide non-vegetated beach area.

<sup>92</sup> Personal communication with Dr. Susan Rees, Mobile District, U.S. Army Corps of Engineers, January 26, 2006.

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disposal operations likely to affect proposed CH designation, this analysis does not estimate future costs of conservation efforts for these activities.<sup>93</sup>

#### Federal Emergency Management Agency

143. The number of FEMA emergency dune restoration and facility rebuilding projects in units proposed for CH 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.<sup>94</sup> 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 are possible.<sup>95</sup> 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, including:

- Predator-proof trash receptacles;
- Construction and maintenance of boardwalks;
- Use of native vegetation in landscaping; and
- Prohibiting feral cats.<sup>96</sup>

In addition, conservation efforts will be minimal if the local or State government is able to implement the project before the ABM re-inhabits the dune areas. Given the uncertainty surrounding future storm events and related activities that may affect the ABM, this analysis does not estimate future costs of conservation efforts for the ABM that may be incurred by FEMA.

#### 5.4 FUTURE STORM DAMAGE TO HABITAT

144. To accurately estimate the costs of conservation efforts for the ABM concerning activities related to tropical storms and hurricanes would require a series of assumptions about the future of tropical storms and hurricanes. These assumptions would include predicting the strike locations and intensity of future storms, the magnitude of damage likely to be caused, and the likely human response to the damage (e.g., would structures be rebuilt or replaced).
145. The analysis would then need to determine the conservation efforts that would be recommended for the ABM.<sup>97</sup> Although some models are available to predict storm

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<sup>93</sup> Personal communication, Susan Rees, USACE, April 24, 2006.

<sup>94</sup> Written communication from Brett Bowen, Federal Emergency Management Agency, February 25, 2006.

<sup>95</sup> Written communication from Brett Bowen, Federal Emergency Management Agency, February 25, 2006.

<sup>96</sup> Written communication from Daphne Field Office Personnel, February 28, 2006.

<sup>97</sup> The ABM 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. Written communication from U.S. Fish and Wildlife Service Personnel, March 24, 2006.



events,<sup>98</sup> this data is not sufficient to predict the likely human response to the damage and conservation efforts for the ABM. Accordingly, this analysis does not quantify costs of conservation efforts resulting from future storm damage.

146. Not predicting tropical storms and hurricanes is expected to have a downward impact on estimating total cost of conservation efforts for the ABM. Most response to storm events is baseline and incremental to ABM proposed CH designation. For example, dune restoration and protection efforts (e.g., beach nourishment) are a result of the storm event and not the ABM; however, some additional efforts may be required by the proposed CH designation such as conducting a consultation. In addition, it is important to note that some conservation efforts for the ABM may result in dune protection to the extent that dune protection lessens storm damage.

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<sup>98</sup> For example, Models are available that estimate the annual probabilities of hurricane landfall for the counties containing proposed CH designation, such as the Colorado State University, and United States Landfalling Hurricane Probability Project. (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.).

## SECTION 6 | POTENTIAL ECONOMIC IMPACTS ON SPECIES MANAGEMENT ACTIVITIES AND RECREATION

147. Units proposed for critical habitat and areas proposed for exclusion for the ABM include State Parks and public beach areas managed by multiple Federal, State, and local agencies. Although these lands are used for recreational activity, land managers take measures to protect the ABM species and its habitat from this activity and other threats. This section describes the past economic impacts of conservation efforts for the ABM in the proposed CHD areas. Next, the section discusses future projects and measures that may be undertaken to protect the habitat area.

### 6.1 SUMMARY OF IMPACTS

148. Historically, species management for ABM has entailed dune restoration and protection, vegetation, and fencing. The costs associated with these activities have totaled approximately \$115,600 in the proposed CHD. Future species management activities will likely reflect past efforts. However, limited information is currently available regarding specific projects and associated costs. In addition, species management efforts will likely be affected by storm and hurricane events through the Gulf Coast, discussed in Section 5.

149. Although the units proposed for CHD and areas proposed for exclusion include multiple parks and beaches, few impacts on recreational beach use or visitation are anticipated as a result of future beach mice conservation efforts. This is due to the fact that: 1) the vegetated dune areas in proposed CHD are frequently traversed by beach users via formal trails, dune walkovers, or boardwalks, but are not the focus areas for beach recreation; and 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.<sup>99</sup>

### 6.2 PAST IMPACTS OF SPECIES MANAGEMENT

150. Each unit proposed for designation as critical habitat for the ABM contains multiple park and beach areas. These areas are managed by different agencies, including the Service, Bureau of Land Management and Alabama State Parks (see Exhibit 6-1). In addition, one of the proposed exclusion areas (i.e., Perdue Unit) includes the Bon Secour National Wildlife Refuge, managed by the Service.

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<sup>99</sup> Code of Alabama Section 32-1-7.

## EXHIBIT 6-1 PUBLIC LAND MANAGEMENT BY ABM UNIT

UNIT	PUBLIC LAND MANAGER (PARK)
ABM-1	Alabama State Parks (Fort Morgan Historical Park)
ABM-2	Bureau of Land Management, Alabama State Parks
ABM-3	Bureau of Land Management, Alabama State Parks
ABM-4	Bureau of Land Management
ABM-5	Alabama State Parks (Gulf State Park)
Exclusion-7	U.S. Fish and Wildlife Service (Bon Secour National Wildlife Refuge)

151. In the past (1985 to 2006), land managers have engaged in four consultations related to species management or recreation. As presented in Exhibit 6-2, these consultations addressed habitat protection (e.g., boardwalk construction and dune restoration), beach nourishment, and the removal of hurricane debris from park and beach areas. The costs associated with these consultations are discussed in further detail below by land manager. Two of these consultations, related to beach nourishment and hurricane debris removal, are discussed in further detail in Section 5, as they are more directly related to storm and hurricane activity. In addition, the administrative costs of consultation are quantified in Appendix A.

## EXHIBIT 6-2 SUMMARY OF PAST CONSULTATIONS REGARDING SPECIES MANAGEMENT AND HABITAT PROTECTION FOR THE ABM

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Proposed Dune Restoration Efforts and Beach Access Improvements at Gulf State Park <sup>a</sup>	2004	Service	ABM-5	<ul style="list-style-type: none"> <li>▪ Reconstruction includes: rearrangement of the parking area, construction of a perimeter pedestrian processional, building of restroom facilities bordering the parking lot, and erecting a decorative fence coupled with the park access road.</li> <li>▪ Beach access efforts include: Constructing three boardwalks connecting the parking area to the beach, placing sand fencing for dune augmentation, planting native dune re-vegetation, and fertilizing existing dune vegetation.</li> <li>▪ GPS shall ensure that construction equipment, vehicles, supplies, and fueling equipment will not be stored within habitat areas.</li> <li>▪ Construction easements shall also be bordered by silt fencing to ensure mice remain away from the impact areas.</li> <li>▪ Deteriorated habitat shall be restored to mimic adjacent habitat.</li> <li>▪ GPS shall ensure that any take of the Alabama Beach Mice will immediately be reported to FWS.</li> </ul>
Nourish the wet beach area for storm protection and recreational amenity <sup>b</sup>	2004	USACE	ABM-5	<ul style="list-style-type: none"> <li>▪ Construction equipment, and pipes must be located off the beach and outside of the beach access corridors.</li> <li>▪ Minimize lighting through reduction, shielding, lowering, and placement to reduce the probability of disturbing foraging.</li> <li>▪ Complete a project report.</li> <li>▪ Plant native salt-resistant dune vegetation on restored dunes.</li> <li>▪ Provide educational materials to residents and tourists.</li> </ul>
Permit for Surveying for Scientific and Recovery Activities <sup>c</sup>	2005	Service	All	<ul style="list-style-type: none"> <li>▪ Permits and sub-permits shall contain requirements to minimize ABM mortality and ensure standardized data collection. Requirements include: ensure permit applicants qualified with prior experience, proper bait for traps, inspection to ensure small mammals are not left in trap.</li> <li>▪ In addition, applicants should have a contingency procedure in case ABM are injured during operating procedures. If mortality/injury occurs, the Daphne Service office should be contacted.</li> </ul>

ACTION	YEAR	AGENCY	UNIT	CONSERVATION EFFORTS
Remove Hurricane Debris from State Owned Lands <sup>d</sup>	2006	USACE	ABM - 1	<ul style="list-style-type: none"> <li>▪ Initiate storm debris cleanup</li> <li>▪ Use of existing roads, trails, and wet beach</li> <li>▪ Equipment and contractor staging, access, and parking</li> <li>▪ Remove hurricane debris located within vegetated areas by hand</li> <li>▪ Mechanically rake unvegetated shoreline with root rake</li> <li>▪ Collect debris waterward of vegetation with skid steerer and load onto trailers for transport to a local landfill</li> <li>▪ Mechanically remove debris from area adjacent to the old sea wall</li> <li>▪ Stage equipment in paved or open dirt areas outside Fort Morgan</li> <li>▪ Native woody debris left in place to assist in stabilization and formation of dunes</li> <li>▪ Use of only low-impact equipment (i.e. bobcats and ATVs with small trailers) on unvegetated beach</li> <li>▪ No mechanical equipment used in vegetated dunes</li> </ul>
<p><sup>a</sup> U.S. Fish and Wildlife Service, <i>Biological Opinion for Gulf State Park</i>, Proposed dune restoration efforts and beach access improvements at Gulf State Park (GSP), June 9, 2004.</p> <p><sup>b</sup> U.S. Fish and Wildlife Service. <i>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</i>. April 1, 2004. Note, wet beach is not beach mouse habitat. Note that the main concern for beach nourishment projects is impacts to sea turtles.</p> <p><sup>c</sup> U.S. Fish and Wildlife Service, <i>Biological Opinion for Ecological Services, Atlanta, Georgia</i>, Beach Mouse Trapping Permits, April 27, 2005.</p> <p><sup>d</sup> U.S. Fish and Wildlife Service, <i>Biological Opinion for USACE</i>, Proposal to Remove Hurricane Debris at Fort Morgan State Historic Site, March 17, 2006.</p>				

#### U.S. Fish and Wildlife Service

152. The Service has undertaken ABM management and habitat protection efforts and funded outside entities' efforts since 1985.<sup>100</sup> The total cost of past species management and habitat protection efforts funded by the Service in proposed CHD is \$106,600. This includes dune restoration and beach access improvements (\$96,100), vegetation and dune fertilization (\$7,500),<sup>101</sup> and sand fencing (\$3,000).<sup>102</sup> The dune restoration and vegetation activities for ABM protection were undertaken in Gulf State Park (ABM-5) through a grant to Alabama State Park in 2004. The sand fencing project was undertaken in ABM-4 following the 2005 hurricane season.

#### Alabama State Parks

153. Alabama State Parks manages Gulf State Park (ABM-5), and public land in ABM- 2 and ABM-3. As noted above, the Service provided a grant to Gulf State Park in 2004 in the amount of \$373,000, of which \$96,100 has been spent in ABM-5 for ABM protection measures. Additional activities funded by the Service included planting bitter panic grass, blue stem, and sea oats, and dune fertilization in 2006 totaling \$7,500.
154. Other ABM protection efforts employed by Alabama State Parks have primarily included dune building and information management. In the past the Park has used Christmas trees to build dune areas. In addition, the Park readily uses posted signs to discourage visitors from wandering in the dune areas inhabited by the ABM. Costs associated with both of these efforts have been minimal.<sup>103</sup>

#### Fort Morgan

155. The Fort Morgan Historical Park is located within ABM-1. Although the site is managed by the National Wildlife Refuge (Service), it is owned by the State of Alabama (Alabama State Historical Commission). Historically, Fort Morgan has not been impacted by species management efforts for ABM beyond efforts to restore the dune habitat following storm and hurricane events (see Section 5). In addition, although all of Fort Morgan is designated as critical habitat, ABM primarily inhabit the dunes outside of the concrete seawall that surrounds the Fort. Therefore, costs associated with ABM protection in Fort Morgan have been minimal.<sup>104</sup>

#### Bureau of Land Management

156. The Bureau of Land Management (BLM) manages land within units ABM-2, ABM-3, and ABM-4. In 2005 BLM established sand fencing along three public domain tracts

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<sup>100</sup> Written communication Daphne Field Office, U.S. Fish and Wildlife Service, February 23, 2006.

<sup>101</sup> Personal communication with Forrest Bailey, Alabama State Parks, March 2, 2006.

<sup>102</sup> Personal communication with Faye Winters, Bureau of Land Management, April 19, 2006; Personal communication with Rob Tawes, U.S. Fish and Wildlife Service, April 24, 2006.

<sup>103</sup> Written communication from Kelly Reetz, Gulf State Park, February 7, 2006.

<sup>104</sup> Written communication with Blanton Blankenship, Fort Morgan Historical Site, March 28, 2006.

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along the beach in the Fort Morgan Peninsula area to enhance ABM habitat.<sup>105</sup> These tracts are adjacent to Our Road (ABM-2), Veterans Road (ABM-3), and Mobile Road (ABM-4).<sup>106</sup> The cost of this project totaled approximately \$6,000.<sup>107</sup> However, the fences at all three sites were destroyed by hurricanes and tropical storm activity shortly after they were constructed. BLM anticipates reestablishing fencing at one site (ABM-2) for \$3,000 in 2006.<sup>108</sup>

#### National Wildlife Refuge

157. The Bon Secour National Wildlife Refuge, managed by the Service, is within the Perdue Unit of critical habitat area proposed for exclusion (Exclusion-7). ABM are actively managed and protected at the Refuge. As part of this effort, the Refuge focuses on protection of species habitat (e.g., movement corridor), restoration of habitat areas (e.g., dunes and scrub/shrub habitat), dune fertilization, dune protection, population monitoring, and predator control.<sup>109</sup> These efforts are estimated to have cost between approximately \$212,100 to \$389,900 in undiscounted dollars.<sup>110</sup>

#### 6.2.1 SUMMARY OF PAST IMPACTS OF SPECIES MANAGEMENT

158. Exhibit 6-5 provides a summary of the total cost of past species management and habitat protection costs within the proposed CHD and areas proposed for exclusion by land manager. As shown in the exhibit these costs total approximately \$115,600, in undiscounted dollars. The majority of costs have been incurred by the Service for habitat protection in ABM-5. In addition, species management costs within the Bon Secour National Wildlife Refuge (Exclusion Area 7) have totaled between approximately \$212,100 to \$389,900 in undiscounted dollars.<sup>111</sup>

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<sup>105</sup> Written communication with Bruce Dawson, Bureau of Land Management, March 28, 2006.

<sup>106</sup> Personal communication with Faye Winters, Bureau of Land Management, April 24, 2006.

<sup>107</sup> Personal communication with Faye Winters, Bureau of Land Management, April 19, 2006.

<sup>108</sup> Personal communication with Faye Winters, Bureau of Land Management, April 19, 2006; Written communication with Faye Winters, Bureau of Land Management, April 24, 2006.

<sup>109</sup> U.S. Fish and Wildlife Service, Bon Secour National Wildlife Refuge, Draft Comprehensive Conservation Plan and Environmental Assessment, December 2004, page 66 to 71.

