Draft Economic Analysis of Critical Habitat Designation for the Coachella Valley Milk-Vetch

Prepared for:

U.S. Fish and Wildlife Service
Division of Economics
Arlington, Virginia

Prepared by:

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This report addresses the economic effects associated with the proposed designation of critical habitat for the Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae,* hereafter "CVMV"). The U.S. Fish and Wildlife Service (hereafter "Service") published a proposed rule designating critical habitat for the CVMV in the *Federal Register* on December 14, 2004.[1] The purpose of this report is to identify and estimate the economic effects associated with the proposed designation of critical habitat for the CVMV. The analysis attempts to quantify the economic effects associated with the proposed critical habitat designation (CHD). 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. Economic costs are measured here in terms of the impacts of the listing and the CHD on the efficient use of society's resources, as well as how those costs are distributed across segments of society. This analysis is intended to assist the Secretary in determining whether the benefits of excluding particular areas from the final designation outweigh the biological benefits of including those areas in the final designation.

The CVMV is an erect winter annual or short-lived perennial plant in the pea family (*Fabaceae)* that grows about eight to twelve inches tall. The CVMV produces deep pink-purple flowers as early as December, with flowering continuing into May.[2] The CVMV is found on loose wind-blown or alluvial sands located in dunes or flats, and also along disturbed margins of sandy washes. The range of the CVMV is restricted to the northern Coachella Valley, and, to a limited extent, the Chuckwalla Valley.[3] The Service proposed endangered status for the CVMV on May 8, 1992, in a proposed rule which included six other desert milk-vetch taxa from California and Nevada. Following an extended comment period, the Service published a final rule listing the CVMV as endangered in the October 6, 1998, edition of the Federal Register.[4]

SCOPE OF THE ANALYSIS

The CVMV critical habitat economic analysis applies a distinct analytical framework, as outlined in Section 1.2. The framework includes the following elements:

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1 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register,* Vol. 69, No. 239, pp. 74468-74491.

2 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*.

3 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register,* Vol. 69, No. 239, pp. 74468-74491.

4 U.S. Fish and Wildlife Service, October 6, 1998, "Determination of Endangered or Threatened Status for Five Desert Milk-vetch Taxa From California" *Federal Register*, Vol. 63, No. 193, pp. 53596-53615.

- Consistent with recent court rulings, the analysis includes impacts that occur co-extensively with the listing under the Act.[5] Enforcement actions taken in response to violations of the Act are not included.

- The analysis considers conservation and protection efforts for the CVMV. No distinction is made between impacts that occur due to listing and those that result from the CHD. It also includes any protective measures taken as a result of other Federal, State, or local laws that aid habitat conservation in the areas identified in the proposed rule, and may therefore be coextensive with the designation.

- Inevitably, actions taken to protect CVMV provide biological benefits to other species. Where possible, this analysis allocates the costs of conservation actions by (1) focusing on the impacts of species and habitat conservation efforts; and (2) excluding activities implemented prior to the final CVMV listing in October 1998. Finally, when conservation efforts are implemented in areas of habitat overlap between CVMV and other listed species, the analysis includes the full costs of the conservation efforts as co-extensive with CVMV and other listed species.

- Both pre-designation and post-designation costs are considered. Pre-designation costs include those that have accrued since the time that the CVMV was listed as endangered (October 1998), but prior to the final designation of critical habitat (November 2005). Post-designation effects include likely future costs associated with CVMV conservation efforts following the final designation of critical habitat in November 2005, effectively 2006 through 2025.

- The geographic scope of the analysis reflects distinct areas identified as essential to the conservation of the CVMV, including both lands proposed for critical habitat and lands excluded from the proposed CHD. These essential habitat lands are all located within Riverside County, California. Also included in the analysis are unoccupied areas in Riverside and San Bernardino counties identified by the Service for possible inclusion in the CHD (see Section 1.8.5). Each of the three land types considered here are analyzed and presented separately.

- The geographic unit of analysis for proposed critical habitat, lands excluded from proposed critical habitat, and unoccupied areas identified for possible inclusion as critical habitat, is the area defined by the Service as each of three critical habitat units. These units are shown on Map 1 in the Map Attachment to this report.

- The localized economic efficiency effects reflect impacts in the areas specifically identified as critical habitat, as well as those essential habitat lands excluded from proposed critical habitat, and those lands identified for possible inclusion. However, efforts occurring in adjacent land or

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[5] That is, the analysis includes activities or efforts intended to protect the species, as well as those for its habitat.

beyond the boundaries of the proposed critical habitat with the potential to affect attributes within essential habitat, such as water quantity and quality, are also considered when appropriate.

- This analysis utilizes a "with" and "without" framework, and emphasizes those effects that are determined to be attributable to CVMV conservation efforts. Impacts that would have occurred without the CVMV listing and CHD are evaluated on a case-by-case basis to determine if they are driven, in part, by conservation efforts for the CVMV.

- The period of analysis and discounting is guided by the availability of information concerning the start date and duration of each activity. Each potential cost component is examined over the time period that is appropriate for that specific activity or investment. Some of these are costs that are incurred one time only, while others are recurring. These costs are presented in undiscounted dollars, and also as net present values and annualized costs, using three and seven percent discount rates.

PROPOSED CRITICAL HABITAT

The Service has identified 20,561 acres of habitat in Riverside County as essential for the conservation of the CVMV ("essential habitat").[6] Portions of the essential habitat are expected to be covered by conservation areas identified in the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP) when it is finalized; a total of 16,978 acres have been excluded from the proposed CHD as a result of species protection and mitigation requirements identified in the draft MSHCP. The remaining area of 3,583 acres of land not covered by the MSHCP, represents the essential habitat proposed as critical habitat for the CVMV.[7]

Proposed critical habitat and excluded areas are divided among three units as described briefly below and shown in Map 1 of the Map Attachment to this report. The units are described in greater detail in Section 1.8 of the report as well as the proposed rule.

Unit 1: Whitewater River

Unit 1, the Whitewater River Unit, includes approximately 9,625 acres of essential habitat, of which 2,921 is proposed as critical habitat. This unit is identified by the Service as essential to species conservation because it is part of a complete sand transport system for the Whitewater River System that

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6 Calculated through GIS analysis of proposed critical habitat and excluded area, and land ownership coverages provided by the Service on May 20, 2005. This total differs slightly from that presented in the proposed rule (20,559 acres). The difference can be attributed to rounding.

7 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, pp. 74468-74491.

is occupied by the CVMV. Threats to the CVMV in this unit include the obstruction of major channels by sand mining operations and competition from invasive weeds. Over 80 percent of the lands proposed for critical habitat in this unit (approximately 2,437 acres) are managed by the Bureau of Land Management (BLM). Of the approximately 6,704 acres in Unit 1 excluded from the proposed CHD, over 99 percent, or approximately 6,651 acres, are privately owned.

Unit 2: Mission Creek and Morongo Wash

Unit 2, the Mission Creek and Morongo Wash Unit, includes approximately 5,836 acres of essential habitat, of which 605 acres is proposed as critical habitat. The Service identifies this unit as essential because it is part of the complete sand transport system for the Mission Creek/Morongo Wash System that is occupied by the CVMV. Threats to the CVMV in this unit include the loss of sand transportation to maintain suitable habitat and the invasion of exotic weeds. Proposed critical habitat in this unit is comprised mostly of land managed by the BLM (415 acres, or nearly 70 percent), with the remainder privately owned. Almost all of the approximately 5,231 acres of essential habitat in Unit 2 excluded from proposed critical habitat is privately owned.

Unit 3: Thousand Palms

The Service has identified approximately 5,100 acres of essential habitat in Unit 3, the Thousand Palms Unit, of which approximately 57 acres are proposed as critical habitat. The unit is identified as essential because it is part of a sand transport system that supports several large populations of the CVMV, and it is located in the easternmost portion of the CVMV range in the Coachella Valley. Fluvial transport of sediment and the eolian sand transport corridor in the Thousand Palms area face potential threats in Unit 3. Lands managed by the BLM (approximately 24 acres) and the Service (approximately 31 acres) comprise most of the proposed critical habitat. Of the approximately 5,043 acres of essential habitat in Unit 3 that is excluded from the proposed CHD, about 70 percent is managed by the Service (approximately 3,548 acres), with the remainder mostly in State and private ownership.

Unoccupied Areas Identified for Possible Inclusion

In addition to the essential habitat discussed above, the Service has also identified approximately 35,810 acres of unoccupied areas for possible inclusion in the CHD for the CVMV. The proposed rule states that "the species depends on sand being continually replenished from outside the areas it occupies."[8] The Service has identified areas that serve as a source for this sand and requested comment on whether these unoccupied areas should also be included in the final designation of critical habitat for the CVMV. These areas are described in Section 1.8.5 of the report as well as the proposed rule, and shown on Map 1 in the

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[8] U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, p. 74480.

Map Attachment to this report. Economic impacts related to CVMV conservation in these unoccupied areas are analyzed and presented separately throughout the report.

SUMMARY OF RESULTS

This section addresses the economic effects of conservation efforts attributable to both the listing of the CVMV under the Act (pre-designation) and the designation of critical habitat (post-designation). All costs are presented in 2005 dollars. Total post-designation costs are presented in undiscounted dollars, and as present values applying both three percent and seven percent discount rate. Annualized post-designation costs are also presented using three percent and seven percent discount rates. The analysis measures effects on residential and commercial development, flood control facilities, water supply development, energy development, public lands management, and transportation.

RESULTS BY ACTIVITY

Pre-Designation Impacts

Table ES-1 provides a summary of the economic impacts due to CVMV conservation efforts in proposed critical habitat, excluded habitat, and unoccupied areas for each of the activities analyzed. Pre-designation impacts in proposed critical habitat total $2.5 million, of which $1.0 million are incurred on public lands. Pre-designation costs among excluded habitat are about $7.8 million, concentrated on flood control projects. Public land costs in the unoccupied areas include $26.8 million for the purchase of sand source lands in the vicinity of Unit 3, and account for nearly all of those costs. The water supply costs in proposed critical habitat and excluded habitat are associated primarily with a conservation easement on Coachella Valley Water District (CVWD) land, while the flood control costs are associated with a proposed CVWD project adjacent to the western boundary of Unit 3. The remaining pre-designation costs are split among development, energy, transportation, and HCPs.

Post-Designation Impacts

As indicated in Table ES-1, post-designation costs in proposed critical habitat are estimated to total $7.8 million in undiscounted dollars.[9] This amounts to $4.2 million when using a seven percent discount rate, and $5.8 million when using a three percent discount rate. Annualized costs are estimated to be approximately $0.4 million at both a seven and three percent discount rate. Costs associated with public lands management and transportation account for the largest shares of the annualized post-designation costs. Other activities incurring conservation costs include energy, water supply, and habitat conservation plans. A relatively small amount is incurred by flood control and development.

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[9] "Undiscounted" dollars represent the sum of the future costs in 2005 dollars that are not adjusted for inflation (expected changes in purchasing power).

Within excluded habitat, post-designation costs are considerably higher than in the proposed critical habitat largely due to the relative sizes of two categories. In undiscounted dollars, an estimated impact of $16.7 million is anticipated. This amounts to $11.9 million when applying a seven percent discount rate, and $14.1 million with a three percent rate. The annualized equivalent ranges from $1.1 million using seven percent, and $0.9 million using a three percent discount rate. The costs in excluded habitat are concentrated in flood control projects, transportation, and water supply.

The unoccupied areas will incur only costs associated with development, in the amount of $0.4 million in undiscounted dollars. Total costs are $0.2 to $0.3 million using a seven and three percent discount rate, respectively. Annualized costs are about $18 to $19 thousand per year at seven and three percent discount rate.

Table ES-1
Summary of Conservation Costs for CVMV, by Activity

Activity	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
Development	$0	$33,300	$24,300	$17,000	$1,600	$1,600
Flood Control	$46,700	$81,300	$78,900	$76,000	$5,300	$7,200
HCP	$0	$480,100	$332,600	$215,500	$22,400	$20,300
Public Lands	$1,012,000	$2,530,000	$1,882,000	$1,340,100	$126,500	$126,500
Transportation	$455,900	$1,575,600	$1,369,900	$1,162,400	$92,000	$109,700
Energy	$265,000	$1,510,800	$1,123,800	$800,300	$75,500	$75,500
Mining	$0	$0	$0	$0	$0	$0
Water Supply	$769,600	$1,569,600	$1,023,500	$609,400	$68,700	$57,400
Total - Proposed Critical Habitat	**$2,549,200**	**$7,780,700**	**$5,835,000**	**$4,220,600**	**$392,000**	**$398,200**
Excluded Habitat						
Development	$0	$262,300	$191,700	$133,600	$12,900	$12,600
Flood Control	$4,061,700	$7,068,700	$6,862,800	$6,606,300	$461,300	$623,600
HCP	$0	$1,570,000	$1,087,300	$704,500	$73,100	$66,500
Public Lands	$0	$0	$0	$0	$0	$0
Transportation	$1,938,800	$4,075,100	$3,533,500	$2,994,300	$237,500	$282,700
Energy	$7,000	$0	$0	$0	$0	$0
Mining	$0	$0	$0	$0	$0	$0
Water Supply	$1,793,200	$3,730,300	$2,444,100	$1,466,400	$164,300	$138,400
Total - Excluded Habitat	**$7,800,700**	**$16,706,400**	**$14,119,400**	**$11,905,000**	**$949,100**	**$1,123,800**
Essential Habitat - Not Allocated	$4,482,600	$0	$0	$0	$0	$0
Unoccupied Areas						
Development	$0	$380,600	$278,100	$193,800	$18,700	$18,300
Flood Control	$0	$0	$0	$0	$0	$0
HCP	$0	$0	$0	$0	$0	$0
Public Lands	$26,769,800	$0	$0	$0	$0	$0
Transportation	$0	$0	$0	$0	$0	$0
Energy	$32,500	$0	$0	$0	$0	$0
Mining	$0	$0	$0	$0	$0	$0
Water Supply	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$26,802,300**	**$380,600**	**$278,100**	**$193,800**	**$18,700**	**$18,300**

Note: Numbers may not sum due to rounding.

RESULTS BY CRITICAL HABITAT UNIT

Pre-Designation Impacts

Table ES-2 provides a summary of the economic impacts due to CVMV conservation efforts by habitat unit. The costs include all of the categories of impacts shown in Table ES-1. Pre-designation costs in the proposed critical habitat are concentrated in Unit 1 (at $1.7 million) and Unit 3 ($0.6 million). Pre-designation costs in Unit 1 are associated primarily with transportation and development. Within the excluded habitat, the approximately $7.8 million in costs are distributed across Unit 3 ($4.1 million), Unit 1 ($2.5 million), and Unit 2 ($1.2 million).

Pre-designation costs in unoccupied areas of Unit 3 are primarily associated with public land acquisition ($26.8 million) by the Coachella Valley Water District, and flood control ($4.1 million) in the excluded lands. Costs in Units 1 and 2 are primarily associated with transportation and development, and water supply within Unit 1.

Post-Designation Impacts

Total post-designation costs within proposed critical habitat are concentrated in Unit 1, which accounts for 76 percent of the annualized impacts. Unit 1 impacts are associated primarily with water supply projects, and additional costs are associated with transportation, development, and energy. Post-designation costs in Unit 3 are associated primarily with flood control and public lands management. Unit 2 costs are primarily associated with development and water supply.

A similar relative outcome occurs in the excluded habitat, where the majority of impacts are concentrated in Unit 1. Water supply projects are the leading activity responsible for impacts in Unit 1. Unit 3 is the second highest of the three units in excluded habitat, and are dominated by flood control and public lands management costs. Impacts in excluded habitat in Unit 2 are led by costs to development and water supply.

Table ES-2
Summary of Conservation Costs by Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$1,715,900	$5,942,600	$4,444,900	$3,205,900	$298,700	$302,600
2 – Mission Creek/Morongo Wash	$234,400	$375,000	$283,400	$206,800	$19,000	$19,500
3 – Thousand Palms	$598,900	$1,463,100	$1,106,700	$807,900	$74,300	$76,200
Total - Proposed Critical Habitat	**$2,549,200**	**$7,780,700**	**$5,835,000**	**$4,220,600**	**$392,000**	**$398,200**
Excluded Habitat						
1 – Whitewater River	$2,492,400	$8,046,700	$6,041,800	$4,396,100	$406,100	$414,900
2 – Mission Creek/Morongo Wash	$1,231,200	$1,323,300	$1,021,700	$770,500	$68,600	$72,800
3 – Thousand Palms	$4,077,100	$7,336,400	$7,055,800	$6,738,500	$474,300	$636,100
Total - Excluded Habitat	**$7,800,700**	**$16,706,400**	**$14,119,400**	**$11,905,000**	**$949,100**	**$1,123,800**
Essential Habitat - Not Allocated	$4,482,600	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$32,500	$63,900	$46,700	$32,500	$3,100	$3,100
2 – Mission Creek/Morongo Wash	$0	$291,600	$213,000	$148,300	$14,300	$14,000
3 – Thousand Palms	$26,769,800	$25,000	$18,400	$13,000	$1,200	$1,200
Total - Unoccupied Areas	**$26,802,300**	**$380,600**	**$278,100**	**$193,800**	**$18,700**	**$18,300**

Note: Numbers may not sum due to rounding.

RESULTS BY LANDOWNER

Table ES-3 provides a summary of conservation costs by category of landowner. The landowner types that are relevant in this analysis include private, State of California, local government (cities and Riverside County), Federal government, and non-profit (CVWD and conservation non-governmental organizations). Total pre-designation costs in proposed critical habitat are concentrated among state and Federal government agencies; costs in excluded habitat apply primarily to non-profit entities. In the unoccupied areas, nearly all costs also apply to non-profit entities, particularly CVWD.

Post-designation costs are concentrated among non-profits; in particular, post-designation conservation costs associated with the water supply and flood control costs are borne by the CVWD and its customers. The private sector also bears substantial costs associated with residential and commercial development.

Table ES-3
Summary of Conservation Costs by Landowner

Landowner	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
Local	$0	$480,100	$332,600	$215,500	$22,400	$20,300
Private	$265,000	$1,544,100	$1,148,100	$817,300	$77,100	$77,100
State	$455,900	$1,575,600	$1,369,900	$1,162,400	$92,000	$109,700
Federal	$1,012,000	$2,530,000	$1,882,000	$1,340,100	$126,500	$126,500
Non-Profit	$816,300	$1,650,900	$1,102,400	$685,400	$74,000	$64,600
Total - Proposed Critical Habitat	**$2,549,200**	**$7,780,700**	**$5,835,000**	**$4,220,600**	**$392,000**	**$398,200**
Excluded Habitat						
Local	$0	1570000	$1,087,300	$704,500	$73,100	$66,500
Private	$7,000	$262,300	$191,700	$133,600	$12,900	$12,600
State	$1,938,800	$4,075,100	$3,533,500	$2,994,300	$237,500	$282,700
Federal	$0	$0	$0	$0	$0	$0
Non-Profit	$5,854,900	$10,799,000	$9,306,900	$8,072,700	$625,600	$762,000
Total - Excluded Habitat	**$7,800,700**	**$16,706,400**	**$14,119,400**	**$11,905,000**	**$949,100**	**$1,123,800**
Essential Habitat - Not Allocated	$4,482,600	$0	$0	$0	$0	$0
Unoccupied Areas						
Local	$0	$0	$0	$0	$0	$0
Private	$32,500	$380,600	$278,100	$193,800	$18,700	$18,300
State	$0	$0	$0	$0	$0	$0
Federal	$26,769,800	$0	$0	$0	$0	$0
Non-Profit	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$26,802,300**	**$380,600**	**$278,100**	**$193,800**	**$18,700**	**$18,300**

SUMMARY OF ADMINISTRATIVE COSTS BY UNIT

Table ES-4 provides a summary of administrative costs that have occurred (pre-designation) or are anticipated to occur (post-designation) associated with section 7 consultations and CHD. An estimated cost of about $31,000 has occurred prior to the designation in the proposed critical habitat and $150,000 in excluded habitat. An additional $563,000 in administrative costs have been incurred that are not allocated to essential habitat or unoccupied areas. These costs are associated with consultations initiated prior to designation, but geographically located outside of any designated or excluded habitat, or area proposed for possible inclusion. After designation, it is anticipated that administrative costs will be incurred in each of proposed critical habitat and excluded habitat, in addition to areas outside these areas.

Table ES-4
Estimated Section 7 Administrative Costs per Habitat Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)[a/]	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$30,300	$296,300	$220,400	$157,000	$14,800	$14,800
2 – Mission Creek/Morongo Wash	$700	$6,400	$4,800	$3,400	$300	$300
3 – Thousand Palms	$100	$500	$400	$300	$0	$0
Total - Proposed Critical Habitat	**$31,000**	**$303,300**	**$225,600**	**$160,700**	**$15,200**	**$15,200**
Excluded Habitat						
1 – Whitewater River	$16,400	$53,000	$39,400	$28,100	$2,700	$2,700
2 – Mission Creek/Morongo Wash	$19,600	$67,300	$50,100	$35,700	$3,400	$3,400
3 – Thousand Palms	$113,900	$125,400	$93,300	$66,400	$6,300	$6,300
Total - Excluded Habitat	**$149,900**	**$245,800**	**$182,800**	**$130,200**	**$12,300**	**$12,300**
Essential Habitat - Not Allocated	$0	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Numbers may not sum due to rounding.

a/ Annualized costs calculated at three percent and seven percent interest rates (based on total present value costs calculated at three and seven percent discount rates, respectively) are equal since administrative costs are equally distributed across the twenty years in the post-designation period.

SUMMARY OF RESULTS BY MAJOR ACTIVITY

FLOOD CONTROL COSTS

Within the region, Riverside County Flood Control (RCFC) and the CVWD are charged with the responsibility of protecting people, property, and watersheds from damage or destruction from flood or storm waters.[10] One large flood control project, still in the planning stages, is the Whitewater River/Thousand Palms Flood Control Project. This project, as currently designed, will be located adjacent to CVMV proposed critical habitat Unit 3 and is expected to adversely affect CVMV habitat. This proposed flood control project has been the subject of two consultations, and is also discussed in the draft Coachella Valley MSHCP. The Coachella Valley MSHCP outlines mitigation and management requirements for the project; as these conservation efforts benefit the CVMV, they are included in this analysis.

WATER SUPPLY COSTS

The Mission Springs Water District (MSWD) and the Coachella Valley Water District (CVWD) provide water for domestic use and wastewater reclamation in the Coachella Valley. CVWD is also involved in irrigation water delivery, storm water protection, agricultural drainage, and water conservation. When water districts access their infrastructure for maintenance and expansion projects, they potentially disturb the habitat of the CVMV. The water supply costs included in this analysis are specifically associated with a pipeline project, a sand relocation project, and land placed in a conservation easement that may be used for future mitigation.

RESIDENTIAL AND COMMERCIAL DEVELOPMENT

As discussed in Section 2.2.2.1, the impact of CHD on residential, industrial, and commercial development may include:

- Cost of project modifications for development (e.g., employing biological monitoring and flagging of CVMV during construction activities, protecting CVMV habitat by fencing and signage, prohibiting the planting of exotic plants); and

- Cost of mitigation fees and activities for development (e.g., habitat restoration, enhancement, creation, and conservation).

In this analysis, development costs are estimated based on the assumption that development is allowed in the designated areas if appropriate project modifications and/or mitigation activities are taken, and/or mitigation fees paid. Thus, this analysis assumes that no land is removed from potential development as a

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[10] RCFC Mission Statement, http://www.floodcontrol.co.riverside.ca.us/districtsite/ accessed June 2, 2005.

result of development restrictions. The costs for these project modifications and/or mitigation fees and activities are paid by developers or landowners.

The basis for the development analysis is the open city model, which is considered the most appropriate approach for analyzing the effects of the CHD on development. Inherent in this model is the recognition or understanding that people are unconstrained from moving. It is possible that land purchased for mitigation purposes could decrease the supply of developable land; however, the analysis suggests that this will not be a constraint on development.

The per acre mitigation fee in the draft MSHCP, combined with its scheduled annual three percent rate of increase, are used in this analysis when estimating costs to development.

TRANSPORTATION COSTS

Transportation projects in CVMV habitat areas often result in conservation costs associated with mitigation, endowment fees, and other conservation efforts. During the pre-designation period, several Federal, State, and local transportation projects were planned in the vicinity of CVMV habitat and incurred conservation costs. In the period 2006 to 2016, Cal Trans anticipates that five interchange projects will occur in or near the City of Palm Springs along Interstate 10. Additionally, nine of the 267 future local transportation projects identified in the Coachella Valley MSHCP are within the essential habitat Units for the CVMV.

PUBLIC LANDS COSTS

The BLM owns and manages 2,893 acres in the three essential habitat units. The CVMV benefits from the development of the BLM land management plan and from the BLM enforcement of land use restrictions, so these costs are attributable to CVMV habitat and species conservation. Additionally, nearly all of Unit 3, which encompasses the Coachella Valley Ecological Preserve, is publicly owned. Although the CVMV benefits from the management of the Preserve, Preserve management costs are not included in this analysis since the costs are funded from an endowment established to protect the Coachella Valley fringe-toed lizard (CVFTL). Costs of $26.8 million to acquire sand source lands adjacent to Unit 3, Thousand Palms, are included however. The 9,000 purchased acres were targeted acquisitions under the MSHCP and were purchased using funds provided by government agencies and non-profit conservation organizations.

ENERGY COSTS

Both wind energy developments and a pipeline project are located within CVMV essential habitat Unit 1, Whitewater River. Several past maintenance and expansion projects for wind energy developments have required mitigation and conservation efforts, and it is expected that projected additional wind energy development in the area will incur similar conservation costs. Additionally, maintenance of a pipeline

project located near Unit 1 resulted in conservation expenses associated with the CVMV. No future pipeline projects are projected.

Economic Effects to Small Entities and the Energy Industry

Appendix A of this report provides an examination of the extent to which the costs presented in the main report reflect impacts to small entities and the energy industry. The analysis concludes that no impacts to small businesses or the energy industry are anticipated.

This report addresses the economic effects of conservation efforts associated with the listing and proposed critical habitat designation (CHD) for the Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae,* hereafter "CVMV"). The U.S. Fish and Wildlife Service (hereafter "Service") published a proposed rule designating critical habitat for the CVMV in the *Federal Register* on December 14, 2004.[11]

This analysis is intended to assist the Secretary in determining whether the economic benefits of excluding particular areas from the designation outweigh the biological benefits of including those areas in the designation.[12] In addition, this information allows 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).[13] This report also complies with direction from the U.S. 10th Circuit Court of Appeals that "co-extensive" effects should be included in the economic analysis to inform decision-makers regarding which areas to designate as critical habitat.[14]

This section provides the general analytic approach to estimating economic effects, including discussion of both efficiency and distributional effects. Next, it discusses the scope of the analysis, including the link between existing and critical habitat-related protection efforts and economic impacts. Then, it describes the information sources employed to conduct this analysis. Finally, it describes the background of the listing and proposed designation of critical habitat for the CVMV.

1.1 APPROACH TO ESTIMATING ECONOMIC EFFECTS

This economic analysis considers both the economic efficiency and regional economic impacts that may result from species and habitat protection. Economic efficiency effects generally reflect "opportunity costs" associated with the commitment of resources required to accomplish species and habitat conservation. For example, if activities on private lands 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

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11 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register,* Vol. 69, No. 239, pp. 74468-74491.

12 16 U.S.C. § 1533(b)(2).

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

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 proposed CHD, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico Cattle Growers Ass'n vs. U.S.F.W.S.,* 248 F.3d 1277 (10th Cir. 2001)).

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 of the Endangered Species Act (Act) represent opportunity costs of conservation efforts, given that those resources committed to the consultation process are not available for alternative activities. To the extent possible, the efficiency analysis also measures the distribution of these opportunity costs across groups, such as producers and consumers. For example, some costs related to conservation actions may fall entirely on one group, or may fall on individuals within a group, such as low income farmers. While economic efficiency is concerned with the total change in societal welfare from a given policy or action, and is thus the appropriate measure to ensure efficient use of resources, distributional measures can also be useful to policymakers in assessing who gains and who loses from such policies or actions.

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

Where data are available, the analysis attempts to capture the net economic impact imposed on regulated entities and the regional economy of CVMV conservation actions. That is, the economic impact of CVMV conservation to the land management agencies and regulated community net of any direct offsetting benefit they experience.

1.1.1 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 discern the implications of a regulatory action. For regulations specific to the conservation of the CVMV, 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 surplus in affected markets.[15]

In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, a landowner or manager may enter into a consultation

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

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 his or her land not been designated critical habitat. In the case that compliance activity is not expected to significantly affect markets – that is, not result in a shift in the quantity of a good or service provided at a given price, or in the quantity of a good or service demanded given a change in price – the measurement of compliance costs provides a reasonable estimate of the change in economic efficiency.

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

This analysis begins by measuring costs associated with measures taken to protect species and habitat. As noted above, in some cases, compliance costs can provide a reasonable estimate of changes in economic efficiency. In the case of the CVMV, compliance costs represent a reasonable estimate of efficiency effects, and thus impacts on consumer and producer surpluses in affected markets are considered but not estimated.

1.1.2 Distributional and Regional Economic Effects

Measurements of changes in economic efficiency focus on the net impact of conservation efforts across broad aggregates of people (e.g., producers and consumers), without consideration of how certain economic sectors or groups of people (e.g., low income farmers) are affected. As noted above, these distributional or equity effects regarding how efficiency gains or losses are borne may be important to policymakers. In addition, economic efficiency effects do not address issues related to impacts on local or regional economies. Thus, a discussion of efficiency effects alone may miss important distributional considerations, as well as impacts on local economies. OMB encourages Federal agencies to consider these latter effects separately from efficiency effects.[16] This analysis considers several types of these effects, including impacts on small entities; impacts on energy supply, distribution, and use; and regional economic impacts. It is important to note that these impacts on local economies or sectors are fundamentally different measures of economic costs than efficiency effects, and thus cannot be added to or compared with estimates of changes in economic efficiency.

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

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

This analysis considers how small entities, including small businesses, organizations, and governments, as defined by the RFA, may be affected by future CVMV conservation efforts.[17] In addition, in response to Executive Order 13211 "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," this analysis considers the impacts of conservation efforts on the energy industry and its customers.[18] While small business impacts are discussed, significant impacts on the energy sector are not expected. See Appendix A for an analysis of impacts to small businesses and the energy industry.

1.1.2.2 Regional Economic Effects

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

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

Despite these and other limitations, in certain circumstances regional economic impact analysis may provide useful information about the scale and scope of localized impacts. It is important to remember that measures of regional economic effects generally reflect shifts in resource use rather than efficiency losses. Thus, these types of secondary impacts are reported separately from efficiency effects (i.e., not

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[17] 5 U.S.C. § 601 *et seq.*

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

summed). In addition, measures of regional economic impact cannot be compared with estimates of efficiency effects, but should be considered as distinct measures of impact.

Because this report assumes that development is not restricted by CHD, but that the developers will instead mitigate their activities through mitigation fee payments to address CVMV conservation concerns, broader regional economic impacts are not expected as a result of CVMV conservation efforts.

1.2 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 to avoid, mitigate, or compensate for such threats within the boundaries of the CHD. In instances where critical habitat is being proposed after a species is listed, some future impacts may be unavoidable, regardless of the final designation and exclusions under section 4(b)(2). However, due to the difficulty in making a credible distinction between listing and critical habitat effects within critical habitat boundaries, this analysis considers all future conservation-related impacts to be co-extensive with the designation.[19]

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

The CVMV critical habitat economic analysis includes the following items:

- Consistent with recent court rulings, the analysis includes impacts that occur co-extensively with the listing under the Act. Enforcement actions taken in response to violations of the Act are not included.

- The analysis considers conservation and protection efforts for the CVMV. No distinction is made between impacts that occur due to listing and those that result from the CHD. It also includes any protective measures taken as a result of other Federal, State, or local laws that aid habitat

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[19] In 2001, the U.S. 10th Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of proposed CHD, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico Cattle Growers Ass'n vs. U.S.F.W.S.,* 248 F.3d 1277 (10th Cir. 2001)). In 2004, the U.S. 9th Circuit invalidated the Service's regulation defining destruction or adverse modification of critical habitat (*Gifford Pinchot Task Force v. United States Fish and Wildlife Service)*. The Service is currently reviewing the decision to determine what effect it (and to a limited extent *Center for Biological Diversity v. Bureau of Land Management* (Case No. C-03-2509-SI, N.D. Cal.)) may have on the outcome of consultations pursuant to section 7 of the Act.

conservation in the areas identified in the proposed rule, and may therefore be coextensive with the designation.

- Inevitably, actions taken to protect CVMV provide benefits to other species. This creates challenges in apportioning costs to each species. Where possible, this analysis addresses this issue by (1) focusing on the impacts of species and habitat conservation efforts; and (2) excluding activities implemented prior to the final CVMV listing in October 1998. Finally, when conservation efforts are implemented in areas of habitat overlap between CVMV and other listed species, the analysis includes the full costs of the conservation efforts as co-extensive with CVMV and other listed species.

- Both pre-designation and post-designation costs are considered. Pre-designation costs include those that have accrued since the time that the CVMV was listed as endangered (October 1998), but prior to the final designation of critical habitat (November 2005). Post-designation effects include likely future costs associated with CVMV conservation efforts following the final designation of critical habitat in November 2005, effectively 2006 through 2025.

- The geographic scope of the analysis reflects distinct areas identified as essential to the conservation of the CVMV, including lands proposed for critical habitat, areas identified for possible inclusion, and lands excluded from the proposed CHD. Lands proposed for critical habitat and lands excluded from the proposed CHD are all located within Riverside County, California. Also included in the analysis are unoccupied areas identified by the Service for possible inclusion in the CHD, which are located in Riverside and San Bernardino counties.

- The geographic unit of analysis for proposed critical habitat, lands excluded from proposed critical habitat, and unoccupied areas identified for possible inclusion as critical habitat, is the area defined by the Service as each of three critical habitat units. These units are shown on Map 1 in the Map Attachment to this report.

- The localized economic efficiency effects reflect impacts in the areas specifically identified as critical habitat, as well as those essential lands excluded from proposed critical habitat and unoccupied areas identified by the Service for possible inclusion in the CHD. Conservation efforts occurring on adjacent land or beyond the boundaries of the proposed critical habitat with the potential to affect attributes within essential habitat, such as water quantity and quality, are also considered when appropriate. These areas are shown on Map 2 in the Map Attachment to this report.

- This analysis utilizes a "with" and "without" framework, and emphasizes those effects that are determined to be attributable to CVMV conservation efforts. Impacts that would have occurred without the CVMV listing and CHD are evaluated on a case-by-case basis to determine if they are driven, in part, by conservation efforts for the CVMV.

- The period of analysis and discounting is guided by the availability of information concerning the start date and duration of the activity. Each potential cost component is examined over the time period that is appropriate for that specific activity or investment. Some of these are costs that are incurred one time only, while others are recurring. These costs are presented as undiscounted dollars, net present values, and annualized costs, using three and seven percent discount rates.

1.2.1 SECTIONS OF THE ACT RELEVANT TO ECONOMIC 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 CHD. Pursuant to this section, the Secretary is required to list species as endangered or threatened "solely on the basis of the best scientific and commercial data available."[20]

The protections afforded to threatened and endangered species and their habitat are described in sections 7, 9, and 10 of the Act. The economic effects of these protections are considered in this analysis:

- Section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of the species' designated critical habitat. The administrative costs of these consultations, along with the costs of project modifications resulting from these consultations, represent compliance costs associated with the listing of the species and the designation of critical habitat.[21]

- Section 9 defines the actions that are prohibited by the Act, and in particular, prohibits the "take" of endangered wildlife. The term "take" means to "harass, harm, pursue, ... or collect, or to attempt to engage in any such conduct."[22] The economic impacts associated with this section manifest themselves in sections 7 and 10. While the prohibition against "take" does not apply to plant species such as the CVMV, the Service is obligated to ensure that proposed activities adequately minimize the impact to the species.

- 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 a species in order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a

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20 16 U.S.C. § 1533.

21 The Service notes, however, that a recent 9th Circuit judicial opinion, *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*, has invalidated the Service's regulation defining destruction or adverse modification of critical habitat. The Service is currently reviewing the decision to determine what effect it (and to a limited extent *Center for Biological Diversity v. Bureau of Land Management* (Case No. C-03-2509-SI, N.D. Cal.)) may have on the outcome of consultations pursuant to section 7 of the Act.

22 16 U.S.C. § 1532.

property.[23] The requirements posed by the HCP may have economic impacts associated with the goal of ensuring that the effects of incidental take are adequately minimized and mitigated. The designation of critical habitat does not require completion of an HCP; however, the designation may influence conservation efforts provided under HCPs. While HCPs are not developed solely for plant species, if listed plants occur in the area subject to the HCP, the Service must consider whether the proposed activities may adversely affect or jeopardize the continued existence of the plant species. In the case of the CVMV, areas covered by one HCP have been excluded from the proposed CHD (see Section 4.3).

1.2.2 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. In general, economic impacts will be evaluated regardless of whether or not species protection efforts required by the Act are also required by other Federal agencies or State or local governments. The impact of these protection efforts will be treated as "co-extensive" with, or attributable to, CVMV listing and CHD. Examples of these types of regulations include, but are not limited to, the California Environmental Quality Act (CEQA) and Section 404 of the Clean Water Act (CWA).

In some cases, non-habitat related regulations will limit land use activities within critical habitat in ways that will directly or indirectly benefit the CVMV or its habitat. For example, local zoning ordinances that specify the amount and type of development that may occur, if any, in a certain area may benefit the CVMV and its habitat. The impact of these types of local, non-habitat related regulations and land use controls are not considered "co-extensive," with or attributable to the CVMV listing and designation. Examples of these types of local regulations or controls include, but are not limited to, local zoning ordinances and local hillside or view shed protection ordinances.

1.2.3 Additional Analytic Considerations

Previous economic impact analyses prepared to support critical habitat decisions have considered other types of economic impacts related to conservation efforts associated with CHD, including time delay, regulatory uncertainty, and stigma impacts. This analysis considers these other types of economic impacts that can be a consequence of CVMV CHD, as described below.

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[23] U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning," http://endangered.fws.gov/hcp/, accessed August 6, 2002. Sections 9 and 10 of the Act do not apply to plants. While HCPs are not typically developed specifically for listed plant species, an HCP may include listed or non-listed plant species that may be affected by the project subject to the HCP.

