Economic Analysis of Critical Habitat Designation for Monterey Spineflower

Monterey and Santa Cruz Counties, California

December 3, 2007

Prepared for:
U.S. Fish and Wildlife Service
4401 North Fairfax Drive
Arlington, VA 22203

Prepared by:
Berkeley Economic Consulting
2550 Ninth St. Suite 102
Berkeley, CA 94710

Table of Contents

List of Tables

List of Figures

Executive Summary

The purpose of this report is to identify and analyze the potential economic impacts associated with the proposed critical habitat designation for the Monterey spineflower (*Chorizanthe pungens* var. *pungens*). This report was prepared by Berkeley Economic Consulting under contract with the U.S. Fish and Wildlife Service (Service).

Critical habitat for the spineflower was originally designated on May 29, 2002.[1] However, in a settlement agreement reached in March of 2006, the Service was required to re-evaluate the final critical habitat designation. On December 14, 2006, the Service published a proposed rule revising critical habitat to include 11,032 acres in Monterey and Santa Cruz Counties.[2] The proposed critical habitat is divided into nine units.

Figure ES-1 provides a map of the total area of proposed critical habitat. Detailed maps illustrating the ownership of each individual unit are provided in Figures ES-2 through ES-10. As shown in the figures, the majority of the proposed critical habitat (8,172 acres) is located on Federal land managed by the Bureau of Land Management (BLM) and the Department of the Army (Army). The California Department of Parks and Recreation (State Parks) also manages a large portion of proposed critical habitat (1,327 acres). The remaining 1,533 acres are owned or managed by University of California, the County of Monterey, Fort Ord Reuse Authority, Caltrans, Monterey Peninsula Regional Park District, Pacific Gas & Electric, and other private landowners.

This final economic analysis analyzes the proposed critical habitat as described in the proposed rule. It also considers information received during the public comment period for the draft economic analysis. In addition, Appendix D of this analysis describes the economic impacts associated with the addition of 26 acres of spineflower critical habitat in Unit 2, which were not described in the proposed rule or analyzed in the draft economic analysis. Outside of Appendix D, this analysis does not reflect other changes to the proposed critical habitat designation that may be made in the final rule. Consequently, description of the critical habitat in the final rule may differ from maps and figures presented in this analysis.

The analysis quantifies economic impacts of spineflower conservation efforts associated with the following activities: (1) removal and control of invasive, nonnative plant species; (2) recreational activities, including foot traffic, and off-road vehicles; (3) overspray of pesticides from agricultural operations; (4) munitions clean-up methods on former military ranges that remove and chip all standing vegetation; (5) expansion of

[1] 67 FR 37498.

[2] 71 FR 75189.

unregulated vehicle parking on the sand dunes; and (6) vegetation clearing associated with road and trail maintenance.[3]

The consultation history for this species consists of 15 section 7 consultations and four cases in which the Service provided technical assistance. In addition, the Service published a Recovery Plan for the spineflower in 1998.[4] This analysis incorporates information from the consultations, the Recovery Plan, and conversations with landowners and the Service.

The Key Findings of this analysis are highlighted below, and Tables ES-1 and ES-2 summarize the quantitative results of the analysis. Table ES-1 presents the estimated economic impacts to each affected entity. The relative magnitudes of impacts in each proposed critical habitat unit are shown in Table ES-2.

Chapters 2 through 7 and Appendix D of this report consider all future conservation-related impacts, including impacts associated with overlapping protections from other Federal, State, and local laws that aid habitat conservation in the areas proposed for critical habitat. That is, these "co-extensive" impacts are forecast to occur regardless of critical habitat designation for the spineflower. Appendix A considers the potential "incremental" impacts of critical habitat designation for the spineflower by attempting to isolate those impacts that would not be expected to occur absent the designation of critical habitat. No incremental impacts are anticipated to occur as a result of the critical habitat designation.

A screening analysis of potential effects on the energy industry and small entities was conducted. Designation of critical habitat is not expected to lead to a reduction in electricity production or an increase in the cost of energy production or distribution. As a result of the screening analysis, no small entities were found to potentially be affected by the proposed rule. Please see Appendix B for a summary of the results of the screening analysis. Past costs can be found in Appendix C.

---

[3] These activities were identified in the Proposed Rule as threats that may require special management (71 FR 75197-99).

[4] U.S. Fish and Wildlife Service. 1998. Seven Coastal Plants and the Myrtle's Silverspot Butterfly Recovery Plan. Portland Oregon. 141 pp.

Key Findings

Total Estimated Impacts: This economic analysis forecasts future costs associated with conservation efforts for the spineflower in the areas proposed for designation of $17.0 million (undiscounted) over the next 20 years. The present value of these impacts, applying a three percent discount rate, is $13.0 million ($0.85 million annualized); the present value of these impacts, applying a seven percent discount rate, is $9.6 million ($0.85 million annualized). Past impacts for all activities are provided in appendix B.

Costs to the landowners associated with the highest economic impact of future efforts to conserve the spineflower within the area of proposed critical habitat are summarized below.

California Department of Parks and Recreation (CDPR) manages all of the land in proposed critical habitat units 1, 2, 3 and 6, and most of the land in unit 4. In units 2, 3, and 4, rangers conduct patrols aimed at protecting native plants from recreational activities and nonnative, invasive plant species. Additionally, CDPR removes nonnative, invasive plant species and maintains fences, signs, and walkways to keep visitors away from native plants. Impacts to CDPR over the next 20 years are estimated to be $10.5 million in undiscounted dollars.

Department of the Army currently manages 8,000 acres on former Fort Ord (unit 8). The Army funds efforts to remove invasive plants, protect native plants from recreation activities, minimize impacts of road and trail maintenance, and recover plants in areas where vegetation has been removed for munitions clean-up purposes. The impacts to the Army over the next 20 years are estimated to be $3.5 million in undiscounted dollars.

University of California (UC) manages 606 acres on former Fort Ord (unit 8), which it uses for research and as a habitat reserve. UC removes nonnative plants on its land, controls erosion on its roads and trails, and does not allow recreational activities on its land. Although these actions benefit all of the native plants and animals on the land managed by UC, they are essential to the conservation of the spineflower. Impacts to UC over the next 20 years are estimated to be $1.5 million in undiscounted dollars.

Bureau of Land Management (BLM) currently manages 7,200 acres in unit 8, of which 1,191 acres are proposed as critical habitat for the spineflower. BLM has a program for nonnative plant species removal. It concentrates efforts on keeping hikers, cyclists, and other visitors on trails and out of sensitive habitat areas. BLM keeps its roads and trails as narrow as possible to allow native plants maximum area to grow. BLM also controls erosion on its roads and trails and does not plan to install any new roads or trails on its land. All of these actions support the conservation of the spineflower within the areas of proposed critical habitat managed by BLM and are funded by BLM's annual budget for conservation measures. The impacts to BLM over the next 20 years are estimated to be $0.83 million in undiscounted dollars.

Table ES-1: Summary of Estimated Economic Impacts
Landowner Ranking

	Future Costs (20 year time frame)			Annualized Costs (20 year time frame)	
Landowner	**Undiscounted Dollars**	**Present Value (3%)**	**Present Value (7%)**	**Annualized (3%)**	**Annualized (7%)**
CDPR	$10,473,000	$8,028,400	$5,941,000	$524,000	$524,000
Army	$3,500,000	$2,682,000	$1,984,000	$175,000	$175,000
UC	$1,484,000	$1,137,000	$841,000	$74,000	$74,000
BLM	$827,000	$634,000	$469,000	$41,000	$41,000
FORA	$280,000	$214,000	$159,000	$14,000	$14,000
Caltrans	$212,000	$162,000	$120,000	$11,000	$11,000
Monterey County	$199,000	$153,000	$113,000	$10,000	$10,000
Total	**$16,975,000**	**$13,010,400**	**$9,627,000**	**$849,000**	**$849,000**

Notes:

1. CDPR=California Department of Parks and Recreation; UC=University of California; BLM=Bureau of Land Management; FORA=Fort Ord Reuse Authority.

2. Guidance provided by the OMB specifies the use of a real discount 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, February 3, 2003).

Table ES-2: Summary of Estimated Economic Impacts
Unit Ranking

PCH Units	Future Costs (20 year time frame)			Annualized Costs (20 year time frame)	
	Undiscounted Dollars	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
8	$6,265,000	$4,801,000	$3,552,000	$313,000	$313,000
3	$6,145,000	$4,708,000	$3,482,000	$307,000	$307,000
4	$2,145,000	$1,643,000	$1,215,000	$107,000	$107,000
2	$2,145,000	$1,643,000	$1,215,000	$107,000	$107,000
7	$237,000	$181,000	$134,000	$12,000	$12,000
1	$29,000	$27,200	$24,500	$2,000	$2,000
6	$9,000	$7,200	$4,500	$500	$400
5	$0	$0	$0	$0	$0
9	$0	$0	$0	$0	$0
Total	**$16,975,000**	**$13,010,400**	**$9,627,000**	**$848,500**	**$848,400**

Notes:

1. Annualized values differ slightly between Tables ES-1 and ES-2 due to rounding.

2. Guidance provided by the OMB specifies the use of a real discount 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, February 3, 2003).

Figure ES-1: Proposed Critical Habitat for the Monterey Spineflower

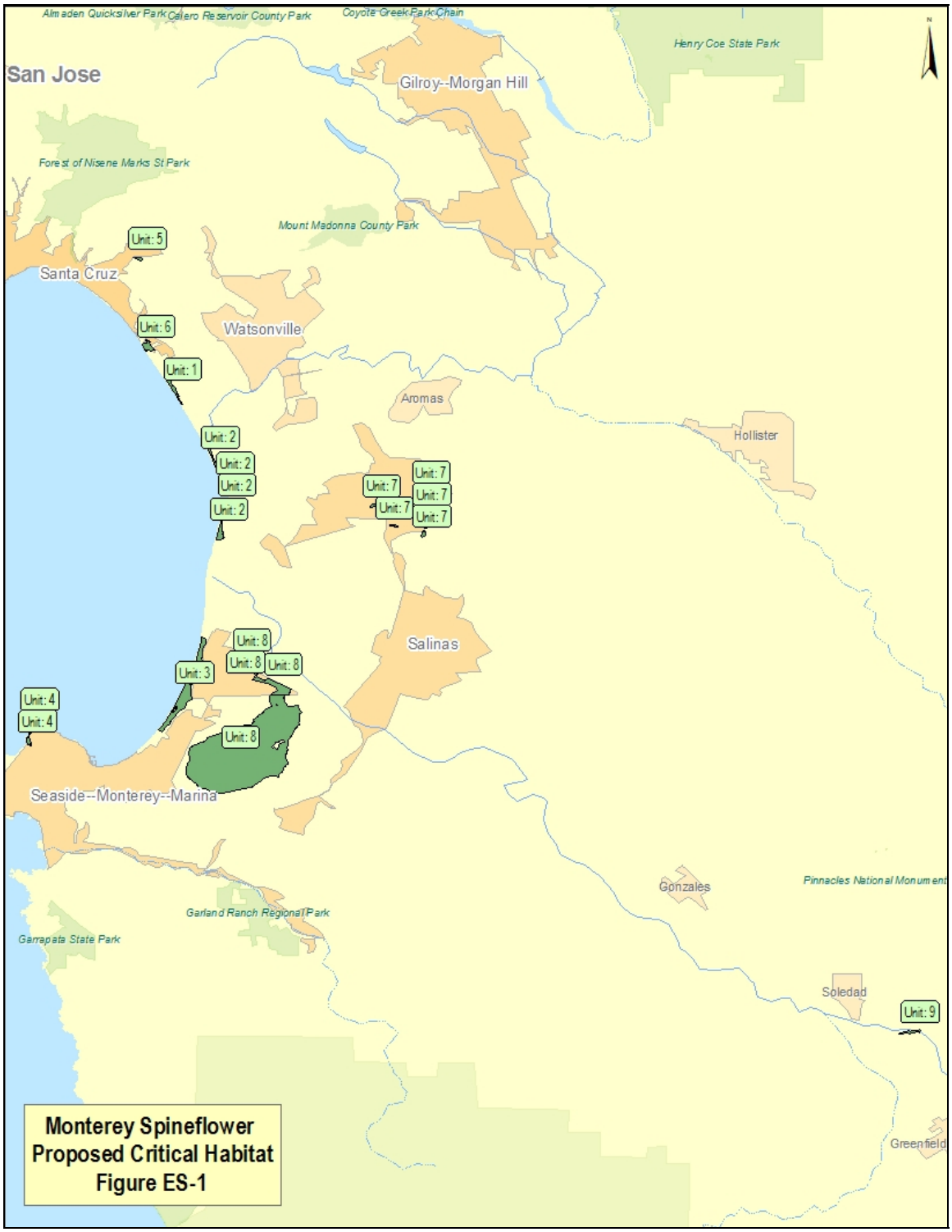


Figure ES-2: Land Ownership in Proposed Critical Habitat Unit 1, Sunset

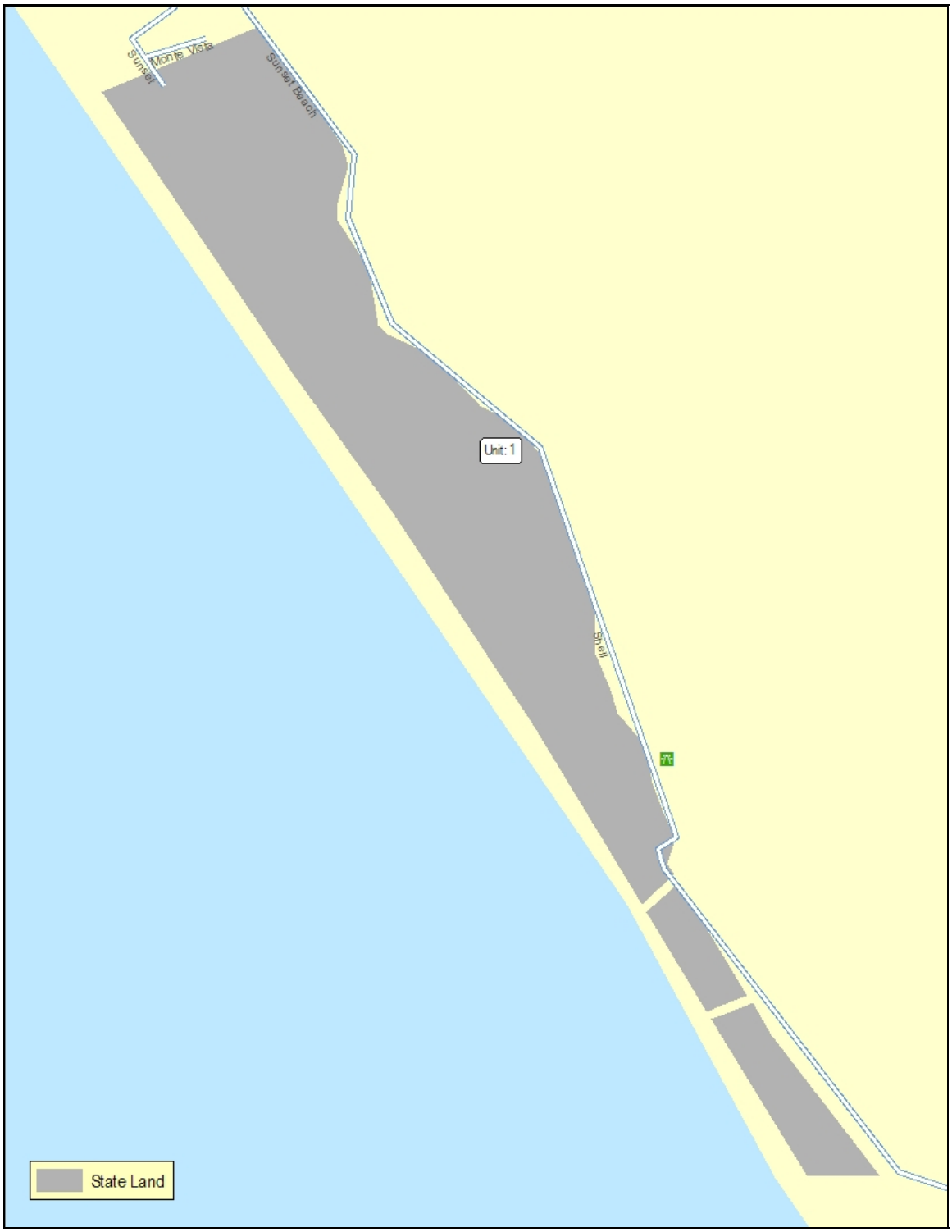


Figure ES-3: Land Ownership in Proposed Critical Habitat Unit 2, Moss Landing

Figure ES-4: Land Ownership in Proposed Critical Habitat Unit 3, Marina

Figure ES-5: Anticipated Future Land Ownership in Proposed Critical Habitat Unit 4, Asilomar

Figure ES-6: Land Ownership in Proposed Critical Habitat Unit 5, Freedom Blvd.

