

**Economic Analysis of Critical Habitat Designation for  
Bear Valley Sandwort, Ash-Gray Indian Paintbrush, and  
Southern Mountain Wild-Buckwheat  
(Pebble Plains Plants)**

**San Bernardino County, California**

December 6, 2007

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

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

## Table of Contents

<b>Executive Summary</b> .....	<b>ES-1</b>
Key Findings .....	ES-2
<b>Chapter 1: Introduction and Framework</b> .....	<b>1</b>
1.1 Background .....	2
1.1.1 Regulatory History .....	2
1.1.2 Description of Proposed Critical Habitat and Landownership .....	2
1.2 Regulatory Alternatives .....	3
1.3 Threats .....	3
1.4 Approach to Estimating Economic Impacts .....	5
1.4.1 Efficiency Effects .....	5
1.4.2 Distributional and Regional Economic Impacts .....	6
1.4.3 Calculating Present Value and Annualized Impacts .....	6
1.5 Scope of the Analysis .....	7
1.5.1 Sections of the Act Relevant to the Analysis .....	8
1.5.2 Other Relevant Protection Efforts .....	9
1.5.3 Additional Analytic Considerations .....	9
1.5.3.1 Time Delay and Regulatory Uncertainty Impacts .....	9
1.5.3.2 Stigma Impacts .....	10
1.5.4 Geographic Scope of the Analysis .....	10
1.5.5 Time Frame of the Analysis .....	10
1.5.6 Benefits .....	10
1.6 Information Sources .....	11
1.7 Structure of the Report .....	12
<b>Chapter 2: Potential Economic Impacts on Unauthorized Vehicle Activities</b> .....	<b>13</b>
2.1 United States Forest Service .....	13
2.2 Other Landowners .....	14
<b>Chapter 3: Potential Economic Impacts of Invasive, Nonnative Plant Species Management</b> .....	<b>16</b>
<b>Chapter 4: Potential Economic Impacts of Dispersed Recreation Activities Management</b> .....	<b>19</b>
<b>Chapter 5: Administrative Impacts of Section 7 Consultation</b> .....	<b>22</b>
<b>Appendix A: Incremental Analysis of Critical Habitat Designation for the Pebble Plains Plants</b> .....	<b>A-1</b>
A.1 Background .....	A-1
A.2 Framework for the Incremental Analysis .....	A-3
A.2.1 Defining the Baseline .....	A-3
A.2.2 Quantifying Incremental Economic Impacts .....	A-4
A.3 Incremental Analysis of Critical Habitat for the PPP .....	A-9

<b>Appendix B: Economic Impacts on Small Businesses and Energy Production</b>	<b>B-1</b>
B.1 SBREFA Analysis .....	B-1
B.2 Potential Impacts to the Energy Industry .....	B-1
<b>Appendix C: Past Economic Impacts</b> .....	<b>C-1</b>
<b>Appendix D: Analysis of Additional Final Critical Habitat Areas</b> .....	<b>D-1</b>

## List of Figures

Figure ES-1: Proposed Critical Habitat Units for Pebble Plains Plants
Figure ES-2: Proposed Critical Habitat Unit 1
Figure ES-3: Proposed Critical Habitat Unit 2
Figure ES-4: Proposed Critical Habitat Unit 3
Figure ES-5: Proposed Critical Habitat Unit 4
Figure ES-6: Proposed Critical Habitat Unit 5
Figure ES-7: Proposed Critical Habitat Unit 6
Figure ES-8: Proposed Critical Habitat Unit 7
Figure ES-9: Proposed Critical Habitat Unit 8
Figure ES-10: Proposed Critical Habitat Unit 9
Figure ES-11: Proposed Critical Habitat Unit 10
Figure ES-12: Proposed Critical Habitat Unit 11
Figure D-1: Critical Habitat Areas
Figure D-2: Land Use in Additional Final Critical Habitat Areas

## List of Tables

Table ES-1: Summary of Estimated Economic Impacts, Activity Ranking
Table ES-2: Summary of Estimated Economic Impacts, Landowner Ranking
Table ES-3: Summary of Estimated Economic Impacts, Unit Ranking
Table ES-4: Estimated Future Incremental Impacts of Critical Habitat for the PPP
Table 1: Landownership by Type
Table 2: Landownership in Each Unit
Table 3: Threats to Pebble Plains Plants
Table 4: Impacts of Unauthorized Off-Road Vehicle Management
Table 5: Impacts of Invasive, Nonnative Plant Species Management
Table 6: Impacts of Dispersed Recreation Management
Table 7: Administrative Impacts of Section 7 Consultation
Table A-1: Range of Administrative Consultation Costs, 2006 Dollars
Table A-2: Estimated Administrative Costs of Consultation (Per Effort), 2006 Dollars
Table A-3: Estimated Future Incremental Impacts of Critical Habitat for the PPP
Table B-1: Identification of Small Entities
Table C-1: Summary of Estimated Past Economic Impacts
Table D-1: Impacts on the US Forest Service of PPP Conservation Efforts in Additional Final Critical Habitat Areas

## Executive Summary

The purpose of this report is to identify and analyze the potential economic impacts associated with the proposed critical habitat designation for the Bear Valley sandwort (*Arenaria ursina*), ash-gray Indian paintbrush (*Castilleja cinerea*), and the southern mountain wild-buckwheat (*Eriogonum kennedyi* var. *austromontanum*), referred to as the Pebble Plains Plants, or PPP. This report was prepared by Berkeley Economic Consulting under contract with the U.S. Fish and Wildlife Service (the Service).

The Service identified 1,511.2 acres in San Bernardino County as proposed critical habitat for the PPP.<sup>1,2</sup> The proposed critical habitat is divided into eleven units, most of which are further divided into subunits. The landscape is characterized by treeless openings surrounded by woodland or coniferous forest. Figures ES-1 through ES-12 show the areas of proposed critical habitat and current landowners or managers. As shown in the figures, the U.S. Forest Service manages the majority of the proposed critical habitat (1,395.2 acres). Other landowners or managers include: California Department of Fish and Game (4 acres), Boy Scouts of America (6 acres), the Wildlands Conservancy (71 acres), and other private landowners (35 acres).<sup>3</sup>

This final economic analysis analyzes the proposed critical habitat as described in the proposed rule. It also considers information received during the public comment period for the draft economic analysis. In addition, Appendix D of this analysis describes the economic impacts associated with 266 acres of PPP critical habitat near Unit 11, which were not described in the proposed rule or analyzed in the draft economic analysis. Outside of Appendix D, this analysis does not reflect other changes to the proposed critical habitat designation that may be made in the final rule. Consequently, description of the critical habitat in the final rule may differ from maps and figures presented in this analysis.

The analysis quantifies economic impacts of PPP conservation efforts on each affected entity – typically landowners or managers – associated with the following: (1) vehicle use

---

<sup>1</sup> Fish and Wildlife Service, “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for *Arenaria ursina* (Bear Valley sandwort), *Castilleja cinerea* (ash grey Indian paintbrush), and *Eriogonum kennedyi* var. *austromontanum* (southern mountain wild-buckwheat); Proposed Rules,” Federal Register, v 71, November 22 2006, p 67720-67721 (71 FR 67720-21).

<sup>2</sup> Note that total acreage (1511.2 acres) is not rounded in this analysis to 1,511 as it is in the proposed rule because rounding would omit all of subunit 5c (0.2 acres) from the total.

<sup>3</sup> 71 FR 67721, Table 3 of proposed rule.

off of designated routes; (2) the presence of nonnative plant species; and (3) dispersed recreation activities.<sup>4</sup>

The Key Findings highlighted below and Tables ES-1, ES-2, and ES-3 summarize the quantitative results of the analysis.<sup>5</sup> The relative magnitudes of impacts to each type of affected activity are shown in Table ES-1. Table ES-2 presents the economic impacts on each affected entity, while Table ES-3 presents the estimated economic impacts associated with each proposed critical habitat subunit.

Chapters 2 through 5 and Appendix D of this report consider all future conservation-related impacts, including impacts associated with overlapping protections from other Federal, State, and local laws that aid habitat conservation in the areas proposed for critical habitat. That is, a portion of these “co-extensive” impacts are forecast to occur regardless of critical habitat designation for the PPP. Appendix A estimates the potential “incremental” impacts of critical habitat designation for the PPP by attempting to isolate those impacts that would not be expected to occur absent the designation of critical habitat. Incremental impacts are described in Appendix A and summarized in Table ES-4.

The consultation history for all three plant species is limited to three biological opinions issued by the Service for the implementation of the 2002 Pebble Plains Habitat Management Guide and the San Bernardino National Forest Land and Resource Management Plan. As a result, the information in this analysis is based on those consultations, the 2002 Pebble Plains Habitat Management Guide, and conversations with local land managers and the Service.

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

### **Key Findings**

**Total Future Impacts:** The economic analysis forecasts future costs associated with conservation efforts for the Pebble Plains Plants in the areas proposed for designation to be approximately \$1.34 million (present value at a three percent discount rate) over the next 20 years (\$0.09 million annualized)

---

<sup>4</sup> These activities were identified in the proposed rule as threats to the species that may require special management, 71 FR 67719-25.

<sup>5</sup> Annualized impacts at 3% and 7% discount rates differ slightly due to rounding.

**Summary of Impacts:** The impacts on the US Forest Service (USFS) associated with efforts to conserve the PPP within the area of proposed critical habitat are summarized below. Future impacts to other landowners are not anticipated.

The USFS will continue its current efforts to control unauthorized, off-road vehicles and dispersed recreation, according to the management requirements in the 2002 Pebble Plains Management Guide and the 2001 Biological Opinion. In addition, the Service has recommended that the USFS monitor for the spread of invasive, nonnative plant species and, if found necessary as a result of monitoring, conduct invasive plant species removal. In total, impacts to the USFS are estimated to be \$1.34 million over the next 20 years (present value at a three percent discount rate).

<b>Table ES-1: Summary of Estimated Economic Impacts</b>						
<b>Activity Ranking</b>						
		<b>Future Impacts: 2007-2026</b>				
		<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Annualized (3%)</b>	<b>Annualized (7%)</b>
<b>Activity</b>	<b>Units</b>					
Invasive Plants	All	\$1,400,000	\$1,041,423	\$741,581	\$70,000	\$70,000
Off-Road Vehicles	All	\$370,000	\$275,233	\$195,989	\$18,500	\$18,500
Dispersed Recreation	All except 3a, 3b	\$30,000	\$22,316	\$15,891	\$1,500	\$1,500
Administrative Impacts	All	\$3,700	\$3,593	\$3,458	\$3,701	\$3,701
<b>Total:</b>		<b>\$1,803,700</b>	<b>\$1,342,565</b>	<b>\$956,920</b>	<b>\$93,702</b>	<b>\$93,701</b>
Notes:						
(1) Undiscounted value is calculated using 2007 dollar values. For the present value calculation, 2007 dollar values are used as the base year.						
(2) Guidance provided by the Office of Management and Budget (OMB) specifies the use of a real discount rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 Federal Register 5492, February 3, 2003).						

**Table ES-2: Summary of Estimated Economic Impacts**

**Landowner Ranking**

		<b>Future Impacts: 2007-2026</b>				
		<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Annualized (3%)</b>	<b>Annualized (7%)</b>
<b>Entity</b>	<b>Units</b>					
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	\$1,803,700	\$1,342,565	\$956,920	\$93,702	\$93,701
TWC	3b	\$0	\$0	\$0	\$0	\$0
Private	8a, 8b	\$0	\$0	\$0	\$0	\$0
BSA	6a	\$0	\$0	\$0	\$0	\$0
CDFG	7b	\$0	\$0	\$0	\$0	\$0
<b>Total:</b>		<b>\$1,803,700</b>	<b>\$1,342,565</b>	<b>\$956,920</b>	<b>\$93,702</b>	<b>\$93,701</b>

Notes:

(1) USFS=United States Forest Service, TWC=The Wildlands Conservancy, Private=other private entities, BSA=the Boy Scouts of America, CDFG=California Department of Fish and Game

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

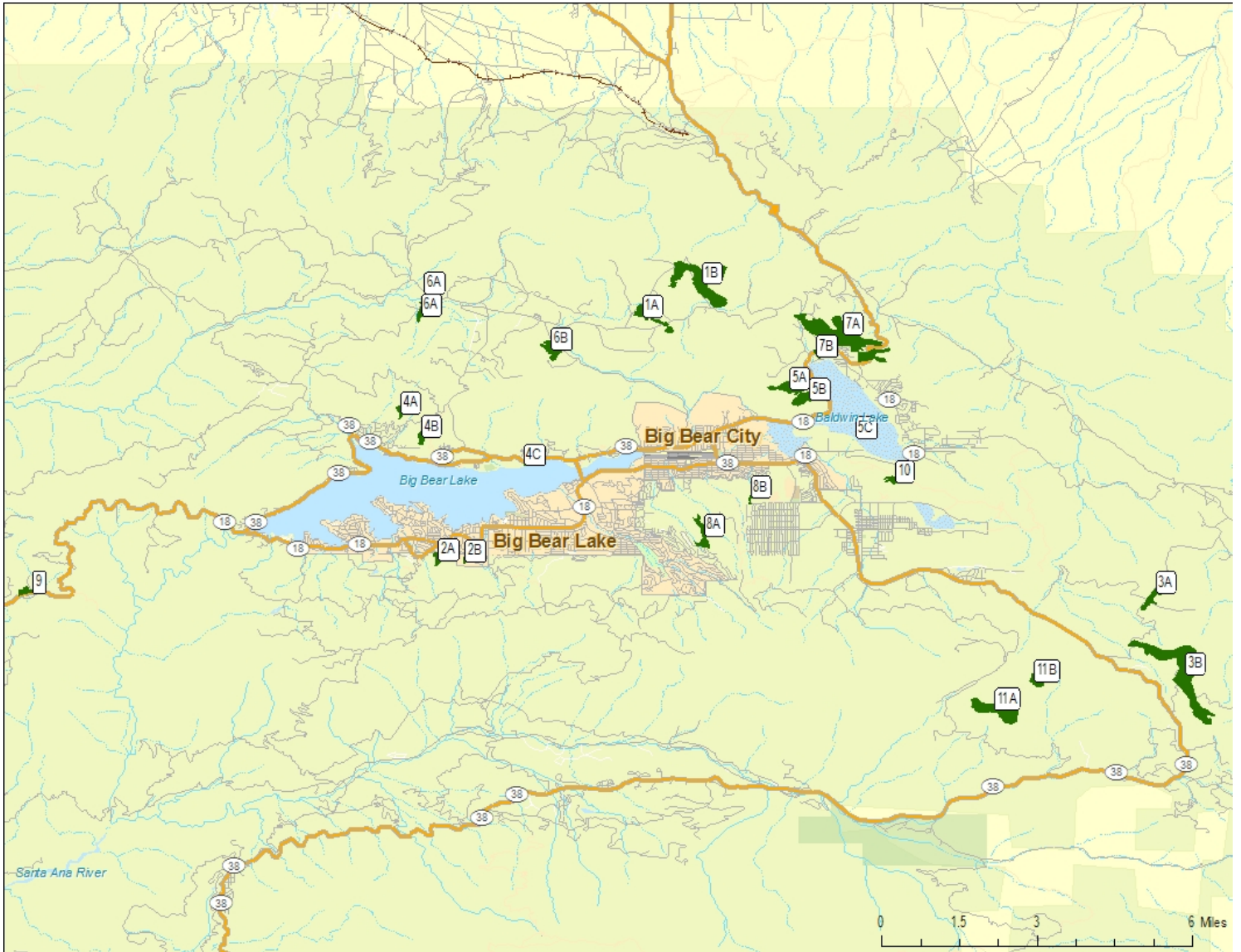
<b>Table ES-3: Summary of Estimated Economic Impacts</b>						
<b>Unit Ranking</b>						
		<b>Future Impacts: 2007-2026</b>				
<b>Units</b>	<b>Acres</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Annualized (3%)</b>	<b>Annualized (7%)</b>
7a	320	\$413,693	\$307,928	\$219,477	\$21,491	\$21,491
3b	326	\$329,661	\$245,380	\$174,896	\$17,126	\$17,126
1b	229	\$296,049	\$220,361	\$157,063	\$15,380	\$15,380
11a	127	\$164,184	\$122,209	\$87,105	\$8,529	\$8,529
1a	69	\$89,202	\$66,397	\$47,325	\$4,634	\$4,634
5a	62	\$80,153	\$59,661	\$42,524	\$4,164	\$4,164
3a	58	\$74,982	\$55,812	\$39,780	\$3,895	\$3,895
6b	44	\$56,883	\$42,340	\$30,178	\$2,955	\$2,955
5b	43	\$55,590	\$41,378	\$29,492	\$2,888	\$2,888
11b	34	\$43,955	\$32,717	\$23,319	\$2,283	\$2,283
9	26	\$33,613	\$25,019	\$17,833	\$1,746	\$1,746
4b	24	\$31,027	\$23,095	\$16,461	\$1,612	\$1,612
10	23	\$29,734	\$22,132	\$15,775	\$1,545	\$1,545
6a	28	\$28,441	\$21,170	\$15,089	\$1,478	\$1,478
2a	21	\$27,149	\$20,208	\$14,403	\$1,410	\$1,410
4a	15	\$19,392	\$14,434	\$10,288	\$1,007	\$1,007
8a	45	\$19,392	\$14,434	\$10,288	\$1,007	\$1,007
2b	6	\$7,757	\$5,774	\$4,115	\$403	\$403
4c	2	\$2,586	\$1,925	\$1,372	\$134	\$134
5c	0.2	\$259	\$192	\$137	\$13	\$13
7b	4	\$0	\$0	\$0	\$0	\$0
8b	5	\$0	\$0	\$0	\$0	\$0
<b>Total:</b>		<b>\$1,803,700</b>	<b>\$1,342,565</b>	<b>\$956,920</b>	<b>\$93,702</b>	<b>\$93,701</b>

