

**Low-Effect Habitat Conservation Plan for the Mount Hermon June Beetle,  
the Ben Lomond Wallflower, and the Ben Lomond Spineflower,  
at Bean Creek Estates,  
a 13-unit residential development site (APN 022-631-22),  
Located on Bean Creek Road in Scotts Valley, Santa Cruz County, California**

*Prepared for:*  
**Mr. Tom Masters  
28225 Robinson Canyon Road  
Carmel, CA 93923  
(831) 625-0413**

*Prepared by:*  
**Richard A. Arnold, Ph.D.  
Entomological Consulting Services, Ltd.  
104 Mountain View Court  
Pleasant Hill, CA 94523-2188  
(925) 825-3784**

**and**

**Kathy Lyons  
Biotic Resources Group  
2551 So. Rodeo Gulch Road, Suite 12  
Soquel, CA 95073-2057  
(831) 476-4803**

**and**

**Todd Graff and Norman Schwartz  
Bolton Hill Company, Inc.  
303 Potrero Street, Suite 42-204  
Santa Cruz, CA 95060  
(831) 457-8696**

**Revised Draft  
March 2007**

## EXECUTIVE SUMMARY

Mr. Tom Masters (“Applicant”) has applied for a permit pursuant to section 10 (a)(1)(B) of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884) (ESA), as amended, from the U.S. Fish and Wildlife Service (the Service) for the incidental take of the endangered Mount Hermon June beetle (*Polyphylla barbata*). In addition, Mr. Masters is requesting that the Service include the Ben Lomond Wallflower (*Erysimum teretifolium*), and the Ben Lomond Spineflower (*Chorizanthe pungens* var. *hartwegiana*) on the incidental take permit, but that the permit is not being sought for incidental take of these two plant taxa. The potential taking would occur incidental to development of 13 single-family residences at an undeveloped, 18.07-acre parcel (APN 022-631-22) owned by the Applicant and located on Bean Creek Road in Scotts Valley (Santa Cruz, County), CA. This residential development project is known as Bean Creek Estates. Because of the Zayante sandy soils that characterize much of Scotts Valley and the surrounding communities, this portion of the Santa Cruz Mountains is referred to as the “Zayante sandhills”.

The proposed impact area where development would occur at the parcel measures 4.07 acres, which includes the footprint of the 13 new single-family residences and other planned improvements, including the streets and driveways serving the residences, utility hookups, retaining walls, and landscaping. Development of this portion of the project site will result in the loss of 4.07 acres of Mixed Evergreen Forest. The majority of the remaining site, 14.0 acres, supports Coast Range Ponderosa Pine Forest, Mixed Evergreen Forest, and Riparian Woodland, and will be protected via a recorded conservation easement held by the Center for Natural Lands Management. The new habitat preserve will henceforth be known as the Bean Creek Estates Preserve. Within this habitat preserve an estimated 0.08 acres will also be permanently impacted. An additional estimated 1.59 acres of temporary impacts will occur within the habitat preserve, including 0.19 acres that will be revegetated and about 1.4 acres that are two Fuel Management Areas approved by the Scotts Valley Fire District, where shrubs and trees will be periodically pruned. Thus, of the 18.07 acres comprising the parcel, a total of 4.15 acres will be permanently impacted and 1.59 acres will be temporarily impacted.

Within the 18.07 HCP area, 5.5 acres of Coast Range Ponderosa Pine Forest function as breeding habitat for the MHJB and 11.97 acres of Mixed Evergreen Forest function as dispersal habitat. A total of 5.64 acres of MHJB habitat will be permanently removed, including 0.60 acre of breeding habitat and 5.04 acres of dispersal habitat.

BLW and BLS are both restricted to approximately 0.012 acre within the Coast Range Ponderosa Pine Forest. Potential impacts to BLS may occur on approximately 0.002 acre. BLW is not expected to suffer any direct impacts or loss of habitat due to construction, but might possibly be impacted by future habitat management activities.

Adults of the Mount Hermon June beetle (MHJB) were first observed at the project site during a presence-absence survey for the beetle that was conducted in 1999. A second survey was performed during 2002 to assist with site planning. Small populations of the Ben Lomond Wallflower (BLW) and Ben Lomond Spineflower (BLS) also occur at the property. Residential development of the parcel will result in direct or indirect impacts to these three endangered taxa.

As a result of these anticipated impacts, the Applicant has applied for a section 10 (a)(1)(B) incidental take permit and proposes to implement this HCP as described herein, which provides measures for minimizing and mitigating adverse effects on the endangered MHJB, BLW, and BLS. The Applicant requests that the section 10 (a)(1)(B) permit be issued for a period of six years.

This HCP summarizes the project and identifies the responsibilities of the Service, the City of Scotts Valley, Tom Masters and his successors and assigns, the homeowners' association, and the Center for Natural Lands Management for the 18.07-acre HCP plan area. The biological goals of this HCP are to:

- a) protect in perpetuity a 14.0-acre portion of the HCP plan area, known as the habitat preserve, and consisting of a mixture of Coast Range Ponderosa Pine Forest, Mixed Evergreen Forest, and Riparian Woodland habitats, and occupied by the MHJB, BLW, and BLS, via a recorded conservation easement with the Center for Natural Lands Management;
- b) manage the habitat preserve in a manner that supports populations of the MHJB, BLW, and BLS; and
- c) undertake various measures during grading and construction activities at the HCP plan area to minimize impacts to the three endangered species and their habitats.

A lump sum payment for initial and capital costs, as well as the endowment, will be paid directly to the Center for Natural Lands Management to fund habitat protection and management activities, as well as monitoring of the endangered species.

This HCP also describes measures that will be implemented by the Applicant to minimize and mitigate impacts of the project on the MHJB, BLW, and BLS and their habitats and to further the conservation of these species. These measures include:

- a) dust control during grading;
- b) use of non-insect attracting light bulbs in street lights and exterior light fixtures on the new residences;
- c) construction fencing during grading and construction activities and permanent fencing upon completion of the project to protect the 14.0-acre habitat preserve that will be established at the HCP plan area;
- d) removal of garbage and debris from the 14.0 acre habitat preserve;
- e) removal and control of exotic plants at the 14.0 acre habitat preserve;
- f) maintenance of indigenous sandhill plants in the habitat preserve of the HCP plan area;
- g) collection of seed of the BLS growing within the impact area;
- h) within the habitat preserve, restoration of the native plant communities where temporary impacts occur, such as trenching for construction of the storm drain, utility hookups, and storm drain outlet and energy dissipater;
- i) implementation of a fuel management plan to minimize the chance of catastrophic fire events;
- j) placement of a permanent conservation easement on 14.0 acres of prime sandhills habitat within the habitat preserve at the HCP plan area; and
- k) monitoring of the three covered species at the habitat preserve during the duration of

the incidental take permit and in perpetuity.

The net effect of these measures is that 14.0 acres of Coast Range Ponderosa Pine forest, Mixed Evergreen Forest, and Riparian Woodland will be protected in perpetuity to benefit the endangered beetle, wallflower, and spineflower. The HCP also describes measures to ensure that the elements of the HCP are implemented in a timely manner. Funding sources for implementation of the HCP, actions to be taken for changed circumstances and unforeseen events, alternatives to the proposed project, and other measures required by the Service are also discussed.

# TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	i
<b>TABLE OF CONTENTS</b>	iv
<b>LIST OF TABLES AND FIGURES</b>	viii
<b>COVER PHOTO CREDITS</b>	viii
<b>1.0 INTRODUCTION</b>	1
1.1 Project Location	1
1.2 Project Site	2
1.3 History of the HCP Process	2
<b>2.0 PROJECT DESCRIPTION AND AREA</b>	4
2.1 Project Description	4
2.2 Permit Holder/Permit Boundary	6
2.3 Surrounding Land Uses	6
<b>3.0 REGULATORY FRAMEWORK</b>	7
3.1 Federal Endangered Species Act of 1973	7
3.1.1 Section 10 Permit Process and HCP Requirements	8
3.2 National Environmental Policy Act of 1969	10
3.3 National Historic Preservation Act	10
3.4 California Environmental Quality Act	11
3.5 California Endangered Species Act	11
3.6 Scotts Valley Fire District	11
3.7 City of Scotts Valley	11
<b>4.0 BIOLOGY</b>	12
4.1 Habitats	12
4.1.1 Coast Range Ponderosa Pine Forest	12
4.1.2 Mixed Evergreen Forest	13
4.1.3 Riparian Woodland	14
4.2 Covered Species: Mount Hermon June Beetle	14
4.2.1 Conservation Status	14
4.2.2 Description and Taxonomy	14
4.2.3 Distribution and Habitats	14
4.2.4 Natural History	15
4.2.5 Occurrence at the HCP Plan Area and Vicinity	15
4.3 Covered Species: Ben Lomond Wallflower	16
4.3.1 Conservation Status	16
4.3.2 Description and Taxonomy	16
4.3.3 Distribution and Habitats	16
4.3.4 Natural History	16