<sup>110</sup> Personnel communication with Jereme Philips, Wildlife Biologist, Bon Secour National Wildlife Refuge, U.S. Fish and Wildlife Service, May 31, 2006. Note that some of these costs were funded by other entities, including Auburn University, and the Daphne Field Office.

<sup>111</sup> Personnel communication with Jereme Philips, Wildlife Biologist, Bon Secour National Wildlife Refuge, U.S. Fish and Wildlife Service, May 31, 2006. Note that some of these costs were funded by other entities, including Auburn University, and the Daphne Field Office.

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**EXHIBIT 6-3 SUMMARY OF ESTIMATED PAST ABM CONSERVATION EFFORTS FOR SPECIES MANAGEMENT AND HABITAT PROTECTION**

UNIT	SERVICE	ALABAMA STATE PARKS	BUREAU OF LAND MANAGEMENT	TOTAL UNDISCOUNTED DOLLARS	PERCENT OF TOTAL
<b>Proposed Critical Habitat Units</b>					
ABM-1	\$0	0	NA	\$0	0%
ABM-2	\$0	0	\$5,000	\$5,000	4%
ABM-3	\$0	0	\$2,000	\$2,000	2%
ABM-4	\$3,000	NA	\$2,000	\$5,000	4%
ABM-5	\$103,600	0	NA	\$103,631	90%
<b>Total</b>	<b>\$106,631</b>	<b>\$0</b>	<b>\$9,000</b>	<b>\$115,631</b>	<b>100%</b>
<b>Areas Proposed for Exclusion</b>					
Perdue Unit (Exc-7)	\$212,100 to \$389,900	\$0	\$0	\$212,100 to \$389,900	100%

**6.3 FUTURE IMPACTS OF SPECIES MANAGEMENT**

159. The Service and Alabama State Parks are expected to undertake species management and habitat protection efforts in the future. Managers for these public lands identified the following potential future projects that are likely to occur with in proposed CHD areas:

- **Dune protection:** The parks may place signs informing visitors not to enter the dune area, construct and/or maintain boardwalks, construct and/or maintain fencing to reduce illegal trails through the dunes. For example, at Fort Morgan the State may place boardwalks from the fort area across the dunes to the beach in the future. Currently, this is a low priority. Should the boardwalks be constructed, the State intends to take measures to ensure that the placement of boardwalks would cause minimal impact, if any, to the ABM.<sup>112</sup>
- **Dune restoration and vegetation:** The parks may undertake efforts to promote dune growth, plant sea oats, dune plant fertilization, and conduct beach nourishment. For example, Gulf State Park plans to continue using old Christmas trees to promote dune growth.
- **Tropical storms and hurricanes:** The Federal Emergency Management Agency and Alabama State Parks may undertake facility re-construction projects after tropical storms and hurricanes. See Section 5 for further discussion of tropical storm and hurricane activities.

Gulf State Park and Fort Morgan, both managed by Alabama State Parks, anticipate future costs related to ABM management to be modest, based on currently available information.

<sup>112</sup> Written communication with Blanton Blankenship, Fort Morgan Historical Site, March 28, 2006.



160. Future species management activities for land managed by BLM are unknown pending the completion of the land use plan in 2007. Without the finalization of this plan, BLM is unable to predict the number of projects and associated costs, if any, that may be impacted by ABM conservation efforts.<sup>113</sup>
161. Finally, future management costs associated with the Bon Secour National Wildlife Refuge are estimated to total \$500,000 between 2007 and 2026, or \$25,000 annually.<sup>114</sup> Based on the Conservation Plan, the refuge will likely continue to engage in habitat protection, restoration, population monitoring, and predator control activities.<sup>115</sup>

#### 6.4 POTENTIAL IMPACTS ON RECREATION

162. The beach habitat considered in this analysis is found in all five CHD units and provides recreational opportunities for public beach use. The proposed rule identifies recreational use as a threat to the species that may result in soil compaction, damage to dunes, and/or a decrease in beach mouse habitat quality.<sup>116</sup> Proposed CHD for the ABM includes primary dunes, secondary dunes, interdunal swales, and scrub dunes.<sup>117</sup> Accordingly, areas generally used for beach recreation do not tend to overlap with the areas inhabited by the ABM species. However, beach users frequently traverse the vegetated dune areas in proposed CHD for beach access via formal trails, dune walkovers, or boardwalks.
163. Exhibit 6-4 provides an overview of the tourism industry in the Gulf Coast Region of Alabama. As shown in the exhibit, the number of visitors to the Alabama Gulf Coast in 2004 was 1.4 million, with most visitation occurring in the summer season.<sup>118</sup> Annual tourist expenditures in this year totaled \$2.6 billion and travel-related earnings totaled \$1.1 billion. The industry also supported 57,034 jobs (both directly and indirectly related to tourism).<sup>119</sup>

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<sup>113</sup> Written communication with Bruce Dawson, Bureau of Land Management, March 28, 2006.

<sup>114</sup> Personnel communication with Jereme Phillips, Wildlife Biologist, Bon Secour National Wildlife Refuge, U.S. Fish and Wildlife Service, May 31, 2006.

<sup>115</sup> U.S. Fish and Wildlife Service, Bon Secour National Wildlife Refuge, Draft Comprehensive Conservation Plan and Environmental Assessment, December 2004, page 66 to 71.

<sup>116</sup> U.S. Fish and Wildlife Service, Proposed Critical Habitat for the Alabama Beach Mouse, 50 CFR Part 17, February 1, 2006.

<sup>117</sup> U.S. Fish and Wildlife Service, Proposed Critical Habitat for the Alabama Beach Mouse, 50 CFR Part 17, February 1, 2006.

<sup>118</sup> 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.

<sup>119</sup> 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.

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**EXHIBIT 6-4 2004 BEACH TOURISM INDUSTRY PROFILE OF THE ALABAMA GULF COAST CONTAINING CRITICAL HABITAT FOR ABM**

GEOGRAPHIC AREA	ANNUAL VISITORS (MILLIONS)	TOTAL TOURIST EXPENDITURES (BILLIONS)	TRAVEL-RELATED EARNINGS (BILLIONS)	TRAVEL-RELATED EMPLOYMENT
Alabama Gulf Coast <sup>a</sup>	1.4 <sup>a</sup>	\$2.6 <sup>b</sup>	1.1 <sup>b</sup>	57,034 <sup>b</sup>
<sup>a</sup> Klages, Walter J. <i>2004 Visitor Profile Alabama Gulf Coast Convention and Visitors Bureau</i> . Prepared by Evans-Klages, Inc. for Alabama Gulf Coast Convention and Visitors Bureau. November 2004. <sup>b</sup> Deravi, M. Keivan, and Pam Smith. <i>Economic Impact Alabama Travel Industry 2004</i> . Submitted to Lee Sentell, Director Alabama Bureau of Tourism and Travel. April 15, 2005.				

164. Representatives from the affected State parks agree 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; and 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 (see Exhibit 6-5).<sup>120</sup> Accordingly, conservation efforts associated with recreation for the ABM have not affected visitation to the public lands historically and, furthermore, are not anticipated to impact future beach use or visitation.<sup>121</sup>

**EXHIBIT 6-5 CURRENT BEACH REGULATIONS AND RESTRICTIONS WITHIN ABM CRITICAL HABITAT**

TYPE	DESCRIPTION
Beach Access	Persons are prohibited from walking on or otherwise damaging sand dunes or the vegetation growing thereon. <sup>a</sup>
Beach Driving	It is unlawful to operate a motor vehicle, motorcycle, or motor driven cycle on beaches and sand dunes. <sup>b</sup>
Native Vegetation	Persons are prohibited from removing primary dune or beach sands and/or vegetation. <sup>c</sup>
<sup>a</sup> Discussion with Kelly Reetz on February 9, 2006. <sup>b</sup> Code of Alabama Section 32-1-7. <sup>c</sup> Alabama Department of Environmental Management, Coastal Area Management Program, April 26, 1995.	

<sup>120</sup> Code of Alabama Section 32-1-7.

<sup>121</sup> 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.

**APPENDIX A**

165. This appendix presents administrative costs of actions taken under section 7 of the Act associated with the geographic extent of units proposed for CH and areas proposed for exclusion for the Alabama beach mouse (ABM). First, this Appendix defines the types of administrative costs likely to be associated with the units proposed for CH 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 CH for the ABM, 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**

166. 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 CH and areas proposed for exclusion.

**TECHNICAL ASSISTANCE**

167. 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 CH. Technical assistance costs represent the estimated economic costs of informational conversations between these entities and the Service regarding the designation of CH for the ABM. Most likely, such conversations will occur between municipal or private property owners and the Service regarding lands designated as CH or lands adjacent to CH. The Service's technical assistance activities are voluntary and generally occur in instances where a Federal nexus does not exist.

**SECTION 7 CONSULTATIONS**

168. 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 CH. There are two scenarios under which the designation of CH 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 CH 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.

169. During a consultation, the Service, the Action agency, and the land 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 CH. 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 CH associated with the activity that has been proposed, the Federal agency, and whether there is a private applicant involved.
170. 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 CH. 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 CH 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 CH, 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**

171. 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 CH 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.
172. 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**

173. Since the listing of the ABM in 1985, there have been 18 formal section 7 consultations, two informal consultations, and five technical assistance efforts in the geographic extent of units proposed for CH and areas proposed for exclusion for the ABM.
174. As shown in Exhibit A-2, past administrative costs are estimated at \$262,000 to \$440,000. 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**

175. Approximately six formal consultations are expected regarding the ABM over the next 20 years. These six formal consultations are expected to include: one consultation on transportation for units 1, 2, and 3; two consultations on tropical storms spanning all five units; two consultations on development for unit 3; and one consultation on development in a yet to be determined unit.
176. As shown in Exhibit A-4, future administrative costs are estimated at \$83,000 to \$134,000. Assuming a seven percent discount rate over 20 years, the present value of administrative costs are \$37,000 to \$59,000, annualized costs are estimated at \$3,000 to \$5,000. (See Exhibit A-5).

**A.5 CAVEATS**

177. The number of consultations and technical assistance efforts to be undertaken in the future for activities within a given unit is 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 CH. 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, 1985-2006, IN 2005 DOLLARS

UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
Unit 1	Formals	2			0.2	0.3	1		4	\$49,000	\$79,000
	Informals					0.3			0	\$1,000	\$3,000
	Technical Assistance				1	0.3	0.4		2	\$1,000	\$4,000
	Subtotal								6	\$51,000	\$86,000
Unit 2	Formals				0.2	0.3	0.4		1	\$7,000	\$12,000
	Informals					0.3			0	\$1,000	\$3,000
	Technical Assistance					0.3	0.4		1	\$1,000	\$2,000
	Subtotal								2	\$9,000	\$17,000
Unit 3	Formals	4			0.2	0.3			5	\$63,000	\$101,000
	Informals					0.3			0	\$1,000	\$3,000
	Technical Assistance					0.3	0.4		1	\$1,000	\$2,000
	Subtotal								6	\$65,000	\$106,000
Unit 4	Formals				0.2				0	\$3,000	\$4,000
	Informals								0	\$0	\$0
	Technical Assistance						0.4		0	\$0	\$1,000
	Subtotal								1	\$3,000	\$5,000
Unit 5	Formals	1			2.2				3	\$44,000	\$71,000
	Informals					0.3			0	\$1,000	\$3,000
	Technical Assistance					1	0.4		1	\$1,000	\$3,000
	Subtotal								0	\$6,000	\$9,000

UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
Proposed CH Designation	Formals	7			3	1	1		12	\$167,000	\$268,000
	Informals					1			1	\$4,000	\$14,000
	Technical Assistance				1	2	2		5	\$4,000	\$11,000
	<b>Subtotal</b>								<b>18</b>	<b>\$175,000</b>	<b>\$293,000</b>
The Dunes	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Bay to Breakers	Formals	1							1	\$14,000	\$22,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>1</b>	<b>\$14,000</b>	<b>\$22,000</b>
Kiva Dunes	Formals	2							2	\$28,000	\$45,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>2</b>	<b>\$28,000</b>	<b>\$45,000</b>
Plantation Palms	Formals	1							1	\$14,000	\$22,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>1</b>	<b>\$14,000</b>	<b>\$22,000</b>

UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
The Beach Club	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								0	\$0	\$0
Martinique on the Gulf	Formals	2							2	\$28,000	\$45,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								2	\$28,000	\$45,000
Perdue Unit, Bon Secour NWR	Formals								0	\$0	\$0
	Informals						1		1	\$4,000	\$14,000
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								1	\$4,000	\$14,000
Gulf State Park	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								0	\$0	\$0
Single Family Homes	Formals	2							2	\$28,000	\$45,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								2	\$28,000	\$45,000
Proposed for	Formals	6							6	\$83,000	\$134,000
	Informals						1		1	\$4,000	\$14,000



UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
Exclusion	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								7	\$87,000	\$148,000
Unknown	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								0	\$0	\$0
Total	Formals	13	0	0	3	1	1	0	18	\$250,000	\$401,000
	Informals	0	0	0	0	1	1	0	2	\$7,000	\$28,000
	Technical Assistance	0	0	0	1	2	2	0	5	\$4,000	\$11,000
<b>Total Costs Low</b>		\$181,000	\$0	\$0	\$43,000	\$19,000	\$19,000	\$0	\$262,000		
<b>Total Costs High</b>		\$290,000	\$0	\$0	\$69,000	\$41,000	\$41,000	\$0	\$440,000		

Note: Totals may not sum due to rounding.

## EXHIBIT A-3 TOTAL PAST ADMINISTRATIVE COSTS, 1985-2006, IN 2005 DOLLARS

UNIT	TOTAL UNDISCOUNTED DOLLARS		PRESENT VALUE (3%)		PRESENT VALUE (7%)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
<b>CH Units</b>						
Unit 1	\$51,000	\$86,000	\$51,000	\$86,000	\$51,000	\$86,000
Unit 2	\$9,000	\$17,000	\$9,000	\$17,000	\$9,000	\$17,000
Unit 3	\$65,000	\$106,000	\$65,000	\$106,000	\$65,000	\$106,000
Unit 4	\$3,000	\$5,000	\$3,000	\$5,000	\$3,000	\$5,000
Unit 5	\$46,000	\$77,000	\$46,000	\$77,000	\$46,000	\$77,000
<b>Subtotal</b>	<b>\$174,000</b>	<b>\$291,000</b>	<b>\$174,000</b>	<b>\$291,000</b>	<b>\$174,000</b>	<b>\$291,000</b>
<b>Proposed Exclusions</b>						
The Dunes	\$0	\$0	\$0	\$0	\$0	\$0
Bay to Breakers	\$14,000	\$22,000	\$14,000	\$22,000	\$14,000	\$22,000
Kiva Dunes	\$0	\$0	\$0	\$0	\$0	\$0
Plantation Palms	\$14,000	\$22,000	\$14,000	\$22,000	\$14,000	\$22,000
The Beach Club	\$0	\$0	\$0	\$0	\$0	\$0
Martinique on the Gulf	\$28,000	\$45,000	\$28,000	\$45,000	\$28,000	\$45,000
Perdue Unit, Bon Secour NWR	\$4,000	\$14,000	\$4,000	\$14,000	\$4,000	\$14,000
Gulf State Park	\$0	\$0	\$0	\$0	\$0	\$0
Single Family Homes	\$28,000	\$45,000	\$28,000	\$45,000	\$28,000	\$45,000
<b>Subtotal</b>	<b>\$88,000</b>	<b>\$148,000</b>	<b>\$88,000</b>	<b>\$148,000</b>	<b>\$88,000</b>	<b>\$148,000</b>
<b>Total</b>	<b>\$262,000</b>	<b>\$439,000</b>	<b>\$262,000</b>	<b>\$439,000</b>	<b>\$262,000</b>	<b>\$439,000</b>

Note(s):

1/ Consultations with unknown units are not included in this exhibit.