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

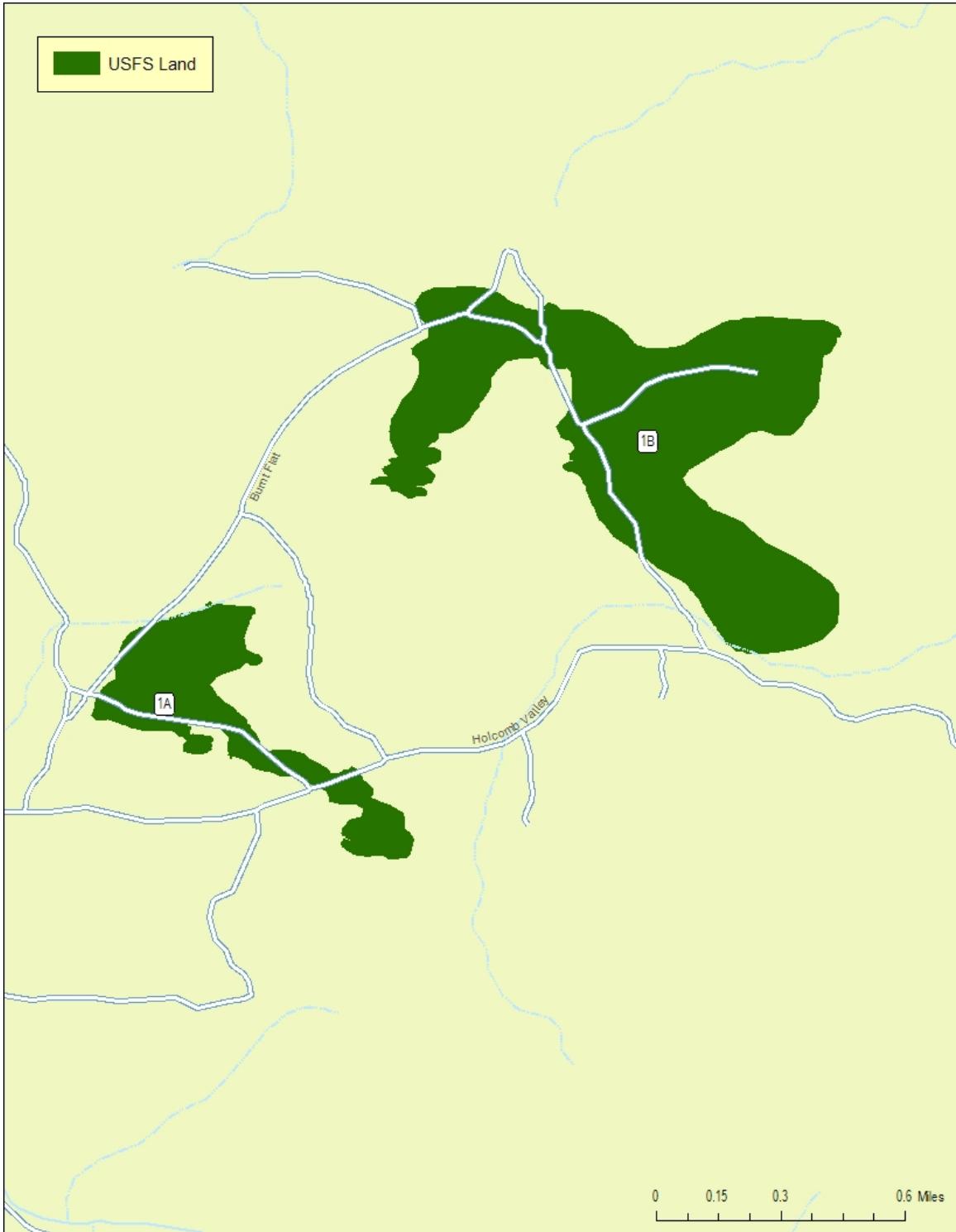
<b>Table ES-4: Estimated Future Incremental Impacts of Critical Habitat for the PPP</b>				
<b>Impacted Entity</b>	<b>Description of Coextensive Impact (Chapters 2-5)</b>	<b>Baseline Impact (PV, 3%)</b>	<b>Incremental Impact (PV, 3%)</b>	<b>Reason</b>
USFS	Re-initiation of Consultation regarding the Forest Plan	\$3,593	\$3,593	Re-initiation expected to be undertaken due to critical habitat designation
<b>Total</b>		<b>\$3,593</b>	<b>\$3,593</b>	



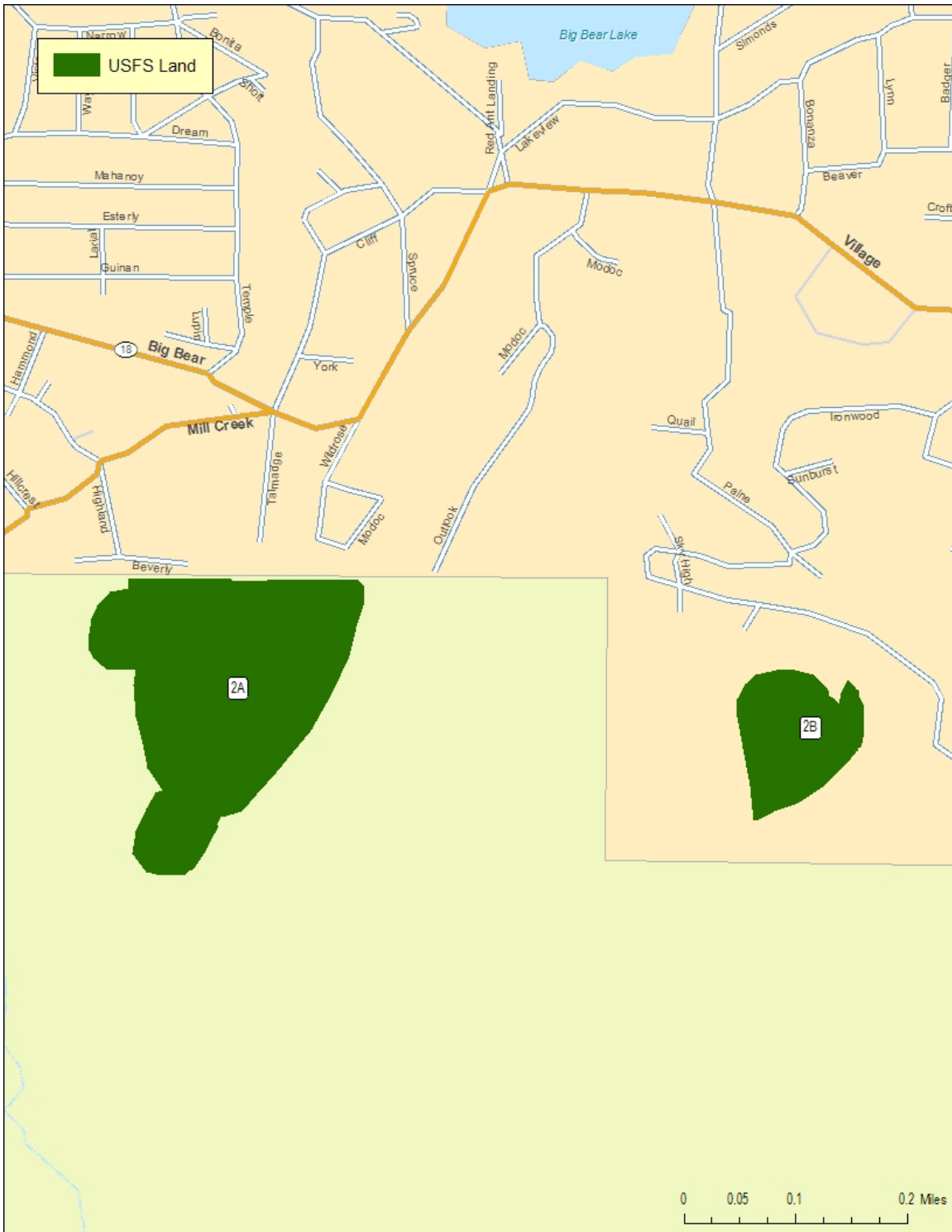
**Figure ES-1: Proposed Critical Habitat Units for Pebble Plains Plants**



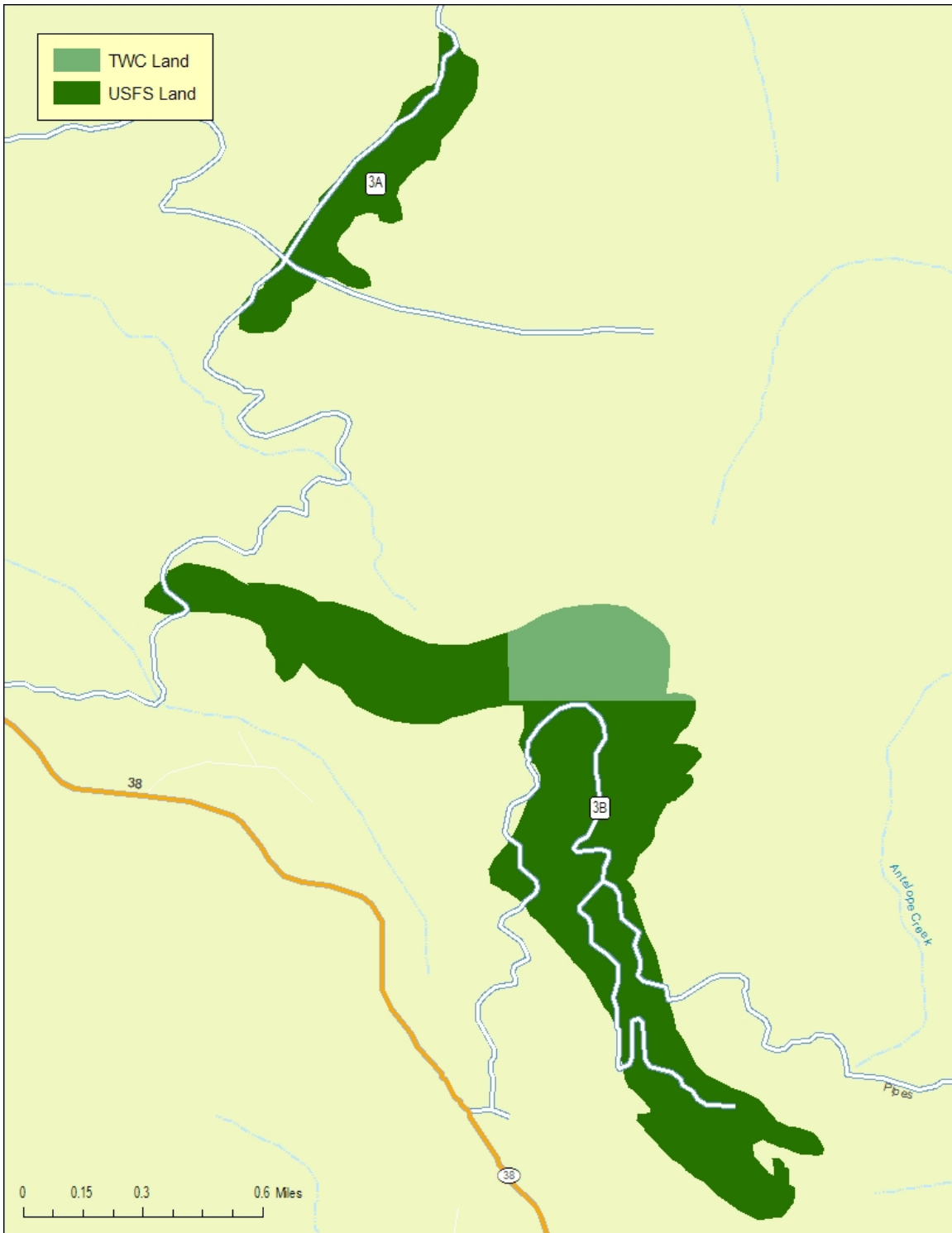
**Figure ES-2: Proposed Critical Habitat Unit 1**



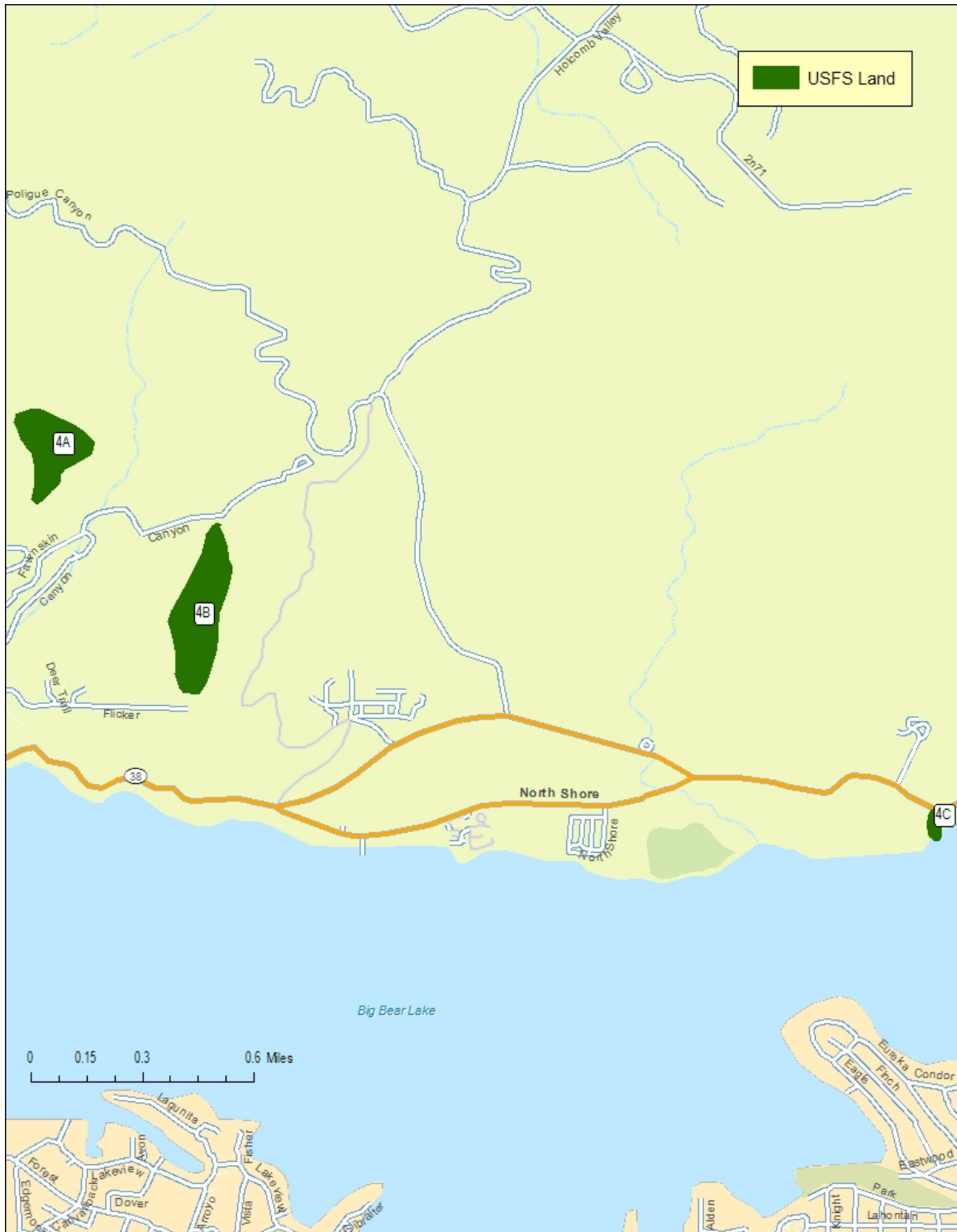
**Figure ES-3: Proposed Critical Habitat Unit 2**