4.3.5	Occurrence at the HCP Plan Area and Vicinity	17
4.4	Covered Species: Ben Lomond Spineflower	17
4.4.1	Conservation Status	17
4.4.2	Description and Taxonomy	18
4.4.3	Distribution and Habitats	18
4.4.4	Natural History	19
4.4.5	Occurrence at the HCP Plan Area and Vicinity	19
<b>5.0</b>	<b>IMPACTS AND ENVIRONMENTAL COMPLIANCE</b>	<b>21</b>
5.1	Impact Assessment	21
5.2	Direct and Indirect Effects	23
5.3	Cumulative Effects	23
5.4.	Effects on Critical Habitat	24
<b>6.0</b>	<b>TAKE OF THE THREE COVERED SPECIES</b>	<b>25</b>
<b>7.0</b>	<b>MINIMIZATION, MITIGATION, AND MONITORING MEASURES</b>	<b>28</b>
7.1	Minimization Measures During Construction	28
7.1.1	Construction Monitor	28
7.1.2	Delineation of Impact Area	28
7.1.3	Construction and Operational Requirements	28
7.1.4	Contractor and Employee Orientation	28
7.1.5	Access to HCP Plan Area	29
7.1.6.	Habitat Protection During Construction	29
7.1.7.	Salvage of Ben Lomond Spine Flower	29
7.1.8	Slope Stabilization	29
7.1.9	Cover Exposed Soils	30
7.2	Mitigation Measures	30
7.2.1	Mitigation Site Location	30
7.2.2	Conservation Easement	30
7.2.3	CC&R's of the Bean Creek Estates Homeowners' Association	30
7.2.4	Habitat Protection	31
7.2.5	Night Lighting	31
7.3	Habitat Management and Monitoring Activities	31
7.3.1	Habitat Management	32
7.3.2	Fuel Management Plan	33
7.3.3	Species Monitoring Activities	34
7.3.3.1	Mount Hermon June Beetle	35
7.3.3.2	Ben Lomond Wallflower & Ben Lomond Spineflower	35
7.3.4	Annual Monitoring Report	36
7.4	Schedule for Implementation	36

<b>8.0</b>	<b>PLAN IMPLEMENTATION</b>	<b>38</b>
8.1	Biological Goals and Objectives	38
8.2	Identification of Project Representative	38
8.3	Identification of Construction and Biological Monitors	39
8.4	Responsibilities	39
8.5	Plan Duration	39
8.6	Reporting	40
	8.6.1. Post-Construction Compliance Report	40
	8.6.2 Annual Mitigation Monitoring Reports	40
8.7	Funding	40
8.8	Disposition of Dead or Injured Specimens	42
<b>9.0</b>	<b>CHANGED AND UNFORESEEN CIRCUMSTANCES</b>	<b>43</b>
9.1	Changed Circumstances	43
9.2	Unforeseen Circumstances	44
<b>10.0</b>	<b>PERMIT AMENDMENT/RENEWAL PROCESS</b>	<b>45</b>
10.1	Amendments to the Permit	45
10.2	Amendments to the HCP	45
10.3	Permit Renewal	45
10.4	Permit Transfer	46
<b>11.0</b>	<b>ALTERNATIVES CONSIDERED</b>	<b>47</b>
11.1	Alternative #1: No-Action	47
11.2	Alternative #2: Redesigned Project (reduced take)	47
11.3	Alternative #3: Proposed Action (permit issuance)	47
<b>12.0</b>	<b>HABITAT CONSERVATION PLAN PREPARERS</b>	<b>48</b>
<b>13.0</b>	<b>REFERENCES CITED</b>	<b>49</b>
<b>14.0</b>	<b>FIGURES</b>	<b>52</b>
<b>15.0</b>	<b>APPENDIX A: Mount Hermon June Beetle Survey Report</b>	
<b>16.0</b>	<b>APPENDIX B: Botanical Survey Report</b>	
<b>17.0</b>	<b>APPENDIX C: Tree Evaluation Report</b>	
<b>18.0</b>	<b>APPENDIX D: Conservation Easement</b>	
<b>19.0</b>	<b>APPENDIX E: Ordinance No. 16-ZC-197</b>	
<b>20.0</b>	<b>APPENDIX F: Mitigated Negative Declaration</b>	
<b>21.0</b>	<b>APPENDIX G: Property Analysis Record (PAR) &amp; PAR Letter</b>	

**22.0 APPENDIX H: Conditions, Covenants, and Restrictions of the  
Bean Creek Estates Homeowners' Association**

**23.0 APPENDIX I: Management and Funding Agreement**

## **LISTS OF TABLES AND FIGURES**

### **TABLES**

1. Habitat types of the Bean Creek Estates HCP plan area with estimates of existing, impacted, and conserved acreages for each habitat type.
2. Summary of BLW and BLS population numbers at the Bean Creek Estates property.
3. Summary of permanent and temporary impacts.
4. Implementation schedule for habitat management activities at the Bean Creek Estates HCP plan area.
5. Summary of initial and capital tasks and costs from the PAR for Bean Creek Estates.
6. Summary of annual ongoing tasks and costs from the PAR for Bean Creek Estates.

### **FIGURES**

1. Regional location map.
2. Portion of Felton 7.5' USGS topographic map illustrating the location of the HCP plan area.
3. Map of vegetation types and locations of endangered species at the HCP plan area.
4. Site grading, and utility plan, illustrating the impact area, fuel management, and habitat preserve areas.
5. Limits of grading and development, plus locations of endangered species.

### **COVER PHOTO CREDITS:**

Richard A. Arnold – Mount Hermon June Beetle

Jodi McGraw – Ben Lomond Spineflower and Ben Lomond Wallflower

## 1.0 INTRODUCTION

This Habitat Conservation Plan (HCP) for the proposed Bean Creek Estates development of 13 new single-family residences on an undeveloped 18.07-acre property near Scotts Valley, Santa Cruz County, California, has been prepared pursuant to the requirements of Section 10(a) of the Federal Endangered Species Act (ESA) of 1973, as amended. The HCP is intended to provide the basis for issuance of a Section 10(a)(1)(B) permit to Mr. Tom Masters to authorize incidental take (see Section 6.0) of the endangered Mount Hermon June beetle (*Polyphylla barbata*), which will result from development of the proposed project. Mr. Masters is also requesting that the Service include the Ben Lomond Wallflower (*Erysimum teretifolium*) and Ben Lomond Spineflower (*Chorizanthe pungens* var. *hartwegiana*) on the incidental take permit, but that the permit is not being sought for incidental take of these two plant taxa. The site is occupied by all three endangered species. The Applicant requests a permit for six years commencing on the date of permit approval.

This HCP describes the occurrence of the endangered species at the project site, evaluates the effects of the proposed development on these species, and presents a mitigation plan to offset habitat losses and direct harm to the species that could result from development of 13 new single-family residences on the property. The biological goals of this HCP are:

- a) permanently protect 14.0 acres at the project site as a habitat preserve, which will henceforth be known as the Bean Creek Estates Preserve and will consist of a mixture of Coast Range Ponderosa Pine Forest, Mixed Evergreen Forest, and Riparian Woodland habitats, via a recorded conservation easement with the Center for Natural Lands Management (CNLM);
- b) manage the habitat preserve in a manner that supports populations of the Mount Hermon June beetle (MHJB), Ben Lomond Wallflower (BLW), and Ben Lomond Spineflower (BLS); and
- c) undertake various measures during grading and construction activities at the project site to minimize impacts to both endangered species and their habitat.

### **1.1 PROJECT LOCATION**

The 18.07-acre Bean Creek Estates property is located within the city limits of the City of Scotts Valley, a community located in the Santa Cruz Mountains, approximately six miles northeast of the town of Santa Cruz in Santa Cruz County, CA (Figure 1). Specifically, the project site is located on the west side of Bean Creek Road, north of and adjacent to the Montevelle Mobile Home community, approximately one mile north of the intersection of Bean Creek Road and Scotts Valley Drive, and approximately one-half mile east of Nelson Road near the Mission Springs community. The project parcel (APN 022-631-22) is located within the Felton 7.5" U.S. Geological Survey (USGS) topographic quadrangle, in Township 10 S. and Range 2 W. of the Mt. Diablo Meridian. No section numbers are identified in this portion of the topographic quadrangle. Figure 2, which is adapted from the Felton USGS topo map, illustrates the location of the project site. The parcel is owned by Mr. Tom Masters.

## **1.2 PROJECT SITE**

The irregularly-shaped parcel measures approximately 1,520 x 960 ft. and is situated between approximately 390 to 570 ft. elevation. The site slopes from east to west, and south to north. Soils at the site were mapped by the Soil Conservation Service (Bowman et al. 1980) as Zayante sands and Nisene-Aptos complex.

Vegetation at the property consists of three plant communities: Coast Range Ponderosa Pine Forest, Mixed Evergreen Forest, and Riparian Woodland. Figure 3 is a vegetation map of the parcel that also illustrates the locations of the three endangered species covered by this HCP. Additional information on the plant communities and resident species is presented in Chapter 4.1.

## **1.3 HISTORY OF THE HCP PROCESS**

The formal habitat conservation planning process for the 18.07-acre site began on May 23, 2001, when Brad Bowman, President of College Heights Development Corp. (Initial Project Applicant), Norman Schwartz of Bolton Hill Company, Inc., a planning firm representing College Heights, and Dr. Richard Arnold, President of Entomological Consulting Services, Ltd., met with Colleen Sculley, entomologist for the Ventura office of the Service. Upon touring the site and learning more about the proposed project, Ms. Sculley recommended that College Heights Development Corp. apply for a section 10(a)(1)(B) incidental take permit, pursuant to provisions of the ESA. This recommendation was based on the likelihood that take of MHJB and adverse affects to the BLW and BLS could occur within that portion of the property proposed for development.

Ms. Sculley also recommended that surveys for the MHJB be conducted to verify the presence of this species on the parcel and to assist with site planning efforts. In June and July of 2002, Dr. Arnold performed the presence-absence survey for the beetle, determined that it occupied the property, and identified those portions of the property that represent breeding habitat (Appendix A). As a result of these findings, College Heights Development Corp. revised its original development plan to minimize take of the three endangered species that occur at the property. Ms. Sculley also recommended that surveys for the BLW and BLS should be performed to identify those portions of the property where these endangered plants occur. Ms. Kathy Lyons, Principal of the Biotic Resources Group, mapped the occurrences of these endangered plants as part of her botanical survey report dated June 21, 2002 (Appendix B). The findings of these surveys were used to revise the original development plan for the property to largely avoid and minimize impacts to these three endangered species.