2/ Totals may not sum due to rounding.

## A-4 FUTURE ADMINISTRATIVE COSTS BY UNIT AND BY ACTIVITY (2007-2026), IN 2005 DOLLARS

UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
Unit 1	Formals					0.33	0.4		1	\$10,000	\$16,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	Subtotal								1	\$10,000	\$16,000
Unit 2	Formals					0.33	0.4		1	\$10,000	\$16,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	Subtotal								1	\$10,000	\$16,000
Unit 3	Formals	2				0.33	0.4		3	\$38,000	\$61,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	Subtotal								3	\$38,000	\$61,000
Unit 4	Formals					0	0.4		0	\$6,000	\$9,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	Subtotal								0	\$6,000	\$9,000
Unit 5	Formals						0.4		0	\$6,000	\$9,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	Subtotal								0	\$6,000	\$9,000

UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
Proposed CH Designation	Formals	2	0	0	0	17	2	0	5	\$70,000	\$111,000
	Informals	0	0	0	0	0	0	0	0	\$0	\$0
	Technical Assistance	0	0	0	0	0	0	0	0	\$0	\$0
	<b>Subtotal</b>								<b>5</b>	<b>\$70,000</b>	<b>\$111,000</b>
The Dunes	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Bay to Breakers	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Kiva Dunes	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Plantation Palms	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>

UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
The Beach Club	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Martinique on the Gulf	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Perdue Unit, Bon Secour NWR	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Gulf State Park	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Single Family Homes	Formals								0	\$0	\$0
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								<b>0</b>	<b>\$0</b>	<b>\$0</b>
Proposed for	Formals	0	0	0	0	0	0	0	0	\$0	\$0
	Informals	0	0	0	0	0	0	0	0	\$0	\$0

UNIT	TYPE OF CONSULT	DEVELOPMENT	RECREATION	DREDGING	SPECIES MANAGEMENT	TRANSPORTATION	TROPICAL STORMS	OTHER	TOTAL NUMBER	TOTAL COSTS (LOW)	TOTAL COSTS (HIGH)
Exclusion	Technical Assistance	0	0	0	0	0	0	0	0	\$0	
	<b>Subtotal</b>								0	\$0	
Unknown	Formals	1							1	\$14,000	\$14,000
	Informals								0	\$0	\$0
	Technical Assistance								0	\$0	\$0
	<b>Subtotal</b>								1	\$14,000	\$0
Total	Formals	3	0	0	0	1	2	0	6	\$83,000	\$134,000
	Informals	0	0	0	0	0	0	0	0	\$0	\$0
	Technical Assistance	0	0	0	0	0	0	0	0	\$0	\$0
<b>Total Costs Low</b>		<b>\$42,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$14,000</b>	<b>\$28,000</b>	<b>\$0</b>	<b>\$83,000</b>		
<b>Total Costs High</b>		<b>\$67,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$22,000</b>	<b>\$45,000</b>	<b>\$0</b>	<b>\$134,000</b>		

Note: Totals may not sum due to rounding.

## EXHIBIT A-5 TOTAL AND ANNUALIZED FUTURE ADMINISTRATIVE COSTS, 2007-2026, IN 2005 DOLLARS

UNIT	TOTAL UNDISCOUNTED DOLLARS		PRESENT VALUE (3%)		PRESENT VALUE (7%)	
	LOW	HIGH	LOW	HIGH	LOW	HIGH
Unit 1	\$10,000	\$16,000	\$7,000	\$12,000	\$5,000	\$8,000
Unit 2	\$10,000	\$16,000	\$7,000	\$12,000	\$5,000	\$8,000
Unit 3	\$38,000	\$61,000	\$28,000	\$45,000	\$20,000	\$32,000
Unit 4	\$6,000	\$9,000	\$4,000	\$7,000	\$3,000	\$5,000
Unit 5	\$6,000	\$9,000	\$4,000	\$7,000	\$3,000	\$5,000
<b>Total</b>	<b>\$70,000</b>	<b>\$111,000</b>	<b>\$52,000</b>	<b>\$83,000</b>	<b>\$37,000</b>	<b>\$59,000</b>
<b>Annualized</b>			<b>\$3,000</b>	<b>\$6,000</b>	<b>\$3,000</b>	<b>\$5,000</b>

Note: Totals may not sum due to rounding.

APPENDIX B  
SMALL BUSINESS IMPACTS AND ENERGY IMPACTS



178. 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 Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) in 1996. Information was gathered from the Small Business Administration and U.S. Census Bureau. The energy analysis in Section B.2 is conducted pursuant to Executive Order No. 13211.

#### **B.1 SBREFA ANALYSIS**

179. 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).<sup>122</sup> 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.<sup>123</sup> 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.
180. To assist in this process, the following represents a screening level analysis of the possible effects of conservation activities for the Alabama beach mouse (ABM) 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 ABM conservation activities, and then details and quantifies the specific impacts to potentially affected small businesses.

##### **B.1.1 IDENTIFICATION OF ACTIVITIES THAT MAY INVOLVE SMALL ENTITIES**

181. This analysis estimates prospective economic impacts due to implementation of ABM conservation efforts in five categories:
1. Residential and commercial real estate development activities;
  2. Road construction and maintenance
  3. Tropical storms and hurricanes;
  4. Species management and habitat protection activities; and
  5. Recreation.

In four of these five categories, impacts of ABM conservation are not anticipated to impact small businesses for the following reasons:

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<sup>122</sup> 5 U.S.C. 601 et seq.

<sup>123</sup> 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).

- *Recreation*: Section 4 of this analysis discusses the potential impacts of ABM conservation efforts on recreation that may be affected by the proposed CH designation. 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 CH designation 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 CH 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 ABM conservation efforts.
  - *Road construction and maintenance*: Section 6 of this analysis presents the potential costs to transportation activities. These costs are expected to be borne by ALDOT. Therefore, this category of impacts is not expected to affect small entities.
  - *Tropical storms and hurricanes*: Section 5 of this analysis discusses the potential impacts of ABM conservation efforts on tropical storm and hurricane response activities that may be affected by the proposed CH designation. As discussed in Section 5, for the purposes of this analysis it is not feasible to predict the future locations, intensity, damage, and response to storms. Most storm event response actions would likely be undertaken by FEMA and the USACE, and thus would not affect small entities.
  - *Species management and habitat protection*: Section 6 of this analysis presents the potential costs of ABM specific management and habitat protection activities. As the Service, BLM, and Alabama State Parks are expected to bear any species management and habitat protection costs, no impacts on small entities are anticipated for this category.
182. The remainder of this section addresses the potential economic impacts to private development activities, and how those impacts may affect small entities.

#### B.1.2 ANALYSIS OF IMPACTS TO PRIVATE DEVELOPMENT

183. Section 3 describes the potential impacts of ABM conservation efforts on private development. Landowners in CH may be individuals and families, rather than real estate or construction businesses. There is neither a North American Industry Classification System (NAICS) code for landowners, nor a Small Business Administration definition of a small landowner. However, as some landowners in CH may be small business entities, this analysis provides information on the number of landowners potentially affected by ABM conservation efforts and the magnitude of the impact.
184. As shown in Exhibit B-1, proposed CH includes 94 private developable acres that are currently vacant. Assuming each parcel of land is owned by a unique landowner, 137

landowners could be impacted by ABM conservation efforts. To the extent landowners own multiple parcels, Exhibit B-1 overstates the number of landowners potentially impacted.

EXHIBIT B-1 ESTIMATED LANDOWNER IMPACT IN ALABAMA BEACH MOUSE CRITICAL HABITAT

CH UNIT	DEVELOPABLE ACRES ON VACANT PARCELS			NUMBER OF PRIVATELY OWNED DEVELOPABLE PARCELS
	ZONED SINGLE-FAMILY AND DUPLEX	ZONED MULTI-FAMILY	POTENTIAL TO BE REZONED MULTI-FAMILY	
ABM-1	11	0	2	8
ABM-2	6	5	2	9
ABM-3	64	0	0	113
ABM-4	3	0	0	7
ABM-5	0	0	0	0
TOTAL	84	5	5	137

Sources: Baldwin County Planning and Zoning GIS data, Volkert & Associates GIS Layer of Vacant Lands on the Fort Morgan Peninsula.  
Note: Totals may not sum due to rounding.

#### Single-Family and Duplex Development

185. Under the City of Gulf Shores Range-Wide Habitat Conservation Plan, landowners in CH constructing a single-family or duplex residence make a one-time contribution to beach mouse conservation of \$2,500 per residential unit built. In addition, the Service may recommend that landowners with beachfront parcels construct dune walkovers at an estimated cost of \$8,000.<sup>124</sup> Across all private parcels in CH, the average per parcel cost of ABM conservation efforts is estimated to be \$11,000.<sup>125</sup> With 134 private parcels on 84 acres of developable land, the average parcel size in CH is 0.63 acres. In 2005, the average value of undeveloped land in Baldwin County within a quarter mile of the beach was \$506,800 per acre.<sup>126</sup> Thus, undeveloped parcels in CH are worth approximately \$317,700. The average cost of beach mouse conservation efforts per landowner (i.e., \$11,000) represents three percent of average parcel value.

<sup>124</sup> Aerial images and Baldwin County GIS parcel maps were used to estimate which parcels might require dune walkovers in order to protect Alabama beach mouse CH. If many small parcels were clustered on the beachfront, a single, shared dune walkover was deemed adequate for the entire cluster, rather than assuming each landowner would build a dune walkover.

<sup>125</sup> The Gulf Shores Zoning Code was used to determine the maximum number of units allowed on each parcel, which in turn was used to calculate each landowner's maximum contribution to the Gulf Shores Range-Wide Habitat Conservation Plan. The Gulf Shores Zoning Code generally permits more residential units per parcel than the Baldwin County Zoning Code.

<sup>126</sup> Baldwin County Planning and Zoning GIS data current as of 2005. The average true land value of parcels within a quarter mile of the beach is \$506,799 per acre.

## Multi-Family and Development

186. There are three vacant parcels that may be developed as multi-family condominiums on 10 acres of proposed CH. In addition, the Beach Club West and Gulf Highlands, residential developments are proposed respectively by Head Companies and Gulf Highlands Holdings LLC. The costs of ABM conservation efforts at these multi-family developments are expected to represent a three to seven percent of estimated project revenues.

**EXHIBIT B-2 ESTIMATED MAGNITUDE OF MULTI-FAMILY DEVELOPMENT PROJECT AFFECTED BY ALABAMA BEACH MOUSE CONSERVATION EFFORTS**

MULTI-FAMILY DEVELOPMENT PROJECT	NUMBER OF CONDOMINIUM UNITS	SALES PRICE OF CONDOMINIUM UNIT <sup>A</sup>	TOTAL PROJECT REVENUES	ABM CONSERVATION EFFORT COSTS (UNDISCOUNTED)	PERCENT PROJECT REVENUE POTENTIALLY AFFECTED
Beach Club West	473	\$896,000	\$423,808,000	\$13,234,000	3%
Gulf Highlands	552	\$896,000	\$494,592,000	\$22,410,000	5%
Unnamed ABM-1 multi-family project	74	\$896,000	\$66,304,000	\$4,417,800	7%
Unnamed ABM-1 multi-family project 2	70	\$896,000	\$62,720,000	\$4,179,000	7%
Unnamed ABM-2 multi-family project 2	32	\$896,000	\$28,672,000	\$1,910,400	7%

Forty-nine condominium units are currently for sale at Head Companies' existing Beach Club towers. The average asking price is \$896,000. New condominium units within proposed critical habitat are assumed to sell for a similar price to Beach Club condominium units. Asking prices for Beach Club condominium units are from the Beach Club website under "real estate sales" accessed at <http://www.headcompanies.com/projects.php> on June 2, 2006.

**B.2 POTENTIAL IMPACTS TO THE ENERGY INDUSTRY**

187. 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."<sup>127</sup> 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);

<sup>127</sup> 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 fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- 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.<sup>128</sup>

As none of these criteria is relevant to this analysis, energy-related impacts associated with ABM conservation activities efforts the proposed CH designation are not expected.

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<sup>128</sup> Ibid.

**APPENDIX C**

188. This appendix provides a description of the data sources and methodology used to identify the number of potential residential units that may be built within proposed CH for the Alabama Beach Mouse (ABM). This analysis uses a geographic information system (GIS) to estimate the maximum number of potential residential units under current Baldwin County, Alabama zoning regulations, and future City of Gulf Shores, Alabama zoning.<sup>129</sup>

**DATA SOURCES**

189. For this analysis, we obtained several GIS data layers from U.S. Fish Wildlife Service (Service) and Volkert & Associates, an environmental engineering firm base in Mobile, Alabama that has performed several studies on the Fort Morgan Peninsula for local communities and developers. Exhibit C-1 provides the source and brief description for each layer used in this analysis.

**EXHIBIT C-1 DATA SOURCES USED IN CALCULATING DEVELOPABLE UNITS**

DATA LAYER (CREATION DATE)	SOURCE	DESCRIPTION
Proposed CH for the Alabama Beach Mouse (ABM) (January 2006)	United States Fish and Wildlife Service (Service)	Identifies lands Proposed for CH designation (CH designation) for the ABM.
Proposed Exclusions from CH for the ABM (April 2006)	Service	Identifies lands proposed for exclusions from CH for the ABM.
Baldwin County, Alabama Parcel Information (2005)	Service, Baldwin County GIS Department	Provides tax parcel information for Baldwin County, Alabama.
Baldwin County, Alabama Zoning Information (2005)	Service, Baldwin County GIS Department	Provides current Baldwin County, Alabama zoning designations by parcel.
Color Aerial Photography of Fort Morgan Peninsula (Spring 2005)	Volkert & Associates, Service, Baldwin County, GIS Department	Georeferenced aerial photographs of the Fort Morgan Peninsula.
Construction Control Line (CCL) (2005)	Service	A line set by the Alabama Department of Environmental Management that parallels the coastline. Development between the mean high tide and CCL without a permit is generally prohibited.
Single-family Vacant Lands on the Fort Morgan Peninsula (2005)	Volkert & Associates, Inc.	Originally developed for City of Gulf Shores Range-Wide Habitat Conservation Plan, this layer identifies vacant single-family lots within ABM habitat. Volkert used current aerial photography, Baldwin County parcel data, and ABM habitat data to identify vacant single-family lots. Parcels that have already been issued permits or clearance letters by the Service have been removed from this layer.
Permitted or Potential Future Gulf-Front Multi-family Development Locations, Fort Morgan Peninsula (January 2003)	Volkert & Associates, Inc.	Originally assembled to identify areas on the Fort Morgan peninsula that may legally and physically support multi-family development (irrespective of current zoning), this layer identifies parcels that are legally (e.g., covenants, easements) or physical incapable (e.g., wetlands) of development.