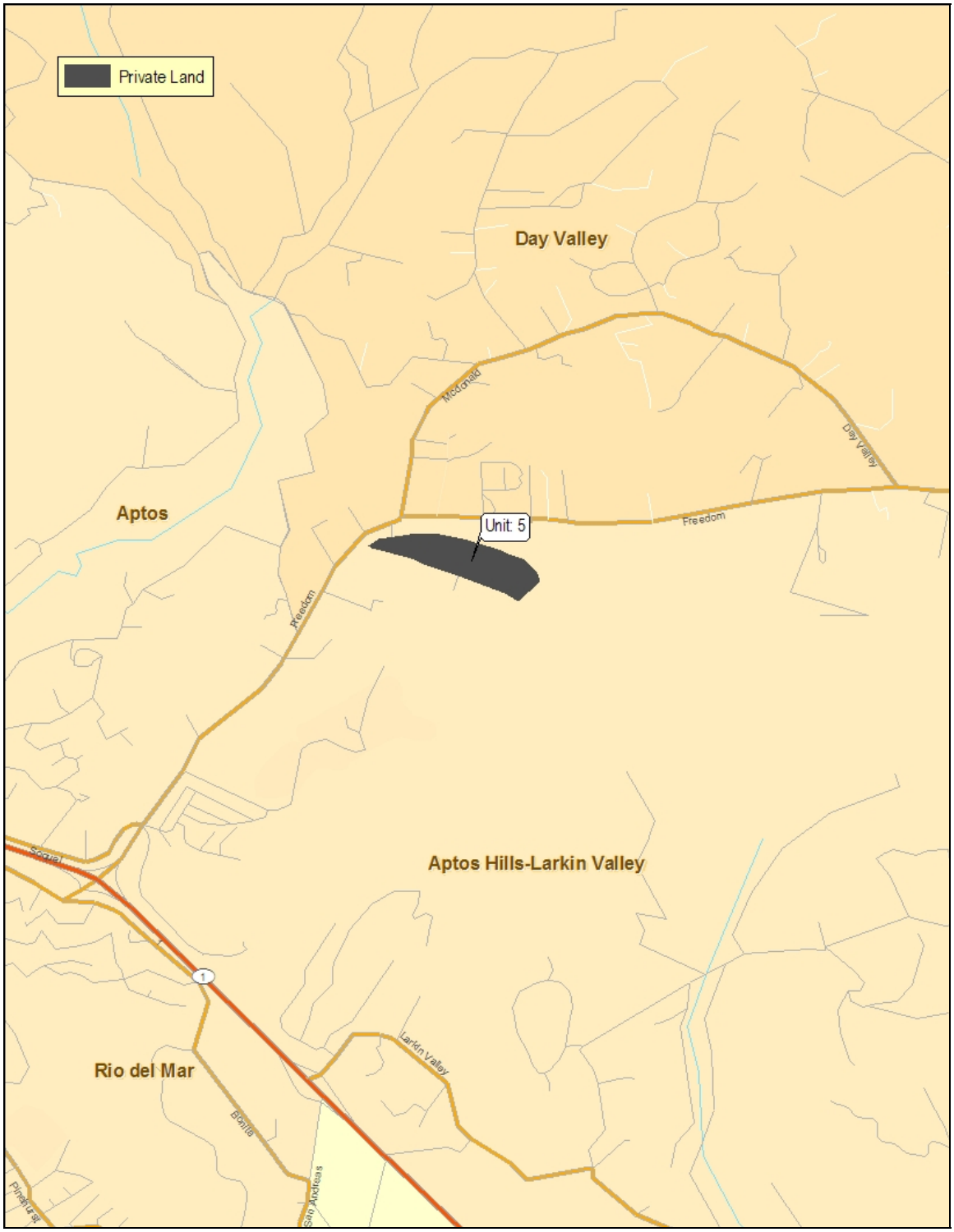


Figure ES-7: Land Ownership in Proposed Critical Habitat Unit 6, Manresa

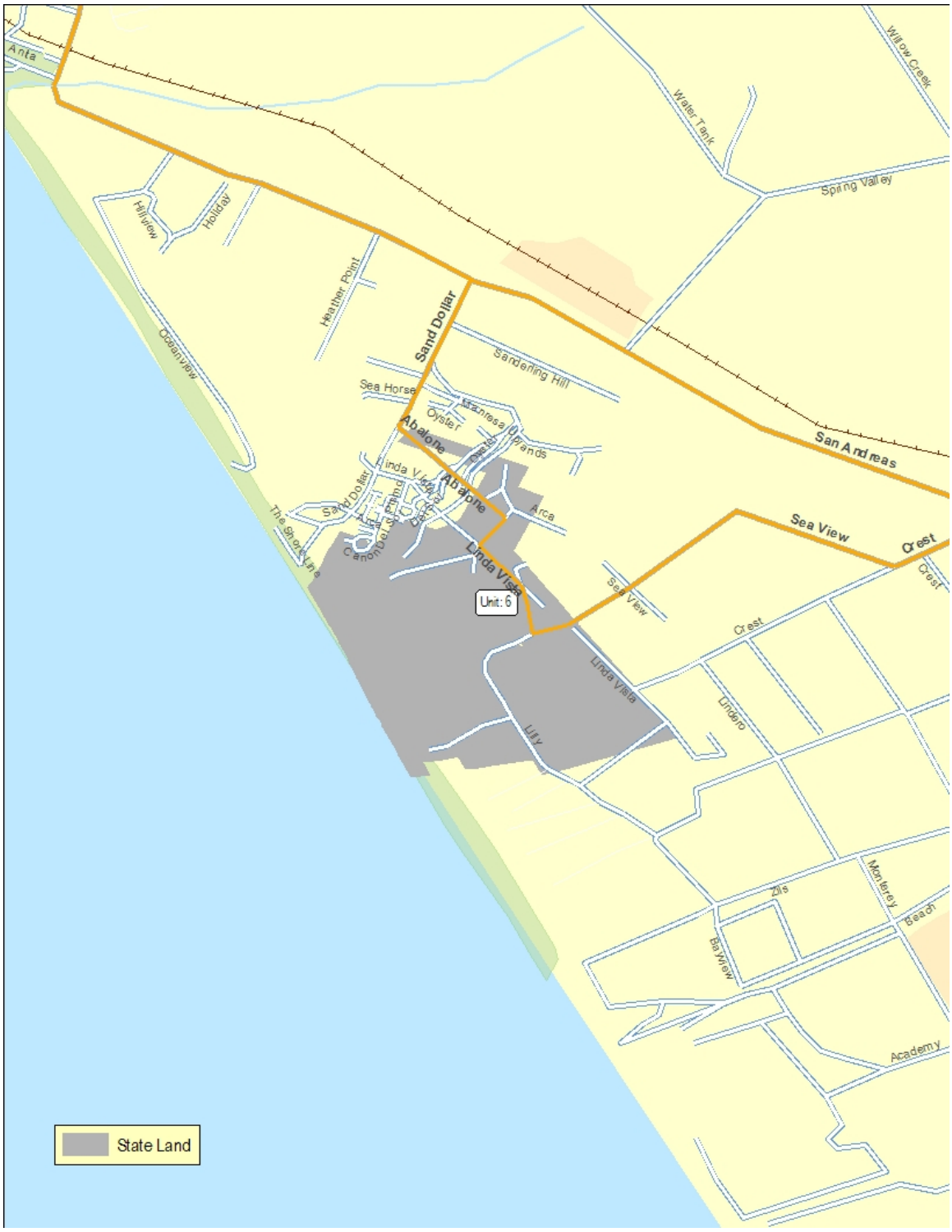


Figure ES-8: Land Ownership in Proposed Critical Habitat Unit 7, Prunedale

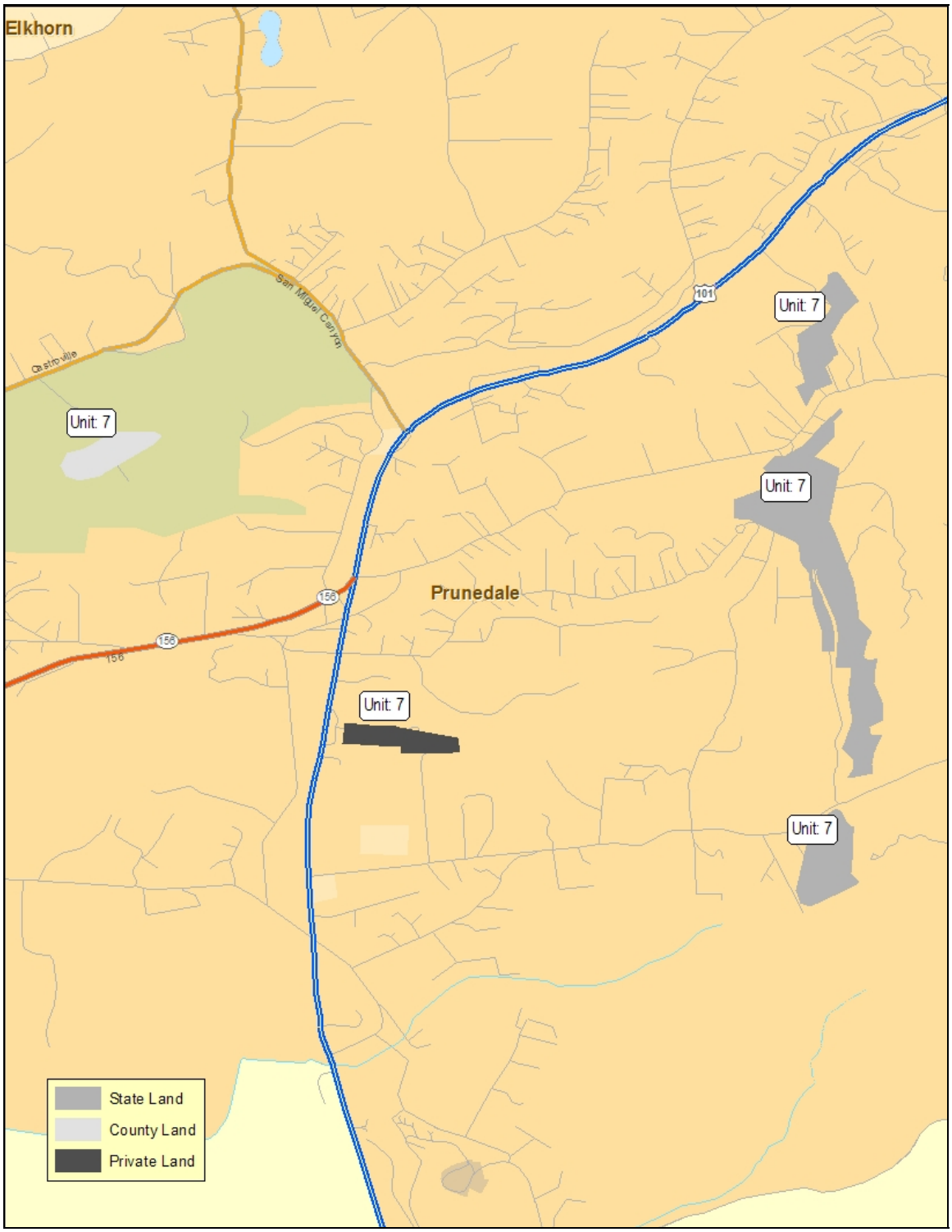


Figure ES-9: Anticipated Future Land Ownership in Proposed Critical Habitat Unit 8, Fort Ord

