Economic Analysis of Critical Habitat Designation for Monterey Spineflower

Monterey and Santa Cruz Counties, California

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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.

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 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

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[1] 67 FR 37498.

[2] 71 FR 75189.

[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.

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. Appendix B provides estimates of past costs.

Key Findings

Total Estimated Impacts: The draft 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	$10,450,400	$8,006,903	$5,922,842	$522,514	$522,499
Army	$3,500,000	$2,681,665	$1,983,729	$175,000	$175,000
UC	$1,483,782	$1,136,859	$840,978	$74,189	$74,189
BLM	$827,083	$633,703	$468,774	$41,354	$41,354
FORA	$279,861	$214,427	$158,620	$13,993	$13,993
Caltrans	$211,749	$162,240	$120,015	$10,587	$10,587
Monterey County	$198,847	$152,343	$112,681	$9,942	$9,940
Total	**$16,951,722**	**$12,988,139**	**$9,607,638**	**$847,580**	**$847,564**

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) Undiscounted Dollars	Future Costs (20 year time frame) Present Value (3%)	Future Costs (20 year time frame) Present Value (7%)	Annualized Costs (20 year time frame) Annualized (3%)	Annualized Costs (20 year time frame) Annualized (7%)
8	$6,265,032	$4,800,205	$3,550,893	$313,252	$313,252
3	$6,144,800	$4,708,084	$3,482,748	$307,240	$307,240
4	$2,144,800	$1,643,324	$1,215,629	$107,240	$107,240
2	$2,144,800	$1,643,324	$1,215,629	$107,240	$107,240
7	$236,290	$181,031	$133,903	$11,814	$11,813
6	$9,000	$6,829	$4,926	$446	$435
1	$7,000	$5,341	$3,909	$349	$345
5	$0	$0	$0	$0	$0
9	$0	$0	$0	$0	$0
Total	**$16,951,722**	**$12,988,139**	**$9,607,638**	**$847,580**	**$847,564**

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).