1.2.3.1 Stigma Effects

Stigma refers to the change in economic value of a particular project or activity due to perceptions of the role critical habitat will play in developing, implementing, or conducting that project or activity. For example, "stigma effects" could include changes to private property values associated with public attitudes about the limits and costs of implementing a project in critical habitat. Stigma effects are a form of uncertainty that relate more to perceived fluctuations rather than observation, when there is limited information on actual outcomes. There is currently a void of peer-reviewed literature that has successfully identified or attempted to quantify empirical estimates of stigma effects. As such, while there is a potential for some developable land to be subject to short-term stigma effects due to uncertain regulatory requirements, no attempt is made to estimate its magnitude.

1.2.3.2 Time Delay and Regulatory Uncertainty

In addition to direct costs of consultation and project modification associated with CVMV conservation efforts, the analysis considers potential indirect impacts, such as may result from project delays. Both public and private entities may experience incremental time delays for projects and other activities due to requirements associated with the section 7 consultation process and/or compliance with other laws associated with the designation. The need to conduct a section 7 consultation will not necessarily delay a project, as often the consultation may be coordinated with the existing regulatory approval process. However, depending on the schedule of the consultation, a project may experience additional delays, resulting in an unanticipated extension in the time needed to fully realize returns from the planned activity. Delays of this nature were considered in the development of this analysis and it was determined that any impact they may impose is not likely to materially change the quantitative results of this analysis.

Regulatory uncertainty costs can occur in anticipation of having to modify project parameters, and might include, for example, project proponents retaining outside experts or legal counsel to better understand their responsibilities with regard to critical habitat.

1.2.3.3 Other Impacts

Under certain circumstances, CHD may provide new information to a community about the sensitive ecological nature of a geographic region, potentially triggering additional economic impacts under other State or local laws. In cases where these costs would not have been triggered absent the CHD, they are included in this economic analysis. In this regard, the analysis considers the extent to which the CVMV CHD might trigger the completion of an environmental impact report (EIR) under the CEQA.

1.2.4 BENEFITS

Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the societal costs and benefits of proposed regulatory actions.[24] 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.[25]

In the context of CHD, the primary purpose of the rulemaking (i.e., the direct benefit) is the potential to enhance conservation of the species. The published economics literature has documented that social welfare benefits can result from the conservation and recovery of endangered and threatened species. In its guidance for implementing Executive Order 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research.[26] *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 costs of the rulemaking.*

CHD 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, CHD can result in maintenance of particular environmental conditions that may generate other social benefits aside from the preservation of the species. That is, management actions undertaken to conserve a species or habitat may have coincident, positive social welfare implications, such as increased recreational opportunities in a 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 a species or its habitat.

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

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24 Executive Order 12866, September 30,1993, "Regulatory Planning and Review."

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

26 Ibid.

entities and the regional economy. This analysis was not able to measure ancillary benefits due to the lack of available data.

1.2.4.1 The Potential for Amenity Values

When land areas are designated as critical habitat for a species, they may generate amenity values to adjacent property owners and residents. Unlike the negative "stigma" effects discussed earlier, these amenity values are derived from the associated visual amenities and other environmental and ecosystem benefits that may arise from the CHD. The existence and magnitude of positive economic values for environmental amenities are well documented in the environmental economics literature. If a CHD provides additional protection of the area, habitat, or ecosystem from which such environmental services may flow, the existence of positive values from a CHD is possible.

In the case of a CHD, owners of adjacent or nearby residential property may benefit from the "internalization" of the environmental public goods arising from the CHD. However, the extent of the impact on the welfare of owners of undeveloped land and developers in general is not always clear. For example, landowners and developers would not have an incentive to provide open space or related amenities unless they could capture some of the resulting value in the price of lots and houses. Some land developers of larger areas have voluntarily set aside portions of the potential development as open space, and have built in price premiums in remaining parcels to account for the advertised amenity. However, it is expected that owners of smaller parcels would have to engage in cooperative behavior with adjacent property owners to provide sufficient open space to provide price premiums adequate to offset the loss of revenue from reduced numbers of developable lots.

In the literature, the existence of amenity values has been demonstrated in a wide variety of settings and these values have been quantified with a number of non-market valuation techniques. Time and resource constraints often prohibit the performance of original, site-specific research to measure amenity values. Instead, potential amenity values are often quantified via the "benefits transfer" approach. This approach essentially borrows (transfers) estimates of value for the same non-marketed commodity (e.g., open space) from extant studies and applies them to a new site or setting. The conditions under which such procedures are valid are well discussed in the literature. The OMB also provides guidance for an appropriate use of benefits transfer methods, including criteria for their use.[27] In general, however, the closer the two sites are in terms of key physical and economic factors, the more likely it is that the transferred value is appropriate for the new setting. In addition, the literature cautions that values be used conservatively; i.e., that among those previous estimates judged to be appropriate, lower bound estimates should be used for the new application or setting. This analysis recognizes the potential for the existence of amenity values within the CVMV CHD, but leaves such values unquantified due to the lack of appropriate valuation studies for the types of habitat changes proposed in this CHD.

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

1.3 ANALYTIC TIME FRAME

The analysis examines activities taking place both within and adjacent to the proposed CHD and lands excluded from or identified for possible inclusion in the proposed CHD as described in the proposed rule. This analysis activities that have occurred since the final listing (October 1998) and prior to the final designation (November 2005), as well as activities anticipated to occur after designation. Estimates of post-designation effects are 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. The analysis estimates economic effects of activities from 1998 (year of the final rule for listing) through 2025 (20 years from the year of final CHD).

1.4 INFORMATION SOURCES

The analysis contained in this report is based on data and information collected from a wide range of sources. Communications with and data provided by Service personnel include maps and GIS data, information on past section 7 consultation and project modification, copies of informal and formal CVMV consultation documents such as Biological Opinions (BOs), and other material directly related to the proposed designation. Other Federal, State, and local agencies provided information, as well as independent or private sector entities and individuals. The specific sources used to address the effects of CVMV conservation efforts are identified within each section, and citations are provided where appropriate. The reference section at the end of this document includes a full list of information sources.

1.5 BACKGROUND OF THE CVMV LISTING

The Service published a notice of review of plants in the Federal Register on December 15, 1980, which included CVMV as a category 1 candidate.[28] Category 1 species are described as "those species for which information in the Service's possession was sufficient to support proposals for listing."[29] Supplements to the plant notice of review were published in 1983, 1985, and 1990, and continued to include the CVMV as a category 1 species.[30]

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28 U.S. Fish and Wildlife Service, December 15, 1980, "Review of Plant Taxa for Listing as Endangered or Threatened Species, Notice of Review," *Federal Register*, Vol. 45, pp. 82480-82569.

29 U.S. Fish and Wildlife Service, October 6, 1998, "Determination of Endangered or Threatened Status for Five Desert Milk-vetch Taxa from California, Final Rule," *Federal Register*, Vol. 63, No. 193, p. 53601.

30 U.S. Fish and Wildlife Service, November 28, 1983, "Review of Plant Taxa for Listing as Endangered or Threatened Species, Notice of Review," *Federal Register*, Vol. 48, pp. 53640-53670; U.S. Fish and Wildlife Service, September 27, 1985, "Review of Plant Taxa for Listing as Endangered or Threatened Species, Notice of Review" *Federal Register*, Vol. 50, No. 188, pp. 39526-39577; and U.S. Fish and Wildlife Service, February 21, 1990, "Review of Plant Taxa for Listing as Endangered or Threatened Species, Notice of Review," *Federal Register*, Vol. 55, No. 35, pp. 6184-6229.

The Service proposed endangered status for the CVMV on May 8, 1992, in a proposed rule which included six other desert milk-vetch taxa from California and Nevada.[31] Following an extended comment period, the Service published a final rule listing the CVMV as endangered in the October 6, 1998, edition of the Federal Register.[32] At that time, the Service also determined the designation of critical habitat for the CVMV was not prudent, as "designation of critical habitat for this taxon will provide it no additional conservation benefits beyond those provided by its listing, and that the designation could lead to acts of collection or vandalism."[33]

1.6 BACKGROUND OF THE CVMV CRITICAL HABITAT DESIGNATION

As noted earlier, critical habitat was not designated for CVMV at the time of its final listing as endangered in October 1998. Lawsuits challenging the Service's determination that designation of critical habitat for CVMV (and seven other listed plant species) was not prudent were filed in November 2001 by the Center for Biological Diversity and the California Native Plant Society[34] and Building Industry Legal Defense Foundation.[35] The parties in both cases participated in a conference on March 19, 2002, where they agreed to a remand of the critical habitat determinations to the Service for additional consideration, but did not agree on a timeline.

The American Sand Association, the California Off-Road Vehicle Association, the American Motorcycle Association, Inc. – District 37, the San Diego Off-Road Coalition, and the Off-Road Business Association filed a motion to intervene, which the Court granted on April 8, 2002. The motion limited the participation of the intervening groups to resolution of an appropriate timeline for reconsideration of the critical habitat determination.

On July 1, 2002, the Court ordered the Service to reconsider its not prudent determination and publish a proposed critical habitat rule, if prudent, by November 30, 2004, and to publish a final critical habitat designation by November 30, 2005. The proposed rule designating critical habitat for the CVMV was published in the December 14, 2004, edition of the Federal Register.[36]

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31 U.S. Fish and Wildlife Service, May 8, 1992, "Proposed Rule for Seven Desert Milk-vetch Taxa from California and Nevada, Proposed Rule," *Federal Register*, Vol. 57, No. 90, pp. 19844-19851.

32 U.S. Fish and Wildlife Service, October 6, 1998, "Determination of Endangered or Threatened Status for Five Desert Milk-vetch Taxa from California, Final Rule" *Federal Register*, Vol. 63, No. 193, pp. 53596-53615.

33 Ibid., pp. 53612.

34 *Center for Biological Diversity, et al. v. Norton,* No. 01-CV-2101 (S.D. Cal.).

35 *Building Industry Legal Defense Foundation v. Norton,* No. 01-CV-2145 (S.D. Cal.).

36 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, pp. 74468-74491.

1.7 DESCRIPTION OF THE SPECIES AND HABITAT[37]

The CVMV is a winter annual or short-lived perennial plant in the pea family (*Fabaceae*), and is one of many varieties of milk-vetch known worldwide. The CVMV is only found in portions of eastern Riverside County, California, between the cities of Cabezon and Indio. The CVMV is an erect winter annual or short-lived perennial covered with white-silky hairs, and grows about eight to twelve inches tall. The plant sprouts from seed or seasonally dormant root crowns in response to winter rains. The CVMV produces deep pink-purple flowers as early as December, with flowering continuing into May, and the majority of flowering thought to occur in March and April. The plant produces two-chambered fruits that are strongly inflated, appearing as early as February, but generally peaking in April and May. The mature pods dry and fall to the ground, where they are dispersed by wind. The vegetation above the root mass dies off over the summer, and an unknown proportion of plants persist into the following summer and fall as dormant root crowns.

The CVMV is found on loose wind-blown or alluvial sands located in dunes or flats, and also along disturbed margins of sandy washes. It is found almost exclusively in the northern Coachella Valley area, and to a limited extent, in northern Chuckwalla Valley. In the Coachella Valley area, distribution of the CVMV roughly spans from just east of Cabezon to the dunes off Washington Avenue, north and west of Indio. CVMV occurrences in the Chuckwalla Valley are all along a five-mile stretch of Highway 177 just north of Desert Center.

The proposed rule designating critical habitat for the CVMV describes threats to the species as follows:

> "The primary threat to [the CVMV] is the extensive urban development in the Coachella Valley. Urbanization has both direct and indirect effects on [the CVMV]. Urbanization can destroy plants and suitable and occupied habitat on-site, and indirectly degrade suitable and occupied habitat by blocking sand transport downwind of the development. Other threats include habitat destruction from future wind energy projects, off-highway vehicle (OHV) use, and spread of exotic plants, such as Saharan mustard (*Brassica tournefortii*) and Mediterranean grass (*Schismus barbatus*)."[38]

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[37] Information on the CVMV and its habitat is derived from the proposed rule designating critical habitat (U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, pp. 74468-74491) and the final listing rule (U.S. Fish and Wildlife Service, October 6, 1998, "Determination of Endangered or Threatened Status for Five Desert Milk-vetch Taxa from California, Final Rule" *Federal Register*, Vol. 63, No. 193, pp. 53596-53615). It is provided in summary form only; specific citations are omitted.

[38] U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, pp. 74469-74470 (citations omitted).

The proposed rule also identified construction and operation of sand and gravel mining, dams, and percolation ponds on public lands as threats to the CVMV. These activities can impact the CVMV directly through the loss of plants and occupied habitat, or indirectly through the reduction of sand transport to downstream or downwind occupied habitat areas.

Using the best available scientific data, the Service has determined the primary constituent elements essential to the conservation of the CVMV. Information on the primary constituent elements are described in the proposed rule.[39]

1.8 CRITICAL HABITAT DESIGNATION

The Service has identified 20,561 acres of habitat in Riverside County as essential for the conservation of the species ("essential habitat").[40] Portions of the essential habitat are expected to be covered by conservation areas identified in the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP) when it is finalized; a total of 16,978 acres have been excluded from the proposed CHD for the CVMV as a result of species protection and mitigation requirements identified in the draft MSHCP (excluded habitat is discussed in more detail in Section 1.8.4). The remaining area, approximately 3,583 acres of land not covered by the MSHCP, represents the essential habitat proposed as critical habitat for the CVMV.[41] Essential habitat, including both proposed critical habitat and excluded areas, is divided among three units, as shown in Table 1.

Table 1
CVMV Essential Habitat by Unit (Acres)

Unit	Proposed Critical Habitat	Excluded Habitat	Total Essential Habitat
1 - Whitewater River	2,921	6,704	**9,625**
2 - Mission Creek and Morongo Wash	605	5,231	**5,836**
3 - Thousand Palms	57	5,043	**5,100**
Totals	**3,583**	**16,978**	**20,561**

Source: GIS data provided by the Service.

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39 Ibid., p. 74472.

40 Calculated through GIS analysis of coverages provided by the Service. This total differs slightly from that presented in the proposed rule (20,559 acres). The difference can be attributed to rounding.

41 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, pp. 74468-74491.

The 3,583 acres of proposed critical habitat is described briefly below for each of the units, and shown in Map 3 in the Map Attachment to this report. The majority of proposed critical habitat occurs on land managed by Federal agencies, including 2,876 acres managed by the Bureau of Land Management (BLM) and 31 acres managed by the Service. The proposed CHD also includes 34 acres of State or locally managed land and 642 acres of privately owned land. Table 2 displays the land ownership for the proposed critical habitat areas by unit.

Table 2
Land Ownership for Proposed Critical Habitat by Unit (Acres)

Unit	Ownership				
	BLM	**Service**	**State**	**Private**	**Total**
1 - Whitewater River	2,437	0	32	452	**2,921**
2 - Mission Creek and Morongo Wash	415	0	0	191	**605**
3 - Thousand Palms	24	31	1	0	**57**
Total Proposed Critical Habitat	**2,876**	**31**	**34**	**642**	**3,583**

Note: Numbers may not sum due to rounding.

Source: GIS data provided by the Service.

1.8.1 UNIT 1: WHITEWATER RIVER

Proposed critical habitat in Unit 1, the Whitewater River Unit, consists of 2,921 acres located just east of the city of Cabezon, south of Interstate 10, and north of the city of Palm Springs. Approximately 2,437 acres of the proposed critical habitat in this unit is managed by the BLM. About 32 acres of State lands are included in the proposed designation, as well as approximately 452 acres of private lands. This unit is identified by the Service as essential to species conservation because it is part of a complete sand transport system for the Whitewater River System that is occupied by the CVMV. Threats to the CVMV in this unit include the obstruction of major channels by sand mining operations and competition from invasive weeds, such as Saharan mustard and Mediterranean grass.

1.8.2 UNIT 2: MISSION CREEK AND MORONGO WASH

Unit 2, the Mission Creek and Morongo Wash Unit, includes approximately 605 acres proposed for critical habitat. These lands are located north of Interstate 10 between Palm Drive and Date Palm Drive, south of 20th Avenue. The proposed critical habitat includes approximately 415 acres managed by the BLM, and approximately 191 acres of private land. The Service identifies this unit as essential to species conservation because it is part of a complete sand transport system for the Mission Creek/Morongo Wash System that is occupied by the CVMV. Threats to the CVMV in this unit include the loss of sand transportation to maintain suitable habitat and the invasion of suitable habitat by exotic weeds.

1.8.3 UNIT 3: THOUSAND PALMS

Proposed critical habitat in Unit 3, the Thousand Palms Unit, consists of about 57 acres in the Coachella Valley Preserve along Ramon Road. Lands managed by the BLM and Service comprise most of the proposed critical habitat, with only one acre of State land and no private lands included. The unit is identified by the Service as essential to species conservation because it is located in the easternmost portion of the CVMV range in the Coachella Valley, and is part of a sand transport system that supports several large populations of the CVMV. Fluvial transport of sediment and the eolian sand transport corridor in the Thousand Palms area face potential threats in Unit 3.

1.8.4 EXCLUDED HABITAT

Section 4(b)(2) of the Act states that critical habitat shall be designated, and revised, on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. An area may be excluded from critical habitat if it is determined that the benefits of exclusion outweigh the benefits of specifying a particular area as critical habitat, unless the failure to designate such area as critical habitat will result in the extinction of the species.[42] In the case of the CVMV, the Service has excluded some areas of essential habitat ("excluded habitat") from the proposed critical habitat pursuant to section 4(b)(2).

Of the 20,561 acres of habitat identified by the Service as essential to the conservation of the CVMV, a total of approximately 16,978 acres have been excluded from the proposed CHD under section 4(b)(2) of the Act. This "excluded habitat" includes areas identified in the preferred alternative reserve design within the boundaries of the pending Coachella Valley MSHCP. The proposed rule published in the Federal Register provides greater detail describing the excluded lands and the basis for exclusion under section 4(b)(2).[43] The Coachella Valley MSHCP is also discussed in Section 4.3.1 of this report.

The excluded habitat is divided among three units in the same manner as proposed critical habitat, and ownership by unit is shown in Table 3. Within Unit 1 (Whitewater River), approximately 6,704 acres of essential habitat that is part of the sand transport system is excluded from the proposed CHD. Most of this land is in private ownership (approximately 6,651 acres). Approximately 5,231 acres of the sand transport system within Unit 2 (Mission Creek/Morongo Wash) is similarly excluded, nearly all of it privately owned. Within Unit 3 (Thousand Palms), approximately 5,043 acres of essential habitat is also excluded from the proposed CHD. The Service manages over half of the excluded lands in Unit 3, or 3,548 acres, while about 765 acres are privately owned.

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42 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, pp. 74468-74491.

43 Ibid., pp. 60110-60134.

Table 3
Land Ownership for Excluded Essential Habitat by Unit (Acres)

Unit	Ownership						
	BLM	Service	State	Private	Tribal	Other	Total
1 - Whitewater River	7	0	0	6,651	46	0	**6,704**
2 - Mission Creek and Morongo Wash	3	0	0	5,228	0	0	**5,231**
3 - Thousand Palms	8	3,548	719	765	0	5	**5,043**
Total Proposed Critical Habitat	**17**	**3,548**	**719**	**12,644**	**46**	**5**	**16,978**

Note: Totals may not sum due to rounding.

Source: GIS data provided by the Service.

1.8.5 UNOCCUPIED AREAS IDENTIFIED FOR POSSIBLE INCLUSION

The Service has been cautioned by Congress to be "exceedingly circumspect" in designating unoccupied habitat. However, the Service states in the proposed rule that "the species depends on sand being continually replenished from outside the areas it occupies."[44] The Service has identified areas that serve as a source for this sand and requested comment on whether these unoccupied areas should also be included in the final designation of critical habitat for the CVMV. These unoccupied areas identified for possible inclusion are shown on Map 1 in the Map Attachment to this report, and described in the text of the proposed rule, which is summarized here. Economic impacts related to CVMV conservation in these unoccupied areas are analyzed and presented separately throughout the report. Land ownership for the unoccupied areas identified for possible inclusion is presented in Table 4 for each of the units.

Table 4
Land Ownership for Unoccupied Areas Identified for Possible Inclusion by Unit (Acres)

Unit	Ownership					
	Federal	State	Private	Tribal	Other	Total
1 - Whitewater River	8,200	0	7,983	4,332	0	**20,515**
2 - Mission Creek and Morongo Wash	4,518	407	5,184	0	77	**10,185**
3 - Thousand Palms	1,898	143	3,040	0	29	**5,110**
Total Proposed Critical Habitat	**14,615**	**550**	**16,207**	**4,332**	**106**	**35,810**

Note: Numbers may not sum due to rounding.

Source: GIS data provided by the Service.

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[44] U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, p. 74480.

1.8.5.1 Possible Addition to Unit 1

Unit 1 depends on a large sand transport system comprised of several mountain drainages in the eastern San Bernardino and northern San Jacinto mountains where the Whitewater River System begins. The primary sediment sources are the major channels within the San Gorgonio River and Whitewater River drainage areas. Other sources are channels within the Snow Canyon, San Jacinto Canyons 1 and 2, Stubbes Canyon, and Garnet Wash mountain drainages. The areas identified for possible inclusion in Unit 1 include parts of the Morongo Indian Reservation located on stream and river channels in the San Gorgonio River basin.

As shown in Table 4, there are 20,515 acres of unoccupied habitat in the area of Unit 1 (Whitewater River) identified for possible inclusion as critical habitat for the CVMV. Some 8,200 acres are in Federal ownership, with a little over half of the Federal lands managed by the U.S. Forest Service and the remainder managed by the BLM. Unoccupied habitat in Unit 1 also includes 7,983 acres of private land and 4,332 acres of tribal land (portions of the Morongo Indian Reservation).

1.8.5.2 Possible Addition to Unit 2

Unit 2 depends upon a sand transport system comprised of mountain drainages in the eastern San Bernardino and Little San Bernardino Mountains which form the beginning of the Mission Creek and Morongo Wash System. Major channels within the Mission Creek, Dry Morongo, lower Little Morongo Creek, and lower Big Morongo south of Morongo Valley drainages are considered essential for sand transport for Unit 2, and identified for possible inclusion in the CVMV CHD. The Long Canyon drainage is also part of this system, but is not considered essential for sand transport, as its depositional area has been significantly reduced due to past development.

As shown in Table 4, 10,185 acres of unoccupied habitat in the area of Unit 2 (Mission Creek and Morongo Wash) has been identified for possible inclusion in the CHD. Private land makes up slightly over half of the unoccupied areas identified in Unit 2, with about 5,184 acres in private ownership. Some 4,518 acres are in Federal ownership, and most of this is managed by the BLM, with some smaller areas managed by the U.S. Forest Service and National Park Service. The State owns 407 acres of the unoccupied lands in this unit, and the Nature Conservancy owns 77 acres.

1.8.5.3 Possible Addition to Unit 3

Unit 3 depends upon a sand transport system beginning in the mountain drainages in the Indio Hills west of Thousand Palms Canyon, where the Coachella Valley Preserve System begins. Major channels within each of these drainage areas that serve as sand sources are identified for possible inclusion as critical habitat for the CVMV.

There are 5,110 acres of unoccupied habitat in the area of Unit 3 (Thousand Palms) have been identified for possible inclusion as critical habitat. This includes 3,040 acres of private land, and 1,898 acres of

Federal land, primarily managed by the BLM. The remainder is owned and managed by either the State or the Nature Conservancy.

1.9 ORGANIZATION OF THE REPORT

The remainder of this report is divided into eight sections. The following section describes the framework for analyzing the economic impacts associated with CVMV conservation efforts in the proposed critical habitat and excluded and not included areas. This includes a description of the general analytic approach to estimating economic effects, operating definitions of pre-designation and post-designation effects, general categories of economic effects, and assumptions such as time frame of analysis and discount rate.

The next section provides a socioeconomic profile of the counties encompassing the essential habitat for CVMV, including proposed critical habitat, excluded habitat, and unoccupied areas identified for possible inclusion. The profile is presented in terms of the affected counties as the smallest unit of measure for much of the data presented. This is followed by a discussion of the regulatory environment, which includes the Federal, State, and local laws and regulations that are relevant to the analysis.

The different categories of economic effects are examined in the next four sections. The first addresses the effects on residential and commercial development; the application of an "open city" model of development is presented. The second concerns effects on transportation projects. The third addresses the effects on land management. The Bureau of Land Management and U.S. Forest Service are dominant landowners in the proposed critical habitat and unoccupied areas. The fourth of the four sections on economic effects addresses the other categories that may apply. Finally, the last section of the report presents a summary of the findings and discussion of the results for the CVMV.

A number of appendices are included with this report. Appendix A addresses the economic effects of CVMV conservation efforts on small entities and the nation's energy supply. Appendix B includes a presentation of the analytic framework for determining effects on residential and commercial development. Appendix C includes a list of the acronyms used in the report. A Map Attachment is also provided and contains all maps referenced in the text of the report.

This section describes the framework used in measuring the economic impacts associated with conservation efforts to protect CVMV and its habitat.[45] This section first describes the general concepts that underlie the estimation of economic effects associated with the proposed designation of critical habitat. This is done by taking into account the costs of conservation-related measures that are likely to be associated with future economic activities that may adversely affect the habitat within the proposed boundaries. These concepts include efficiency and distributional effects, as well as pre-designation and post-designation effects. Methods used to evaluate each of the different general categories of economic effects, such as efficiency effects on Federal or private entities, as well as distributional effects, are then described. The time frame and discount rate used in the analysis are also described, as well as general caveats and assumptions that apply to all categories of costs examined.

2.1 PRE-DESIGNATION AND POST-DESIGNATION EFFECTS

The economic analysis includes both pre-designation and post-designation effects. Pre-designation effects include those that have accrued since the time that the CVMV was listed as endangered but prior to the final designation of critical habitat. This pre-designation analysis begins with the October 1998 final rule listing the CVMV as endangered.[46] The final designation of critical habitat for CVMV is expected in November 2005, which represents the end of the pre-designation period. Pre-designation impacts include costs associated with *implementing* CVMV conservation efforts between 1998 and 2005, even if the impetus for those efforts was a Federal, State, or local regulation promulgated prior to 1998. Post-designation impacts include likely future cost associated with CVMV conservation efforts following the final designation of critical habitat in November 2005, effectively 2006 through 2025. The post-designation analysis forecasts the costs of conservation efforts likely to occur within the essential habitat, including lands proposed for designation, excluded from the proposed CHD, and identified for possible inclusion, as described in the proposed rule.

2.2 GENERAL CATEGORIES OF ECONOMIC EFFECTS

The impacts associated with past and potential future species and habitat management efforts are manifested in economic efficiency effects (i.e., social welfare) as outlined below.

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[45] Much of the general framework discussion represents guidance from the Service and incorporates language standard across multiple economic analyses of CHD.

[46] U.S. Fish and Wildlife Service, October 6, 1998, "Determination of Endangered or Threatened Status for Five Desert Milk-vetch Taxa from California, Final Rule" *Federal Register*, Vol. 63, No. 193, pp. 53596-53615.

Administrative Costs: Costs associated with engaging in section 7 consultation, including time spent attending meetings, preparing letters and biological assessments, and in the case of formal consultations, the development of a Biological Opinion (BO) by the Service are quantified as administrative costs. Section 7 consultation can require substantial administrative effort on the part of all participants. These impacts are measured as the cost of labor required to fulfill these managerial duties. Estimates of per-effort costs associated with informal and formal consultations are presented in Table 5. Costs of the biological assessment (BA) are typically borne by the action agency. Unless otherwise stated, this table is used to develop total administrative costs for consultations associated with activities within the CVMV essential habitat.[47]

Table 5
Estimated Administrative Costs of Section 7 Consultations (2005 dollars)

Party	Formal	Informal
Service		
Consultation Cost	$4,908	$2,187
Action Agency		
Consultation Cost	$5,548	$2,774
BA Cost	$18,137	$2,134
Third Party Costs		
Consultation Cost	$3,734	$2,187

Source: Industrial Economics, April 2005, "Final Economic Analysis of Proposed Critical Habitat Designation for the Lane Mountain Milk-Vetch." The administrative cost model is based on data from the Federal Government Schedule Rates, Office of Personnel Management, a review of consultation records from several Service Field offices across the country, and communications with Biologists in the Service. Average costs by type of consultation for each party, brought to 2005 dollars using the "Consumer Price Index – All Urban Consumers" from the U.S. Department of Labor, Bureau of Labor Statistics (Series ID: CUUROOOOSAO Not Seasonally Adjusted).

Project Modification Costs: Management efforts taken to protect the species and/or its habitat are likely to result in project modifications to comply with the goals of the management efforts. Costs of implementing these modifications are associated with

[47] This analysis employs a consultation cost model (see Table 5) to represent a likely range of administrative costs of informal and formal section 7 consultations. The cost model is based on anticipated administrative effort from a survey of a number of Federal agencies and Service Field Offices across the country. The administrative effort is typically defined in number of hours spent, and than translated into a dollar value by applying the appropriate average government salary rates. In interviewing the agencies relevant to this analysis, the representatives were asked if the estimated administrative costs seemed reasonable. In the case that the agency anticipated a different range of costs for their particular activities within the proposed designation that cost range was applied to the relevant consultations in place of the generic cost model estimates. That is, where improved information was available regarding the level of effort for a particular consultation, the unique cost estimates were applied.

changes in labor or material requirements that may occur at one point in time and/or be ongoing.

2.2.1 FEDERAL

Federal agencies incur costs that are directly attributable to compliance with the Act. As noted above, the Service is charged with enforcement, administration, consultation, and monitoring; these costs are predominantly programmatic, and some may be discernable as attributable to the CVMV listing. However, action agencies—those responsible for authorizing or carrying out projects or activities that could have an impact on an endangered species or its habitat—also incur costs through consultations, environmental studies, or project modifications that can be directly or indirectly attributable to CVMV conservation efforts.

2.2.1.1 Section 7 Consultations, Technical Assistance, and Project Modifications

All Federal agencies are required by the Act to ensure the activities they authorize, fund, or carry out do not jeopardize a listed species or adversely modify or destroy designated critical habitat. Consultations may be formal or informal, but in either case the action agency incurs costs to interact with the Service. Costs include preparing BAs, meeting with Service staff to discuss project details, and implementing project modifications to avoid, minimize, or offset impacts to listed species. Federal agencies may also incur costs for monitoring habitat conditions.

Administrative costs of consultations, along with the costs of project modifications resulting from these consultations, represent compliance costs associated with the listing of the species and CHD. In this report, the number and types of consultations with the Service are identified and presented. The costs associated with compliance and project modifications are addressed, and administrative costs are included.

2.2.2 PRIVATE

The CHD for the CVMV or any other threatened or endangered species has the potential to impose costs on private individuals or groups of individuals if there is a connection or nexus between private activities and Federal actions. For example, if a Federal permit is required before developers can begin construction or if there is Federal funding for a private activity, then it is possible that the provisions of the Act, including CHD, may potentially restrict private actions if the action results in a section 7 consultation.

This section identifies and briefly discusses a framework for analyzing economic impacts on development activities that may occur in or near the proposed critical habitat areas.

2.2.2.1 Framework for Residential, Industrial, and Commercial Development Effects

When critical habitat areas are designated in a region, developers may face the following three types of restrictions and costs: 1) development may be prohibited in designated areas, which will impose costs to developers and landowners; 2) development may be allowed in the designated areas, but developers in these areas are required to take additional on-site measures (i.e., project modifications) to reduce the impact of their activities on the listed species and its habitat; and/or 3) development may be allowed in the designated areas, but appropriate mitigation fees must be paid and mitigation activities must be taken to offset the impact of their activities on the listed species and its habitat. The mitigation activities can be on-site or off-site. Thus, the impact of CHD on residential, industrial, and commercial development may include the following components:

- Cost of development restrictions (e.g., prohibit development in designated areas and thus reduce the supply of developable land);

- Cost of project modifications for development (e.g., employ biological monitoring and flagging CVMV habitat during construction activities, protect the habitat site by fencing and signage, prohibit the planting of exotic plants, and restrict the use of pesticides); and

- Cost of mitigation fees and activities for development (e.g., habitat enhancement and conservation).

Economists use two types of models to evaluate the effect of land use regulations on development. The first is the "closed city model," and the second is the "open city model." The open city model is more appropriate for measuring the potential impacts of CHD on urban development. The closed city model assumes that the total number of households in a metropolitan area is fixed and does not respond to market conditions. Thus, if the supply of land is reduced, more people must fit into less space or must live in less desirable locations. The open city model assumes that the number of households in a particular market is determined in a multi-market equilibrium, and households will relocate in response to changes in economic conditions. Housing markets in California, including the southern California counties examined in this analysis, feature a large volume of in- and out-migration and are better described using an open city model.

In this analysis, the costs to residential, industrial, and commercial development arising from CVMV conservation efforts are estimated based on the assumption that development is allowed in the designated areas if appropriate project modifications and/or mitigation activities are taken, and/or mitigation fees paid. Thus, this analysis assumes that no land is removed from potential development as a result of development restrictions. The costs for these project modifications and/or mitigation fees and activities are paid by developers or landowners. Therefore, of the three cost components, only the last two are relevant for this analysis. The method for calculating these components is discussed below. The method for calculating the first component of cost is discussed in Appendix B.

Cost of Project Modification and Mitigation Activities

The net present value approach is used to measure the cost of project modification and mitigation fees and activities to past and future developments that may be associated with designation of critical habitat. This approach allows us to estimate the cost by different types of development (e.g., commercial, residential) and by region (e.g., a particular unit or subunit). The framework requires several pieces of information, including: a) projected acres of each type of development in each area designated for critical habitat, b) percent of development actually "burdened" by project modification and mitigation fees and activities, and c) per-acre costs of project modification and mitigation fees and activities for the "burdened" development. With these data, the post-designation cost of CHD for commercial, industrial, and residential development during a given time period (e.g., from 2006 to 2025) can be estimated by the following formula, where total cost (TC) is measured in 2005 dollars:

$$(1) \qquad TC = \sum_{t=2006}^{2025} \sum_{i=1}^{I} \frac{A_t^i S_t^i C_t^i}{(1+r)^{t-2005}}$$

i = types of development (e.g., low-density residential, high-density residential, commercial, mixed development, etc.)

A_t^i = projected acres of type i development in year t

S_t^i = percent of type-i development actually burdened

C_t^i = per-acre project modification and mitigation activity cost

r = discount rate

Likewise, the pre-designation cost of habitat designation for commercial, industrial, and residential development during a given time period (e.g., from 1998 to 2005) can be estimated by the following formula, where the pre-designation cost is also measured in 2005 dollars:

$$(2) \qquad TC = \sum_{t=1998}^{2005} \sum_{i=1}^{I} [A_t^i S_t^i C_t^i (1+r)^{2005-t}]$$

2.2.3 Effects on Small Entities

This analysis considers how small entities, including small businesses, organizations, and governments, might be affected by future CVMV conservation efforts. The analysis follows guidelines appropriate for

the RFA.[48] Those activities involving small entities are identified, affected small entities described, and potential effects estimated, depending on the availability of data. This analysis is included in Appendix A of this report.

2.2.4 EFFECTS ON ENERGY SUPPLY

In adherence with Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," the analysis considers the future impacts of conservation efforts on the energy industry and its customers.[49] This involves analyzing impacts associated with changes in existing or proposed energy generating facilities as a result of the CHD. If the proposed designation results in a reduction of more than 500 megawatts of installed capacity, the potential electricity price impacts are also considered. This analysis is included in Appendix A of this report.

2.3 PROJECT LIFE, PERIOD OF ANALYSIS, AND DISCOUNT RATE

The period of analysis and discounting is guided by the availability of information concerning the start date and duration of the activity. Each potential cost component has a time period that is appropriate for that specific activity or investment. The time period used is therefore discussed in each section describing the effects of individual types of activities. For example, in evaluating the effects of conservation efforts on residential, industrial, and commercial development, a time frame of 20 years was used to reflect the availability of county forecasts of land use.

The time frame associated with each activity is important because as the time horizon for an economic analysis is expanded, the forecast of future projects becomes increasingly speculative. As a result, a consistent time frame of 20 years is applied to all activities. This provides a time frame within which economic assumptions and forecasts are more likely to remain viable. Also, from a practical standpoint, any values beyond 20 years will be substantially reduced by the process of discounting, and thus would have minimal effect on the present value of the activity or action in question.

Some costs are recurring while others are one time costs. These costs are presented both as net present values and as annualized costs. The total cost per unit of essential habitat represents the summation of annualized costs obtained for each of the component economic impacts. Post-designation (future) costs are presented using both seven and three percent discount rates.

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[48] 5 U.S.C. § 601 *et seq*.

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

2.4 DEFINITION OF ECONOMIC IMPACTS

This report presents four results for each land use category analyzed: (1) pre-designation economic impacts; (2) "undiscounted" post-designation economic impacts; (3) "present value" of post-designation economic impacts (at a three and seven percent discount rate); and (4) "annualized" post-designation economic impacts (also at a three and seven percent discount rate). Procedures used to calculate each set of results are described below.

For each land use category, this analysis first determines and then presents the "undiscounted" economic costs of CVMV conservation efforts. The undiscounted cost is the sum of the future costs in 2005 dollars that are not adjusted for inflation (i.e.; expected changes in purchasing power) and other factors that determine the existence and level of the discount rate. . That is, the economic costs across time are not subject to the process of "discounting." Discounting converts a series of future cash flows (in this case, future costs) to their present value in terms of today's dollars. Discounting is employed in economic analyses involving multiple time periods because it is assumed that an individual or society would not be indifferent between receipt of a dollar today and a dollar received in the future. This is because a dollar today could either be invested, for example, in the bond market, to earn a positive rate of return over time, or the dollar could be used today for present consumption. The process of discounting places the future dollar values into a present value context, and thus facilitates comparison of alternative investments or activities which occur over time. Typically, the greater the opportunities for investment of that dollar today, the higher will be the discount (interest) rate that is applied in the discounting process. Since the present value of a series of payments or costs will usually vary with the number of payments (time periods), the present value estimate is often converted to an annualized value to compare activities or investment alternatives which occur over multiple time periods.

This analysis also presents the economic impacts incurred during the pre-designation and post-designation time periods in common dollar terms. First, the cost of pre-designation conservation efforts known to occur in specific years between 1998 and 2005 are adjusted to 2005 dollars using the Bureau of Labor Statistics' Consumer Price Index (accessed at http://www.bls.gov/cpi/). Pre-designation costs are adjusted to 2005 dollars so that they may be expressed in common terms and compared with future costs, which are also adjusted to 2005 dollars through the discounting process.