<sup>129</sup> City of Gulf Shores. Final Draft Fort Morgan Peninsula Land Use Plan. October 10, 2005.

#### METHODOLOGY

190. This analysis uses the ModelBuilder application within ESRI's ArcGIS software to construct a GIS model that estimates the number of potential residential units under both zoning regulations. First, the model identifies all vacant parcels on the Fort Morgan peninsula, by combining the single-family vacant lands layer (supplied by Volkert & Associates) with individually identified vacant lots zoned for multi-family development.<sup>130,131</sup> Second, the "intersect" tool is used to select the areas within the vacant parcels layer that overlap with proposed CH for the ABM. Then, the following areas are removed from the assembled vacant land/CH layer:
- **Land south of Construction Control Line (CCL):** Development between the mean high tide and CCL without a permit is generally prohibited.
  - **Areas Proposed for Exclusion for CH:** Since these areas are proposed for exclusion, we omit them from this analysis.
  - **Beach Club and Gulf Highlands:** These areas are currently planned for development, but have been delayed due to contested Incidental Take Permits. The developers of these properties provided the proposed number of units for each location.
  - **Alabama State Land:** State land within proposed CH designation is restricted from residential development.
191. Once these layers are removed, the model overlays the remaining parcels with a layer that contains both Baldwin County and future Gulf Shores zoning designations. Exhibit C-2 shows the crosswalk from Baldwin County zoning to future Gulf Shores zoning as designated in the *City of Gulf Shores Fort Morgan Peninsula Land Use Plan*. In addition, based on current zoning regulations, we determined the minimum lot size and the number of potential residential units per minimum sized lot for each zoning designation.

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<sup>130</sup> Volkert & Associates had previously removed lands legally (e.g., conservation easements) and physically (e.g., wetlands) incapable of supporting residential development from the single-family vacant lands layer.

<sup>131</sup> Vacant multi-family lots were identified through a combination of aerial photography, Baldwin County zoning layer, and the potential multi-family development layer supplied by Volkert & Associates.

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**EXHIBIT C-2 CROSSWALK BETWEEN CURRENT BALDWIN COUNTY ZONING AND FUTURE  
GULF SHORES ZONING**

BALDWIN COUNTY ZONING (LOW-END ESTIMATE)				CITY OF GULF SHORES ZONING (HIGH-END ESTIMATE)			
ZONE	DESCRIPTION	MINIMUM LOT SIZE (ACRES)	POTENTIAL RESIDENTIAL UNITS PER MINIMUM SIZED LOT	ZONE	DESCRIPTION	MINIMUM LOT SIZE (ACRES)	POTENTIAL RESIDENTIAL UNITS PER MINIMUM SIZED LOT
R1A	Single-family	0.92	1	R120	Single-family	0.46	1
R2A	Single-family	0.50	1	R120	Single-family	0.46	1
R4	Two-family	0.50	2	RDFM	Two-family	0.50	2
R6	Multi-family	1.00	6	RMLFM	Multi-family	1.00	15
Sources: City of Gulf Shores. Final Draft Fort Morgan Peninsula Land Use Plan. October 10, 2005. Baldwin County Planning and Zoning Department. Baldwin County Zoning Regulations. November 16, 2004.							

192. After measuring acreages for the remaining parcels, the analysis removes all parcels assumed to be too small to support residential development.<sup>132</sup> The maps provided in Appendix E show the vacant parcels within proposed CH designation for which the analysis calculates the number potential residential units and the number units assigned by the analysis under Baldwin County zoning. In total, the number of potential residential units are estimated for 137 vacant parcels.
193. The calculation of the number of potential residential units for each parcel is based on the acreage in proposed CH, minimum lot size, and the units per minimum sized lot (as determined by zoning regulations). Using this approach, the number of potential residential units in Proposed CH per parcel is:<sup>133</sup>

<sup>132</sup> After visually inspecting each vacant parcel along with aerial photography, it was determined that all parcels less than 0.07 acres were too small to support residential development. In most cases these small parcels were "remnants" resulting from the intersection of the CH and vacant parcels layer. In a few cases, a small area of CH was found within the boundaries of a larger vacant parcel. Based on the aerial photography of the area, it was assumed that those landowners who own vacant lots containing less than 0.07 acres of CH would likely be able to build outside of CH.

<sup>133</sup> Our analysis found that many home structures on the Fort Morgan Peninsula were built on parcels smaller than the minimum lot size designated by Baldwin County's zoning regulations. Based on this historical record, this analysis assumes that homes will continue to be built on parcels smaller than the minimum lot size. To account for those parcels in proposed CH that have acreages below than the minimum lot size, this analysis assumes the number of potential residential units to be the maximum number of residential units allowed under the zoning regulations for the minimum lot size. For example, under Gulf Shores zoning, the minimum lot size for two-family development is 0.5 acres. For a vacant parcel in proposed CH measuring 0.25 acres, this analysis assumes two potential residential units. Likewise, for a parcel under Gulf Shores single-family zoning measuring, 0.25 acres, this analysis assumes one residential unit.



$$\frac{\text{Acres in Proposed CH}}{\text{Minimum Lot Size}} \times \text{Units Per Minimum Sized Lot}$$

As an example, using the Baldwin County designation for two family zoning (R4), the number of potential residential units for a two acre parcel in proposed CH designation are calculated as follows:

$$(2 \text{ Acres} / 0.5 \text{ Acres}) \times 2 \text{ Units} = 8 \text{ Potential Residential Units}$$

Finally, the number of potential residential units are summarized for each proposed CH unit.

#### Redevelopment Analysis

194. Section 3.5.1 (Other Locations) details the analysis of the potential redevelopment of single/two-family zoned areas to high-density multi-family development. In the 2003 study, *Permitted or Potential Future Gulf-Front Multi-Family Development Locations, Fort Morgan Peninsula, Gulf Shores, Alabama*, Volkert & Associates identified lands that can physically and legally support multi-family development, irrespective of current zoning.<sup>134</sup> Given the legal and physical constraints on multi-family development on the Fort Morgan Peninsula, Volkert identified only three potential future locations that can support multi-family development. Two of those locations are within proposed CH units ABM-1 and ABM-2, and the third is outside of proposed CH.
195. Using the GIS data layer of these locations, this analysis estimates the number potential-future multi-family residential units that may be built within proposed CH. The estimates are presented only in the high-end estimate of development costs.
196. To accomplish this task, this analysis first identifies all parcels within proposed CH that fall within the two potential multi-family locations identified by Volkert & Associates. For those vacant parcels zoned as single/two-family, this analysis then estimates the number of potential residential units as if the parcel is zoned for multi-family under future City of Gulf Shores zoning (15 potential residential units per acre). For those parcels that are currently built upon, this analysis consolidates the lots into larger, contiguous parcels and then similarly estimates the number of potential residential units using City of Gulf Shores multi-family zoning. The individual parcels "re-zoned" using this methodology are identified in Appendix F.

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<sup>134</sup> Legal limitations include deed restrictions prohibiting multifamily development and right-of-way easements that cannot be terminated. Physical limitations include Alabama Department of Environmental Management coastal set back lines, wetlands, and minimum site size. Volkert & Associates, Inc. 2003. *Permitted or Potential Future Gulf-Front Multi-Family Development Locations, Fort Morgan Peninsula, Gulf Shores, Alabama*.