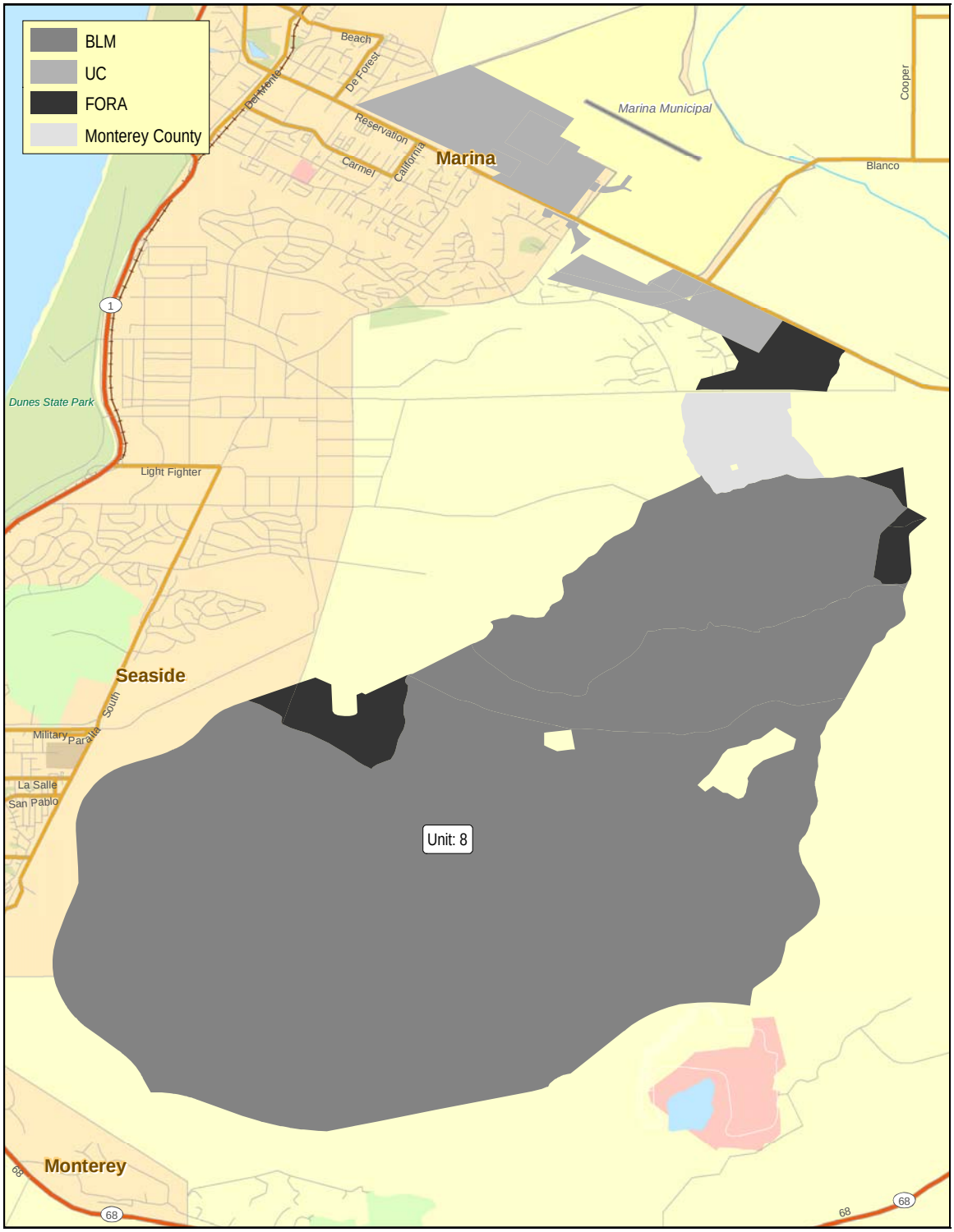
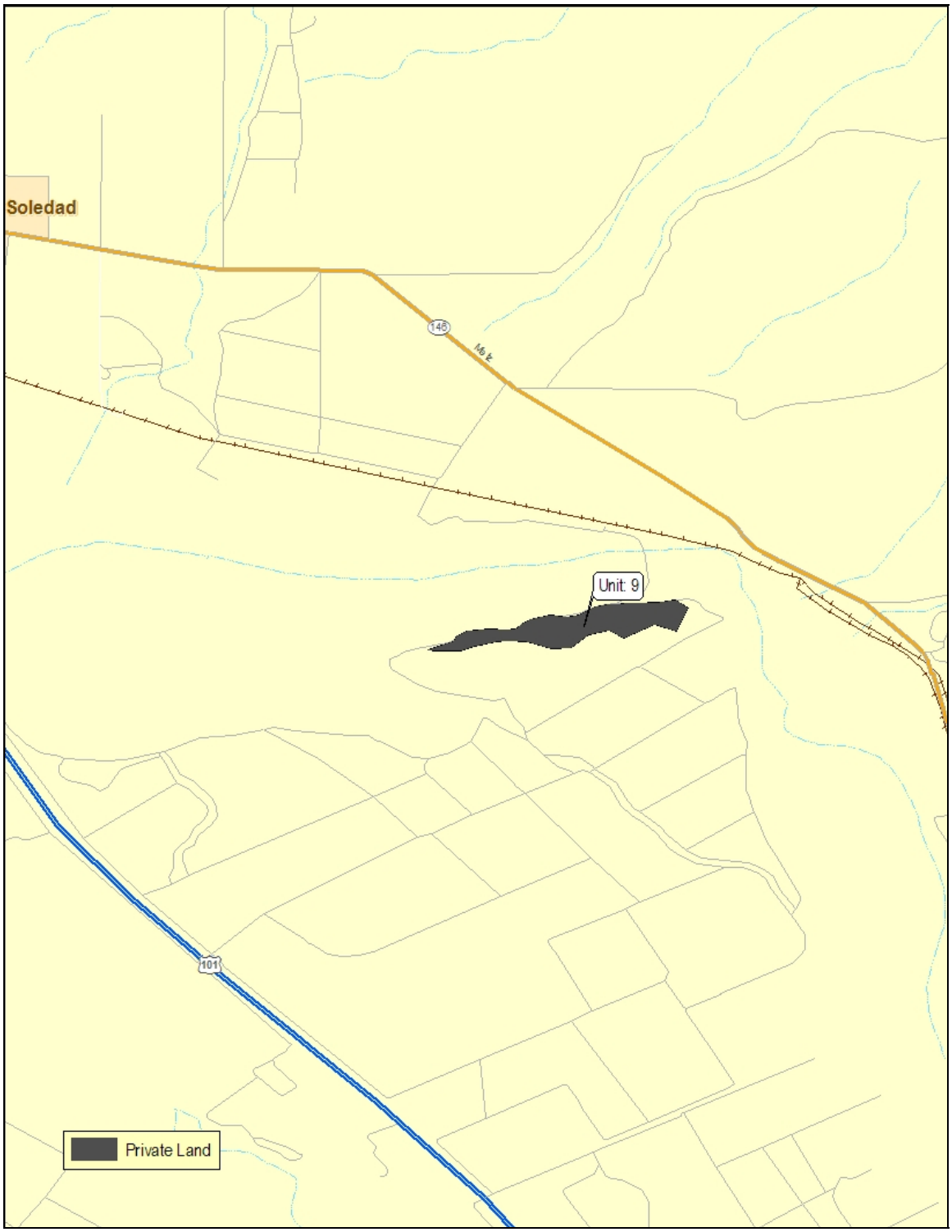


Figure ES-10: Land Ownership in Proposed Critical Habitat Unit 9, Soledad



Chapter 1: Introduction and Framework

The purpose of this report is to estimate the economic impact of actions taken to protect the federally listed Monterey spineflower (*Chorizanthe pungens* var. *pungens*) and its habitat. It attempts to quantify the economic effects associated with the proposed designation of critical habitat. It does so by taking into account the cost of conservation-related measures that are likely to be associated with future economic activities that may adversely affect the habitat within the proposed boundaries. The analysis looks retrospectively at costs incurred since the Monterey spineflower (spineflower) was listed, and it attempts to predict future costs likely to occur after the proposed critical habitat designation is finalized.

This final economic analysis analyzes the proposed critical habitat as described in the proposed rule. This analysis does not reflect changes to the proposed critical habitat designation made in the final rule. Consequently, description of the critical habitat in the final rule may differ from maps and figures presented in this analysis.

Chapters 2 through 7 of this report consider all future conservation-related impacts, including impacts associated with overlapping protections from other Federal, State, and local laws that aid habitat conservation in the areas proposed for critical habitat. That is, a portion of these "co-extensive" impacts are forecast to occur regardless of critical habitat designation for the spineflower. Appendix B estimates the potential "incremental" impacts of critical habitat designation for the spineflower by attempting to isolate those impacts that would not be expected to occur absent the designation of critical habitat.

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 from designation.[5] 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).[6] This report also complies with direction from the U.S. Court of Appeals for the 10th Circuit that "co-extensive" effects should be included in the economic analysis to inform decision-makers regarding which areas to designate as critical habitat.[7]

---

[5] 16 U.S.C. §1533(b)(2).

[6] 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.

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

This chapter provides background information on the regulatory history, the species and its habitat, and the proposed designation. Next, it describes regulatory alternatives considered by the Service, and summarizes the threats to the species. Then, it describes its approach to estimating impacts and lays out the scope of the analysis. Information sources relied upon are summarized in the next section. The first chapter concludes with a description of the organization of the remainder of this report.

1.1 Background

1.1.1 Regulatory History

On February 4, 1994, the Service published the final rule listing the spineflower as threatened.[8] The Service published a recovery plan for seven coastal plants and the Myrtle's silverspot butterfly which included the spineflower in September of 1998. The designation of 18,829 acres in Monterey and Santa Cruz Counties of critical habitat for the spineflower was published in the Federal Register on May 29, 2002.[9] In March 2005, the Homebuilders Association of Northern California, et. al., filed suit against the Service challenging final critical habitat rules for several species including the spineflower. The settlement, which was reached in March 2006, required the Service to re-evaluate five final critical habitat designations, including designated critical habitat for the spineflower. The settlement also required that the Service to issue a proposal to revise critical habitat on or before December 7, 2006.[10]

1.1.2 Description of Proposed Critical Habitat and Landownership

The Service identified 11,032 acres of land in Monterey and Santa Cruz Counties, California, as proposed critical habitat for the spineflower.[11] For a description of the spineflower and the primary constituent elements that are essential to the conservation of the species, refer to the Proposed Rule. Proposed critical habitat forms the study area for this analysis.

Proposed critical habitat areas are divided into nine units. Most of the land is publicly owned, as shown in Table 1 which summarizes total land ownership according to landowner type.

Table 1: Land Owner Type

Owner Type	Acres
Federal	8,172
State	2,088
Local Agency	680
Private	92
Total Proposed Critical Habitat	**11,032**

Source: 71 FR 75197

Land managers, including US Department of the Army, Bureau of Land Management (BLM), California Department of Parks and

[8] 59 FR 5499

[9] 67 FR 37498

[10] 71 FR 75192

[11] 71 FR 75189

Recreation (CDPR), California Department of Transportation (Caltrans), University of California (UC), City of Pacific Grove, County of Monterey, Monterey Peninsula Regional Park District (MPRPD), the Fort Ord Reuse Authority (FORA), Pacific Gas and Electric (PG&E) and other private entities, are shown in Table 2 which presents landownership in each unit.[12] For maps showing the location of each unit, see Figures ES-1 through ES-10 above.

Table 2: Land Owners in Proposed Critical Habitat

Unit	Name	Acres	Land Manager	Owner Type	Acres
1	Sunset	85	CDPR	State	85
2	Moss Landing	224	CDPR	State	224
3	Marina	884	CDPR	State	884
4	Asilomar	48	CDPR	State	40
			City of Pacific Grove	Local Agency	4
			MPRPD	Local Agency	4
5	Freedom Blvd.	24	Private	Private	24
6	Manresa	94	CDPR	State	94
7	Prunedale	190	Caltrans	State	155
			PG&E	Private	17
			Monterey County	Local Agency	18
8	Fort Ord	9,432	UC	State	606
			Monterey County	Local Agency	251
			FORA	Local Agency	403
			Army/BLM	Federal	8,172
9	Soledad	51	Private	Private	51
Total					**11,032**

Notes:

1. The 8,172 acres in unit 8 owned by Army / BLM indicates lands that are being transferred from the Army to BLM. Impacts associated with these acres will not be "double counted."

Sources:

1. 71 FR 75197
2. Monterey and Santa Cruz County and FORA GIS landownership data provided by USFWS.

1.2 Regulatory Alternatives

Executive Order 12866 directs Federal Agencies to evaluate regulatory alternatives. Section 4(b)(2) of the Act allows the Service to exclude areas proposed for designation based on economic and other relevant impacts. The Service identifies nine units for designation as critical habitat. An alternative to the proposed rule is to exclude some of these areas from critical habitat designation; the potential impacts of such an alternative

[12] As of the writing of this report, the Army currently manages all Federal and Local Agency land in Unit 8. This land will be transferred to BLM, Monterey County, and FORA over the next eight to 20 years as the Army completes remediation of the land. Thus, the landownership presented in Table 2 and in the proposed critical habitat rule reflects future, not current, landownership.

can be inferred from Table ES-2 above. Consideration of impacts at a subunit level may also result in alternate combinations of potential habitat that may or may not ultimately be designated as critical habitat. This type of analysis allows the Service to consider the economic impacts of designating various combinations of critical habitat units.

1.3 Threats

In the Proposed Rule, the Service determined that many of the known occurrences of spineflower are threatened by direct and indirect effects from the following events or activities: habitat fragmentation and loss, and edge effects resulting from urban development such as increases in invasive nonnative species and increased trampling and soil compaction from recreation; road development; invasive species control with herbicides; industrial and recreational development; equestrian and other recreational activities; and dune stabilization using nonnative plant species.[13]

Additionally, the Service discussed in the Proposed Rule that the following activities may require special management to ensure the long-term conservation of the spineflower because they could result in unfavorable disturbance intensity, frequency, or timing and could destroy individual plants or deplete any associated seed bank: road maintenance; invasive species control; and fire suppression.[14] Table 3 below presents the threats to the spineflower and their associated units.

Table 3: Land Owners and Threats Specific to Units

Threats	Unit	Landowner(s)
Invasive, non-native plant species	All Units	All Landowners
Recreational activities: foot traffic	1, 2, 3, 4, 6, 8	CDPR, Army/BLM, UC, Monterey County, FORA
Recreational activities: off-road vehicles	7	Private
Overspray of pesticides from agricultural operations	9	Private
Munitions clean-up methods on former ranges that remove and chip all standing vegetation	8	Army
Unregulated vehicle parking on the dunes	4	City of Pacific Grove
Vegetation clearing activities associated with road and trail maintenance	8	Army/BLM, UC, FORA, Monterey County
Vegetation clearing activities associated with road maintenance	9	Private

Note: Economic impacts associated with the following landowners are not considered in this economic analysis because these landowners will probably not undertake actions to conserve the spineflower: Monterey Peninsula Regional Park District (MPRPD), City of Pacific Grove, PG&E, and private landowners in units 5 and 9.
Source: 71 FR 75197 - 75199

[13] 71 FR 75196.

[14] *Ibid.*

1.4 Approach to Estimating Economic Impacts

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

1.4.1 Efficiency Effects

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 the spineflower, 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.[15]

In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, a Federal land manager, such as the US Department of the Army, may enter into a consultation with the Service to ensure that a particular activity will not adversely modify critical habitat. The effort required for the consultation 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 a compliance activity is not expected to significantly affect markets – that is, not result in a shift in the quantity of the 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.

Where habitat protection measures are expected to significantly impact the 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 the region. In this case, changes in economic efficiency

---

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

(i.e., social welfare) can be measured by considering changes in producer and consumer surplus in the market. For this analysis, compliance costs are estimated. Market effects are unlikely, because the costs of this proposed regulation are relatively small and borne primarily by State and Federal agencies.

1.4.2 Distributional and Regional Economic Impacts

The analysis also considers how small entities, including small businesses, organizations, and governments, as defined by the Regulatory Flexibility Act, might be affected by future conservation activities for the spineflower.[16] 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 activities on the energy industry and its customers.[17]

1.5 Scope of the Analysis

This analysis identifies those economic activities believed to most likely threaten the listed species and its habitat and, where possible, quantifies the economic impact of avoiding, mitigating, or compensating for such threats within the boundaries, or adjacent to, proposed critical habitat. In instances where critical habitat is being proposed after a species is listed, some future impacts may be unavoidable, regardless of the final designation and exclusions under 4(b)(2).However, due to the difficulty in making a credible distinction between listing and critical habitat effects within critical habitat boundaries, this analysis considers all future conservation-related impacts to be coextensive with the designation.[18,19]

Coextensive effects may also include impacts associated with overlapping protective measures of other Federal, State, and local laws that aid habitat conservation in the areas proposed for designation. In past instances, some of these measures have been precipitated by the listing of the species and impending designation of critical habitat.