Next, the cost of post-designation conservation efforts forecast to occur in specific years between 2006 and 2025 are discounted and presented in present value terms. As noted above, present value terms are used to compare economic costs incurred in different time periods. The present value represents the value of a payment or stream of payments to be made in the future in common dollar terms. In the context of CHD activities involving future costs, translation of these future economic costs to present value terms requires the following: a) projected future costs of CVMV conservation efforts (the undiscounted costs); and b) the specific years in which these impacts are expected to be incurred. With these data, the present

value of the future stream of impacts (PV_c) of CVMV conservation efforts from year t to T is measured in 2005 dollars according to the following standard formula:[50]

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

C_t = forecast cost of CVMV conservation efforts in year t

r = discount rate[51]

As a final output of this analysis, costs of future conservation efforts for each land use category in each unit are expressed as annualized values. Annualized values are calculated to provide comparison of impacts across activities with varying time periods (T). For this analysis, however, all land use categories employ a forecast period of 20 years, 2006 through 2025. Annualized impacts of future CVMV conservation efforts (APV_c) are calculated by the following standard formula:

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

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

2.5 CAVEATS AND ASSUMPTIONS

The assumptions presented here include only those which in general apply to all activity areas included in the analysis. Similar information on assumptions and possible bias that apply to specific activities appear later in the report, within the particular section related to each activity analyzed.

These general caveats, and those presented later specific to each activity, describe factors that introduce uncertainty into the results of this analysis. Table 6 contains a summary of these key assumptions. These caveats and assumptions may be revised as additional information becomes available. The Service therefore solicits from the public further information on any of the issues presented in the discussions and tables of caveats. Additionally, information pertaining to the following questions is requested:

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50 To derive the present value of future conservation efforts, t is 2006 and T is 2025.

51 To discount and annualize costs, guidance provided by the OMB specifies the use of a discount (interest) 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, "Guidelines to Standardize Measures of Costs and Benefits and the Format of Accounting Statements," in Appendix 4: Report to Congress on the Costs and Benefits of Federal Regulations, March 22, 2000, 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).

- Are data available to develop more accurate estimates of the number of future consultations, project modifications, and costs for the activities related to private or public lands?

- Are data available on additional land use practices, or current or planned activities in essential habitat areas, that are not specifically or adequately addressed in this analysis?

- Are data available on additional co-extensive impacts (such as additional regulatory burdens from State or local laws triggered by the designation of critical habitat) that are not specifically or adequately addressed in this analysis?

Table 6
Assumptions and Uncertainties Applicable to the General Analysis

Assumption	Direction of Bias
The analysis considers the cost of conservation and protection efforts for the CVMV including those attributable to the listing, to CHD, or other State and local regulations.	+
Inevitably, actions taken to protect CVMV provide benefits to other listed species. When conservation efforts are implemented in areas of habitat overlap between CVMV and other listed species, the analysis attributes the costs of the conservation efforts co-extensively to CVMV.	+
Non-market benefits are not easily measured without additional resources, unless directly applicable and peer-reviewed analyses are readily available. Consequently, this analysis makes no attempt to measure the non-market benefits that may be associated co-extensively with CHD.	+

+: This assumption is likely to produce an upward bias in cost estimates.

-: This assumption is likely to produce a downward bias in cost estimates.

+/-: No direction of bias can be determined.

Note: This table summarizes general caveats and assumptions related to the approach of the analysis. Detailed caveats and assumptions are described under relevant sections for each analyzed activity.

Key economic and demographic information, including population characteristics and general economic activity, for the counties containing essential habitat (including proposed critical habitat and lands excluded from proposed critical habitat) and unoccupied areas identified for possible inclusion in the CHD for the CVMV is presented in this section. The smallest area for which socioeconomic data are available most reliably is at the county level, so county data are presented in order to provide context for the discussion of potential economic impacts later in this report. The county data also might serve to illuminate trends within the essential habitat areas that could influence the potential economic impacts, and therefore aid in the analysis of those impacts. Although county level data may not precisely reflect the socioeconomic characteristics of the areas immediately surrounding the CVMV essential habitat, these data provide the best context for the broader analysis.

3.1 GEOGRAPHIC DESCRIPTION OF THE REGION

Essential habitat for the CVMV, including areas proposed for critical habitat and areas excluded from the proposed CHD, is located within Riverside County in Southern California. Additional unoccupied areas within both Riverside and San Bernardino counties have also been identified for possible inclusion in the CHD for the CVMV. In Riverside County, the essential habitat and areas identified for possible inclusion are located in the northwestern part of the county, generally along Interstate 10 between the cities of Banning and Indian Wells. Areas identified for possible inclusion as critical habitat extend north from Interstate 10 within Riverside County into the southern part of San Bernardino County. The region has a very diverse geography, ranging from fertile river valleys and low deserts, to foothills and mountain ranges. The climate of the region is characterized by a strong desert influence, moderated at times by marine air from the Pacific Ocean. Temperatures below freezing are rare, while hot weather with temperatures in excess of 90ºF is common in summer. In the winter months, the monthly average rainfall is just 1.5 inches.

3.2 POPULATION CHARACTERISTICS AND DEMOGRAPHICS

Essential habitat for the CVMV has been identified within Riverside County, and includes areas proposed for critical habitat and areas excluded from the proposed designation. Unoccupied areas identified in the proposed rule for possible inclusion in the CHD are located in both Riverside and San Bernardino counties. Proposed critical habitat, excluded lands, and unoccupied areas identified for possible inclusion are described in Section 1.8. Because this analysis considers CVMV conservation efforts in all of these areas, socioeconomic data for both counties are presented here. Table 7 presents the population size, change in population from 1990 to 2004, per capita income, and poverty rates for the two counties and the State of California. The two counties combined account for over ten percent of the total population of the State, or nearly 3.8 million people. These counties rank among the most populated counties in the United

States; based on 2004 population estimates, San Bernardino was the twelfth largest county in the nation, while Riverside County ranked thirteenth.[52]

Table 7
Socioeconomic Profile of Counties Containing CVMV Essential Habitat and Unoccupied Areas Identified for Possible Inclusion

County/State	Population (2004)	Percent of State (2004)	Percent Change (1990-2004)	Per Capita Income (2003)	Poverty Rate (2002)
Riverside County	1,871,950	5.2%	+59.9%	$25,032	12.9%
San Bernardino County	1,921,131	5.4%	+35.4%	$24,042	15.7%
California State	**35,893,799**	**100.0%**	**+20.6%**	**$33,415**	**13.3%**

Sources:
2004 population estimates: U.S. Census Bureau, "Table 1: Annual Estimates of the Population for Counties of California: April 1, 2000 to July 1, 2004 (CO-EST2004-01-06)," downloaded from http://www.census.gov/popest/counties/CO-EST2004-01.html, April 15, 2005.
2002 poverty estimates: U.S. Census Bureau, December 2004, "Small Area Income and Poverty Estimates," accessed at http://www.census.gov/hhes/www/saipe/tables.html, April 15, 2005.
1990-2004 population change: U.S. Census Bureau, "Ranking Tables for Counties," downloaded from http://www.census.gov/population/www/cen2000/phc-t4.html, May 12, 2004; and U.S. Census Bureau, "Table 1: Annual Estimates of the Population for Counties of California: April 1, 2000 to July 1, 2004 (CO-EST2004-01-06)," downloaded from http://www.census.gov/popest/counties/CO-EST2004-01.html, April 15, 2005.
2003 per capita income: U.S. Department of Commerce, April 2005, Bureau of Economic Analysis, *Regional Economic Information System 1969-2003.*

The population of Riverside County has grown significantly since 1990, increasing by nearly 60 percent from 1990 to 2004. In recent years (2000 to 2004), Riverside County's population increased by 21.1 percent, making it the second fastest growing county in the State.[53] The population of San Bernardino County increased by over 35 percent from 1990 to 2004, exhibiting a stronger growth rate than the State's average of 21 percent for the same time period.

Per capita incomes for both counties are lower than the Statewide average of $33,415; the per capita income for Riverside County is $25,032, and that of San Bernardino County is $24,042.

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52 U.S. Census Bureau, April 14, 2005 (Release Date), "Table CO-EST2004-08 - Population Estimates for the 100 Largest U.S. Counties Based on July 1, 2004 Population Estimates: April 1, 2000 to July 1, 2004," http://www.census.gov/popest/counties/CO-EST2004-08.html.

53 U.S. Census Bureau, "Table 1: Annual Estimates of the Population for Counties of California: April 1, 2000 to July 1, 2004 (CO-EST2004-01-06)," downloaded from http://www.census.gov/popest/counties/CO-EST2004-01.html, April 15, 2005.

The poverty rate for a region is the percentage of people who are estimated to live below the poverty level, which is based on national levels set for minimum income requirements for various sizes of households. The poverty rate for Riverside County is 12.9 percent, slightly less than the State average of 13.3 percent. The poverty rate in San Bernardino County is estimated at 15.7 percent, somewhat higher than that of the State.

3.3 EMPLOYMENT AND ECONOMIC ACTIVITY

Employment is a key economic indicator, as patterns of growth and decline in a region's employment are largely driven by economic cycles and local economic activity. Current employment figures can be examined to provide a "snapshot" of a region's economy, highlighting key industries. Earnings represent the sum of three components of personal income: wage and salary disbursements, other labor income (includes employer contribution to pension and profit-sharing, health and life insurance, and other non-cash compensation), and proprietors' income. Earnings reflect the amount of income that is derived directly from work and work-related factors. Earnings can be used as a proxy for the income that is generated within a geographical area by industry sectors, and can be used to identify the significant income-producing industries of a region or to show trends in industry growth or decline.

Recent employment and earnings data for Riverside and San Bernardino counties are presented in Table 8. Employment is given for each industry group in terms of the number of jobs, which includes both full-time and part-time jobs, and as a percentage of the total jobs for each county. Earnings are presented in millions of dollars and percentage share of total for each of the same industry groups as employment.

Riverside County employment is 744,121 jobs, or about 3.8 percent of total employment in the State of California. Total earnings of nearly $26 billion are attributed to employment in Riverside County, making up about 2.8 percent of total earnings in the State. About 17 percent of jobs and earnings in the county are found in trade, transportation, and utilities; retail trade represents over 70 percent of those jobs.[54] Government is also a significant employer, contributing nearly 15 percent of total county jobs, while the professional and business services sector provides about 12 percent of total county jobs. In terms of earnings, government is responsible for over 20 percent of total earnings in Riverside County, the greatest share of any industry group. Construction provides more than ten percent of the total jobs in Riverside County, while leisure and hospitality jobs make up slightly less than ten percent of the total. Construction, however, contributes a greater share to earnings (nearly 14 percent of total) than leisure and hospitality (less than six percent of total). Less than two percent of Riverside County employment is related to agricultural production on farms, and another 1.5 percent is found in the forestry, hunting, fishing, and related activities sector, which includes agricultural services jobs. Earnings in each of these two industry groups make up less than one percent of the county's total earnings.

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[54] California Employment Development Department, April 26, 2005, "Riverside County – Industry Employment and Labor Force by Annual Average," downloaded from http://www.calmis.cahwnet.gov/htmlfile/county/river.htm.

Table 8
2003 Employment and Earnings in Riverside and San Bernardino Counties

		Riverside		San Bernardino	
		Employment (# of Jobs) *(% of Total)*	**Earnings ($Millions)** *(% of Total)*	**Employment (# of Jobs)** *(% of Total)*	**Earnings ($Millions)** *(% of Total)*
	Total Employment	**744,121**	**$25,981.7**	**773,690**	**$29,757.4**
Goods Producing:	Agricultural Production (Farm)	12,866 *(1.7%)*	$236.8 *(0.9%)*	5,235 *(0.7%)*	$138.0 *(0.5%)*
	Forestry, Hunting, Fishing, and Related[a/]	10,927 *(1.5%)*	$221.9 *(0.9%)*	1,869 *(0.2%)*	$48.6 *(0.2%)*
	Mining	912 *(0.1%)*	$43.0 *(0.2%)*	983 *(0.1%)*	$56.7 *(0.2%)*
	Construction	78,049 *(10.5%)*	$3,499.2 *(13.5%)*	50,944 *(6.6%)*	$2,226.6 *(7.5%)*
	Manufacturing	54,940 *(7.4%)*	$2,715.8 *(10.5%)*	68,807 *(8.9%)*	$3,264.5 *(11.0%)*
Service Providing:	Trade, Transportation, and Utilities[b/]	130,307 *(17.5%)*	$4,407.0 *(17.0%)*	170,632 *(22.1%)*	$6,552.0 *(22.0%)*
	Leisure and Hospitality[c/]	72,673 *(9.8%)*	$1,430.1 *(5.5%)*	57,657 *(7.5%)*	$882.9 *(3.0%)*
	Financial Activities[d/]	58,990 *(7.9%)*	$1,714.2 *(6.6%)*	54,381 *(7.0%)*	$2,418.6 *(8.1%)*
	Information	8,367 *(1.1%)*	$366.3 *(1.4%)*	8,897 *(1.1%)*	$414.4 *(1.4%)*
	Professional and Business Services[e/]	89,612 *(12.0%)*	$2,469.5 *(9.5%)*	96,855 *(12.5%)*	$2,889.0 *(9.7%)*
	Educational and Health Services[f/]	68,564 *(9.2%)*	$2,439.5 *(9.4%)*	83,092 *(10.7%)*	$3,324.9 *(11.2%)*
	Other Services	47,828 *(6.4%)*	$1,101.7 *(4.2%)*	47,418 *(6.1%)*	$1,028.0 *(3.5%)*
	Government	110,086 *(14.8%)*	$5,336.5 *(20.5%)*	126,920 *(16.4%)*	$6,513.3 *(21.9%)*

a/ also includes Agricultural Services
b/ includes Utilities, Transportation and Warehousing, Retail Trade, and Wholesale Trade
c/ includes Accommodation and Food Services, and Arts, Entertainment, and Recreation
d/ includes Finance and Insurance, and Real Estate and Rental and Leasing
e/ includes Professional, Scientific, and Technical Services, Administrative Support, Waste Management, and Remediation Services, and Management of Companies and Enterprises
f/ includes Education Services and Heath Care and Social Assistance
Source: U.S. Department of Commerce, April 2005, Bureau of Economic Analysis, *Regional Economic Information System 1969-2003.*

Employment in San Bernardino County totals 773,690 jobs, or about 3.9 percent of the State's total employment. Total earnings of nearly $30 billion are generated by San Bernardino County jobs, making up about 3.2 percent of total earnings in California. Over 22 percent of jobs and earnings in the county are in trade, transportation, and utilities, the largest industry group in the county. Of these jobs, slightly over half are associated with retail trade, and the remainder is split between wholesale trade and transportation and utilities.[55] Government is another significant employer, accounting for over 16 percent of county jobs and nearly 22 percent of county earnings. Professional and business services provides over 12 percent of total employment and just less than 10 percent of total earnings in the county. Employment in educational and health services makes up about 11 percent of employment and earnings in San Bernardino County. Only a small portion (less than one percent) of county employment and earnings is related to agricultural production on farms, and even less is associated with forestry, hunting, fishing, and related activities, which includes agricultural services jobs.

3.4 INDIAN TRIBES

Two Indian reservations are located near the area of the proposed CVMV critical habitat: the Agua Caliente Indian Reservation and the Morongo Indian Reservation. No Indian reservation lands have been identified as essential for the conservation of the CVMV; however, unoccupied areas have been identified on the Morongo Indian Reservation for possible inclusion in the CHD.[56] The Agua Caliente Indian Reservation is located in the vicinity of the proposed critical habitat, but the proposed rule does not identify any reservation lands as essential to the CVMV or for possible inclusion in the CHD. However, a draft HCP proposing coverage for 24 species, including the CVMV, has been developed for the Tribe, covering lands within and near the reservation and is currently in consultation with the Service.

3.4.1 AGUA CALIENTE INDIAN RESERVATION

The Agua Caliente Indian Reservation is located in and around the city of Palm Springs, with approximately 6,700 acres of the reservation located within the city limits.[57] According to the 2000 Census, the total population for the reservation was 21,358, of which only 283 people identified their race as American Indian or Alaska Native (AIAN), either alone or in combination with one or more other races (see Table 9). The Agua Caliente Band of Cahuilla Indians has approximately 365 enrolled members, not

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55 California Employment Development Department, April 26, 2005, "San Bernardino County – Industry Employment and Labor Force by Annual Average," downloaded from http://www.calmis.cahwnet.gov/htmlfile/county/sbern.htm.

56 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register*, Vol. 69, No. 239, p. 74483.

57 Tiller, Veronica E. Velarde (Ed.), October 1995, *American Indian Reservations and Indian Trust Areas,* U.S. Department of Commerce, Economic Development Administration, p. 234.

all of whom live on the reservation.[58] Reservation residents reported a 5.7 percent unemployment rate in 2000, which represents the percentage of civilians 16 years old or older and of any race who reported that they were unemployed members of the labor force. Per capita income and poverty rate data as shown here are based on 1999 incomes for reservation residents of all races. The poverty rate represents the percentage of individuals who reported income less than a nationally-determined poverty level. The per capita income for residents of the Agua Caliente Reservation was $32,059, while the poverty rate was 10.5 percent.

Table 9
2000 Census Data for Indian Reservations in Vicinity of CVMV Essential Habitat

Characteristic	Agua Caliente Reservation	Morongo Reservation
Land Area (square miles)	48.9	49.1
Population (number of persons):		
All Races	21,358	954
American Indian or Alaska Native[a/]	283	581
Unemployment Rate[b/]	5.7%	10.0%
Per Capita Income[b/]	$32,059	$17,413
Poverty Rate[b/]	10.5%	18.0%

a/ Includes residents who selected American Indian and Alaska Native (AIAN) as race, whether they selected AIAN alone or in combination with one or more other races.

b/ Unemployment, per capita income, and poverty rate information is based on all residents of the reservation, regardless of race (i.e., includes people of all races, not just AIAN).

Source: U.S. Census Bureau, Census 2000 data obtained from http://factfinder.census.gov, May 2005.

3.4.2 MORONGO INDIAN RESERVATION

The Morongo Indian Reservation is located about 22 miles northwest of Palm Springs and adjacent to the city of Banning. The reservation lies primarily within the foothills and lower portions of the San Bernardino range, and is bordered by both the San Bernardino and San Jacinto mountains. Residents of the Morongo Reservation are primarily members of the Cahuilla Tribe, with the remainder made up of the Serrano and Cupeño tribes.[59] A total of 954 people lived on the reservation according to the 2000 Census; 581 of these identified their race as AIAN, either alone or in combination with one or more other

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58 San Diego State University, Library and Information Access, "California Indians and Their Reservations, an Online Dictionary," http://infodome.sdsu.edu/research/guides/calindians/calinddict.shtml#a, accessed May 31, 2005.

59 Tiller, Veronica E. Velarde (Ed.), October 1995, *American Indian Reservations and Indian Trust Areas,* U.S. Department of Commerce, Economic Development Administration, p. 274.

races (see Table 9). The Morongo Band of Mission Indians has approximately 1,100 members living both on and off the Reservation.[60] The unemployment rate for reservation residents, including all races, was 10.0 percent, according to the 2000 Census. The per capita income for residents of the Morongo Reservation was $17,413, while the poverty rate was 18.0 percent.

[60] Ibid.

4.1 OTHER SPECIES LISTED UNDER THE ACT

The final rule listing CVMV as endangered also determined endangered status for *Astragalus jaegerianus* (Lane Mountain milk-vetch) and *Astragalus tricarinatus* (triple-ribbed milk-vetch), as well as threatened status for *Astragalus lentiginosus* var. *piscinensis* (Fish Slough milk-vetch) and *Astragalus magdalenae* var. *peirsonii* (Peirson's milk-vetch).[61]

It is important to consider other species in the region listed under the Act, as protections for other threatened and endangered species and any of their designated critical habitats may also benefit the CVMV. When a consultation is triggered for any listed species, the Service will also take into account all other listed species known or thought to occupy areas on or near the project lands. Past section 7 consultations for the CVMV have included 62 other listed species.

The Service maintains lists of threatened and endangered species, and organizes the list by State (http://ecos.fws.gov/tess_public). For California, there are 298 listed species, second among states only to Hawaii, including 119 animal species and 179 plant species.[62] Some conservation efforts may have been in place for many of these species that may provide incidental protection for the CVMV.

4.2 FEDERAL AND CALIFORNIA STATE STATUTES AND REGULATIONS

4.2.1 CLEAN WATER ACT

The purpose of the CWA is to restore the physical, biological, and chemical integrity of the waters of the United States using two basic mechanisms: (1) direct regulation of discharges pursuant to permits issued under the National Pollutant Discharge Elimination System (NPDES) of section 402, as well as the discharge of dredge or fill materials under section 404; and (2) the Title III water quality program.[63]

Under the NPDES program, EPA sets pollutant-specific limits on the point source discharges for major industries and provides permits to individual point sources that apply these limits. EPA has delegated

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61 U.S. Fish and Wildlife Service, October 6, 1998, "Determination of Endangered or Threatened Status for Five Desert Milk-vetch Taxa from California, Final Rule" *Federal Register*, Vol. 63, No. 193, pp. 53596-53615.

62 U.S. Fish and Wildlife Service, "Threatened and Endangered Species System (TESS), Listings by State and Territory as of 04/18/2005, California," http://ecos.fws.gov/tess_public/TESSWebpageUsaLists?state=CA, accessed April 18, 2005.

63 Clean Water Act, 33 U.S.C. §1251 (1987).

responsibility for the NPDES permitting program to most states.[64] State-issued NPDES permits are treated as non-Federal actions. As such, the issuance of NPDES permits by states is not subject to the consultation requirements of the Act. The Service consults with the EPA on the triennial review to ensure that threatened and endangered species impacts are contemplated in the development of standards.

Under the water quality standards program, EPA has issued water quality criteria to establish limits on the ambient concentration of pollutants in surface waters that will still protect the health of the water body. States issue water quality standards that reflect the Federal water quality criteria and submit the standards to EPA for review. State water quality standards are subject to review every three years (triennial review). States apply the standards to NPDES discharge permits to ensure that discharges do not violate the water quality standards.[65]

Section 404 of the CWA prescribes a permit program for the discharge of dredged or fill material into navigable waters. Under section 404 of the CWA, all applicants for a Federal license or permit to conduct activity that may result in discharge to navigable waters of the United States are required to submit a State certification to the licensing or permitting agency. Specifically, pursuant to section 404, permit applicants are required to show that they have "taken steps to avoid wetland impacts, where practicable, minimized potential impacts to wetlands, and provided compensation for any remaining, unavoidable impacts through efforts to restore or recreate wetlands."[66]

4.2.2 PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Act of 1969 is the organic act for the California State and Regional Water Quality Control Boards. The Act made the Regional Boards the "principal state agencies with primary responsibility for the coordination and control of water quality" with jurisdiction over the "waters of the state," defined as "any surface water or groundwater, including saline waters, within the boundaries of the state."[67] Regional Boards are the licensing and/or permitting agencies for any California State certification requisite under Section 401 of the CWA for activities requiring a Federal license or permit to conduct activities that may result in discharge into navigable waters.[68] Included as Federal licenses and

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64 Clean Water Act, 33 U.S.C. §402.

65 Clean Water Act, 33 U.S.C. §303, 305.

66 U.S. Environmental Protection Agency, September 26, 2003 (last updated), "Section 404 of the Clean Water Act: An Overview," http://www.epa.gov/owow/wetlands/facts/fact10.html.

67 California Environmental Resources Evaluation System, "California Wetlands Information System (CWIS) Agency Roles and Responsibilities: State Water Resources Control Board," http://ceres.ca.gov/wetlands/agencies/swrcb.html, accessed April 2005; and California Water Code, § 13050(e).

68 Personal communication with David Acuff, Biologist, City of San Marcos, California, April 18, 2005.

permits subject to Section 401 are Sections 402 and 404 permits, Federal Energy Regulatory Commission hydropower licenses, and Rivers and Harbors Act Sections 9 and 10 permits.[69]

4.2.3 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The CEQA (P.R.C. 21000 *et seq*.) establishes State policy to prevent actions or project modifications from causing significant, avoidable damage to the environment by requiring changes through the use of alternatives or mitigation measures. In a manner comparable to section 7 of the Act, CEQA applies to actions undertaken, financed, or permitted by State lead agencies. Regulations for implementation are published in the State CEQA Guidelines, which establish an overall process for the environmental evaluation of projects that is similar to that promulgated under the National Environmental Policy Act (NEPA).

CEQA applies to certain activities of State and local public agencies. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project." A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment. Most proposals for physical development in California are subject to the provisions of CEQA, as are many governmental decisions which do not immediately result in physical development (such as adoption of a general or community plan). Every development project that requires discretionary governmental approval will likely require at least some environmental review pursuant to CEQA.[70]

Article 14 of CEQA applies to projects that are subject to both CEQA and NEPA. NEPA applies to projects which are carried out, financed, or approved in whole or in part by Federal agencies. Accordingly, this article applies to projects which involve one or more State or local agencies *and* one or more Federal agencies.

An EIR is required to assess potential environmental impacts of a project, the components of which are detailed in Sections 15120 to 15132. In general, projects must identify potential environmental impacts and design alternatives where feasible for the project to avoid those impacts. If impacts are unavoidable, the project must provide a finding explaining why impacts are unavoidable, and subsequently design alternatives to minimize and mitigate environmental impacts.

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69 U.S. Environmental Protection Agency, March 4, 2005 (last updated), "Section 401 of the Clean Water Act: An Overview," http://www.epa.gov/owow/wetlands/facts/fact24.html, accessed April 2005.

70 California Resources Agency, "California Environmental Quality Act: Frequently Asked Questions," http://ceres.ca.gov/topic/env_law/ceqa/more/faq.html, accessed July 22, 2004.

CEQA provides protection for the CVMV by requiring project descriptions that identify the environmental setting of a project. If impacts are found to be unavoidable, alternatives to minimize impacts to CVMV habitat are required to be designed through the EIR process.

4.3 HABITAT CONSERVATION PLANS AND CONSERVATION PROGRAMS

4.3.1 COACHELLA VALLEY MULTIPLE SPECIES HABITAT CONSERVATION PLAN

Planning and development of the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP) began 12 years ago in 1994. There are sixteen signatories to the MSHCP including Riverside County, local municipalities, and water districts. Although the Memorandum of Understanding (MOU) was signed in 1996, planning and preparation of the MOU was undertaken by the Local Permittees of the MSHCP prior to that time. The effort to create the MSHCP was initiated primarily as a result of a recommendation by the Coachella Valley Mountain Conservancy (CVMC) that CVAG prepare a multiple species HCP to address conservation needs of the wide range of Federal and State listed species throughout the Coachella Valley and surrounding mountain areas. Prior to CVMC's recommendation, the Federally listed Coachella Valley fringe-toed lizard (CVFTL) was addressed by an individual HCP (see Section 4.3.2). It is anticipated that the MSHCP will become permitted (receive incidental take permits) by year-end 2005.[71] The purpose of the MSHCP is to develop a balance between conservation and economic development in the rapidly growing Coachella Valley and provide a more streamlined process for compliance with the Act and other environmental regulations.[72]

When granted permits, the MSHCP will serve as a HCP pursuant to section 10 (a)(1)(b) of the Act, as well as a Natural Community Conservation Plan pursuant to California's Natural Community Conservation Planning Act of 1991 and will cover 27 species, 10 of which are Federally listed including the CVMV. Aside from unincorporated Riverside County, eight Coachella Valley municipalities (Cathedral City, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage) are signatories to the MSHCP. These entities, along with other signatories to the plan constitute the Local Permittees of the MSHCP. The remaining signatories include: Coachella Valley Association of Governments (CVAG); Coachella Valley Conservation Commission (CVCC); Coachella Valley Water District (CVWD); Imperial Irrigation District (IID); Riverside County Parks Department; Riverside County Flood Control and Water Conservation District; and Riverside County Waste Management District.

The MSHCP Plan Area encompasses approximately 1.13 million acres, including 20,561 acres of essential and 19,570 acres of unoccupied areas of CVMV habitat. In general, the MSHCP Plan Area is

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71 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), May 31, 2005.

72 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 1.2, Purpose.

the entire extent of the Coachella Valley Watershed that is within the jurisdiction of the CVAG.[73] Specifically, the MSHCP Plan Area is bordered in the north by San Bernardino County, in the east by a range line common to Ranges 13 and 14 East, in the south by San Diego and Imperial Counties, and in the west by a range line common to Ranges 1 and 2 East at the limit of the Colorado Desert in the San Gorgonio Pass area.[74]

Throughout the MSHCP Plan Area, covered species and associated habitat are conserved through a system of Reserve Areas known as the MSHCP Reserve System. Section 4.0 of the Draft MSHCP discusses assembly of the MSHCP Reserve System. The Reserve System will be established and managed within 21 Conservation Areas that span approximately 747,600 acres of the MSHCP Plan Area.[75]

The Reserve System lies entirely within the Conservation Areas because Reserve Areas are those portions of Conservation Areas consisting of existing public land and private land that has been acquired for conservation by the Local Permittees, non-profit organizations, and government agencies. Land acquired for conservation within Conservation Areas becomes part of the Reserve System. Acquisition funding is accrued through conditional contributions by MSHCP signatories, development mitigation fees that will be imposed when the plan is permitted, previous development mitigation fees paid under the CVFTL HCP, various Federal and State funding, and donations and acquisitions by private entities. Land within Conservation Areas with a greater possibility of development is given a high priority for acquisition by the Local Permittees.[76] For clarity, Figure 1 provides a representation of the MSHCP Reserve System and the relationship between Conservation Areas, Reserve Areas, public land, and private land acquired for conservation.

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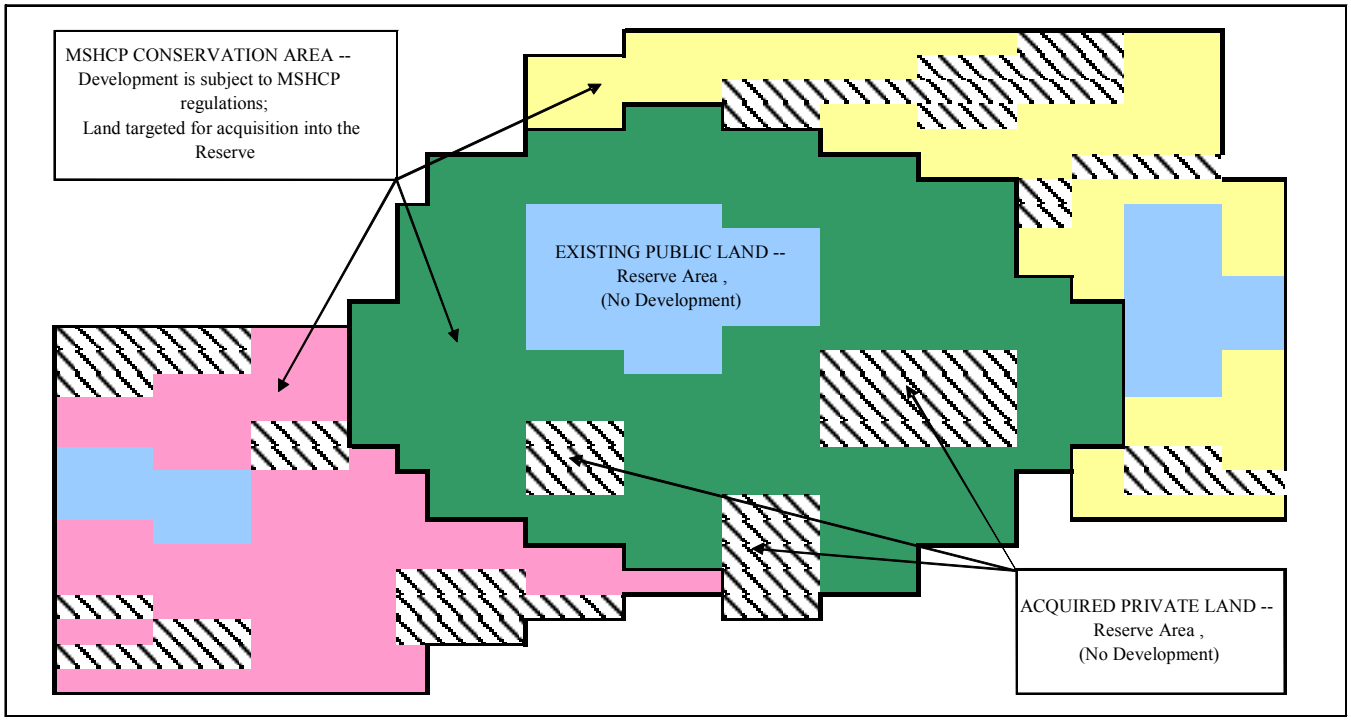
73 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 2.1, Plan Area Boundaries and Regional Setting.

74 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 2.1, Plan Area Boundaries and Regional Setting.

75 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 4.0, Establishment of the MSHCP Reserve System.

76 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), May 31, 2005.

Figure 1
Representation of Hypothetical MSHCP Reserve System



CVMV is widely distributed throughout the MSHCP Plan Area as 14 of the 21 Conservation Areas conserve CVMV habitat. It is important to note that MSHCP Conservation Areas simultaneously protect multiple covered species occurring within their boundaries. The MSHCP defines species-specific conservation objectives. Section 9.0 of the Draft MSHCP outlines the general conservation objectives for the CVMV as follows:

- **Objective 1 - Ensure Conservation of "Core Habitat:"** "Core Habitat" for CVMV is defined broadly as an area sufficiently large to support self-sustaining populations independent of other Core Habitat areas, not fragmented by development, including roads in "such a way to isolate populations," has "intact Essential Ecological Processes, including sand source and delivery systems," and has effective connections to other Core Habitat areas through Biological Corridors and Linkages.[77]

- **Objective 2 - Conserve "Other Conserved Habitat:"** "Other Conserved Habitat" for the CVMV refers to that habitat which is important to the species but does not possess the characteristics that define "Core Habitat."

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77 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 9.2.2.3, Species Conservation Analysis.

- **Objective 3 - Ensure Protection of "Essential Ecological Process" Areas:** The main "Essential Ecological Process Areas" for CVMV are sand transport areas. These areas are protected through acquisition into the Reserve System and special provisions for development within Conservation Areas.

- **Objective 4 - Protect Biological Corridors and Linkages:** Biological Corridors and Linkages for CVMV pertain to the areas that connect CVMV habitat and sand transport systems.

- **Objective 5 - Implement Adaptive Management and Biological Monitoring:** Reserve Areas that conserve CVMV will be managed and monitored accordingly. Management ensures that the land is suitable to sustain the conservation of the species while monitoring generally assesses the effectiveness of conservation efforts.

Much of the proposed CHD and the excluded essential habitat identified in the proposed rule are contained by MSHCP Conservation Areas. In addition, the Unoccupied Areas within Riverside County are completely covered by MSHCP Conservation Areas. Table 10 provides a summary of essential CVMV habitat and its relationship to MSHCP Conservation Areas.

Table 10
Conservation Areas and Essential Habitat for the CVMV

Essential Habitat Unit	Overlapping MSHCP Conservation Areas
1 - Whitewater River	Snow Creek/Windy Point Whitewater Floodplain
2 - Mission Creek and Morongo Wash	Willow Hole Upper Mission Creek/Big Morongo Canyon
3 - Thousand Palms	Thousand Palms

Source: Coachella Valley Association of Governments (CVAG), 2004, *Draft Coachella Valley MSHCP*, Section 9.2.2 "Coachella Valley Milkvetch (*Astragalus lentiginosus var. coachellae*)."

Table 11 provides a summary of unoccupied areas of CVMV habitat and as they relate to MSHCP Conservation Areas. Map 2 provides a visual representation of the overlapping CVMV habitat units and MSHCP Conservation Areas.

Table 11
Unoccupied Areas of CVMV Habitat and MSHCP Conservation Areas

Unoccupied Areas	Overlapping MSHCP Conservation Areas
1 - Whitewater River	Cabazon Santa Rosa and San Jacinto Mountains Stubbe and Cottonwood Canyons Snow Creek/Windy Point Upper Mission Creek/Big Morongo Canyon Whitewater Canyon Whitewater Floodplain
2 - Mission Creek and Morongo Wash	Edom Hill Thousand Palms Upper Mission Creek and Big Morongo Canyon Willow Hole
3 - Thousand Palms	Thousand Palms

Source: Coachella Valley Association of Governments (CVAG), 2004, *Draft Coachella Valley MSHCP*, Section 9.2.2 "Coachella Valley Milkvetch (*Astragalus lentiginosus var. coachellae*)."

4.3.1.1 MSHCP Conservation in Unit 1

As shown in Table 10 and Map 2, Unit 1 proposed CHD is entirely contained in both the Snow/Creek Windy Point and Whitewater Floodplain Conservation Areas. That is, the entire unit is within the MSHCP proposed conservation area. Unit 1 is approximately 2,458 acres (84 percent) of the 2,939 acres in the Snow Creek/Windy Point Conservation Area and approximately 5,993 acres (81 percent) of the 7,374 acres in the Whitewater Floodplain Conservation Area.[78] "Core Habitat" for the CVMV, as designated in the Draft MHSCP, is conserved in both Conservation Areas that overlap Unit 1 of essential habitat for the CVMV. The unoccupied areas of Unit 1 are contained in the Cabazon, Santa Rosa and San Jacinto Mountains, Stubbe and Cottonwood Canyons, Snow Creek/Windy Point, Upper Mission Creek and Big Morongo Canyon, Whitewater Canyon, and Whitewater Floodplain MSHCP Conservation Areas. In general, unoccupied areas consist of sand source and transport areas, commonly considered "Other Conserved Habitat" for the CVMV in the Draft MSHCP.[79]

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[78] Approximately 441 acres of the Santa Rosa and San Jacinto Mountains Conservation Area consists of Unit 1 of essential habitat for the CVMV. Coverage by this conservation area (441 acres) represents approximately 4.5 percent of Unit 1.

[79] Although these mainly conserve "Other Conserved Habitat" for CVMV as defined in the Draft MSHCP, two of these Conservation Areas, Whitewater Floodplain and Snow Creek/Windy Point also conserve "Core Habitat" for the CVMV.

4.3.1.2 MSHCP Conservation in Unit 2

Unit 2 proposed CHD is contained entirely in both the Willow Hole and Upper Mission Creek and Big Morongo Canyon Conservation Areas. Unit 2 is approximately 4,213 acres (73 percent) of the 5,776 acres in the Willow Hole Conservation Area and approximately 1,006 acres (3 percent) of the 28,887 acres in the Upper Mission Creek and Big Morongo Canyon Conservation Area. "Core Habitat" for the CVMV is conserved in the Willow Hole Conservation Area, while "Other Conserved Habitat" for the CVMV is conserved in the Upper Mission Creek/Big Morongo Canyon Conservation Area.

As defined in Section 4.3.8 of the Draft MSHCP, there are portions of six parcels contained in the Willow Hole Conservation Area where a 9:1 conservation to development ratio must be applied. In addition, two parcels constitute "Special Provisions Areas" within the Upper Mission Creek and Big Morongo Canyon Conservation Area that overlap Unit 2. In these parcels, specific areas are designated as "take areas," while others are designated conserved lands. Much of the lands to be conserved within these parcels are within Unit 2.