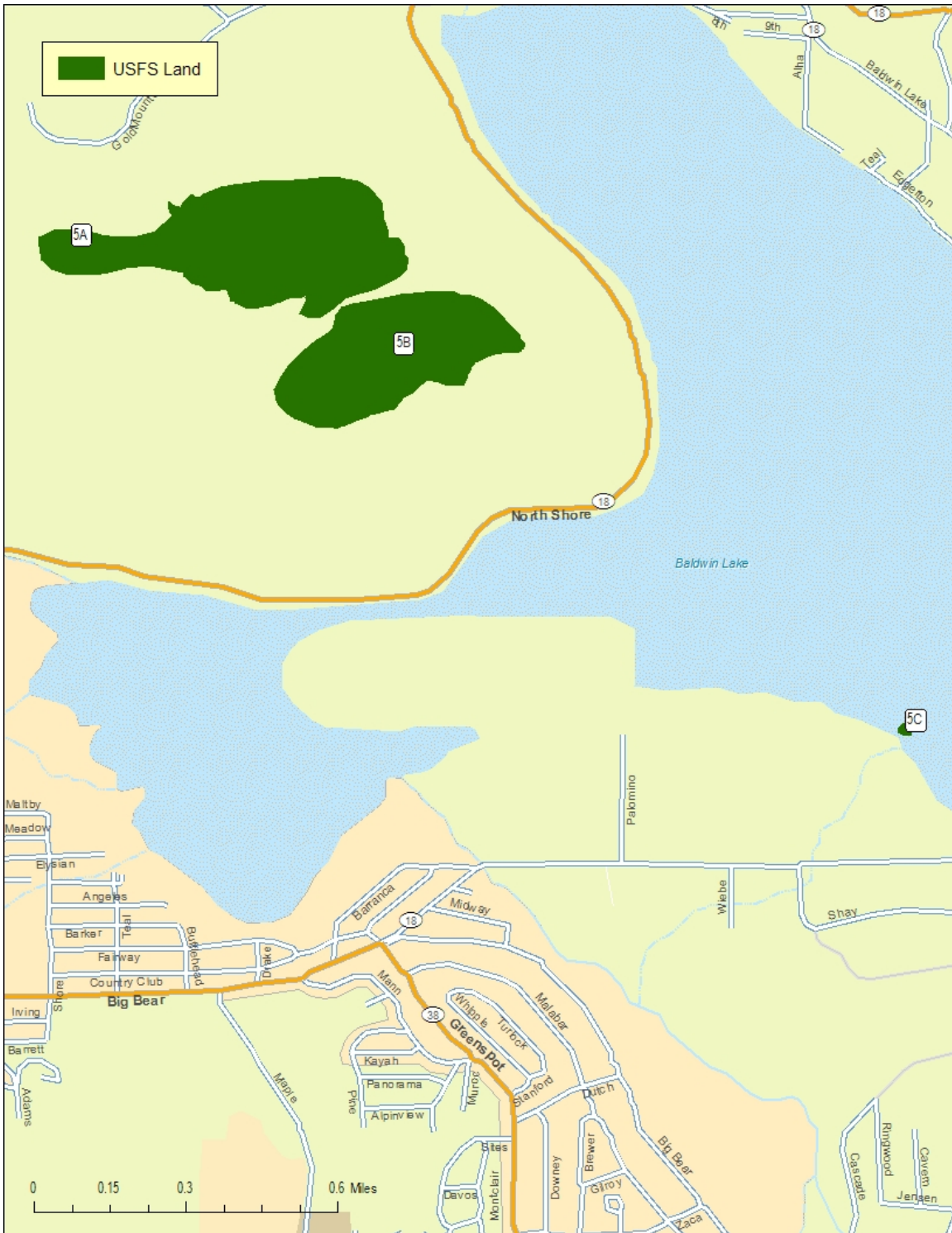
**Figure ES-4: Proposed Critical Habitat Unit 3**



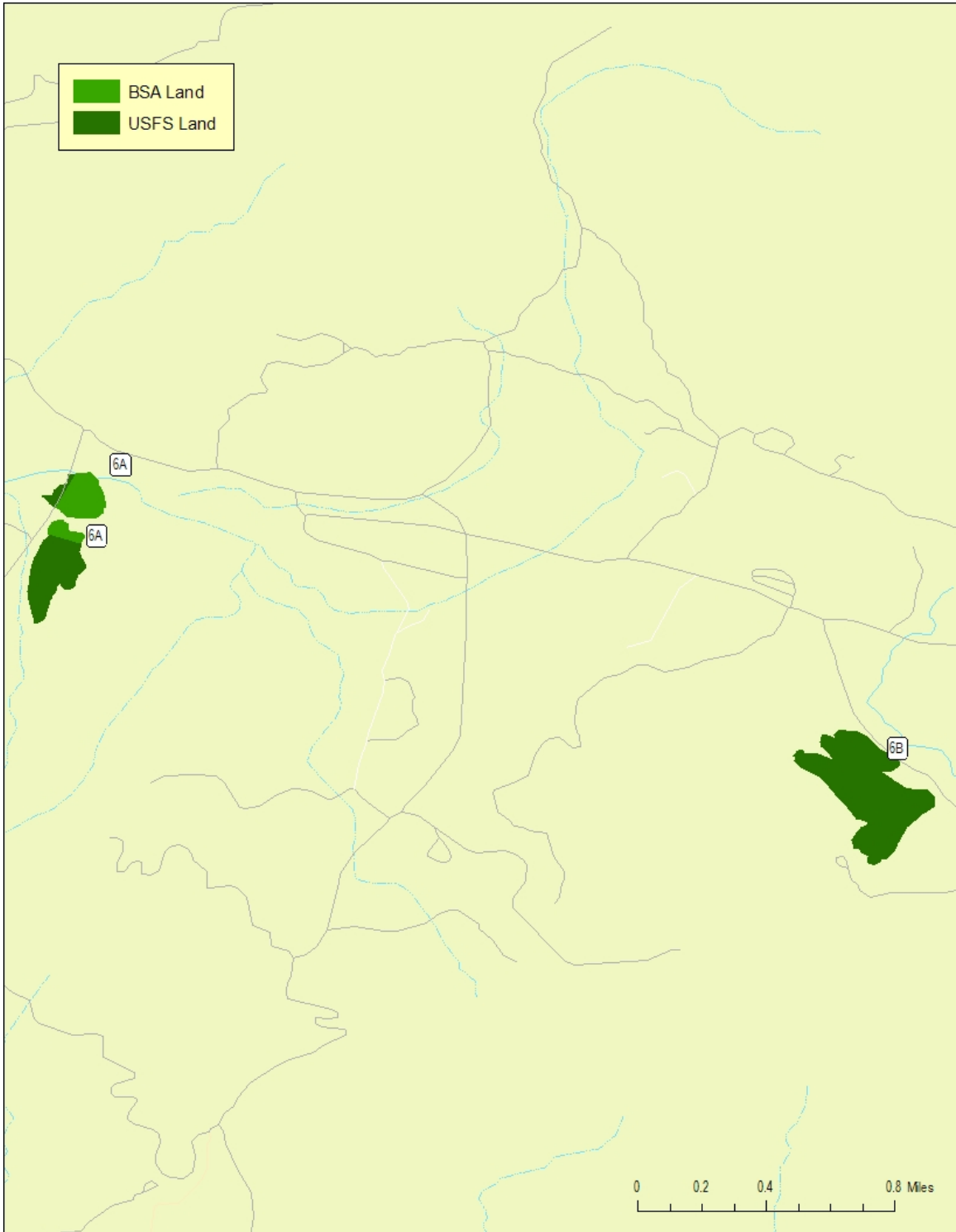
**Figure ES-5: Proposed Critical Habitat Unit 4**



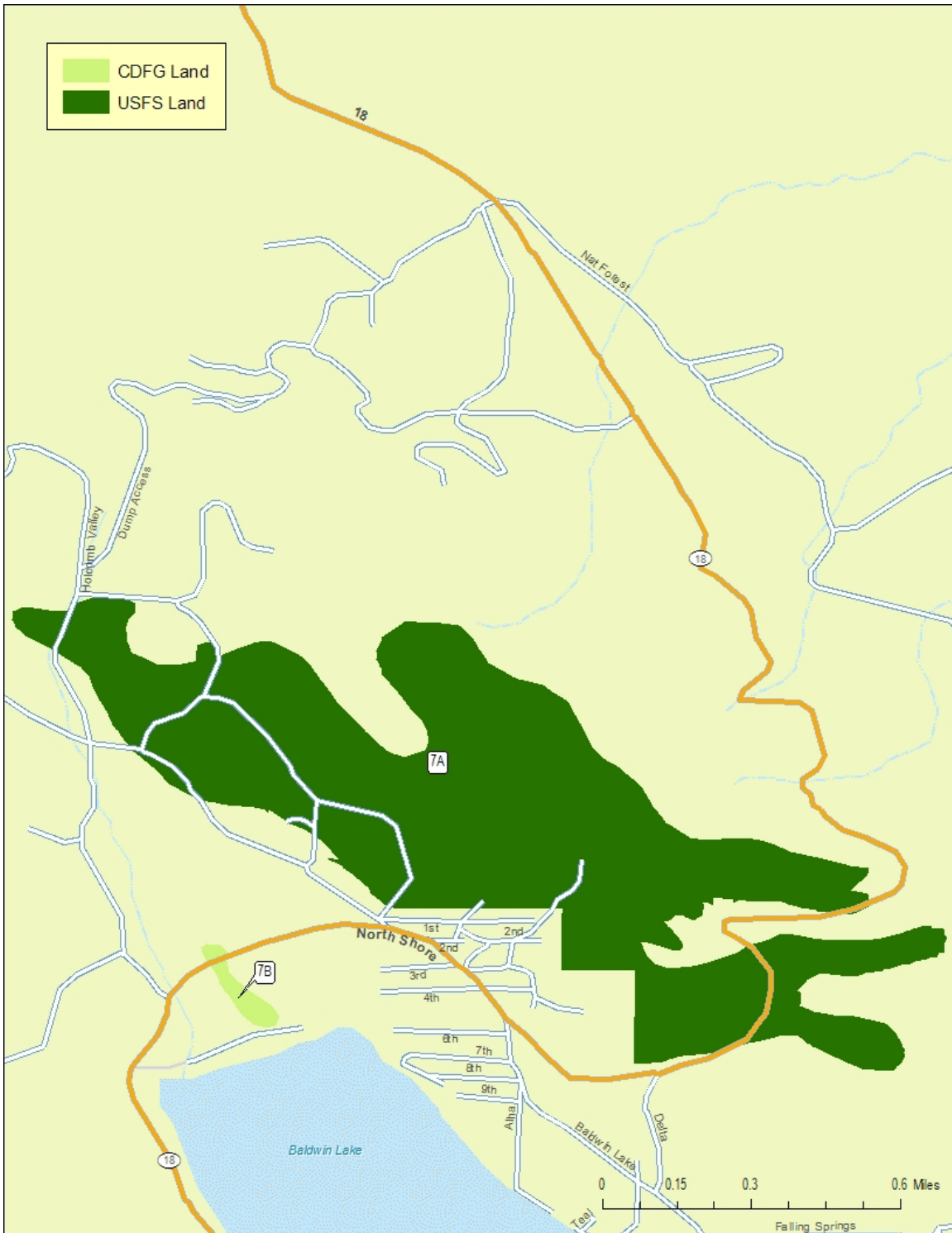
**Figure ES-6: Proposed Critical Habitat Unit 5**