**APPENDIX D**  
**CONTEXT MAPS**

EXHIBIT D-1 PROPOSED CRITICAL HABITAT FOR THE ALABAMA BEACH MOUSE

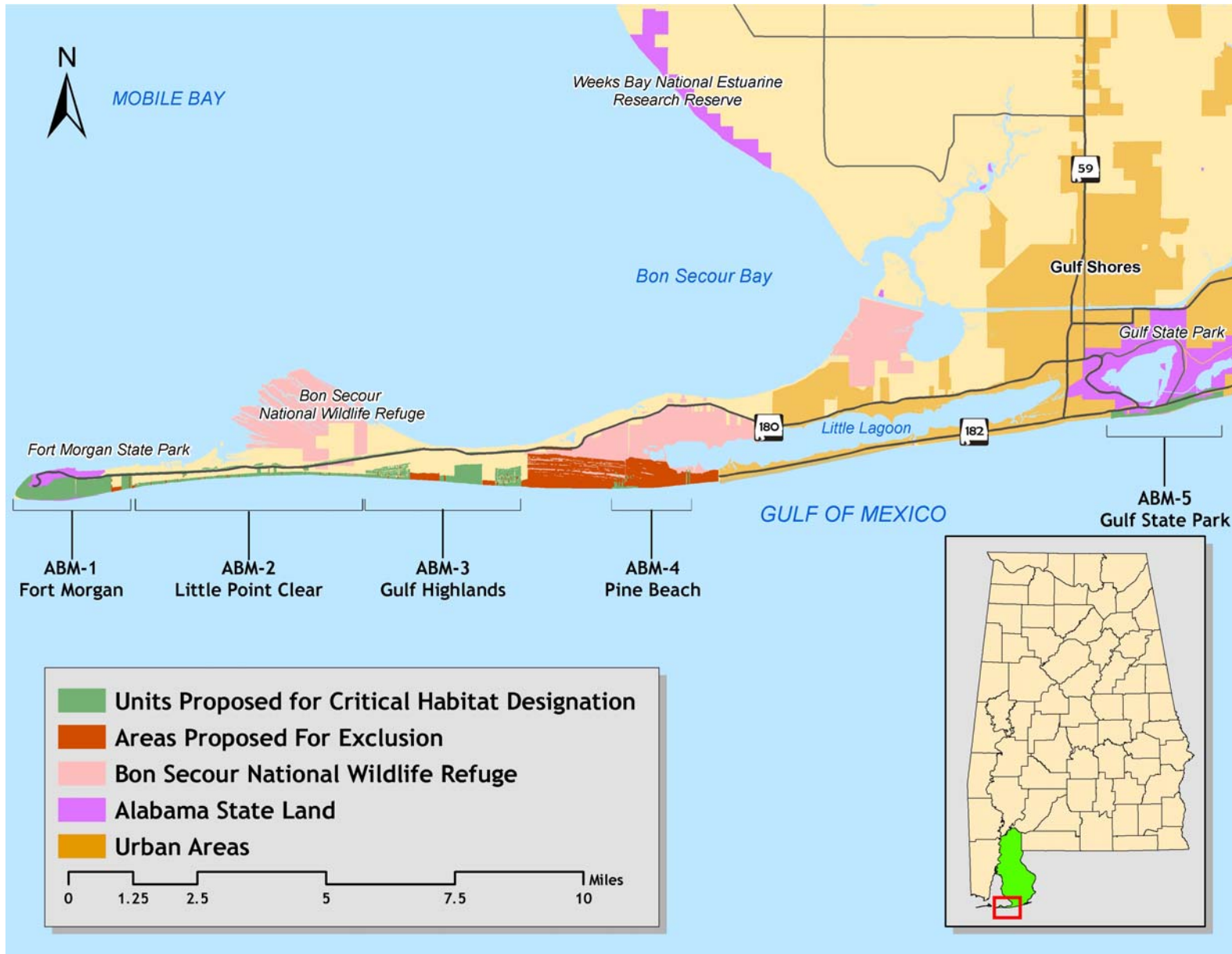


EXHIBIT D-2 ABM-1 (FORT MORGAN) PROPOSED CRITICAL HABITAT FOR THE ALABAMA BEACH MOUSE

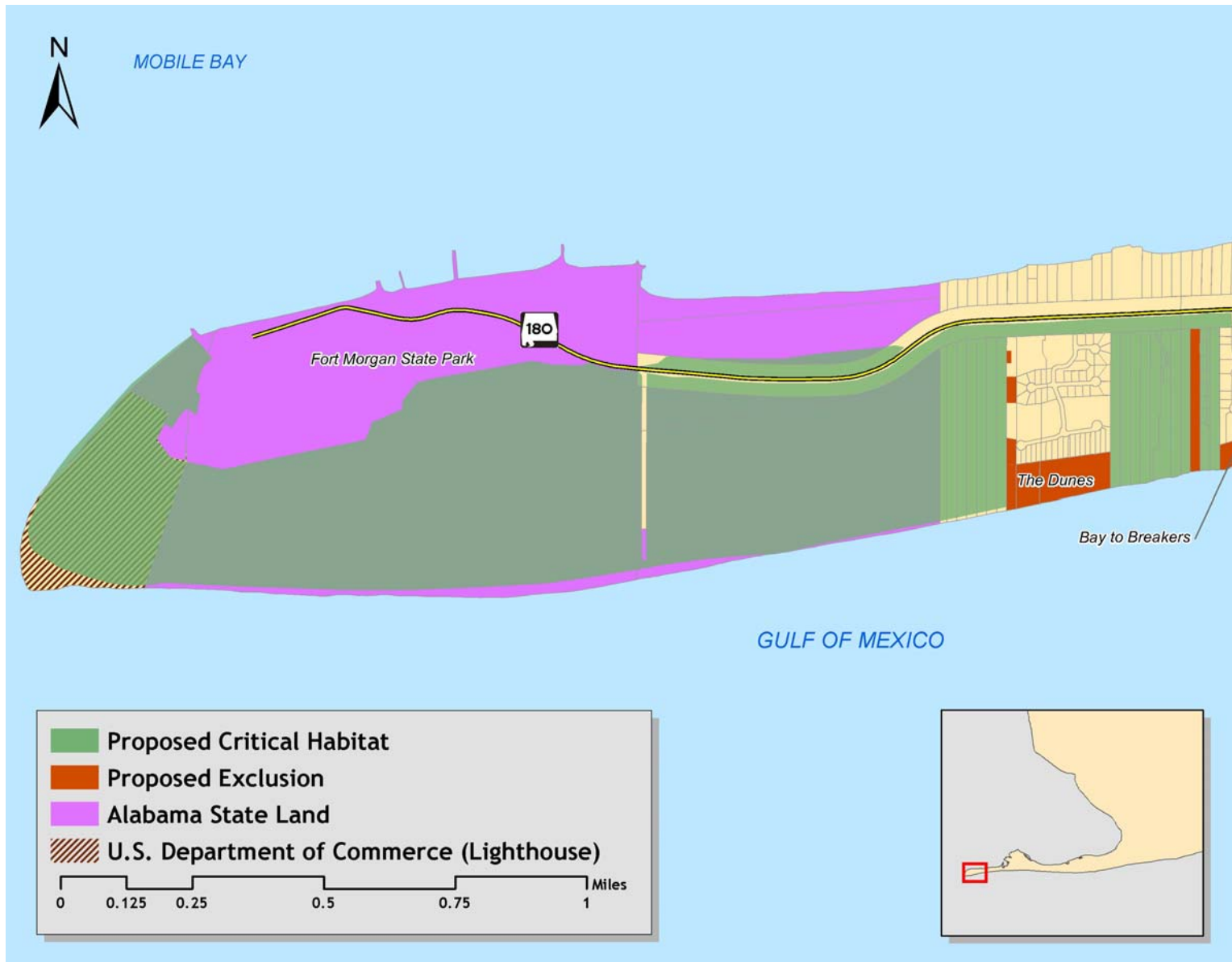


EXHIBIT D-3 ABM-2 (LITTLE POINT CLEAR) PROPOSED CRITICAL HABITAT FOR THE ALABAMA BEACH MOUSE

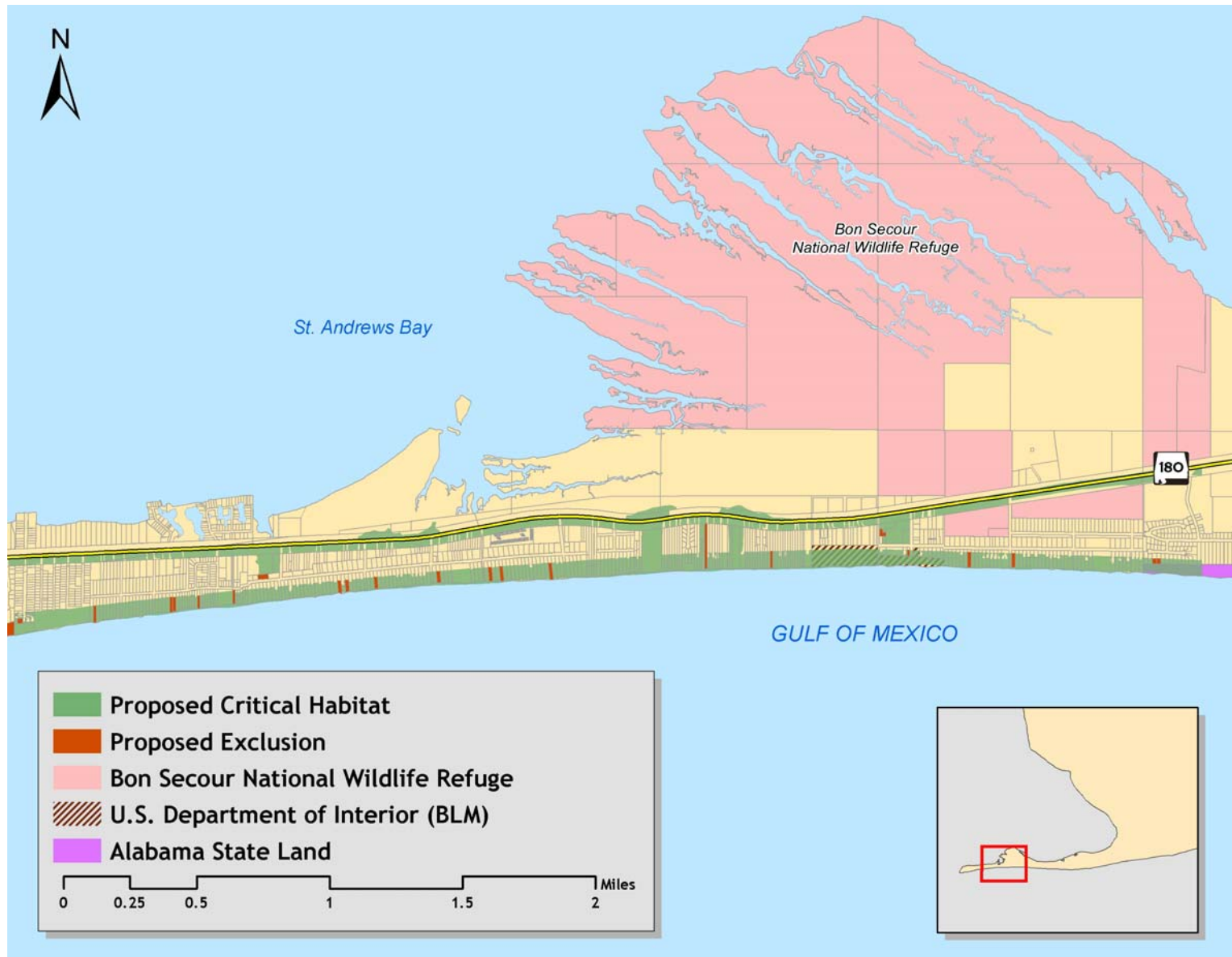


EXHIBIT D-4 ABM-3 (GULF HIGHLANDS) PROPOSED CRITICAL HABITAT FOR THE ALABAMA BEACH MOUSE

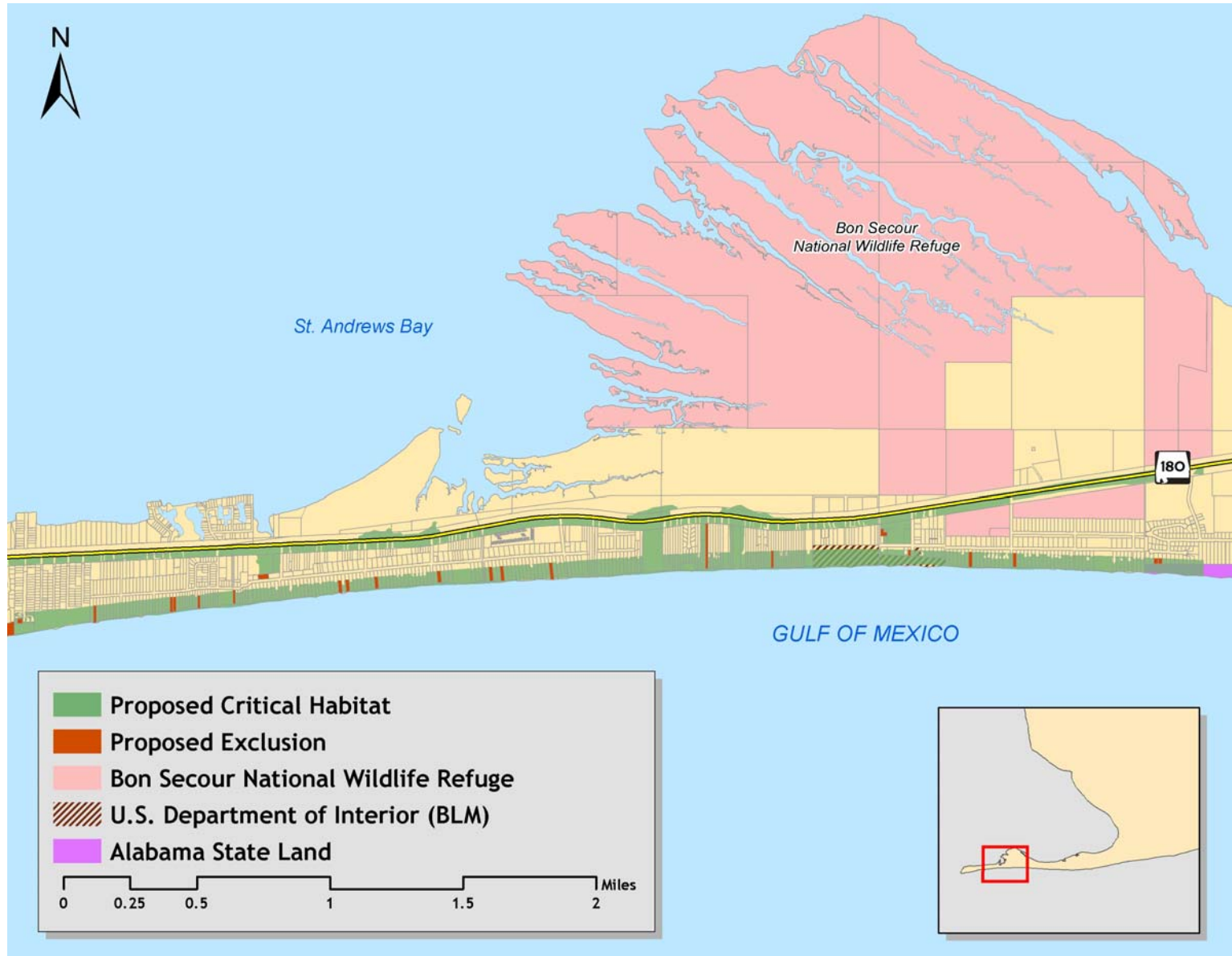




EXHIBIT D-5 ABM-4 (PINE BEACH) PROPOSED CRITICAL HABITAT FOR THE ALABAMA BEACH MOUSE

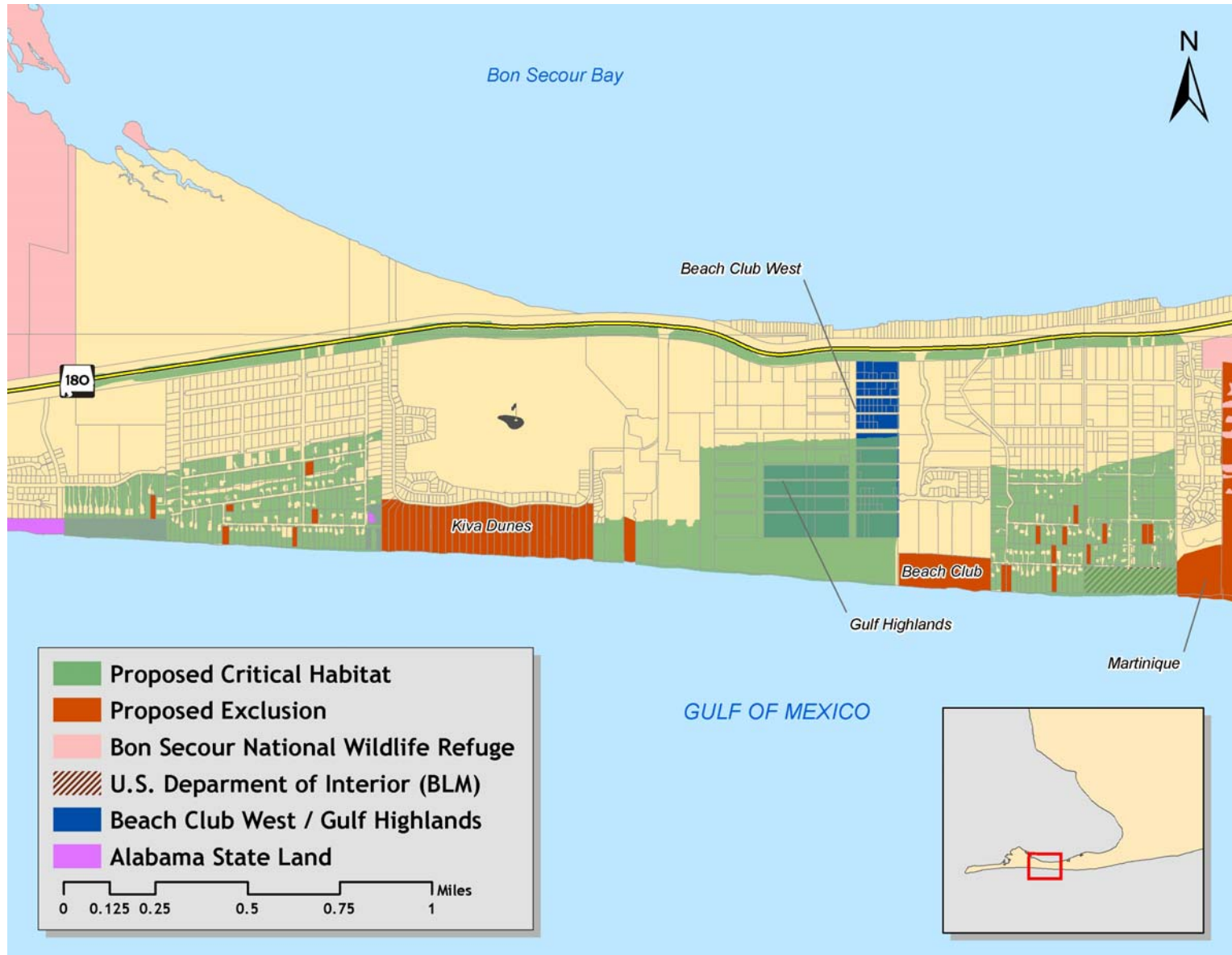
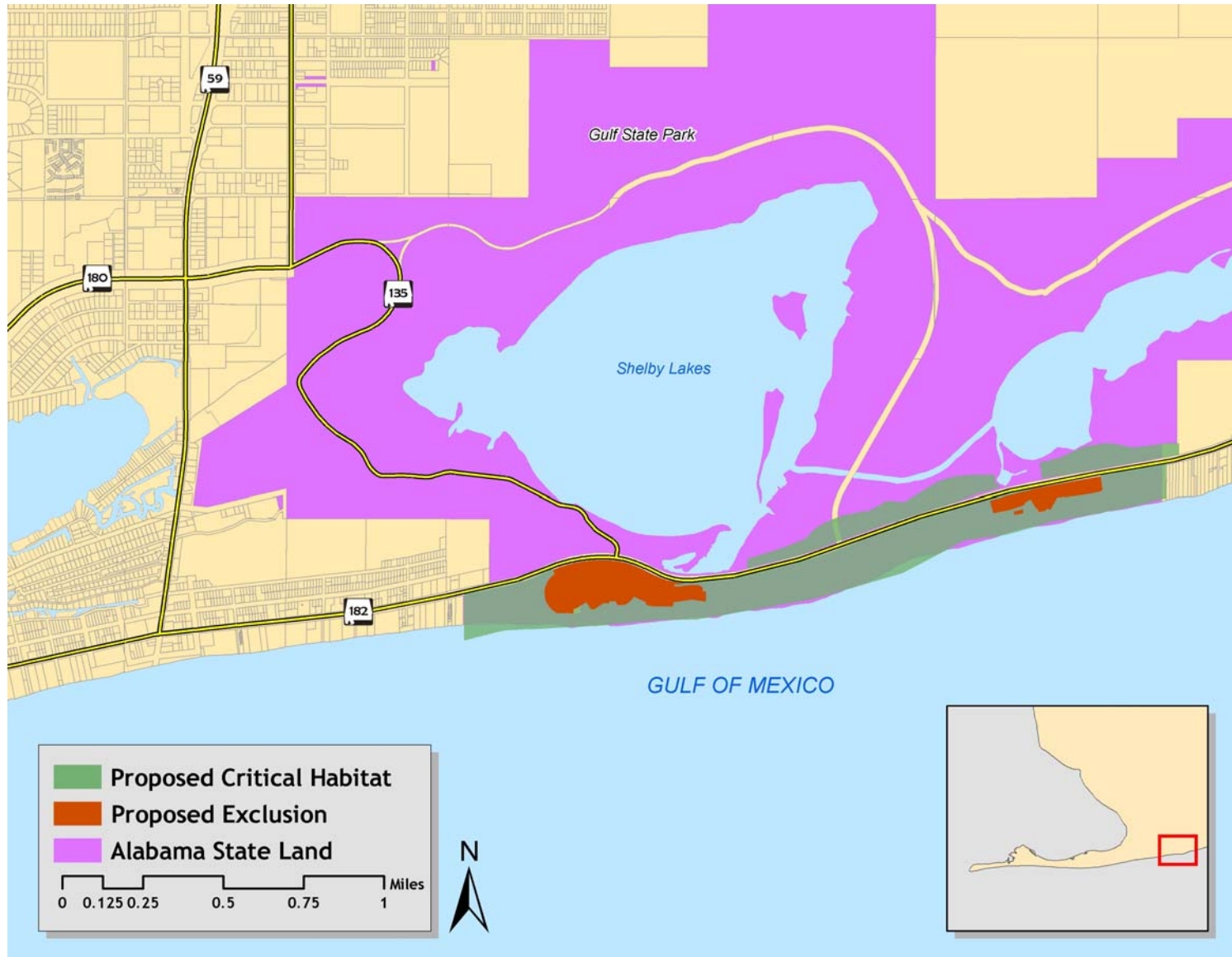