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

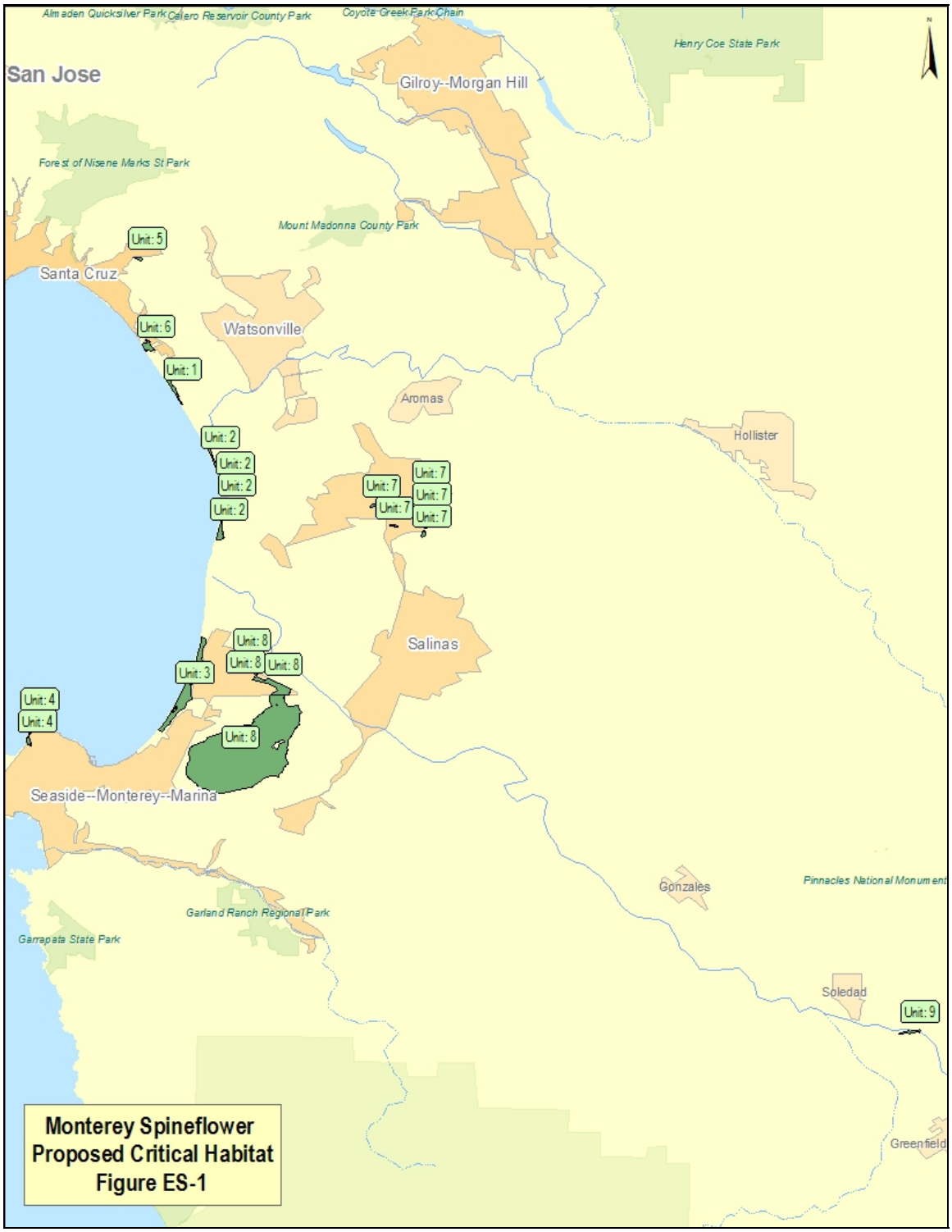


Figure ES-2: Land Ownership in Proposed Critical Habitat Unit 1, Sunset

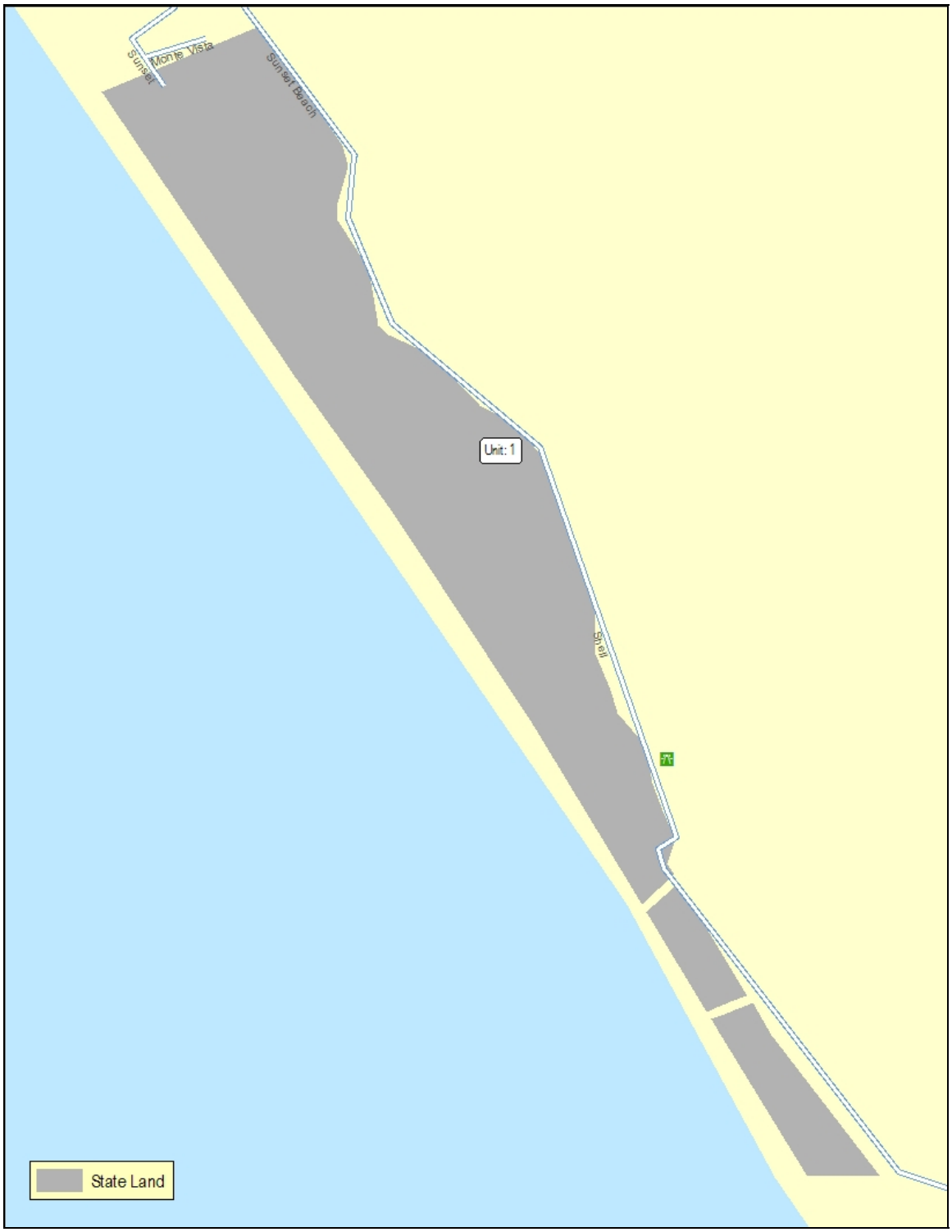