On September 19, 2002, Brad Bowman, Norman Schwartz, and Richard Arnold met with Amelia Orton-Palmer and Deborah Kirkland of the Ventura office of the Service to present the revised site plan. An initial draft HCP was submitted to the Service in November 2004 and the Service's written comments on the draft HCP were received in November 2005. This revised draft responds to the Service's comments and was submitted to the Ventura office in March 2007. Brad Bowman, President of College Heights Development Corp., and Tom Masters, owner of the property, agreed in August of 2008 that Tom Masters would be substituted as the applicant for the project.



## 2.0 PROJECT DESCRIPTION AND AREA

### 2.1 PROJECT DESCRIPTION

At present, the project site is a vacant, irregularly-shaped parcel that measures 18.07 acres in size. Locations of the 13 proposed, single-family homes and other associated site improvements are illustrated in Figure 4, the site plan. This portion of the property is referred to as the “impact area” and measures 4.07 acres. The remaining 14.0 acres, or 77% of the property, will not be developed and is referred to as the “habitat preserve” in Figure 4. The habitat preserve will become permanent open space and habitat for the MHJB, BLW, and BLS. The CNLM will hold a recorded conservation easement for the 14.0-acre habitat preserve to insure that it is protected and managed in perpetuity. The habitat preserve will be known as the Bean Creek Estates Preserve.

Thirteen single-family homes and a 24-foot wide private street with cul-de-sacs in the southeastern and north-central areas of the property will be built within the 4.07-acre impact area. Lot sizes will range from approximately 5,000 to 15,000 ft.<sup>2</sup> in size, with most lots measuring approximately 7,000 to 8,000 ft.<sup>2</sup>. The project includes a Planned Development (PD) Zoning Overlay, which permits the clustering of lots smaller than the minimum size permitted in the underlying R-1-40,000 zoning. There are three primary environmental benefits from clustering smaller lots: (i) clustering minimizes grading and the potential for future erosion; (ii) clustering results in the least impact on the three federally-listed endangered species; and, (iii) clustering allows the creation of a larger habitat preserve. The project is expected to include minimal house lighting. The site plan’s single-loaded street (i.e., homes will be built on only one side of the street to avoid sandhills habitat) separates most of the lots from the portion of the habitat preserve containing the Coast Range Ponderosa Pine Forest.

Much of the property is characterized by mild to moderately steep slopes. Clearing of vegetation and grading will be necessary throughout most of the impact area. As illustrated in the grading plan (Figure 5), the habitat preserve will not be graded. The cut and fill have been designed to nearly balance on site, such that only 2,372 cubic yard of soil will be imported. The project’s limit of grading and development avoid slopes of 40% or greater, as well as nearly all of the areas where Ponderosa Pine and the listed plants are located. In addition, the limit of grading and development is set back at least 75 feet from the centerline of Bean Creek, which runs along a portion of the northwestern property line. As proposed, the set back area from Bean Creek would be part of the permanent open space and habitat preserve.

Lot landscaping will emphasize native species and non-invasive ornamental plants. There is no common area landscaping. Predominant trees growing within the 4.07-acre impact area proposed for development are primarily redwoods and oaks. It is anticipated that 99 trees or redwood clusters within the grading limits will be removed. Tree species planned for removal include Madrone (*Arbutus menziesii*), Coast Redwood (*Sequoia sempervirens*), Coast Live Oak (*Quercus agrifolia*), Pacific Maple (*Acer macrophyllum*), Tan Oak (*Lithocarpus densiflorus*), and Acacia (*Acacia dealbata*). In addition, 13 trees are located close to the limits of the proposed grading area and might require removal. No Ponderosa Pine (*Pinus ponderosa*) trees are planned for removal.

The City of Scotts Valley requires the project applicant to submit a tree removal and preservation plan and to replace removed trees at a 2:1 ratio, preferably on site, as part of the landscaping plan for the project. Any trees that cannot be replaced on site will be replaced through the applicant's payment of fees to defray the city's cost to plant trees elsewhere. A tree evaluation report for the Bean Creek Estates site and prepared by MacNair & Associates (2004) is attached to this HCP (Appendix C). The 99 trees scheduled for removal have 236 trunks that will require mitigation. Thus the project will need to plant or pay for a total of 472 trees. Although the landscaping plan for the project has yet to be prepared (the City of Scotts Valley does not require a landscaping plan until an application for a building permit is submitted), an estimated 90 trees are expected to be planted at the project site. This will require an in lieu payment for an estimated 392 trees.

The habitat preserve will not be disturbed except as needed to conform with fire clearance regulations of the Scotts Valley Fire District (as described in Section 7.3.2, Fuel Management Plan), to construct a surface V-ditch at the rear of lots #1 - #6, to construct a storm drain pipe from the neighboring Monteville Mobile Home Community, to construct a pedestrian path in the southeastern portion of the property connecting the southern cul-de-sac to Bean Creek Road, to construct water and sewer mains in the southeastern portion of the property and to construct a energy dissipater in the north-central part of the property to prevent storm water caused erosion near Bean Creek (Figure 4).

The new homes will be plumbed with domestic water and sanitary sewer. Since the project's sanitary sewer and water lines will connect to the existing public sewer and water lines in Bean Creek Road, the development will require no septic or cesspool systems or wells. Electrical power is fed from overhead power lines that run along Bean Creek Road. Likewise natural gas is also provided by the local utility provider via underground connection at the property line. Except as previously noted, all trenching for the connection of underground utilities will occur within the impact area.

Altogether, these activities will disturb approximately 4.07 acres within the impact area at the project site, characterized by the Mixed Evergreen Forest plant community. Plants indigenous to the Zayante sandhills will be maintained in the 14.0-acre habitat preserve. Approximately 3,700 square feet (0.08 acre) of the habitat preserve will be temporarily disturbed to construct the water, sewer and storm drainage infrastructure described above. Approximately 7,800 square feet (0.19 acres) will be permanently disturbed for the pedestrian path and the surface v-ditch described above. Approximately 1.4 acres of the habitat preserve will be periodically pruned as part of the Fuel Management Plan. Thus, of the 18.07 acres comprising the parcel, a total of 5.74 acres will be permanently (4.15 acres) or temporarily (1.59 acres) impacted (see Table 3 in Section 5.1). Several measures will be employed before, during, and after construction activities to minimize any adverse impacts to the MHJB, BLW, and BLS and their habitats at the project site.

- 1) Temporary fencing will be erected to limit where grading equipment can move on the site, before any grading activities occur;
- 2) Salvage of seed of the BLS, if appropriate;
- 3) Appropriate dust control measures, such as periodically wetting down the graded areas, will be used as necessary during grading of the areas for building footprints and

- in other portions of the impact area during grading or any other activities than generate dust;
- 4) Revegetation of temporarily disturbed portions of the property with plant taxa that are indigenous to the native plant communities of the project site; and
  - 5) Use of light bulbs that do not attract insects in street lamps and exterior lights on the new residences.

## **2.2 PERMIT HOLDER/PERMIT BOUNDARY**

Mr. Tom Masters will be the initial holder of the section 10(a)(1)(B) permit. Mr. Masters can be contacted via mail at 28225 Robinson Canyon Road, Carmel, CA 93923, or via telephone at (831) 625-0413, or via email at masterst@mac.com. Once all of the homes have sold, the permit will transfer to the Bean Creek Estates Homeowners' Association, which will become the owner of the 14-acre habitat preserve, or to the CNLM, holder of the conservation easement of the preserve. Additional contact persons will be reported to the Service as necessary. In the event of sale of the property by the Applicant to another party prior to the completion of the 13 proposed new residences, a new permit application along with an Assumption Agreement will be submitted to the Service by the new owner. The Applicant will be responsible for permit and HCP compliance until either a new permit is issued or the original permit is formally transferred.

The Applicant requests that the permit be for six years. This period of time should allow for completion of the construction and sale of all new homes, as well as habitat protection and management activities.

The project site, HCP plan area, permit area, and permit boundaries for Bean Creek Estates are the same as the boundaries of the 18.07-acre parcel. Within this HCP plan area, locations of the impact area and habitat preserve at the project site are illustrated in Figure 2. Legal descriptions of the parcel and the habitat preserve are attached to the Conservation Easement (Appendix D).

## **2.3 SURROUNDING LAND USES**

The Bean Creek Estates parcel is located in a residential neighborhood in Scotts Valley. The Monteville Mobile Home community is located south of the property, while homes or undeveloped parcels border the other property boundaries. According to the City-Wide Land Use Plan of the City of Scotts Valley General Plan (1994), the land use designation for the project site is estate (1 dwelling unit per acre). Land use designations for immediately surrounding properties include Med Hi (5 to 9 dwelling units per acre), Mtn (1 dwelling unit per 5 acres) and Rural (1 dwelling unit per 2.5 acres). The City passed Ordinance No. 16-ZC-197 (Appendix E) in 2004 to apply a PD Overlay to the project site which will permit the development of lots smaller than one acre and the preservation of the approximately 14 acres of habitat.

### **3.0 REGULATORY FRAMEWORK**

This chapter discusses the Federal, State, and local environmental regulations that apply to the Bean Creek Estates project.

#### **3.1 FEDERAL ENDANGERED SPECIES ACT OF 1973**

Section 9 of the Endangered Species Act and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering. Harass is defined by the USFWS as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of the carrying out of an otherwise lawful activity.

Pursuant to section 11(a) and (b) of the ESA, any person who knowingly violates section 9 of the ESA or any permit, certificate, or regulation related to section 9, may be subject to civil penalties of up to \$25,000 for each violation or criminal penalties up to \$50,000 and/or imprisonment of up to one year.