**Figure ES-7: Proposed Critical Habitat Unit 6**

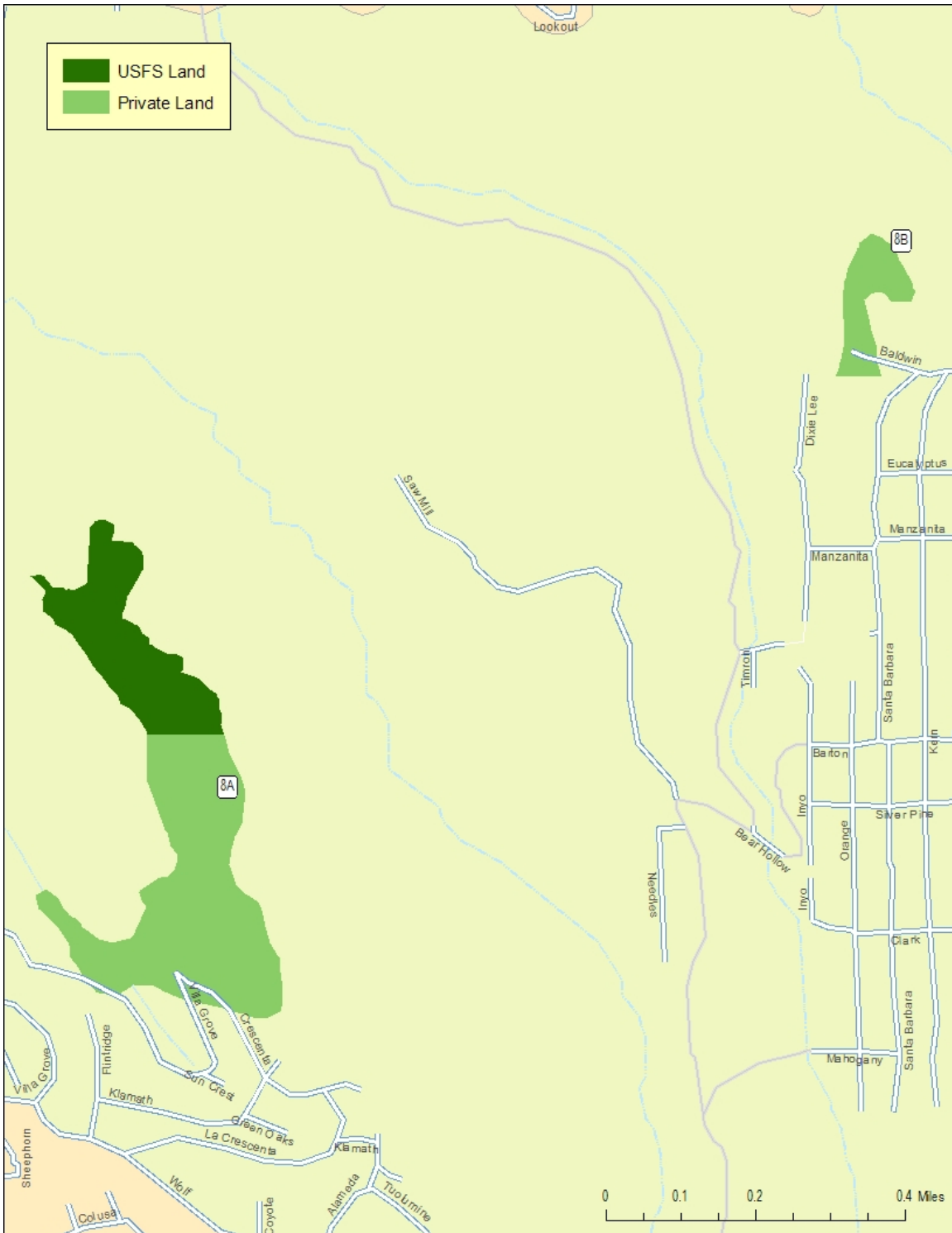


**Figure ES-8: Proposed Critical Habitat Unit 7**

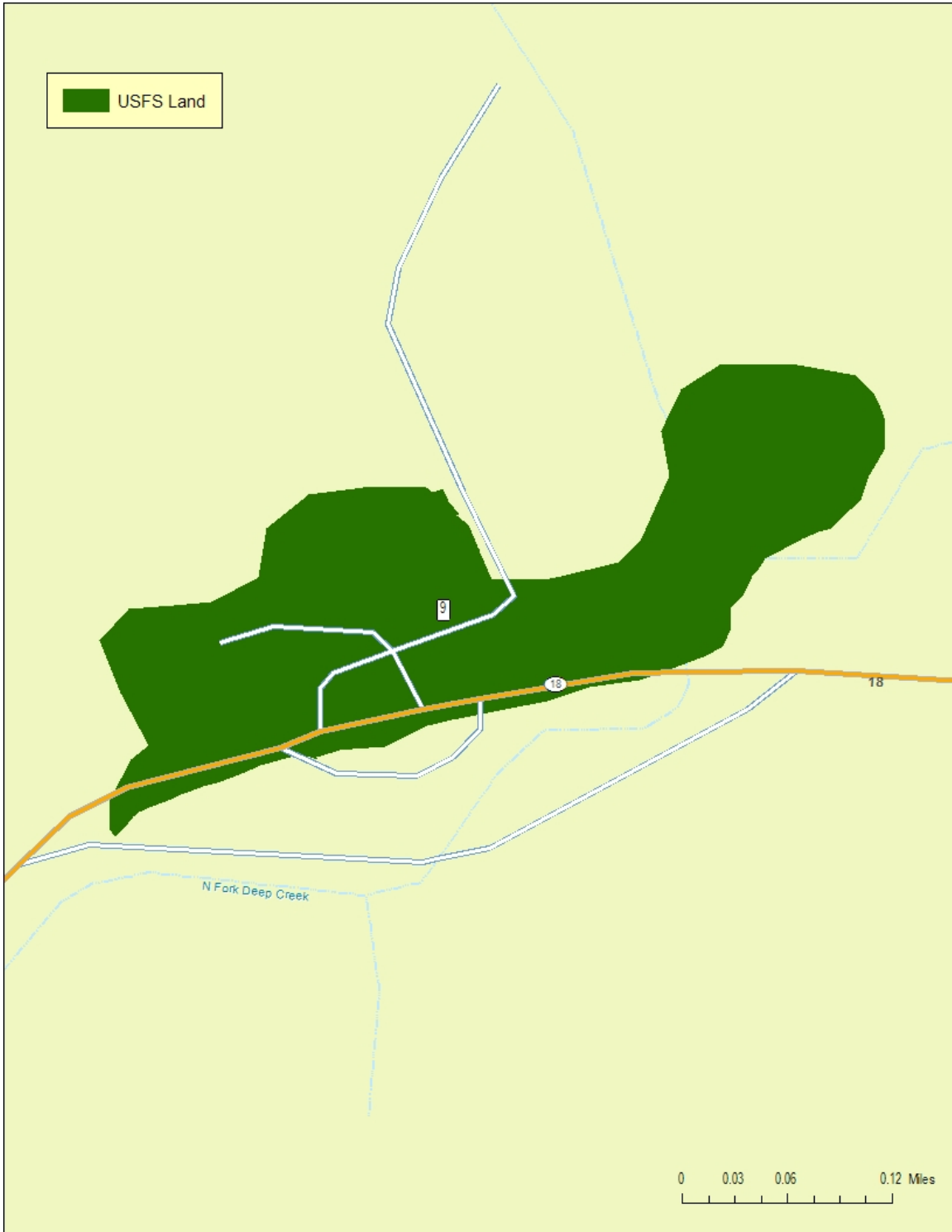




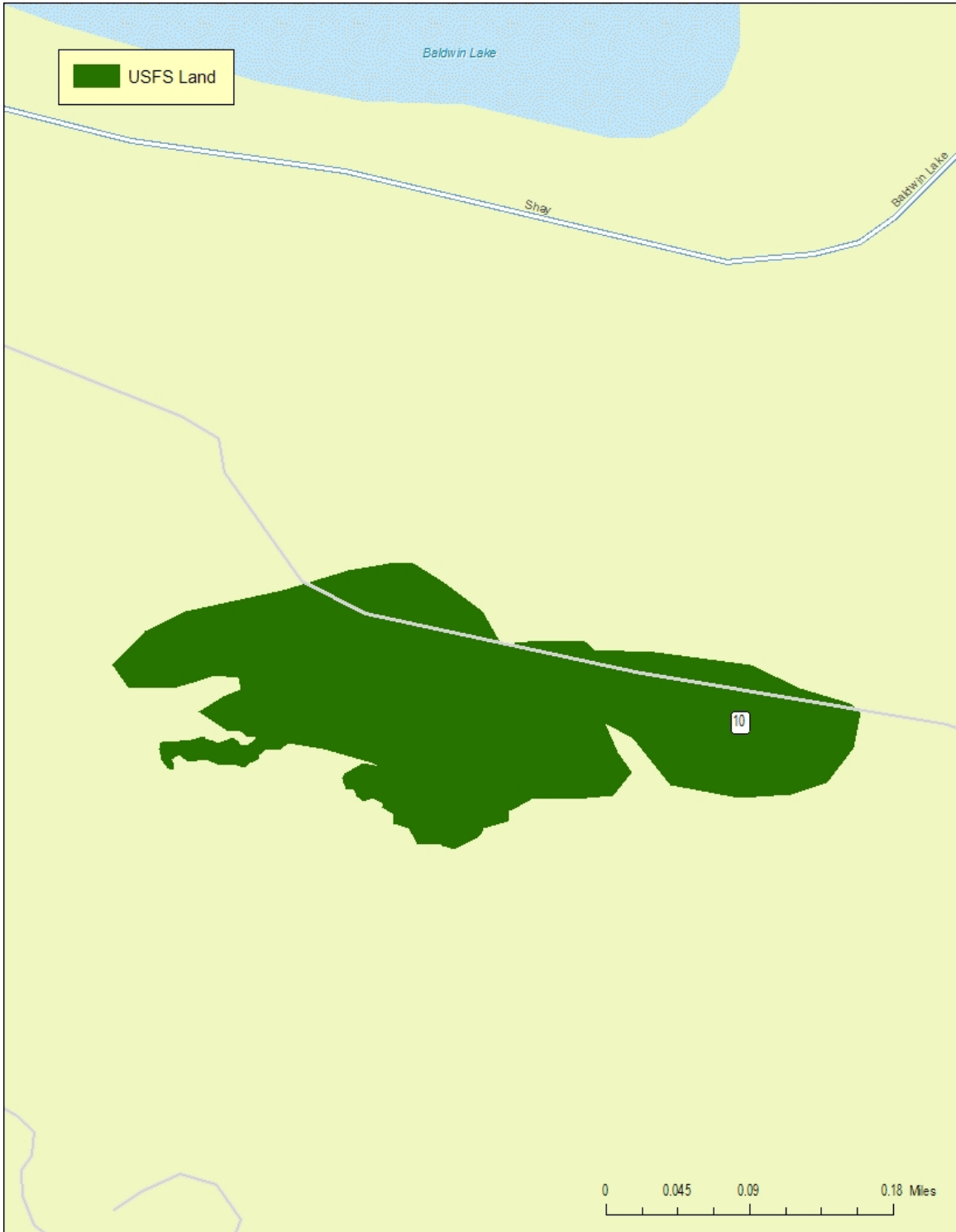
**Figure ES-9: Proposed Critical Habitat Unit 8**



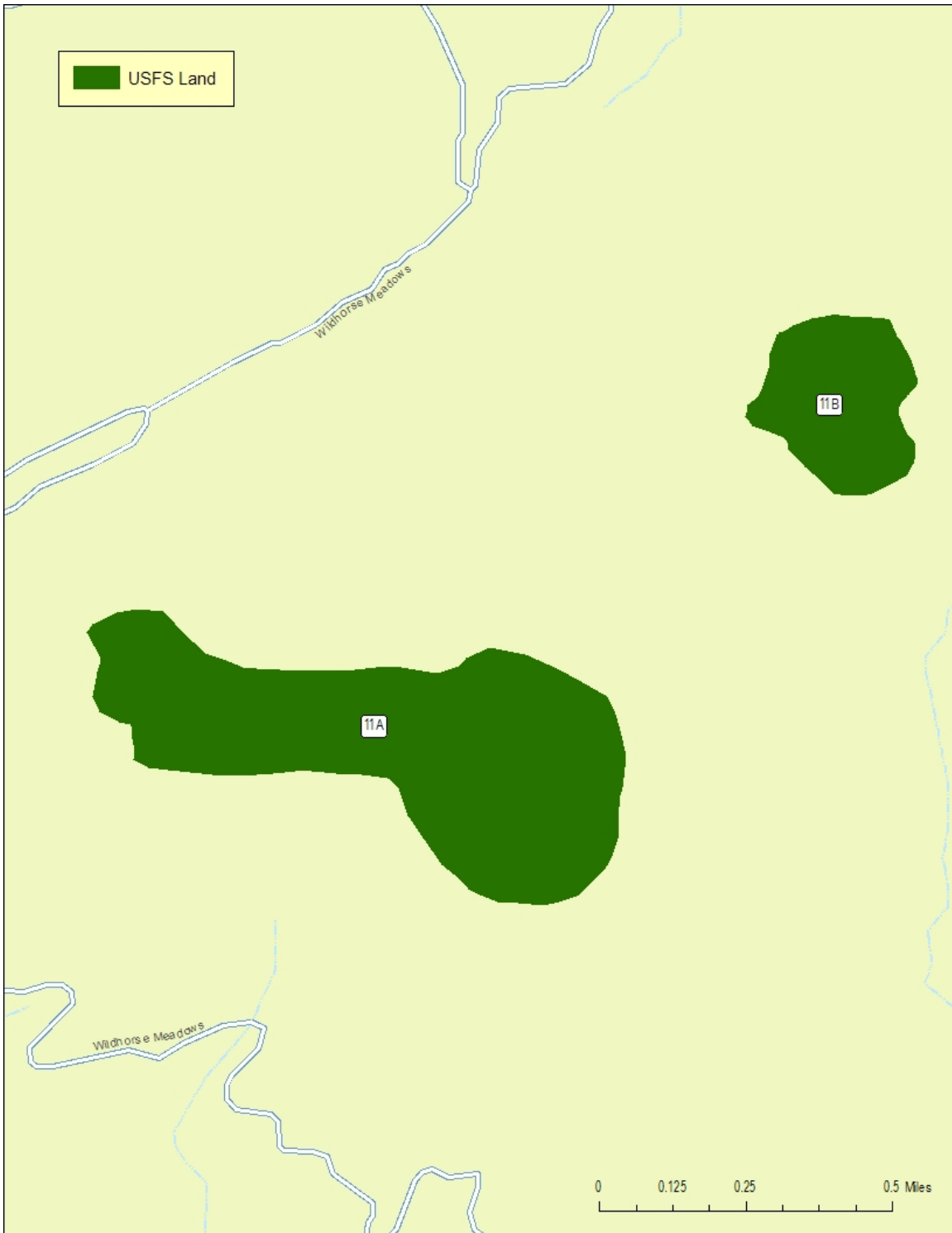
**Figure ES-10: Proposed Critical Habitat Unit 9**



**Figure ES-11: Proposed Critical Habitat Unit 10**



**Figure ES-12: Proposed Critical Habitat Unit 11**



## Chapter 1: Introduction and Framework

The purpose of this report is to estimate the economic impact of actions taken to protect the federally listed Bear Valley sandwort (*Arenaria ursina*), the ash-gray Indian paintbrush (*Castilleja cinerea*), and the southern mountain wild-buckwheat (*Eriogonum kennedyi* var. *austromontanum*), referred to as the “Pebble Plains Plants” or PPP in this report, and their habitat. It attempts to quantify the economic effects associated with the proposed designation of critical habitat. It does so by taking into account the cost of conservation-related measures that are likely to be associated with future economic activities that may adversely affect the habitat within the proposed boundaries. The analysis looks retrospectively at costs incurred since the PPP were listed, and it attempts to predict future costs likely to occur after the proposed critical habitat designation is finalized.

This final economic analysis analyzes the proposed critical habitat as described in the proposed rule. It also considers information received during the public comment period for the draft economic analysis. In addition, Appendix D of this analysis describes the economic impacts associated with 266 acres of PPP critical habitat near Unit 11, which were not described in the proposed rule or analyzed in the draft economic analysis. Outside of Appendix D, this analysis does not reflect other changes to the proposed critical habitat designation that may be made in the final rule. Consequently, description of the critical habitat in the final rule may differ from maps and figures presented in this analysis.

Chapters 2 through 5 of this report consider all future conservation-related impacts, including impacts associated with overlapping protections from other Federal, State, and local laws that aid habitat conservation in the areas proposed for critical habitat. That is, a portion of these “co-extensive” impacts are forecast to occur regardless of critical habitat designation for the PPP. Appendix B estimates the potential “incremental” impacts of critical habitat designation for the PPP by attempting to isolate those impacts that would not be expected to occur absent the designation of critical habitat.

This information is intended to assist the Secretary in determining whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas.<sup>6</sup> In addition, this information allows the U.S. Fish and Wildlife Service (the Service) to address the requirements of Executive Orders 12866 and 13211, and the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA).<sup>7</sup> This report also complies with direction from the

---

<sup>6</sup> 16 U.S.C. §1533(b)(2).

<sup>7</sup> Executive Order 12866, Regulatory Planning and Review, September 30, 1993; Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use, May 18, 2001; 5.U.S.C. §601 et seq; and Pub Law No. 104-121.

U.S. Court of Appeals for the 10<sup>th</sup> Circuit that “co-extensive” effects should be included in the economic analysis to inform decision-makers regarding which areas to designate as critical habitat.<sup>8</sup>

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

## 1.1 Background

### 1.1.1 Regulatory History

On September 14, 1998, the Service published the final rule listing the PPP as threatened. In the final rule, the Service determined that designation of critical habitat for the plant species was not prudent. On September 13, 2004, the Center for Biological Diversity and the California Native Plant Society filed a joint lawsuit challenging the Service’s failure to designate critical habitat for six California plant species, including the PPP. The Service agreed to publish a proposed rule to designate critical habitat on or before November 9, 2006, and a final rule by November 9, 2007.

### 1.1.2 Description of Proposed Critical Habitat and Landownership

The Service identified 1,511.2 acres of land in San Bernardino County, California, as proposed critical habitat for the PPP.<sup>9</sup> For a description of the PPP and the primary constituent elements that are essential to the conservation of the species, refer to the proposed rule. Proposed critical habitat forms the study area for this analysis.