Unit 2 unoccupied areas are contained in the Edom Hill, Thousand Palms, Upper Mission Creek and Big Morongo Canyon, and Willow Hole Conservation Areas.

4.3.1.3 MSHCP Conservation in Unit 3

Unit 3 is contained in the Thousand Palms Conservation Area. Specifically, Unit 3 completely overlaps the southwestern corner of the Thousand Palms Conservation Area. The area is mainly characterized by publicly owned land, including a substantial amount of land owned by the Service. Consequently, the majority of Unit 3 is included in the existing MSHCP Reserve System design. The Thousand Palms Conservation Area conserves "Core Habitat" for the CVMV. The 764 acres of private land in the northwest corner of Unit 3 is entirely contained within a Special Provisions Area imposing a 9:1 conservation to development ratio.[80]

Unit 3 unoccupied areas are contained entirely within the Thousand Palms Conservation Area. Although some of the unoccupied habitat areas occur on private land, substantial portions are owned by the BLM and the Department of Parks and Recreation, and are therefore part of the existing MSHCP Reserve System.

4.3.2 COACHELLA VALLEY FRINGE-TOED LIZARD HABITAT CONSERVATION PLAN

The Coachella Valley Fringe-Toed Lizard Habitat Conservation Plan (CVFTL HCP) was approved by the Service and granted permits in 1986. At that time, the CVFTL HCP was only the second individual

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[80] Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 4.3.11, Thousand Palms Conservation Area.

species HCP approved in the United States. The CVFTL is protected through three separate preserve areas encompassing sandy areas of the Coachella Valley floor: the Coachella Valley Preserve (in the Thousand Palms area), the Willow Hole/Edom Hill Preserve, and the Whitewater Floodplain Preserve east of Indian Avenue.[81] In order to comply with the CVFTL HCP, developers are required to pay a fee of $600 per acre to mitigate for associated adverse habitat affects and take of CVFTL.[82]

In addition to lands already publicly owned, the CVFTL HCP targeted 13,000 acres of land to be acquired, primarily in the Coachella Valley Preserve.[83] Approximately $23.5 million was spent between 1985 and 1997 to purchase these acres.[84] With the exception of approximately 15 acres in the Coachella Valley Preserve area, all the lands identified in the CVFTL HCP have been acquired. The acquisition funds were almost exclusively derived from the CVFTL development mitigation fees.

When the MSHCP is permitted, all incidental take permits granted under Section 10 of the Act as they pertain to the CVFTL HCP will be relinquished and existing CVFTL HCP Preserves will become part of the MSHCP Reserve System.[85] Existing CVFTL HCP Preserves will be managed and monitored as part of the MSHCP by Preserve landowners, some of which are Local Permittees. Table 12 presents the ownership of the existing CVFTL Preserves. As seen in Table 12, the BLM, the Service, and State Parks are the major owners of the Coachella Valley Preserve, while the BLM, private landowners, Center for Natural Lands Management (CNLM) and the Coachella Valley Mountain Conservancy (CVMC) constitute ownership of the Willow Hole/Edom Hill Preserve. CVWD owns approximately 97 percent of the Whitewater Floodplain Preserve.[86]

CVMV and CVFTL have similar habitat requirements, and a substantial portion of CVMV modeled habitat is consistent with that of CVFTL. Consequently, conservation efforts attributable to the CVFTL HCP have likely benefited the CVMV.

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81 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 6.6.1.3, Relinquishment of CVFTL Incidental Take Permit.

82 U.S. Fish and Wildlife Service, February 25, 1999, "Section 7 Consultation for O.B. Star Management Inc., Desert Star Golf Course, Riverside County, CA,"1-6-99-F-16).

83 Personal communication with Katie Barrows, Coachella Valley Mountains Conservancy, June 29, 2005.

84 Personal communication with Katie Barrows, Coachella Valley Mountains Conservancy, June 29, 2005.

85 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 6.6.1.3, Relinquishment of CVFTL Incidental Take Permit.

86 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 6.6.1.3, Relinquishment of CVFTL Incidental Take Permit.

Table 12
Ownership of Existing CVFTL HCP Preserves (Acres)

Owner	Coachella Valley Preserve (Thousand Palms Area)	Willow Hole / Edom Hill	Whitewater Floodplain
BLM	9,928	1,824	24
CNLM	0	160	0
CVMC	0	135	0
CVWD	113	0	1,170
DFG	695	0	0
Private	186	167	0
State Parks	2,207	0	0
TNC	875	0	0
Service	3,616	0	0
Total	**17,620**	**2,286**	**1,194**

Source: Coachella Valley Association of Governments (CVAG), 2004, *Draft Coachella Valley MSHCP*, Section 6.6.1.3, "Relinquishment of CVFTL Incidental Take Permit," Table 6-2: Land Ownership in the CVFTL Preserves.

4.3.3 BUREAU OF LAND MANAGEMENT COACHELLA VALLEY CALIFORNIA DESERT CONSERVATION AREA PLAN

As required under the Federal Land Policy and Management Act of 1976, the Bureau of Land Management formulated the Coachella Valley California Desert Conservation Area Plan (CVCDCAP) in 1980. This plan was amended in 2002 to provide additional protections for endangered species in the Coachella Valley. The purpose of the CVCDCAP is to develop a plan of action that meets the following needs of the BLM in the Coachella Valley planning area: providing for multiple use and sustainable development of the public lands, assisting the recovery of Federal and State listed species and preventing future listings of sensitive species, providing recreational activities, making available mineral and energy resources on the public lands, and working collaboratively with local jurisdictions to facilitate land management.[87]

The 2002 Amendment to the CVCDCAP was developed in conjunction with the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP). BLM-managed lands comprise approximately 28

[87] Bureau of Reclamation, 2002, *Coachella Valley California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement*, p. 1-3.

percent of the MSHCP area.[88] In 1996, the BLM signed a Memorandum of Understanding for preparation of the MSHCP together with nine cities and six State, Federal, and county agencies. As a Federal partner and participant in the MSHCP, BLM agreed to the conservation goals of the MSHCP.[89]

The 2002 Amendment addresses the role of BLM lands in the context of the MSHCP. The CVCDCAP Amendment proposes to address habitat conservation in cooperation with other jurisdictions in the Coachella Valley. Specifically, the BLM, in conjunction with other jurisdictions, is focusing on establishing reserves, providing corridors to link the reserves, and maintaining ecological processes important to endemic Coachella Valley species.[90]

The CVCDCAP Amendment addresses conservation measures for the three vegetative community types that provide habitat for the CVMV: sand dunes and sand fields, desert scrub communities, and dry wash woodland and mesquite communities. Each of these vegetative communities provides habitat for the CVMV and at least ten other sensitive plant and animal species. Conservation measures in these vegetative communities include conserving at least 99 percent of the extant communities, avoiding stabilization of sand dunes, maintaining and enhancing sand transport systems, avoiding disturbance and compaction of sandy habitats, avoiding overgrazing, and controlling the spread of non-native species.[91]

4.3.4 Agua Caliente Band of Cahuilla Indians Habitat Conservation Plan

The Agua Caliente Tribe has developed a Tribal Habitat Conservation Plan (THCP) that has been submitted to the Service as part of the Tribe's request for a 10(a) permit for the CVFTL, among other species.[92] This THCP was not mandated, but was developed by the Tribe to exercise its sovereign authority on the Reservation and to formalize its "traditional, balanced approach to land use and resource management."[93] The THCP imposes an $800 per acre Valley Floor Conservation Area Mitigation Fee (this fee may increase prior to certification/approval by the Service).[94] The mitigation fee will fund

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88 Bureau of Land Management, 2002, *Coachella Valley California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement*, p. 1-6.

89 Bureau of Land Management, 2002, *Coachella Valley California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement*, p. 5-5.

90 Bureau of Land Management, 2002, *Coachella Valley California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement*, p. 1-22.

91 Bureau of Land Management, 2002, *Coachella Valley California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement*, pp. 2-22 – 2-29.

92 Personal communication with Margaret Park, Director of Planning, Agua Caliente Indian Reservation, June 1, 2005.

93 Ibid..

94 Personal communication with Margaret Park, Director of Planning, Agua Caliente Indian Reservation, May 26, 2005.

acquisition of habitat preserve areas within Target Acquisition Areas located both on and off the Reservation. To date, no acreage has been acquired within the Target Acquisition Areas.[95]

The THCP also identifies three objectives for the CVMV: avoid, minimize and/or mitigate impacts to active or ephemeral sand fields and biological core and linkage habitat within the Section 6 Target Acquisition Area, conserve a minimum of 80 percent of habitat in the Mountains and Canyons Conservation Area, and ensure that a minimum of 40 percent of habitat acquired in Target Acquisition Areas is potentially suitable to support this species.

The director of planning on the Reservation was unable to provide an estimate of the cost to develop the THCP.[96] Since the plan covers multiple species and does not provide protections that solely benefit the CVMV, it is assumed that the plan development cost attributable directly to the CVMV is minimal. No pre or post-designation costs are estimated on Tribal lands in this analysis as Agua Caliente Tribal lands are not identified in the proposed rule designating habitat for the CVMV.

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95 Personal communication with Margaret Park, Director of Planning, Agua Caliente Indian Reservation, May 26, 2005.

96 Ibid.

The general framework for estimating the costs of land use restrictions imposed on landowners and developers by conservation efforts associated with CVMV is described in Section 2.2.2.1 of this report. In this section, the cost of CVMV conservation to residential, commercial, and industrial development during the pre-designation period (1998-2005) is estimated. In addition, the framework is applied to estimate the costs to residential, commercial, and industrial development forecast to occur during the post-designation period (2006-2025).

5.1 THE COSTS OF PRE-DESIGNATION ACTIVITIES

Fifteen section 7 consultations involving CVMV and development projects have occurred since the CVMV was listed in October 1998. The consultation history for the CVMV includes five formal consultations for which the Service developed Biological Opinions (BOs) and ten informal consultations. The consultation history for the CVMV provides the best data for estimating the costs borne by developers for conserving CVMV and its habitat occurring in and around essential and unoccupied areas of CVMV habitat during the post-listing, pre-designation period (October 1998 – 2005). Table 13 summarizes formal section 7 consultations, while Table 14 summarizes informal section 7 consultations for development related projects involving CVMV, along with the habitat unit to which costs of conservation measures are allocated.

Following the consultation summary tables, this analysis describes the conservation efforts for CVMV undertaken by developers that are quantified as costs of conserving CVMV. In the absence of primary data from every project proponent on past consultations, assumptions were made regarding the time period over which costs have been or will be incurred. Costs anticipated during the post-designation period (2006-2025) are described and included in the post-designation section of this report (Section 5.2). This analysis assumes that all types of mitigation, development modifications, and conservation fees resulting from past consultations have been or will be incurred. Costs of other conservation measures such as surveying, hiring a biologist, restoration, and replanting were also quantified using cost information assembled for Section 6.1.3.

Table 13
Summary of Biological Opinions Concerning Formal Consultations for Pre-Designation Development Related Projects

Formal Consultation	Habitat Unit	Species Involved	Project Description	Conservation Measures	Cost of Conservation Measures
Proposed Bond Company and Creosote Partners Project, Cathedral City, Riverside County, CA FWS-ERIV-3983.3 November 2, 2004	Not Allocated	CVMV, Coachella Valley fringe-toed lizard (CVFTL)	Project proponent proposes to construct residential units and a small commercial center on 230 acres within Cathedral City on the northeast corner of Dinah Shore Drive and Da Valle Drive, located on Agua Caliente Reservation Lands.	1. Project proponent will pay $800/acre fee to the Interim Tribal Habitat Conservation Plan and the fees will be transferred to the Center for Natural Lands Management to support mitigation impacts on CVFTL habitat. Other blowsand habitat dependant species such as the CVMV will benefit from mitigation activities.	1. $184,000 (230 acres by $800/acre) in development mitigation fees to the Interim Tribal HCP of the Cahuilla Tribe.
Proposed Palm Springs International Raceway, Riverside County, CA FWS-ERIV-3120.2 December 16, 2003	Not Allocated	CVMV, CVFTL	Project proponents propose to build a raceway and associated complexes on 640 acres of land belonging to the Agua Caliente Indian Tribe, Immediately north of Interstate 10, about 3.5 miles east of the I-10/Palm Drive interchange near Thousand Palms.	1. Project proponents agree to pay $800/acre mitigation fee to the Interim Tribal HCP of the Cahuilla Tribe. The fee will be applied to 640 acres of track and associated structure development. The developer does not propose any other conservation measures.	1. $512,000 (640 acres by $800/acre) in development mitigation fees to the Interim Tribal HCP of the Cahuilla Tribe.
Proposed Storage Units in Riverside County, CA FWS-ERIV-3299.2 February 11, 2003	Not Allocated	CVMV, CVFTL	Project proponent proposes to construct 500 mini-storage units and secondary facilities on 3.6 acres of Agua Caliente Land belonging to the Cahuilla Indians along the Southern Boundary of the Palm Springs Airport.	1. Project proponent will pay $800/acre fee to the Interim Tribal Habitat Conservation Plan endowment created by the Tribe for the "purchase and management" of valley floor habitat for sensitive species.	1. Project proponent will provide $2,880 (3.6 acres by $800/acre) in development mitigation fees to the Interim Tribal HCP of the Cahuilla Tribe.

Formal Consultation	Habitat Unit	Species Involved	Project Description	Conservation Measures	Cost of Conservation Measures
Proposed Golden Ridge Resort and Spa, Riverside County, CA FWS-ERIV-2353.2 2002	Not Allocated	CVMV, CVFTL, Flat-tailed horned lizard	Project proponent proposes to construct 800 room resort hotel, 800 time share units, 27 single-family homes, and two 18-hole championship golf courses on Agua Caliente land.	1. Project proponent will pay $800/acre fee to the Interim Tribal Habitat Conservation Plan. 2. To the extent possible, the majority of earth-moving activities will be limited to the summer months, when CVFTL are above ground. 3. Garbage receptacles will be made available during construction to reduce the attractiveness of the area to potential predators. 4. Project proponent proposes to post photos and notes on tee boxes of course to notify players of listed species in proximity. 5. Proponent proposes to minimize soil compaction in all CVMV suitable habitat by hauling fill material to a land-fill.	1. $323,300 (404 acres x $800/acre) in development mitigation fees will be paid prior to physical start of project to the Interim Tribal HCP of the Cahuilla Tribe. Also, as additional leases are approved up to the 450 acre project site, additional fees shall be paid. 2. Unknown cost of potential project delay. 3. Unknown cost of purchasing garbage receptacles. 4. Unknown costs of photos and notes. 5. Unknown costs of hauling fill material.

Formal Consultation	Habitat Unit	Species Involved	Project Description	Conservation Measures	Cost of Conservation Measures
Proposed O.B. Sports Management Inc., Desert Star Golf Course,Riverside County, CA 1-6-99-F-16 February 25, 1999	Not Allocated	CMVV, CVFTL	Project Proponent will develop 200 acres of a 241 acre-holding into a golf course, driving range, and country club located between Ramon Rd. and Desert Princess Country Club (impacting 100 acres of jurisdictional waters, USACE).	1. O.B. Sports must convey $100,000 to the Friends for purchase of 200 acres of CVFTL habitat owned by Edison in the Snow Creek Area. 2. O.B. Sports will pay $600/acre of CVFTL HCP Development Fees. 3. Contract a field contract representative (FCR) to oversee compliance of construction with BO including: • Flagging and marking construction areas that need special care. • Surveys that shall be conducted one-week before any project related surface disturbance to check for CVMV and if present, they shall be transplanted and removed from the site in containers. 4. An endangered species education training program shall be provided to all construction employees. The Corps and the Service shall review and approve a landscape plan and exotic/invasive control program to provide for effective native re-vegetation program.	1. $100,000 for CVFTL habitat acquisition. 2. Approximately $118,000 (≈200 acres by $600/acre). 3. Estimated cost of FCR is $25,000 per year, estimated cost of flagging and marking construction area is $15,000 per project, and estimated cost of pre-construction surveys is $20,000 per project. (See Section 6.1.3.1 for reference).

Table 14
Summary of Comments Concerning Informal Consultations for Pre-Designation Development Related Projects

Informal Consultation	Habitat Unit	Species Involved	Project Description	Conservation Measures	Cost of Conservation Measures
NOI for draft EA for the proposed Terra Lago East project, City of Indio, Riverside County, CA FWS-ERIV-4301.1 December 10, 2004	Not Allocated	CVMV, Palm Springs ground squirrel, honey mesquite hummocks	Consolidation of two previously approved projects among a subset of other previously approved projects.	1. All adverse affects to the CVMV that were to be avoided should be offset through restoration and protection of the graded area along Dillon Road that has been avoided thus far, where mesquite hummocks are re-generating and soon will provide habitat for the CVMV. 2. Intensive restoration and management of mesquite hummocks to accelerate regeneration. 3. 3:1 offsite mitigation through habitat replacement for mesquite hummocks that do not recover through restoration efforts.	1. Unknown costs of mesquite hummock protection. 2. Unknown cost of mesquite hummock restoration. 3. Unknown cost associated with habitat replacement.
Construction of Two Small Plane Landing Fields, FWS-ERIV-4260.1 November 5, 2004	Not Allocated	CVMV, Coachella Valley round-tailed ground squirrel, Palm Springs pocket mouse, Le Conte's Thrasher	Proposed construction of two small plane landing fields in the Edom Hill Conservation Area.	1. Project proponent should adhere to the guidelines of the draft CVMSHCP for the Edom Hill Conservation Area and species contained therein.	1. No costs assigned as the project was denied permitting.
Xavier College Prep High School FWS-ERIV-3897.4 October 19, 2004	Unoccupied Unit 3	CVMV, CVFTL	Proposed construction of a high school downwind of the bulge of the Coachella Valley NWR and Coachella Valley Preserve for the CVFTL in the Thousand Palms area.	1. No commitment of resources be made that would further intrude into the sand transport system that is approved by the Corps in the FEIR for the project.	1. Unknown cost of project delay.
Construction of Golden Date Center, Palm Springs, Riverside County, CA FWS-ERIV-3940.2 June 24, 2004	Not Allocated	CVMV, CVFTL	Proposed construction of the Golden Date Center.	1. Project proponent requested formal consultation and conducted surveys for the CVMV to provide data to the Service on which to make decision regarding formal consultation. Formal consultation was initiated on May 27, 2004.	1. Estimated cost of pre construction surveys is $20,000 per project (See Section 6.1.3.1 for reference).

Informal Consultation	Habitat Unit	Species Involved	Project Description	Conservation Measures	Cost of Conservation Measures
Regency Homes Project, City of Indio, Riverside County, CA FWS-ERIV-4001.1 May 13, 2004	Not Allocated	CVMV, CVFTL, (Sensitive species: Coachella Valley giant sand treader cricket, flat-tailed horned lizard, Le Conte's Thrasher, Palm Springs pocket mouse)	Proposed housing development in the City of Indio.	1. Conduct focused surveys for the CVMV during this growing season because previous winter and spring rains have been adequate to stimulate growth of CVMV. 2. Proposed payment of $600 per acre CVFTL HCP development fee.	1. Estimated cost of pre construction surveys is $20,000 per project (See Section 6.1.3.1 for reference). 2. Unknown cost base on unknown acreage to which fee was or will be applied.
World Trade Center University Golf Course, Thousand Palms, Riverside County, CA FWS-ERIV-3968.1 April 14, 2004	Unit 3	CVMV, CVFTL	Proposed development of a golf course near Thousand Palms, CA.	1. Reinitiating the flood control project consultation is required if preferred alternative from the past flood control project is not selected.	1. Status unknown.
Proposed Palm Springs Village, Palm Springs, Riverside County, CA FWS-ERIV-3914.1 April 6, 2004	Not Allocated	CVMV, CVFTL	Proposed development within the jurisdiction of Palm Springs, CA.	1. Proponent agrees to pay $600 per acre CVFTL HCP development fee contingent on presence of species. 2. Additional surveys for CVMV be conducted this spring based on better pervious rainy season conditions more conducive to growth of CVMV.	1. Unknown cost based on unknown acreage to which fee was applied. 2. Estimated cost of pre construction surveys is $20,000 per project (See Section 6.1.3.1 for reference).
Proposed Coyote Run II Apartments Project, Riverside County, CA FWS-ERV-3768.2 March 10, 2004	Not Allocated	CVMV, CVFTL	Development of apartment housing units.	1. Previous rainy season was conducive to growing several plant species, yet no CVMV were found during surveys, hence not likely the CVMV is present on-site. 2. Payment of $600 per acre CVFTL HCP development fee as project occurs within CVFTL HCP fee area.	1. No cost associated; Estimated cost of pre construction surveys is $20,000 per project (See Section 6.1.3.1 for reference). 2. Unknown cost based on unknown acreage to which fee was or will be applied.

Informal Consultation	Habitat Unit	Species Involved	Project Description	Conservation Measures	Cost of Conservation Measures
Construction of a billboard on I-10 to Cathedral City, Riverside County, CA FWS-ERIV-2998.1 July 25, 2002	Not Allocated	CVMV, CVFTL, triple-ribbed milk-vetch, flat-tailed horned lizard	Construction of a proposed signboard on Interstate 10 in the Coachella Valley near Cathedral City.	1. $800 per acre mitigation fee shall be paid to the Interim Tribal HCP endowment. 2. All surface disturbing activities shall be limited to those requisite for signboard re-location. 3. A qualified biologist approved by the Service shall be on-site during all construction activities. 4. No handling of CVFLT or flat-tailed horned lizards is allowed and construction will cease within 100 feet of any observed lizards.	1. $80 (0.1 acres by $800 per acre). 2. Unknown costs of project modification. 3. Cost of contract biologist estimated as $25,000 per year (See Section 6.1.3.1 for reference). 4. Unknown cost of project delays related to presence of lizards.
Comments on Division of 15 acres into 26 residential lots, Thousand Palms Zoning Area, Riverside County, CA FWS-ERIV-2406.1 January 3, 2002	Not Allocated	CVMV, CVFTL	Proposed lot subdivision located southerly of Ramon Road and easterly of Willis Palm Lane near Thousand Palms. Division would be 15 acres into 26 residential lots.	1. $600/acre CVFTL HCP development fee should be paid prior to the issue of grading permits.	1. $9000 (15 acres by $600/acre) in CVFTL HCP development fees would be paid.

5.1.1 COACHELLA VALLEY FRINGE-TOED LIZARD HCP MITIGATION FEES

As previously described, the CVFTL HCP established a development mitigation fee that is used to fund acquisitions to preserve land for the species. As shown above, there are several consultations where both the CVMV and CVFTL are involved and the $600 per acre fee is required or proposed as a conservation measure. The CVFTL development fees are used to acquire habitat that protects the CVFTL and may also protect other sand species, including CVMV which requires similar habitat. The majority of the land acquisitions occurred prior to the listing of the CVMV and are not included in this analysis. Although some CVFTL land acquisitions occurred subsequent to the CVMV listing (see section 8.6.3), they were funded by the MSHCP development and transportation mitigation fees and are thus accounted for in sections 5.0 and 6.0.

5.1.2 AGUA CALIENTE INTERIM TRIBAL HCP MITIGATION FEES

Fees paid to the Cahuilla Band's Interim Tribal HCP are quantified as measures for conserving CVMV. The $800 per acre fee was required and proposed as mitigation payment for several projects occurring or proposed to occur on Agua Caliente land. In general, the fee is used for the "purchase and management" of valley floor habitat for sensitive species.[97] As shown in the consultation summaries above, there are often multiple species involved in consultations, including CVMV, where the $800 per acre Interim Tribal HCP fee has been proposed or required as mitigation. This analysis does not include any payments of the interim fee as no Agua Caliente land is included in the proposed CHD.

5.1.3 COSTS RELATED TO OTHER CONSERVATION EFFORTS

In addition to the mitigation fee, development project proponents have been required to conserve CVMV through various conservation efforts. In some cases, as with the proposed O.B. Sports Desert Star Golf Course and the proposed Golden Ridge Resort and Spa, the proponents have provided education in the form of instructional videos for construction crews, and photos and pamphlets for users of constructed facilities on the endangered species in the area. Costs of these activities are currently unknown, and are not quantified. Other CVMV conservation efforts include project modifications such as moving fill material off-site rather than compacting soil where CVMV seeds may be present (proposed Golden Ridge Resort and Spa). Other project proponents may have had to hire a field contract representative (FCR) or qualified biologist to supervise and conduct surveys for CVMV prior to and during construction, as well as flag the sensitive portions of construction sites where CVMV may be present. Costs associated with the conservation efforts are included as presented in Section 6.1.3.1. Indirect costs such as the cost of project delay are expected to be minimal and are not quantified in this analysis.

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[97] U.S. Fish and Wildlife Service, February 11, 2003, Section 7 Consultation on the Proposed Storage Unit Project," Riverside County, California (FWS-ERIV-3299.2).

5.1.4 COST OF REQUIRED MINIMIZATION ACTIVITIES

Based on the consultation history for the CVMV, there are five informal consultations and one formal consultation where the project proponent will likely be required to conserve CVMV by one or more of the following measures: contracting a FCR; conducting pre-construction surveys; and flagging and marking sensitive areas of construction sites. Because it is unknown where the projects will specifically be located, this analysis assigned all project costs to essential habitat but not to a specific Unit or Units within essential habitat. Further, it is assumed that the projects and associated costs were incurred during the year of the consultation. Therefore, all costs occur in the pre-designation, post-listing period (1998-2005), and were adjusted to 2005 dollars using the CPI-U for the Los Angeles-Riverside-Orange County region. Table 15 presents the estimated costs of pre-designation conservation measures for the CVMV.

Table 15
Pre-Designation Costs of Conserving CVMV Incurred by Development, by Habitat Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Proposed Critical Habitat	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Excluded Habitat						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Excluded Habitat	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Essential Habitat - Not Allocated	$181,002	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

5.2 THE COSTS OF POST-DESIGNATION ACTIVITIES

5.2.1 COACHELLA VALLEY MSHCP MITIGATION FEES

When the MSHCP is permitted, local jurisdictions will impose a Local Development Mitigation Fee of $1,975 per acre on residential, commercial, and industrial development occurring on private land within the Plan Area containing habitat for Covered Species.[98] Local Development Mitigation Fees will be used by the Local Permittees to fund plan implementation. The initial Local Development Mitigation Fee of $1,975 per acre will be inflated by 3.0 percent each year based on the CPI-U for the Los Angeles-Anaheim-Riverside region.[99] The MSHCP considers four general categories of development for which Local Development Mitigation Fees are imposed: residential development with a density less than 8.0 dwelling units per acre (du/acre); residential development with a density between 8.1 and 14.0 du/acre; residential development with a density greater than 14.0 du/acre; and non residential development.[100] However, the mitigation fee does not vary among the development categories. In this analysis, non-residential development is represented by commercial and industrial development.

5.2.2 CVMSHCP 9:1 CONSERVATION TO DEVELOPMENT PARCELS

As discussed in Section 4.3.1, portions of Unit 2 in the Willow Hole Conservation Area as well as a portion of Unit 3 in the Thousand Palms Conservation Area require a 9:1 conservation to development ratio. In other words, for every acre developed, nine acres of habitat must be conserved. If it becomes apparent that the 9:1 conservation to development ratio will not be met for the portions of 9:1 parcels identified in the MSHCP, local jurisdictions can meet with the Service and/or CDFG to find alternatives to meet the conservation objectives, including an accelerated acquisition program.[101] Acquisitions are to occur on a willing seller basis at fair market value as determined on a parcel-by-parcel basis by an independent appraiser.[102] Moreover, fair market value is determined by assessing potential land use without considering the regulations of the MSHCP. Therefore, landowners will realize the value of their land as if the MSHCP were not permitted. However, developers who purchase land and wish to develop must pay the MSHCP Local Development Mitigation Fee, which will be used to fund habitat acquisition

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98 Coachella Valley Association of Governments (CVAG), 2004, *Draft Coachella Valley MSHCP*, Section 5.2.1.1 "Local Development Mitigation Fees."

99 Coachella Valley Association of Governments (CVAG), 2004, *Draft Coachella Valley MSHCP*, Section 5.2.1.1 "Local Development Mitigation Fees."

100 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), April 14, 2005.

101 Coachella Valley Association of Governments (CVAG), 2004, *Draft Coachella Valley MSHCP*, Section 4.3.8 "Willow Hole Conservation Area."

102 Personal communication with Jim Sullivan, Director of Environmental Resources, CVAG, April 14, 2005.

and MSHCP implementation costs. Therefore, habitat acquisition costs are captured in this analysis by quantifying the cost of mitigation fees incurred by future development.

5.2.3 DEVELOPMENT PROJECTIONS

5.2.3.1 Methods

Projections of low (RL), medium (RM), and high-density (RH) residential development, as well as commercial (C), and industrial (I) development from 2006 to 2025 were completed for each Unit. Development projections for each land use category in the Units incorporate: 1) the 2001 Southern California Association of Governments (SCAG) land use data, 2) General Plan land use zoning for local Coachella Valley jurisdictions and Riverside County within MSHCP Conservation Areas overlapping the Units, and 3) annual Coachella Valley population projections.

The following steps were followed to project acres of residential, commercial, and industrial development in the CVMV Units from 2006 to 2025:

Step 1: Derive annual Coachella Valley population and the resulting annual growth rate based on existing 2003 population reported by CVAG, and recent population projections by CVAG.

Step 2: Determine total acres of development of low (RL), medium (RM), and high-density (RH) residential development, as well as commercial (C), and industrial development (I) using the 2001 SCAG data within a township-range block containing the habitat units.[103]

Step 3: Apply the annual growth rate projections to the acreage of each land use category to project the annual acres of development by land use category from 2006 to 2025 in the township-range block.

Step 4: Annual development acreage is then obtained by multiplying the projected acreage of development in each category obtained in Step 3 for the township-range block by the proportion of land zoned for development located within each Unit.

Step 5: Sum annual developed acreage by land use category from 2006 to 2025 to obtain the total projected development of low (RL), medium (RM), and high-density (RH) residential development, as well as commercial (C), and industrial development (I) in each unit.

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[103] The township-range block was defined as the area contained within Townships 2 South to 4 South and Ranges 2 East to 6 East.

5.2.3.2 No Development Projected in Unit 3 (Thousand Palms)

Development was not projected for Unit 3 due to existing ownership and regulations. Approximately 85 percent of the land in Unit 3 is owned by the Federal and State governments, while 15 percent of the land is private. Based on GIS analysis, there are two areas of private land within the Unit: a contiguous area of 449 acres in the northwest corner of the unit, and smaller parcels surrounded by Federal and State owned lands. According to a CVAG GIS map in the draft MSHCP, the smaller parcels surrounded by public land are owned by CVWD and Southern California Edison.[104] In addition, these lands are also zoned as Riverside County open space (OS-CH), which is not considered developable in this analysis.[105] The contiguous areas of private land are zoned by Riverside County as rural residential (RR) and therefore would be considered developable. However, the Required Development Measures for the Thousand Palms Conservation Area impose restrictions on the amount of land in this area that can be developed. As described in Section 4.3.1.3, the northwest corner of Unit 3 is completely enveloped by a parcel that imposes a 9:1 conservation to development ratio, effectively requiring that 90 percent, or 404 of the 449 acres be conserved through implementation of the MSHCP. Due to the high proportion of publicly-owned land and the 9:1 conservation to development ratio requirement, development is not expected to occur within the Unit.

5.2.3.3 Data

Annual population projections for the Coachella Valley were derived from the recently completed CVAG analysis described in Section 5.2.3.1.[106]. Population projections from 2003 to 2066 were provided by CVAG as point estimates in 2003, 2010, 2020, and 2066. Annual Coachella Valley population projections were derived by interpolating between the available data points.

SCAG maintains GIS data describing land use in Riverside County for 2001.[107] These GIS data were intersected with the CVMV units to describe land use therein. Total developable land was derived for Units 1 and 2 using the SCAG data. SCAG land use classifications were aggregated to the aforementioned five general land use categories (RL, RM, RH, C, and I) as summarized in Table 16.

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[104] Coachella Valley Association of Governments (CVAG), *Coachella Valley MSHCP,* Section 6 Maps, "Figure 6-2: CVFTL Preserves" http://www.cvmshcp.org/prdplan/Section%206%20Maps/d6-2.pdf, Accessed June 2005.

[105] Coachella Valley Association of Governments (CVAG), *Coachella Valley MSHCP,* Section 4 Maps, "Figure 4-16e: Thousand Palms Conservation Area," http://cvmshcp.org/prdplan/Section%204%20Maps/d4-13f.pdf, accessed June 2005.

[106] Coachella Valley Association of Governments (CVAG), 2005, *Presentation to the Community Association Institute*, Presented by John Wohlmuth, Executive Director, CVAG, http://www.cvag.org/wohlmuth.zip, Accessed May 2005.

[107] Southern California Association of Governments, Region Land Use - 2000, www.scag.ca.gov.

Table 16
Aggregation of SCAG Land Use Data

SCAG Land Use Classification	C	I	RH	RM	RL	DV	UD
Abandoned Orchards and Vineyards						x	
Commercial Recreation	x						
Commercial Storage	x						
Communication Facilities	x						
Correctional Facilities	x						
Developed Local Parks and Recreation							x
Duplexes, Triplexes and 2-or 3-Unit Condominiums and Townhouses			x				
Electrical Power Facilities		x					
Fire Stations		x					
Freeways and Major Roads	x						
Golf Courses	x						
High-Density Single Family Residential			x				
Horse Ranches						x	
Hotels and Motels	x						
Improved Flood Waterways and Structures							x
Irrigated Cropland and Improved Pasture Land						x	
Liquid Waste Disposal Facilities	x						
Low-Density Single Family Residential					x		
Low-Rise Apartments, Condominiums, and Townhouses			x				
Maintenance Yards	x						
Mineral Extraction - Other Than Oil and Gas		x					
Mixed Transportation	x						
Mixed Transportation and Utility		x					
Mixed Utilities		x					
Modern Strip Development	x						
Natural Gas and Petroleum Facilities	x						
Non-Irrigated Cropland and Improved Pasture Land						x	
Nurseries						x	
Open Storage	x						
Orchards and Vineyards						x	
Other Agriculture						x	
Other Open Space and Recreation							x

SCAG Land Use Classification	C	I	RH	RM	RL	DV	UD
Other Public Facilities	x						
Railroads		x					
Religious Facilities	x						
Rural Residential, High-Density			x				
Rural Residential, Low-Density					x		
Senior High Schools							x
Solid Waste Disposal Facilities	x						
Special Care Facilities	x						
Trailer Parks and Mobile Home Courts, High-Density			x				
Undeveloped Regional Parks and Recreation							x
Vacant Undifferentiated						x	
Water Storage Facilities	x						
Water Transfer Facilities	x						
Water, Undifferentiated							x
Wildlife Preserves and Sanctuaries							x

Table Key:

RL Residential, low density (<8 units/acre)
RM Residential, medium density (8.1-14 units/acre)
RH Residential, high density (>14 units/acre)
C Commercial
I Industrial
DV Developable land
UD Undevelopable

Based on analysis of SCAG data using the land use classification aggregation scheme presented in Table 16 above, there are 8,230 acres of developable land in Unit 1 and 5,175 acres of developable land within Unit 2. Development is allowed within MSHCP Conservation Areas, but not within the existing MSHCP Reserve Areas.[108] In order to set an upper bound on developable land, existing private land conserved within Units 1 and 2 was removed from total developable land. Existing conservation of private land was reported by Conservation Area in Section 4.0 of the MSHCP and adjusted to essential habitat by multiplying conserved acres by the share of essential habitat in each Conservation Area. Developable land within Units 1 and 2 was then adjusted downward by 1,612 and 1,350 acres, respectively according

[108] Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), April 14, 2005.

to information contained in the MSHCP. Table 17 summarizes existing conservation areas and the adjustments to total developable land in each Unit.

Table 17
Adjusted Developable Land by Essential Habitat Unit

Existing SCAG 2001 Total Developable Land Unit 1 (Whitewater River)	**6,815**
Snow Creek Complimentary Conservation [a/]	669
Estimated Existing CVWD Conservation [b/]	943
Total Existing Private Land Conservation:	1,612
Adjusted Developable Land in Unit 1:	**5,203**
Existing SCAG 2001 Total Developable Land Unit 2 (Mission Creek and Morongo Wash)	**4,745**
Estimated Existing CVMC Conservation [c/]	117
Estimated 9:1 Parcel Conservation [d/]	853
Estimated Special Provision Area Conservation [e/]	380
Total Existing Private Land Conservation:	1,350
Adjusted Developable Land in Unit 2:	**3,395**

a/ Coachella Valley Association of Governments (CVAG), 2004, Draft Coachella Valley MSHCP, Section 4.2.1, "Complementary Conservation," Table 4-5.

b/ Coachella Valley Association of Governments (CVAG), 2004, Draft Coachella Valley MSHCP, Section 4.3.6, "Whitewater Floodplain Conservation Area," Table 4-35.

c/ Coachella Valley Association of Governments (CVAG), 2004, Draft Coachella Valley MSHCP, Section 4.3.8, "Willow Hole Conservation Area," Table 4-45.

d/ Coachella Valley Association of Governments (CVAG), 2004, Draft Coachella Valley MSHCP, Section 4.3.8, "Willow Hole Conservation Area." Anecdotal descriptions of areas of each parcel that would achieve 9:1 conservation to development were used in conjunction with GIS data on parcel acreage to estimate portions of Unit 2 of essential habitat that would be conserved through implementation of the CVMSHCP by multiplying estimated acreages by 0.9 to represent 9:1 conservation to development.

e/ Coachella Valley Association of Governments (CVAG), 2004, Draft Coachella Valley MSHCP, Section 4.3.7, "Upper Mission Creek and Big Morongo Canyon Conservation Area." Used satellite images of Special Provision Area parcels in the upper reaches of Unit 2 of essential habitat that were in the Upper Mission Creek and Big Morongo Canyon Conservation Area in conjunction with GIS data on parcel acreage to estimate portions of Unit 2 of essential habitat that would be conserved in Special Provisions Areas through implementation of the CVMSHCP.

Results of the GIS analysis of SCAG land use data indicated little existing development and that the majority of private developable land within the proposed CHD was classified as "vacant undifferentiated." With little existing development within essential habitat and no indication of potential development on the vacant undifferentiated land, there was no base mix of land use within Units 1 and 2 from which to project development forward at the rate of population growth. Riverside County and local

Coachella Valley jurisdiction general plan GIS data were used to identify the mix of zoning designations on private, developable land within Units 1 and 2. The following discussion describes how the zoning data were used to identify developable and undevelopable lands within each unit.