Figure ES-3: Land Ownership in Proposed Critical Habitat Unit 2, Moss Landing

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

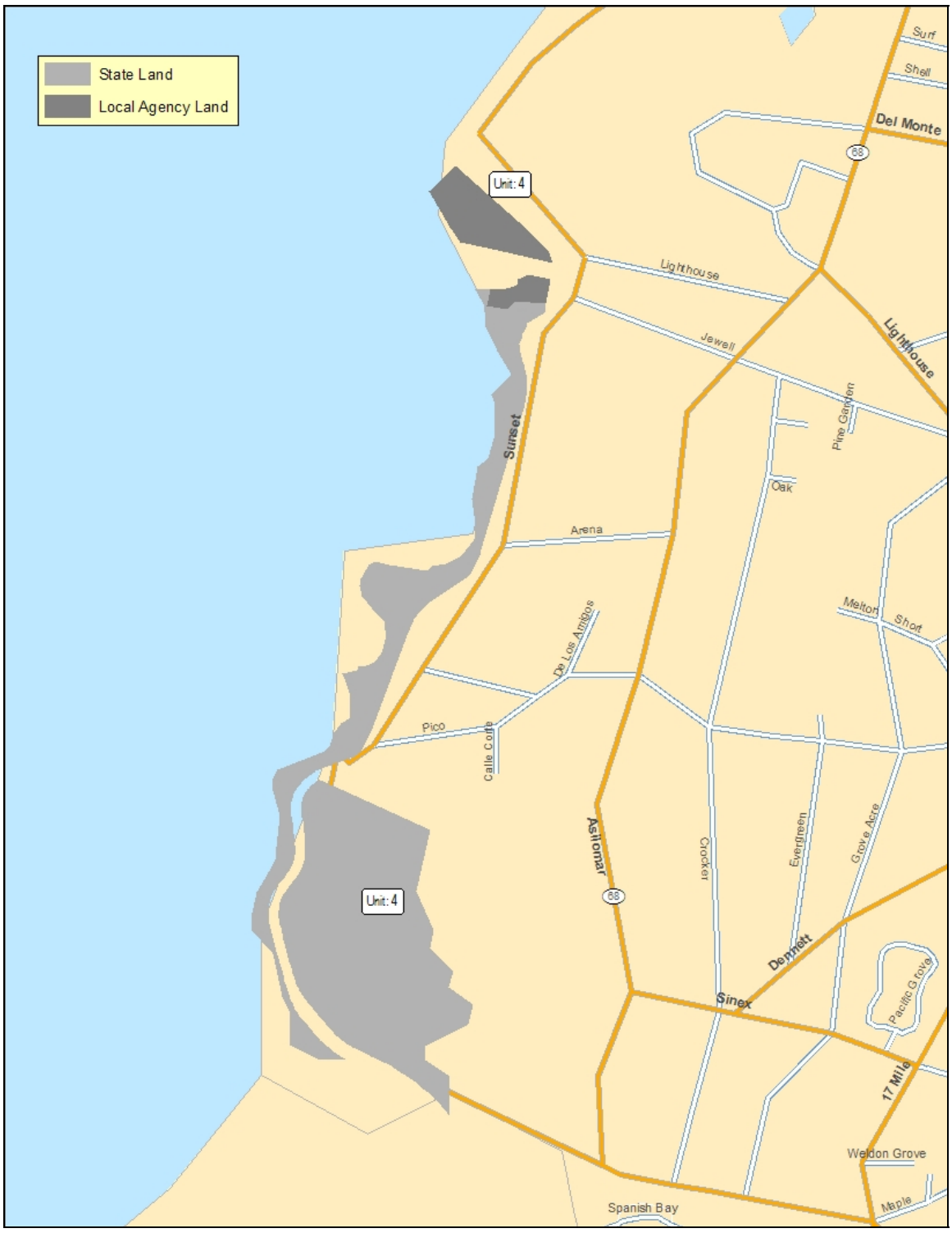


Figure ES-6: Land Ownership in Proposed Critical Habitat Unit 5, Freedom Blvd.