---

[16] 5 U.S.C. § 601 *et. seq.*

[17] Executive Order 13211, *Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, and Use*, May 18, 2001.

[18] In 2001, the U.S. 10th Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of critical habitat 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)).

[19] Issued in 2004, a Ninth Circuit judicial opinion invalidated the Service's regulation defining destruction or adverse modification of critical habitat (Gifford Pinchot Task Force v. USFWS), and the Service does not rely on the regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Pursuant to Director's Memo dated December 9, 2004, and the statutory provisions of the Act, destruction or adverse modification is determined on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the primary constituent elements to be functionally established) to serve its intended conservation role for the species.

Because habitat conservation efforts affording protection to a listed species likely contribute to the efficacy of the critical habitat efforts, the impacts of these actions are considered relevant for understanding the full effect of the proposed critical habitat designation. Enforcement actions taken in response to violations of the Act, however, are not included.

1.5.1 Sections of the Act Relevant to the Analysis

The 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 designation of critical habitat. According to section 4, the Secretary is required to list species as endangered or threatened "solely on the basis of the best available scientific and commercial data."[20] Section 4 also requires the Secretary to designate critical habitat "on the basis of the best scientific data available and after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat."[21]

Section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat.[22]

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."[23]

Under section 10(a)(1)(B) of the Act, an entity (e.g. a landowner or local government) may develop a Habitat Conservation Plan (HCP) for an endangered animal species in

---

[20] 16 U.S.C. §1533.

[21] 16 U.S.C. §1533.

[22] Issued in 2004, a Ninth Circuit judicial opinion invalidated the Service's regulation defining destruction or adverse modification of critical habitat (Gifford Pinchot Task Force v. USFWS), and the Service does not rely on the regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Pursuant to Director's Memo dated December 9, 2004, and the statutory provisions of the Act, destruction or adverse modification is determined on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the primary constituent elements to be functionally established) to serve its intended conservation role for the species.

[23] 16 U.S.C. §1532.

order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property.[24]

Note that the Act does not specifically prohibit "take" of endangered plants unless the plants are under Federal jurisdiction or the action is otherwise in violation of State law. Therefore, on private lands, unless a Federal nexus is present (e.g., a landowner requires a permit from a Federal agency to undertake an activity and therefore that agency is subject to consultation with the Service under section 7 of the Act), private landowners are not obligated by the Service to take actions to manage or minimize their impact on plants located on their property. As a result, the economic analysis estimates the costs of conservation efforts undertaken by landowners that are reasonably likely to occur.

1.5.2 Other Relevant Protection Efforts

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.[25] For the purpose of this analysis, such protective efforts are considered to be co-extensive with the protection offered by critical habitat, and costs associated with these efforts are included in this report. In addition, under certain circumstances, the critical habitat 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 and local laws. In cases where these costs would not have been triggered absent the designation of critical habitat, they are included in this economic analysis.

1.5.3 Additional Analytic Considerations

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

1.5.3.1 Time Delay and Regulatory Uncertainty Impacts

Time delay impacts are costs resulting from project delays associated with the consultation process or compliance with other regulations. Regulatory uncertainty costs occur in anticipation of having to modify parameters (e.g., retaining outside experts or legal counsel to better understand responsibilities with regard to critical habitat). Time

---

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

[25] For example, the Sikes Act Improvement Act (Sikes Act) of 1997 requires Department of Defense (DoD) military installations to develop Integrated Natural Resource 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 other activities, such as training exercises, taking place at the facility.

delays and regulatory uncertainty impacts are not anticipated in this case, because the Federal and State agencies involved in consultations are familiar with the process.

1.5.3.2 Stigma Impacts

Stigma refers to the change in economic value of a particular project or activity due to negative (or positive) perceptions of the role critical habitat will play in developing, implementing, or conducting that policy. For example, changes to private property values associated with public attitudes about the limits and costs of implementing a project in critical habitat are known as "stigma" impacts. Because the proposed designation includes little private property (approximately 92 acres, 17 of which are within an easement), stigma effects are not quantified in this analysis.

1.5.4 Geographic Scope of the Analysis

The geographic scope of the analysis includes areas proposed for critical habitat designation. The analysis focuses on activities within or affecting these areas. No areas were proposed for exclusion under section 4(b)(2) of the Act.

Impacts are presented at the finest resolution feasible, given the available data. For this proposed critical habitat designation, impacts are reported for each unit identified in the Proposed Rule. The Executive Summary presents a map showing the location of the subunits relative to major cities.

1.5.5 Time Frame of the Analysis

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 estimates economic impacts of activities from 1994 (year of the species' listing) to 2025 (20 years from the year the Proposed Rule was published in 2006). Forecasts of economic conditions and other factors beyond the next 20 years would be speculative.

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 represents the value of a payment or a stream of payments in common dollar terms. That is, it is the sum of a series of past or future cash flows expressed in terms of today's dollars. Translation of economic impacts of past and future costs to present value terms requires the following information: a) past or projected future costs of conservation efforts; and b) the specific years in which these impacts have been or are expected to be incurred. With these data, the present value of the past or future stream of impacts of conservation efforts (PV_c) from year t to T is measured in today's dollars according to the following standard formula[1]: $PVc = \sum_{t}^{T} \frac{Ct}{(1+r)^{T-t}}$ Where C_t is the cost of conservation efforts in year t and r is the discount rate[2].

Impacts of conservation efforts for each activity in each unit are also expressed in 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 the forecast period of 20 years, 2006 through 2025. Annualized impacts of future conservation efforts (APV_c) are calculated by the following standard formula: $APVc = PVc\left[\frac{r}{1-(1+r)^{-(N)}}\right]$ Where N is the number of years in the forecast period (in this analysis, 20 years).

---

[1] To derive the present value of past conservation efforts for this analysis, t is 1994 and T is 2006; to derive the present value of future conservation efforts, t is 2006 and T is 2025.

[2] To discount and annualize costs, guidance provided by 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, CircularA-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, February 3, 2003).

1.5.6 Benefits

Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.[26] 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.[27]

In the context of critical habitat designation, the primary purpose of the rulemaking (i.e., direct benefits) is the potential to enhance the 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.[28] *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.*

Critical habitat designation may also generate ancillary benefits. Critical habitat aids in the conservation of species specifically by protecting the primary constituent elements on which the species depends. To this end, critical habitat designation can result in 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 the species or habitat may have coincident, positive social welfare implications, such as increased recreational opportunities in the region. While they are not the primary purpose of critical habitat, these ancillary benefits may result in gains in employment, output, or income that may offset the direct, negative impacts to a region's economy resulting from actions to conserve the species or its habitat.

It is often difficult to evaluate the ancillary benefits of critical habitat designation. To the extent that the ancillary benefits of the rulemaking may be captured by the market through an identifiable shift in resource allocation, they are factored into the overall economic impact assessment. For example, if habitat preserves are created to protect a species, the value of existing residential property adjacent to those preserves may increase, resulting in a measurable positive impact. Ancillary benefits that affect markets are not anticipated in this case, and are therefore not quantified.

---

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

[27] 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.

[28] *Ibid.*

1.6 Information Sources

The primary sources of information for this report were communications with and data provided by personnel from the Service, Federal agencies, California State governments and institutions, local government agencies in Monterey and Santa Cruz Counties, and affected private entities. Specifically, the analysis relies on data collected in communication with personnel from the following entities:

- Bureau of Land Management;
- Department of the Army;
- California Department of Parks and Recreation;
- California Department of Transportation;
- California Department of Pesticide Regulation;
- University of California at Santa Cruz;
- Monterey County University of California Cooperative Extension;
- Monterey County Parks Department;
- Monterey County Agricultural Commissioner;
- Santa Cruz County Planning Department;
- Monterey Peninsula Regional Park District; and
- Pacific Gas & Electric.

In addition, this analysis relies on the Service's section 7 consultation records, the Recovery Plan for Seven Coastal Plants and the Myrtle's Silverspot Butterfly, the Draft Habitat Conservation Plan for Former Fort Ord, and the Fort Ord Dunes State Park Preliminary General Plan and Draft Environmental Impact Report.

1.7 Structure of the Report

The remainder of the report is organized as follows:

- Chapter 2: Impacts of Invasive, Nonnative Plant Species Management;
- Chapter 3: Impacts of Recreational Activities Management;
- Chapter 4: Impacts of Controlling Overspray of Pesticides;
- Chapter 5: Impacts on Munitions Clean-up Methods that Remove and Chip all Standing Vegetation;
- Chapter 6: Impacts of Controlling Unregulated Vehicle Parking;
- Chapter 7: Impacts on Vegetation Clearing for Road and Trail Maintenance;
- Appendix A: Incremental Analysis of Critical Habitat Designation for the Monterey Spineflower
- Appendix B: SBREFA Screening Analysis and Impacts to the Energy Industry;
- Appendix C: Past Economic Impacts; and
- Appendix D: Additional Proposed Critical Habitat.

Chapter 2: Impacts of Invasive, Nonnative Plant Species Management

Invasive, nonnative plant species, such as ice plant and European beachgrass, form dense colonies on coastal beaches and crowd out spineflower. As a result, the Proposed Rule indicates that special management may be needed to protect the spineflower and its habitat from invasive, nonnative plant species in all proposed critical habitat units.[29]

This chapter quantifies the economic impact of removing invasive, nonnative plant species through hand removal, herbicide application, or other methods that will not harm the spineflower. The discussion of impacts is organized by land owner. Table 4 summarizes future impacts of invasive, nonnative plant species management. Total future impacts are estimated to be $12.91 million (undiscounted dollars) over twenty years.

2.1 California Department of Parks and Recreation (Units 1, 2, 3, 4, and 6)

Past Costs

Initial actions to remove invasive, nonnative plants have been carried out in those proposed critical habitat units in which there are lands managed by California Department of Parks and Recreation (CDPR). At Sunset State Beach (Unit 1), which is managed by the Santa Cruz District of CDPR, efforts have been made to remove ice plant and nonnative perennial plants. The initial cost of removing invasive species, primarily grasses, from 85 acres at Sunset State Beach through prescribed burning, followed by herbicide application and maintenance was approximately $1,593 per acre over the course of four years from 2000 to 2003.[30] Thus, total past costs in Sunset State Beach of removing invasive species are approximately $136,000 in undiscounted dollars.

The past costs of invasive, nonnative species removal at Manresa State Beach (Unit 6), which is also in the Santa Cruz District of CDPR, differed from Sunset State Beach in that ice plant was the primary target. Removal of invasive, nonnative plant species at Manresa State Beach was done through the use of herbicides on 94 acres and cost approximately $4,200 in undiscounted dollars over the course of three years, from 2003 to 2005.[31]

In Moss Landing, Marina, and Asilomar State Beaches (Units 2, 3, and 4, which are managed by the CDPR Monterey District), invasive species have been controlled through a combination of herbicide application and hand removal since the listing of the spineflower. Since 1994, two staff and one supervising scientist have been required at each beach to carry out invasive species removal actions, which have demanded

---

[29] 71 FR 75197 - 75199.

[30] Hyland and Holloran, 2005, "Controlling European beachgrass (*Ammophila arenaria*) using prescribed burns and herbicide."

[31] Electronic communication from Tim Hyland, Environmental Scientist for the Santa Cruz District of California Department of Parks and Recreation, May 9, 2007.

approximately 30 percent of their time. Each staff member is paid $25,000 per year; the scientist is paid $50,000 per year. Purchase of herbicides and other materials have cost an additional estimated $10,000 per year.[32] Thus, the total annual costs of controlling invasive plants at each beach in the Monterey District (Moss Landing, Marina, and Asilomar) were approximately $40,000. The total past costs from 1994 through 2005 at each beach (Moss Landing, Marina, and Asilomar State Beaches (Units 2, 3, and 4)) are estimated to be $480,000 (undiscounted dollars).

Future Costs

To maintain the areas for which initial nonnative species removal efforts have already been conducted, the CPDR Santa Cruz District conducts herbicide spraying approximately three times per year.[33] The maintenance costs of maintaining control of invasive plant species at Sunset and Manresa State Beaches (Units 1 and 6) is approximately $300 per year per beach (totaling $6,000 in each beach over 20 years in undiscounted dollars). This $300 covers the cost of staff and supplies, including herbicides and backpack sprayers.[34]

The CDPR Monterey District controls invasive species, such as ice plant, by spraying with pesticides and conducting hand removal. In some areas, inmate labor is used to re-plant native species.[35] The annual costs of maintaining control of invasive species in the State Beaches in the Monterey District are expected to be similar to the annual past costs, or $40,000 annually per beach. Thus, over 20 years, the total cost of controlling invasive plants at each beach (Moss Landing, Marina, and Asilomar State Beaches (Units 2, 3, and 4)) will be $800,000.

The Fort Ord Dunes State Park is in the process of being transferred to CDPR. Thus, initial efforts to remove invasive plant species have not yet been conducted. Under the Draft HCP for former Fort Ord, CDPR must remove all ice plant and annual grasses (which it does through the use of herbicides) and restore the native vegetation.

The annual CDPR budget for natural resource management in the Fort Ord Dunes State Park is $200,000. This budget pays for the salary of a full-time environmental scientist to monitor the area, as well as other expenses related to habitat restoration and removing invasive nonnative plants such as hiring contractors or temporary employees, purchasing tools and supplies, propagating native plants in a green house, and replanting and dispersing native seeds. Although these efforts will benefit all of the species found in Fort

---

[32] Personal communication from Tom Moss, Environmental Scientist for the Monterey District of California Department of Parks and Recreation, April 26, 2007.

[33] Personal communication from Tim Hyland, Environmental Scientist for the Santa Cruz District of California Department of Parks and Recreation, April 26 and May 9, 2007.

[34] *Ibid*.

[35] Personal communication from Lauren Rex, Acting Superintendent for the Monterey District of California Department of Parks and Recreation, April, 20, 2007.

Ord Dunes State Park, these efforts are adequate to protect the spineflower and its habitat from nonnative plant species and no additional management of nonnative plants is needed.[36] Total costs associated with these efforts are anticipated to be $4.0 million over 20 years.

2.2 Monterey County (Unit 7)

In Unit 7, Monterey County owns 18 acres that are part of Manzanita County Park. The Monterey County Agriculture Commissioners Office, Invasive Weed Division, in Manzanita Park, is responsible for invasive species control. The County Weed Division conducts invasive plant species removal efforts for a variety of reasons including the protection of agricultural land, resources for recreation and domestic animals, and habitat for wildlife.[37] The County reports costs of invasive species for the entire 183 acres of Manzanita Park, though only 18 acres of the park are proposed as critical habitat for the spineflower. This analysis assumes that the costs of invasive plant species removal within the proposed critical habitat in Manzanita Park is consistent with the per acre cost of invasive plant species removal in the entire park (approximately $68/acre/year).

Past Costs

The total past cost since invasive plant species removal efforts began in the area of proposed critical habitat in Manzanita Park (Unit 7) has been approximately $800.