<b>Table 1: Landownership by Type</b>		
<b>Entity</b>	<b>Owner Type</b>	<b>Total Acres</b>
USFS	Federal	1,395.2
TWC	Private, Conservation-Oriented Organization	71
BSA	Private	6
Private	Private	35
CDFG	State	4
<b>Total</b>		<b>1,511.2</b>
Notes: (1) USFS = U.S. Forest Service, TWC = The Wildlands Conservancy, BSA = Boy Scouts of America, CDFG = California Department of Fish and Game, Private = other private landowners		
(2) Total acreage is not rounded, as it is in the Proposed Rule, because rounding would omit the entire acreage of subunit 5c (0.2 acre) from the total.		
Source: 71 FR 67720-21		

<sup>8</sup> In 2001, the U.S. Court of Appeals for the 10<sup>th</sup> Circuit instructed the Service to conduct a full analysis of all of the economic impacts of proposed critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes (New Mexico cattle Growers Ass’n v. U.S.F.W.S., 248 F.3d. 1277 (10<sup>th</sup> Cir. 2001)).

<sup>9</sup> 71 FR 67720-21.

Proposed critical habitat areas are divided into eleven units, which are subdivided into a total of twenty-two subunits. Most of the land is publicly owned and managed (U.S. Forest Service (USFS) and California Department of Fish and Game (CDFG)), but some of the land is privately owned by conservation-oriented groups and other private entities.

Table 1 summarizes total land ownership according to landowner type (Federal, State, or private). Table 2 indicates landownership by subunit and which of the three PPP species occur in each critical habitat subunit. For maps showing the location of each subunit, see Figures ES-1 through ES-12 above.

### 1.2 Regulatory Alternatives

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

Consideration of impacts at a subunit level may result in alternate combinations of potential habitat that may or may not ultimately be designated as critical habitat. The impacts of multiple combinations of potential habitat are also available to the Service.

### 1.3 Threats

The Service identified the following threats to PPP throughout their range in the proposed rule: development on private lands, off-highway vehicle use off of designated routes, road maintenance activities, ground disturbance that affects surface hydrology, mining activities, recreational activities, habitat fragmentation, and the invasion of nonnative *Bromus tectorum* (cheatgrass). However, the proposed rule determined that special

Unit	Landowner	Acres	Species		
			BVS	AGIPB	SMWB
1a	USFS	69	√	√	√
1b	USFS	229	√	√	√
2a	USFS	21	√	√	
2b	USFS	6	√	√	√
3a	USFS	58	√	√	√
3b	USFS	255	√	√	
	TWC	71			
4a	USFS	15	√	√	√
4b	USFS	24	√	√	√
4c	USFS	2		√	
5a	USFS	62	√	√	√
5b	USFS	43	√	√	√
5c	USFS	0.2		√	
6a	USFS	22	√	√	√
	BSA	6			
6b	USFS	44	√	√	√
7a	USFS	320	√	√	√
7b	CDFG	4		√	
8a	USFS	15	√	√	√
	Private	30			
8b	Private	5	√	√	√
9	USFS	26		√	
10	USFS	23	√	√	√
11a	USFS	127	√	√	
11b	USFS	34	√	√	
<b>Total</b>		<b>1,511.2</b>			
Notes: (1) BVS = Bear Valley Sandwort, AGIPB = ash-gray Indian paintbrush, SMWB = southern mountain wild-buckwheat (2) USFS = U.S. Forest Service, TWC = The Wildlands Conservancy, BSA = Boy Scouts of America, CDFG = California Department of Fish and Game, Private = other private landowners (3) Total acreage is not rounded because rounding would omit the entire acreage of subunit 5c (0.2 acre) from the total. Source: 71 FR 67720-21					

management considerations or protection measures may be needed to minimize the impacts to the primary constituent elements for the PPP associated with only three activities: vehicle use and road maintenance; recreational activities; and the presence of nonnative plant species.<sup>10</sup> Through conversations with the Service it was determined that cattle and burro trespass, as well as mining activities do not require special management considerations because the likelihood of these threats occurring in pebble plain habitat is very small.<sup>11</sup> Table 3 presents the threats to the PPP that may require special management within each of the proposed critical habitat subunits.

Unit	Landowner(s)	Primary Threats	Species		
			BVS	AGIPB	SMWB
1a, 1b	USFS	Unauthorized vehicle use related to woodcutting and camping activities, dispersed recreation, cheatgrass	√	√	√
2a	USFS	Trampling, soil compaction, and unauthorized vehicle use through dispersed recreation, cheatgrass	√	√	
2b	USFS	"	√	√	√
3a	USFS	Unauthorized vehicle use, cheatgrass and common knotweed	√	√	√
3b	USFS, TWC	"	√	√	
4a, 4b	USFS	Public vehicle use and OHV use outside of designated areas, cheatgrass, dispersed recreation	√	√	√
4c	USFS	Dispersed recreation, OHV use outside of designated areas, cheatgrass		√	
5a, 5b	USFS	Unauthorized vehicle use, cheatgrass, dispersed recreation	√	√	√
5c	USFS	Unauthorized access by equestrian and OHV use by adjacent private landowners, cheatgrass		√	
6a, 6b	USFS, BSA	Dispersed recreation, OHV use outside of designated areas, cheatgrass	√	√	√
7a	USFS	Authorized and unauthorized vehicle use, cheatgrass and clasping pepperweed, dispersed recreation	√	√	√
7b	CDFG	"		√	
8a, 8b	USFS, Private	Authorized and unauthorized dispersed recreation, unauthorized vehicle use, cheatgrass	√	√	√
9	USFS	Dispersed recreation, unauthorized vehicle use, cheatgrass		√	
10	USFS	Dispersed recreation, unauthorized vehicle use, cheatgrass	√	√	√
11a, 11b	USFS	Dispersed recreation, unauthorized vehicle use, cheatgrass	√	√	

Source: (1) 71 FR 67721-25

<sup>10</sup> 71 FR 67716-19.

<sup>11</sup> Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 18, 2007.



## 1.4 Approach to Estimating Economic Impacts

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

### 1.4.1 Efficiency Effects

At the guidance of the Office of Management and Budget (OMB) and in compliance with Executive Order 12866, “Regulatory Planning and Review,” Federal agencies measure changes in economic efficiency in order to understand how society, as a whole, will be affected by a regulatory action. In the context of regulations that protect the PPP, these efficiency effects represent the opportunity cost of resources used or benefits foregone by society as a result of the regulations. Economists generally characterize opportunity costs in terms of changes in producer and consumer surpluses in affected markets.<sup>12</sup>

In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, a Federal land manager, such as the U.S. Forest Service, may enter into a consultation with the Service to ensure that a particular activity will not adversely modify critical habitat. The effort required for the consultation is an economic opportunity cost because the landowner or manager’s time and effort would have been spent in an alternative activity had the parcel not been included in the designation. When compliance activity is not expected to significantly affect markets – that is, not result in a shift in the quantity of the good or service provided at a given price, or in the quantity of a good or service demanded, given a change in price – the measurement of compliance costs can provide a reasonable estimate of the change in economic efficiency.

Where habitat protection measures are expected to significantly impact the market, it may be necessary to estimate changes in producer and consumer surpluses. For example, a designation that precludes the development of large areas of land may shift the price and

---

<sup>12</sup> For additional information on the definition of “surplus” and an explanation of consumer and producer surplus in the context of regulatory analysis, see Gramlich, Edward M., *A Guide to Benefit-Cost Analysis* (2<sup>nd</sup> Ed.), Prospect Heights, Illinois: Waveland Press, Inc. 1990; and U.S. Environmental Protection Agency, *Guidelines for Preparing Economic Analyses*, EPA 240-R-00-003, September 2000, available at <http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html>.

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

### 1.4.2 Distributional and Regional Economic Impacts

The analysis also considers how small entities, including small businesses, organizations, and governments, as defined by the Regulatory Flexibility Act, might be affected by future conservation activities for the PPP.<sup>13</sup> In addition, in response to Executive Order 13211, “Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use,” this analysis considers the future impacts of conservation activities on the energy industry and its customers.<sup>14</sup>

### 1.4.3 Calculating Present Value and Annualized Impacts

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

formula:<sup>15</sup> 
$$PV_c = \sum_t^T \frac{C_t}{(1+r)^{T-t}}$$
 Where  $C_t$  is the cost of conservation efforts in year  $t$  and  $r$

is the discount rate.<sup>16</sup>

---

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

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

<sup>15</sup> To derive the present value of past conservation efforts for this analysis,  $t$  is 1998 and  $T$  is 2007; to derive the present value of future conservation efforts,  $t$  is 2007 and  $T$  is 2026.

<sup>16</sup> To discount and annualize costs, guidance provided by OMB specifies the use of a real rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, “Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice,” 68 *Federal Register* 5492, February 3, 2003).

Impacts of conservation efforts for each activity in each unit are also expressed in annualized values. Annualized values are calculated to provide comparison of impacts across activities with varying forecast periods ( $T$ ). For this analysis, however, all activities employ the forecast period of 20 years, 2007 through 2026. Annualized impacts of future conservation efforts ( $APV_c$ ) are calculated by the following standard formula:

$APV_c = PV_c \left[ \frac{r}{1 - (1 + r)^{-N}} \right]$  Where  $N$  is the number of years in the forecast period (in this analysis, 20 years).

### 1.5 Scope of the Analysis

This analysis identifies those economic activities believed to most likely threaten the listed species and its habitat and, where possible, quantifies the economic impact to avoid, mitigate, or compensate for such threats within the boundaries, or adjacent to, proposed critical habitat. In instances where critical habitat is being proposed after a species is listed, some future impacts may be unavoidable, regardless of the final designation and exclusions under 4(b)(2). However, due to the difficulty in making a credible distinction between listing and critical habitat effects within critical habitat boundaries, this analysis considers all future conservation-related impacts to be coextensive with the designation.<sup>17,18</sup>

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

---

<sup>17</sup> In 2001, the U.S. 10<sup>th</sup> Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes (*New Mexico Cattle Growers Assn v. U.S.F.W.S.*, 248 F.3d 1277 (10th Cir. 2001)).

<sup>18</sup> Issued in 2004, a Ninth Circuit judicial opinion invalidated the Service's regulation defining destruction or adverse modification of critical habitat (*Gifford Pinchot Task Force v. USFWS*), and the Service does not rely on the regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Pursuant to current national policy and the statutory provisions of the Act, destruction or adverse modification is determined on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the primary constituent elements to be functionally established) to serve its intended conservation role for the species.

### 1.5.1 Sections of the Act Relevant to the Analysis

The analysis focuses on activities that are influenced by the Service through sections 4, 7, 9, and 10 of the Act.

- Section 4 of the Act focuses on the listing and recovery of endangered and threatened species, as well as the designation of critical habitat. According to section 4, the Secretary is required to list species as endangered or threatened “solely on the basis of the best available scientific and commercial data.”<sup>19</sup> Section 4 also requires the Secretary to designate critical habitat “on the basis of the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact, of specifying any particular area as critical habitat.”<sup>20</sup>
- Section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat.<sup>21</sup>
- Section 9 defines the actions that are prohibited by the Act. In particular, it prohibits the “take” of endangered wildlife, where “take” means to “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”<sup>22</sup>
- 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 listed animal species in order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property.<sup>23</sup>

---

<sup>19</sup> 16 U.S.C. §1533.

<sup>20</sup> 16 U.S.C. §1533.

<sup>21</sup> Issued in 2004, a Ninth Circuit judicial opinion invalidated the Service’s regulation defining destruction or adverse modification of critical habitat (*Gifford Pinchot Task Force v. USFWS*), and the Service does not rely on the regulatory definition when analyzing whether an action is likely to destroy or adversely modify critical habitat. Pursuant to current national policy and the statutory provisions of the Act, destruction or adverse modification is determined on the basis of whether, with implementation of the proposed Federal action, the affected critical habitat would remain functional (or retain the current ability for the primary constituent elements to be functionally established) to serve its intended conservation role for the species.

<sup>22</sup> 16 U.S.C. §1532.

<sup>23</sup> U.S. Fish and Wildlife Service, “Endangered Species Habitat Conservation Planning,” August 6, 2002, accessed at: <http://endangered.fws.gov/hcp/>.

Note that the Act does not prohibit ‘take’ of listed plants. Section 9 of the Act does prohibit certain actions with regard to listed plants, including removing listed plants from areas under Federal jurisdiction, and damaging or destroying listed plants in knowing violation of State law. Therefore, on private lands, unless a Federal nexus is present (e.g., a landowner requires a permit from a Federal agency to undertake an activity and therefore that agency is subject to consultation with the Service under section 7 of the Act), private landowners are not obligated to take actions to manage or minimize their impact on plants located on their property. As a result, the economic analysis estimates the costs of potential voluntary conservation efforts undertaken by private landowners, however the probability that these actions will be taken is unknown.

### **1.5.2 Other Relevant Protection Efforts**

The protection of listed species and habitat is not limited to the Act. Other Federal agencies, as well as State and local governments, may also seek to protect the natural resources under their jurisdiction.<sup>24</sup> For the purpose of this analysis, such protective efforts are considered to be co-extensive with the protection offered by critical habitat, and costs associated with these efforts are included in this report. In addition, under certain circumstances, the critical habitat designation may provide new information to a community about the sensitive ecological nature of a geographic region, potentially triggering additional economic impacts under other State and local laws. In cases where these costs would not have been triggered absent the designation of critical habitat, they are included in this economic analysis.

### **1.5.3 Additional Analytic Considerations**

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

#### **1.5.3.1 Time Delay and Regulatory Uncertainty Impacts**

Time delay impacts are costs resulting from project delays associated with the consultation process or compliance with other regulations. Regulatory uncertainty costs occur in anticipation of having to modify parameters (e.g., retaining outside experts or legal counsel to better understand responsibilities with regard to critical habitat). Time delays and regulatory uncertainty impacts are not anticipated in this case, because the Federal and State agencies involved in consultations are familiar with the process.

---

<sup>24</sup> For example, the Sikes Act Improvement Act (Sikes Act) of 1997 requires Department of Defense (DoD) military installations to develop Integrated Natural Resource Management Plans (INRMPs) that provide for the conservation, protection, and management of wildlife resources (16 U.S.C. §§ 670a – 670o). These plans must integrate natural resource management with other activities, such as training exercises, taking place at the facility.

### 1.5.3.2 Stigma Impacts

Stigma refers to the change in economic value of a particular project or activity due to negative (or positive) perceptions of the role critical habitat will play in developing, implementing, or conducting that policy. For example, changes to private property values associated with public attitudes about the limits and costs of implementing a project in critical habitat are known as “stigma” impacts. Because the proposed designation includes little private property (approximately 112 acres), stigma effects are not quantified in this analysis.

### 1.5.4 Geographic Scope of the Analysis

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

Impacts are presented at the finest resolution feasible, given the available data. For this proposed critical habitat designation, impacts are reported for each subunit identified in the proposed rule. The Executive Summary presents maps showing the location of the subunits relative to major cities, national forest land, and wilderness lands.

### 1.5.5 Time Frame of the Analysis

The analysis estimates impacts based on activities that are “reasonably foreseeable,” including, but not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. This analysis estimates economic impacts to activities from 1998 (year of the species’ final listing) to 2026 (20 years from the final year anticipated in 2007). Forecasts of economic conditions and other factors beyond the next 20 years would be speculative.

### 1.5.6 Benefits

Under Executive Order 12866, OMB directs Federal agencies to provide an assessment of both the social costs and benefits of proposed regulatory actions.<sup>25</sup> OMB’s Circular A-4 distinguishes two types of economic benefits: *direct benefits* and *ancillary benefits*. Ancillary benefits are defined as favorable impacts of a rulemaking that are typically unrelated, or secondary, to the statutory purpose of the rulemaking.<sup>26</sup>

In the context of critical habitat designation, the primary purpose of the rulemaking (i.e., direct benefits) is the potential to enhance the conservation of the species. The published economics literature has documented that social welfare benefits can result from the

---

<sup>25</sup> Executive Order 12866, *Regulatory Planning and Review*, September 30, 1993.