EXHIBIT D-6 ABM-5 (GULF STATE PARK) PROPOSED CRITICAL HABITAT FOR THE ALABAMA BEACH MOUSE





**APPENDIX E**  
**POTENTIAL RESIDENTIAL**  
**DEVELOPMENT MAPS**

EXHIBIT E-1 ABM-1 (FORT MORGAN) POTENTIAL RESIDENTIAL DEVELOPMENT UNDER BALDWIN COUNTY ZONING

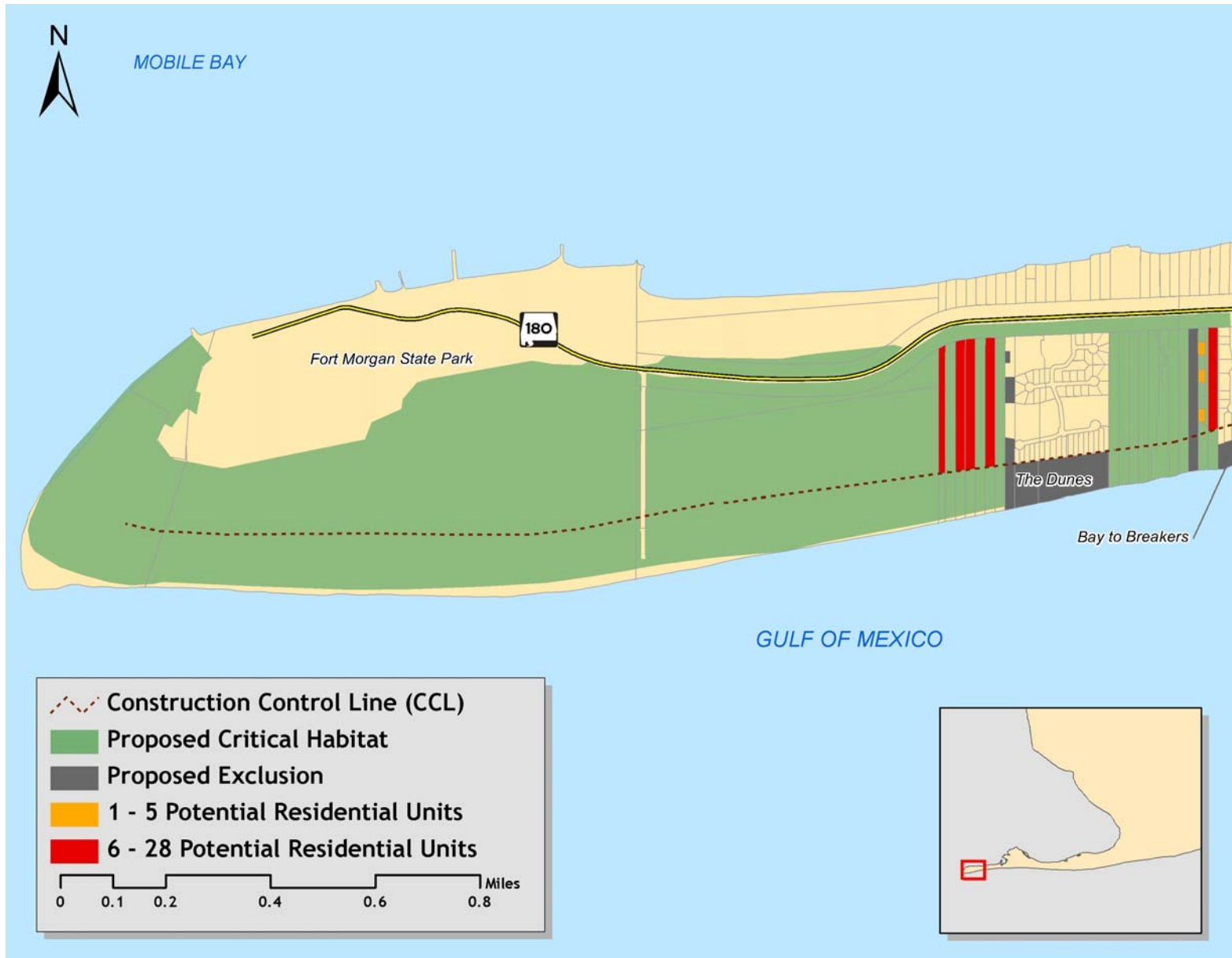


EXHIBIT E-2 ABM-2 (LITTLE POINT CLEAR) POTENTIAL RESIDENTIAL DEVELOPMENT UNDER BALDWIN COUNTY ZONING

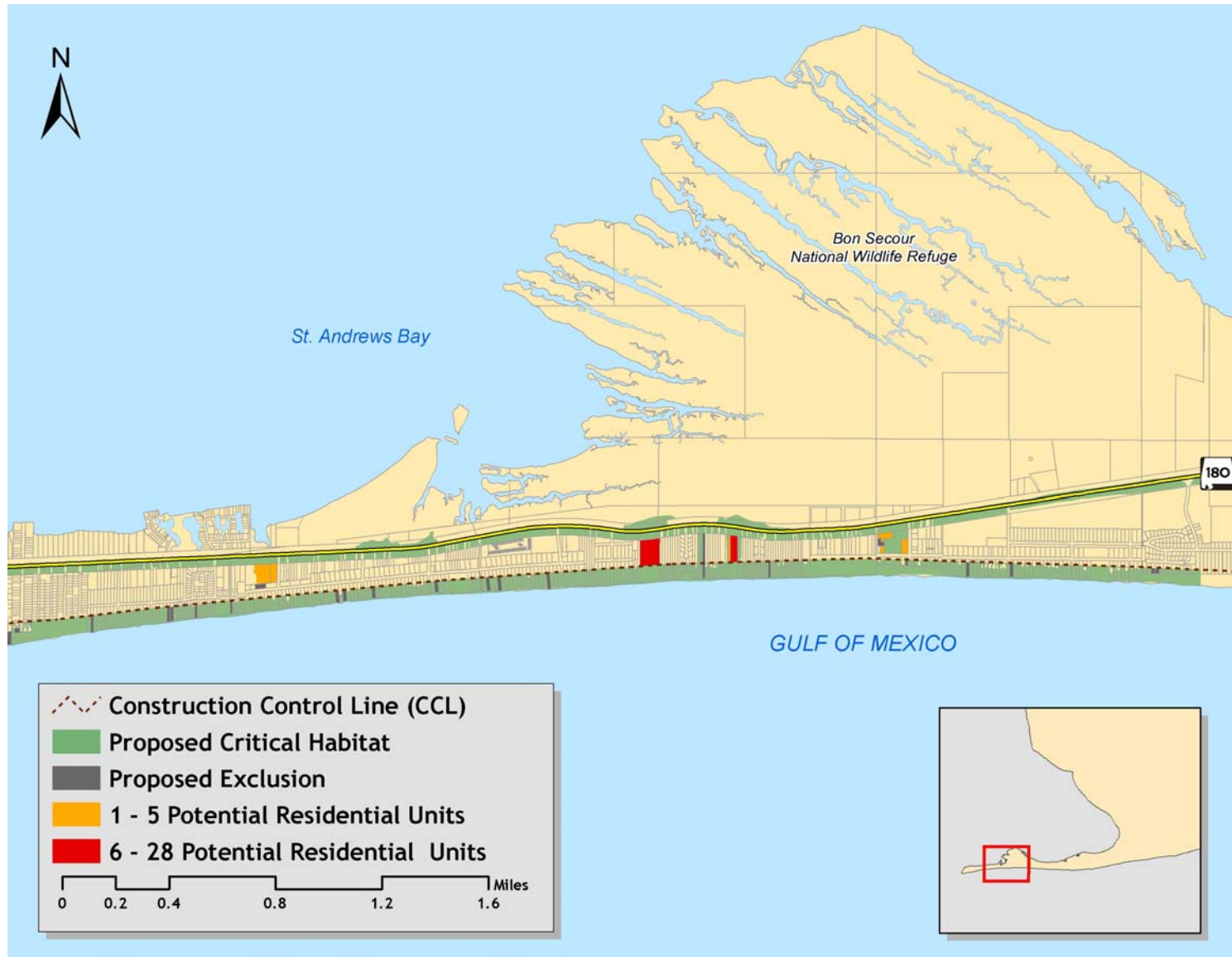


EXHIBIT E-3 ABM-3 (GULF HIGHLANDS) POTENTIAL RESIDENTIAL DEVELOPMENT UNDER BALDWIN COUNTY ZONING

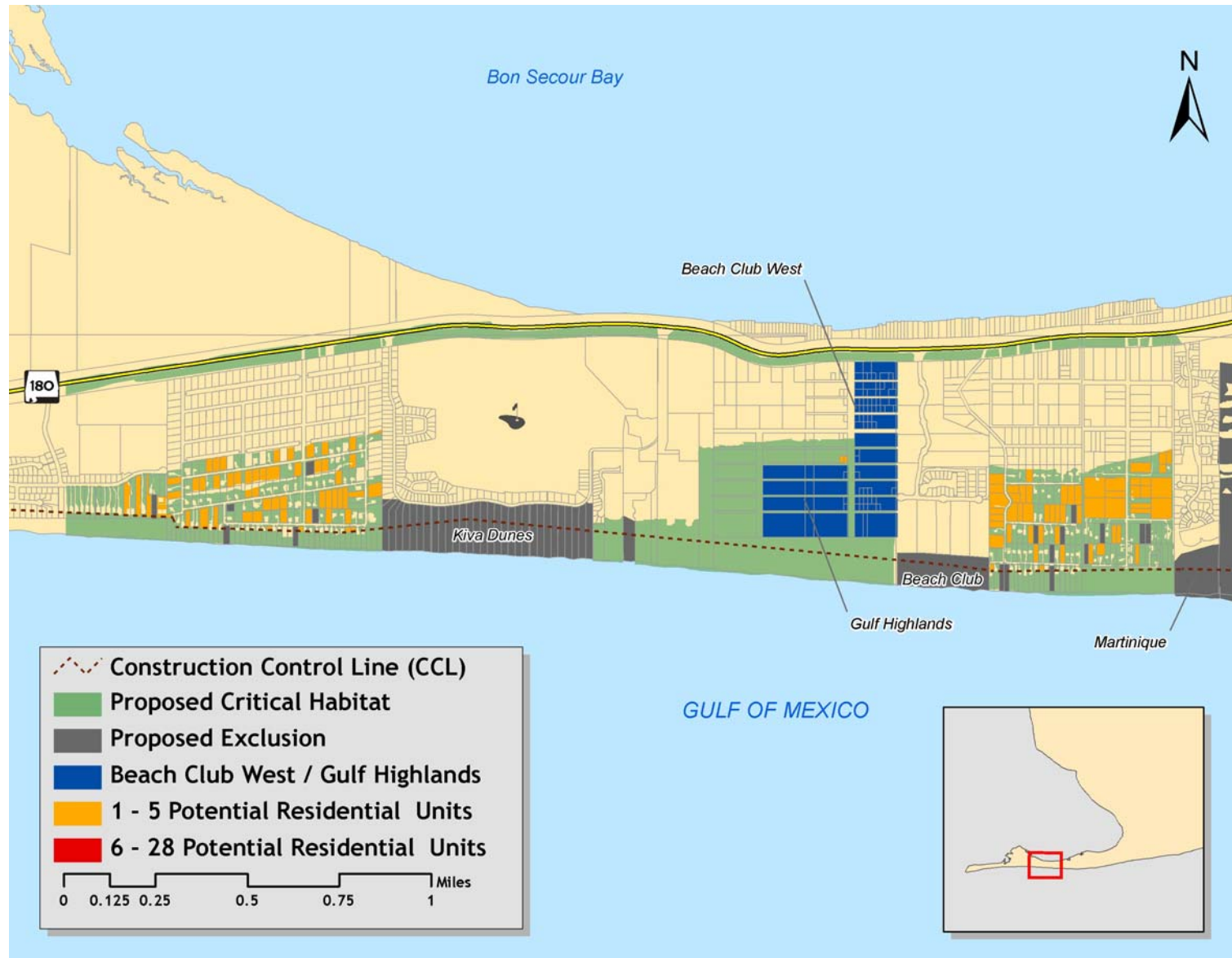
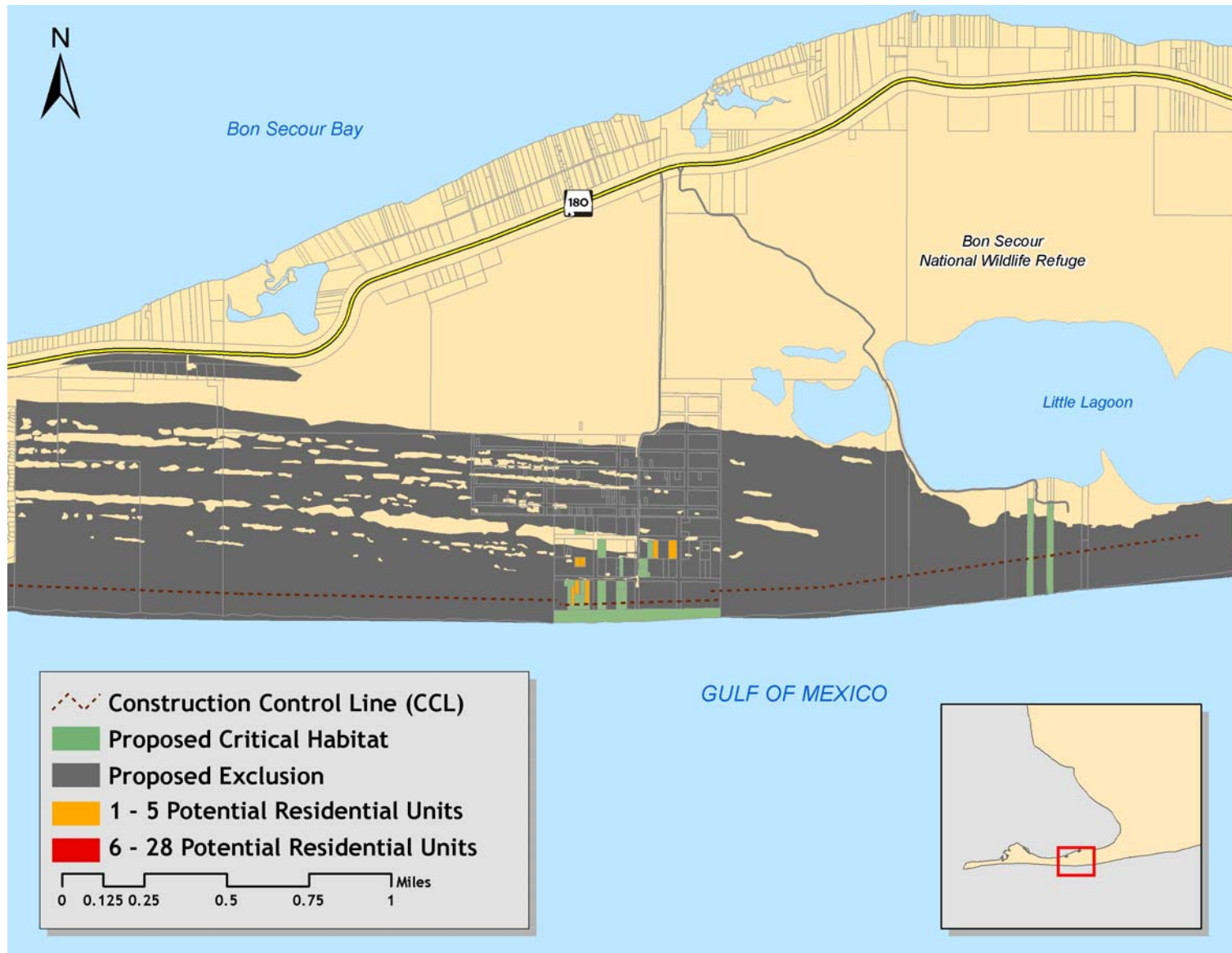