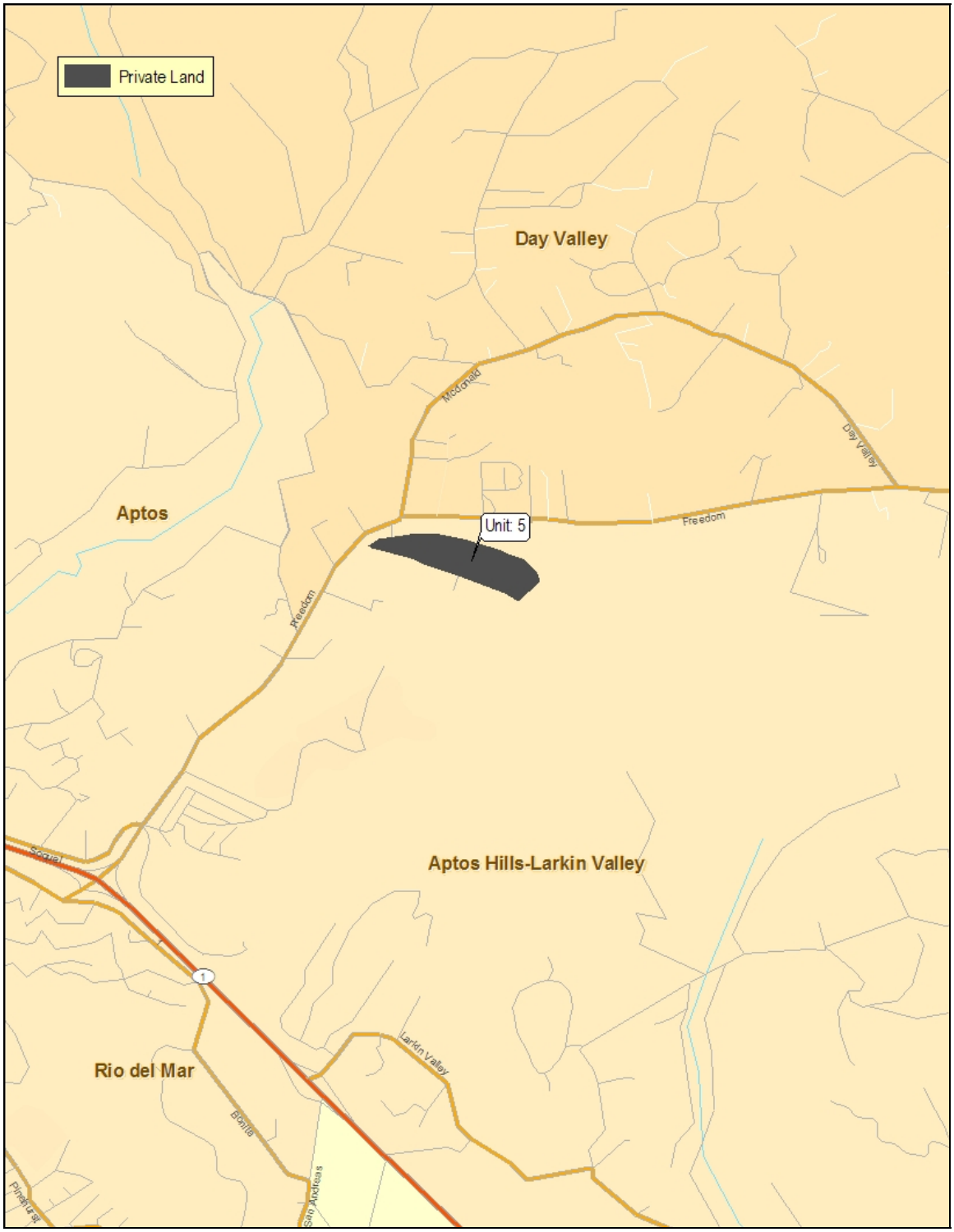


Figure ES-7: Land Ownership in Proposed Critical Habitat Unit 6, Manresa

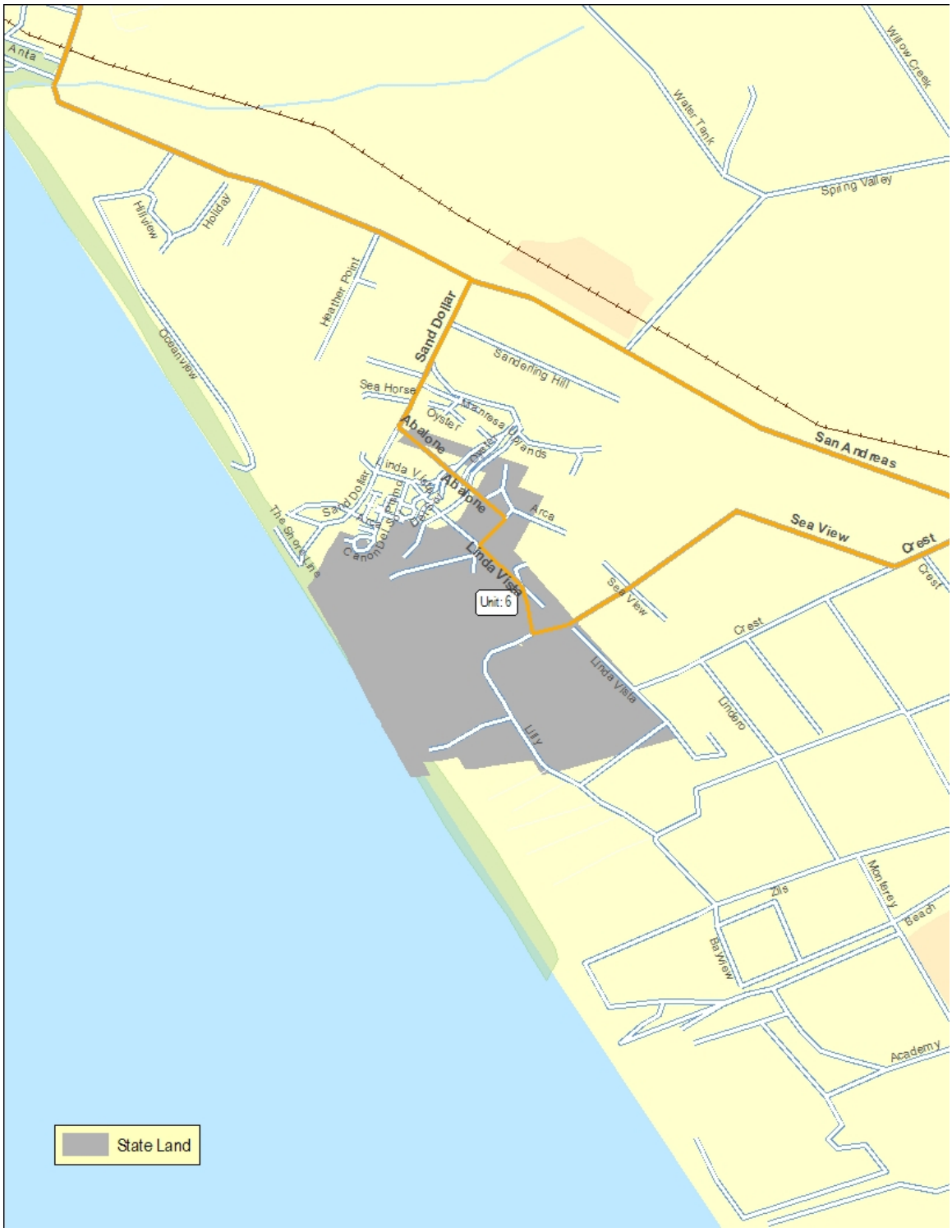