Developable Land

General Plan data for Riverside County describes Agricultural, and Rural zones as having a density requirement ranging from one unit per 5 to 20 acres. The designations that fall within these "foundation units" include rural residential (RR), rural mountainous (RM), rural desert (RD), and agricultural (AG). An additional classification with a low-density requirement is open space rural (OS-RUR). "Rural" lands were considered developable in the model due to the following characteristics:

- The Riverside County General Plan Principles for Rural areas (County of Riverside General Plan – General Planning Principles, Section VI) states that, "These principles do not preclude the addition of small-scale villages of a contrasting character, even those that might include a mix of more intensive residential development, as a component of the rural landscape."

- Also, in that same section, "Additional rural towns and residential neighborhoods should be minimized because of the need to provide more efficient community development opportunities."

Agricultural lands were considered "developable" for the following reasons:

- The Riverside County General Plan contains an Agriculture Foundation amendment cycle. In this amendment a portion (7% per region, of which there are 3 in Riverside County) of land designated as Agriculture is allowed to transfer to another foundation (such as Rural, Rural Community, or Community Development) in a 2 ½ year cycle. The conversion can be made at any time during the cycle. Conversion requests that exceed the 7% limit are considered on a case-by-case basis, and must wait for a five year amendment cycle.[109] This amendment makes it possible for property owners to switch from Agriculture to other zoning classifications.

Undevelopable Land

The Open Space Foundation identifies areas that are appropriate for preserving open space for habitat, recreation, scenic value, mineral resource extraction, and natural resource preservation. The Open Space category also identifies remote, large-parceled areas that allow limited development (Open Space Rural – included as "developable").[110] The zoning categories that apply to the Open Space Foundation include; Conservation (C), Conservation Habitat (CH), Water (W), Recreation (R), Rural (RUR), and Mineral

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[109] http://www.rcip.org/Documents/general_plan/generalplanconcepts/2.pdf

[110] Riverside County General Plan, Foundation Components, http://www.rcip.org/documents/general_plan/gen_plan_2-4-03/book1-3-landuse.pdf, page LU – 12, chapter 3.

Resources (MR). Due to the restriction of development as a land use in this zoning classification all of these categories (except OS-RUR) are identified as "undevelopable." The zoning classification aggregation is summarized in Table 18.

Table 18
Aggregation of General Plan Zoning Classifications

Description	C	I	RH	RM	RL	DV	UD
Agriculture						X	
Business Park	X						
Commercial Office	X						
Commercial Retail	X						
Commercial Tourism	X						
Estate Density Residential					X		
Floodway							X
High Density Residential				X			
Heavy Industrial		X					
Low Density Residential					X		
Light Industrial		X					
Medium Density Residential					X		
Medium High Density Residential				X			
Open Space Conservation							X
Open Space Conservation Habitat							X
Open Space Recreational							X
Open Space Rural, one unit per 20 acres						X	
Open Space Water							X
Public Facilities							X
Rural Desert, one unit per 10 acres						X	
Rural Mountaineous, one unit per 10 acres						X	
Rural Residential, one unit per 5 acres						X	
Very High Density Residential			X				
Very Low Density Residential					X		

Table Key:

RL	Residential, low density (<8 units/acre)	I	Industrial
RM	Residential, medium density (8.1-14 units/acre)	DV	Developable land
RH	Residential, high density (>14 units/acre)	UD	Undevelopable land
C	Commercial		

5.2.3.4 Forecast Acres of Land Development

Total development in the CVMV Units for the post-designation time period (2006-2025) is summarized in Table 19. As shown, very few acres are estimated to be developed within the proposed CHD over the forecast period.

Table 19
Forecasted Acres of Land Developed Between 2006 and 2025 by Habitat Unit

Habitat Unit	RL	RM	RH	C	I	Total
Unit 1						
Proposed CHD	3.5	-	-	-	2.7	6.2
Excluded EH	-	-	-	4.8	4.5	9.3
Unoccupied Areas	20.1	-	-	5.1	1	26.2
Unit 2						
Proposed CHD	7.2	0.2	-	-	0.2	7.6
Excluded EH	74.6	1.2	-	15.9	4.8	96.5
Unoccupied Areas	85.1	-	-	34.3	-	119.4
Total	**190.5**	**1.4**	**0**	**60.1**	**13.2**	**265.2**

Note: Numbers may not sum due to rounding.

5.2.4 ESTIMATION RESULTS: TOTAL POST-DESIGNATION ECONOMIC COSTS

Each forecasted acre of development is required to pay the Local Development Mitigation Fees imposed by the MSHCP to conserve the CVMV. The procedure for estimating post-designation costs of mitigation fees incurred by development is described below.

Step 1: Estimate the per-acre MSHCP Local Development Mitigation Fee for each general land use category. As previously described in Section 4.3.1 and 5.2.1, a one-time fee of $1,975 per acre will be imposed on all development impacting the habitat of Covered Species contained in private, vacant land within the MSHCP Plan Area. The fee is applied uniformly across five land use categories of development and held constant over the post-designation period (2006-2025).

Step 2: Estimate the present value of MSHCP Local Development Mitigation Fee costs from 2006 to 2025 in essential habitat Units 1 2, and 3 based on the projected acres of development. Post-designation costs of mitigation fees in essential habitat Units 1 2, and 3 are discounted using discount rates of three and seven percent. Post-designation costs of mitigation fees are also annualized using discount rates of three and seven percent.

The MSHCP Local Development Mitigation Fee and conservation efforts associated with development from 2006 to 2025 are shown in Table 20. Costs were allocated among proposed critical habitat and excluded essential habitat according to share of acreage in Units 1 and 2. Given that there is a greater share of excluded essential habitat than proposed critical habitat in both Units 1 and 2, a greater portion of total post-designation development costs are allocated to excluded essential habitat.

Table 20
Post-Designation Mitigation Fee Costs to Development, by Habitat Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$0	$14,100	$10,400	$7,300	$700	$700
2 – Mission Creek/Morongo Wash	$0	$19,100	$14,000	$9,700	$900	$900
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Proposed Critical Habitat	**$0**	**$33,300**	**$24,300**	**$17,000**	**$1,600**	**$1,600**
Excluded Habitat	0	0	0	0	0	0
1 – Whitewater River	$0	$19,000	$14,100	$9,900	$900	$900
2 – Mission Creek/Morongo Wash	$0	$236,200	$172,500	$120,100	$11,600	$11,300
3 – Thousand Palms	$0	$7,000	$5,100	$3,600	$300	$300
Total - Excluded Habitat	**$0**	**$262,300**	**$191,700**	**$133,600**	**$12,900**	**$12,600**
Essential Habitat - Not Allocated	$0	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$63,900	$46,700	$32,500	$3,100	$3,100
2 – Mission Creek/Morongo Wash	$0	$291,600	$213,000	$148,300	$14,300	$14,000
3 – Thousand Palms	$0	$25,000	$18,400	$13,000	$1,200	$1,200
Total - Unoccupied Areas	**$0**	**$380,600**	**$278,100**	**$193,800**	**$18,700**	**$18,300**

6.1 ROAD PROJECTS

This section examines the costs of conservation efforts associated with past and future road projects on lands identified in the proposed CHD for the CVMV. Past consultations involving the CVMV occurred in areas not identified in the proposed CHD. Costs associated with these consultations are not included in this analysis.

The Federal Highway Administration (FHWA) is the action agency for consultations involving federally funded projects, or Federal highways. Interstate 10 is the only Federal highway in the vicinity of proposed CVMV critical habitat. In addition, other agencies may bear portions of the costs for mitigation, endowment fees, or conservation efforts related to the CVMV if they are involved with Federally funded projects, Federal highways, or projects identified in the MSHCP. Other agencies involved in transportation projects in the region include the California Department of Transportation (Caltrans), Riverside County Transportation Department, and Coachella Valley Association of Governments (CVAG).

6.1.1 PRE-DESIGNATION ACTIVITIES

This section analyzes conservation efforts related to the CVMV from 1998 through 2005. Several Federal, State, and local transportation projects were planned in the vicinity of CVMV habitat during that time period and mitigation, endowment fees, and conservation efforts were required as a result of section 7 consultations. The following sections address interchange projects on Interstate 10 as well as Cal Trans and Riverside County transportation projects.

6.1.1.1 Interstate 10 Interchange Projects

In 1999, Riverside County began developing conservation strategies to address impacts to sensitive species and their habitat for the Date Palm and Palm Drive interchange projects along Interstate 10. The initial efforts involved analysis of "action areas," to determine cumulative effects of the project on affected species. This effort was conducted prior to a biological assessment or formal consultation. The Service found the species and habitat conservation strategies developed by Riverside County to be inadequate and required the formation of a conservation plan to address the indirect and direct effects of the proposed projects. In 1999, the resulting Conservation Bank Plan was initiated through the combined efforts of Caltrans, FHWA, Riverside County, CVAG, California Department of Fish and Game (CDFG), and the Service.

The Conservation Bank Plan was developed to gather data and necessary information required of the formal programmatic consultation process for the five planned interchange projects and associated arterial

street improvements.[111] The Plan was finalized in 2003, providing the data necessary for the Service to evaluate direct and indirect impacts on sensitive species.[112] According to transportation planners, much of the costs associated with the development of the Conservation Bank Plan (CBP) were accrued in the form of project delays and rising costs of inputs required for the project that occurred during the delay period.[113] For example, the Project Study Report (PSR) for the Bob Hope/Ramon Road Interchange project was originally written in 1998. In the PSR, the total cost estimate for the project was $22.5 million. However, the environmental documentation process has required more than seven years to complete and the PSR has continually been adjusted to account for rising land costs for the right of ways, as well as prices for concrete and steel, among other inputs. The most recent cost estimate, completed in April 2005, for the same project design was $33 million, a 50 percent increase. Similarly, the four other PSRs were completed in 1999 and it is estimated that the cost increase in these interchange projects is approximately 40 percent.[114]

The reported increases in estimated project costs are not included in this analysis because the projects have not yet begun and it is unclear whether, at the time of implementation, capital costs of construction will be higher than originally budgeted. Actual project costs may be higher or lower than estimated costs depending upon a variety of factors including fluctuations in the prices of inputs (e.g., steel, concrete, etc.). Absent information regarding when the projects may occur, and the expected changes in prices of inputs at that time, quantification of the cost of time delays is not possible.

Direct and indirect effects to the CVMV, among other species, were developed through the formation of the CBP and a programmatic BO developed by the Service.[115] Direct effects from the interchange and arterial street improvement projects included both permanent and temporary impacts from cleaning and grading sand hummocks, as well as constructing the roadbed and overlying street surface. Indirect effects to the CVMV included impacts from habitat fragmentation.[116]

Through the Plan, it was determined that a total of 440 acres would be directly impacted and 948 acres would be indirectly impacted from the work completed on the interchanges and associated arterials. A land mitigation ratio of 2:1 was used to measure mitigation requirements for direct impacts and a ratio of 1:1 was used to measure indirect mitigation acres, resulting in a total mitigation acreage requirement of

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[111] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, May 20, 2005.

[112] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, June 3, 2005.

[113] Personal communication with Lori Dobson Correa, Transportation Planner, Riverside County Department of Transportation, May 31, 2005.

[114] Personal communication with Alyn Waggle, Director of Transportation, CVAG, June 1, 2005.

[115] U.S. Fish and Wildlife Service, September 23, 2004, "Programmatic Biological Opinion for Five Interchanges and Associated Arterial Improvement Projects along Interstate 10," FWS-ERIV-3282.4.

[116] U.S. Fish and Wildlife Service, September 23, 2004, "Programmatic Biological Opinion for Five Interchanges and Associated Arterial Improvement Projects along Interstate 10," FWS-ERIV-3282.4.

1,795 acres.[117] Table 21 provides the direct and indirect impacts by interchange and arterial unit as well as the corresponding mitigation requirements.

CVAG mitigated for 1,364 of the 1,795 acre total requirement through the acquisition of the Cathlon Investment Properties land.[118] The 1,364 acres of Cathlon Investment Property were purchased for approximately $4 million in 2004, or the equivalent of $3,000 per acre. The remaining 431 acres of mitigation, most of which is for the Indian Avenue Interchange, will be purchased within the next year in the Whitewater Preserve area at an estimated cost of $4,000 per acre. [119] In this analysis, the remaining mitigation land purchases are assumed to be completed prior to 2006 and are included as pre-designation costs.

As indicated by Table 21, three of the interchange projects (Indian Avenue, Palm Drive/Gene Autry Trail, and Date Palm Drive) will occur within the boundary of the units proposed as critical habitat for the CVMV. These projects are assigned pre-designation costs allocated to a specific unit. The City of Palm Desert recently surveyed for CVMV in the area of the proposed interchange project at the junction of Monterey and Interstate 10 at a cost of $10,000. A mitigation plan and biological assessment was also formed for the planned interchange project in preparation for formal consultation with the Service. The cost of performing this work was estimated to be $7,000 and is included in the administrative costs of consultations in Section 8.7.[120] Because the project is located outside of the essential habitat for the CVMV, the costs are not included in this analysis. Consultation for this project is currently ongoing and a BO is expected from the Service in the near future. Anticipated conservation efforts resulting from the consultation are discussed in Section 8.7.

Total pre-designation costs for the interchange projects are identified in Table 22. Total pre-designation costs for all Units are $2,372,100, including $452,600 allocated to proposed critical habitat and $1,919,500 to excluded essential habitat.

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[117] U.S. Fish and Wildlife Service, September 23, 2004, "Programmatic Biological Opinion for Five Interchanges and Associated Arterial Improvement Projects along Interstate 10," FWS-ERIV-3282.4.

[118] Personal communication with John Wohlmuth, Government Affairs, CVAG, May 23, 2005.

[119] Personal communication with John Wohlmuth, Government Affairs, CVAG, May 23, 2005.

[120] Personal communication with Sam Stewart, Bon Terra Consulting, May 24, 2005.

Table 21
Mitigation Requirements of Interstate 10 Interchange Projects

Habitat Unit [a/]	Interchange Associated Arterial	Impacted Acres		Mitigation Acres	
		Direct Effects	Indirect Effects	Direct Effects	Indirect Effects
—	Indian Ave.	29.9	43.8	59.8	43.8
—	Indian Ave. (I-10 to Dillon Rd.)	11.27	35.48	22.54	35.48
Unit 1	Indian Ave. (I-10 to San Rafael)	29.56	111.76	59.12	111.76
—	Palm Dr./Gene Autry Trail	33.2	33.3	66.4	33.3
Unit 2	Palm Dr. (I-10 to 20th Ave.)	7.84	62.23	15.68	62.23
Unit 1	Gene Autry Trail (I-10 to Vista Chino)	19.81	75.42	39.62	75.42
Unit 2	Varner Rd. (Palm Dr. to Mountain View Rd.)	18.02	66.88	36.04	66.88
—	Date Palm Dr.	27.4	24.2	54.8	24.2
Unit 2	Date Palm Dr. (I-10 to Vamer Rd.)	10.28	39.38	20.56	39.38
—	Date Palm Dr. (I-10 to Ramon Rd.)	10.43	55.81	20.86	55.81
—	Varner Rd. (Mountain View Rd. to Vista Chino)	45.19	167.73	90.38	167.73
—	Ramon Rd. / Bob Hope Dr.	71.9	97.2	143.8	97.2
—	Bob Hope (Ramon Rd. to Dinah Shore Dr.)	14.35	14.6	28.7	14.6
—	Ramon Rd. (Los Alamos to Bob Hope)	9.92	14.13	19.84	14.13
—	Ramon Rd. (I-10 to Varner)	2.56	0	5.12	0
—	Ramon Rd. (Varner to Monterey)	1.29	7.89	2.58	7.89
—	Varner Rd. (Vista Chino to ½ mi. before Rio Del Sol)	20.85	75.06	41.7	75.06
—	Varner Rd. (1-10 to midpoint)	2.25	3.72	4.5	3.72
—	Jefferson Ave.	39.3	14.7	78.6	14.7
—	Jefferson Ave. (I-10 to 40th Ave.)	2.2	4.21	4.4	4.21
—	Ramon Rd. (Previous Impacts)	2.9		2.9	0
—	Palm Dr. (Previous Impacts)	30		30	0
	Total Acreage	**440.42**	**947.5**	**847.94**	**947.5**
		1,388		**1,795**	

a/ — = Not Allocated to a Unit.

Source: U.S. Fish and Wildlife Service, September 23, 2004, "Programmatic Biological Opinion for Five Interchanges and Associated Arterial Improvement Projects along Interstate 10," FWS-ERIV-3282.4.

Table 22
Pre-Designation Interchange Costs Associated with the CVMV

Habitat Unit	Total Acres	Total Mitigation Cost (2005 dollars)
Proposed Critical Habitat		
1 – Whitewater River	86.8	$315,300
2 – Mission Creek and Morongo Wash	45.5	$140,600
3 – Thousand Palms	0	$0
Total - Proposed Critical Habitat	**132.3**	**$455,900**
Excluded Habitat		**$0**
1 – Whitewater River	199.1	$723,600
2 – Mission Creek and Morongo Wash	393.4	$1,215,200
3 – Thousand Palms	0	$0
Total - Excluded Habitat	**592.6**	**$1,938,800**
Essential Habitat - Not Allocated	0	$0
Total - Unoccupied Areas	**0**	**$0**

6.1.1.2 Other Projects

Caltrans also performed surveys for CVMV during the Willow Wash bridge project. The Willow Wash Bridge is in need of maintenance work. In anticipation of the maintenance project and construction activity on the bridge, surveys were conducted for the CVFTL, CVMV, and the Palm Springs ground squirrel. The cost of performing these surveys was $27,800. In this initial survey no CVMV were found to be in the area, however, additional pre construction surveys may be warranted due to the uncertain location of CVMV plants from year to year.[121] In this analysis, the costs of performing these surveys are not included, as they occurred outside of the proposed CHD.

6.1.2 POST-DESIGNATION ACTIVITIES

6.1.2.1 Interstate 10 Interchange Projects

Caltrans anticipates that the five interchange projects described in the Programmatic BO will occur between 2006 and 2016 in or near the City of Palm Springs along Interstate 10.[122] The cost of land acquisition to mitigate for impacts to sensitive species, including the CVMV, has already been incurred

[121] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, May 25, 2005.

[122] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, May 20, 2005.

and is included as a pre-designation cost, as described above. In addition to the mitigation acreage requirement, CVAG will dedicate $1,077,000 to an endowment fund for the management and monitoring of the 1,795 acres of mitigation land, or the equivalent of $600 per acre. The dedication of these funds is expected to occur in 2006.[123] Table 23 provides a summary of the allocation of the endowment fund among the specific projects and CVMV units. The majority of the endowment fees ($642,300) are associated with interchange projects located outside of the proposed critical and excluded habitat areas, and are not considered further in this analysis.

Table 23
Post-Designation Endowment Fees Associated with Interchange Projects

Habitat Unit	Total Acres	Total Endowment Fee
Proposed Critical Habitat		
1 – Whitewater River	86.8	$52,000
2 – Mission Creek and Morongo Wash	45.5	$27,300
3 – Thousand Palms	0	$0
Total - Proposed Critical Habitat	**132.3**	**$79,400**
Excluded Habitat		
1 – Whitewater River	199.1	$119,500
2 – Mission Creek and Morongo Wash	393.4	$236,100
3 – Thousand Palms	0	$0
Total - Excluded Habitat	**592.6**	**$355,500**
Essential Habitat - Not Allocated	**0**	$0
Total – Unoccupied Areas	**0**	**$0**

6.1.2.2 Local Transportation Projects

There are 267 local road projects identified as covered activities in section 7.2.3 of the Coachella Valley MSHCP. To mitigate the impacts of these transportation projects, CVAG will contribute $30 million of tax revenues from Measure A toward acquisition and the Monitoring Program, the Management Program, and Adaptive Management Program of the MSHCP.[124] Measure A is a ½ cent sales tax in Riverside County that is expected to generate $600 million through 2038. The developers of the Coachella Valley

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[123] Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 5, Table 5-3d Endowment Fund (inflated dollars).

[124] Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 6.6.1, Obligations of the Local Permittees, p. 6-16.

MSHCP applied a five percent of capital cost rate to arrive at the $30 million mitigation requirement.[125] The $30 million will be contributed through equal payments in 2006 and 2007.[126]

Nine of the 267 local transportation projects identified in the Coachella Valley MSHCP are located within proposed CHD and excluded essential habitat for the CVMV. None of the projects will occur within the unoccupied areas identified for possible inclusion as critical habitat for the CVMV. Therefore, in this analysis 3.4 percent of the $30 million mitigation fee is allocated to the CVMV units. This $1.01 million is allocated evenly among the nine projects. Table 24 lists each project according to its respective CVMV habitat unit.

Table 24
Local Transportation Projects in CVMV Habitat by Unit

Transportation Project	Habitat Unit
Gene Autry Trail - Vista Chino to Whitewater River Crossing	Unit 1
Gene Autry Trail - Whitewater River Bridge Crossing	Unit 1
Gene Autry Trail - Whitewater River to South of Railroad	Unit 1
Gene Autry Trail - Railroad to Salvia Road	Unit 1
Gene Autry Trail - Salvia Road to and including I-10 interchange	Unit 1
Indian Avenue - Old City Limit to RR Crossing (including bridge over Whitewater River)	Unit 1
Ramon Road – Monterey Avenue to Thousand Palms Canyon Road	Unit 3
Varner Road – Palm Drive to Mountain View Road	Unit 2
Varner Road – Mountain View Road to Date Palm Drive	Unit 2

6.1.2.3 Other Projects

In accordance with the Draft MSHCP, Caltrans has an obligation to acquire 5,791 acres of land to mitigate its non-interchange projects.[127] The projected cost for the mitigation is $12.6 million. These acquisitions must be accomplished by 2015. Caltrans must also contribute $7.6 million to the Endowment Fund by 2009.[128]

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[125] Personal communication with Jim Sullivan, CVAG, May 31, 2005.

[126] Personal communication with Jim Sullivan, CVAG, May 27, 2005.

[127] Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 7.2.2.

[128] Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 5.2.1.3, Transportation Project Mitigation.

Section 7.2.2 of the draft CV MSHCP identifies 29 projects in the Coachella Valley. However, only six of these projects are within the CVMV habitat units. Therefore, this analysis allocates 20.7 percent of the total endowment fees and mitigation requirements of Caltrans to the CVMV.[129] All of the projects that may impact CVMV habitat are located in Unit 1proposed or excluded habitat. Due to uncertainty surrounding the precise location of these projects, the costs are assigned proportionally to proposed and excluded habitat based on the acreage of each category in Unit 1. In addition, because the acquisitions must be completed by 2015, this analysis assumes that the land acquisitions have an equal annual probability of occurring in the time period 2006 through 2015. A similar approach is applied for the endowment fee, which must be contributed by 2009.

6.1.3 CONSERVATION EFFORTS AND COSTS

6.1.3.1 Interstate 10 Interchange Projects

Three of the six major interchange projects will occur within the CVMV units (see Map 4 in the Map Attachment). Therefore, only the post-designation costs of conservation efforts for these three projects are assigned to a specific unit while all other costs are not included in this analysis. The three interchange projects within CVMV Units include the Indian Avenue Interchange, Palm Drive/Gene Autry Trail Interchange, and the Date Palm Drive Interchange. Due to the uncertainty of the start and completion dates for these projects, it is assumed that each project has an equal annual probability of occurring in the time period 2006-2016.

The programmatic BO for the five interchange projects along Interstate 10 provided general conservation measures for the interchange projects. However, in order to obtain the necessary take permit an additional consultation on a project specific basis will be completed and a "tiered" BO will be written to address conservation efforts specifically for each interchange project.[130] The programmatic BO and the completed tiered BO (Palm Drive/Gene Autry Trail) resulted in the following CVMV conservation measures:

- Pre-construction surveys are necessary to identify the CVMV. The cost for performing the surveys has been estimated by Caltrans at $20,000 per project.[131]

- Construction areas will be delineated and marked clearly in the field.[132] After accounting for the large size of these projects, Caltrans estimated that fencing and flagging activities to protect the CVMV and the associated habitat would likely cost $15,000 per project.[133]

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[129] 20.7 percent = 6/29

[130] A tiered BO is a project-specific biological opinion. In this case, a programmatic BO addresses impacts of the five projects in general, while each tiered BO considers an individual project.

[131] Personal communication with Sam Stewart, Bon Terra Consulting, May 24, 2005.

- A qualified biologist will monitor construction and be responsible for compliance.[134] It is anticipated by Caltrans that each interchange project will last two years, and a qualified biologist will cost $25,000 per year.[135]

- The CVMV seed will be collected along with the top four inches of soil and relocated to an area outside the footprint of the project.[136] This conservation effort is planned for the Monterey Project within the next year at an estimated cost of $10,000.[137]

Table 25 provides the costs associated with conservation efforts for a representative interchange project. These costs are assigned to each of the five interchange projects included in the programmatic BO.

The Monterey Interchange Project is anticipated for construction in 2006.[138] CVMV seed collection and disbursement are expected to be the only conservation effort of the Monterey Project, with the associated cost of $10,000. The mitigation plan developed by consultants requires one acre of land acquisition in a nearby preserve. However, the Service has indicated that it will not require the land acquisition for the project.[139] This analysis does not allocate $10,000 as a post-designation cost due to the proposed interchange project's location outside of land proposed as critical habitat for the CVMV.

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[132] U.S. Fish and Wildlife Service, September 23, 2004, "Programmatic Biological Opinion for Five Interchanges and Associated Arterial Improvement Projects along Interstate 10," FWS-ERIV-3282.4.

[133] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, May 20, 2005.

[134] U.S. Fish and Wildlife Service, September 23, 2004, "Programmatic Biological Opinion for Five Interchanges and Associated Arterial Improvement Projects along Interstate 10," FWS-ERIV-3282.4.

[135] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, May 20, 2005.

[136] U.S. Fish and Wildlife Service, September 23, 2004, "Programmatic Biological Opinion for Five Interchanges and Associated Arterial Improvement Projects along Interstate 10," FWS-ERIV-3282.4.

[137] Personal communication with Sam Stewart, Bon Terra Consulting, May 24, 2005.

[138] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, May 20, 2005.

[139] Personal communication with Sam Stewart, Bon Terra Consulting, May 24, 2005.

Table 25
Costs of CVMV Conservation Efforts for Representative Interchange Project

Conservation Effort	Total Project Costs
Surveying	$20,000
Avoidance (Fence/Flag)	$15,000
Construction Monitoring [a/]	$50,000
Seed Collection	$10,000
Total Cost	**$95,000**

a/ Includes 2 years of construction monitoring at $25,000 per year.

6.1.3.2 Other Projects

There is a preliminary Environmental Assessment (EA) being formed for a new interchange at the junction of Interstate 10 and Portola near Rancho Mirage, California. This project will occur just to the east of the Monterey project.[140] While Caltrans may consider the CVMV in performing relevant surveys for the project, it occurs outside of the land identified in the proposed rule designating critical habitat for the CVMV and therefore is not included in this analysis as a cost associated with CHD for the CVMV.

6.1.4 COST SUMMARY

Table 26 provides a cost summary of pre-designation and post-designation road project costs. Total essential habitat is burdened with $392,400 in annualized costs, including $109,700 in proposed critical habitat and $282,600 in excluded habitat using a seven percent discount rate. Total non-discounted post-designation costs in essential habitat (including proposed and excluded) are $5,650,600.

[140] Personal communication with Scott Quinnell, Environmental Planner, Cal Trans, May 20, 2005.

Table 26
Cost Summary for Road Projects

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$315,300	$1,515,000	$1,317,300	$1,117,200	$88,500	$105,500
2 – Mission Creek/Morongo Wash	$140,600	$59,600	$51,900	$44,700	$3,500	$4,200
3 – Thousand Palms	$0	$1,000	$700	$500	$0	$0
Total - Proposed Critical Habitat	**$455,900**	**$1,575,500**	**$1,369,800**	**$1,162,400**	**$92,100**	**$109,700**
Excluded Habitat						
1 – Whitewater River	$723,600	$3,477,000	$3,023,300	$2,564,000	$203,200	$242,000
2 – Mission Creek/Morongo Wash	$1,215,200	$514,800	$448,200	$386,200	$30,100	$36,500
3 – Thousand Palms	$0	$83,300	$62,000	$44,100	$4,200	$4,200
Total - Excluded Habitat	**$1,938,800**	**$4,075,100**	**$3,533,400**	**$2,994,300**	**$237,500**	**$282,600**
Essential Habitat - Not Allocated	$0	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Numbers may not sum due to rounding.

6.2 AIRPORTS

This analysis considers the costs of CVMV conservation efforts associated with past and future airport projects. There has only been one informal consultation regarding airport projects in the lands proposed as critical habitat for the CVMV. The Service sent a letter to the Planning Department in Riverside County regarding the construction of two small plane landing fields in Desert Hot Springs in November 2004.[141] In the letter, it was recommended that the guidelines and requirements of the draft Coachella Valley MSHCP be utilized during the project. However, according to the Riverside County Planning Department, this project was denied by the planning commission on April 13, 2005, after several concerns

[141] U.S. Fish and Wildlife Service, November 5, 2004, Letter to Jay Olivas, County of Riverside, Re: Proposed Construction of Two Small Plane Landing Fields (APN 659-110-005), Desert Hot Springs, Riverside County (Conditional Use Permit No. 3442).

were brought forth to the commission, including those from homeowners in the adjacent neighborhoods.[142] Therefore, this analysis does not assign any costs to airport projects.

6.3 RAILWAYS

This section examines the costs of conservation efforts associated with past and future railway projects in the vicinity of essential habitat for the CVMV. The Service has completed one consultation for railroad projects involving the CVMV. On June 26, 2003, the Service issued a final BO as amended for the Union Pacific Railroad Track Upgrade, Yuma Subdivision–Phase II Project in Riverside County. The project involved construction of 16.58 miles of track alongside the existing track from Union Pacific Milepost 578.78 near Fingal to milepost 598.56 near Thousand Palms. Elements of the project included extending, enlarging, or replacing 28 bridges or culverts located along the alignment. Additionally, nine miles of liquid petroleum pipeline had to be relocated to accommodate the project.[143]

Through consultation it was determined that a 1:1 land mitigation ratio was required to compensate for CVMV, desert tortoise, and CVFTL habitat loss imposed during construction. A total of 110.9 acres were permanently impacted by the construction, and an additional 36.8 acres from the long-term maintenance and operation of the railway for a total habitat loss of 147.7 acres. In addition, Union Pacific established an endowment fund with CDFG for the future management and monitoring of the property.[144] In response to the BO, Union Pacific Railroad purchased 153 acres of land at a cost of $3,000 per acre and paid $1,500 per acre to the endowment fund for a total of $478,000 and $239,395, respectively, in 2005 dollars.[145]

6.3.1 CONSERVATION MEASURES AND COSTS

There were several conservation measures recommended in the BO for the railroad track upgrade project. The following pertain to the CVMV:

- Surveys for the CVMV were conducted before the project to identify the sensitive species.

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[142] Personal communication with Jay Olivias, Indio Office of Riverside County Planning Department, May 16, 2005.

[143] U.S. Fish and Wildlife Service, January 29, 2003, "Endangered Species Consultation on the Proposed Union Pacific Railroad Track Upgrade, Yuma Subdivision – Phase II, Riverside County, California," FWS-ERIV-2861.2.

[144] U.S. Fish and Wildlife Service, January 29, 2003, "Endangered Species Consultation on the Proposed Union Pacific Railroad Track Upgrade, Yuma Subdivision – Phase II, Riverside County, California," FWS-ERIV-2861.2.

[145] Personal communication with Jay Officer, Parsons Consulting, May 12, 2005.

- Within temporarily disturbed areas of the construction footprint and staging areas, the top four to five inches of soil was stockpiled and replaced after the disturbance activity was completed.[146]

- A biological monitor was on-site during the construction activity.[147]

In order to satisfy these requirements, Union Pacific hired consulting services to perform the necessary surveys, monitor construction activities, and restore habitat after the project was competed. [148] These services cost Union Pacific a total of $284,771 (2005 dollars).[149]

In this analysis, the costs of the project are not included, as the project did not occur in areas identified in the proposed rule designating critical habitat for the CVMV. No planned railroad projects within the CVMV units were identified.

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[146] U.S. Fish and Wildlife Service, January 29, 2003, "Endangered Species Consultation on the Proposed Union Pacific Railroad Track Upgrade, Yuma Subdivision – Phase II, Riverside County, California," FWS-ERIV-2861.2.

[147] U.S. Fish and Wildlife Service, January 29, 2003, "Endangered Species Consultation on the Proposed Union Pacific Railroad Track Upgrade, Yuma Subdivision – Phase II, Riverside County, California," FWS-ERIV-2861.2.

[148] Personal communication with Chris Blandford, Chambers Group Incorporated, May 12, 2005.

[149] Applied a CPI factor of 1.043116 to the 2003 cost in order to update it to 2005 dollars.

7.1 FEDERAL LAND MANAGEMENT

7.1.1 BUREAU OF LAND MANAGEMENT (UNITS 1, 2, AND 3)

The Bureau of Land Management (BLM) owns 2,893 acres (14 percent) of the approximately 21,000 acres of essential habitat proposed by the Service for the CVMV. However, of the approximately 3,600 acres proposed as critical CVMV habitat, the BLM owns 2,900 acres (81 percent). This land is located primarily in Unit 1, where the BLM manages over 2,400 acres.

The BLM land in the Coachella Valley is managed under the Coachella Valley California Desert Conservation Area Plan (CVCDCAP), as amended in 2002. This plan covers 337,000 acres of public land and numerous species and habitats. The Plan was first formulated in 1980, as required by the Federal Land Policy and Management Act of 1976. However, the plan must be amended when necessary to ensure protection of sensitive species. The cost to prepare the 2002 Coachella Valley Plan Amendment for the CVCDCAP was approximately $300,000.[150] While this analysis includes this full cost as a pre-designation impact associated with conservation efforts for the CVMV, the plan provides protection for multiple species, as 22 sensitive species are identified and addressed in the plan. Furthermore, only 5,060 of the 337,000 acres covered by the plan are habitat for the CVMV.[151]

The primary cost to the BLM of protecting the CVMV and its habitat is enforcement of Off Highway Vehicle (OHV) restrictions, as well as enforcement of other unauthorized uses of BLM conservation areas. Law enforcement by BLM benefits the CVMV since illegal OHV and other recreation in the sand dune ecosystem is a significant threat to the CVMV.[152] Enforcement of OHV restrictions has increased since 1998 in order to protect habitat of the CVMV and other species such as the CVFTL.[153]

In addition to law enforcement on BLM lands, the BLM rangers also patrol other public lands such as the Service and The Nature Conservancy lands in the Coachella Valley Preserve in Unit 3. According to the chief ranger in the Palm Springs BLM district, two full-time rangers are necessary to enforce regulations

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[150] Personal communication with Greg Hill, Planning & NEPA Coordinator, Palm Springs South Coast BLM Office, May 17, 2005.

[151] Bureau of Reclamation, 2002, *Coachella Valley California Desert Conservation Area Plan Amendment and Final Environmental Impact Statement*, page E-16.

[152] U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. coachellae (Coachella Valley milk-vetch)," *Federal Register*, Vol. 69, No. 239, p. 74474.

[153] Personal communication with Jim Foote, Bureau of Land Management, June 26, 2005.

on public lands in the Coachella Valley.[154] The cost of these two rangers is estimated at $225,000 annually; this cost includes labor costs, supervision, transportation, and dispatch support.[155] Once the MSHCP is implemented, the participating local governments will fund two additional rangers to manage and patrol the additional land acquisitions; these costs are discussed in Section 8.6.2.[156].

To apportion the enforcement costs between the proposed units, the chief ranger in the Palm Springs South Coast BLM Office estimated the allocation of ranger time in each of the units. It is estimated that enforcement in Unit 1 comprise 20 percent of total enforcement costs, while enforcement in Units 2 and 3 comprise five percent and 30 percent of costs, respectively. The remaining 45 percent of enforcement costs is for enforcement outside of the CVMV Units. Consequently, this analysis assigns 55 percent of the enforcement costs to the CVMV Units. Enforcement benefits all species within the habitat units and the portion of the costs related solely to the CVMV is unclear. As a result, attributing the full cost of enforcement to the CVMV overstates the costs of conservation efforts specific to the CVMV.

In addition to ranger enforcement of regulations, the BLM must replace and repair signs and fencing. The annual cost of sign and fence maintenance is approximately $5,000.[157] This conservation measure occurs within the three units as well as land outside the units in the same manner as the cost of ranger enforcement described above. While the 2002 Coachella Valley Plan Amendment addresses other conservation measures, such as biological monitoring and surveying, typically such measures are not funded by the BLM (and are therefore not implemented), so no costs are estimated..[158] However, biological surveying and monitoring on BLM lands has been conducted in conjunction with the development of the MSHCP; these costs are addressed in section 8.6.1.

Results of the cost analysis for CVMV conservation efforts on BLM lands are presented in Table 27. Pre-designation CVMV costs in proposed critical habitat areas on BLM lands total approximately $1.0 million, while the present value of post-designation costs, evaluated at a seven and three percent discount rate, total $1.3 million and $1.9 million, respectively.

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[154] Personal communication with John Blatchley, Chief Ranger at the Palm Springs South Coast BLM Office, May 18, 2005.

[155] Personal communication with John Blatchley, Chief Ranger at the Palm Springs South Coast BLM Office, May 18, 2005.

[156] Personal communication with Katie Barrows, Coachella Valley Mountains Conservancy, June 19, 2005.

[157] Ibid.

[158] Personal communication with Jim Foote, Outdoor Recreation Planner, Palm Springs South Coast BLM Office, May 16, 2005. Personal communication with Greg Hill, Planning & NEPA Coordinator, Palm Springs South Coast BLM Office, May 18, 2005.

Table 27
Costs of CVMV Conservation on BLM Lands by Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)[a/]	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$368,000	$920,000	$684,400	$487,300	$46,000	$46,000
2 – Mission Creek/Morongo Wash	$92,000	$230,000	$171,100	$121,800	$11,500	$11,500
3 – Thousand Palms	$552,000	$1,380,000	$1,026,500	$731,000	$69,000	$69,000
Total - Proposed Critical Habitat	**$1,012,000**	**$2,530,000**	**$1,882,000**	**$1,340,100**	**$126,500**	**$126,500**
Excluded Habitat						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Excluded Habitat	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Essential Habitat - Not Allocated	$357,600	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Numbers may not sum due to rounding.

7.1.2 U.S. FOREST SERVICE (UNOCCUPIED LANDS, UNITS 1, 2)

In the proposed rule, the Service identified for possible inclusion nearly 36,000 acres of unoccupied lands that serve as sand sources for proposed essential habitat units. The unoccupied areas, which consist of major fluvial channels that transport sand into the Coachella Valley, include nearly 5,300 acres of Forest Service land in the San Bernardino National Forest. Unoccupied Forest Service lands are identified for possible inclusion in Units 1 and 2.