<sup>26</sup> U.S. Office of Management and Budget, “Circular A-4,” September 17, 2003, available at: <http://www.whitehouse.gov/omb/circulars/a004/a-4.pdf>.

conservation and recovery of endangered and threatened species. In its guidance for implementing Executive Order 12866, OMB acknowledges that it may not be feasible to monetize, or even quantify, the benefits of environmental regulations due to either an absence of defensible, relevant studies or a lack of resources on the implementing agency's part to conduct new research.<sup>27</sup> *Rather than rely on economic measures, the Service believes that the direct benefits of the proposed rule are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.*

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

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

## **1.6 Information Sources**

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

- U.S. Forest Service;
- The Wildlands Conservancy;
- San Bernardino Mountains Land Trust;
- University of Redlands; and
- San Bernardino County Land Use Services Division.

In addition, this analysis relies on the Service's section 7 consultation records and the 2002 Pebble Plains Habitat Management Guide.

---

<sup>27</sup> *Ibid.*

## **1.7 Structure of the Report**

The remainder of the report is organized as follows:

- Chapter 2: Potential Economic Impacts on Unauthorized Vehicle Activities;
- Chapter 3: Potential Economic Impacts of Invasive, Nonnative Plant Species Management;
- Chapter 4: Potential Economic Impacts of Dispersed Recreation Activities Management;
- Chapter 5: Administrative Impacts of Section 7 Consultation;
- Appendix A: Economic Impacts on Small Businesses and Energy Production;
- Appendix B: Incremental Analysis of Critical Habitat Designation for the Pebble Plains Plants;
- Appendix C: Past Economic Impacts; and
- Appendix D: Analysis of Additional Final Critical Habitat Areas.



## Chapter 2: Potential Economic Impacts on Unauthorized Vehicle Activities

In all proposed critical habitat subunits, unauthorized vehicle use was identified as a threat to the PPP and their habitat. The threat of unauthorized vehicle use encompasses many activities. For example, where mining activities are identified in general as a threat to the PPP it is the use of vehicles to access mining claims that specifically threatens the PPP. Additionally, nonnative plant species are able to invade pebble plain habitat when the soil is disturbed; soil disturbance usually occurs through unauthorized off-road vehicles.<sup>28</sup> Therefore, unauthorized vehicle use off of designated roads or trails has been identified as a key threat to the PPP in all areas of proposed critical habitat.<sup>29</sup>

According to the Service's 2001 biological opinion to the USFS regarding pebble plains, off-road vehicle use should be controlled by eliminating unauthorized roads that cut through pebble plains, installing signs and barriers, repairing and maintaining fences and barriers, monitoring road closures and protection measures, increasing law enforcement patrols, and educating the public. Public use of legal roads should be allowed to continue; therefore no lost consumer surplus is anticipated.<sup>30</sup>

This chapter quantifies the economic impact of controlling unauthorized vehicle use in proposed PPP critical habitat. Impacts will be borne primarily by the USFS. PPP conservation efforts were undertaken by private landowners in the past. However, future impacts on landowners other than the USFS are not anticipated because there is no evidence other landowners have undertaken PPP conservation efforts to date or that they will voluntarily do so in the future. Additionally, the Service does not have a legal mechanism or legal requirement to compel the other landowners to undertake conservation efforts. Total future impacts, as shown in Table 4, are estimated to be \$275,233 (present value at a three percent discount rate) over twenty years (2007 – 2026).

### 2.1 United States Forest Service

**Past Impacts:** The USFS has implemented measures to control unauthorized off-highway vehicle (OHV) activity in pebble plain complexes since 1999, the year after the PPP were listed. Measures include installing fences, signs and barriers designed to keep vehicles on designated roads and out of pebble plains habitat, patrolling pebble plain habitat, and ticketing unauthorized vehicle use off of designated roads or trails. Economic

---

<sup>28</sup> Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

<sup>29</sup> 71 FR 67721 - 25.

<sup>30</sup> U.S. Fish and Wildlife Service to Gene Zimmerman, Forest Supervisor, San Bernardino National Forest, Formal Section 7 Consultation for Various Ongoing and Related Activities Affecting Pebble Plains, San Bernardino County, California, February 14, 2001, pp. 4-7.

impacts from 1999 through 2006 were approximately \$18,500 per year, in real dollars, including the cost of labor overhead.<sup>31</sup>

**Future Impacts:** The USFS is expected to maintain control of unauthorized vehicle use on an ongoing basis for an indefinite amount of time for the benefit of the PPP. Ongoing activities are expected to be similar to past actions (e.g. installation and maintenance of fences and signage, and patrolling of the habitat area). The cost per year is anticipated to be \$18,500 which totals \$275,233 over 20 years (present value at a 3 percent discount rate).<sup>32</sup>

## 2.2 Other Landowners

**Past Impacts:** Unit 8a is protected by a conservation easement.<sup>33</sup> In 2002, the Natural Heritage Foundation, which held the conservation easement for Unit 8a at that time, installed fencing and signs to keep unauthorized off-road vehicles out of the pebble plain.<sup>34</sup> Past costs of the installation of the fence and signs around Unit 8a were approximately \$606 in 2002 dollars, based on estimates of fencing and sign material costs from the USFS.<sup>35</sup> According to individuals familiar with PPP and their habitat, Unit 8b was set aside in a conservation easement as mitigation for construction of the Big Bear High School, but the conservation easement was not formerly recorded. A fence was installed around Unit 8b in the late 1980's by The Nature Conservancy and has been maintained by the local community.<sup>36</sup> Past costs of the installation of the fence around Unit 8b are not included in this economic analysis because they occurred prior to the time of listing of the PPP.

**Future Impacts:** As explained above, future impacts on other landowners are not estimated because there is no evidence they are currently undertaking PPP conservation efforts or that they will voluntarily do so in the future, and the Service does not have a legal mechanism to compel the other landowners to undertake conservation efforts.

---

<sup>31</sup> Personal communication from Scott Eliason, USFS District Botanist, May 22, 2007.

<sup>32</sup> This estimate includes the cost of employee overhead, which is assumed to be 150% of the employee's annual salary.

<sup>33</sup> Personal communication from Tim Krantz, associate Professor, University of Redlands, April 20, 2007.

<sup>34</sup> Personal communication from Peter Juris, former Director, San Bernardino Mountains Land Trust, April 20, 2007.

<sup>35</sup> Personal communication from Scott Eliason, USFS District Botanist, May 22, 2007.

<sup>36</sup> Personal communication from Peter Juris, former Director, San Bernardino Mountains Land Trust, April 20, 2007.

<b>Table 4: Impacts on Unauthorized Off-Road Vehicle Management</b>									
		<b>Past Impacts</b>			<b>Future Impacts: 2007-2026</b>				
<b>Entity</b>	<b>PCH Units</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Annualized (3%)</b>	<b>Annualized (7%)</b>
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	\$148,000	\$169,443	\$203,093	\$370,000	\$275,233	\$195,989	\$18,500	\$18,500
TWC	3b	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
BSA	6a	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CDFG	7b	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Private	8a, 8b	\$606	\$702	\$849	\$0	\$0	\$0	\$0	\$0
<b>Total:</b>		<b>\$148,606</b>	<b>\$170,145</b>	<b>\$203,942</b>	<b>\$370,000</b>	<b>\$275,233</b>	<b>\$195,989</b>	<b>\$18,500</b>	<b>\$18,500</b>

Notes:

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

Source:

(1) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.

## Chapter 3: Potential Economic Impacts of Invasive, Nonnative Plant Species Management

According to the proposed rule, invasive, nonnative plant species could out-compete the PPP for habitat in all proposed critical habitat subunits. As a result, the proposed rule indicates that special management may be needed to keep invasive, nonnative plant species from threatening PPP populations.<sup>37</sup> According to the USFS, the best way to control invasive species is to prevent occurrences of soil disturbance because soil disturbance allows invasive plant species to spread to and become established in new areas. Off-road vehicle activity is the dominant contributor to soil disturbance.<sup>38</sup> The cost of controlling off-road vehicles was addressed in Chapter 2; therefore this chapter focuses instead on monitoring and removing invasive plant species.

The Service has recommended that landowners monitor critical habitat for invasive plant species. If, through monitoring, it is found that invasive species are posing a significant threat to the PPP and their habitat, the Service recommends conducting routine removal of the nonnative plants through hand removal.<sup>39</sup>

This chapter quantifies the economic impact of monitoring the proposed critical habitat for the growth of invasive plant species. It then identifies the potential cost of implementing an invasive plant species removal effort if such actions are found to be necessary to conserve the PPP. Impacts are expected to be borne solely by the USFS. Impacts on landowners other than the USFS are not anticipated because there is evidence that other landowners have not undertaken PPP conservation efforts to date and will not voluntarily do so in the future. Additionally, the Service does not have a legal mechanism or legal requirement to compel the other landowners to undertake such efforts. Table 5 summarizes future impacts of invasive, nonnative plant species management. Total future impacts are estimated to be \$1.04 million (present value at a three percent discount rate) over twenty years.

### United States Forest Service

**Past Impacts:** In the Service's 2001 biological opinion to the USFS, it advised the USFS to continue to implement existing pest management projects to avoid significant pest damage to forests and woodlands. The biological opinion recommended inventory and eradication of invasive, nonnative plant species through the use of herbicides, prescribed burning, or direct removal. Additionally, the biological opinion recommended that the USFS "continue alien plant removal in and near pebble plains habitat to

---

<sup>37</sup> 71 FR 67721 - 25

<sup>38</sup> Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

<sup>39</sup> Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007 and 71 FR 67723.

maximize long-term benefits while minimizing short term impacts to pebble plains habitat.” The biological opinion noted that the only efforts made prior to 2001 to control invasive plant species had been the hand pulling of weeds such as cheatgrass.<sup>40</sup> The USFS was unsuccessful at removing invasive nonnative plants through small scale efforts (which had negligible costs) and therefore has not implemented a monitoring and removal project.<sup>41</sup>

**Future Impacts:** This section quantifies the economic costs of monitoring the areas of critical habitat for the next twenty years for the growth and spread of invasive plant species. It also estimates the potential cost of removing invasive plant species from the areas of critical habitat through herbicides, prescribed burning, or direct hand removal.

It is assumed that one employee would be needed to monitor the pebble plain proposed critical habitat for invasive plant species, at a cost of \$20,000 per year,<sup>42</sup> including overhead.<sup>43,44</sup> If invasive, nonnative plant species need to be removed, it is assumed that the removal effort would involve small scale hand-removal and require approximately half of one employee’s time per year.<sup>45</sup> The potential cost of removing invasive, nonnative plant species is \$50,000 per year (undiscounted) including overhead.<sup>46</sup>

---

<sup>40</sup> U.S. Fish and Wildlife Service to Gene Zimmerman, Forest Supervisor, San Bernardino National Forest, Formal Section 7 Consultation for Various Ongoing and Related Activities Affecting Pebble Plains, San Bernardino County, California, February 14, 2001, pp. 18-19.

<sup>41</sup> Personal communication from Scott Eliason, District Botanist, USFS, May 22, 2007.

<sup>42</sup> Personal communication from Scott Eliason, District Botanist, USFS, May 22, 2007 and June 21, 2007.

<sup>43</sup> The cost to the USFS of hiring an employee to monitor the pebble plain proposed critical habitat area is based on estimates made by the USFS of monitoring for unauthorized OHV and dispersed recreation. According to the USFS, one employee monitors all of the environmentally sensitive areas of the San Bernardino National Forest for unauthorized vehicles and dispersed recreation, at an annual salary of \$40,000. This employee also gives citations and carries out other actions necessary to protect the sensitive habitats from these activities. Half of the employee’s time is spent monitoring pebble plain complexes, of which 40 % have been proposed for critical habitat designation. Therefore, the approximate cost to the USFS of managing unauthorized vehicles and dispersed recreation is \$8,000 (40% of one half of \$40,000). Including overhead costs, that figure comes to \$20,000 per year.

<sup>44</sup> Employee overhead costs are assumed to be 150% of employee’s annual salary.

<sup>45</sup> Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007.

<sup>46</sup> Half of one employee’s time is \$20,000 per year. Employee overhead costs are assumed to be 150% of employee’s annual salary.

**Table 5: Impacts of Invasive, Nonnative Plant Species Management**

		Past Impacts	Future Impacts: 2007-2026				
Entity	PCH Units	Undiscounted Value	Undiscounted Value	Present Value (3%)	Present Value (7%)	Annualized (3%)	Annualized (7%)
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a,	\$0	\$400,000	\$297,549	\$211,880	\$20,000	\$20,000
	5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b		\$1,000,000	\$743,874	\$529,701	\$50,000	\$50,000
TWC	3b	\$0	\$0	\$0	\$0	\$0	\$0
BSA	6a	\$0	\$0	\$0	\$0	\$0	\$0
CDFG	7b	\$0	\$0	\$0	\$0	\$0	\$0
Private	8a, 8b	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total:</b>		<b>\$0</b>	<b>\$1,400,000</b>	<b>\$1,041,423</b>	<b>\$741,581</b>	<b>\$70,000</b>	<b>\$70,000</b>

## Notes:

(1) Two dollar figures are presented. The first is the impact of monitoring the spread of invasive plant species. The second is the impact of removing invasive plant species, and will be incurred only if removal is found to be necessary as a result of monitoring.

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

## Sources:

(1) Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007.

(2) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.

## Chapter 4: Potential Economic Impacts of Dispersed Recreation Activities Management

Dispersed recreation is a term used to refer to any camping, hiking, backpacking, equestrian use, mountain biking, and vehicle use off of developed recreation sites. These activities threaten the PPP through increased trampling, soil compaction, and soil disturbance.<sup>47</sup>

The cost of controlling off-road vehicle use has already been addressed in the previous chapter. Therefore, this chapter quantifies the impact of controlling dispersed camping, mountain biking, equestrian activities, and hiking. According to the proposed rule, dispersed recreation activities could threaten the PPP and their habitat in all of the subunits except 3a and 3b.<sup>48</sup>

In the Service's biological opinion to the USFS in 2001, it recommended continuing to maintain and administer the existing level and distribution of dispersed recreational use, but to implement impact avoidance and minimization measures such as 1) closing off high-use undesignated camp sites and walking areas with fencing; 2) posting "Stay on Trail" signs in dispersed recreation areas; 3) channeling visitors away from pebble plains without eliminating access to recreation sites; 4) working with adjacent landowners to control land use in pebble plains; and 5) increasing awareness of pebble plains habitat through information brochures, seasonal exhibits and school programs.<sup>49</sup> Because the Service's biological opinion recommends maintaining the existing level and distribution of dispersed recreation, lost consumer surplus from reduced recreation opportunities is not considered in this analysis.

This chapter quantifies the economic impact of implementing actions to protect the PPP from dispersed recreation activities.<sup>50</sup> Impacts are expected to be borne solely by the USFS. Impacts on other landowners are not anticipated because there is no evidence that other landowners have undertaken efforts to control dispersed recreation to date or that they will voluntarily do so in the future. Additionally, the Service does not have a legal mechanism or legal requirement to compel the other landowners to undertake conservation efforts. Total future impacts, which are summarized in Table 6, are estimated to be \$22,316 (present value at a three percent discount rate) over twenty years.

---

<sup>47</sup> Personal communication from Scott Eliason, District Botanist, USFS, April 6, 2007.

<sup>48</sup> *Ibid.*

<sup>49</sup> U.S. Fish and Wildlife Service to Gene Zimmerman, Forest Supervisor, San Bernardino National Forest, Formal Section 7 Consultation for Various Ongoing and Related Activities Affecting Pebble Plains, San Bernardino County, California, February 14, 2001, p 9-12.

<sup>50</sup> This analysis does not calculate lost surplus because the Service does not anticipate preventing recreational activities, just managing the recreational activities in a way that minimizes impacts to PPP.