Future Costs

In the future, the County plans to expand its efforts to remove French broom, yellow-star thistle, ice plant, and Jubata grass in Unit 7. The County plans to spend approximately $1,230 every year for the foreseeable future in efforts to remove invasive plant species from the area of proposed critical habitat for the spineflower in Manzanita Park.[38] Total future costs for the time frame of this analysis are estimated to be $25,000 in undiscounted dollars.

2.3 Caltrans (Unit 7)

Caltrans is currently holding land in Prunedale, of which 155 acres is proposed as critical habitat for the spineflower.[39] Caltrans will either use this land as mitigation for future

---

[36] Personal communication from Ken Gray, Environmental Scientist for California Department of Parks and Recreation, April 23 and May 9, 2007.

[37] Monterey County Invasive Weed Division website at: http://www.co.monterey.ca.us/ag/nox_weeds.htm, site accessed November 16, 2007.

[38] Personal communication from Weed Division Supervisor, Monterey County Agricultural Commissioner's Office, December 11, 2006.

[39] Personal communication from Associate Biologist, California Department of Transportation (Caltrans), December 12, 2006.

road construction projects elsewhere or it will sell the land. If Caltrans keeps the land, and sets it aside as mitigation for road development elsewhere, Caltrans will have to go through the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) review processes. The result of the review will likely be that Caltrans will hire a conservation-oriented organization to manage the land in perpetuity. If Caltrans sells the land, the buyer will probably have to go through the CEQA review process and may have to create a management plan for the land. Under either outcome, it is likely that the 155 acres Caltrans currently holds in the Prunedale area will be managed for its environmental resources in the future.[40]

Past Costs

Caltrans has monitored the status of invasive species on their land in the past, but does not control the spread of the invasive plant species. Monitoring efforts involve one or two biologists visiting the site every year or every other year. Costs of the monitoring efforts have been approximately $1,000 per year, for the past seven years.[41]

Future Costs

This analysis assumes that natural resource management will occur on this land in the future, regardless of the designation of critical habitat. It is assumed that actions needed to control the spread of invasive plant species will be similar to those implemented by the Monterey County Agricultural Commissioners Office, Weed Division on a per acre basis (approximately $68/acre/year). In total, costs of controlling invasive species on the 155 acres in Unit 7 are expected to be approximately $212,000 in undiscounted dollars over the next 20 years.

2.4 Department of the Army and Bureau of Land Management (Unit 8)

Past Costs

The Army has been conducting minimization and protection measures for the spineflower in the former Fort Ord area since it received a biological opinion from the Service in October 2002.[42] The annual budget for "care taking" actions required in this opinion, described below, varied over three years and ranged from $100,000 to $250,000. Total

[40] Personal communication from Associate Biologist, California Department of Transportation (Caltrans), November 16, 2007.

[41] *Ibid.*

[42] U.S. Fish and Wildlife Service to James Wilson, Director, Environmental and Natural Resource Management, Department of the Army, Biological Opinion on the Closure and Reuse of Fort Ord, Monterey County, California, as it affects Monterey Spineflower Critical Habitat, October 22, 2002.

undiscounted past costs of $525,000 are estimated by taking the sum of the average annual cost ($175,000).[43]

The Bureau of Land Management (BLM) received a biological opinion from the Service on December 30, 2005, at which point it began restoration efforts for the spineflower and other species in the former Fort Ord area.[44] Because BLM did not start restoration efforts related to this opinion until 2006, costs to BLM are included in future cost estimates.

Future Costs

The Army spends approximately $100,000 to $250,000 per year on implementing the measures laid out in past biological opinions, such as invasive plant species removal, vegetation monitoring, and road maintenance. This budget pays for contracts with the BLM to carry out the care taking responsibilities on its land. This budget also pays for an expert in unexploded ordnances to escort the contractors during monitoring and other care taking responsibilities.[45]Assuming that, on average, the Army will spend $175,000 on care taking activities, management costs in this unit for the Army are anticipated to be $3.50 million over the next 20 years.

In addition to the contracted work BLM does for the Army, BLM carries out removal of invasive plant species, erosion control, and management of recreational activities on the 1,191 acres of land in Fort Ord it has already received.[46] The annual cost to BLM of controlling erosion, managing recreational activities, and conducting nonnative plant species abatement in the area of proposed critical habitat for the spineflower is approximately $41,000[47] in undiscounted dollars (totaling approximately $827,000 over 20 years in undiscounted dollars).[48] These conservation efforts benefit the spineflower as well as other sensitive species present in the area of proposed critical habitat for the spineflower on former Fort Ord land.

2.5 University of California (Unit 8)

The University of California (UC) manages approximately 605 acres of land within the proposed critical habitat boundaries that are managed as a habitat reserve by UC Santa

---

[43] This analysis assumes protection measures were carried out during the years 2003 – 2005 (i.e. a three-year time frame) because the Army received the biological opinion from the Service at the end of 2002.

[44] U.S. Fish and Wildlife Service to Field Manager, Bureau of Land Management, Biological Opinion for Bureau of Land Management Ongoing Activities on Fort Ord Public Lands, Monterey County, California, December 30, 2005.

[45] Personal communication from Bill Collins, Biologist, Army, May 3, 2007.

[46] Personal communication from Bruce Delgado, Biologist, Bureau of Land Management, May 3, 2007.

[47] *Ibid.*

[48] These figures have been rounded.

Cruz Natural Reserve System.[49] UC Santa Cruz operates in compliance with the Fort Ord Habitat Management Plan (HMP), which was developed to protect natural resources, including the spineflower and its habitat. When the Fort Ord HCP is finalized, it will replace the HMP in providing conservation guidance.[50,51]

Past Costs

Since 1997, the University of California at Santa Cruz Natural Reserve System has carried out HMP-defined activities, such as habitat restoration and monitoring. These activities have benefited the spineflower as well as other sensitive plant and animal species in the area. The annual budget for carrying out all HMP-defined activities ranged from $39,096 to $94,949 in real dollars during the time period 1997 through 2005.[52] The total past cost, which was derived by taking the sum of the annual budget in each of the years from 1997 through 2005, was $667,421 in undiscounted dollars.

Future Costs

The conservation activities that will be required under the Fort Ord HCP have not yet been finalized, as the HCP is still in draft form. The funds necessary for each landowner to carry out the conservation efforts outlined in the HCP are not finalized either. This analysis assumes that the annual future costs to UC of carrying out the actions required under the HCP will be approximately similar to the average annual cost of carrying out actions required under the HMP because the costs of carrying out actions required under the HMP are the best data currently available. Note that this estimate is made to approximate the economic impacts of spineflower conservation on the land owned by UC for the purposes of this report only and should not be used to predict the budgetary needs of UC in the future. The approximate annual cost to UC of conserving the spineflower, including removal of invasive plant species and implementation of measures to avoid damaging the spineflower when doing road and trail maintenance, is expected to be approximately $74,000. Therefore, the total future cost to conserve the spineflower on UC lands is anticipated to be $1.48 million in undiscounted dollars.

2.6 Monterey County and FORA (Unit 8)

Monterey County will eventually own 251 acres of land that is within the boundaries of proposed critical habitat in Unit 8. These lands will be transferred from the Fort Ord

---

[49] Monterey Bay Education, Science, and Technology Center of the University of California at Santa Cruz website at: http://www.ucmbest.org/Development/Maps/Fig3_1.htm, May 3, 2007.

[50] UCSC Natural Reserves website at: http://ucreserve.ucsc.edu/FortOrd/ ftordres.html, May 3, 2007.

[51] Personal communication from Director, Fort Ord natural Reserve, April 27, 2007.

[52] The year with the highest annual budget was 1999 and the year with the lowest annual budget was 1997. The annual budget in 1999 was $94,949 in 1999 dollars (real dollars); the annual budget in 1997 was $39,096 in 1997 dollars (real dollars). The annual budgets in each year from 1997-2005 were within that range.

Reuse Authority (FORA) to Monterey County after the draft Fort Ord HCP is completed. In addition, FORA will receive 403 acres in unit 8, which it will transfer to local agencies (such as Monterey County or Monterey Peninsula College) in the future. The local agency recipients have not yet been determined.[53]

When the Fort Ord HCP is completed, the Center for Natural Lands Management will put together a Property Analysis Record (PAR) for most of the landowners in former Fort Ord, including Monterey County and the other local agencies which will receive land from FORA. The PARs will create a basis for appropriating funds to each participating landowner from the FORA endowment for habitat restoration and conservation measures.

Because the PARs, which would provide the best source of cost data, have not yet been published, this economic analysis relies on per acre cost estimates provided by the Bureau of Land Management.[54] Measures taken by BLM to remove invasive species, protect natural habitats when maintaining roads and trails, and manage recreational activities cost approximately $35/acre/year and will be similar to the measures that will be taken by Monterey County and the other local agencies which will receive land from FORA in the future. It is anticipated that the cost over 20 years of measures to conserve the proposed critical habitat land managed by Monterey County will be approximately $174,000 in undiscounted dollars. The costs associated with the 403 acres managed by FORA will be approximately $280,000 in undiscounted dollars.

[53] Electronic communication from Diane Steeck, July 23, 2007.

[54] Personal communication from Bruce Delgado, Biologist, Bureau of Land Management, May 3, 2007.

Table 4: Impacts of Invasive, Nonnative Plant Species Management									
		Past Costs			Future Costs (20 year time frame)			Annualized Costs (20 year time frame)	
Landowner	PCH Unit Description	Undiscounted Dollars	Present Value (3%)	Present Value (7%)	Undiscounted Dollars	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
CDPR	1 Sunset	$136,000	$155,000	$185,000	$6,000	$5,000	$3,000	$300	$300
	2 Moss Landing	$480,000	$585,000	$766,000	$800,000	$613,000	$453,000	$40,000	$40,000
	3 Marina	$480,000	$585,000	$766,000	$800,000	$613,000	$453,000	$40,000	$40,000
	3 Fort Ord Dunes SP[1]	$0	$0	$0	$4,000,000	$3,065,000	$2,267,000	$200,000	$200,000
	4 Asilomar	$480,000	$585,000	$766,000	$800,000	$613,000	$453,000	$40,000	$40,000
	6 Manresa	$4,200	$4,400	$4,800	$6,000	$5,000	$3,000	$300	$300
Monterey County	7 Prunedale	$800	$1,000	$1,100	$25,000	$19,000	$14,000	$1,000	$1,000
Caltrans	7 Prunedale	$7,000	$8,000	$9,000	$212,000	$162,000	$120,000	$11,000	$11,000
Army	8 Fort Ord	$525,000	$557,000	$602,000	$3,500,000	$2,682,000	$1,984,000	$175,000	$175,000
BLM	8 Fort Ord	$0	$0	$0	$827,000	$634,000	$469,000	$41,000	$41,000
UC	8 Fort Ord	$667,421	$767,022	$925,043	$1,484,000	$1,137,000	$841,000	$74,000	$74,000
Monterey County	8 Fort Ord	$0	$0	$0	$174,000	$134,000	$99,000	$9,000	$9,000
FORA	8 Fort Ord	$0	$0	$0	$280,000	$214,000	$159,000	$14,000	$14,000
Total		**$2,780,421**	**$3,247,422**	**$4,024,943**	**$12,914,000**	**$9,896,000**	**$7,318,000**	**$645,600**	**$645,600**

Notes:

1. Land managed by CDPR in Fort Ord Dunes State Park has its own land management budget.

2. Guidance provided by the OMB specifies the use of a real discount 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, February 3, 2003).

Chapter 3: Impacts of Recreational Activities Management

Recreational activities, such as foot traffic, unauthorized camping, and off-road vehicles, could result in the trampling of plants and may require special management considerations or protections.[55,56] This chapter quantifies the economic impacts of managing foot traffic, camping and off-road vehicles for the conservation of the spineflower. The discussion of impacts is organized by landowner. Table 5 summarizes future impacts of recreational activities management. Total future impacts are estimated to be $4.06 million (undiscounted dollars) over twenty years.

3.1 California Department of Parks and Recreation (Units 1, 2, 3, 4, and 6)

CDPR does not allow camping outside of designated areas on State beaches. Off-road vehicles were not identified as a threat on land owned by CDPR. Foot traffic is directed away from habitat areas with cable fencing, boardwalks, trails, and signs.[57]

Past Costs

At Sunset State Beach (Unit 1), trails and boardwalks were installed in 2001 at a cost of approximately $10,000. Fencing was installed at Manresa State Beach (Unit 6) before the time of listing of the spineflower (prior to 1994). These costs are not considered co-extensive with the proposed designation of critical habitat for the spineflower. The trails, boardwalks, and fences control both foot traffic and erosion, specifically for the purpose of protecting native plants and their habitat (i.e. these actions were not taken for the snowy plover).[58]

At Moss Landing, Marina, and Asilomar, State Beaches (Units 2, 3, and 4), which are in the CDPR Monterey District, the installation of boardwalks, sand ladders, and fencing occurred before the time of listing of the spineflower and are not considered co-extensive with the proposed designation of critical habitat for the spineflower.

CDPR rangers in the Monterey District spend approximately twenty percent of their time patrolling for "resource protection" purposes. Resource protection patrols involve surveying the State Beaches three times daily for recreational activities that may be harming the native plants, animals, and habitats on the State beaches. During resource protection patrols, rangers cite and/or otherwise prevent people from undertaking actions which may harm the spineflower, such as camping and walking off-trail. The cost to

---

[55] 71 FR 75197 - 75199.

[56] Personal communication from field biologist, USFWS, September 5, 2007.

[57] Personal communication from Lauren Rex, Acting Superintendent for the Monterey District of California State Parks, April, 20, 2007.

[58] Personal communication from Tim Hyland, Environmental Scientist for the Santa Cruz District of California Department of Parks and Recreation, April 26 and May 9, 2007.

CDPR Monterey District of conducting resource protection patrols is approximately $42,000 per year per beach.[59,60]

In Moss Landing, Marina, and Asilomar State Beaches, approximately 10 percent of the time of two staff and one supervising scientist are required at each beach to monitor the status of boardwalks, trails, fences and signs and make repairs as necessary. Each staff member is paid $25,000 per year; the scientist is paid $50,000 per year. In addition, the cost of materials is approximately $15,000 per year.[61] These activities have benefited the spineflower as well as other sensitive plant and animal species in the area. In total, the cost to CDPR of conducting resource protection patrols and maintaining recreational activity barriers in each of the beaches in the Monterey District over the past 12 years (since the time of listing) has been approximately $807,000 in undiscounted dollars.

Future Costs

At Sunset and Manresa State Beaches (Units 1 and 6), the approximate cost of maintaining/repairing the fencing, boardwalks, and trails is estimated to be 10 percent of the initial installation cost. This analysis assumes that repairs may be needed once within the next 20 years. As a result, total future costs are anticipated to be $1,000 at Sunset and $3,000 at Manresa over the next 20 years.[62]

At Sunset State Beach, proposed critical habitat is located close to designated campgrounds. Unauthorized camping outside of designated areas is occurring within the area of proposed critical habitat at Sunset State Beach. To ensure the spineflower habitat is not damaged, additional fencing may be needed at Sunset State Beach. The cost of additional fencing is estimated to be $20,000 initially, and approximately $2,000 in repairs every ten years (undiscounted dollars).[63] Therefore the total cost in Sunset State Beach of controlling recreational activities is estimated to be $23,000 (undiscounted dollars).