Figure ES-8: Land Ownership in Proposed Critical Habitat Unit 7, Prunedale

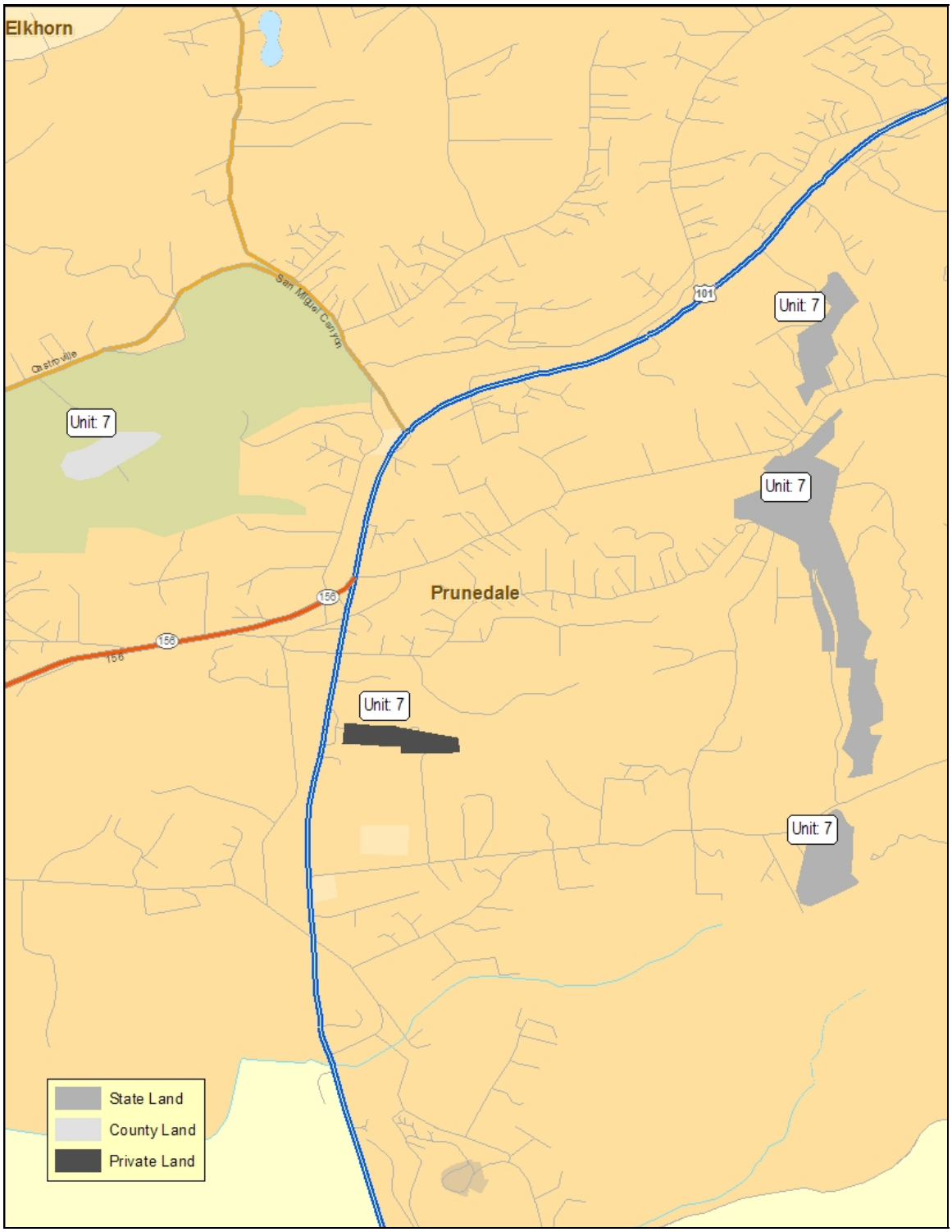


Figure ES-9: Anticipated Future Land Ownership in Proposed Critical Habitat Unit 8, Fort Ord