## United States Forest Service

**Past Impacts:** The USFS has undertaken projects to protect the PPP from dispersed recreation activities. In Unit 2, the USFS has installed fencing along trails to prevent further encroachment into the pebble plain, established alternate paths, relocated annual bicycle races to other sites, and closed the Snow Summit Ski Area.<sup>51</sup> In Unit 5, the USFS has permanently closed roads and conducted area patrols.<sup>52</sup> In Units 8, 9, 10, and 11, the USFS has posted signs to keep hikers out of sensitive habitat.<sup>53</sup> Total past costs to the USFS associated with controlling dispersed recreation activities are \$13,739 (present value at a three percent discount rate), which includes the cost of labor, overhead, and materials.<sup>54</sup> The pebble plains plants were listed in September of 1998 and the USFS began activities to conserve the PPP in 1999.<sup>55</sup>

**Future Impacts:** Future actions, including patrolling pebble plain habitat and maintaining fences, signs, and barriers, are expected to be similar to the actions taken in the past. Total future costs are also expected to be \$1,500 per year, or \$22,316 over 20 years (present value at a three percent discount rate).

---

<sup>51</sup> 71 FR 67722.

<sup>52</sup> 71 FR 67723.

<sup>53</sup> 71 FR 67724-25.

<sup>54</sup> Past cost estimates from the USFS were provided in 2007 dollars. Costs were deflated using the average national CPI (<http://www.bls.gov/cpi>) for the years 1999 – 2006.

<sup>55</sup> Personal communication with Scott Eliason, USFS District Botanist, May 22, 2007.



<b>Table 6: Impacts of Dispersed Recreation Management</b>									
		<b>Past Impacts</b>			<b>Future Impacts: 2007-2026</b>				
<b>Entity</b>	<b>PCH Unit</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Annualized (3%)</b>	<b>Annualized (7%)</b>
USFS	1a, 1b, 2a, 2b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a,	\$12,000	\$13,739	\$16,467	\$30,000	\$22,316	\$15,891	\$1,500	\$1,500
BSA	6a	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CDFG	7b	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Private	8a, 8b	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<b>Total:</b>		<b>\$12,000</b>	<b>\$13,739</b>	<b>\$16,467</b>	<b>\$30,000</b>	<b>\$22,316</b>	<b>\$15,891</b>	<b>\$1,500</b>	<b>\$1,500</b>

Notes:

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

Source:

(1) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.

## Chapter 5: Administrative Impacts of Section 7 Consultation

The USFS has consulted with the Service in the past regarding USFS activities and their effects on pebble plains, and the Land and Resource Management Plan for the San Bernardino National Forest. Additionally, the USFS created the Pebble Plain Habitat Management Guide as a commitment of the consultation with the Service regarding USFS effects on pebble plains. In 2007, the consultation with the Service regarding the Land and Resource Management Plan for the San Bernardino National Forest (forest plan) was reinitiated due to updates to the forest plan. In the future, it is expected that the USFS consultation with the Service regarding the forest plan will be reinitiated due to critical habitat designation for the PPP.

Federal nexuses do not exist in other areas of proposed critical habitat. Therefore, other landowners are not expected to be affected by section 7 consultations with the Service.

This chapter quantifies the economic impact of administrative impacts resulting from section 7 consultation. Table 7 summarizes the administrative impacts. Total future impacts are estimated to be about \$3,593 (present value at a three percent discount rate) over twenty years.

### United States Forest Service

**Past Impacts:** The USFS incurred administrative costs in 2000 related to formal section 7 consultation with the Service for ongoing and related activities affecting pebble plains. As a result of that consultation, the USFS prepared the Pebble Plain Habitat Management Guide, which was published in 2002. In 2005, the USFS revised the forest plan and consulted with the Service. When the forest plan was updated a few years later, the Service re-initiated consultation with the USFS. The cost to the USFS of completing section 7 consultations in the past are presented in Table 7 below.<sup>56</sup>

**Future Impacts:** When critical habitat for the PPP is designated, it is anticipated that the consultation with the USFS regarding the forest plan will be reinitiated, resulting in administrative impacts to the USFS. The outcome of the consultation re-initiation, however, is not expected to add additional conservation efforts to the activities undertaken by the USFS.<sup>57</sup> Future administrative impacts of consultation re-initiation are presented in Table 7 below.

---

<sup>56</sup> Personal communication with Scott Eliason, USFS District Botanist, May 22, 2007.

<sup>57</sup> Electronic communication with Tannika Engelhard, Biologist, US Fish and Wildlife Service, October 2, 2007.

<b>Table 7: Administrative Impacts of Section 7 Consultation</b>										
			<b>Past Impacts</b>			<b>Future Impacts: 2007-2026</b>				
<b>Entity</b>	<b>PCH Units</b>	<b>Activity</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Annualized (3%)</b>	<b>Annualized (7%)</b>
USFS	1a, 1b, 2a, 2b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	Consultation RE: Pebble Plains	\$10,400	\$12,791	\$16,700	\$0	\$0	\$0	\$0	\$0
		Pebble Plains Habitat Management Guide	\$5,320	\$6,167	\$7,462	\$0	\$0	\$0	\$0	\$0
		Consultation RE: Forest Plan Revision	\$5,120	\$5,432	\$5,862	\$0	\$0	\$0	\$0	\$0
		Re-initiate Consultation RE: Forest Plan	\$3,700	\$3,700	\$3,700	\$3,700	\$3,593	\$3,458	\$3,701	\$3,701
<b>Total:</b>			<b>\$24,540</b>	<b>\$28,090</b>	<b>\$33,724</b>	<b>\$3,700</b>	<b>\$3,593</b>	<b>\$3,458</b>	<b>\$3,701</b>	<b>\$3,701</b>
Notes:										
(1) Guidance provided by the OMB specifies the use of a real discount rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 Federal Register 5492, February 3, 2003).										
Source:										
(1) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.										

## **Appendix A: Incremental Analysis of Critical Habitat Designation for the Pebble Plains Plants**

This appendix estimates the potential incremental impacts of critical habitat designation for the Pebble Plains Plants (PPP). It does so by attempting to isolate those direct and indirect impacts that are expected to be triggered specifically by the critical habitat designation. That is, the incremental conservation efforts and associated impacts included in this appendix would not be expected to occur absent the designation of critical habitat for the species.

As described in section A.3 of this appendix, the incremental impacts of critical habitat designation for the PPP are estimated to be approximately \$3,593 (present value at a three percent discount rate). These incremental impacts are associated with costs above and beyond those impacts expected to occur due to the listing of the species. All remaining impacts quantified in Chapters 2 through 5 of this report are forecast to occur regardless of critical habitat designation for the PPP.

### **A.1 Background**

The U.S. Office of Management and Budget's (OMB) guidelines for conducting an economic analysis of regulations direct Federal agencies to measure the costs of a regulatory action against a baseline, which it defines as the "best assessment of the way the world would look absent the proposed action."<sup>58</sup> In other words, the baseline includes the existing regulatory and socio-economic burden imposed on landowners, managers, or other resource users potentially affected by the designation of critical habitat. Impacts that are incremental to that baseline (i.e., occurring over and above existing constraints) are attributable to the proposed regulation. Significant debate has occurred regarding whether assessing the impacts of the Service's proposed regulations using this baseline approach is appropriate in the context of critical habitat designations.

In 2001, the U.S. Tenth Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of proposed critical habitat, regardless of whether those impacts are attributable coextensively to other causes.<sup>59</sup> Specifically, the court stated

"The statutory language is plain in requiring some kind of consideration of economic impact in the CHD phase. Although 50 C.F.R. 402.02 is not at issue here, the regulation's definition of the jeopardy standard as fully encompassing the adverse modification standard renders any purported economic analysis done utilizing the baseline approach virtually meaningless. We are compelled by the canons of statutory interpretation to give some effect to the congressional directive that economic impacts be considered at the time of critical habitat designation.... Because economic analysis done using the FWS's baseline model

---

<sup>58</sup> OMB, "Circular A-4," September 17, 2003.

<sup>59</sup> *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F. 3d 1277 (10<sup>th</sup> Cir. 2001).

is rendered essentially without meaning by 50 C.F.R. § 402.02, we conclude Congress intended that the FWS conduct a full analysis of all of the economic impacts of a critical habitat designation, regardless of whether those impacts are attributable coextensively to other causes. Thus, we hold the baseline approach to economic analysis is not in accord with the language or intent of the ESA.”<sup>60</sup>

Since that decision, however, courts in other cases have held that an incremental analysis of impacts stemming solely from the critical habitat rulemaking is proper.<sup>61</sup> For example, in the March 2006 court order ruling that the August 2004 critical habitat rule for the Peirson's milk-vetch was arbitrary and capricious, the United States District Court for the Northern District of California stated,

“The Court is not persuaded by the reasoning of *New Mexico Cattle Growers*, and instead agrees with the reasoning and holding of *Cape Hatteras Access Preservation Alliance v. U.S. Dep’t of the Interior*, 344 F. Supp 2d 108 (D.D.C. 2004). That case also involved a challenge to the Service’s baseline approach and the court held that the baseline approach was both consistent with the language and purpose of the ESA and that it was a reasonable method for assessing the actual costs of a particular critical habitat designation *Id* at 130. ‘To find the true cost of a designation, the world with the designation must be compared to the world without it.’”<sup>62</sup>

In order to address the divergent opinions of the courts and provide the most complete information to decision-makers, this economic analysis reports both: a) the fully coextensive impacts associated with the proposed critical habitat designation (in Chapters 2-5 of the report); and b) the impacts that are identified as incremental to the rulemaking, precipitated specifically by the designation of critical habitat for the species (in this appendix).

Until a new regulation is adopted to define “destruction or adverse modification,” incremental effects of critical habitat designation are determined using the Service's December 9, 2004 interim guidance on “Application of the ‘Destruction or Adverse Modification’ Standard Under Section 7(a)(2) of the Endangered Species Act” and information from the Service regarding what potential consultations and project modifications would be imposed as a result of critical habitat designation over and above those associated with the listing.<sup>63</sup> The following section describes the methods employed

---

<sup>60</sup> *New Mexico Cattle Growers Assn v. United States Fish and Wildlife Service*, 248 F.3d 1277 (10<sup>th</sup> Cir. 2001).

<sup>61</sup> *Cape Hatteras Access Preservation Alliance v. Department of Interior*, 344 F. Supp. 2d 108 (D.D.C.); *CBD v. BLM*, 422 F. Supp. 2d 1115 (N.D. Cal. 2006).

<sup>62</sup> Center for Biological Diversity et al, Plaintiffs, v. Bureau of Land Management et al, Defendants and American Sand Association, et al, Defendant Intervenors. Order re: Cross Motions for Summary Judgment. Case 3:03-cv-02509 Document 174 Filed 03/14/2006. Pages 44-45.

<sup>63</sup> Director, U.S. Fish and Wildlife Service, Memorandum to Regional Directors and Manager of the California-Nevada Operations Office, Subject: Application of the “Destruction or Adverse Modification” Standard under Section 7(a)(2) of the Endangered Species Act, dated December 9, 2004.

to identify incremental impacts anticipated to result from the designation of critical habitat.

## **A.2 Framework for the Incremental Analysis**

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

### **A.2.1 Defining the Baseline**

The baseline for this incremental analysis is the existing state of regulation, prior to the designation of critical habitat that provides protection to the species under the Act, as well as under other Federal, State and local laws. Section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species. The administrative costs of consultations under the jeopardy standard, along with the impacts of project modifications resulting from these consultations, are considered baseline impacts.

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

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

When critical habitat is designated, section 7 requires Federal agencies to ensure that their actions will not result in the destruction or adverse modification of critical habitat (in addition to considering whether the actions are likely to jeopardize the continued

existence of the species). The added administrative costs of including consideration of critical habitat in section 7 consultations, and the additional impacts of implementing project modifications resulting from the protection of critical habitat are the direct compliance costs of designating critical habitat. These costs are not in the baseline, and are considered incremental impacts of the rulemaking.

### **A.2.2 Quantifying Incremental Economic Impacts**

The incremental impacts of the proposed critical habitat designation are a subset of the coextensive economic impacts quantified in Chapters 2-5 of this analysis. Incremental impacts may be the direct compliance costs associated with additional effort for forecast consultations, reinitiated consultations, new consultations occurring specifically because of the designation, and additional project modifications that would not have been required under the jeopardy standard. Additionally, incremental impacts may include indirect impacts resulting from reaction to the potential designation of critical habitat (e.g., developing habitat conservation plans (HCPs) specifically to avoid designation of critical habitat), triggering of additional requirements under State or local laws intended to protect sensitive habitat, and uncertainty and perceptual effects on markets.

#### Direct Impacts

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

#### Administrative Section 7 Consultation Costs

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

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

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

**Re-initiation of consultation to address adverse modification** - Consultations that have already been completed on a project or activity may require re-initiation to address critical habitat. In this case, the costs of re-initiating the consultation, including all associated administrative and project modification costs are considered incremental impacts of the designation.

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

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

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

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

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

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

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



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

The cost model in Table A-2 presents the estimated incremental costs of consultation for each of the three categories of consultation described above. Importantly, the estimated costs represent the midpoint of the ranges in Table A-1 to account for variability regarding levels of effect of specific consultation.<sup>64</sup>

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

<b>Consultation Type</b>	<b>Service</b>	<b>Federal Agency</b>	<b>Third Party</b>	<b>Biological Assessment</b>
<i>Incremental consultation resulting entirely from critical habitat designation</i>				
Informal	\$2,250	\$2,900	\$2,050	\$2,000
Formal	\$5,050	\$5,750	\$3,500	\$4,800
<i>Re-initiation of consultation to address adverse modification</i>				
Informal	\$1,120	\$1,450	\$1,020	\$1,000
Formal	\$2,520	\$2,870	\$1,750	\$2,400
<i>Additional effort to address adverse modification in a new consultation</i>				
Informal	\$560	\$725	\$510	\$500
Formal	\$1,260	\$1,430	\$875	\$1,200
Note: Estimates reflect average hourly time required by staff. Source: IEc analysis of full administrative costs is based on data from the Federal Government Schedule Rates, Office of Personnel Management, 2006, and a review of consultation records from several Service field offices across the country conducted in 2002.				

### Section 7 Project Modification Impacts

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

<sup>64</sup> Absent specific information on the probability that a consultation will be closer to the low or high end of the range, presenting the midpoint effectively assumes there is an even distribution of the consultation falling at any given point on the spectrum between the low-end cost and high-end cost.

**Additional effort to address adverse modification in a new consultation -**

Only project modifications associated solely with avoiding, compensating for, or mitigating adverse modification are considered incremental.

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

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

Indirect Impacts

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

Habitat Conservation Plans

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

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

Other State and Local Laws

Under certain circumstances, critical habitat designation may provide new information to a community about the sensitive ecological nature of a geographic region, potentially triggering additional economic impacts under other State or local laws. In cases where these impacts would not have been triggered absent critical habitat designation, they are considered indirect, incremental impacts of the designation.

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

As an additional example, the California Coastal Act restricts development in an environmentally sensitive habitat area (ESHA). This code specifically states, “Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.”<sup>65</sup>

#### Additional Indirect Impacts

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

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

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

**Stigma** - In some cases, the public may perceive that critical habitat designation may result in limitations on private property uses above and beyond those

---

<sup>65</sup> California Public Resources Code Section 30240, accessed at: <http://law.justia.com/california/codes/prc/30240-30244.html>, on September 7, 2007.

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

### A.3 Incremental Analysis of Critical Habitat for the PPP

Table A-3 summarizes the impacts that are considered to be incremental, according to the framework described above. Total incremental impacts of critical habitat designation are forecast to be \$3,593 (present value at a three percent discount rate). When critical habitat for the PPP is designated, it is anticipated that the consultation with the USFS regarding the forest plan will be reinitiated, resulting in administrative impacts to the USFS. The outcome of the consultation re-initiation, however, is not expected to add additional conservation efforts to the activities currently undertaken by the USFS for the PPP as part of the forest plan.<sup>66</sup> Re-initiation of the consultation is not expected to occur, absent critical habitat designation. Therefore, the administrative costs of re-initiation are considered incremental to the proposed rule. These impacts can be attributed to the units where the USFS manages the land (1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b).