The actions taken by CDPR in Asilomar, Moss Landing, and Marina State Beaches in the future related to recreational activities management are expected to be similar to those in the past (approximately $67,000 annually). In total, the costs to CDPR of conducting

---

[59] Rangers' annual salary is $52,800. Twenty percent of $52,800 is $10,560. There are 4 rangers in each of the State Beaches in the CDPR Monterey District that are proposed for critical habitat. 4x10,560 = 42,240.

[60] Personal communication from Lauren Rex, Acting Superintendent for the Monterey District of California State Parks, April, 20, 2007; and Personal communication with Tom Moss, Environmental Scientist for the Monterey District of California Department of Parks and Recreation, April 26, 2007.

[61] Personal communication from Tom Moss, Environmental Scientist for the Monterey District of California Department of Parks and Recreation, April 26, 2007.

[62] Personal communication from Tim Hyland, Environmental Scientist for the Santa Cruz District of California Department of Parks and Recreation, May 9, 2007.

[63] Personal communication from Tim Hyland, Environmental Scientist for the Santa Cruz District of California Department of Parks and Recreation, November 30, 2007.

resource protection patrols and maintaining recreational activity barriers in each of the beaches in the Monterey District over the next 20 years will be approximately $1.35 million in undiscounted dollars.

In the former Fort Ord area that will be part of Unit 3, CDPR's annual budget for managing Fort Ord Dunes State Park General Plan will include funds for installing trails, boardwalks, and fencing to keep people out of areas of proposed critical habitat. See section 2.1 above for a description of the annual budget.

3.2 Department of the Army and Bureau of Land Management (Unit 8)

In the 2002 biological opinion to the Army, the Service noted that the spineflower would not be adversely affected by public access to dunes and beaches with the implementation of numerous measures designed to reduce these effects, such as the use of signs, barriers, and enforcement patrols.[64] The cost of implementing these measures is included in the "care taking" budget explained in Section 2.4.

The 2005 biological opinion from the Service to BLM states that trail maintenance will be conducted on an as needed basis, but only four feet of trail width would be maintained for recreation use. Any scraped surfaces beyond the four-foot trail width boundary would be seeded, strawed, and allowed to revegetate. BLM anticipates grading trails once per decade or less, except for trails used heavily for mountain biking, which will require more frequent grading. The biological opinion also stated that herbicides would not be applied within or adjacent to any drainage structures that contained running or standing water and will only be applied during days of dry weather in order to minimize the effects of route management and use on listed and sensitive species and their habitats.[65] The cost of implementing these measures is included in the annual BLM budget explained in section 2.4 above.

3.3 University of California (Unit 8)

UC Santa Cruz Natural Reserve System operates their land in unit 8 as a habitat reserve, meaning only teaching and research activities are allowed on the land. No recreational activities will be allowed on land owned by UC.[66]

3.4 Monterey County and FORA (Unit 8)

---

[64] U.S. Fish and Wildlife Service to James Wilson, Director, Environmental and Natural Resource Management, Department of the Army, Biological Opinion on the Closure and Reuse of Fort Ord, Monterey County, California, as it affects Monterey Spineflower Critical Habitat, October 22, 2002, p. 15.

[65] U.S. Fish and Wildlife Service to Field Manager, Bureau of Land Management, Biological Opinion for Bureau of Land Management Ongoing Activities on Fort Ord Public Lands, Monterey County, California, December 30, 2005 p. 4.

[66] Personal communication from Director, Fort Ord natural Reserve, April 27, 2007.

The costs associated with land managed by FORA and Monterey County to implement measures to protect the spineflower and its habitat from recreational activities are included in the estimated total annual cost of conservation measures to these two entities explained in section 2.6 above.

3.5 Caltrans and Monterey County (Unit 7)

Recreational activities, such as off-road vehicles, which can crush plants and destroy seeds were identified as a threat to the spineflower that may require special management in unit 7. Unit 7 spans across the intersection of highways 101 and 156 in the town of Prunedale and includes 18 acres in Manzanita County Park, a 17 acre PG&E easement, and 155 acres of Caltrans mitigation land. The location and extent of the threat of off-road vehicles has not been defined by the Service as of the writing of this report.

Table 5: Impacts of Recreational Activities Management

		Past Costs			Future Costs (20 year time frame)			Annualized Costs (20 year time frame)	
Landowner	PCH Unit Description	Undiscounted Dollars	Present Value (3%)	Present Value (7%)	Undiscounted Dollars	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
CDPR	1 Sunset	$10,000	$12,000	$14,000	$23,000	$22,200	$21,500	$1,400	$1,900
	2 Moss Landing	$807,000	$983,000	$1,287,000	$1,345,000	$1,030,000	$762,000	$67,000	$67,000
	3 Marina	$807,000	$983,000	$1,287,000	$1,345,000	$1,030,000	$762,000	$67,000	$67,000
	4 Asilomar	$807,000	$983,000	$1,287,000	$1,345,000	$1,030,000	$762,000	$67,000	$67,000
	6 Manresa	$0	$0	$0	$3,000	$2,200	$1,500	$100	$100
Total		**$2,431,000**	**$2,961,000**	**$3,875,000**	**$4,061,000**	**$3,114,400**	**$2,309,000**	**$202,500**	**$203,000**

Notes:

1. Costs to CDPR in unit 3 (Fort Ord Dunes State Park), and costs to land landowners in unit 8 (Army, BLM, UC, Monterey County, and FORA) were presented in Table 4 and are not included in this table.

2. Guidance provided by the OMB specifies the use of a real discount 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, February 3, 2003).

Chapter 4: Impacts of Controlling Overspray of Pesticides

The Service identified overspray of pesticides from agricultural production as a threat to the spineflower that may require special management in unit 9.[67] This chapter discusses the regulation of pesticide overspray in Monterey County and how it relates to the proposed critical habitat.

Regulatory agencies

The California Department of Pesticide Regulation (DPR) oversees a multi-tiered enforcement program for pesticide usage in the state. The US Environment Protection Agency (US EPA) enacts laws covering minimum pesticide requirements that are enforced at the State and county levels through cooperative agreements. Over the years, the California Legislature has passed more stringent laws concerning pesticide registration, licensing, the sale and use of pesticides, and farmworker protection.[68]

DPR has primary responsibility to enforce pesticide laws and regulations in California. The Enforcement Branch oversees compliance with pesticide use requirements, has overall responsibility for pesticide incident investigations, administers the nation's largest state monitoring program for analyzing domestic and imported produce for pesticide residues, and ensures compliance with pesticide product registration and labeling requirements.[69]

County Agricultural Commissioners (CACs) enforce federal and state pesticide laws and regulations at the local level. CACs issue site-specific local permits for the use of restricted materials, conduct on-site application inspections, administer full pesticide use reporting, conduct worker safety inspections, and investigate pesticide incidents.[70]

Codes and Regulations

The U.S. EPA laws governing pesticide application target compliance with the correct usage requirements established by the labeling of the applied product. Under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), US EPA has the authority to require all pesticides be registered and properly labeled.[71] Usage labels indicate appropriate application methods and conditions for target species and areas. California's

---

[67] 71 FR 75199.

[68] California Department of Pesticide Regulation website at: http://www.cdpr.ca.gov/docs/enfcmpli/enf_auth.htm, May 9, 2007.

[69] *Ibid.*

[70] *Ibid.*

[71] US EPA website at: http://www.epa.gov/region5/defs/html/fifra.htm, May 14, 2007.

Food and Agriculture code also prevents substantial drift of the pesticide to non target areas.[72]

The California Code of Regulation requires surveys of the area for the desired application of pesticides. The survey is intended to assess the risk to persons, livestock, and property. If the application of a pesticide is determined to cause damage, then the application of the pesticide is restricted or prohibited. The California Code of Regulations includes a provision allowing DPR and the CACs to enforce mitigation measures on any activity that is not specified in other laws to protect persons, animals, and property called the General Standards of Care.[73]

In some cases third party pest control advisors will be hired by farm owners to comply with the regulations and implement required pest control measures during each growing season. Pest control advisors are subject to the same regulatory laws as the farm owners and actions can be taken against them, including revoking their license, for failing to comply with the laws governing pesticide application. [74]

There are no specific Federal, State or local regulations of pesticide application in California that are specific to the protection of threatened and endangered species.[75]

The Monterey County Agriculture Commissioners (CAC) office issues pesticide use permits and can impose conditions to minimize hazards to persons, animals or property. These conditions can include buffer zones and the mandatory use of drift control technologies. In addition, the Monterey CAC issues permits for materials restricted for use in California. Before a permit is issued by the Monterey CAC, a study of the site is conducted to determine if there are nearby species sensitive to the pesticide in question and to determine appropriate safety measures for the use of the pesticide. [76]

Relation to Critical Habitat

Overspray of herbicides and other pesticides in Monterey County is regulated through numerous laws by agencies at various levels of government. According to the farming operation leasing the land in unit 9, pesticide application methods in the surrounding

---

[72]California Department of Food and Agriculture website at: http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fac&group=12001-13000&file=12971-12979, May 14, 2007.

[73]California Department of Pesticide Regulation website at: http://www.cdpr.ca.gov/docs/inhouse/calcode/030201.htm#a6600 May 14, 2007.

[74] Personal communication from Agriculture Program Manager at Monterey County Agriculture Commissioners Office, May 11, 2007.

[75] *Ibid.*

[76] California Department of Pesticide Regulation website at: http://www.cdpr.ca.gov/docs/inhouse/calcode/020401.htm#a6400, May 14, 2007.

agricultural land are in compliance with all applicable regulations.[77] Absent data that current application processes threaten the spineflower, or that the grower is out of compliance with existing restrictions, there is no foreseeable impact associated with this threat.

During the public comment period, Merrill Farms LLC (the farming operation that leases the land in unit 9) submitted a comment which stated that the designation of critical habitat could restrict farming operations in and around the area of proposed critical habitat.[78] The designation of critical habitat may trigger unforeseen indirect regulations from the county or state level. However, no impacts appear to have resulted from the 2002 designation of critical habitat on the farming operations in this area. This analysis does not anticipate impacts to the farming operations in unit 9 as a result of the proposed designation.

Chapter 5: Impacts on Munitions Clean-up Methods that Remove and Chip all Standing Vegetation

The Army will continue to clean up munitions in the former Fort Ord area as part of the process of transferring the land to other entities. Although the Army's prescribed burn program requires fuel breaks to be cut around areas of prescribed burning to prevent the escape of the fire, the Army complies with the measures laid out in the biological opinion from the Service.[79] In the biological opinion, the Service found that, "the net effect of ordnance clearance is expected to be beneficial or minimally adverse to the Monterey spineflower critical habitat." Additionally, the biological opinion says that, "Cutting areas up to 50 acres in size would have both the beneficial effects of reducing cover of shrub vegetation and the adverse effects of adding the chipped vegetation layer to the ground surface. However, we expect there to be few instances where this is necessary and that these areas will occur within larger areas eventually prescribe burned. Both prescribed burning and cutting can result in erosion and provide open areas that can be invaded by nonnative plant species…however Monterey spineflower is able to colonize disturbed soils, so we expect these effects to be temporary and reduced by minimization measures the Army will employ."[80]

---

[77] Personal communication from owner, Merrill Farms LLC, May 14, 2007.

[78] John Bramers, VP Production to Ventura Fish and Wildlife Serivce, "Impact of Monterey Spineflower Critical Habitat Unit 9," October 31, 2007.

[79] Personal communication from Bill Collins, Biologist, Army, May 14, 2007.

[80] U.S. Fish and Wildlife Service to James Wilson, Director, Environmental and Natural Resource Management, Department of the Army, Biological Opinion on the Closure and Reuse of Fort Ord, Monterey County, California, as it affects Monterey Spineflower Critical Habitat, October 22, 2002, p. 14.

The minimization measures the Army employs include minimizing the area to be cut, surveying the area prior to cutting to take an inventory of the amount of native vegetation present, burning the cut areas after the prescribed burn is completed, monitoring the cut areas after burns, and conducting nonnative plant species removal in the cut areas after burns.[81]

The cost to the Army of implementing these minimization measures are included in the "care taking" budget identified in Chapter 2 above.

Chapter 6: Impacts of Controlling Unregulated Vehicle Parking

Asilomar Beach, unit 4, receives a high number of visitors each year. Visitors park their cars along the edge of Sunset Dr. and Oceanview Blvd. to walk along the beach. The Proposed Rule identified the expansion of unregulated vehicle parking on the dunes as a threat in the unit.

Where Sunset Dr. and Oceanview Blvd. pass through land owned and managed by CDPR and the Monterey Peninsula Regional Park District (MPRPD), there are fences running along the border of the road.[82] At the northern end of unit 4, there are four acres of proposed critical habitat that were to be transferred from ownership by the Coast Guard to the City of Pacific Grove. In 2002, the Coast Guard installed a 2,637 foot "grape stake" fence along Oceanview Blvd.[83] These fences prevent the expansion of unregulated vehicle parking on the dunes.

Chapter 7: Impacts on Vegetation Clearing or Trampling from Road and Trail Maintenance

The Proposed Rule states that vegetation clearing or trampling associated with road and trail maintenance may require special management considerations or protections.[84] This chapter considers the economic impacts of protecting the spineflower and its habitat from road maintenance. This section is divided into discussions of the impact on each land owner.

---

[81] Personal communication from Bill Collins, Biologist, Army, April 27, 2007.

[82] Personal communication from Tom Moss, Environmental Scientist for the Monterey District of California Department of Parks and Recreation, April 26, 2007; and Personal communication with Tim Jenson, Planning Manager, Monterey Peninsula Regional Park District, May 3, 2007.

[83] U.S. Fish and Wildlife Service to Tom Doszkos, U.S. General Services Administration, Biological Opinion for Transfer of Surplus Property from Federal to City Ownership at Light Station Point Pinos, City of Pacific Grove, Monterey County, California, June 2, 2005.

[84] 71 FR 75199.

7.1 Department of the Army and Bureau of Land Management (Unit 8)

The roads on the land owned by BLM were established by previous Army use. BLM maintains dirt roads that are 20-26 feet wide and paved roads that are 20-25 feet wide, including the road shoulder. BLM uses a glyphosate-based herbicide to control weeds in the asphalt cracks inside the roadbeds, but the herbicide is not applied within or adjacent to any drainage structures that contain running or standing water and are only applied during days of dry weather. BLM maintains dirt trails that are 4 feet wide. Any surfaces outside of the 4 feet of trail surface will be seeded, strawed, and allowed to revegetate. Trails need to be graded once per decade or less, unless the trail is used heavily by mountain bikes, in which case it would need more frequent grading.[85] The costs of minimizing effects to the spineflower are included in the BLM annual budget explained in Chapter 2.