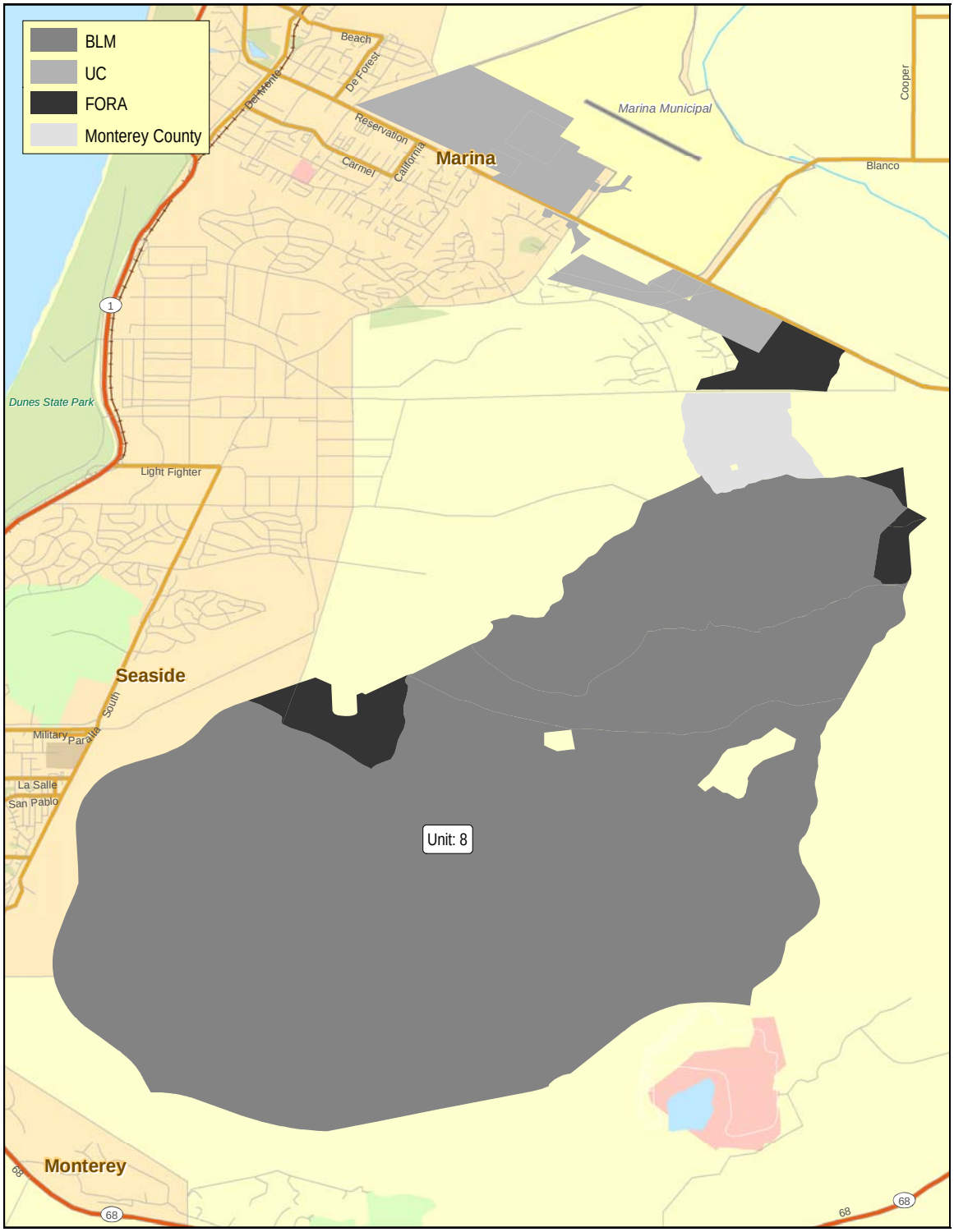
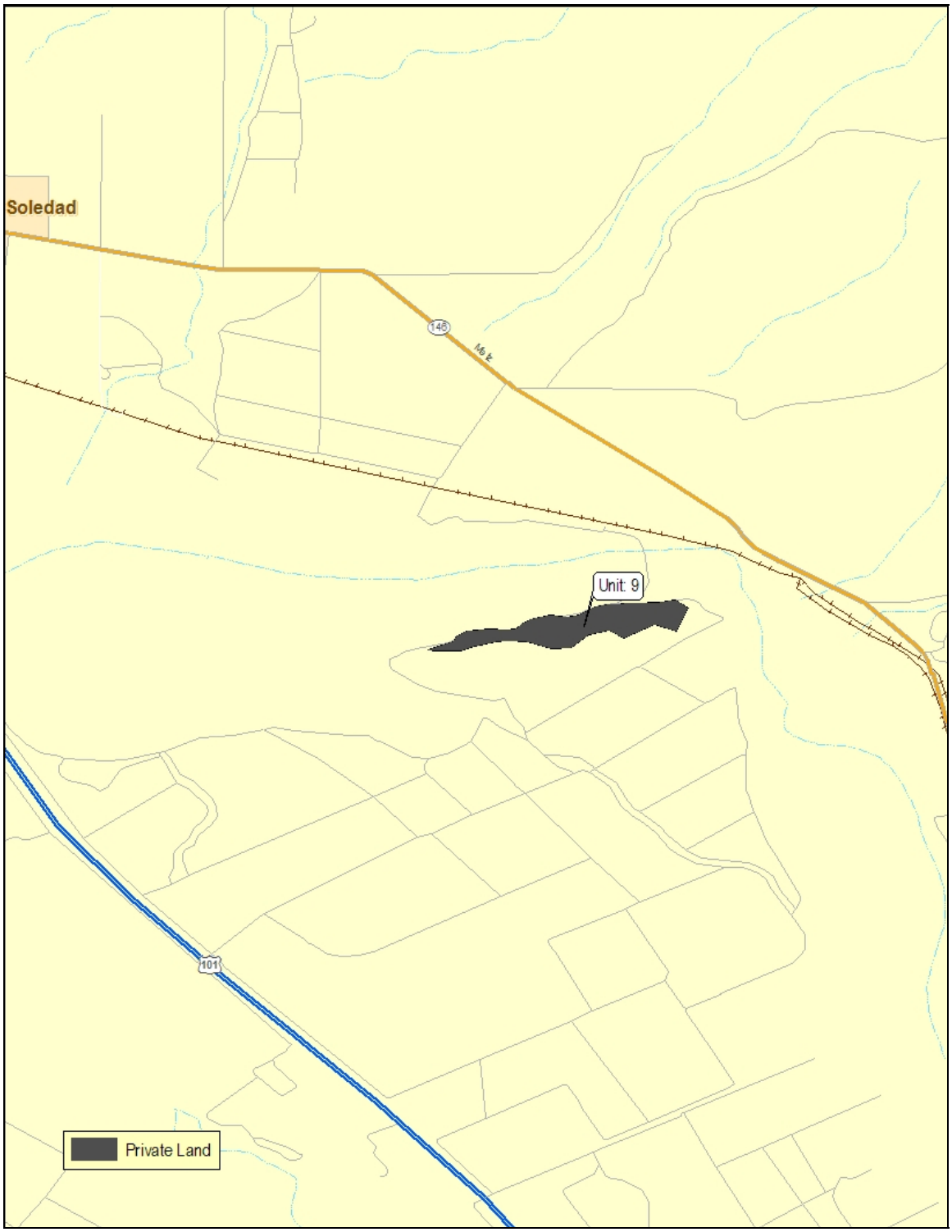