According to the Forest Service, water development projects represent the activity most likely to affect sand transport in these areas.[159] Water projects could reduce sand transport by reducing flow volume or trapping sediment.[160] However, no water projects would be allowed on approximately 75 percent of the

[159] Personal communication with Scott Eliason, San Bernardino National Forest, May 27, 2005.

[160] Personal communication with Scott Eliason, San Bernardino National Forest, June 1, 2005.

unoccupied Forest Service lands as these are located within designated Wilderness boundaries.[161] Additionally, no new water use permits are being issued in the non-Wilderness areas because water in the basin is already over-allocated. [162] In the future, the only change in water use would involve termination of existing permits, which would increase streamflow, and hence sediment transport, and therefore benefit the CVMV and habitat.[163] Because no new water projects would be allowed on Forest Service unoccupied lands, this analysis concludes no impacts of CVMV conservation efforts will occur on these lands.

7.2 OTHER LAND MANAGEMENT

Unit 3 (Thousands Palms) is comprised primarily of the Coachella Valley Preserve. The Preserve was established in 1986 to protect the CVFTL. Lands were purchased (and continue to be purchased) according to the original CVFTL HCP; nearly all of the land in Unit 3 was acquired prior to the 1998 CVMV listing.[164] The Preserve is comprised of lands owned by the Service (Coachella Valley National Wildlife Refuge), the California Department of Fish and Game, the California Department of Parks and Recreation, the Bureau of Land Management, the Nature Conservancy, and the Center for Natural Lands Management. Although each entity retains ownership, the area is managed as one biological unit by the Center for Natural Lands Management.

CVMV conservation efforts on the Preserve include biological monitoring, removal of exotic species, and enforcement, fencing and signing to prevent OHV use. Biological monitoring of the milk-vetch is conducted annually at an estimated cost of $2,500.[165] A research project was initiated in 2004 to study the effects of an exotic mustard species. Currently it is unknown if the species will pose a threat to endemic species such as the CVMV. The mustard only thrives during heavy rainfall years, which occur about once every ten years. Consequently, the effect of the plant on the CVMV is likely limited. If the Preserve were to organize a mustard control campaign during a wet year (using volunteers to hand weed the plant), the cost to organize the effort would be approximately $3,200.[166] This cost would only be incurred in wet years, so the average expected annual cost of such an invasive species control is estimated to be $320 ($3,200 multiplied by the 1/10 probability of a wet year).

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[161] Personal communication with Scott Eliason, San Bernardino National Forest, May 31, 2005.

[162] Personal communication with Gary Ernie, Special Projects Manager, San Bernardino National Forest, June 2, 2005. Personal communication with Joe Neu, Lands, Minerals and Special Uses, San Bernardino National Forest, June 6, 2005.

[163] Personal communication with Gary Ernie, Special Projects Manager, San Bernardino National Forest, June 2, 2005.

[164] Personal communication with Cameron Barrows, manager of the Coachella Valley Preserve, May 17, 2005.

[165] Personal communication with Cameron Barrows, manager of the Coachella Valley Preserve, May 17, 2005.

[166] Personal communication with Cameron Barrows, manager of the Coachella Valley Preserve, May 17, 2005.

Additional conservation costs of fencing and signing are incurred to prevent OHV use. Original fencing construction was completed prior to the species listing in 1998 (and is thus a cost not included in this analysis), but the annual maintenance costs are approximately $1,000.[167] Additionally, a BLM ranger patrols the area to enforce OHV restrictions as discussed in Section 7.1.1 of this report.

The management of the Preserve is funded almost exclusively (over 95 percent) through an endowment financed by mitigation fees. This endowment was established in 1986 when the Preserve was created for the CVFTL, and is currently managed for the Preserve by the Center for Natural Lands Management. The use of mitigation fees is now restricted to land acquisitions. Subsequent to the CVMV listing, no new mitigation fees have funded the Preserve management endowment.[168] As the Preserve endowment was established prior to CVMV listing in 1998, no management costs are included in this analysis.

Although much of the Preserve was acquired prior to 1998, approximately $26 million was spent in 2004 to acquire 9,000 acres of land located near the Preserve.[169] This area was purchased to preserve sand source areas and the sand source transport system for the Preserve.[170] The acquisition includes some land inside Unit 3, but most acreage is located outside of either proposed essential or unoccupied lands.[171] However, since the lands were acquired with the purpose of preserving sand sources for Unit 3, this acquisition cost is included in the report and allocated to Unit 3 pre-designation costs in unoccupied areas.

Land acquired for conservation in the Coachella Valley is primarily purchased using funds collected from development mitigation fees; however, nearly all of the $26 million spent on this land acquisition was funded by a collection of government agencies and non-profit entities. As this land acquisition was targeted in the MSHCP and was not paid for by development mitigation fees; the purchase cost is included as a cost of CVMV conservation. Although most of the acquired land is located outside of either proposed essential habitat or sand source (unoccupied) lands, protection of sand transport to Unit 3 was the purpose of the acquisition. Therefore, the purchase cost of $26 million is entirely attributed to unoccupied sand source areas for Unit 3.

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[167] Personal communication with Cameron Barrows, manager of the Coachella Valley Preserve, May 17, 2005.

[168] Personal communication with Cameron Barrows, manager of the Coachella Valley Preserve, June 8, 2005.

[169] Personal communication with Katie Barrows, Coachella Valley Mountains Conservancy, June 19, 2005.

[170] Personal communication with Katie Barrows, Coachella Valley Mountains Conservancy, June 19, 2005.

[171] Personal communication with Cameron Barrows, manager of the Coachella Valley Preserve, June 8, 2005.

8.1 EFFECTS ON WATER SUPPLY PROJECTS

This section examines the costs of conservation measures associated with past and future water supply projects on lands identified in the proposed designation of critical habitat for the CVMV and in areas of past consultations. There are two water districts in the region providing water for domestic use and wastewater reclamation: Mission Springs Water District (MSWD), and the Coachella Valley Water District (CVWD). CVWD also provides irrigation water delivery, storm water protection, agricultural drainage, and water conservation. Water districts and water treatment plants must access their infrastructure for maintenance or expansion projects, potentially disturbing the habitat of sensitive species. One formal consultation for a water pipeline project involving the CVMV has been completed. This project and consultation are discussed below.

8.1.1 PRE-DESIGNATION ACTIVITIES

This section describes water supply activities requiring conservation measures for the CVMV from 1998 through 2005.

8.1.1.1 Mission Springs Water District

In October 2000, the Service entered into consultation with the USACE, as the action agency, and MSWD, as the local sponsor, concerning a proposed Sewer Line Improvement project. The project involved the phased construction of 62.8 miles of sewer line and a one million gallon per day expansion of the Horton Wastewater Treatment Plant.[172] This project is located outside of the essential habitat units for the CVMV. Consequently, the costs presented below are not included in the summary tables.

Through consultation, it was found that the project would impact 0.1 acres of CVMV and CVFTL habitat along the new sewer line alignment. An additional 3.5 acres were impacted by the construction footprint of the wastewater expansion project. Potential impacts to the CVMV included crushing of plants and seeds, degradation and destruction of habitat, and negative effects of exotic plants.

Conservation measures specific to the CVMV included:

[172] U.S. Fish and Wildlife Service, October 16, 2000, "Biological Opinion on the Proposed Mission Springs Water District Sewerline Improvement Project, Riverside County, California," 1-6-00-F-869.

- Acquiring 7.2 acres of habitat within the Edom Hill/Willow Hole Sand Transport system, or a payment of $4,500 per acre to *Friends of the Desert Mountains* in lieu of the land acquisition.[173] MSWD chose to make the payment to *Friends of the Desert Mountains* in 2000.

- An Education Program for Construction Workers and Construction Monitoring was also a requirement. Trained employees of MSWD executed the education program and construction monitoring. Cost estimates for MSWD employee time were not available for this analysis.[174]

- Any CVMV plants in the buffer zone of the project footprint would be fenced with snow fencing and avoided during project construction.[175] The cost of installing the snow fence around the perimeter of the project was estimated by MSWD at $3,000.[176]

The cost of the CVMV conservation efforts incurred by MSWD are summarized in Table 28.

Table 28
Cost of MSWD Conservation Efforts for the CVMV

Effort	Cost
Land Acquisition	$32,400
Snow Fencing	$3,000
Total	**$35,400**

8.1.1.2 Coachella Valley Water District

Percolation Ponds

CVWD owns and operates percolation ponds within the boundaries of Unit 1. The percolation ponds are used to recharge the groundwater basin during periods of high surface flows to support future groundwater use in the region. The Indio basin, which is recharged by the ponds, contains some of the highest population densities in the Coachella Valley.[177]

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[173] U.S. Fish and Wildlife Service, October 16, 2000, "Biological Opinion on the Proposed Mission Springs Water District Sewerline Improvement Project, Riverside County, California," 1-6-00-F-869.

[174] Personal communication with Brent Gray, Mission Springs Water District, May 16, 2005.

[175] U.S. Fish and Wildlife Service, October 16, 2000, "Biological Opinion on the Proposed Mission Springs Water District Sewerline Improvement Project, Riverside County, California," 1-6-00-F-869.

[176] Personal communication with Brent Gray, Mission Springs Water District, May 16, 2005.

[177] Personal communication with Dr. Monica Swartz, Coachella Valley Water District, May 11, 2005.

Periodically, CVWD must remove sediment from the ponds to facilitate improved percolation for aquifer recharge.[178] In the past, sediment was removed from the ponds and used to build "sugar dikes," or water diversion structures. The pond area was excluded from essential habitat, but adjacent lands, including one "sugar dike" located on BLM land, were included in the proposed designation. The potential effects of the percolation ponds on the CVMV may include disruption to the sand transport function within the Whitewater Preserve.

To address this concern, an experimental study has been initiated by CVWD in partnership with other agencies and a university to analyze the effect of moving the dredged sediment downwind of the ponds. The experiment is being conducted by CVWD in collaboration with USGS, researchers with the University of California Riverside, and the Center for National Lands Management. The purpose of the experiment is to determine if the relocation of the sand deposition will benefit species that occur within the sand ecosystem, including the CVMV. The aeolian deposit of sediment is expected to benefit the CVMV, as the plant prefers particles with a specific size.[179] All research efforts from other agencies are "in kind" contributions. No cost estimates for these "in kind" contributions were available for this analysis. The cost of physically moving the sediment downwind of the ponds has been estimated at $2.5 million. If the experiment is found to benefit sensitive habitat in the area, it is anticipated that this adaptive management effort for sediment transport will reoccur every ten years.[180]

The project is being conducted for the benefit of many species including the CVMV. This analysis, however, includes the entire $2.5 million cost of the experiment as a pre-designation impact due to the difficulty of apportioning the costs of the project among affected species. Furthermore, it is assumed that the experiment will benefit the CVMV and it will be repeated every ten years. Therefore, two additional sediment relocation efforts (in 2015 and 2025) are expected to be implemented within the 20-year time frame of this analysis and the associated costs are captured in the analysis of post-designation impacts of CVMV conservation efforts. The costs of the experiment are allocated proportionally to the proposed CHD and excluded habitat units based on the acreage of each category within Unit 1.

Community Monitoring

CVWD is also involved in managing and designing a community monitoring program. The focus of this adaptive management program is on a wide array of species and their associated habitat, to gain a better understanding of how species and their habitat interact with one another. Monitoring for the CVMV is included in this effort and began in 2002.[181]

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[178] Personal communication with Dr. Monica Swartz, Coachella Valley Water District, May 11, 2005.

[179] Personal communication with Dr. Monica Swartz, Coachella Valley Water District, May 11, 2005.

[180] Personal communication with Dr. Monica Swartz, Coachella Valley Water District, May 11, 2005.

[181] Personal communication with Dr. Monica Swartz, Coachella Valley Water District, May 11, 2005.

Funding for the community monitoring program is supplied primarily from the Federal government and California Department of Fish and Game through the University of California Riverside. The budget for the program has been $200,000 per year, and is expected to increase to $500,000 in 2006.[182] In the future, as understanding of the interaction between species increases, the costs of the program may decrease, as less effort will be required for monitoring. No estimate was available to describe the magnitude or timing of the potential cost decrease.

CVWD estimates that $15,000 annually can be directly attributed to monitoring of the CVMV.[183] This represents sampling efforts of three employees for one month out of the year. In this analysis a $15,000 annual pre-designation cost for years 2002 through 2005 is assigned to all three Units and proportionally allocated among the habitat categories according to acreage. In addition, a $15,000 annual post-designation cost is assigned to three Unit in a similar manner.

Land Contributions

CVWD owns approximately 7,000 acres in the Conservation Areas described in the draft MSHCP. There are 1,200 acres in the Whitewater Floodplain Conservation Area currently conserved pursuant to the CVFTL HCP that will be permanently committed to conservation under the MSHCP. Of these 7,000 acres, 3,185 acres are within Unit 1, 10 acres are within Unit 2, and 113 acres are within Unit 3, for a total of 3,307 acres within CVMV habitat units. CVWD is obligated under the draft MSHCP to cooperate with the Coachella Valley Conservation Commission (CVCC) toward the conservation of these lands.[184] It is possible that some or all of these lands would have been conserved by CVWD regardless of the development of the MSHCP.[185]

To accomplish conservation, CVWD may convey fee titles, record conservation easements, or enter into an MOU for cooperative management with CVCC for all of the land in the Conservation Areas.[186] CVWD has the option of conserving these lands at any time within fifty years of the MSHCP being finalized. In return, CVWD will receive the potential use of an equivalent dollar value as credit toward the Development Mitigation fee, which is currently $1,975 per acre.[187] The current value of land has been estimated by CVWD to be $5,000 to $15,000 per acre.[188]

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[182] Personal communication with Dr. Monica Swartz, Coachella Valley Water District, May 11, 2005.

[183] Personal communication with Dr. Monica Swartz, Coachella Valley Water District, June 8, 2005.

[184] Section 6.6.1 Obligations of the Local Permittees, Draft Coachella Valley MSHCP, October 2004.

[185] Personal Communication with Monica Swartz, CVWD, June 30, 2005.

[186] Personal communication with Monica Swartz, CVWD, June 8, 2005.

[187] Section 6.6.1 Obligations of the Local Permittees, Draft Coachella Valley MSHCP, October 2004.

[188] Personal Communication with Dave Keeley, Right of Way Department, CVWD, June 28, 2005. This estimate was based on the sale price of land adjacent to Unit 1, the sale occurred in 2004.

It is uncertain when CVWD will contribute their lands or when the district may use development mitigation fee credits. The potential cost to CVWD consists the lost opportunity to sell the land for market value, while the benefit to CVWD is the potential use of an equivalent value of Development Mitigation Fees. In year fifty of Plan implementation, if CVWD still owns land in the Conservation Areas that has not been conserved by any of the foregoing methods, CVWD is obligated under the MSHCP to cooperate with the CVCC in the conservation of these lands through acquisition by CVCC or other means.[189] In this case, there is no lost value, as CVCC will acquire the land at market prices. It is possible for CVWD to contribute a value of land greater than the mitigation fee credits they will use, however no data was collected to support such a possibility. Therefore, in this analysis, the aforementioned options of conservation are assumed to result in no net costs to CVWD.

8.1.2 COST SUMMARY

Table 29 shows the cost summary of all mitigation and other conservation efforts directly related to the CVMV and associated with water supply activities. Total undiscounted dollar costs to excluded habitat are $3,730,300, which is equivalent to $2,444,100 and $1,466,400 using three and seven percent discount rates, respectively.

Table 29
Cost Summary for Water Supply Projects

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$767,600	$1,560,000	$1,016,300	$604,300	$68,300	$57,000
2 – Mission Creek/Morongo Wash	$1,800	$8,800	$6,600	$4,700	$400	$400
3 – Thousand Palms	$200	$800	$600	$400	$0	$0
Total - Proposed Critical Habitat	**$769,600**	**$1,569,700**	**$1,023,500**	**$609,500**	**$68,800**	**$57,500**
Excluded Habitat	0	0	0	0	0	0
1 – Whitewater River	$1,761,800	$3,580,400	$2,332,600	$1,387,000	$156,800	$130,900
2 – Mission Creek/Morongo Wash	$16,000	$76,300	$56,800	$40,400	$3,800	$3,800
3 – Thousand Palms	$15,400	$73,600	$54,700	$39,000	$3,700	$3,700
Total - Excluded Habitat	**$1,793,100**	**$3,730,300**	**$2,444,100**	**$1,466,400**	**$164,300**	**$138,400**
Essential Habitat - Not Allocated	$0	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0

[189] Section 6.6.1 Obligations of the Local Permittees, Draft Coachella Valley MSHCP, October 2004.

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Numbers may not sum due to rounding.

8.2 EFFECTS ON FLOOD CONTROL PROJECTS

This section examines the costs of conservation measures associated with past and future flood control projects on lands identified in the proposed designation of critical habitat for the CVMV and in areas of past consultations. Within the region, Riverside County Flood Control (RCFC) and the CVWD are charged with the responsibility of protecting people, property, and watersheds from damage or destruction from flood or storm waters.[190] One large flood control project, still in the planning stages, is the Whitewater River/Thousand Palms Flood Control Project. This project is expected to occur adjacent to Unit 3.

8.2.1 PRE-DESIGNATION ACTIVITIES

The Service has completed two CVMV consultations involving the Whitewater River/Thousand Palms Flood Control project. Consultation for the project was originally initiated due to potential presence of the CVMV, CVFTL, and the desert tortoise. A BO was issued for the Whitewater River/Thousand Palms Flood Control Project in Riverside County in September 2000. The proposed project included construction of four levees to contain flows associated with a 100-year flood event to the FEMA flood hazard zone between Indio Hills and Interstate 10. The original location of the flood control levees was adjacent to Unit 3. Potential direct effects of the project on the CVMV cited in the BO included burying and crushing the plant during construction activities. In addition, indirect effects were anticipated as the result of fragmentation of habitat, degradation of habitat, and facilitation of development on the alluvial fan. Specific conservation measures were outlined in the BO for protection of the CVMV. These conservation measures and mitigation requirements included purchasing 551 acres of floodplain, acquiring and conserving 583 acres within the wind corridor, and surveying for listed species.[191] It was determined that protecting 583 acres within the wind corridor would benefit all blowsand dependent

[190] RCFC Mission Statement, http://www.floodcontrol.co.riverside.ca.us/districtsite/ accessed June 2, 2005.

[191] U.S. Fish and Wildlife Service, September 12, 2000, "Biological Opinion on the Whitewater River/Thousand Palms Flood Control Project, Riverside County, California," (1-6-00-F-46).

species that rely on the large quantity of sand in the wind corridor, including the CVMV. Additionally, the floodway acquisition was thought to provide protection for 292 acres of CVMV habitat.[192]

To date, the flood control project has not been initiated or mitigated. In the fall of 2004, the USACE proposed a redesign of the project. The redesign was intended to accommodate two planned development projects (Xavier College Preparatory High School and the World Trade Center Golf Course) that were not considered in the original BO. Both projects conflicted with the original flood control project designs and the final Environmental Impact Statement (EIS) completed in the fall of 2000.[193] Following review of the redesign, the Service determined that the direct impact of the proposed project would increase by 440 acres by causing an obstruction in the sand transport system. This estimate included a significant increase in the level of anticipated loss of CVMV habitat above that considered in the original BO.[194] In addition, the switch to a channel from a levee, as proposed by the redesign, would require more maintenance, and the realignment would create legal and land ownership conflicts. Therefore, the Service requested that USACE reinitiate Section 7 consultation on the proposed project pursuant to 50 CFR 402.16.[195] It is possible, although uncertain at this time, that reinitiation of the consultation will result in further mitigation, endowment fees, or conservation measures.

Currently, the flood control project has been delayed due to a lack of funding for the project.[196] Therefore, at this time it is not possible to determine what, if any, additional measures may be required due to the proposed project redesign. However, the flood control project is a "Covered Activity" in the draft Coachella Valley MSHCP. The Draft Coachella Valley MSHCP explains that the local sponsors of the flood control project will acquire 550 acres in the Thousand Palms Conservation Area to mitigate for the Whitewater River Flood Control Project and contribute to an endowment fund for the management and monitoring of the site into perpetuity.[197] Due to the uncertain outcome of the consultation, this analysis applies the costs as identified in the Draft MSHCP. The land acquisitions are expected to occur

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[192] U.S. Fish and Wildlife Service, September 12, 2000, "Biological Opinion on the Whitewater River/Thousand Palms Flood Control Project, Riverside County, California," (1-6-00-F-46).

[193] U.S. Fish and Wildlife Service, October 13, 2004, Letter to USACE, Subject: U.S. Fish and Wildlife Service Concerns with the U.S. Army Corps of Engineers Proposed Changes to the Whitewater River Basin Flood Control Project, Riverside County, California.

[194] U.S. Fish and Wildlife Service, October 13, 2004, Letter to USACE, Subject: U.S. Fish and Wildlife Service Concerns with the U.S. Army Corps of Engineers Proposed Changes to the Whitewater River Basin Flood Control Project, Riverside County, California.

[195] U.S. Fish and Wildlife Service, October 13, 2004, Letter to USACE, Subject: U.S. Fish and Wildlife Service Concerns with the U.S. Army Corps of Engineers Proposed Changes to the Whitewater River Basin Flood Control Project, Riverside County, California.

[196] Personal communication with Monica Swartz, Coachella Valley Water District, May 11, 2005.

[197] The mitigation payment is expected in 2009, therefore the inflated (2009) value is $7.6 million; see Draft Coachella Valley MSCHP, October 15, 2004, Table 5-3d: Endowment Fund (Inflated Dollars).

in 2006 and are included as a post-designation cost in this analysis (see Section 8.2.2). [198] CVWD and the Imperial Irrigation District's contribution of $4,108,400 to an endowment fund is expected to occur in 2005, and are allocated to Unit 3 as a pre-designation cost.[199]

8.2.2 POST-DESIGNATION ACTIVITIES

CVWD's land acquisition of 550 acres to mitigate for the Whitewater River Flood Control Project is expected to cost $7,150,000 ($13,000 per acre) and the anticipated purchase will occur in 2006.[200] The land acquisition cost is included as a post-designation activity allocated to Unit 3.

8.2.3 CONSERVATION MEASURES AND COSTS

The levee system of the flood control project will help direct fluvial-born sand into the depositional area where Aeolian sand transport processes will sort and transport sand downwind. Operation and maintenance (O&M) of the levee system will be in conformance with an O&M Manual to be developed with the USACE in consultation with the Service.[201] However, the USACE has temporarily put this project on hold due to a lack of funding.[202] In addition, the recent redesign of the flood control project creates further uncertainty as to CVMV impacts and specific conservation efforts that may be implemented. Therefore, in this analysis only the costs of land acquisition, and management and monitoring are included.

8.2.4 COST SUMMARY

According to the original design, the levee surrounding the southwestern portion of the Coachella Valley Preserve (Unit 3) was to be set back 152 meters from the preserve's border.[203] However, due to the redesign of the project, as mentioned above, a specific location of the flood control project cannot be identified at this time. In this analysis, the costs of CVMV conservation efforts are allocated in full to Unit 3 and assigned to proposed and excluded lands based on the proportion of each type of land in

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198 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 5.2.1.4, Regional Infrastructure Project Mitigation.

199 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 5, Table 5-3d: Endowment Fund (Inflated Dollars).

200 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 5, Table 5-3c: Land Acquisition and Improvement Fund (Inflated Dollars).

201 Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 4.0, General Plan Land Use Designation, Thousand Palms Conservation area, p. 4-102.

202 Personal communication with Monica Swartz, Coachella Valley Water District, May 11, 2005.

203 U.S. Fish and Wildlife Service, September 12, 2000, "Biological Opinion on the Whitewater River/Thousand Palms Flood Control Project, Riverside County, California," (1-6-00-F-46).

Unit 3. Table 30 below provides a summary of the estimated costs to the flood control project. Total undiscounted costs sum to $7.15 million, which is equivalent to present values of $6.94 million and $6.68 million using three and seven percent discount rates, respectively.

Table 30
Flood Control Project Cost Summary

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$46,700	$81,300	$78,900	$76,000	$5,300	$7,200
Total - Proposed Critical Habitat	**$46,700**	**$81,300**	**$78,900**	**$76,000**	**$5,300**	**$7,200**
Excluded Habitat	0	0	0	0	0	0
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$4,061,700	$7,068,700	$6,862,800	$6,606,300	$461,300	$623,600
Total - Excluded Habitat	**$4,061,700**	**$7,068,700**	**$6,862,800**	**$6,606,300**	**$461,300**	**$623,600**
Essential Habitat - Not Allocated	$0	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Numbers may not sum due to rounding.

8.3 Effects on Energy Projects

8.3.1 Wind Energy Projects

There are substantial wind turbine developments located on BLM land in and around the eastern portion of Unit 1 (Whitewater River). As this area has been developed and re-powered (wind turbines replaced), the BLM has entered into section 7 consultations with the Service regarding the effect of these projects on listed species, including the CVMV. Since the 1998 listing of the CVMV, there have been three wind energy consultations in and around Unit 1 associated with the species. A fourth consultation concerned a

wind energy project located in an unoccupied sand source area along the San Gorgonio River in the San Gorgonio Pass, approximately one mile east of the community of Cabazon.[204]

In 1999, several wind energy companies replaced old wind turbines with newer turbines.[205] The project, which consisted of several smaller projects undertaken by various independent private companies, was expected to impact 18 acres of CVMV and CVFTL habitat. To minimize impact to the CVMV and the CVFTL, the project developers were required to either acquire two acres to be placed in a conservation easement for every disturbed acre, or to pay a mitigation fee equal to the value of the land acquisition.[206] Based on the required mitigation fee for other wind energy consultations in 1999, the mitigation fee is estimated at $2,036 per acre.[207] Given the 2:1 mitigation ratio, the mitigation fees for the project thus total $73,300. Other required conservation measures included employee education, no disturbance of mesquite and desert willow hummocks, and surveys and flagging for CVMV. Of the eighteen impacted acres, the wind energy company, AES SeaWest, developed approximately half.[208] Communication with AES SeaWest indicates that the cost of the other conservation measures to AES SeaWest was approximately $57,600.[209] Since AES SeaWest owns approximately half of the disturbed habitat, the total cost of the other conservation measures on all eighteen acres is estimated to be $115,200.

Two additional AES SeaWest wind projects in 1999 resulted in two more consultations with the Service regarding the CVMV.[210] The first project involved development of 18 new wind turbines. This project impacted 2.84 acres of CVMV and CVFTL habitat. The disturbed habitat was mitigated at a 2:1 ratio through payment of a per acre fee of $2,036, or $11,600 total.[211] Additional mitigation measures to minimize impact (e.g. construction measures, training of employees, and hiring a biologist to ensure

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204 USFWS Consultation FWS-ERIV-1289.2, August 6, 2001.

205 USFWS Consultation 1-6-99-F-49, September 3, 1999.

206 USFWS Consultation 1-6-99-F-49, September 3, 1999.

207 The mitigation fee indicated in USFWS Consultation 1-6-99-F-17, February 24, 1999 and USFWS Consultation 1-6-99-F-17-R1, June 18, 1999, the 1999 mitigation fee was $1,767. In 2005 dollars, this is equivalent to $2,036.

208 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest ,May 27, 2005.

209 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest ,May 27, 2005.

210 USFWS Consultation 1-6-99-F-17, February 24, 1999 and USFWS Consultation 1-6-99-F-17-R1, June 18, 1999.

211 USFWS Consultation 1-6-99-F-17, February 24, 1999. Per personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest (May 27, 2005), the stipulated mitigation fee was paid.

compliance) cost AES SeaWest approximately $17,300.[212] A related AES SeaWest project that resulted in another consultation was associated with the construction of a storage facility necessary during development of the new wind turbines.[213] This project was determined to impact 1.07 acres of CVMV and CVFTL habitat. Again, disturbed habitat was mitigated at a ratio of 2:1 at a fee of $2,036 per acre, for a total mitigation cost of $4,100.[214] Other required mitigation measures, primarily associated with special construction features designed to prevent accumulation of blowsand, are estimated to have cost an additional $40,300.[215] Combined, these two projects resulted in conservation and mitigation expenses totaling $73,300.

A fourth wind energy consultation occurred in 2001 regarding development of a project along the San Gorgonio River within the San Gorgonio Pass (a sand source area for the Whitewater essential habitat unit).[216] Although the project was not located on BLM land, a Federal nexus with the USACE required a Section 7 consultation. This project was anticipated to impact 4.25 acres of CVFTL and CVMV habitat, 53 acres of desert tortoise habitat, and 14 acres of big horn sheep habitat. The original project was developed by Cabazon Wind Partners, but has since changed ownership several times.[217] Although contact with the project developer could not be established for this analysis, the development was completed according to a USACE official familiar with the project.[218] According to the consultation history, mitigation for project-related impacts agreed to by the developer included setting aside 53 acres in a conservation easement. Assuming the land purchase price was similar to the per acre mitigation price in the other wind energy consultations, the cost to mitigate the 4.25 acres of CVMV is approximately $8,700. Additional CVMV related conservation measures included flagging sensitive species, educating employees about the biological resources at the construction site, and ensuring the presence of a biological monitor. Based on conservation cost information provided by AES SeaWest for similar conservation measures, other conservation measures are estimated to cost approximately $24,400.[219] The total CVMV related conservation cost at the Cabazon Wind Energy site is thus estimated at $33,100.

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212 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest, May 27, 2005.

213 USFWS Consultation 1-6-99-F-17-R1, June 18, 1999.

214 USFWS Consultation 1-6-99-F-17-R1, June 18, 1999. Per personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest (May 27, 2005), the stipulated mitigation fee was paid.

215 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest ,May 27, 2005.

216 USFWS Consultation FWS-ERIV-1289.2.

217 Personal communication with Robert Smith, USACE San Diego Office, June 1, 2005.

218 Personal communication with Robert Smith, USACE San Diego Office, June 1, 2005.

219 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest, May 27, 2005 indicated that similar conservation measures cost $15,000 for 2.84 acres. On a per acre basis, this

Regarding future conservation costs associated with wind energy projects, a SeaWest representative estimated that AES SeaWest would likely impact 50 acres of CVMV habitat in the next 20 years during re-development or re-powering projects.[220] Assuming a 2:1 mitigation ratio and a per acre mitigation fee of $2,036 as in prior consultations, mitigation fees for these 50 disturbed acres total $203,600. In addition to mitigation fees, an estimated $300,000 of clearance survey costs and other conservation measure costs over the next 20 years.[221] Total future conservation costs to AES SeaWest thus are projected at $503,600. Although contact was not established with other wind energy companies to project their future conservation costs, AES SeaWest estimated that total wind energy related costs would be approximately three times the magnitude of costs to AES SeaWest alone.[222] These costs are assumed to be distributed uniformly over the next twenty years to result in an estimated annualized cost of $75,500.

Based on future conservation cost projections from AES SeaWest, it is estimated that total wind-energy related costs would be $1.5 million. Although it is unknown if all of these projects would be located in essential habitat, these conservation costs are all attributed to the conservation of the CVMV in Unit 1 as wind energy development is concentrated in and around that unit. This method of allocating costs overstates the specific impact of CVMV conservation measures on wind energy projects in Unit 1. Furthermore, other sand species in addition to the CVMV, such as the CVFTL, are expected to benefit from these conservation efforts. Table 31 summarizes pre- and post-designation conservation costs associated with wind-energy development, and Table 32 summarizes these costs by unit.

Table 31
Costs to Wind Energy Developments of CVMV Conservation by Activity

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Conservation Measures	$197,200	$900,000	$669,500	$476,700	$45,000	$45,000
Mitigation Fees	$97,300	$610,800	$454,400	$323,500	$30,500	$30,500
Total	**$294,500**	**$1,510,800**	**$1,123,800**	**$800,300**	**$75,500**	**$75,500**

represents a conservation cost of $5,282. Multiplying this per acre cost by the 4.25 impacted acres yields an estimated conservation cost of $22,427.

220 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest, May 27, 2005.

221 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest, May 27, 2005.

222 Personal communication with Mike Azeka, Senior Vice President of Development, AES SeaWest, May 27, 2005.

Table 32
Costs to Wind Energy Developments of CVMV Conservation by Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$262,000	$1,510,800	$1,123,800	$800,300	$75,500	$75,500
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Proposed Critical Habitat	**$262,000**	**$1,510,800**	**$1,123,800**	**$800,300**	**$75,500**	**$75,500**
Excluded Habitat						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Excluded Habitat	$0	$0	$0	$0	$0	$0
Essential Habitat - Not Allocated	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Unoccupied Areas						
1 – Whitewater River	$32,500	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$32,500**	**$0**	**$0**	**$0**	**$0**	**$0**

8.3.2 PETROLEUM PIPELINES

Kinder Morgan Energy Partners (KMEP) owns and operates a 20-inch pipeline, Line Section 111, which transports petroleum products between Colton, California and Phoenix, Arizona. LS 111 crosses the San Gorgonio River near the intersection of Interstate 10 and State Highway 111 in the vicinity of Unit 1. Heavy storm water flows in 2004 undermined the soil cover over the pipeline, leaving the line exposed. KMEP proposed to re-cover the exposed line and install a system that would stop erosion during future storm events. An evaluation of the biological resources at the Line Section 111 washout location was performed in 2005.[223]

223 Draft Biological Resource Evaluation at Line Section 111 Washout Location, from Nick Ricono (TRC) to Elisha Back (KMEP), January 12, 2005.

The evaluation noted that habitat for the CVMV exists in the washout area and that the plant has been recorded in five locations within three miles of the project site, the closest one being about a mile and a half to the southeast. The evaluation recommended measures to avoid impacts to the sensitive plant and wildlife species, including several measures specific to the CVMV. Pre-construction surveys were conducted to identify access, staging, and lay down areas that minimize impact. Access routes and lay down areas were also clearly identified using stakes and flagging. [224]

The Service found the conservation measures described in the evaluation to satisfactory to avoid adverse effects to threatened or endangered species in the area of the project.[225] The costs incurred to protect the CVMV were estimated by KMEP to total $10,000 for this project.[226] This pre designation cost is expected to occur in Unit 1. In the future, KMEP plans to relocate this section of pipeline, which may require a formal consultation with the Service. However, as it is unknown when this relocation project will occur or what CVMV conservation measures will be required, this analysis does not estimate impacts associated with the project.

8.4 RECREATION - OHV USE

In the proposed rule designating critical habitat for the CVMV, off-highway vehicle (OHV) use is an identified threat to the species.[227] OHV use can directly destroy plants and also adversely modify habitat. The BLM has historically allowed OHV use on designated routes, OHV "free play" off of designated routes has never been legal in the Coachella Valley on BLM land. However, the BLM did not enforce the restriction of free play, and several BLM-owned lands in the Coachella Valley became popular OHV open recreation sites.

In order to conserve habitat, the BLM in its 2002 CDCA Amendment formally closed to OHV use 357 acres at the Windy Point area in the Whitewater floodplain. This area was formerly a popular OHV free play area. The amendment also formally designated 47.4 miles of OHV routes and closed 25.6 miles.[228] Additionally, 44.6 miles that were not previously accessible to the public due to rights of way or other activities were also formally closed. As there are extensive designated BLM routes and also private

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224 Draft Biological Resource Evaluation at Line Section 111 Washout Location, from Nick Ricono (TRC) to Elisha Back (KMEP), January 12, 2005.

225 Informal Consultation with Kinder Morgan Energy Partners, Request for US Fish and Wildlife Service Approval to conduct Preliminary Investigations on Line Section 111, Riverside County, California, FWS-ERIV-4409.1, March 16, 2005.

226 Personal communication with Erin Wilson, Kinder Morgan Energy Partners, May 16, 2005.

227 U.S. Fish and Wildlife Service, December 14, 2004, "Proposed Designation of Critical Habitat for *Astragalus lentiginosus* var. *coachellae* (Coachella Valley milk-vetch), Proposed Rule," *Federal Register,* Vol. 69, No. 239, p. 74470.

228 Personal communication with Jim Foote, BLM recreation specialist, June 24, 2005.

riding areas in the Coachella Valley, the recreation specialist at the BLM does not believe that closing the 25.6 miles of route is resulting in crowded riding conditions or other adverse impacts. Therefore, while habitat conservation measures have led to increased enforcement of OHV restrictions and closures of previous OHV free play areas, since these activities were not technically legal prior to the listing of the CVMV, this analysis does not assess an economic impact to OHV use of CVMV conservation measures.

8.5 MINING ACTIVITIES

Mining activities are identified in the proposed rule designating CVMV critical habitat as a threat to the species. As stated in the rule, "the construction and operation of sand and gravel mining…can directly impact plants and occupied habitat and decrease the amount of fluvial transported sediments to deposition areas [in] downstream occupied habitats." The BLM land management plan (CVCDCAP) allows mineral resource development only within State designated mineral resource zones. The CVCDCAP Amendment also requires mining projects located in conservation areas to meet habitat conservation objectives. Required conservation measures may result in higher production and reclamation costs.

According to the BLM, there are currently no sand or gravel operations in CVMV habitat areas or blowsand areas.[229] A quarry located on BLM lands north of Unit 1 and east of Unit 2 is currently being expanded, but this expansion will not be located in either Unit 1 or Unit 2.[230] Due to the lack of current or projected mining development in CVMV proposed essential habitat units, no economic impacts to mining are estimated. To the extent that land within essential habitat is developed for mining in the next twenty years, this analysis underestimates costs.

8.6 COST OF HABITAT CONSERVATION PLAN

8.6.1 COST OF CREATING THE COACHELLA VALLEY MSHCP

The cost of the MSHCP through 2005 is estimated at $5 million, spent over approximately 12 years.[231] The Memorandum of Understanding (MOU) between the Wildlife Agencies and the Local Permittees of the MSHCP was signed in 1996. However, requisite planning, research, and development to complete the MOU by the local jurisdictions of the Coachella Valley began prior to that time.[232]

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229 Personal communication with John Kalish, Bureau of Land Management realty specialist,

230 Personal communication with Allan Bankus, Whitewater Rock and Supply, July 20, 2005.

231 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), June 7, 2005.

232 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), June 7, 2005.

Through grants under the Natural Community Conservation Plan (NCCP) program, the Federal and state governments have contributed approximately $2.5 million dollars to the development of the MSHCP. These grants were effectively matched in kind through staff time of the Local Permittees dedicated to plan development.[233] Covered species responsible for the largest portion of plan development costs include the Bighorn sheep and the various "sand species."[234] According to CVAG, approximately 75 to 90 percent of MSHCP costs have been driven by "sand species," including the CVMV.[235]

A portion of this $5 million MSHCP preparation cost was incurred prior to the CVMV listing. However, specific information regarding the timing of the costs was not available for this analysis. As a result, it was assumed that the costs were incurred uniformly from 1994 to 2005. The costs from 1998 through 2005 are included in this analysis. Further, this analysis allocates 82.5 percent of the MSHCP development costs entirely to the CVMV.[236] These costs are not apportioned among essential habitat units or unoccupied areas.