Individuals and state and local agencies proposing an action that is expected to result in the take of federally listed species are encouraged to apply for an incidental take permit under section 10 (a)(1)(B) of the ESA to be in compliance with the law. Such permits are issued by the USFWS when take is not the intention of and is incidental to otherwise legal activities. An application for an incidental take permit must be accompanied by a habitat conservation plan, commonly referred to as an HCP. The regulatory standard under section 10 (a)(1)(B) of the ESA is that the effects of authorized incidental take must be minimized and mitigated to the maximum extent practicable. Under section 10 (a)(1)(B) of the ESA, a proposed project also must not appreciably reduce the likelihood of the survival and recovery of the species in the wild, and adequate funding for a plan to minimize and mitigate impacts must be ensured.

Section 7 of the ESA requires Federal agencies to ensure that their actions, including issuing permits, do not jeopardize the continued existence of listed species or destroy or adversely modify listed species’ critical habitat. “Jeopardize the continued existence of...,” pursuant to 50 CFR 402.2, means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species. Issuance of an incidental take permit under section 10 (a)(1)(B) of the ESA by the USFWS is a Federal action subject to section 7 of the ESA. As a Federal agency issuing a discretionary permit, the USFWS is required to consult with itself (i.e., conduct an internal consultation). Delivery of the HCP and a section 10 (a)(1)(B) permit application initiates the section 7 consultation process within the USFWS.

The requirements of section 7 and section 10 substantially overlap. Elements unique to section 7 include analyses of impacts on designated critical habitat, analyses of impacts on listed plant species, if any, and analyses of indirect and cumulative impacts on listed species. Cumulative effects are effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area, pursuant to section 7 (a)(2) of the ESA. The action area is defined by the influence of direct and indirect impacts of covered activities. The action area may or may not be solely contained within the HCP boundary. These additional analyses are included in this HCP to meet the requirements of section 7 and to assist the USFWS with its internal consultation.

### **3.1.1. Section 10 Permit Process and HCP Requirements.**

The section 10 process for obtaining an incidental take permit has three primary phases:

- 1) the HCP development phase;
- 2) the formal permit processing phase; and
- 3) the post-issuance phase.

During the HCP development phase, the project applicant prepares a plan that integrates the proposed project or activity with the protection of listed species. An HCP submitted in support of an incidental take permit application must include the following information:

- impacts likely to result from the proposed taking of the species for which permit coverage is requested;
- measures that will be implemented to monitor, mitigate for, and minimize impacts;
- funding that will be made available to undertake such measures;
- procedures to deal with unforeseen circumstances;
- alternative actions considered that would not result in take; and
- additional measures the USFWS may require as necessary or appropriate for purposes of the plan.

The USFWS has established a special category of HCP, called a low-effect HCP, for projects with relatively minor or negligible impacts. Based on criteria for determining whether a HCP qualifies as “low-effect”, as described below and in the USFWS’s (1996) Habitat Conservation Planning Handbook, the applicant for the proposed Hidden Glen Drive project believes this is a low-effect HCP.

A low-effect HCP is defined as having:

- minor or negligible effects on federally listed, proposed, or candidate species and their habitats that are covered under the HCP; and

- minor or negligible effects on other environmental resources.

The impacts are assessed on both a project and cumulative basis. Implementation of low-effect HCPs and their associated incidental take permits, despite authorization of some small level of incidental take, individually and cumulatively have a minor or negligible effect on the species covered in the HCP. The determination of whether an HCP qualifies for the low-effect category is based on the anticipated impacts of the project prior to implementation of the mitigation plan. The purpose of the low-effect HCP is to expedite handling of HCPs for activities with inherently low impacts; it is not intended for projects with significant potential impacts that are subsequently reduced through mitigation programs. Environmental compliance under the National Environmental Protection Act (NEPA) for low-effect HCPs is achieved via a categorical exclusion because the incidental take permit issued involves no individual or cumulative significant effects on the environment.

The HCP development phase concludes and the permit-processing phase begins when a complete application package is submitted to the appropriate permit-issuing office of USFWS. The complete application package for a low-effect HCP consists of:

- 1) an HCP;
- 2) a completed permit application; and
- 3) a \$100 permit fee from the applicant.

The USFWS must publish a Notice of Receipt of a Permit Application in the Federal Register; prepare a section 7 Biological Opinion; prepare a Set of Findings that evaluates the action 10(a)(1)(B) permit application in the context of permit issuance criteria (see below); and prepare an Environmental Action Statement, a brief document that serves as the USFWS's record of compliance with NEPA for categorically excluded actions (see below). An implementing agreement is not required for a low-effect HCP. A section 10 (a)(1)(B) incidental take permit is granted upon determination by USFWS that all requirements for permit issuance have been met. Statutory criteria for issuance of the permit are as follows:

- the taking will be incidental;
- the impacts of incidental take will be minimized and mitigated to the maximum extent practicable;
- adequate funding for the HCP and procedures to handle unforeseen circumstances will be provided;
- the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild;
- the applicant will provide additional measures that USFWS requires as being necessary or appropriate; and

- the USFWS has received assurances, as may be required, that the HCP will be implemented.

After receipt of a complete application, a low-effect HCP and permit application is typically processed within approximately 12 months. This schedule includes the Federal Register notification and a 45-day public comment period (30-day comment period for low-effect HCPs).

During the post-issuance phase, the permittee and other responsible entities implement the HCP and the USFWS monitors the permittee's compliance with the HCP and the long-term progress and success of the HCP. The public is notified of permit issuance through publication in the Federal Register.

### **3.2 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969**

The National Environmental Policy Act of 1969, as amended (NEPA), requires that Federal agencies analyze and disclose the environmental impacts of their proposed actions (e.g., issuance of an incidental take permit) and include public participation in the planning and implementation of their actions. Issuance of an incidental take permit by the USFWS is a Federal action subject to NEPA compliance. Although section 10 and NEPA requirements overlap considerably, the scope of NEPA also considers the impacts of the action on non-biological resources such as water quality, air quality, and cultural resources. Depending on the scope and impact of the HCP, NEPA requirements can be satisfied by one of the following documents or actions:

- 1) preparation of an environmental impact statement (generally prepared for HCPs with known significant impacts to the human environment);
- 2) preparation of an Environmental Assessment (generally prepared for HCPs with moderate, but not significant effects, or when the significance of the impacts is unknown); or
- 3) a categorical exclusion (allowed for low-effect HCPs).

The NEPA process helps Federal agencies make informed decisions with respect to the environmental consequences of their actions and ensures that measures to protect, restore, and enhance the environment are included, as necessary, as a component of their actions. Low-effect HCPs, as defined in the USFWS (1996) Habitat Conservation Planning Handbook, are categorically excluded under NEPA, as defined by the Department of Interior Manual 516DM2, Appendix 1, and Manual 516DM6, Appendix 1.

### **3.3 NATIONAL HISTORIC PRESERVATION ACT**

All Federal agencies are required to examine the cultural effects of their actions (e.g., issuance of a permit). This may require consultation with the State Historic Preservation Office (SHPO) and appropriate American Indian tribes. All incidental take permit applicants are requested to submit a Request for Cultural Resources Compliance form to the Service. To ensure compliance, the applicants may be required to contract for cultural resource surveys and

possibly mitigation.

### **3.4 CALIFORNIA ENVIRONMENTAL QUALITY ACT**

In many ways the California Environmental Quality Act, commonly known as CEQA (Public Resources Code Section 21000 *et seq.*), is analogous at the state level as NEPA is to the Federal level. CEQA applies to projects that require approval by state and local public agencies. It requires that such agencies disclose a project's significant environmental effects and provide mitigation whenever feasible. This environmental law covers a broad range of resources. With regard to wildlife and plants, those that are already listed by any state or Federal governmental agency are presumed to be endangered for the purposes of CEQA and impacts to such species and their habitats may be considered significant.

An EIR was prepared for a 17-lot subdivision that was previously proposed for the Bean Creek Estates project site (Terra-Sol Ltd., 1990). This formerly proposed project was known as Creekside Estates.

The project presented in this HCP is known as Bean Creek Estates and is subject to CEQA review. The City of Scotts Valley is the lead agency. A mitigated negative declaration was adopted by the City of Scotts Valley in 2004. A copy of this document is attached as Appendix F.

### **3.5 CALIFORNIA ENDANGERED SPECIES ACT**

The California Endangered Species Act (CESA) of 1984 (Fish and Game Code Section 1900-1913) provides protection for state-listed endangered plants, such as the BLW. CESA Section 2081 requires a permit for take of listed plants for compliance with this statute. For the Bean Creek Estates project, no take of the BLW is anticipated.

### **3.6 SCOTTS VALLEY FIRE DISTRICT**

Public Resources Code 4291 requires homeowners living in or adjacent to forest or brush-covered lands to maintain a firebreak of not less than 30 feet on all sides around all structures, or to the property line, whichever is nearer. The Scotts Valley Fire District enforces this code in the Scotts Valley area. According to Mike Biddle of the Fire District, the District normally prefers a 30-foot clearance for upslope and 100 foot clearance for downslope areas. The fuel management plan presented in section 7.3.2 provides specific requirements for the Bean Creek Estates project.

### **3.7 CITY OF SCOTTS VALLEY**

Section 17.44.080 of the City of Scotts Valley's municipal code describes the protective measures for native and heritage trees. Removal of living, native trees measuring at least 8 inches in diameter at breast height (ca. 54 inches above ground) that are in good health requires a permit from the City of Scotts Valley. When feasible, removed trees should be replaced by new trees that are planted elsewhere on the same property. The City of Scotts Valley requires the project applicant to submit a tree removal and preservation plan and to replace removed trees at a 2:1 ratio as part of the landscaping plan. If this cannot be accomplished on site, then the applicant may pay fees to defray the city's cost to plant trees elsewhere. The tree evaluation report is attached as Appendix C.