Figure ES-10: Land Ownership in Proposed Critical Habitat Unit 9, Soledad



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 (CHD) is finalized.

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.[1] 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).[2] 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.[3]

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.

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[1] 16 U.S.C. §1533(b)(2).

[2] 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.

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

1.1 Background

1.1.1 Regulatory History

On February 4, 1994, the Service published the final rule listing the spineflower as threatened.[4] 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.[5] 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.[6]

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.[7] 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 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

[4] 59 FR 5499

[5] 67 FR 37498

[6] 71 FR 75192

[7] 71 FR 75189

in Table 2 which presents landownership in each unit.[8] 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	Total Acres	Landowner / 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 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

[8] 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.

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.[9]

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.[10] Table 3 below presents the threats to the spineflower and their associated PCH 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

[9] 71 FR 75196.

[10] *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.[11]

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 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

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

quantity of housing supplied in the region. In this case, changes in economic efficiency (i.e., social welfare) can be measured by considering changes in producer and consumer surplus in the market. 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.[12] 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.[13]

[12] 5 U.S.C. § 601 *et. seq.*

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

Calculating Present Value and Annualized Impacts

For each land use activity, this analysis compares economic impacts incurred in different time periods in present value terms. The present value 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).

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[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 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.[14,15]

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

1.5.1 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."[16] 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."[17]

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[14] 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)).

[15] 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.

[16] 16 U.S.C. §1533.

[17] 16 U.S.C. §1533.

- 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.[18]

- 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."[19]

- 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 order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property.[20]

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.[21] For the purpose of this analysis, such protective

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[18] 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.

[19] 16 U.S.C. §1532.

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

[21] 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.

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 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.

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.[22] 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.[23]

In the context of CHD, 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.[24] *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

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

[23] 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.

[24] *Ibid.*

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.

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: SBREFA Screening Analysis and Impacts to the Energy Industry; and
- Appendix B: Past Economic Impacts.

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.[25]

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 $13.0 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.[26] Thus, total past costs in Sunset State Beach of removing invasive species are estimated to be $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.[27]

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

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[25] 71 FR 75197 - 75199.

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

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

each beach to carry out invasive species removal actions, which have demanded 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.[28] 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.[29] 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.[30]

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.[31] 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

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

[29] 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.

[30] *Ibid*.

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

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 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.[32] 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, Weed Division, in Manzanita Park, is responsible for invasive species control. 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 PCH 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 critical habitat in Manzanita Park.[33] 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 to use as mitigation for future road construction projects elsewhere, of which 155 acres is proposed as critical habitat for the spineflower. Caltrans anticipates owning and managing the land for the foreseeable future.[34]

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

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

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

Past Costs

Caltrans currently monitors the status of invasive species on their land, 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.[35]

Future Costs

Caltrans biologists state that a program will likely need to be developed and implemented to control the spread of invasive plants in the future. However, Caltrans could not estimate what such a program would cost.[36] This analysis assumes management 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 to Caltrans of controlling invasive species on 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.[37] 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 undiscounted past costs of $525,000 are estimated by taking the sum of the average annual cost ($175,000).[38]

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

[35] *Ibid.*

[36] *Ibid.*

[37] 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.

[38] 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.

other species in the former Fort Ord area.[39] 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.[40] Assuming that, on average, the Army will spend $175,000 on care taking activities for the spineflower, management costs in this unit for the Army are anticipated to be $3.5 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.[41] 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[42] in undiscounted dollars (totaling approximately $827,000 over 20 years in undiscounted dollars).[43] 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 Cruz Natural Reserve System.[44] UC Santa Cruz operates in compliance with the Fort Ord Habitat Management Plan (HMP), which was developed to protect natural resources,

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[39] 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.

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

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

[42] *Ibid.*

[43] These figures have been rounded.

[44] 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.

including the spineflower and its habitat. When the HCP is finalized, it will replace the HMP in providing conservation guidance.[45]

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.[46] 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, total future costs to conserve the spineflower on UC lands is anticipated to be $1.5 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 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

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

[46] 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.