8.6.2 Cost of Implementing the Coachella Valley MSHCP

Recurring costs of MSHCP implementation will be borne by the Local Permittees through the management, monitoring, and administration of those portions of the MSHCP Reserve System to which they hold title.[237] The Endowment Fund has been established to cover various ongoing costs of implementing the plan, including managing, monitoring, and administrating the MSHCP Reserve System.

Table 5-3b of Section 5.0 of the draft MSHCP provides the projected Operating Fund budget from 2005-2079, including management, monitoring, and administration of the MSHCP Reserve System. It is estimated that the average annual cost per acre for management, monitoring, and administration of the MSHCP Reserve System over the post-designation time period is $39.[238] During the first year in which the MSHCP is permitted (anticipated in 2006), the per acre costs are estimated at $82 (see Table 33). As

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233 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), June 7, 2005.

234 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), June 7, 2005.

235 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), June 7, 2005.

236 82.5 percent = represents the average of the range between 75 and 90 percent, as reported by CVAG.

237 Personal communication with Jim Sullivan, Director of Environmental Resources, Coachella Valley Association of Governments (CVAG), May 13, 2005.

238 Annual budget estimates for monitoring, management, and administration of the CVMSHCP Reserve System for the post-designation time period (2006-2025) were taken from Table 5-3b in Section 5.0 of the Draft CVMSHCP and assumed to be spent in full each year by the Local Permittees in managing, monitoring, and administrating those portions of the CVMSHCP Reserve System which they hold title.

lands are added to the MSHCP Reserve System each year, there will be a greater acreage over which to allocate budgeted recurring costs, thereby reducing the per acre costs over time.[239]

Table 33
Initial and Average Post-Designation Coachella Valley MSHCP Recurring Costs

CVMSHCP Recurring Cost	First Year Permitted, 2006 ($/acre/year)	Post-Designation Average, 2006-2025 ($/acre/year)
Reserve Management	$36	$19
Reserve Monitoring	$41	$18
Administration	$4	$2
Total	**$82**	**$39**

Note: Numbers may not sum due to rounding.

Ongoing MSHCP costs were allocated to Units 1 and 2 at the same rate as projected development within the units. It is assumed that for every acre developed within essential habitat Units 1 and 2, an acre is added in the MSHCP Reserve System where those units occur. This assumption is based on the stated goal by the Local Permittees to establish "rough proportionality" between development and conservation through acquisition; this is described in Section 5.0 of the draft MSHCP.[240] Given that no development was forecasted for Unit 3 of essential habitat, the assumption is made that all 449 acres of privately owned, undeveloped land in the northwest corner of the unit, located in a 9:1 conservation to development area, would be acquired into the MSHCP Reserve System by the Local Permittees.[241] This land was assumed to be acquired in equal annual proportions over the post-designation time period.

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239 As of 2003, existing CVMSHCP Reserve Areas under title of the Local Permittees totaled 6,500 acres. It is the goal of the Local Permittees to acquire their remaining obligation of Conservation Area land for addition into the CVMSHCP Reserve System by 2033 (30 years). While there exists imperfect foresight on the timing of acquisition of the remaining 90,600 acres, Section 5.0 of the CVMSHCP indicated that the Local Permittees wished to acquire 28 percent of their 90,600 acre obligation in the first 6 years and 43 percent by the first 11 years. Remaining acreage was assumed to be acquired in equal proportions every year thereafter. Annual per-acre costs were derived by dividing the annual budget by the estimated number of acres in the CVMSHCP Reserve System under title of the Local Permittees.

240 Coachella Valley Association of Governments (CVAG), 2004, *Draft Coachella Valley MSHCP*, Section 5.2.2.3, "Revenue Collection and Land Acquisitions in Relationship to Land Development (Rough Proportionality)."

241 Under a 9:1 conservation to development ratio, 10 percent of the 449 acres of private land in the northwest corner of unit 3 of essential habitat (44.9) would be otherwise be developable. Given the adjacency of public land ownership and the fact that the land is zoned as Riverside County RR (rural residential), it is assumed that all land in the area will be acquired and added into the CVMSHCP Reserve System.

The costs of preparing and implementing the MSHCP during the post-designation time period and are presented in Table 34.

Table 34
Cost of Preparing and Implementing the Coachella Valley MSHCP

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$0	$422,737	$292,729	$189,586	$19,676	$17,896
2 – Mission Creek/Morongo Wash	$0	$57,403	$39,837	$25,897	$2,678	$2,444
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Proposed Critical Habitat	**$0**	**$480,140**	**$332,566**	**$215,483**	**$22,354**	**$20,340**
Excluded Habitat						
1 – Whitewater River	$0	$970,293	$671,889	$435,151	$45,162	$41,075
2 – Mission Creek/Morongo Wash	$0	$496,006	$344,224	$223,771	$23,137	$21,122
3 – Thousand Palms	$0	$103,723	$71,180	$45,566	$4,784	$4,301
Total - Excluded Habitat	**$0**	**$1,570,023**	**$1,087,294**	**$704,488**	**$73,083**	**$66,499**
Essential Habitat - Not Allocated	$4,125,000	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Numbers may not sum due to rounding.

8.6.3 COST OF LAND ACQUISITION UNDER THE COACHELLA VALLEY MSHCP

Land acquisitions by MSHCP signatories began to be credited under the MSHCP beginning in 1996. Most land acquisitions are funded by the CVFTL or MSHCP development mitigation fee. Several land acquisitions in the Coachella Valley have also been partially funded through the California Environmental Enhancement and Mitigation Program, which mitigates the environmental impacts of modified or new public transportation facilities.[242] Since 1996, 211 acres of land have been acquired in Unit 1 at a cost of $320,323 (it is unknown when this acquisition occurred.)[243] Additionally, 222 acres of land were

[242] California Resources Agency Website, Web address: http://resources.ca.gov/eem/05-06ProcCritFINAL.pdf, downloaded July 22, 2005.

[243] Personal communication with Katie Barrows, Coachella Valley Mountains Conservancy, July 18, 2005.

acquired in Unit 2 at a total cost of $366,231. Of these 222 acres, 71 acres were private donations valued at a total of $103,000. As past and future lands acquired under the MSCHP have been, and will continue to be, funded through development and transportation mitigation fees, and are thus accounted for elsewhere in this report (see Sections 5.0 and 6.0), land acquisition costs are not included in this section.

8.7 ADMINISTRATIVE COSTS

Federal agencies are required to consult with the Service on activities that they fund, permit, authorize, or carry out in order to avoid jeopardizing the continued existence of a listed species. When critical habitat is designated, the agencies are also required to ensure that the activity will not result in an appreciable reduction in the value of the habitat to protect the listed species. In some cases, third parties such as local government or private entities participate in the consultation process along with the Federal action agency when the proposed project has a Federal nexus.

Section 7 consultations can take a variety of forms including informal, formal, and programmatic. The Service may also conduct a "conference" regarding an activity. A conference involves a process of early interagency cooperation involving informal or formal discussions between a Federal agency and the Service pursuant to section 7(a)(4) of the Act regarding the likely impact of an action on proposed species or proposed critical habitat. Conferences are: (1) required for proposed Federal actions likely to jeopardize proposed species, or destroy or adversely modify proposed critical habitat; (2) designed to help Federal agencies identify and resolve potential conflicts between an action and species conservation early in a project's planning; and (3) designed to develop recommendations to minimize or avoid adverse effects to proposed species or proposed critical habitat.[244] The Service has conducted one formal conference opinion on the continued implementation of land and resource management plans for four Southern California National Forests, which involved the CVMV.

The Service has also performed one programmatic consultation for the CVMV. A programmatic consultation is a consultation done to address an agency's multiple actions on a region.[245] The programmatic consultation for the CVMV was applied to the multiple interchange projects along Interstate 10 (see Section 6.1.1.1). However, in order for a take permit to be issued for the associated CVFTL and Desert Tortoise an appendix to the programmatic BO or a tiered BO must be formed. In this analysis the administrative cost of the programmatic consultation involving the CVMV is included as a "formal" consultation.

Table 35 provides a summary of the consultation record for the CVMV.

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[244] U.S. Fish and Wildlife Service and National Marine Fisheries Service, March 1998, "Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act," pp. xi-xii.

[245] U.S. Fish and Wildlife Service and National Marine Fisheries Service, March 1998, "Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act," pp. xvii.

Table 35
Service CVMV Consultations by Year and Type

Year	Total	Formal	Informal
1999	5	5	0
2000	5	5	0
2001	2	2	0
2002	7	3	4
2003	5	4	1
2004	12	2	10
2005	2	0	2
Total	38	21	17
Average Annual	**5.4**	**3.0**	**2.4**

Section 7 consultations require a considerable amount of time and effort for the Service, action agencies, and third parties and can result in substantial administrative costs. Table 36 presents cost estimates for the categories of consultations presented above. The costs are associated with meetings, preparation, and documentation during the consultation. In addition, average costs required to develop Biological Assessments (BAs) are included.[246]

The number of future CVMV consultations is unknown. When the draft Coachella Valley MSHCP becomes final the "covered activities," specified in the plan and performed by the Section 10 permittee will be covered and permitted under the ESA. Consultation requirements will remain for "covered activities" that involve a Federal nexus. However, the consultation process will be abbreviated for such instances due to the presence of the MSHCP and are estimated to require approximately ten percent of the costs identified in Table 36.[247] Therefore, consultation costs for covered activities are assigned ten percent of the costs provided in Table 36, while activities not covered are assigned the full costs.

[246] It is assumed that the hours required to develop the BA by the Action agency and third party are equal but that per hour costs are higher for third parties.

[247] Personal communication with Service Biologist, Carlsbad Fish and Wildlife Office, June 6, 2005.

Table 36
Estimated Administrative Costs of Section 7 Consultations

	Formal		Informal	
	Covered	**Not Covered**	**Covered**	**Not Covered**
Service				
Consultation Cost	$491	$4,908	$219	$2,187
Action Agency				
Consultation Cost	$555	$5,548	$277	$2,774
BA Cost	$1,814	$18,137	$213	$2,134
Third Party Costs				
Consultation Cost	$373	$3,734	$219	$2,187

Source: Industrial Economics, April 2005, "Final Economic Analysis of Proposed Critical Habitat Designation for the Lane Mountain Milk-Vetch," and modified by NEA. The administrative cost model is based on data from the Federal Government Schedule Rates, Office of Personnel Management, a review of consultation records from several Service Field offices across the country, and communications with Biologists in the Service. Average costs by type of consultation for each party, brought to 2005 dollars using the "Consumer Price Index – All Urban Consumers" from the U.S. Department of Labor, Bureau of Labor Statistics (Series ID: CUUROOOOSAO Not Seasonally Adjusted).

The need for future consultations regarding the CVMV will be directly related to the occurrence of projects or activities within CVMV sensitive areas. These activities have been identified as projects involving; development, transportation, mining, flood control, and wind energy among other potential activities that disturb CVMV habitat. The draft MSHCP will reduce the cost of consultation for "covered activities," identified in Table 37 below. Population growth development in the region is expected to exhibit a trend similar to the pre-designation period. Furthermore, there is no evidence to suggest that the occurrence of "covered" or "uncovered" projects will significantly change over the analyisis period. Therefore, this analysis assumes that project development and the need for CVMV consultation will not change from 2006 through 2026.

Two of the past consultations occurred in broad areas and covered several habitat units including the consultation for the five interchange projects along Interstate 10 and the California Desert Conservation Area (CDCA) Plan. This analysis apportioned pre-designation administrative costs to each of the appropriate habitat units. For the transportation consultation, costs are assigned based on the number of interchange projects within the Unit; one fifth of the consultation is assigned to Unit 1, two-fifths to Unit 2, and two fifths are not allocated to essential or unoccupied habitat. The CDCA Plan covered all three of the CVMV Units, therefore, one third of a consultation is assigned to each Unit. Table 37 shows the number of pre-designation consultations assigned to each critical habitat unit for purposes of this analysis.

Table 37
Pre-Designation Consultations per Habitat Unit

Habitat Unit	Formal		Informal	
	Covered	Not Covered	Covered	Not Covered
Proposed Critical Habitat				
1 – Whitewater River	0.1	3.2	0.0	0.0
2 – Mission Creek and Morongo Wash	0.0	0.1	0.0	0.0
3 – Thousand Palms	0.0	0.0	0.0	0.0
Total - Proposed Critical Habitat	**0.1**	**3.3**	**0.0**	**0.0**
Excluded Habitat				
1 – Whitewater River	0.1	0.5	0.0	0.3
2 – Mission Creek and Morongo Wash	0.4	0.6	0.0	0.3
3 – Thousand Palms	0.0	0.7	1.0	2.3
Total - Excluded Habitat	**0.5**	**1.7**	**1.0**	**3.0**
Essential Habitat - Not Allocated	**0.0**	**0.0**	**0.0**	**0.0**
Unoccupied Areas				
1 – Whitewater River	0.0	0.0	0.0	0.0
2 – Mission Creek and Morongo Wash	0.0	0.0	0.0	0.0
3 – Thousand Palms	0.0	0.0	0.0	0.0
Total - Unoccupied Areas	**0.0**	**0.0**	**0.0**	**0.0**
Not Allocated to Essential Habitat or Unoccupied Areas	**0.4**	**14.0**	**0.0**	**13.0**

Note: Numbers may not sum due to rounding.

Total administrative costs per unit are presented in Table 38. Prospective annual costs were calculated by multiplying the average costs per type of consultation by the number of consultations projected to occur each year. Total prospective costs are estimated from annual costs by applying a three and seven percent discount rate over a 20-year period. In this analysis it is assumed that there will be no consultations performed for the CVMV in the unoccupied areas. The following table summarizes estimated effects on federal agencies in regards to the CVMV. Most of the pre-designation costs ($562,900) are not included in the following table because these administrative costs occurred in areas outside of the lands identified in the proposed rule.

Table 38
Estimated Section 7 Administrative Costs per Habitat Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$30,300	$296,300	$220,400	$157,000	$14,800	$14,800
2 – Mission Creek/Morongo Wash	$700	$6,400	$4,800	$3,400	$300	$300
3 – Thousand Palms	$100	$500	$400	$300	$0	$0
Total - Proposed Critical Habitat	**$31,000**	**$303,300**	**$225,600**	**$160,700**	**$15,200**	**$15,200**
Excluded Habitat						
1 – Whitewater River	$16,400	$53,000	$39,400	$28,100	$2,700	$2,700
2 – Mission Creek/Morongo Wash	$19,600	$67,300	$50,100	$35,700	$3,400	$3,400
3 – Thousand Palms	$113,900	$125,400	$93,300	$66,400	$6,300	$6,300
Total - Excluded Habitat	**$149,900**	**$245,800**	**$182,800**	**$130,200**	**$12,300**	**$12,300**
Essential Habitat - Not Allocated	$0	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	$0	$0	$0	$0	$0	$0

Note: Numbers may not sum due to rounding.

9.1 SUMMARY OF FINDINGS

This section provides a summary of the economic effects associated with conservation efforts for the CVMV for each of the activities considered in this analysis. The analysis measures effects on residential, commercial, and industrial development, flood control facilities, pipelines, public lands management, and transportation. Table 39 provides a summary of the economic impacts due to crownscale conservation efforts in essential habitat by activity. The first column of Table 39 presents the total pre-designation (1998-2005) costs in 2005 dollars. The second column reports the total post-designation costs from 1998 to 2025 in undiscounted dollars, and the third and fourth columns report the total post-designation costs using discount rates of three percent and seven percent, respectively. The last two columns present the annualized costs, also using discount rates of three percent and seven percent, respectively.

9.1.1 RESULTS BY ACTIVITY

Pre-designation impacts in proposed critical habitat total $2.5 million, of which $1.0 million are incurred on public lands. Pre-designation costs among excluded habitat are about $7.8 million, concentrated on flood control projects. Public land costs in the unoccupied areas include $26.8 million for the purchase of sand source lands in the vicinity of Unit 3, and account for nearly all of those costs. The water supply costs in proposed critical habitat and excluded habitat are associated primarily with a conservation easement on Coachella Valley Water District (CVWD) land, while the flood control costs are associated with a proposed CVWD project adjacent to the western boundary of Unit 3. The remaining pre-designation costs are split among development, energy, transportation, and HCPs.

The annualized costs at discount rates of three and seven percent are similar, and the similarity is a function of (1) the unknown timing of many of the projects or activities, and (2) recurring equal undiscounted dollar costs for projects or activities during the post-designation period. When the timing of a project or activity is unknown or uncertain, the costs are assumed to have a uniform probability of occurrence across the future years. As such, the annualized post-designation costs at three and seven percent discount rates are equal for that particular project or activity. Similarly, with a constant recurring cost during the forecast period, the annualized post-designation costs for that particular project or activity is equal regardless of discount rate. In this analysis, many of the conservation costs consist primarily of projects and activities of unknown timing, or with recurring undiscounted dollar costs during the post-designation period. Thus, the annualized costs at three and seven percent discount rates are similar.

Table 39
Summary of Conservation Costs for CVMV, by Activity

Activity	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
Development	$0	$33,300	$24,300	$17,000	$1,600	$1,600
Flood Control	$46,700	$81,300	$78,900	$76,000	$5,300	$7,200
HCP	$0	$480,100	$332,600	$215,500	$22,400	$20,300
Public Lands	$1,012,000	$2,530,000	$1,882,000	$1,340,100	$126,500	$126,500
Transportation	$455,900	$1,575,600	$1,369,900	$1,162,400	$92,000	$109,700
Energy	$265,000	$1,510,800	$1,123,800	$800,300	$75,500	$75,500
Mining	$0	$0	$0	$0	$0	$0
Water Supply	$769,600	$1,569,600	$1,023,500	$609,400	$68,700	$57,400
Total - Proposed Critical Habitat	**$2,549,200**	**$7,780,700**	**$5,835,000**	**$4,220,600**	**$392,000**	**$398,200**
Excluded Habitat						
Development	$0	$262,300	$191,700	$133,600	$12,900	$12,600
Flood Control	$4,061,700	$7,068,700	$6,862,800	$6,606,300	$461,300	$623,600
HCP	$0	$1,570,000	$1,087,300	$704,500	$73,100	$66,500
Public Lands	$0	$0	$0	$0	$0	$0
Transportation	$1,938,800	$4,075,100	$3,533,500	$2,994,300	$237,500	$282,700
Energy	$7,000	$0	$0	$0	$0	$0
Mining	$0	$0	$0	$0	$0	$0
Water Supply	$1,793,200	$3,730,300	$2,444,100	$1,466,400	$164,300	$138,400
Total - Excluded Habitat	**$7,800,700**	**$16,706,400**	**$14,119,400**	**$11,905,000**	**$949,100**	**$1,123,800**
Essential Habitat - Not Allocated	$4,482,600	$0	$0	$0	$0	$0
Unoccupied Areas						
Development	$0	$380,600	$278,100	$193,800	$18,700	$18,300
Flood Control	$0	$0	$0	$0	$0	$0
HCP	$0	$0	$0	$0	$0	$0
Public Lands	$26,769,800	$0	$0	$0	$0	$0
Transportation	$0	$0	$0	$0	$0	$0
Energy	$32,500	$0	$0	$0	$0	$0
Mining	$0	$0	$0	$0	$0	$0
Water Supply	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$26,802,300**	**$380,600**	**$278,100**	**$193,800**	**$18,700**	**$18,300**

Note: Numbers may not sum due to rounding.

As indicated in Table 39, post-designation costs in proposed critical habitat are estimated to total $7.8 million in undiscounted dollars. This amounts to $4.2 million when using a seven percent discount rate, and $5.8 million when using a three percent discount rate. Annualized costs are estimated to be approximately $0.4 million at both a seven and three percent discount rate. Costs associated with public lands management and transportation account for the largest shares of the annualized post-designation costs. Other activities incurring conservation costs include energy, water supply, and habitat conservation plans. A relatively small amount is incurred by flood control and development.

Within excluded habitat, post-designation costs are considerably higher than in the proposed critical habitat largely due to the relative sizes of two categories. In undiscounted dollars, an estimated impact of $16.7 million is anticipated. This amounts to $11.9 million when applying a seven percent discount rate, and $14.1 million with a three percent rate. The annualized equivalent ranges from $1.1 million using seven percent, and $0.9 million using a three percent discount rate. The costs in excluded habitat are concentrated in flood control projects, transportation, and water supply.

The unoccupied areas will incur only costs associated with development, in the amount of $0.4 million in undiscounted dollars. Total costs are $0.2 to $0.3 million using a seven and three percent discount rate, respectively. Annualized costs are about $18 to $19 thousand per year at seven and three percent discount rate.

9.1.2 Results by Habitat Unit

Table 40 provides a summary of the economic impacts due to CVMV conservation efforts by habitat unit. The costs include all of the categories of impacts shown in Table 39. Pre-designation costs in the proposed critical habitat are concentrated in Unit 1 (at $1.7 million) and Unit 3 ($0.6 million). Pre-designation costs in Unit 1 are associated primarily with transportation and development. Within the excluded habitat, the approximately $7.8 million in costs are distributed across Unit 3 ($4.1 million), Unit 1 ($2.5 million), and Unit 2 ($1.2 million).

Pre-designation costs in unoccupied areas of Unit 3 are primarily associated with public land acquisition ($26.8 million) by the Coachella Valley Water District, and flood control ($4.1 million) in the excluded lands. Costs in Units 1 and 2 are primarily associated with transportation and development, and water supply within Unit 1.

Total post-designation costs within proposed critical habitat are concentrated in Unit 1, which accounts for 76 percent of the impacts. Unit 1 impacts are associated primarily with water supply projects, and additional costs are associated with transportation, development, and energy. Post-designation costs in Unit 3 are associated primarily with flood control and public lands management. Unit 2 costs are primarily associated with development and water supply.A similar relative outcome occurs in the excluded habitat, where the majority of impacts are concentrated in Unit 1. Water supply projects are the leading activity responsible for impacts in Unit 1. Unit 3 is the second highest of the three units in excluded habitat, and are dominated by flood control and public lands management costs. Impacts in excluded habitat in Unit 2 are led by costs to development and water supply.

Table 40
Summary of Conservation Costs by Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$1,715,900	$5,942,600	$4,444,900	$3,205,900	$298,700	$302,600
2 – Mission Creek/Morongo Wash	$234,400	$375,000	$283,400	$206,800	$19,000	$19,500
3 – Thousand Palms	$598,900	$1,463,100	$1,106,700	$807,900	$74,300	$76,200
Total - Proposed Critical Habitat	**$2,549,200**	**$7,780,700**	**$5,835,000**	**$4,220,600**	**$392,000**	**$398,200**
Excluded Habitat						
1 – Whitewater River	$2,492,400	$8,046,700	$6,041,800	$4,396,100	$406,100	$414,900
2 – Mission Creek/Morongo Wash	$1,231,200	$1,323,300	$1,021,700	$770,500	$68,600	$72,800
3 – Thousand Palms	$4,077,100	$7,336,400	$7,055,800	$6,738,500	$474,300	$636,100
Total - Excluded Habitat	**$7,800,700**	**$16,706,400**	**$14,119,400**	**$11,905,000**	**$949,100**	**$1,123,800**
Essential Habitat - Not Allocated	$4,482,600	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$32,500	$63,900	$46,700	$32,500	$3,100	$3,100
2 – Mission Creek/Morongo Wash	$0	$291,600	$213,000	$148,300	$14,300	$14,000
3 – Thousand Palms	$26,769,800	$25,000	$18,400	$13,000	$1,200	$1,200
Total - Unoccupied Areas	**$26,802,300**	**$380,600**	**$278,100**	**$193,800**	**$18,700**	**$18,300**

Note: Numbers may not sum due to rounding.

9.1.3 RESULTS BY LANDOWNER

Table 41 provides a summary of conservation costs by category of landowner. The landowner types that are relevant in this analysis include private, State of California, local government (cities and Riverside County), Federal government, and non-profit (CVWD and conservation non-governmental organizations). Total pre-designation costs in proposed critical habitat are concentrated among state and Federal government agencies; costs in excluded habitat apply primarily to non-profit entities. In the unoccupied areas, nearly all costs also apply to non-profit entities, particularly CVWD.

Post-designation costs are concentrated among non-profits; in particular, post-designation conservation costs associated with the water supply and flood control costs are borne by the CVWD and its customers. The private sector also bears substantial costs associated with residential and commercial development.

Table 41
Summary of Conservation Costs by Landowner

Landowner	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
Local	$0	$480,100	$332,600	$215,500	$22,400	$20,300
Private	$265,000	$1,544,100	$1,148,100	$817,300	$77,100	$77,100
State	$455,900	$1,575,600	$1,369,900	$1,162,400	$92,000	$109,700
Federal	$1,012,000	$2,530,000	$1,882,000	$1,340,100	$126,500	$126,500
Non-Profit	$816,300	$1,650,900	$1,102,400	$685,400	$74,000	$64,600
Total - Proposed Critical Habitat	**$2,549,200**	**$7,780,700**	**$5,835,000**	**$4,220,600**	**$392,000**	**$398,200**
Excluded Habitat						
Local	$0	1570000	$1,087,300	$704,500	$73,100	$66,500
Private	$7,000	$262,300	$191,700	$133,600	$12,900	$12,600
State	$1,938,800	$4,075,100	$3,533,500	$2,994,300	$237,500	$282,700
Federal	$0	$0	$0	$0	$0	$0
Non-Profit	$5,854,900	$10,799,000	$9,306,900	$8,072,700	$625,600	$762,000
Total - Excluded Habitat	**$7,800,700**	**$16,706,400**	**$14,119,400**	**$11,905,000**	**$949,100**	**$1,123,800**
Essential Habitat - Not Allocated	$4,482,600	$0	$0	$0	$0	$0
Unoccupied Areas						
Local	$0	$0	$0	$0	$0	$0
Private	$32,500	$380,600	$278,100	$193,800	$18,700	$18,300
State	$0	$0	$0	$0	$0	$0
Federal	$26,769,800	$0	$0	$0	$0	$0
Non-Profit	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$26,802,300**	**$380,600**	**$278,100**	**$193,800**	**$18,700**	**$18,300**

9.1.4 SUMMARY OF ADMINISTRATIVE COSTS BY UNIT

Table 42 provides a summary of administrative costs that have occurred (pre-designation) or are anticipated to occur (post-designation) associated with section 7 consultations and CHD. An estimated cost of about $31,000 has occurred prior to the designation in the proposed critical habitat and $150,000 in excluded habitat. An additional $563,000 in administrative costs have been incurred that are not allocated to essential habitat or unoccupied areas. These costs are associated with consultations initiated prior to designation, but geographically located outside of any designated or excluded habitat, or area proposed for possible inclusion. After designation, it is anticipated that administrative costs will be incurred in each of proposed critical habitat and excluded habitat, in addition to areas outside these areas.

Table 42
Estimated Section 7 Administrative Costs per Habitat Unit

Habitat Unit	Pre-Designation (Total) (1998-2005)	Post-Designation (Total) (2006-2025)			Post-Designation (Annualized)[a/]	
		Undiscounted	3%	7%	3%	7%
Proposed Critical Habitat						
1 – Whitewater River	$30,300	$296,300	$220,400	$157,000	$14,800	$14,800
2 – Mission Creek/Morongo Wash	$700	$6,400	$4,800	$3,400	$300	$300
3 – Thousand Palms	$100	$500	$400	$300	$0	$0
Total - Proposed Critical Habitat	**$31,000**	**$303,300**	**$225,600**	**$160,700**	**$15,200**	**$15,200**
Excluded Habitat						
1 – Whitewater River	$16,400	$53,000	$39,400	$28,100	$2,700	$2,700
2 – Mission Creek/Morongo Wash	$19,600	$67,300	$50,100	$35,700	$3,400	$3,400
3 – Thousand Palms	$113,900	$125,400	$93,300	$66,400	$6,300	$6,300
Total - Excluded Habitat	**$149,900**	**$245,800**	**$182,800**	**$130,200**	**$12,300**	**$12,300**
Essential Habitat - Not Allocated	$0	$0	$0	$0	$0	$0
Unoccupied Areas						
1 – Whitewater River	$0	$0	$0	$0	$0	$0
2 – Mission Creek/Morongo Wash	$0	$0	$0	$0	$0	$0
3 – Thousand Palms	$0	$0	$0	$0	$0	$0
Total - Unoccupied Areas	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Note: Numbers may not sum due to rounding.

a/ Annualized costs calculated at three percent and seven percent interest rates (based on total present value costs calculated at three and seven percent discount rates, respectively) are equal since administrative costs are equally distributed across the twenty years in the post-designation period.

16 U.S.C. 670a.

16 U.S.C. § 1532.

16 U.S.C. § 1533.

33 U.S.C. §1251 (1987).

33 U.S.C. §303, 305.

33 U.S.C. §402.

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APPENDIX A:
ECONOMIC EFFECTS TO SMALL ENTITIES AND ENERGY

This appendix contains an examination of the extent to which the analytic results presented in the main report reflect impacts to small entities. The analysis of the effect on small entities is conducted pursuant to the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996. The appendix also contains an analysis of the effects of the rulemaking on energy markets, as required by Executive Order No. 13211.

POTENTIAL EFFECTS ON SMALL ENTITIES

Under the RFA (as amended by SBREFA), whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities. However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.[248] SBREFA amended the RFA to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a 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 effects of conservation efforts for the CVMV on small entities due to the rulemaking. This analysis is intended to facilitate determination of (1) whether this CHD potentially affects a "substantial number" of small entities in counties and/or supporting critical habitat areas, and (2) the probable number of small entities that are likely to experience a "significant effect."

DEFINITION OF SMALL ENTITIES

Small entities include small businesses, small organizations, or small governments, as defined by the U.S. Small Business Administration (SBA). Size standards for small businesses are established for different types of economic activity or industry within the North American Industry Classification System (NAICS), and are commonly expressed in terms of the number of employees or annual receipts. For most industries, the size standard is based upon annual revenue for the business. The revenue standard varies from $750,000 for agriculture to $28.5 million for general and heavy construction. The size standard is based on number of employees for two industry types: manufacturing (500 employees) and wholesale trade (100 employees). The SBA publishes a table of current small business size standards on their

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

website (www.sba.gov/size).[249] These size standards were most recently published by the SBA in "Table of Small Business Size Standards Matched to North American Industry Classification System Codes," effective January 28, 2004.[250] Small organizations are defined as "any non-profit enterprise … which is independently owned and operated and not dominant in its field."[251] These may include organizations such as irrigation districts, water associations, public utilities, or agricultural co-ops. A small government is defined as any government serving populations of 50,000 or less, and might include county, city, town, or school district governments.

Federal courts have held that an RFA analysis should be limited to impacts on entities subject to the requirements of the regulation (i.e., participants in the section 7 consultation process).[252] These entities include participants in the section 7 consultation process, but not entities suffering the downstream effects of consultation outcomes. In spite of these rulings, in its guidance to Federal agencies on conducting screening analyses, the SBA recommends considering impacts to entities that may be indirectly affected by the proposed regulation.[253]

IDENTIFICATION OF ACTIVITIES THAT MAY INVOLVE SMALL ENTITIES

The analysis in the main report determined that costs involving conservation efforts for the CVMV would be incurred for activities involving residential, commercial, and industrial development (land subdivision companies), transportation (California Department of Transportation (Cal Trans), Coachella Valley Association of Governments (CVAG),[254] or Riverside County Transportation Commission (RCTC)), Federal land (Bureau of Land Management (BLM), U.S. Forest Service (USFS), and U.S. Fish and Wildlife Service (Service)) and other public (California Department of Fish and Game (CDFG) and California Department of Parks and Recreation (CDPR)) or conservation (The Nature Conservancy (TNC) and Center for Natural Lands Management (CNLM)) land management, water supply (Mission Springs Water District (MSWD) and Coachella Valley Water District (CVWD)) and flood control (CVWD and Riverside County Flood Control and Water Conservation District (RCFC)), implementation

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249 U.S. Small Business Administration, "Table of Small Business Size Standards Matched to North American Industry Classification System Codes," January 28, 2004, http:// www.sba.gov/size/indextableofsize.html.

250 This table and other information on size standards are available from http://www.sba.gov/size.

251 Regulatory Flexibility Act, 5 U.S.C. § 601 *et seq*.

252 U.S. Small Business Administration, Office of Advocacy, May 2003, "A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act," pp. 69-70.

253 U.S. Small Business Administration, Office of Advocacy, May 2003, "A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act."

254 The Coachella Valley Association of Governments is comprised of ten eastern Riverside County cities (Blythe, Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage), three Indian Tribes (Agua Caliente, Cabazon Band of Mission Indians., and Torres Martinez Desert Cahuilla Indians), and the County itself.

of the Coachella Valley Multiple Species Habitat Conservation Plan (MSHCP), and wind energy projects (private businesses and individuals). This section considers the extent to which the costs presented in the main report reflect impacts to small entities.

Residential, Commercial, and Industrial Development

CHD is expected to result in additional costs to real estate development projects through a Local Development Mitigation Fee. This fee will be imposed by local jurisdictions on residential, commercial, and industrial development occurring on private land containing habitat for Covered Species within the Coachella Valley MSHCP Plan Area. The affected land is located within Riverside County and under private ownership by individuals who will either undertake a development project on their own or sell the land to developers for development.[255] For businesses involved with land development, the relevant threshold for "small" is annual revenues of $6 million or less.[256] The North American Industry Classification System (NAICS) code 237210 is comprised of establishments primarily engaged in servicing land (e.g., excavation, installing roads and utilities) and subdividing real property into lots for subsequent sale to builders. Land subdivision precedes actual construction, and typically includes residential but may also include industrial and commercial properties.

It is likely that development companies in Riverside County, the entities directly impacted by the regulation, would not bear the additional costs of CVMV conservation within the essential habitat, but pass these costs to the landowners through a lower land purchase price. Of the 8,598 acres of developable land in Units 1 and 2, 8,559 acres are under private ownership and "vacant;" the remaining 39 acres are under private ownership and in agriculture.

To comply with the SBA recommendation that Federal agencies consider impacts to entities that may be indirectly affected by the proposed regulation, this screening level analysis presents information on land subdivision and farming businesses for Riverside County as these are the businesses that would likely be impacted directly or indirectly by the regulation (see Table A-1). As highlighted in Table A-1, the majority of the land subdivision and farming businesses within Riverside County are considered small businesses.

It is important to note that the identity and number of land subdivision and farming business impacted by the CHD is not known. In addition, the identity and number of affected businesses classified as "small" is also not known. Nevertheless, the county-level information provided in Table A-1 reflects the smallest region for which data relevant to this analysis exist. This county-level information clearly over represents the potential number of small businesses impacted by development-related CVMV conservation efforts as

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[255] No residential, commercial, and industrial development impacts are forecast for the unoccupied habitat in San Bernardino County.

[256] U.S. Small Business Administration, "Table of Small Business Size Standards Matched to North American Industry Classification System Codes," January 28, 2004, http:// www.sba.gov/size/indextableofsize.html.

the privately owned developable land within the essential habitat (approximately 8,598 acres) comprises less than two-tenths of one percent of the total land area in the County (4,612,480 acres),[257] and only 265.2 acres of this private land is forecasted to be developed between 2006 and 2025. Furthermore, the 39 acres of agriculture land represents less than one-half of one percent of the developable land (approximately 8,598 acres) within the essential habitat.

Table A-1
Profile of Potentially Affected Land Subdivision and Farming Businesses in Riverside County

	Land Subdivision Businesses NAICS 237210	Farming Businesses NAICS 111 (Crops) & NAICS 112 (Animals)
Total number of businesses	475 [a/]	3,186 [b/]
Threshold for small [c/]	< $6 million in sales	< $750,000 in sales
Number of small businesses	441 [a/]	2,896 [d/]

a/ Dun and Bradstreet, March 2005, accessed through a Dialog search of File 516, Dun and Bradstreet, "Dun's Market Identifiers."

b/ U.S. Department of Agriculture, National Agriculture Statistics Service, "2002 Census of Agriculture, June 2004."

c/ U.S. Small Business Administration, "Table of Small Business Size Standards Matched to North American Industry Classification System Codes, January 28, 2004."

d/ The 2002 Agriculture Census reports the number of farms at the county level by categories of income. While the largest income category for which data is reported, sales of "$500,000 or more," exceeds the SBA threshold for a small business (i.e., $750,000), the number of farms at the county level with annual income less than $500,000 is presented as the number of "small businesses" in this analysis as this data is the most accurate information available.

While the identity and number of land subdivision and farming business impacted by the CHD is not known, considering low density residential development is expected to comprise 79 percent of the forecasted acres of land development during 2006 and 2025, this analysis relates the economic impacts to the median home price in the County. The mitigation cost per acre of development is $1,975 and the build-out density for residential low development is less than eight dwelling units per acre. Thus, CVMV-related conservation efforts are expected to cost between $247 and $1,975 per residential dwelling unit (one to eight dwelling units per acre) developed. Considering the median sales price for single family residences in the County was $315,000 in 2004,[258] the economic impacts are equal to 0.08 percent to 0.63 percent of the median home price in Riverside County. These costs may be borne by the developer or passed on to the landowner through a lower land purchase price.

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257 Riverside County's land area is 7,207 square miles, or 4,612,480 acres. Source: U.S. Census Bureau, State and County Quickfacts, available at: http://quickfacts.census.gov/qfd/states/06000.html.

258 "SOUTHERN CALIFORNIA HOME SALE ACTIVITY, L.A. Times Sunday Edition Charts – Data for the Year 2004," available at DataQuick Real Estate News, http://www.dqnews.com/ZIPLAT2004.shtm.

Transportation

Effects on transportation include costs of conservation efforts associated with road projects. The conservation costs would likely be incurred by Cal Trans, CVAG, or RCTC. These public entities exceed the criteria for "small entities" (i.e., service a population greater than 50,000) and are not considered further in this analysis.

Non-Private Land Owners and Managers

Land within the essential and unoccupied habitat is owned or managed by various non-private entities, including the BLM, USFS (San Bernardino National Forest), and the Service, CDFG, CDPR, TNC, and CNLM who together own the Coachella Valley Preserve, which in turn is managed by the CNLM. The BLM, USFS, Service, CDFG, and CDPR exceed the criteria for "small entities" (i.e., service a population greater than 50,000). Furthermore, TNC does not qualify as a "small entity" as it is a non-profit organization dominant in its field, and CNLM funds the operation of the Preserve through an endowment established prior to the plant's listing in 1988. Therefore, these public and non-profit entities are not considered further in this analysis.