EXHIBIT E-4 ABM-4 (PINE BEACH) POTENTIAL RESIDENTIAL DEVELOPMENT UNDER BALDWIN COUNTY ZONING



**APPENDIX F**  
**REDEVELOPMENT ANALYSIS MAPS**



EXHIBIT F-1 VACANT AND BUILT PARCELS WITHIN CRITICAL HABITAT UNITS ABM-1 AND ABM-2 WITH POTENTIAL TO BE REZONED AND REDEVELOPED AS MULTI-FAMILY (INCLUDED IN THE HIGH END ESTIMATE OF FUTURE COSTS)

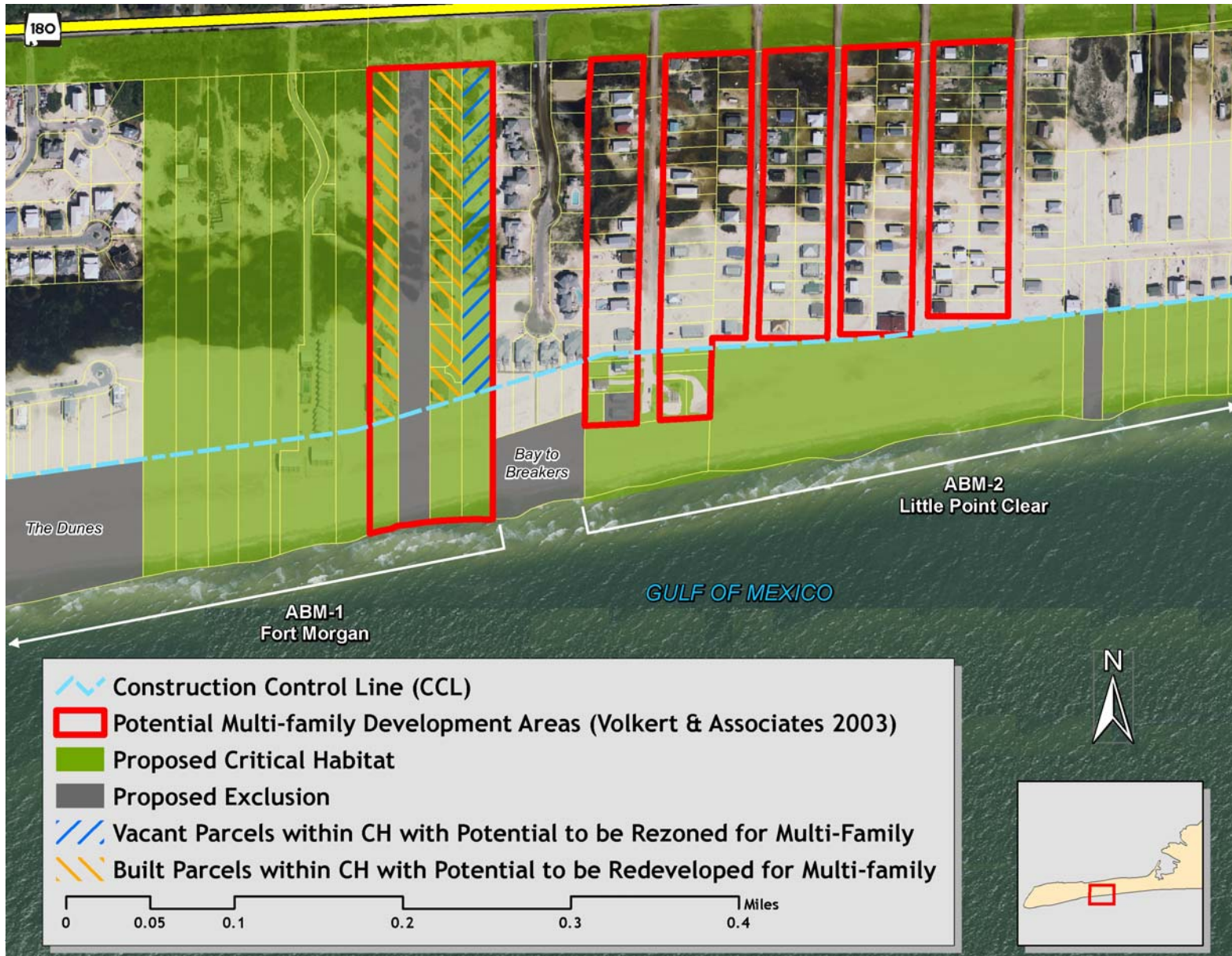
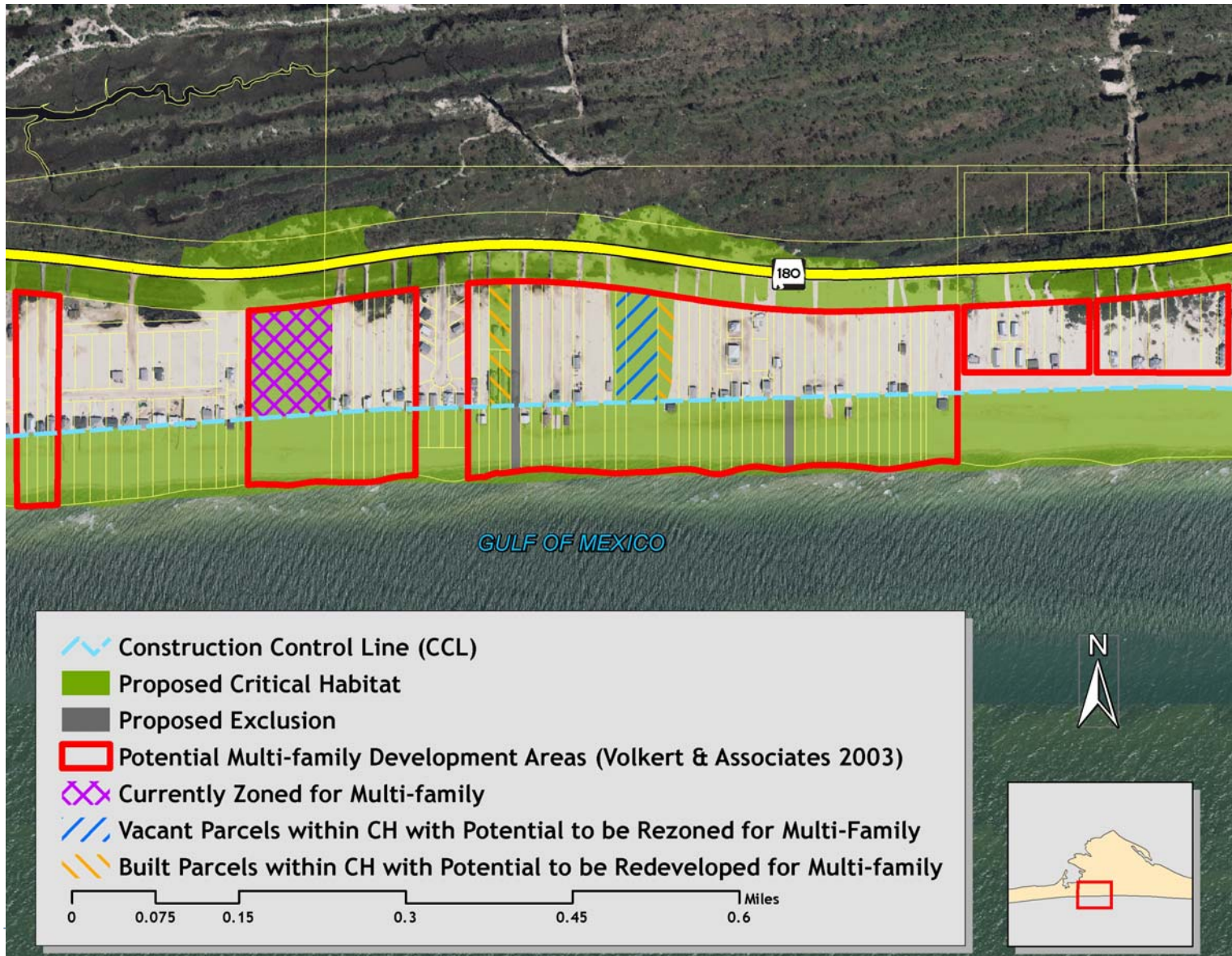




EXHIBIT F-2 VACANT AND BUILT PARCELS WITHIN CRITICAL HABITAT UNIT ABM-2 WITH POTENTIAL TO BE REZONED AND REDEVELOPED AS MULTI-FAMILY (INCLUDED IN THE HIGH END ESTIMATE OF FUTURE COSTS)





**APPENDIX G**

**MAPS OF TOTAL ESTIMATED FUTURE COSTS BY UNIT AND PARCEL**

EXHIBIT G-1 POTENTIAL FUTURE ECONOMIC IMPACTS BY UNIT AND PARCEL, 2007-2026 (HIGH ESTIMATE UNDISCOUNTED)

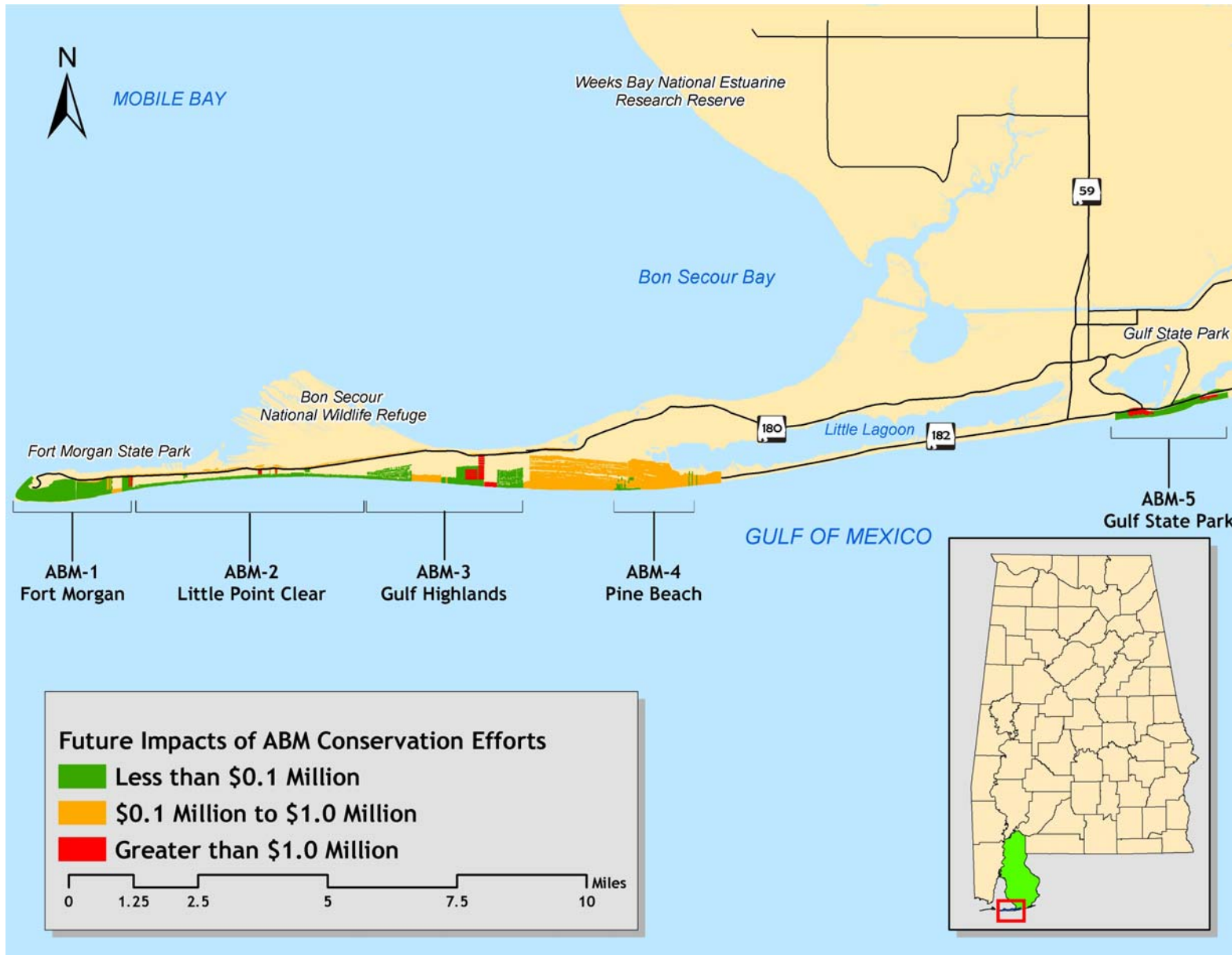


EXHIBIT G-2 POTENTIAL FUTURE ECONOMIC IMPACTS ABM-1 (FORT MORGAN), 2007-2026 (HIGH ESTIMATE UNDISCOUNTED)