## 4.0 BIOLOGY

This chapter describes the existing biotic resource conditions at the Bean Creek Estates HCP plan area. In addition, it discusses the three species addressed in this HCP, namely the MHJB, BLW and BLS (hereafter “the covered species”), which are treated by its associated Section 10(a) (1) (B) permit. The MHJB, BLW, and BLS are federally listed as endangered. The BLW is also State-listed as endangered. Based on historical and recent observations, all three species are known to occur at the HCP plan area and will be directly or indirectly affected by the planned residential development. This section summarizes available information about the taxonomy, identification, distribution, habitat, biology, and conservation of the three covered species.

### **4.1 HABITATS**

The Bean Creek Estates HCP plan area supports three types of terrestrial plant communities: Coast Range Ponderosa Pine Forest, Mixed Evergreen Forest, and Riparian Woodland. The Riparian Woodland occurs along Bean Creek, which is indicated as a blue-line creek on the Felton USGS topographic quadrangle. Figure 3 is a vegetation map of the HCP plan area. Table 1 lists the acreage for each habitat type, including existing, impacted, and conserved acreages.

The native, sandhill plant communities of the Santa Cruz Mountains are edaphically-restricted to scattered pockets of Zayante series soils (Bowman et al. 1980) derived from Miocene sand deposits, known as the Santa Margarita formation (Marangio and Morgan 1987). Three intergrading plant communities commonly occur in sandhill areas, namely Coast Range Ponderosa Pine Forest, Ponderosa Pine-Sand Parkland, and Northern Maritime Chaparral (Marangio and Morgan 1987). Pine forests can be relatively dense and often integrate with surrounding Mixed Evergreen Forests. Ponderosa Pine-sand parkland habitat is a gradation between open pine forest, with sparse but taxonomically diverse subshrubs and annuals, to open, often highly erosive areas dominated by endemic annuals. Northern Maritime Chaparral habitat is characterized by dense stands of Silverleaf Manzanita (*Arctostaphylos silvicola*) with scattered individuals of other shrubs, and in some areas Knobcone Pine (*Pinus attenuata*) and Coast Live Oaks. As described in the next section, the sandhills vegetation at the Bean Creek Estates HCP plan area is Coast Range Ponderosa Pine Forest.

#### **4.1.1 Coast Range Ponderosa Pine Forest**

The property supports approximately 5.5 acres of ponderosa pine forest. As illustrated in Figure 3, the forest occurs in the southwestern portion of the property, while a solitary Ponderosa pine grows in the southeastern portion. The forest grows on deposits of Zayante sands. The forest is characterized by the presence of Ponderosa Pine, which is the dominant tree in the overstory. Ponderosa pine, while common in the Sierra Nevada, is unique in the Santa Cruz Mountains. On the HCP plan area, the density of the ponderosa pines varies. In some areas, the pines have an open, herbaceous understory and in other areas, shrubs are common understory species. These variations in understory are due to the interaction of edaphic factors, moisture gradients, competition from adjacent vegetation and the frequency of fire. For the purposes of this HCP, these variations in the understory at the HCP plan area are collectively referred to as Coast Range Ponderosa Pine Forest.

The vegetation composition is comprised of ponderosa pine, with occurrences of Madrone

and Coast Live Oak. The understory is diverse with Brittle-leaved Manzanita (*Arctostaphylos tomentosa* ssp. *crustacea*), Sticky Monkey Flower (*Mimulus aurantiacus*), Coffee Berry (*Rhamnus californica*), Silver Bush Lupine (*Lupinus albifrons*), and Yellow Yarrow (*Eriophyllum confertiflorum*). Also present are Bracken Fern (*Pteridium aquilinum*), Peak Rsh-rose (*Helianthemum scoparium*), Poison Oak (*Toxicodendron diversilobum*), Diffuse Spineflower (*Chorizanthe diffusa*), Elegant Clarkia (*Clarkia elegans*), Phacelia (*Phacelia* sp), Wild Rye (*Elymus glaucus*), and Green Everlasting (*Gnaphalium californicum*). Some open, herbaceous dominated areas also occur. These areas are dense with Rattail Rescue (*Vulpia myuros*), Ripgut Brome (*Bromus diandrus*), Bracken Fern, and Quaking Grass (*Briza minor*).

Plant species endemic to the Coast Range Ponderosa Pine Forest were also observed on the site during surveys in 2002 (Biotic Resources Group 2002, see Appendix B). In addition to the endangered plant species, Ben Lomond Buckwheat (*Eriogonum nudum* var. *decurrens*), Silver-leaved Manzanita (*Arctostaphylos silvicola*), and Curly-leaved Monardella (*Monardella undulata*) were observed. The endangered plant species are described in more detail in Sections 4.3 and 4.4, below.

<b>Table 1. Habitat types of the Bean Creek Estates HCP plan area and estimates for existing, impacted, and conserved acreages for each habitat type.</b>			
<b>Habitat Types</b>	<b>Habitat Acreages</b>		
	<b>Existing Habitat</b>	<b>Impacted Habitat<sup>a</sup></b>	<b>Conserved Habitat<sup>b</sup></b>
Coast Range Ponderosa Pine Forest	5.50	0.60	5.50
Mixed Evergreen Forest	11.97	5.04	7.90
Riparian Woodland	0.60	0.10	0.60
Site Totals	18.07	5.74	14.00

**Notes:**

**a-** includes temporary impacts due to implementation of fuel management plan and installation of utilities and drains  
**b** –areas to be managed for species and habitat values; invasive, non-native plant species to be removed/controlled.

**4.1.2 Mixed Evergreen Forest**

The majority of the property, nearly 12 acres, supports a Mixed Evergreen Forest. This forest type is dominated by Coast Redwood, Coast Live Oak, California Bay (*Umbellularia californica*), Madrone, Douglas Fir (*Pseudotsuga menziesii*), and Tan Oak. The understory includes Blue Elderberry (*Sambucus mexicana*), Coyote Brush (*Baccharis pilularis*), California Blackberry (*Rubus ursinus*), Bracken Fern, Mugwort (*Artemisia douglasiana*), and Poison Oak. Other species in the understory include Rattail Rescue, Wild Oat (*Avena barbata*), Ripgut Brome, Italian Thistle (*Carduus* sp.), Wild Rye (*Elymus glaucus*), California Brome (*Bromus carinatus*), and Rattlesnake Grass (*Briza maxima*).

### **4.1.3 Riparian Woodland**

The HCP plan area supports Riparian Woodland along a portion of Bean Creek in the northwestern sector of the property. The woodland is characterized by the presence of deciduous tree species, including Black Cottonwood (*Populus trichocarpa*), Willow (*Salix* spp.), Red Alder (*Alnus rubra*), Box Elder (*Acer negundo*), and Blue Elderberry. Understory species include California Blackberry, Stinging Nettle (*Urtica dioica*), Mugwort, Snowberry (*Symphoricarpos* sp.). Coast Redwoods and Coast Live Oaks also occur along the riparian corridor.

## **4.2 COVERED SPECIES: MOUNT HERMON JUNE BEETLE**

The species addressed in this HCP and covered by its associated Section 10(a) (1) (B) permit (hereinafter referred to as covered species) include three federally-listed species, the MHJB, BLW, and the BLS. All three endangered species are known to occur on the Bean Creek Estates HCP plan area and will be directly or indirectly affected by the project. A discussion of the biology of these species and their occurrence on the HCP plan area follows.

### **4.2.1 Conservation Status**

The MHJB is a federally-listed endangered species. Throughout most of its range, the primary threats to the beetle are sand mining and urbanization. In a few instances, other types of land uses, such as agricultural conversion, recreation activities, plus pesticide use, alteration of fire cycles, and collectors, have also threatened the beetle. For these reasons, the beetle was recognized as an endangered species by the Service (1997) in 1997 and a recovery plan was published by the Service (1998) in 1998. Critical habitat has not yet been proposed by the Service for the MHJB.

The State of California does not recognize insects as endangered or threatened species pursuant to the state's Fish & Game Code; however, it does receive consideration under the California Environmental Quality Act (CEQA) since it satisfies the definition of a rare species under this statute. The International Union for the Conservation of Nature (1994) formerly recognized the MHJB as threatened.

### **4.2.2 Description and Taxonomy**

The MHJB is a member of the family Scarabaeidae (Insecta: Coleoptera). Adult males measure about 0.75 inch in length and females are slightly longer. The adult male has a black head and dark brown elytra (leathery forewings) that are covered with brown hairs. The elytra also have stripes that are broken and irregular rather than continuous and well-defined as in related species of June beetles. Larvae are grub-shaped (scarabaeiform) and vary in color from cream to pale yellow for the body segments and darker brown for the head.

Cazier (1938) described the beetle from specimens collected at Mount Hermon, Santa Cruz County, California. The genus *Polyphylla*, which contains 28 species, was recently revised by Young (1988). Although the scientific name *Polyphylla barbata* has been used since its original description, the beetle has commonly been referred to as the Mount Hermon June beetle or the Barbate June beetle.

### **4.2.3 Distribution and Habitats**

Of the 28 North American species of *Polyphylla*, 20 have restricted ranges, with 15 being

endemic to isolated sand deposits (Young 1988). The MHJB is restricted to the Zayante sandy soils that are found in the Scotts Valley-Mount Hermon- Felton-Ben Lomond-Santa Cruz area of the Santa Cruz Mountains. Historically, MHJB localities were referred to as sandhills (Cazier 1938; Young 1988), but more recently this area has been called the Zayante Sandhills (U.S. Fish & Wildlife Service 1998). Arnold (2004) reviewed museum specimens and other reported records for the beetle and determined that it had been observed at about 70 locations within this area.