Flood Control Agencies and Water Districts

The essential habitat encompasses several water districts and flood control agencies. It is expected that RCFC and CVWD will incur post-designation CVMV-related conservation costs in the development of the Whitewater River/Thousand Palms Flood Control Project. Furthermore, CVWD will also incur CVMV-related conservation costs in the management of its water supply operations (e.g., percolation ponds and biological monitoring). However, CVWD and RCFC serve populations that exceed the criteria for "small entities" (i.e., service a population greater than 50,000) and are not considered further in this analysis.[259]

A smaller water district, MSWD, has also been affected by CVMV conservation efforts during the construction of sewer lines and the expansion of its Horton Wastewater Treatment Plant. While the MSWD serves approximately 27,000 people and falls within the criteria for "small entities" (i.e., service a population of 50,000 or less), the water district is expected to incur only pre-designation CVMV conservation costs.[260] Therefore, MSWD is not considered further in this analysis.

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[259] CVWD serves a population of 229,065 people (source: "Annual Review 2003," available at http://www.cvwd.org/Public_Docs.htm) and RCFC serves a population of approximately 1.4 million people (source: "Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2003," available at http://www.floodcontrol.co.riverside.ca.us/districtsite/).

[260] Mission Springs Water District, "Mission to Provide," http://www.mswd.org/operations/about/provide.htm, accessed June 13, 2005.

CVMSHCP

Local Permittees will incur costs to manage, monitor, and administer those portions of the Coachella Valley MSHCP Reserve Area to which they hold title. The Local Permittees include unincorporated Riverside County, eight Coachella Valley municipalities (Cathedral City, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, and Rancho Mirage), CVAG, Coachella Valley Conservation Commission (CVCC), CVWD, Imperial Irrigation District (IID), Riverside County Parks Department, RCFC, and Riverside County Waste Management District.

The funding for these annual expenses will come from an endowment established to fund the management, monitoring, and administration into perpetuity. The Local Permittees' funding for the endowment will come from a variety of sources, including:[261]

- Local Development Mitigation Fees – $1,975 per acre of new development within the MSHCP Plan Area;

- Fees on the importation of waste into landfills and transfer stations in Riverside County – $1 per ton of waste generated in the MSHCP Plan Area and deposited in County landfills;

- Transportation project mitigation – Cal Trans will contribute $7.6 million to the endowment fund and Cal Trans and CVAG together will contribute another $1,077,000 to the endowment fund. In addition, Measure A, a one-half cent sales tax in Riverside County, will contribute to the endowment to mitigate the effects of transportation projects on species and habitat covered by the MSHCP;

- Regional infrastructure project mitigation – CVWD and IID will contribute $4,108,400 to the endowment fund to ensure that lands they commit to conservation under the MSHCP are adequately managed and monitored in perpetuity;

- Eagle Mountain Landfill Environmental Trust Fund – a percentage of $1 per ton if the landfill is developed; and

- Interest on revenue collected and invested for the endowment, operating, and land acquisition and improvement funds.

While seven of the eight Coachella Valley municipalities that are Local Permittees serve populations that fall below the criteria for "small entities" (service population of 50,000 or less),[262] funding sources have

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[261] Coachella Valley Association of Governments (CVAG), October 15, 2004, *Draft Coachella Valley MSHCP*, Section 5.2, Funding for Plan Implementation.

[262] Indio exceeds the criteria, servicing a population greater than 50,000.

been developed to finance the endowment fund and the use of general funds will not be required. The remaining Local Permittees, as well as Cal Trans, serve populations that exceed the criteria for "small entities." Thus, the costs to manage, monitor, and administer the Coachella Valley MSHCP are not considered further in this analysis.

Wind Energy

According to the California Energy Commission, 459 individuals or businesses own power generating facilities in the state, and 18 own wind energy generating facilities in Riverside County; no wind generating facilities operate in San Bernardino County (see Table A-2).[263]

Table A-2
Owners of Wind Energy Generating Facilities in Riverside County, San Bernardino County, and California

Region	Online Capacity		Wind Energy Companies	
	MW	Percent	Number	Percent
Riverside County	350.7	21%	18	40%
San Bernardino County	0.0	0%	0	0%
Other counties	1,346.1	79%	27	60%
California	1,696.8	100%	45	100%

Source: California Energy Commission, Power Plant Database, July 1, 2004.

The 18 owners of wind energy generating facilities in Riverside County are listed in Table A-3. Three of these owners operate plants within the essential habitat, Sea West (AES Corporation), Enxco (EDF Energies Nouvelles), and LG&E Power (E.ON).[264]

Table A-3
Owners of Wind Energy Generating Facilities in Riverside County

Plant Name	Owner	Online MW
NAWP Inc. – 6087	Altech Energy, Inc.	35.000
Foras Energy, Inc.	Difwind Partners	11.720
Foras Energy, Inc.	Energy Conversion	14.154
Energy Eve. & Construction	EUI Management PH, Inc.	3.000
EUI Management PH, Inc.	EUI Management PH, Inc/Energy Unlimited	19.300

263 California Energy Commission, Power Plant Database, July 1, 2004.

264 Personal communication with Clodd Kerby, realty specialist with the BLM, June 20, 2005.

Plant Name	Owner	Online MW
LG&E Power, Inc. – 6030	Fred Noble	13.500
Tres Vaqueros	International Wind Companies	28.800
Foras Energy, Inc. – 6090	Mark Technologies Co.	24.570
Zond Systems, Inc.	Mogul Wind	29.900
Zond Systems, Inc. – 6112	Phoenix Energy, Limited	19.265
San Gorgonia Farms, Inc.	San Gorgonia Farms, Inc.	28.000
LG&E Power, Inc. – 6035	San Gorgonio Farms	5.007
Dutch Energy	Sea West	8.000
Sunbelt 1 & 2	Sea West	11.000
Sea West Wind Farms (in CHD)	Sea West	11.570
Phoenix West	Sea West	12.100
San Gorgonio Farms, Inc.	Section 28 Trust	3.000
LG&E Power, Inc. – 6118	Sigmund J. Lichter	6.200
Enxco (in CHD)	Westwind Association	16.207
LG&E Power, Inc. – 6098 (in CHD)	Wind Power Partners 1991, L.P.	9.350
San Gorgonia Westlands II, LLC	Windustries Inc.	9.800
Wintec Energy, LTD	Wintec, LTD.	18.237
Northwind Vaquero – Souza Windpark		13.000

Source: California Energy Commission, Power Plant Database, July 1, 2004.

AES Corporation (i.e., Sea West) is expected to bear approximately one-third of the annualized wind energy-related CVMV conservation costs (approximately $25,000). AES Corporation is a global power company that operates 120 power generating facilities with approximately 44,000 megawatts of capacity in 27 countries on five continents.[265] The remaining two-thirds of the annualized wind energy-related CVMV conservation costs (approximately $50,000) are expected to be borne by Enxco and LG&E Power, Inc.. Enxco is an affiliate of EDF Energies Nouvelles (France) and LG&E is a subsidiary of E.ON (Germany). EDF is global power company that operates 125,447 megawatts of capacity in 22 countries and provides power to more than 42 million customers world-wide.[266] E.ON is also a global power company that produced 242.3 million megawatt hours of electricity for its customers in Central Europe,

[265] United States Securities and Exchange Commission, Form 10-K, Annual Report Pursuant to Section 13 of 15(d) of the Security Exchange Act of 1934 for the Fiscal Year Ended December 31, 2004, Commission File Number 0-19281, The AES Corporation.

[266] EDF Group, Sustainable Development Report 2004.

Europe, the United Kingdom, Nordic countries, and the United States in 2004.[267] The annual electrical output of AES, EDF, and E.ON exceed the criteria (4 million megawatt hours or less) for "small entities," therefore, AES, EDF, and E.ON are not considered further in this analysis.

Other Small Entities

Nine small local governments are located adjacent to or bisect the areas subject to this analysis: Palm Springs (population 42,807); Cathedral City (population 42,647); Banning (population 23,562); Yucca Valley (population 16,865); Desert Hot Springs (population 16,582); Cherry Valley (population 5,891); Thousand Palms (population 5,120); Cabazon (population 2,229); and Morongo Valley (population 1,929).[268] All nine of the local governments have populations that fall within the criteria (fewer than 50,000 residents) for "small entity." However, there is no record of consultations between the Service and these cities since the CVMV was listed in 1998. Indeed, it is not likely that these cities would be involved in a land development project involving a section 7 consultation, although a city may be involved in land use planning or permitting, and may play a role as an interested party in infrastructure projects. Any cost associated with this activity/involvement is anticipated to be a very small portion of the city's budget.

POTENTIAL EFFECTS ON ENERGY SUPPLY

Executive Order No. 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use," issued May 18, 2001 requires Federal agencies to submit a "Statement of Energy Effects" for all "significant energy actions" in order to present consideration of the impacts of a regulation on the supply, distribution, and use of energy.[269] Significant adverse effects are defined in the EO by the OMB according to the following criteria:

1. Reductions in crude oil supply in excess of 10,000 barrels per day;

2. Reductions in fuel production in excess of 4,000 barrels per day;

3. Reductions in coal production in excess of five million tons per year;

4. Reductions in natural gas production in excess of 25 million mcf (one thousand cubic feet) per year;

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[267] E.ON Annual Report 2004.

[268] Geographic Data Technology, Inc. (GDT), Department of Commerce, Census Bureau, Geography Division, and ESRI, 20040301, U.S. Populated Place Areas: ESRI ® Data & Maps 2004, ESRI, Redlands, California, USA.

[269] Daniels, Mitchel E., July 13, 2001, "Memorandum for Heads of Executive Departments and Agencies, and Independent Regulatory Agencies," M-01-27, http://www.whitehouse.gov/omb/memoranda/m01-27.html.

5. Reductions in electricity production in excess of one billion kilowatt-hours (kWh) per year or in excess of 500 megawatts of installed capacity;

6. Increases in energy use required by the regulatory action that exceed any of the thresholds above;

7. Increases in the cost of energy production in excess of one percent;

8. Increases in the cost of energy distribution in excess of one percent; or

9. Other similarly adverse outcomes.

One of these criteria is relevant to this analysis, increases in the cost of energy production in excess of one percent. Below, the analysis determines whether the electricity industry is likely to experience "a significant adverse effect" as a result of CVMV conservation efforts.

Evaluation of Whether the Designation will Result in an Increase in the Cost of Energy Production in Excess of One Percent

First, total annual net electricity generation is estimated,[270] by fuel type, for the region (i.e., California). As shown in Table A-4, California produced 192,789 million kWh of electricity in 2003.

Table A-4
California Net Energy Generation by Fuel Type, 2003

Fuel Type	Million kWh
Hydroelectric	36,371
Gas	93,191
Petroleum	2,392
Coal	2,326
Nuclear	35,594
Other	22,914
Total	192,789

Source: Energy Information Administration, Electric Power Annual 2003 – Spreadsheets, 1990 - 2003 Net Generation by State by Type of Producer by Energy Source (EIA-906), http://www.eia.doe.gov/cneaf/electricity/epa/epa_sprdshts.html, accessed June 13, 2005.

[270] Net generation is gross generation less plant use. The energy required for pumping at a pumped storage plant is regarded as "plant use" and is deducted from the gross generation.

Next, the average operating expense is calculated for each fuel type. In this screening level analysis, the average, in mills per kWh, is determined for 2003 and then converted into dollars per kWh (Table A-5).

Table A-5
Average Operating Expenses for
Major U.S. Investor-Owned Electric Utilities
(Mills per Kilowatt-Hour)

Expense	2003
Operating	
Nuclear	8.86
Fossil Steam	2.50
Hydroelectric	4.50
Gas Turbine and Small Scale	2.76
Maintenance	
Nuclear	5.23
Fossil Steam	2.73
Hydroelectric	3.01
Gas Turbine and Small Scale	2.26
Fuel	
Nuclear	4.60
Fossil Steam	17.35
Hydroelectric	0.00
Gas Turbine and Small Scale	43.91
Total, mills/KWhr	
Nuclear	18.69
Fossil Steam	22.58
Hydroelectric	7.51
Gas Turbine and Small Scale	48.93
Total, $/KWhr	
Nuclear	0.0187
Fossil Steam	0.0226
Hydroelectric	0.0075
Gas Turbine and Small Scale	0.0489

Note: Operating expenses do not include capital or transmission costs.

Source: Energy Information Administration, December 2004. "Electric Power Annual 2003," Table 8.2 Average Operating Expenses for Major U.S. Investor-Owned Electric Utilities 1992 through 2003.

Last, the total regional energy production costs are estimated and compared to the cost of CVMV conservation ($75,000 annualized). As illustrated in Table A-6, the annualized cost of CVMV conservation is 0.0011 percent of the estimated cost of regional energy production in 2003, well below the one percent threshold suggested by OMB.

It is therefore estimated that CVMV conservation efforts within the region will not result in significant increases in energy costs within the region. The CHD is expected to have minimal impacts on the energy industry in California.

Table A-6
Increase in Regional Cost of Energy Production

Fuel Type	Actual Regional Energy Production in 2003, million kWh	Operating Cost in 2003, $/kWh	Estimated Cost of Annual Energy Production in 2003, $
Hydroelectric	36,371	$0.0075	$273,143,987
Gas	93,191	0.0489	4,559,845,220
Petroleum	2,392	0.0226	54,016,982
Coal	2,326	0.0226	52,527,967
Nuclear	35,594	0.0187	665,247,916
Other	22,914	0.0489	1,121,196,699
Total	**192,789**	**-**	**$6,725,978,772**
Annual Cost of CVMV Conservation			**$75,000**
Percent Increase			**0.0011%**

COSTS OF DEVELOPMENT RESTRICTIONS

When development is prohibited in certain areas as a result of species conservation, it may reduce the value of the affected land. This reduction in property value represents a cost to landowners. There are two classes of models that economists use to evaluate such costs. One is the "closed city model" and the other is the "open city model." The closed city model assumes that the number of households in a city is fixed and migration does not occur when economic conditions change in the city. The open city model assumes that the number of households in a city is determined in a multi-city equilibrium. Therefore, households are free to move from one city to another, and will choose their residential place to maximize their utility. Given that housing markets in U.S. cities feature a large volume of in- and out-migration, the open city model seems to provide a more accurate and realistic description of the development process in the southern California counties examined in this analysis. Based on this premise and technical reviewers' comments on previous analyses of CHD, the open city model is judged to be appropriate to measure the cost associated with land use restrictions, should such restrictions arise with conservation efforts for the species. In these assessments of CHD, household and landowner decisions are modeled by expanding the stochastic city model developed by Capazza and Helsley (1990). To provide an overview of how this type of model can be implemented in the case of an effect on land values, the following description of key relationships is provided. As in Capazza and Helsley (1990), it is assumed that there is an identifiable Central Business District (CBD), to which all households commute daily. Locations are indexed by their distance from the CBD (*z)*.

In a competitive market, the price of land equals the expected present value of future land rents. Specifically, the price of agricultural land at a given location equals the present value of agricultural rent up to the time of conversion plus the present value of urban rent from the time of conversion onward. Assuming that landowners choose the conversion time to maximize the expected value of land, the price of agricultural land can be derived as (Capozza and Helsley 1990):

$$\text{(A1)} \qquad P^a(t,z) = \frac{R_a}{r} + \frac{g}{r^2} e^{-\alpha(z^*-z)} + \frac{r-\alpha g}{\alpha r^2} e^{-\alpha(z^*-z)}$$

R_a = the rent of agricultural land

r = the discount rate

g = income growth rate

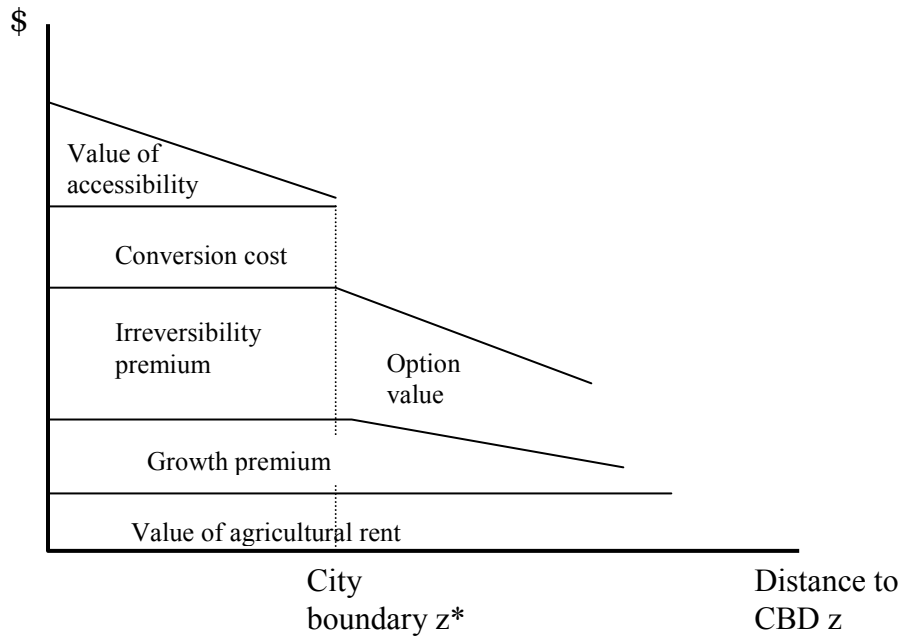
z^* = the distance from the city boundary to the city center

The price of agricultural land has three components: (1) the value of agricultural rents, (2) growth premium, and (3) option value of potential development. Both the growth premium and the option value decrease as the distance from the boundary of the urban area increases and the time of development moves further into the future. The price of urban land can be derived as:

$$(A2) \qquad P^u(t,z) = \frac{1}{r}\left\{ R_a + rC + \frac{g}{r} + \frac{r-\alpha g}{\alpha r} + \frac{z^*(t)-z}{(1+\tau_{t\_})} \right\}$$

In this formula, C is the capital cost of converting a of land to urban use. The price of urban land consists of the value of agricultural rents, the cost of conversion, the growth premium, the irreversibility premium, and the value of accessibility. Graphically, the prices of urban and agricultural land are illustrated as follows in Figure B-1:

Figure B-1
Graphical Representation of the Components of Land Price (Value)



Consider the cost of land use restrictions due to a CHD to landowners in the following scenarios:

a) A piece of agricultural land is prohibited from being farmed or developed in the future. The cost to the landowner is given by (A1).

b) A piece of agricultural land is prohibited from being developed in the future, but can be farmed. The cost to landowner in this case is given by:

$$\left[P^a(t,z) - \frac{A}{r} \right] = \frac{g}{r^2} e^{-\alpha(z^*-z)} + \frac{r-\alpha g}{\alpha r^2} e^{-\alpha(z^*-z)}$$

c) A piece of urban land is prohibited from being farmed or developed. The cost to landowner is given by (A2).

APPENDIX C:
LIST OF ACRONYMS

AIAN	American Indian or Alaska Native
BA	Biological Assessment
BLM	Bureau of Land Management
BO	Biological Opinion
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CWA	Clean Water Act
CHD	Critical Habitat Designation
CVAG	Coachella Valley Association of Governments
CVCDCAP	Coachella Valley California Desert Conservation Area Plan
CVFTL	Coachella Valley Fringe-Toed Lizard
CVMC	Coachella Valley Mountain Conservancy
CVMV	Coachella Valley Milk-Vetch
CVWD	Coachella Valley Water District
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
HCP	Habitat Conservation Plan
MHCP	Multiple Habitat Conservation Program
MSCP	Multiple Species Conservation Program
MSHCP	Multiple Species Habitat Conservation Plan
MSWD	Mission Springs Water District

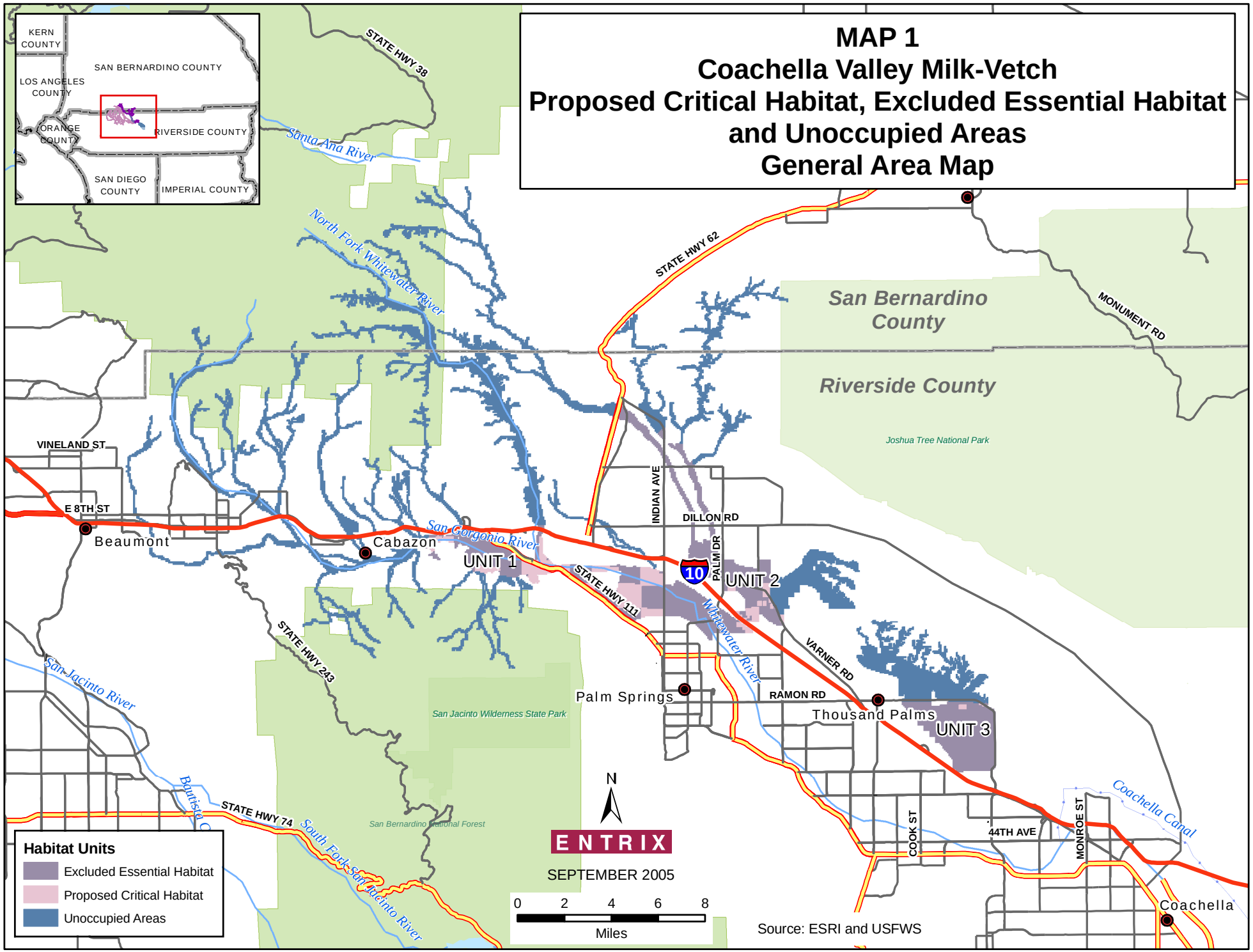
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
OHV	Off-Highway Vehicle
OMB	Office of Management and Budget
PSR	Project Study Report
RCFC	Riverside County Flood Control
RFA	Regulatory Flexibility Act
SBREFA	Small Business Regulatory Enforcement Fairness Act
USBR	U.S. Bureau of Reclamation
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
USACE	U.S. Army Corps of Engineers

MAP 1: COACHELLA VALLEY MILK-VETCH PROPOSED CRITICAL HABITAT, EXCLUDED ESSENTIAL HABITAT, AND UNOCCUPIED AREAS, GENERAL AREA MAP

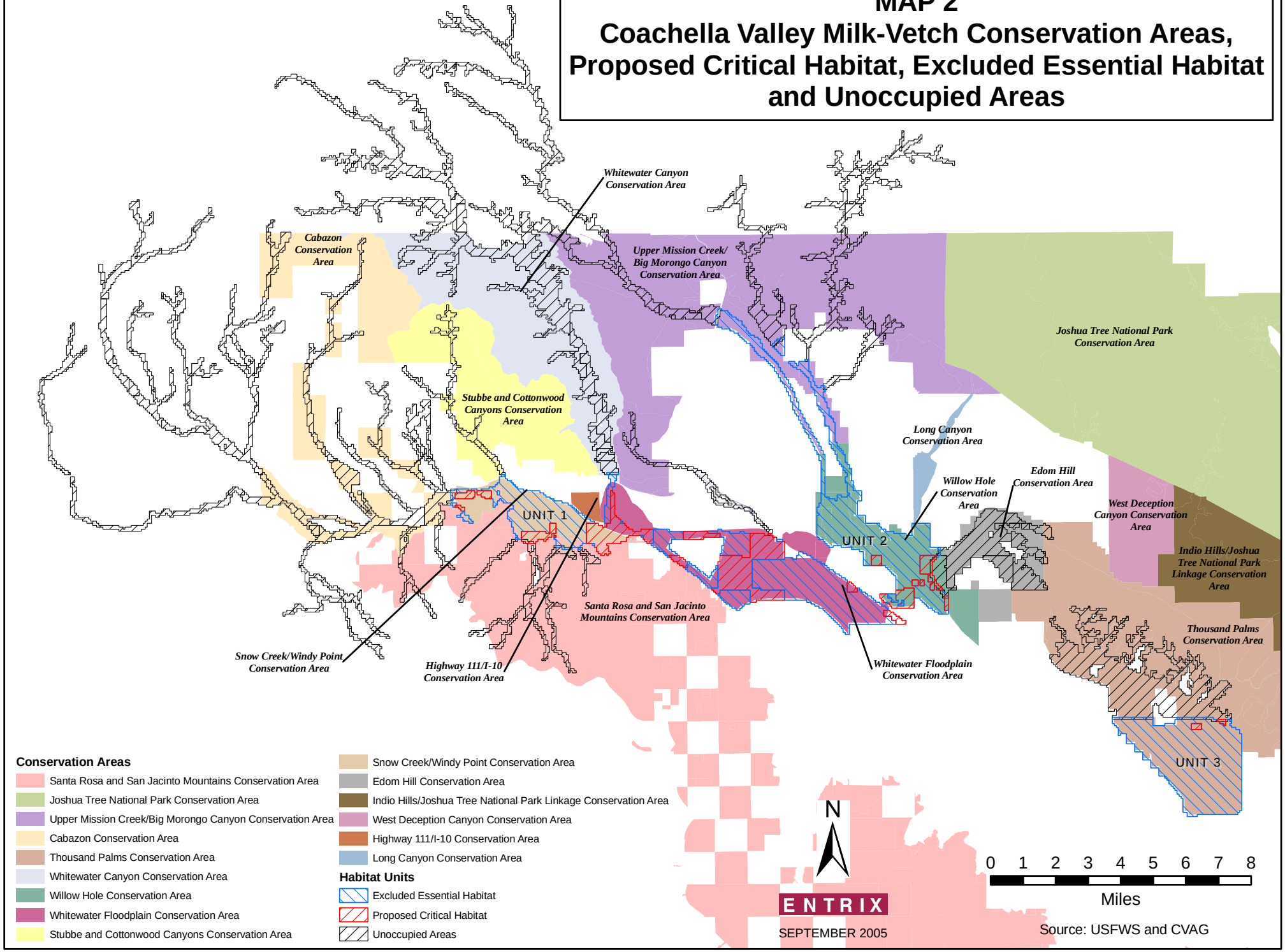
MAP 2: COACHELLA VALLEY MILK-VETCH CONSERVATION AREAS, PROPOSED CRITICAL HABITAT, EXCLUDED ESSENTIAL HABITAT, AND UNOCCUPIED AREAS

MAP 3: COACHELLA VALLEY MILK-VETCH PROPOSED CRITICAL HABITAT, EXCLUDED ESSENTIAL HABITAT, UNOCCUPIED AREAS, AND LAND OWNERSHIP

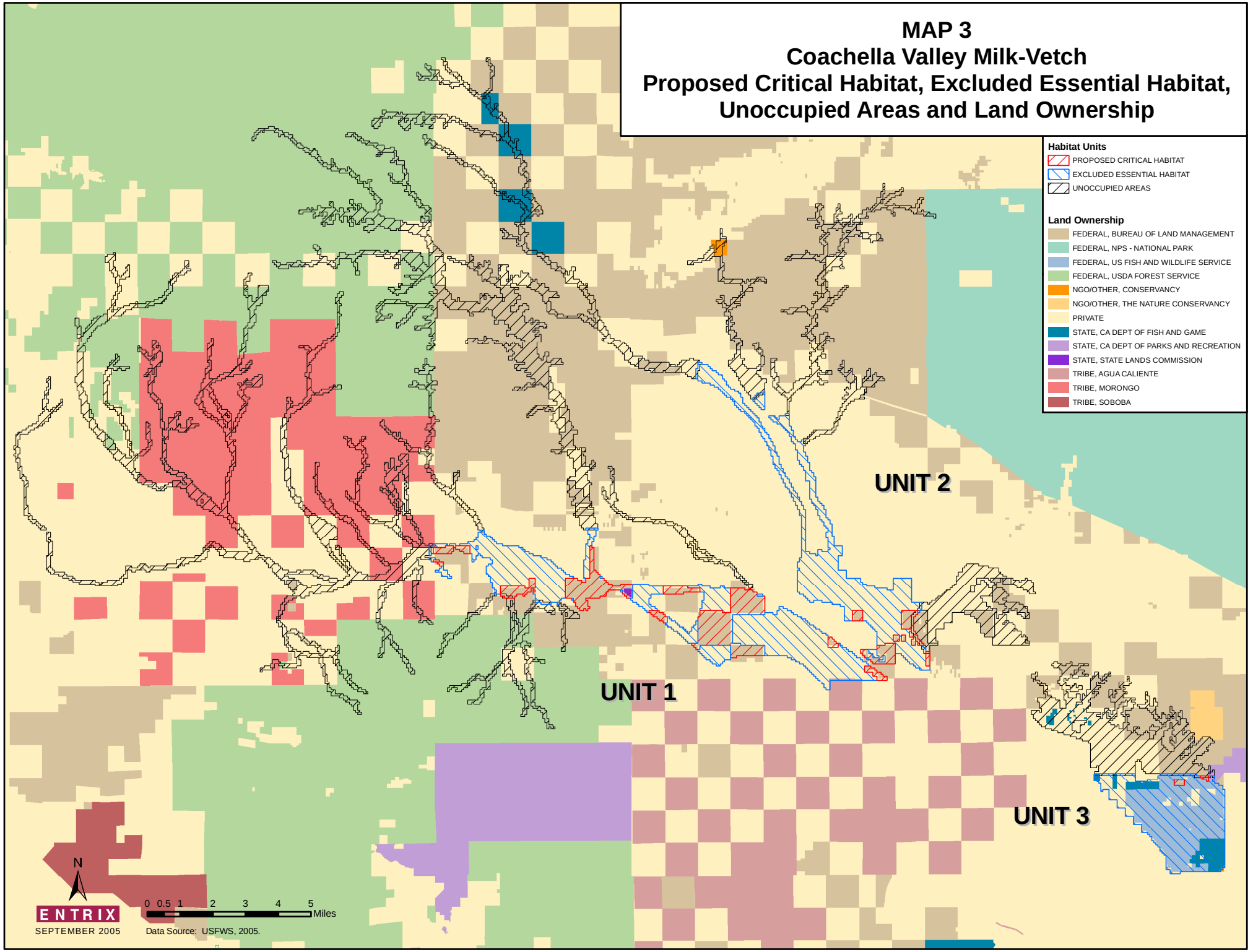
MAP 4: INTERSTATE 10 INTERCHANGE PROJECTS


MAP 1
Coachella Valley Milk-Vetch
Proposed Critical Habitat, Excluded Essential Habitat
and Unoccupied Areas
General Area Map
KERN COUNTY
SAN BERNARDINO COUNTY
LOS ANGELES COUNTY
ORANGE COUNTY
RIVERSIDE COUNTY
SAN DIEGO COUNTY
IMPERIAL COUNTY
STATE HWY 38
Santa Ana River
North Fork Whitewater River
STATE HWY 62
San Bernardino County
Riverside County
MONUMENT RD
Joshua Tree National Park
VINELAND ST
E 8TH ST
Beaumont
Cabazon
San Gorgonio River
UNIT 1
INDIAN AVE
DILLON RD
PALM DR
10
UNIT 2
STATE HWY 111
Whitewater River
VARNER RD
STATE HWY 243
San Jacinto River
Palm Springs
RAMON RD
Thousand Palms
UNIT 3
San Jacinto Wilderness State Park
Bautista C
STATE HWY 74
South Fork San Jacinto River
San Bernardino National Forest
COOK ST
44TH AVE
MONROE ST
Coachella Canal
Coachella
N
ENTRIX
SEPTEMBER 2005
0 2 4 6 8
Miles
Source: ESRI and USFWS
Habitat Units
Excluded Essential Habitat
Proposed Critical Habitat
Unoccupied Areas

MAP 2
Coachella Valley Milk-Vetch Conservation Areas, Proposed Critical Habitat, Excluded Essential Habitat and Unoccupied Areas



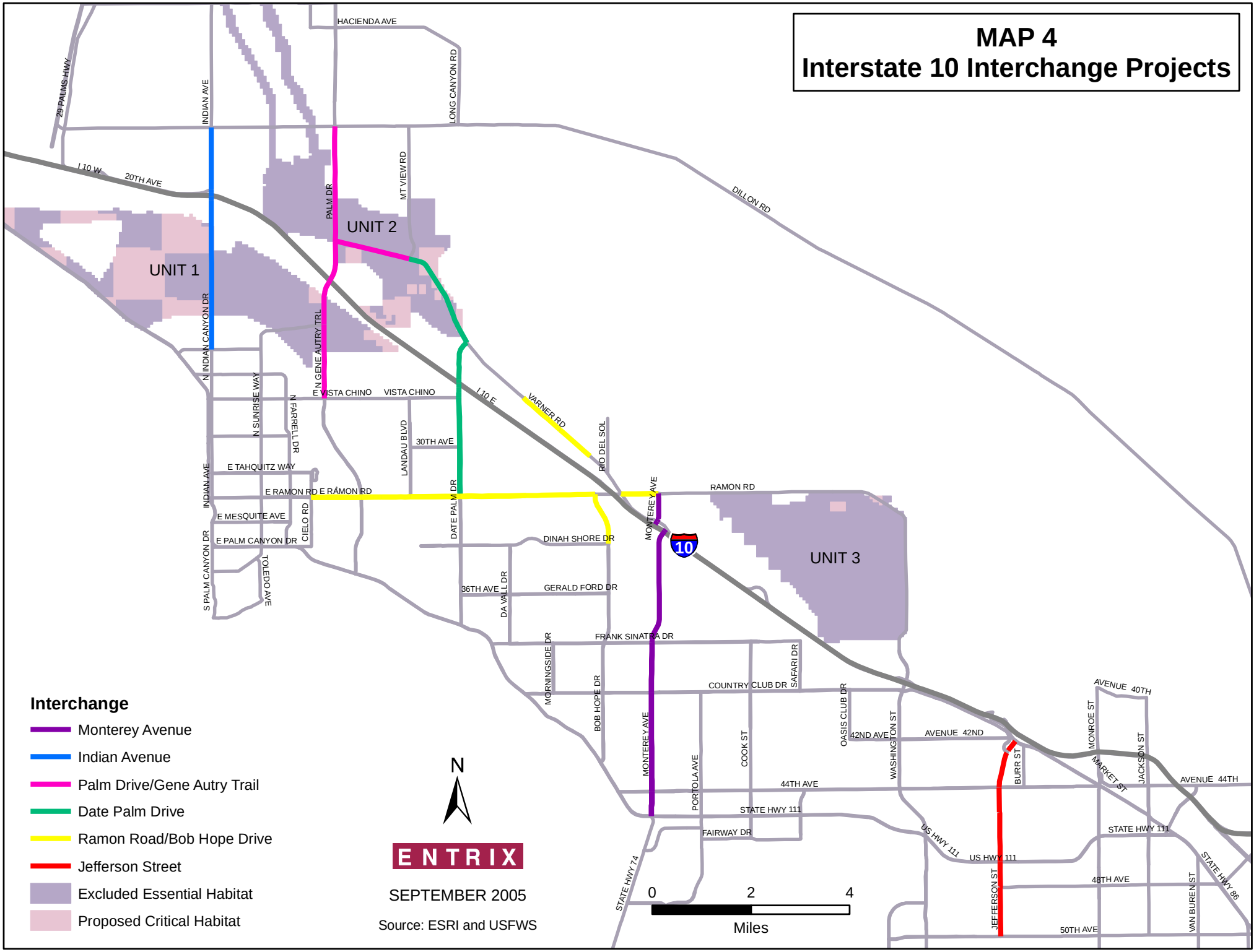
MAP 3
Coachella Valley Milk-Vetch
Proposed Critical Habitat, Excluded Essential Habitat, Unoccupied Areas and Land Ownership



ENTRIX

SEPTEMBER 2005

Data Source: USFWS, 2005.


MAP 4
Interstate 10 Interchange Projects
HACIENDA AVE
29 PALMS HWY
INDIAN AVE
LONG CANYON RD
I 10 W
20TH AVE
PALM DR
MT VIEW RD
DILLON RD
UNIT 2
UNIT 1
N INDIAN CANYON DR
N GENE AUTRY TRL
E VISTA CHINO
VISTA CHINO
I 10 E
VARNER RD
RIO DEL SOL
N SUNRISE WAY
N FARRELL DR
LANDAU BLVD
30TH AVE
E TAHQUITZ WAY
INDIAN AVE
E RAMON RD
E RAMON RD
DATE PALM DR
RAMON RD
MONTEREY AVE
E MESQUITE AVE
CIELO RD
E PALM CANYON DR
DINAH SHORE DR
10
UNIT 3
S PALM CANYON DR
TOLEDO AVE
36TH AVE
DA VALL DR
GERALD FORD DR
FRANK SINATRA DR
MORNINGSIDE DR
BOB HOPE DR
COUNTRY CLUB DR
SAFARI DR
AVENUE 40TH
OASIS CLUB DR
42ND AVE
AVENUE 42ND
WASHINGTON ST
MONROE ST
MONTEREY AVE
COOK ST
PORTOLA AVE
BURR ST
MARKET ST
JACKSON ST
AVENUE 44TH
44TH AVE
STATE HWY 111
FAIRWAY DR
US HWY 111
US HWY 111
STATE HWY 111
STATE HWY 74
JEFFERSON ST
48TH AVE
STATE HWY 86
VAN BUREN ST
50TH AVE
Interchange
Monterey Avenue
Indian Avenue
Palm Drive/Gene Autry Trail
Date Palm Drive
Ramon Road/Bob Hope Drive
Jefferson Street
Excluded Essential Habitat
Proposed Critical Habitat
N
ENTRIX
SEPTEMBER 2005
Source: ESRI and USFWS
0
2
4
Miles