The biological opinion to the Army noted that maintenance of roads and trails could benefit the spineflower by creating openings in the maritime chaparral which the spineflower can colonize. However, road maintenance could facilitate erosion and invasion by nonnative plant species. The Army proposed to minimize these impacts through its control program for invasive nonnative species and by identifying and controlling erosion.[86] The costs of minimizing impacts to the spineflower during road and trail maintenance are included in the "care taking" budget identified in section 2.4 above.

7.2 University of California (Unit 8)

The cost to UC of conducting actions to conserve the spineflower and other species under the Fort Ord HMP and draft Fort Ord HCP are discussed in section 2.5 above. The implementation of minimization measures to protect the spineflower during road and trail maintenance are included in the annual costs described above.

7.3 Monterey County and FORA (Unit 8)

The costs associated with the land managed by FORA and Monterey County of implementing measures to reduce impacts to the spineflower during road and trail maintenance are included in the estimated total annual cost of conservation measures to these two entities explained in section 2.6 above.

---

[85] U.S. Fish and Wildlife Service to Field Manager, Bureau of Land Management, Biological Opinion for Bureau of Land Management Ongoing Activities on Fort Ord Public Lands, Monterey County, California, December 30, 2005, pp. 3-4.

[86] U.S. Fish and Wildlife Service to James Wilson, Director, Environmental and Natural Resource Management, Department of the Army, Biological Opinion on the Closure and Reuse of Fort Ord, Monterey County, California, as it affects Monterey Spineflower Critical Habitat, October 22, 2002.

Appendix A: Incremental Analysis of Critical Habitat Designation for the Spineflower

This appendix considers the potential incremental impacts of critical habitat designation for the spineflower. Incremental impacts are those direct and indirect conservation efforts that are expected to be triggered specifically by the critical habitat designation. Incremental impacts would not be expected to occur absent the designation of critical habitat for the species.

No incremental impacts of critical habitat designation for the spineflower are anticipated. All impacts quantified in Chapters 2 through 7 and Appendix D of this report are forecast to occur regardless of critical habitat designation for the spineflower. Table A-3 summarizes each impact and the criteria used to determine whether or not the impact was considered incremental.

A.1 Background

The U.S. Office of Management and Budget's (OMB) guidelines for conducting an economic analysis of regulations direct Federal agencies to measure the costs of a regulatory action against a baseline, which it defines as the "best assessment of the way the world would look absent the proposed action."[87] In other words, the baseline includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat. Impacts that are incremental to that baseline (i.e., occurring over and above existing constraints) are attributable to the proposed regulation. Significant debate has occurred regarding whether assessing the impacts of the Service's proposed regulations using this baseline approach is appropriate in the context of critical habitat designations.

In 2001, the U.S. Tenth Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of proposed critical habitat, regardless of whether those impacts are attributable coextensively to other causes.[88] Specifically, the court stated

> "The statutory language is plain in requiring some kind of consideration of economic impact in the critical habitat designation phase. Although 50 C.F.R. 402.02 is not at issue here, the regulation's definition of the jeopardy standard as fully encompassing the adverse modification standard renders any purported economic analysis done utilizing the baseline approach virtually meaningless. We are compelled by the canons of statutory interpretation to give some effect to the congressional directive that economic impacts be considered at the time of critical habitat designation…. Because economic analysis done using the FWS's baseline model is rendered essentially without meaning by 50 C.F.R. § 402.02, we conclude Congress intended that the FWS conduct a full analysis of all of the

[87] OMB, "Circular A-4," September 17, 2003.
[88] *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F. 3d 1277 (10th Cir. 2001).

> economic impacts of a critical habitat designation, regardless of whether those impacts are attributable coextensively to other causes. Thus, we hold the baseline approach to economic analysis is not in accord with the language or intent of the ESA."[89]

Since that decision, however, courts in other cases have held that an incremental analysis of impacts stemming solely from the critical habitat rulemaking is proper.[90] For example, in the March 2006 court order ruling that the August 2004 critical habitat rule for the Peirson's milk-vetch was arbitrary and capricious, the United States District Court for the Northern District of California stated,

> "The Court is not persuaded by the reasoning of *New Mexico Cattle Growers*, and instead agrees with the reasoning and holding of *Cape Hatteras Access Preservation Alliance v. U.S. Dep't of the Interior*, 344 F. Supp 2d 108 (D.D.C. 2004). That case also involved a challenge to the Service's baseline approach and the court held that the baseline approach was both consistent with the language and purpose of the ESA and that it was a reasonable method for assessing the actual costs of a particular critical habitat designation *Id* at 130. 'To find the true cost of a designation, the world with the designation must be compared to the world without it.'"[91]

In order to address the divergent opinions of the courts and provide the most complete information to decision-makers, this economic analysis reports both: a) the fully coextensive impacts associated with the proposed critical habitat designation (in Chapters 2-7 of the report); and b) the impacts that are identified as incremental to the rulemaking, precipitated specifically by the designation of critical habitat for the species (in this appendix).

Until a new regulation is adopted to define "destruction or adverse modification," incremental effects of critical habitat designation are determined using the Service's December 9, 2004 interim guidance on "Application of the 'Destruction or Adverse Modification' Standard Under Section 7(a)(2) of the Endangered Species Act" and information from the Service regarding what potential consultations and project modifications would be imposed as a result of critical habitat designation over and above those associated with the listing.[92] The following section describes the methods employed to identify incremental impacts anticipated to result from the designation of critical habitat.

---

[89] *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F.3d 1277 (10th Cir. 2001).

[90] *Cape Hatteras Access Preservation Alliance v. Department of Interior*, 344 F. Supp. 2d 108 (D.D.C.); *CBD v. BLM*, 422 F. Supp/. 2d 1115 (N.D. Cal. 2006).

[91] Center for Biological Diversity et al, Plaintiffs, v. Bureau of Land Management et al, Defendants and American Sand Association, et al, Defendant Intervenors. Order re: Cross Motions for Summary Judgment. Case 3:03-cv-02509 Document 174 Filed 03/14/2006. Pages 44-45.

[92] Director, U.S. Fish and Wildlife Service, Memorandum to Regional Directors and Manager of the California-Nevada Operations Office, Subject: Application of the "Destruction or Adverse Modification" Standard under Section 7(a)(2) of the Endangered Species Act, dated December 9, 2004.

A.2 Framework for the Incremental Analysis

This section provides a description of the methodology used to determine potential economic impacts stemming from the proposed designation of critical habitat for the spineflower. The analysis evaluates impacts in a "with critical habitat designation" versus a "without critical habitat designation" framework, measuring the net change in economic activity. The "without critical habitat designation" scenario, which represents the baseline for this incremental analysis, includes all protection already afforded the species under State, local, and Federal laws, existing conservation plans, and the listing of the species under the Act. The focus of this incremental analysis is to determine the impacts on land uses and activities from the designation of critical habitat that are above and beyond those impacts due to existing required or voluntary conservation efforts being undertaken due to other Federal, State, and local regulations or guidelines. The following sections describe the decision analysis regarding whether an impact should be considered incremental in detail.

A.2.1 Defining the Baseline

The baseline for this incremental analysis is the existing state of regulation, prior to the designation of critical habitat that provides protection to the species under the Act, as well as under other Federal, State and local laws. 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. The administrative costs of consultations under the jeopardy standard, along with the impacts of project modifications resulting from these consultations, are considered baseline impacts.

In addition to impacts associated with section 7 of the Act, the baseline includes impacts of compliance with other Sections of the Act, as well as other Federal, State, and local laws that protect the species in the absence of critical habitat designation. If the Clean Water Act, for example, protects wetland habitat for the species, relevant impacts of Clean Water Act compliance are considered part of the baseline.

The baseline represents the best estimate of the "world without critical habitat," and therefore considers a wide range of additional factors beyond the compliance costs of regulations that provide protection to the listed species. As recommended by OMB, the baseline incorporates, as appropriate, trends in market conditions, implementation of other regulations and policies by the Service and other government entities, and trends in other factors that have the potential to affect economic costs and benefits, such as the rate of regional economic growth in potentially affected industries.

When critical habitat is designated, section 7 requires Federal agencies to ensure that their actions will not result in the destruction or adverse modification of critical habitat (in addition to considering whether the actions are likely to jeopardize the continued existence of the species). The added administrative costs of including consideration of critical habitat in section 7 consultations, and the additional impacts of implementing project modifications resulting from the protection of critical habitat are the direct

compliance costs of designating critical habitat. These costs are not in the baseline, and are considered incremental impacts of the rulemaking.

A.2.2 Quantifying Incremental Economic Impacts

The incremental impacts of the proposed critical habitat designation are a subset of the coextensive economic impacts quantified in Chapters 2-7 and Appendix D of this analysis. Incremental impacts may be the direct compliance costs associated with additional effort for forecast consultations, reinitiated consultations, new consultations occurring specifically because of the designation, and additional project modifications that would not have been required under the jeopardy standard. Additionally, incremental impacts may include indirect impacts resulting from reaction to the potential designation of critical habitat (e.g., developing habitat conservation plans (HCPs) specifically to avoid designation of critical habitat), triggering of additional requirements under State or local laws intended to protect sensitive habitat, and uncertainty and perceptional effects on markets.

Direct Impacts

The direct, incremental impacts of critical habitat designation stem from the consideration of the potential for destruction or adverse modification of critical habitat during section 7 consultations. The two categories of direct, incremental impacts of critical habitat designation are: 1) the administrative costs of conducting section 7 consultation; and 2) implementation of any project modifications requested by the Service through section 7 consultation to avoid, compensate for, or mitigate potential destruction or adverse modification of critical habitat.

Administrative Section 7 Consultation Costs

Parties involved in section 7 consultations include the Service, a Federal "action agency," and in some cases, a private entity involved in the project or land use activity. The action agency (i.e., the Federal nexus necessitating the consultation) serves as the liaison with the Service. While consultations are required for activities that involve a Federal nexus and may jeopardize the continued existence of the species regardless of whether critical habitat is designated, the designation may increase the effort for consultations in the case that the project or activity in question may adversely modify critical habitat.

In general, three different scenarios associated with the designation of critical habitat may trigger incremental administrative consultation costs:

Additional effort to address adverse modification in a new consultation - New consultations taking place after critical habitat designation may require additional effort to address critical habitat issues above and beyond the listing issues. In this case, only the additional administrative effort required to consider critical habitat is considered an incremental impact of the designation.

Re-initiation of consultation to address adverse modification - Consultations that have already been completed on a project or activity may require re-initiation

to address critical habitat. In this case, the costs of re-initiating the consultation, including all associated administrative and project modification costs are considered incremental impacts of the designation.

Incremental consultation resulting entirely from critical habitat designation - Critical habitat designation may trigger additional consultations that may not occur absent the designation (e.g., for an activity for which adverse modification may be an issue, while jeopardy is not, or consultations resulting from the new information about the potential presence of the species provided by the designation). Such consultations may, for example, be triggered in critical habitat areas that are not occupied by the species. All associated administrative and project modification costs of incremental consultations are considered incremental impacts of the designation.

The administrative costs of these consultations vary depending on the specifics of the project. One way to address this variability is to show a range of possible costs of consultation as it may not be possible to predict the outcome of each future consultation in terms of level of effort. Review of consultation records and discussions with Service field offices resulted in an estimated range of administrative costs of consultation as highlighted in Table A-1.

Table A-1: Range of Administrative Consultation Costs, 2006 Dollars

Consultation Type	Service	Federal Agency	Third Party	Biological Assessment
Informal	$1,100 - $3,400	$1,500 - $4,300	$1,200 - $2,900	$0 - $4,000
Formal	$3,400 - $6,700	$4,300 - $7,200	$2,900 - $4,100	$4,000 - $5,600

Note: Estimates reflect average hourly time required by staff.
Source: IEc analysis of full administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2006, and a review of consultation records from several Service field offices across the country conducted in 2002.

The above ranges in consultation costs represent effort required for all types of consultation, including those that considered both adverse modification and jeopardy, and are therefore not representative of the incremental administrative costs of consultation triggered specifically by critical habitat designation. To estimate the fraction of the administrative costs associated with consultation the following assumptions were applied. The costs of an incremental consultation (one only occurring because of the designation of critical habitat) are the greatest, as all costs associated with this consultation are included.

Re-initiation of a consultation is assumed to require approximately half the level of effort of the incremental consultation. This assumes that re-initiations are less time-consuming as the groundwork for the project has already been considered in terms of its effect on the species.

Efficiencies exist with considering both jeopardy and adverse modification at the same time (e.g., in staff time saved for project review and report writing), and therefore incremental administrative costs of considering adverse modification in consultations that will already be required to consider jeopardy result in the least incremental effort of these three consultation categories, roughly half that of a re-initiation.

The cost model in Table A-2 presents the estimated incremental costs of consultation for each of the three categories of consultation described above. Importantly, the estimated costs represent the midpoint of the ranges in Table A-1 to account for variability regarding levels of effect of specific consultation.[93]

Table A-2: Estimated Administrative Costs of Consultation (Per Effort), 2006 Dollars

Consultation Type	Service	Federal Agency	Third Party	Biological Assessment
Incremental consultation resulting entirely from critical habitat desgination				
Informal	$2,250	$2,900	$2,050	$2,000
Formal	$5,050	$5,750	$3,500	$4,800
Re-initiation of consultation to address adverse modification				
Informal	$1,120	$1,450	$1,020	$1,000
Formal	$2,520	$2,870	$1,750	$2,400
Additional effort to address adverse modification in a new consultation				
Informal	$560	$725	$510	$500
Formal	$1,260	$1,430	$875	$1,200

Note: Estimates reflect average hourly time required by staff.
Source: IEc analysis of full administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2006, and a review of consultation records from several Service field offices across the country conducted in 2002.

Section 7 Project Modification Impacts

Section 7 consultation considering critical habitat may also result in additional project modification recommendations specifically addressing potential destruction or adverse modification of critical habitat. For forecast consultations considering jeopardy and adverse modification, and for re-initiations of past consultations to consider critical habitat, economic impacts of project modifications undertaken to avoid, compensate for, or mitigate adverse modification are considered incremental impacts of critical habitat designation. For consultations that are forecast to occur specifically because of the designation (incremental consultations), impacts of all associated project modifications are assumed to be incremental impacts of the designation. This is summarized below.

[93] Absent specific information on the probability that a consultation will be closer to the low or high end of the range, presenting the midpoint effectively assumes there is an even distribution of the consultation falling at any given point on the spectrum between the low-end cost and high-end cost.

Additional effort to address adverse modification in a new consultation - Only project modifications associated solely with avoiding, compensating for, or mitigating adverse modification are considered incremental.

Re-initiation of consultation to address adverse modification - Only project modifications associated solely with avoiding, compensating for, or mitigating adverse modification are considered incremental.

Incremental consultation resulting entirely from critical habitat designation - Impacts of all project modifications are considered incremental.

Indirect Impacts

The designation of critical habitat may, under certain circumstances, affect actions that do not have a Federal nexus and thus are not subject to the provisions of section 7 under the Act. Indirect impacts are those unintended changes in economic behavior that may occur outside of the Act, through other Federal, State, or local actions, which are caused by the designation of critical habitat. This section identifies common types of indirect impacts that may be associated with the designation of critical habitat.