Habitats in the Zayante sandhills where MHJB has been found include Northern Maritime Chaparral, Ponderosa Pine Forest, Sand Parkland (which is a mixture of the aforementioned habitats with a shrub/subshrub and grass/forb understory), and mixed Deciduous-Evergreen Forest. In addition, adults have been found in disturbed sandy areas where remnants of these habitats still occur. Ponderosa Pine occurs at all known MHJB locations and for this reason is a useful indicator of suitable habitat for the beetle. Recent analyses of partially-digested plant fragments in fecal pellets of MHJB larvae by Kirsten Hill (2005) indicate that larvae feed on herbaceous plant species.

#### **4.2.4 Natural History**

The MHJB is univoltine, i.e., it has only one generation per year. As its common name suggests, adult emergence and seasonal activity normally starts in May or June and continues through about mid-August; although, seasonal activity may vary from year to year depending on weather conditions. Adults are nocturnal, being active between about 8:45 and 9:30 pm. Adult males actively fly low to the ground in search of females, which are flightless. Presumably the female emits a pheromone for the males to find her.

Lifespan data from a brief capture-recapture study suggest that adult males live no longer than one week (Arnold 2000 and 2001). Dispersal data from these capture-recapture studies indicate that most adult males are quite sedentary, with home ranges of no more than a few acres. Similar data on lifespan and dispersal of females is lacking at this time since they are so infrequently observed.

Specific life history information for the MHJB is unknown, but can be inferred from related species. Presumably the entire life cycle (egg, larva, pupa, and adult) takes two to three years to complete. The majority of the life cycle is spent as a subterranean larval stage that feeds on plant roots (Furniss and Carolin 1977).

#### **4.2.5 Occurrence at the HCP Plan Area and Vicinity**

Wildlife biologist Dana Bland observed adult males of the MHJB at the HCP plan area in the summer of 1999 (Bland 1999). Arnold (2002, see Appendix A) conducted a more intensive survey of the property during June and July 2002 and identified the Coast Range Ponderosa Pine Forest as the beetle's breeding habitat at the site. A total of 129 MHJB adults were observed at 15 of the 24 locations sampled (Figure 3). The vast majority of the MHJBs were found in the central and western portions of the site, where the Coast Range Ponderosa Pine Forest occurs, while fewer beetles were found in the Riparian Woodland and Mixed Evergreen Forest at the site.

The nearest known locations of MHJB are about one mile south of the Bean Creek Estates HCP plan area. Several properties near the intersection of Bean Creek Road and Scotts Valley Drive are known to support the MHJB (BUGGY Data Base 2007).

### **4.3 COVERED SPECIES: BEN LOMOND WALLFLOWER**

#### **4.3.1 Conservation Status**

The Ben Lomond Wallflower (also sometimes referred to as Santa Cruz Wallflower) is both State-listed and federally listed as endangered. A recovery plan for BLW and four other listed and sensitive plants and insects endemic to the Santa Cruz Mountains was published in 1998 (U.S. Fish & Wildlife Service 1998).

The species is currently known from 15 occurrences within the Felton quadrangle (California Natural Diversity Data Base 2003). Three populations are currently known to occur within the Scotts Valley area. Threats to the species include loss of habitat, lack of land management within known habitat, and growth of non-native plants. Two populations occur on public lands (i.e., Quail Hollow County Park and Bonny Doon Ecological Preserve); all other populations are on lands that are privately owned.

#### **4.3.2 Description and Taxonomy**

BLW is a biennial. The plant grows a basal rosette of leaves during the first growing year. This basal rosette has finely toothed and narrowly linear leaves, typically 3-17 cm. long. During the second growing year, a flowering stalk emerges. This stalk can reach heights of 15-100 cm., topped with yellow flowers. The petals are 1.3-2.5 cm. long. This wallflower blooms from June to September. The flower forms a slender capsule, approximately 10 cm. long.

Previous life history studies on this species found that successful reproduction depends on habitat characteristics and climate conditions (U.S. Fish & Wildlife Service 1998). The percentage of seedling, subadult, adult and reproductive individuals and seed banks varied between populations studied.

#### **4.3.3 Distribution and Habitats**

BLW is commonly found on loose pockets of sandstone soils. It is found in open areas in Northern Maritime Chaparral and Coast Range Ponderosa Pine Forest. It grows in greater densities where the sand is loose and associated vegetation is minimal through environmental constraints or slight sand disturbances. BLW appears unable to successfully compete with non-native grasses and tends to be choked out when the density of non-native grasses increases (K. Lyons, pers. observation). Known populations of BLW occur on Zayante soils.

#### **4.3.4 Natural History**

Brunette (1997) observed population structure of the BLW at the South Ridge of Quail Hollow Quarry. There the BLW exhibited a healthy population structure with 63% seedlings, 21% subadults, 7 adults, and 9% reproductive individuals. He also sampled the seedbank at this location and found that the number of seeds per m<sup>2</sup> ranged from 38 to 731. These numbers contrast dramatically with the BLW population studied at the Bonny Dune Ecological Preserve where the population structure included 0% seedlings, 29% subadults, 57% adults, and 14%

reproductive individuals. No seedbank was found.

#### **4.3.5 Occurrence at the HCP Plan Area and Vicinity**

The population of BLW on the Bean Creek Estates property is recorded in the California Natural Diversity Data Base as occurrence # 13. There the wallflower occurs in two areas. One colony is located on a small north-south ridge of Ponderosa pines in the central portion of the property (Figure 3). Earlier mapping of this colony, which was done for an EIR (Terra-Sol Ltd., 1990) when a 17-lot subdivision known as Creekside Estates was proposed for the HCP plan area, depicted the plants in an approximately 400 square foot area along this ridge. In 1999, seven (7) plants (both flowering and vegetative plants) were observed at the lower portion of the ridge (Figure 3). The 2002 field survey by botanist Kathy Lyons (Biotic Resources Group 2002, see Appendix B) documented one flowering plant, however six (6) vegetative plants were observed along the lower portion of the ridge near an existing dirt road. The occurrence of this colony, as documented in the earlier EIR, from the 1999 survey and from the 2002 survey is shown on Figure 3.

The second wallflower colony is located along a north-facing ridge in the southwestern corner of the parcel amid Ponderosa pines. The previous EIR did not mention this colony, however, 12 plants (flowering and vegetative plants) were observed in 1999. The 2002 field survey reconfirmed the status of this colony wherein nine (9) flowering plants were observed. The occurrence of this colony, as documented from the 1999 survey and from the 2002 survey, is shown on Figure 3. Several additional plants occur upslope of this area on a grassy knoll adjacent to Ponderosa Pines and Silver-leaved Manzanita. Approximately 30 flowering wallflower plants and 100 vegetative wallflower plants were observed in this area in 2002. All of the aforementioned occurrences are outside of the impact area at the HCP plan area.

#### **4.4 COVERED SPECIES: BEN LOMOND SPINEFLOWER**

##### **4.4.1 Conservation Status**

BLS was federally listed as endangered in 1994 (U.S. Fish & Wildlife Service 1994). This plant species is not listed by the State of California. A recovery plan for BLS and four other listed and sensitive plants and insects endemic to the Santa Cruz Mountains was published in 1998 (U.S. Fish & Wildlife Service 1998).

The species is only found on sandy Zayante soils within the Santa Cruz Mountains. The species is currently known from 18 native populations within the Felton quadrangle (California Natural Diversity Data Base 2003). Four (4) populations are currently known to occur within Scotts Valley. The populations occur in Ben Lomond, Scotts Valley, and Felton, as well as near Bonny Doon, Boulder Creek and Gray Whale Ranch (U.S. Fish & Wildlife Service 1998).

Several factors led to the plant's endangered status. Sand quarrying and urban development have resulted in direct loss of habitat supporting the BLS. In remaining areas of habitat, recreational activities, such as horseback riding and trail bikes are suspected of impacting this low-growing annual that prefers open, sunlit ground. While some amount of disturbance maintains the openness of habitat, some activities, such as horseback riding and the use of trail bikes cause erosion and facilitate the spread of invasive, non-native plants.

Competition with these non-native plants and the suppression of natural fires are additional factors that threaten the BLS. Lack of appropriate vegetation and land management within known habitat threatens the survival of some populations. .

#### **4.4.2 Description and Taxonomy**

The spineflower genus, *Chorizanthe*, is in the Polygonaceae (Buckwheat) family. It is considered by some taxonomists as a recently derived genus; however, in California none of its species is widespread or abundant. In California, members of the *Chorizanthe* genus are characterized as slender, stiff and tough annual plants that inhabit dry, sandy soils.

The overall appearance of the BLS is of a low-growing herb that is stiff, hairy and reddish in color. A short-lived annual, the plant is typically branched from the base with a spreading or erect habit. The plant has pink modified leaves (involucral) that surround the flower. Each flower produces one seed that is enclosed by spines. The small hooks on the spines of the involucral lead to the common name of spineflower. Plants may grow as tall as 10 inches, but more typically grow no more than a few inches above ground.

BLS, whose latin name is *Chorizanthe pungens* var. *hartwegiana*, was described as a distinct variety by James Reveal and Clare Hardham in 1989 (Reveal and Hardham 1989) after they noted differences between these inland populations and those on the coast. The coastal populations had previously been described as *Chorizanthe pungens* by George Bentham in 1836 from a specimen collected in Monterey. Compared to other taxa in the *pungens-robusta* complex, BLS is erect-decumbent and pink-inflorescenced with small distinct heads (Erter 1996; U.S. Fish & Wildlife Service 1998).