<b>Impacted Entity</b>	<b>Description of Coextensive Impact (Chapters 2-5)</b>	<b>Baseline Impact (PV, 3%)</b>	<b>Incremental Impact (PV, 3%)</b>	<b>Reason</b>
USFS	Re-initiation of Consultation regarding the Forest Plan	\$3,593	\$3,593	Re-initiation expected to be undertaken due to critical habitat designation
<b>Total</b>		<b>\$3,593</b>	<b>\$3,593</b>	
Source: Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.				

<sup>66</sup> Electronic communication with Tannika Engelhard, Biologist, US Fish and Wildlife Service, October 2, 2007.

## Appendix B: Economic Impacts on Small Businesses and Energy Production

This appendix considers the extent to which the analytic results presented in the previous sections reflect potential future impacts to small entities and the energy industry. The screening analysis presented in this appendix is conducted pursuant to the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) in 1996. Information for this analysis was gathered from the Small Business Administration (SBA), U.S. Census Bureau, and the Risk Management Association (RMA). The energy analysis in section B.2 is conducted pursuant to Executive Order No. 13211.

### B.1 SBREFA Analysis

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

To assist in this process, the following represents a screening level analysis of the potential for PPP conservation efforts to affect small entities. The analysis is based on the estimated incremental impacts associated with the proposed rulemaking as described in Appendix A of the analysis. As described in Appendix A, only one entity may potentially be affected by critical habitat for the PPP. The following table identifies the land manager that may be affected by the proposed rule and presents the criteria for meeting SBA's definition of a small entity.

Table B-1: Identification of Small Entities		
Entity	Criteria	Small (Yes / No)
USFS	Governments of cities, counties, towns, townships, villages, school districts, or special districts with a population of less than 50,000	No
Source: SBA size standards for governments and not-for-profit enterprises taken from SBA, Office of Advocacy, <i>A Guide for Government Agencies: How to Comply with the Regulatory Flexibility Act</i> , May 2003, p. 12.		

The U.S. Forest Service is not considered a small entity by the SBA. Therefore no small entities are expected to be impacted by the proposed rule.

### B.2 Potential Impacts to the Energy Industry

Pursuant to Executive Order No. 13211, "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use," issued May 18, 2001, Federal agencies must prepare and submit a "Statement of Energy Effects" for all "significant energy actions." The purpose of this requirement is to ensure that all Federal agencies "appropriately weigh and

consider the effects of the Federal Government's regulations on the supply, distribution, and use of energy."<sup>67</sup>

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

- Reductions in crude oil supply in excess of 10,000 barrels per day (bbls);
- Reductions in fuel production in excess of 4,000 barrels per day;
- Reductions in coal production in excess of 5 million tons per year;
- Reductions in natural gas production in excess of 25 million Mcf per year;
- Reductions in electricity production in excess of 1 billion kilowatt-hours per year or in excess of 500 megawatts of installed capacity;
- Increases in energy use required by the regulatory action that exceed the thresholds above;
- Increases in the cost of energy production in excess of one percent;
- Increases in the cost of energy distribution in excess of one percent; or
- Other similarly adverse outcomes.<sup>68</sup>

As none of the criteria is relevant to this analysis, energy-related impacts associated with conservation efforts within the proposed critical habitat are not expected.

---

<sup>67</sup> Memorandum For Heads of Executive Department Agencies, and Independent Regulatory Agencies, Guidance for Implementing E.O. 13211, M-01-27, Office of Management and Budget, July 13, 2001, <http://www.whitehouse.gov/omb/memoranda/m01-27.html>.

<sup>68</sup> *Ibid.*

## Appendix C: Past Economic Impacts

This appendix summarizes past economic impacts. Past costs are the costs of efforts to conserve the PPP in the areas of proposed critical habitat between the time they were listed in 1998 and the year in which final designation of critical habitat is anticipated (2007). Past costs were calculated by interviewing the affected entities within critical habitat to determine if any resources had been expended on management, consultation with the Service, or other activities intended to conserve the species. Past costs also include the value of any lost economic opportunities attributable to listing. A summary of past economic impacts are presented in the table below.

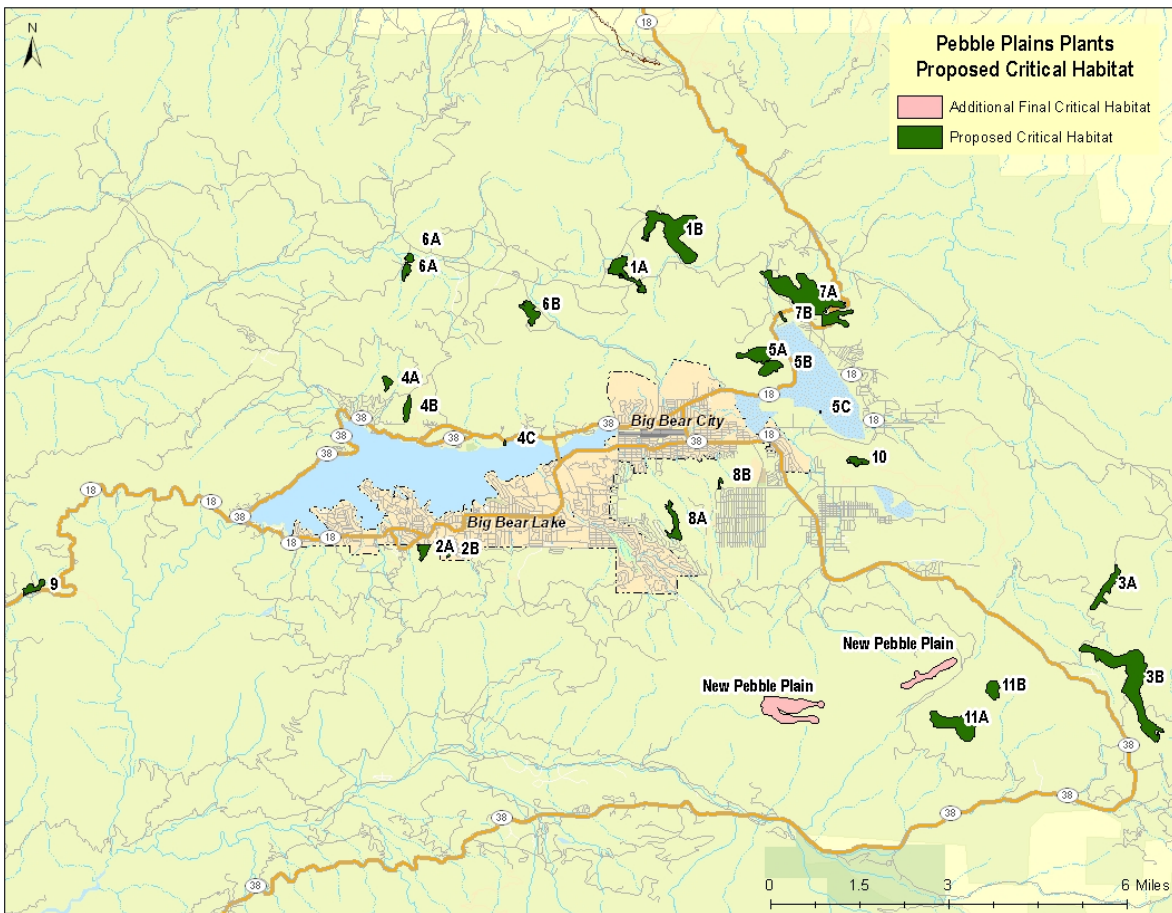
		<b>Past Costs</b>		
<b>Landowner</b>	<b>PCH Units</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>
USFS	1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 7a, 8a, 9, 10, 11a, 11b	\$184,540	\$211,272	\$253,284
TWC	3b	\$0	\$0	\$0
BSA	6a	\$0	\$0	\$0
CDFG	7b	\$0	\$0	\$0
Private	8a, 8b	\$606	\$702	\$849
<b>Total:</b>		<b>\$185,146</b>	<b>\$211,974</b>	<b>\$254,133</b>
Notes: (1) Guidance provided by the OMB specifies the use of a real discount rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 Federal Register 5492, February 3, 2003).				

## Appendix D: Analysis of Additional Final Critical Habitat Areas

The Service is adding an additional 266 acres to the final critical habitat designation for the Pebble Plains Plants. Because these 266 acres were not included in the Proposed Rule, they are not considered in Chapters 2 through 5 of the Final Economic Analysis. The economic impacts of including this land in the final critical habitat are discussed in this addendum.

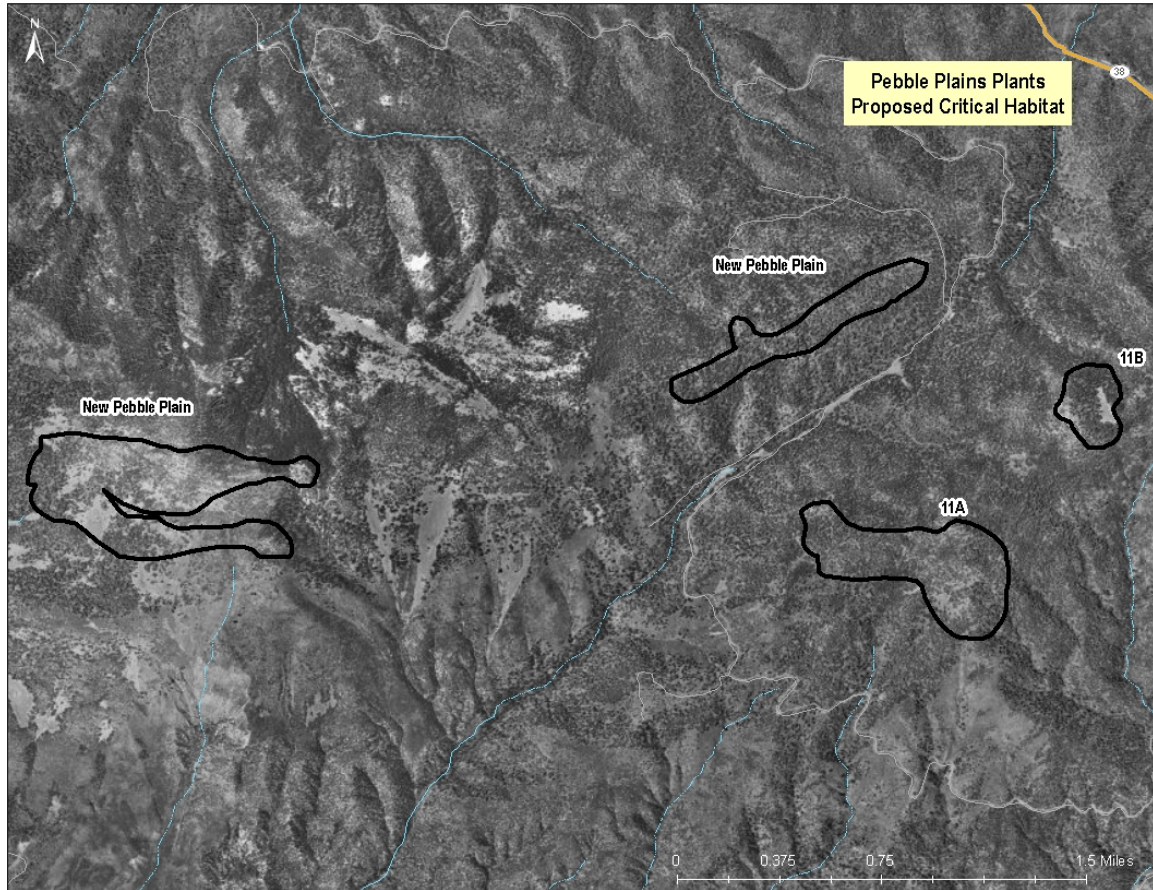
These 266 acres are divided into two pebble plain ecosystems near proposed critical habitat Unit 11. All of these 266 acres are Federally owned and managed by the United States Forest Service (USFS). Figure D-1 shows the additional final critical habitat areas in relation to the eleven originally proposed critical habitat units. Figure D-2 depicts the aerial image of the areas added in the final rule to those proposed in the proposed rule.

**Figure D-1: Critical Habitat Areas**





**Figure D-2: Land Use in Additional Final Critical Habitat Areas**



### **Impacts on the United States Forest Service**

This analysis assumes that management activities in the additional final critical habitat areas are similar to nearby land managed by the USFS. The USFS has undertaken conservation efforts in all PPP ecosystems in the San Bernardino National Forest since 1999, the year after the PPP were listed. The USFS expects to maintain conservation efforts on an ongoing basis for an indefinite amount of time for the benefit of the PPP.<sup>69</sup>

Conservation activities to manage unauthorized vehicle activities include eliminating unauthorized roads, installing signs and barriers, repairing and maintaining fences and barriers, monitoring road closures and protection measures, increasing law enforcement patrols, and educating the public.

Management actions to control dispersed recreation activities include closing off high-use undesignated camp sites and walking areas with fencing, posting “Stay on Trail” signs in dispersed recreation areas, channeling visitors away from pebble plains without

<sup>69</sup> Personal communication from Scott Eliason, USFS District Botanist, May 22, 2007.

eliminating access to recreation sites, working with adjacent landowners to control land use in pebble plains, and increasing awareness of pebble plains habitat through information brochures, seasonal exhibits and school programs.

In addition, the Service has recommended that the USFS monitor PPP habitat for the growth and spread of invasive plant species.<sup>70</sup> If, through monitoring, it is found that invasive species are posing a significant threat to the PPP and their habitat, the Service recommends conducting routine removal of the nonnative plants through hand removal.<sup>71</sup>

Table D-1 summarizes the impacts associated with the additional areas proposed for critical habitat designation. As described in Appendix A of this report, these impacts are all considered baseline impacts that are not expected to be affected by the designation of critical habitat. Each of these USFS conservation efforts have been undertaken since the 2002 consultation regarding the management of these lands. This analysis does not forecast any incremental impacts of critical habitat designation on the addition of these 266 acres to the final critical habitat designation.

---

<sup>70</sup> U.S. Fish and Wildlife Service to Gene Zimmerman, Forest Supervisor, San Bernardino National Forest, Formal Section 7 Consultation for Various Ongoing and Related Activities Affecting Pebble Plains, San Bernardino County, California, February 14, 2001, pp. 18-19.

<sup>71</sup> Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007 and 71 FR 67723.

<b>Table D-1: Impacts on the US Forest Service of PPP Conservation Efforts in Additional Final Critical Habitat Areas</b>								
	<b>Past Impacts</b>			<b>Future Impacts: 2007-2026</b>				
<b>Activity</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Undiscounted Value</b>	<b>Present Value (3%)</b>	<b>Present Value (7%)</b>	<b>Annualized (3%)</b>	<b>Annualized (7%)</b>
Unauthorized off-road vehicle management	\$28,000	\$32,000	\$39,000	\$70,000	\$52,000	\$37,000	\$3,500	\$3,500
Invasive plant species monitoring	\$0	\$0	\$0	\$76,000	\$57,000	\$40,000	\$3,800	\$3,800
Invasive plant species removal	\$0	\$0	\$0	\$190,000	\$142,000	\$101,000	\$9,500	\$9,500
Dispersed recreation management	\$2,000	\$3,000	\$3,000	\$6,000	\$4,000	\$3,000	\$300	\$300
<b>Total</b>	<b>\$30,000</b>	<b>\$35,000</b>	<b>\$42,000</b>	<b>\$342,000</b>	<b>\$255,000</b>	<b>\$181,000</b>	<b>\$17,100</b>	<b>\$17,100</b>

Notes:  
(1) Removing invasive plant species will occur only if found necessary as a result of monitoring.  
(2) Guidance provided by the OMB specifies the use of a real discount rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates such as three percent, which some economists believe better reflects the social rate of time preference. (U.S. Office of Management and Budget, Circular A-4, September 17, 2003 and U.S. Office of Management and Budget, "Draft 2003 Report to Congress on the Costs and Benefits of Federal Regulations; Notice," 68 Federal Register 5492, February 3, 2003).

Sources:  
(1) Personal communication from Tannika Engelhard, Biologist, US Fish and Wildlife Service, April 11, 2007.  
(2) Personal communication from Scott Eliason, District Botanist, USFS, May 22 2007.