Habitat Conservation Plans

Under section 10(a)(1)(B) of the Act, a non-Federal entity (i.e., a landowner or local government) may develop an 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. The HCP intends to counterbalance potential harmful effects that a proposed activity may have on a species, while allowing the otherwise lawful activity to proceed. As such, the purpose of the habitat conservation planning process is to ensure that the effects of incidental take are adequately minimized and mitigated. Thus, HCPs are developed to ensure compliance with section 9 of the Act and to meet the requirements of section 10 of the Act.

HCPs are not required or necessarily recommended by a critical habitat designation. Some landowners, however, may voluntarily complete a HCP in response to the prospect of having their land designated as critical habitat. In this case, the effort involved in creating the HCP and undertaking associated conservation actions are considered an incremental effect of designation.

Other State and Local Laws

Under certain circumstances, critical habitat 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 impacts would not have been triggered absent critical habitat designation, they are considered indirect, incremental impacts of the designation.

The California Environmental Quality Act (CEQA), for example, requires that lead agencies, public agencies responsible for project approval, consider the environmental

effects of proposed projects that are considered discretionary in nature and not categorically or statutorily exempt. In some instances, critical habitat designation may trigger CEQA-related requirements. This is most likely to occur in areas where the critical habitat designation provides clearer information on the importance of particular areas as habitat for a listed species. In addition, applicants who were "categorically exempt" from preparing an Environmental Impact Report under CEQA may no longer be exempt once critical habitat is designated. In cases where the designation triggers the CEQA significance test or results in a reduction of categorically exempt activities, associated impacts are considered to be an indirect, incremental effect of the designation.

As an additional example, the California Coastal Act restricts development in an environmentally sensitive habitat area (ESHA). This code specifically states, "Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas."[94]

Additional Indirect Impacts

In addition to the indirect effects of compliance with other laws or triggered by the designation, project proponents, land managers and landowners may face additional indirect impacts, including the following:

Time Delays - Both public and private entities may experience incremental time delays for projects and other activities due to requirements associated with the need to reinitiate the Section 7 consultation process and/or compliance with other laws triggered by the designation. To the extent that delays result from the designation, they are considered indirect, incremental impacts of the designation.

Regulatory Uncertainty - The Service conducts each section 7 consultation on a case-by-case basis and issues a biological opinion on formal consultations based on species-specific and site-specific information. As a result, government agencies and affiliated private parties who consult with the Service under section 7 may face uncertainty concerning whether project modifications will be recommended by the Service and what the nature of these modifications will be. This uncertainty may diminish as consultations are completed and additional information becomes available on the effects of critical habitat on specific activities. Where information suggests that this type of regulatory uncertainty stemming from the designation may affect a project or economic behavior, associated impacts are considered indirect, incremental impacts of the designation.

Stigma - In some cases, the public may perceive that critical habitat designation may result in limitations on private property uses above and beyond those associated with anticipated project modifications and regulatory uncertainty described above. Public attitudes about the limits or restrictions that critical

[94] California Public Resources Code Section 30240, accessed at: http://law.justia.com/california/codes/prc/30240-30244.html, on September 7, 2007.

habitat may impose can cause real economic effects to property owners, regardless of whether such limits are actually imposed. All else equal, a property that is designated as critical habitat may have a lower market value than an identical property that is not within the boundaries of critical habitat due to perceived limitations or restrictions. As the public becomes aware of the true regulatory burden imposed by critical habitat, the impact of the designation on property markets may decrease. To the extent that potential stigma effects on markets are probable and identifiable, these impacts are considered indirect, incremental impacts of the designation.

A.3 Incremental Analysis of Critical Habitat for the Spineflower

Table A-3 summarizes each impact discussed in Chapters 2-7 and Appendix D and the reasoning for determining whether or not each impact is incremental, according to the framework described above. No incremental impacts of critical habitat designation for the spineflower are anticipated.

Table A-3: Monterey Spineflower Incremental Impacts

Activity	Report Section	Cost (PV, 3%)	Impact and Description	Incremental/ Not Incremental	Reason
Invasive Species	Chapter 2	$10,000	California Department of Parks and Recreation (CDPR): Sunset and Manresa: Future costs of maintaining invasive species control through herbicide application.	No	Part of CDPR natural resources mission which is explained in the 2001 Strategic Plan. Would occur regardless of critical habitat designation.
		$1,839,000	CDPR: Moss Landing, Marina, Asilomar: Impacts from controlling invasive species through herbicide treatment and hand removal	No	Part of CDPR natural resources mission which is explained in the 2001 Strategic Plan.
		$3,065,000	CDPR: Fort Ord Dunes State Park: Future impacts of carrying out the Fort Ord Dunes State Park General Plan and EIR.	No	Part of CDPR natural resources mission which is explained in the 2001 Strategic Plan.
		$19,000	Monterey County: Future impacts of continuing to remove invasive plants and maintain control.	No	Part of County and State invasive weed removal mission. Would occur regardless of critical habitat designation.
		$162,000	Caltrans: Future costs of controlling invasive species	No	Result of CEQA. If CalTrans keeps land, CalTrans will go through CEQA and have the land managed by a conservation agency through an endowment. If CalTrans sells land, recipient will have to go through CEQA review process due to presence of ESHA on the land. Management of land will occur regardless of critical habitat designation.
		$4,801,000	Landowners in unit 8: Army, BLM, UC, Monterey County. Costs of carrying out measures in the Fort Ord HCP	No	Part of Fort Ord HCP, which was not created in anticipation of critical habitat.
Recreation	Chapter 3	$24,400	CDPR: Sunset and Manresa: Future costs of maintaining boardwalks, signs, fences.	No	Part of CDPR natural resources mission which is explained in the 2001 Strategic Plan.
		$3,090,000	CDPR: Moss Landing, Marina, Asilomar: Impacts from monitoring for activities which may threaten native plants. Impacts from maintaining trails, boardwalks, sings and fences.	No	Part of CDPR natural resources mission which is explained in the 2001 Strategic Plan.
		Included in cost above	CDPR: Fort Ord Dunes State Park: Future impacts of carrying out the Fort Ord Dunes State Park General Plan and EIR. No past costs because CDPR will acquire land in near future.	No	Part of CDPR natural resources mission which is explained in the 2001 Strategic Plan.
		Included in cost above	Landowners in unit 8: Army, BLM, UC, Monterey County, City of Seaside. Costs of carrying measures in the Fort Ord HCP	No	Part of Fort Ord HCP, which was not created in anticipation of critical habitat.

Note: BEC does not anticipate consultation re-initiation post-critical habitat because the only land managers subject to a federal nexus (BLM and Army) are already consulting with the Service.

Appendix B: Economic Impacts on Small Businesses and Energy Production

This appendix considers the extent to which the analytic results presented in the previous sections reflect potential future impacts to small entities and the energy industry. The screening 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 for this analysis was gathered from the Small Business Administration (SBA), U.S. Census Bureau, and the Risk Management Association (RMA). The energy analysis in section B.2 is conducted pursuant to Executive Order No. 13211.

B.1 SBREFA Analysis

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 comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). 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. 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.

To assist in this process, the following represents a screening level analysis of the potential for spineflower conservation efforts to affect small entities. The analysis is based on the estimated impacts associated with the proposed rulemaking as described in Chapters 2 through 7 of the analysis. The analysis evaluates the potential for economic impacts related to seven categories:

- Invasive, nonnative plants species management;
- Management of recreational activities including foot traffic, camping, and off-road vehicles;
- Controlling overspray of pesticides;
- Munitions clean-up activities on former ranges that remove and chip all standing vegetation;
- Controlling unregulated vehicle parking on sand dunes; and
- Vegetation clearing associated with road and trail maintenance.

The following table identifies which landowners are considered small entities.

Table B-1: Size Standards for Potentially Affected Entities		
Entity	**SBA Size Standard**	**Meets SBA's Definition of a Small Entity?**
Department of the Army	Governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000	No
Bureau of Land Management		No
Caltrans		No
California Department of Parks and Recreation		No
University of California		No
Monterey County		No
Monterey Peninsula Regional Park District[1]		No
City of Pacific Grove		Yes
FORA (local agencies)[2]		Unknown
PG&E	Electric Utility: 4 million megawatt hours of total electric output for preceding fiscal year	No
Private Landowners, unit 5[3]	Business that is independently owned and operated and not dominant in field	No
Private Farm, unit 9[4]	Crop production: Annual revenue less than $0.75 million	Yes

Notes:

1. Monterey Peninsula Regional Park District (MPRPD) is funded by a tax on its District which includes seven incorporated cities in the Monterey Peninsula, Carmel Valley, and the Big Sur Coast. Population of MPRPD District exceeds 50,000.
2. The local agencies that will receive land from FORA are unknown at this time because the HCP is in draft form.
3. Individual private landowners in unit 5 are not considered small businesses for the purposes of this analysis.
4. The private farm that owns the land in PCH unit 9 is considered a small entity for the purposes of this analysis.

Sources:

1. SBA size standards for governments taken from SBA, Office of Advocacy, A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act, May 2003, p. 12. Size standard for NAICS codes 221122 taken from NAICS Association, "Small Business Size Standards - Matched to NAICS," at http://www.naics.com/sba_sizestandards.htm, May 16, 2007.
2. County and City population data obtained from U.S. Census Bureau: Population Finder, http://factfinder.census.gov/home/saff/main.html?_lang=en, May 16, 2007.
3. Monterey Peninsula Regional Park District website at: http://www.mprpd.org/history.htm, May 16, 2007.
4. Merrill Farms website at: http://merrillfarms.com, May 16, 2007.

Impacts of conservation efforts may affect the small entities identified above. As described in Chapters 2 through 7, the modifications to activities on lands owned by private entities and small governments could result in economic impacts to those landowners. The Department of the Army, Bureau of Land Management, California Department of Transportation, California Department of Parks and Recreation, University of California, Monterey County, Monterey Peninsula Regional Park District, PG&E, and the private landowners in unit 5 are not considered small entities by the Small Business Administration. Costs were not associated with the City of Pacific Grove or the private farmer in unit 9 because of the lack of a legal requirement for these landowners to conserve the spineflower in the future. The Fort Ord HCP is in draft form and the local agencies that will receive land from FORA in the future have not yet been identified. Whether or not those local agencies are considered small entities is unknown.

B.2 Potential Impacts to the Energy Industry

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."[95]

The Office of Management and Budget provides guidance for implementing this Executive Order, outlining nine outcomes that may institute "a significant adverse effect" when compared with the regulatory action under consideration:

- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- Reductions in natural gas production in excess of 25 million Mcf per year;
- Reductions in electricity production in excess of 1 billion kilowatt-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.[96]

PG&E owns 17 acres in unit 7 under a conservation easement. Energy-related impacts associated with conservation efforts within proposed critical habitat are not expected.

[95] 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.
[96] *Ibid.*

Appendix C: Past Economic Impacts

This appendix summarizes past economic impacts. Past costs are the costs of efforts to conserve the spineflower in the areas of proposed critical habitat from the time it was listed in 1994 until the year the Proposed Rule was published (2006). Past costs were estimated by interviewing the affected entities within critical habitat to determine if any resources had been expended on management or other activities intended to conserve the species. Past costs also include the value of any lost economic opportunities attributable to listing. A summary of past economic impacts are presented in the table below.

Table C-1: Summary of Estimated Past Economic Impacts

		Past Costs		
Landowner	**PCH Units**	**Undiscounted Dollars**	**Present Value (3%)**	**Present Value (7%)**
CDPR	1, 2, 3, 4, 6	$4,011,200	$4,875,400	$6,362,800
UC	8	$667,421	$767,022	$925,043
Army	8	$525,000	$557,000	$602,000
Caltrans	7	$7,000	$8,000	$9,000
Monterey County	7, 8	$800	$1,000	$1,100
BLM	8	$0	$0	$0
FORA	8	$0	$0	$0
Total		**$5,211,421**	**$6,208,422**	**$7,899,943**

Notes:
1. Guidance provided by the OMB specifies the use of a real discount 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, February 3, 2003).

Appendix D: Additional Proposed Critical Habitat

The Service is adding an additional 26 acres in Unit 2 to the final critical habitat designation for the Monterey Spineflower. Because these 26 acres were not included in the Proposed Rule, they are not considered in Chapters 2 through 7 of this report. This 26 acre area was, however, included in the original critical habitat designation.[97] The economic impacts of including this land in the revised critical habitat are discussed in this appendix.

Of these 26 acres, approximately 20 acres are owned by private entities and approximately 6 are under State ownership. Figures D-1 and D-2 show the location of the additional 26 acres in Unit 2 in relation to the originally proposed land in Unit 2. In the Proposed Rule, Unit 2 consisted only of State Beach Land. The additional 26 acres are owned by the California State Lands Commission (identified as "State Land" in Figure D-1) and private entities (identified as "Private Land" in Figure D-1).

[97] 67 FR 37525.

Figure D-1: Ownership in Proposed Critical Habitat Unit 2, Moss Landing

Figure D-2: Land Use in the Northern Portion of Proposed Critical Habitat Unit 2, Moss Landing

D.1 Private Land

Approximately 17.45 acres in Unit 2 are owned by a company identified in the Monterey County assessor parcel data as Capurro Properties LLC. Approximately 2.14 acres are owned by a company identified in the Monterey County assessor parcel data as C&M Land Co LLC.[98] Capurro Farms is the parent company that owns Capurro Properties, LLC.[99] Because of C&M Land Co LLC's affiliation with Capurro Farms,[100] this analysis assumes the 2.14 acre parcel is managed congruent with the 17.45 acre parcel.

Capurro Farms is a grower, packager, and shipper of mixed vegetables.[101] According to Capurro Farms, operations in and around these 20 acres comply with regulations aimed at conserving the dune habitat in general; however, none of the regulations were developed in consideration of the spineflower or its habitat. Management at Capurro Farms was unaware of the previous designation of critical habitat for the spineflower on its land.[102] As such, this analysis does not anticipate impacts on economic activities in the privately owned land proposed for critical habitat designation in Unit 2.

D.2 Local Government Land

The 6.41 acres identified as "State Land" in Figure D-1 are currently owned by the California State Lands Commission.[103] As shown in the image in Figure D-2, this area consists of undisturbed dune habitat. Any economic activities that may be occurring on this land are not expected to be affected by the critical habitat designation.

[98] Monterey County Assessor's Parcel Data provided by the Service on November 21, 2007.
[99] Personal communication from Capurro Farms, December 3, 2007.
[100] California Business Portal website at:
http://kepler.ss.ca.gov/corpdata/ShowLpllcAllList?QueryLpllcNumber=200033710067, site accessed December 3, 2007.
Western Growers Association website at:
http://www.wga.com/Portals/0/DocumentLibrary/26295%20WGS_Oct%2007%205.pdf, site accessed December 3, 2007.
[101] Capurro Farms website at: http://www.capurromkt.com, site accessed December 3, 2007.
[102] Personal communication from Capurro Farms, December 3, 2007.
[103] Electronic communication from Service GIS Specialist, November 30, 2007.