The BLS germinates during the winter months and flowers from April through June. The seed is mature by August with the plants becoming rusty-colored as they dry during the summer months. The seed cases shatter from the plant during the late summer, upon which the seeds are dispersed. The spiny seed covering is believed to facilitate seed dispersal, as the spiny bracts are expected to easily attach to animals and can therefore be transported.

#### **4.4.3 Distribution and Habitats**

In general, members of the *Chorizanthe* genus are endemic to specific substrate and/or site conditions. This restriction to such site-specific features has made some species prone to local extirpations, as its habitat has been subject to urban and rural developments throughout the state. They are known from habitats along the coast and inland, however, due the patchy distribution of these unique soil resources, many species of *Chorizanthe* are highly localized in their distribution. The range of many *Chorizanthe* species overlaps; however, there is no range overlap between the BLS, the related robust spineflower (*C. robusta* var. *robusta*), or the Scotts Valley spineflower (*C. robusta* var. *hartwegii*).

The BLS spineflower is endemic to Zayante sandhills in the Santa Cruz Mountains. Most occurrences of the BLS occur within an area bounded by the sandhill communities of Ben Lomond, Glenwood, Scotts Valley, and Felton. Additional, outlier populations are known from Bonny Doon, Boulder Creek, Big Basin State Park, and Gray Whale Ranch. Within the sandhills, it is further restricted to sunlit open or sparsely vegetated ground (Kluse and Doak

1999; Levin and McGraw 1998). Such areas occur in open Sand Parkland and areas with extremely low densities of shrubs, trees, or other annuals.

#### **4.3.4 Natural History**

BLS is a short-lived, annual species. Seed germinate after the first significant autumn rains, grow slowly during the winter, and flower in the spring, approximately late April to late June. In open habitat, BLS can reach seedling densities of hundreds to thousands per square meter (Zador 1993; Kluse and Doak 1999). Botanist Randy Morgan has observed flower visitation by several species of wasps, bees, flies and butterflies, one or more of which may be pollinators (U.S. Fish & Wildlife Service 1998). The plant lives for about 15-21 weeks and produces an average of 8 seeds per plant (Pollock 1995; Kluse 1994; Hames et al. 1993).

#### **4.4.5 Occurrence at the HCP Plan Area and Vicinity**

Four (4) populations of BLS are currently known to occur within Scotts Valley. Five colonies were observed on the property in 2002 (Biotic Resources Group 2002, see Appendix B), as depicted on Figure 3. Although this occurrence appears to correspond to CNDDDB occurrence #7, the CNDDDB occurrence record was based solely on the presence of Ben Lomond Wallflower as wallflower and spineflower typically co-exist (California Natural Diversity Data Base 2003). The 2002 field surveys confirmed the presence of the spineflower on the site, as depicted on Figure 3.

All occurrence of BLS on the HCP plan area are in open, sandy areas. In one area, 12 flowering plants were plants in an approximately 5 foot x 5-foot area. Approximately 50 plants were observed in another area; 30 plants were observed in a third area, 9 plants in a fourth area and approximately 300 plants in the fifth area. BLS plants possibly extend onto adjacent property (the property line was not delineated clearly in this location). All of the aforementioned locations are outside of the impact area of the proposed project.

Individuals of Diffuse Spineflower (*Chorizanthe diffusa*), a non-listed species, were also observed on the property. Approximately 48 plants were observed growing in an open, sandy area on May 23, 2002 (Biotic Resources Group 2002). These plants were not evident (no-longer blooming) during the June 19, 2002 survey; however, individuals of Ben Lomond spineflower were observed nearby and in full bloom.

<b>Table 2. Summary of BLW and BLS Population Numbers at the Bean Creek Estates Property (See Fig. 3 for mapped locations)</b>			
<b>Species</b>	<b>Numbers of Plants Observed by Survey Year</b>		
	<b>1990 EIR <sup>1</sup></b>	<b>1999 <sup>2</sup></b>	<b>2002<sup>3</sup></b>
<b><i>Ben Lomond Wallflower</i></b>			
North-south ridge	Not available	7	7 (south of 1999 occurrence)
Southwest slope	Not available	12	9
Southwest corner	0	Not available	130
<b>Total</b>	<b>Not available</b>	<b>19</b>	<b>146</b>
<b><i>Ben Lomond Spineflower</i></b>			
North-south ridge	0	0	50
Central slope (3 areas)	0	0	39
Lower slope	0	0	12
Southwest corner	0	0	300
<b>Total</b>	<b>0</b>	<b>0</b>	<b>401</b>

Notes:

1. Terra Sol Ltd., 1990
2. Observations by Biotic Resources Group, 1999
3. Observations by Biotic Resources Group, 2002

## **5.0 IMPACTS AND ENVIRONMENTAL COMPLIANCE**

The HCP area includes a total of 18.07 acres. Within this area, 5.5 acres of Coast Range Ponderosa Pine Forest function as breeding habitat for the MHJB and 11.97 acres of Mixed Evergreen Forest functions as dispersal habitat. A total of 5.64 acres of MHJB habitat will be permanently removed, including 0.60 acre of breeding habitat and 5.04 acres of dispersal habitat.

BLW and BLS are both restricted to approximately 0.012 acre within the Coast Range Ponderosa Pine Forest. Potential impacts to BLS may occur on approximately 0.002 acre. BLW is not expected to suffer any direct impacts or loss of habitat due to construction, but might possibly be impacted by future habitat management activities.

Both temporary and permanent impacts are anticipated to occur due to project-related activities. The remainder of this section identifies the specific activities that could result in impacts to the MHJB, BLW, and BLS, as well as their habitats. Table 3 provides a breakdown of the habitats and acreages for anticipated permanent and temporary impacts.

### **5.1 IMPACT ASSESSMENT**

Permanent impacts will be largely confined to the 4.07-acre impact area (Table 3) that will be developed for residential uses. These impacts will occur during grading, excavation, and construction activities. Incidental take of the MHJB as a result of these activities is expected to be limited as the development activities will largely occur outside of the breeding habitat (Coast Range Ponderosa Pine Forest) of the beetle. The few adult males of the MHJB, which were found in the Mixed Evergreen Forest that characterizes the impact area, are considered dispersing beetles. A small, but undetermined number of MHJBs may be associated with the roots of the solitary Ponderosa pine tree located in the eastern-central portion of the site. Some roots from this pine may extend into the adjacent impact area. Two permanent impacts will occur within the Mixed Evergreen Forest portion of the habitat preserve, where a surface V-ditch is constructed behind lots #1 - #5, and due to installation of the pedestrian path. Although existing above-ground vegetation will be removed to install these improvements, the subsurface root zone will not be disturbed.

Similarly, incidental take of the covered plant species as a result of these activities is expected to be limited as development activities will occur outside the Coast Range Ponderosa Pine Forest and outside occupied habitat of BLW and BLS. In general, the proposed development is located approximately 100 feet from occurrences of listed plant species. An exception is one small colony of BLS that occurs immediately adjacent to the proposed grading line and adjacent to an eroded area that is to be repaired and restored. Grading associated with the cul-de-sac and access road to Lot 13 as well as erosion control of the gully has the potential to result in take of BLS individuals and habitat if grading activities occur outside the limits and/or if erosion control treatments require alteration of this area. Twelve individuals were observed growing within this area in 2002. Thus, inadvertent direct impacts may be incurred at this BLS location if construction best management practices are not followed.

Lesser, temporary impacts to the endangered beetle and two plants are expected to occur in the 14-acre habitat preserve during construction of the project, residential occupation of adjacent areas, during habitat restoration and management, and during species monitoring activities. For

example, trenching will occur during construction of the storm drain pipe from Montevalle, connection of sewer and water pipelines, and installation of the storm drain outfall and dissipater. Such losses may also occur when fencing to protect the habitat is installed or repaired, during removal of invasive, non-native plants, during implementation of other management actions, such as revegetation, and during installation of the pedestrian path. Garbage and debris has been dumped on the property near an access point along Bean Creek Road. The garbage and debris will be manually removed to avoid any potential ground disturbance. In addition, trespass into the habitat preserve by adjacent residential landowners may cause impacts to these species due to the trampling, sand erosion/slippage onto occupied habitat and the spread of non-native landscaping into the open space area. The CC&R's prohibit homeowners from entering into the habitat preservation area and access will be limited to restoration, management, and monitoring activities to conform with the provisions of this HCP.

Area or Activity	Estimated Acreage	Type of Impact	Vegetation Type <sup>a</sup>
Impact Area	4.07	Permanent	MEF
Pedestrian pathway	0.04	Permanent	MEF
V-ditch	0.04	Permanent	MEF
	<b>4.15</b>	<b>Total Permanent</b>	
Fuel Management Area- West	1.10	Temporary	0.6 ac. CRPPF 0.5 ac. MEF
Fuel Management Area - East	0.30	Temporary	0.1 ac. CRPPF 0.2 ac MEF
Montevalle storm drain pipe	0.05	Temporary	MEF
Storm drain dissipator	0.10	Temporary	RIP
Sewer connection	0.02	Temporary	MEF
Water connection	0.02	Temporary	MEF
	<b>1.59</b>	<b>Total Temporary</b>	

a – MEF = Mixed Evergreen Forest, CRPPF = Coast Range Ponderosa Pine Forest, and RIP = Riparian Woodland

According to Mike Biddle, of the Scotts Valley Fire District, fire clearance requirements depend on the type of construction materials used to build the new residential structures, the location of the proposed structures within the building envelope, and the presence of sensitive habitat on site. As described in the Fuel Management Plan (section 7.3.2), the Fire District requires a 100-ft. wide fuel management area (Figure 4) alongside and immediately west of the new residences between lots #6 and #12, plus a 30-ft. wide fuel management area on the eastern sides of lots #1 - #5 and the southern side of lot #6. Within these fuel management areas, limbs on existing trees will be pruned to a height of 10 feet above ground and existing shrubs will be pruned. In addition, invasive plants will be removed.