(such as Monterey County or Monterey Peninsula College) in the future. The local agency recipients have not yet been determined.[47]

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.[48] 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 that 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.

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

[48] 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	$136,005	$155,380	$184,786	$6,000	$4,597	$3,401	$300	$300
	2 Moss Landing	$480,000	$584,712	$765,626	$800,000	$612,952	$453,424	$40,000	$40,000
	3 Marina	$480,000	$584,712	$765,626	$800,000	$612,952	$453,424	$40,000	$40,000
	3 Fort Ord Dunes SP[1]	$0	$0	$0	$4,000,000	$3,064,760	$2,267,119	$200,000	$200,000
	4 Asilomar	$480,000	$584,712	$765,626	$800,000	$612,952	$453,424	$40,000	$40,000
	6 Manresa	$4,182	$4,438	$4,795	$6,000	$4,597	$3,401	$300	$300
Monterey County	7 Prunedale	$787	$965	$1,058	$24,541	$18,792	$13,888	$1,226	$1,225
Caltrans	7 Prunedale	$7,000	$7,892	$9,260	$211,749	$162,240	$120,015	$10,587	$10,587
Army	8 Fort Ord	$525,000	$557,135	$601,990	$3,500,000	$2,681,665	$1,983,729	$175,000	$175,000
BLM	8 Fort Ord	$0	$0	$0	$827,083	$633,703	$468,774	$41,354	$41,354
UC	8 Fort Ord	$667,421	$767,022	$925,043	$1,483,782	$1,136,859	$840,978	$74,189	$74,189
Monterey County	8 Fort Ord	$0	$0	$0	$174,306	$133,551	$98,793	$8,715	$8,715
FORA	8 Fort Ord	$0	$0	$0	$279,861	$214,427	$158,620	$13,993	$13,993
Total		**$2,780,395**	**$3,246,967**	**$4,023,809**	**$12,913,322**	**$9,894,046**	**$7,318,988**	**$645,665**	**$645,664**

Notes:

1. Land owned 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

The Proposed Rule states that recreational activities, such as foot traffic, camping, and off-road vehicles, could result in the trampling of plants and may require special management considerations or protections.[49] 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 $4.0 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 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.[50]

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).[51]

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 ten percent to 30 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

[49] 71 FR 75197 - 75199.

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

[51] 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.[52,53]

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.[54] 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.[55]

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 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 $1.3 million in undiscounted dollars.

In the former Fort Ord area that will be part of PCH 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.

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[52] Rangers' annual salary is $52,800. Thirty percent of 52,800 is $15,840. There are 4 rangers in each of the State Beaches in the CDPR Monterey District that are proposed for critical habitat.

[53] 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.

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

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

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.[56] 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 of 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.[57] 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.[58]

3.4 Monterey County and FORA (Unit 8)

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.

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[56] 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.

[57] 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.

[58] Personal communication from Maggie Fusari, Director, Fort Ord natural Reserve, April 27, 2007.

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	$11,593	$14,026	$1,000	$744	$508	$49	$45
	2 Moss Landing	$806,880	$982,900	$1,287,017	$1,344,800	$1,030,372	$762,205	$67,240	$67,240
	3 Marina	$806,880	$982,900	$1,287,017	$1,344,800	$1,030,372	$762,205	$67,240	$67,240
	4 Asilomar	$806,880	$982,900	$1,287,017	$1,344,800	$1,030,372	$762,205	$67,240	$67,240
	6 Manresa	$0	$0	$0	$3,000	$2,232	$1,525	$146	$135
Total		**$2,430,640**	**$2,960,293**	**$3,875,076**	**$4,038,400**	**$3,094,093**	**$2,288,650**	**$201,914**	**$201,899**

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.[59] 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.[60]

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.[61]

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.[62]

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.[63] Usage labels indicate

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[59] 71 FR 75199.

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

[61] *Ibid.*

[62] *Ibid.*

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

appropriate application methods and conditions for target species and areas. California's Food and Agriculture code also prevents substantial drift of the pesticide to non target areas.[64]

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 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.[65]

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. [66]

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.[67]

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. [68]

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 landowner

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[64]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.

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

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

[67] *Ibid.*

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

in unit 9, pesticide application methods in the surrounding agricultural land are in compliance with all applicable regulations.[69] Absent data that current application processes threaten the spineflower, or that the grower is out of compliance with existing restrictions, there is no foreseeable cost associated with this threat.

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.[70] 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."[71]

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.[72]

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

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

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

[71] 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.

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

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.[73] 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.[74] 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.[75]

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.

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.

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[73] 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.

[74] 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.

[75] 71 FR 75199.

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.[76] 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.[77] 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.

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[76] 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.

[77] 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: 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 A.2 is conducted pursuant to Executive Order No. 13211.

A.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 A-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 small likelihood that those landowners would 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.

A.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."[1]

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.[2]

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.

[1] 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.
[2] *Ibid.*

Appendix B: 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 B-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	$4,010,827	$4,874,247	$6,361,534
UC	8	$667,421	$767,022	$925,043
Army	8	$525,000	$557,135	$601,990
Caltrans	7	$7,000	$7,892	$9,260
Monterey County	7, 8	$787	$965	$1,058
BLM	8	$0	$0	$0
FORA	8	$0	$0	$0
Total		**$5,211,035**	**$6,207,261**	**$7,898,885**

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).