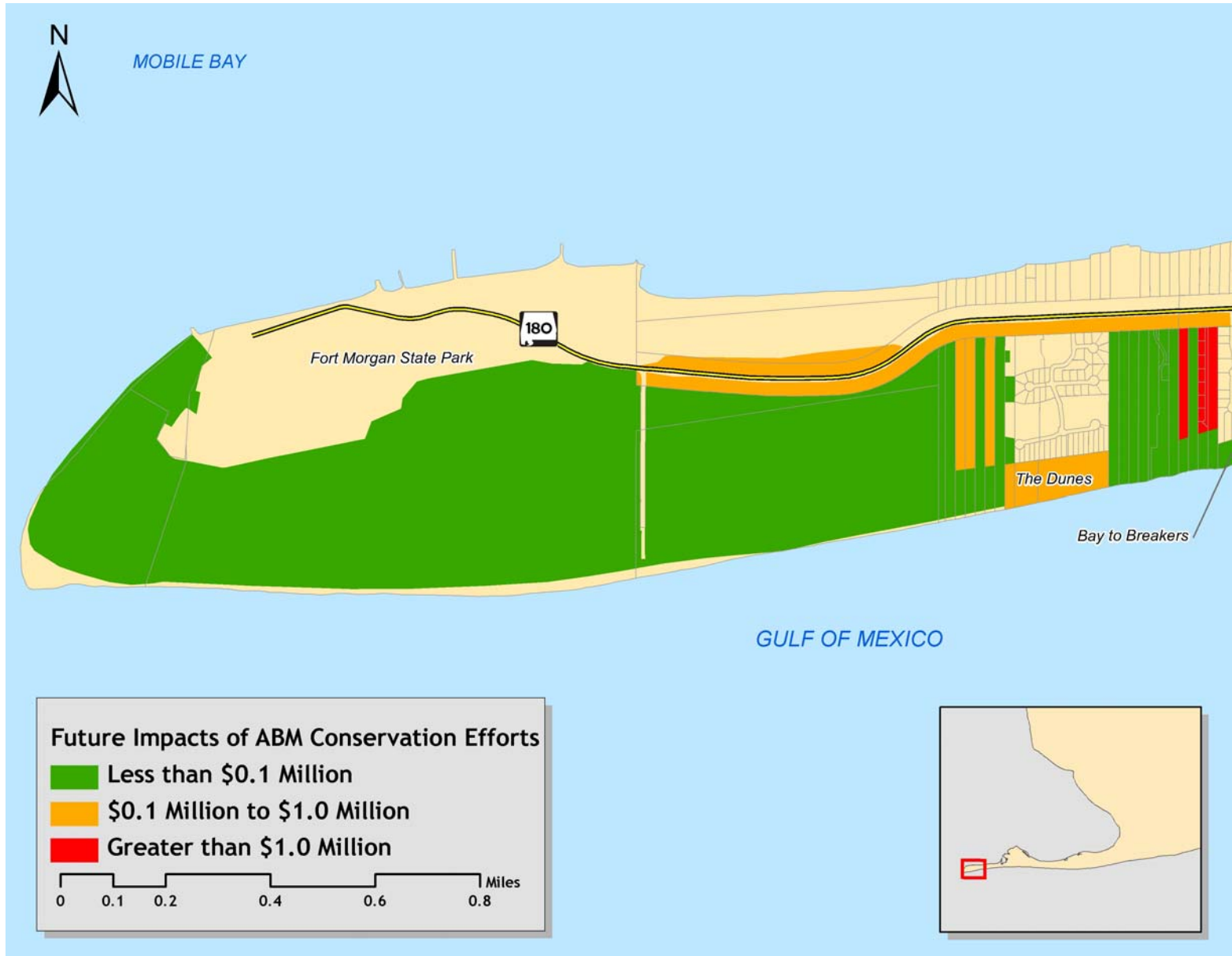


EXHIBIT G-3 POTENTIAL FUTURE ECONOMIC IMPACTS ABM-2 (LITTLE POINT CLEAR), 2007-2026 (HIGH ESTIMATE UNDISCOUNTED)

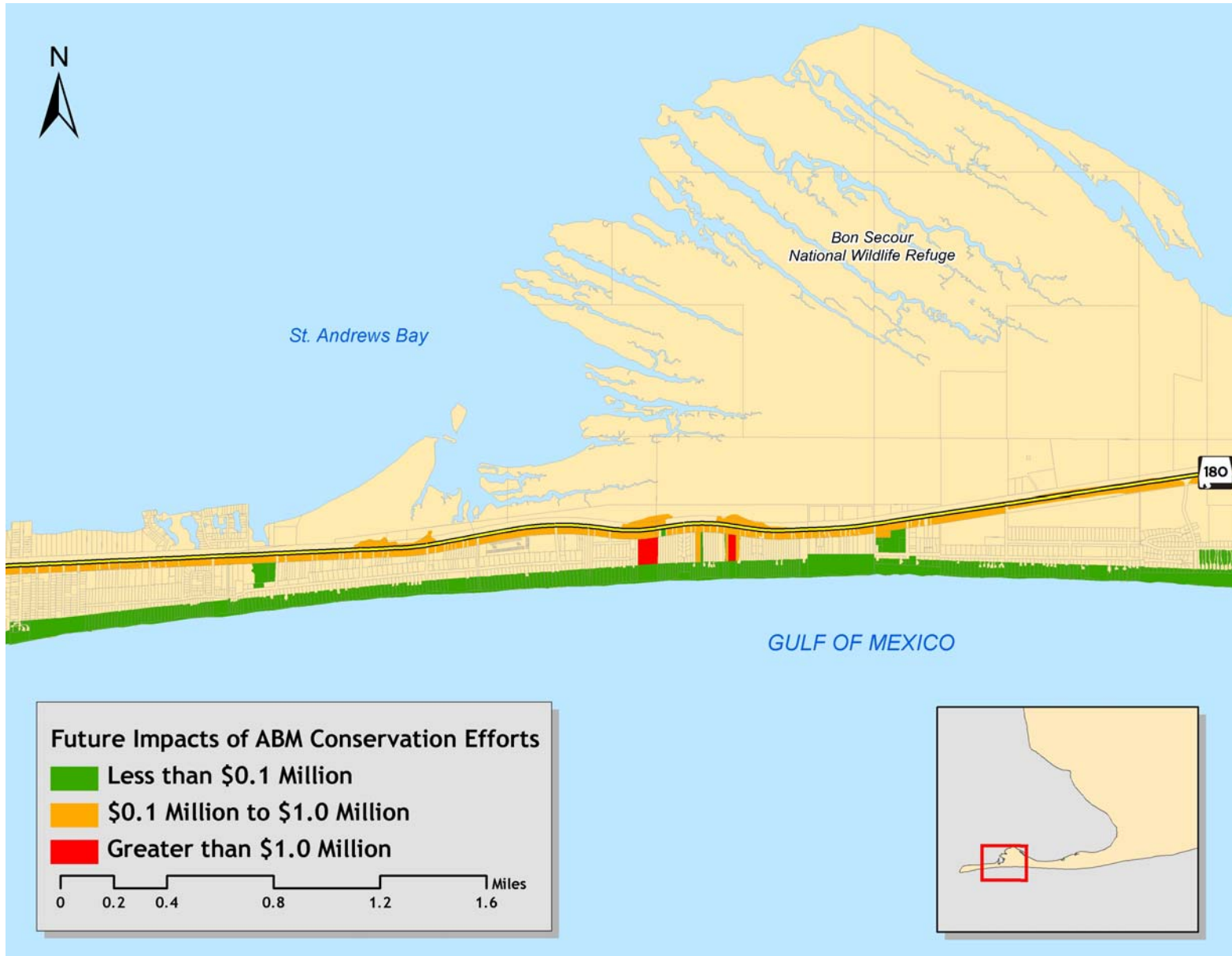


EXHIBIT G-4 POTENTIAL FUTURE ECONOMIC IMPACTS ABM-3 (GULF HIGHLANDS), 2007-2026 (HIGH ESTIMATE UNDISCOUNTED)

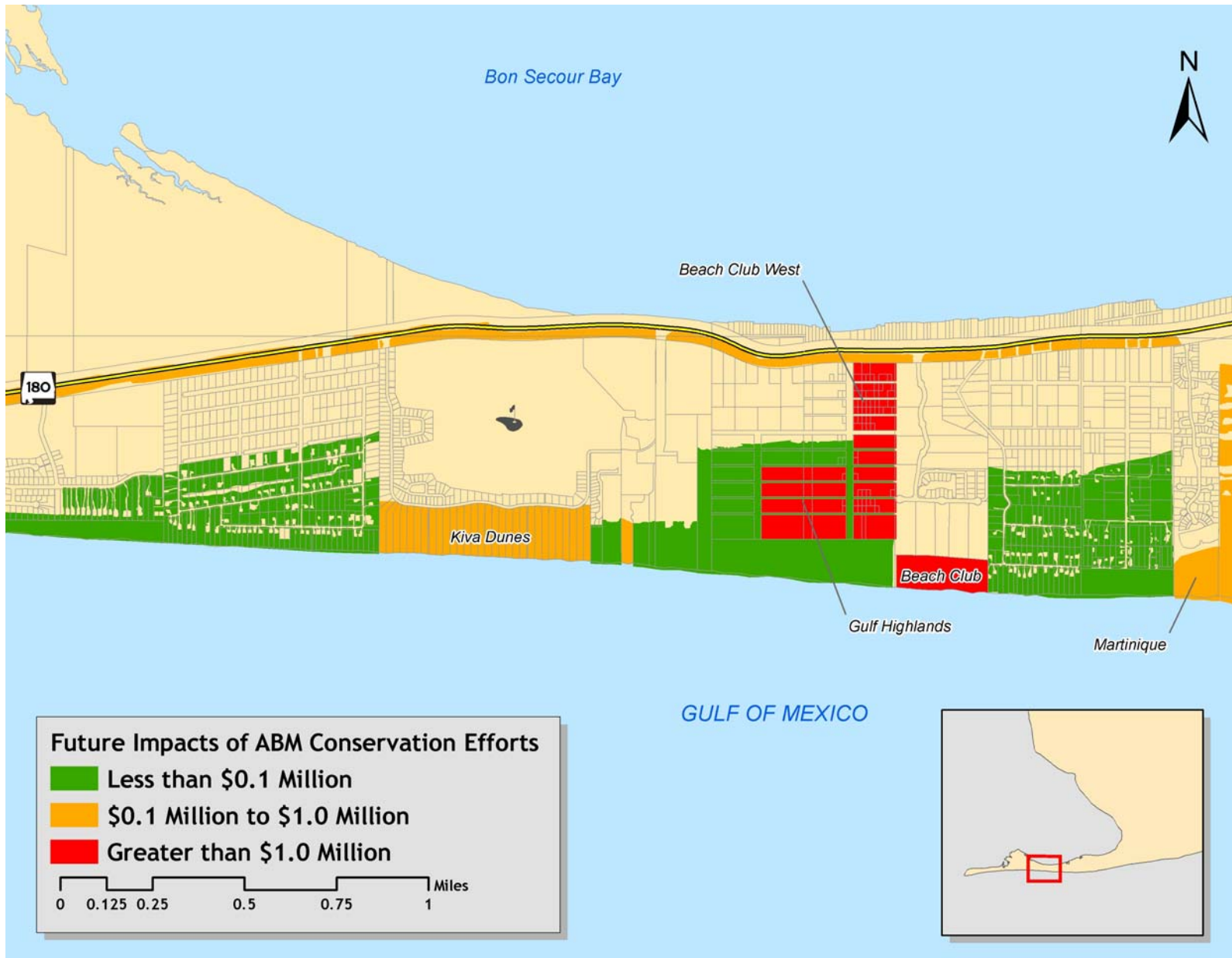




EXHIBIT G-5 POTENTIAL FUTURE ECONOMIC IMPACTS ABM-4 (PINE BEACH), 2007-2026 (HIGH ESTIMATE UNDISCOUNTED)

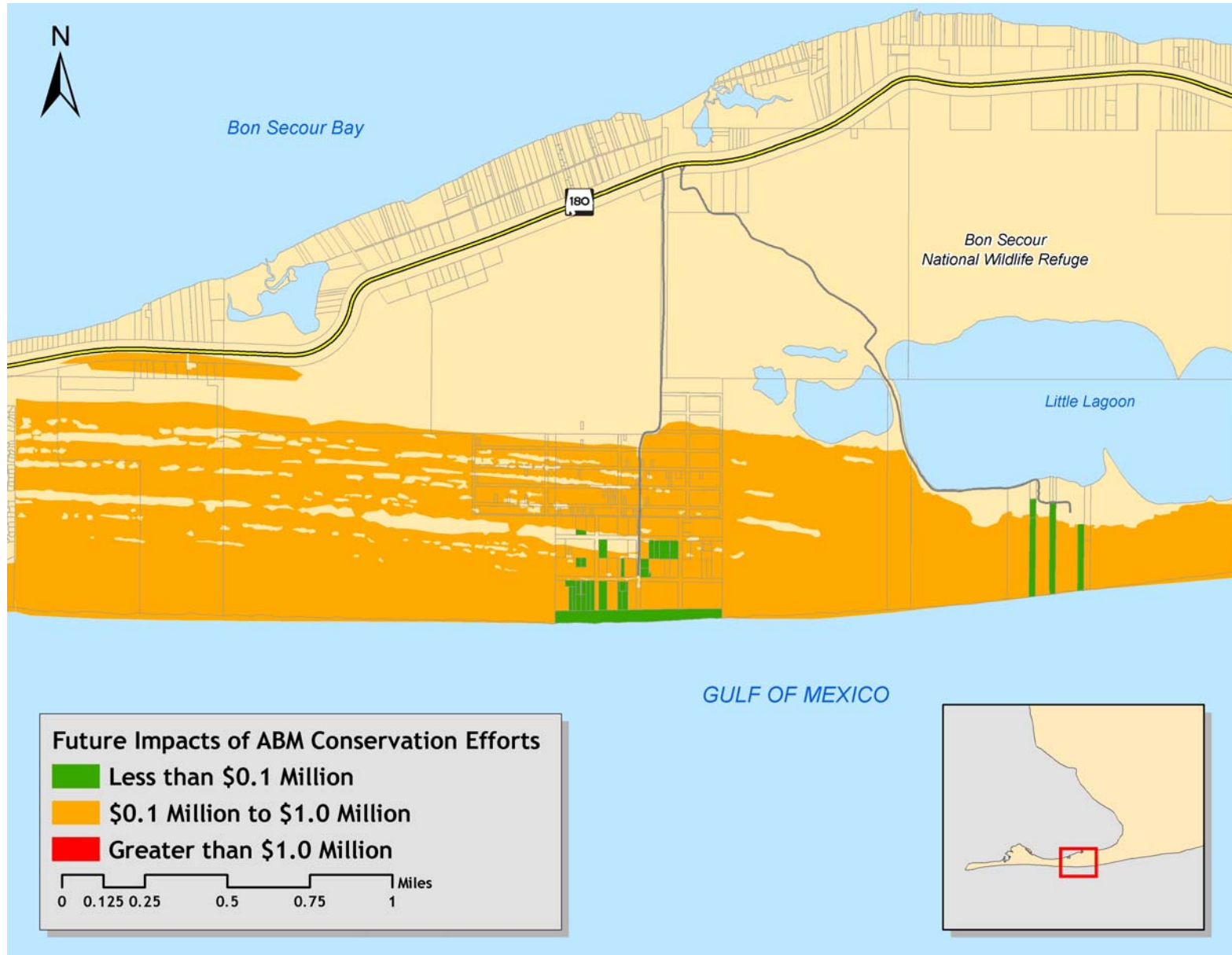


EXHIBIT G-6 POTENTIAL FUTURE ECONOMIC IMPACTS ABM-5 (GULF STATE PARK), 2007-2026 (HIGH ESTIMATE UNDISCOUNTED)