The fuel management areas lie within the habitat preserve. The eastern portion measures approximately 0.3 acres, while the western portion measures about 1.1 acres. Approximately 0.6 acres of Coast Range Ponderosa Pine Forest, 0.1 acres of Riparian Woodland, and 0.97 acres of Mixed Evergreen Forest occur within the fuel management areas.

To summarize, impacts to the MHJB, BLW, and BLS and their habitat will occur during grading of the site and the installation of various improvements to the site associated with the construction of 13 single-family residences. Permanent impacts as a result of these actions will be largely restricted to the 4.07 acre impact area at the HCP plan area, except for an estimated 0.08 acres of the habitat preserve (0.08 acres of Mixed Evergreen Forest) that will also be permanently impacted (Table 3). Temporary impacts will also occur in an estimated 1.59 acres of the habitat preserve, but revegetation will restore 0.19 acres (0.10 acres of Riparian Woodland and 0.09 acres of Mixed Evergreen Forest) of temporarily impacted locations, while pruning of shrubs and trees will periodically occur in 1.4 acres (0.7 acres of Coast Range Ponderosa Pine Forest and 0.7 acres of Mixed Evergreen Forest). As discussed in greater detail in Section 7.0 on Minimization and Mitigation Measures, these impacts at the HCP plan area will be offset by the permanent protection of 14.0 acres, including 5.5 acres of prime sandhills habitat (i.e., Coast Range Ponderosa Pine Forest), 7.9 acres of Mixed Evergreen Forest, and 0.6 acres of Riparian Woodland, via a conservation easement for the habitat preserve at the Bean Creek Estates HCP plan area, where all three endangered species are known to occur.

## **5.2 DIRECT AND INDIRECT EFFECTS**

Although direct and indirect impacts to the MHJB, BLW, and BLS, as well as their preferred habitat are expected to be minimal, incidental take of all three endangered species will occur within the impact area and to a lesser degree within the habitat preserve. During 2002 surveys, a few adult males of MHJB were observed dispersing in the impact area (Figure 3). During the botanical surveys conducted in 2002, twelve individuals (3.0 %) of BLS were observed growing immediately adjacent to the impact area (of an estimated 401 individuals of the BLS observed at the HCP plan area). Similarly, no individuals of BLW were observed growing in the impact area, during 2002 surveys. Thus, the establishment of the open space area will provide habitat protection for approximately 97% of the BLS population and 100% of the BLW population at the HCP plan area.

As previously discussed in this HCP, the Bean Creek Estates HCP plan area is situated in a region where nearby parcels support stands of suitable habitat, including one or all of the three covered species. Although the loss of habitat will be permanent, the applicant will permanently protect 14.0 acres of prime habitat within the preserve.

## **5.3 CUMULATIVE EFFECTS**

Development of the thirteen-lot subdivision will result in minor cumulative impacts to endangered MHJB, BLW, and BLS and Coast Range Ponderosa Pine Forest. The project will permanently remove some roots of one isolated ponderosa pine tree that grows in the eastern portion of the property. The remaining pine forest will be preserved as the habitat preserve.

Even though 4.15 acres of Mixed Evergreen Forest habitat will be permanently removed along with small numbers of MHJB and BLSs, these losses are not expected to affect the survival of the beetle or spineflower due to the occurrence and abundance of both species at several nearby locations, as well as elsewhere throughout their entire geographic ranges. Indeed, the affected acreage will be replaced by the permanent protection of 14.0 acres of prime habitat that is known to support both endangered species. No individuals of BLW are expected to be

directly affected by the proposed development, so any cumulative effects to this species will be minor.

Since MHJB has been observed inhabiting soils in residential yards that occur in close proximity to the HCP plan area, it can presumably co-exist in such habitat once soil disturbance has ceased. Thus, some MHJB may recolonize portions of the HCP plan area where loose, sandy soils remain after all site improvements have been completed.

#### **5.4 EFFECTS ON CRITICAL HABITAT**

Critical habitat has not been designated for the MHJB, BLW, or BLS. The HCP plan area and the habitat preserve are located within the zones of critical habitat (U.S. Fish & Wildlife Service 2001) for the federally endangered Zayante Band Winged Grasshopper (*Trimerotropis infantilis*). The Zayante band-winged grasshopper was not covered in this HCP because it does not occur in the HCP plan area due to absence of its habitat, open sand parkland. The Service will assess the impacts of the project to critical habitat for the Zayante Band Winged Grasshopper in its biological opinion.

## 6.0 TAKE OF THE THREE COVERED SPECIES

Since there are no accurate estimates of the numbers of MHJB that reside at the HCP plan area, it is not possible to quantify the exact number of individual animals that could be taken by the removal or modification of its habitat within the impact area. For these reasons, the level of incidental take of the MHJB is expressed as the acreage of the 18.07-acre HCP plan area. Incidental take of MHJB could result from removal of approximately 4.07 acres of Mixed Evergreen Forest habitat on the HCP plan area within the impact area and approximately 0.08 acres of Mixed Evergreen Forest within the habitat preserve. In addition, beetle eggs, larvae, pupae, or adults may be taken or may be directly harmed during initial grading activities or by construction equipment and vehicles. An undetermined, but limited number of life stages of the MHJB may be lost during habitat management activities at the HCP plan area, in particular, during the removal of non-native plants or pruning for fuel management in the 14.0-acre habitat preserve. Similarly, an undetermined, but limited number of MHJB may be lost during habitat management activities and species monitoring in the habitat preserve, or visitation to the habitat preserve by residential landowners. Since the breeding habitat for the MHJB will be protected, adverse rangewide effects to the beetle, its core areas, or key dispersal areas, should be very minimal as evidenced by the beetle's persistence in several residential neighborhoods in the greater Scotts Valley region.

The maximum levels of take of the MHJB anticipated to occur under this HCP, and hereby authorized by its associated Section 10(a)(1)(B) permit, are as follows:

- 1) any MHJB that may be taken (killed, injured, harmed, harassed or captured) as a result of the following activities occurring within the boundaries of the 4.07 acre impact area at the HCP plan area:
  - a) any construction operations including, but not limited to, use of any equipment, vegetation removal, trampling of vegetation, compaction of soils, ground disturbance, grading, or creation of dust;
  - b) any permanent loss of habitat as a result of development of infrastructure including, but not limited to, buildings, sidewalks, swimming pools, or drainage and irrigation systems; and
  - c) any activities to manage or enhance habitat including, but not limited to, leveling ground, planting vegetation, watering vegetation, or removal of exotic plant species;
- 2) any MHJB that may be taken (killed, injured, harmed, harassed or captured) as a result of the following activities occurring within the boundaries of the 14.0 acre habitat preserve at the HCP plan area:
  - a) any activities associated with habitat management, enhancement, or species monitoring, including but not limited to: surveys for the MHJB, removal of exotic plant species, fuel management, installation and repair of fences or signs, patrol

on foot of the parcel or other actions required in the HCP or conservation easement; and

- b) any temporary loss of habitat as a result of development infrastructure, including ground disturbance for installation of storm pipe and dissapator, and utility hookups.

The proposed project has the potential to impact twelve individuals of BLS (as well as soil seedbank reserves) during grading for the cul-de-sac and access road for Lot 13 (and associated erosion control treatment of an existing gully) that is situated outside of but next to the border of the habitat preserve. Incidental take of BLS could result from removal of sandy, occupied habitat at this location. In addition, seeds of BLS may be taken or directly harmed during initial grading activities or by construction equipment, vehicles, or materials. An undetermined, but limited number of life stages of the BLW and BLS may also be lost during habitat management activities within the open space area, in particular during the removal of non-native plants and revegetation. Similarly, an undetermined, but limited number of plants may be lost during monitoring of the covered species. In addition, an undetermined, but limited number of plants may be lost from residential landowners trespassing into the open space area.

The maximum levels of adverse effects to the BLW and BLS anticipated to occur under this HCP are as follows:

- 1) Any BLS that may be adversely affected as a result of the following activities occurring within the boundaries of the 4.07 development area at the HCP plan area:
  - a) Any construction operations including, but not limited to, use of any equipment, vegetation removal, trampling of vegetation, compaction of soils, ground disturbance, grading, or creation of dust;
  - b) Any permanent loss of habitat as a result of development of infrastructure including, but not limited to, buildings, sidewalks, roads, swimming pools, or drainage and irrigation systems;
  - c) Any activities to manage or enhance habitat including, but not limited to, leveling ground, creating bare ground, planting vegetation, watering vegetation, or removal of exotic plant species;
  
- 2) Any BLW and BLS that may be adversely affected as a result of the following activities occurring within the boundaries of the 14-acre habitat preserve area;
  - a) Any activities associated with habitat management, enhancement, or species monitoring, including but not limited to: surveys for the BLW and BLS, removal of invasive, non-native plant species, installation and repair of fences or signs, patrol on foot of the parcel, or other actions required in the HCP or conservation easement.

These incidental take limits are subject to full implementation of all minimization and mitigation measures described in Section 7.0. If any of these take limits are exceeded, the permit holder shall immediately cease all construction and habitat management operations and contact the Service.

## **7.0 MINIMIZATION, MITIGATION, AND MONITORING MEASURES**

The following measures have been incorporated into the proposed project to minimize and mitigate potential incidental take of the MHJB, BLW, and BLS. The successful implementation of these measures conducted prior to, concurrent with, and following subdivision development will enable the project to achieve its overall biological goal of the protection and management of the endangered beetle and plant populations within the habitat preserve. The remainder of this chapter describes these activities in greater detail.

### **7.1 MINIMIZATION MEASURES DURING CONSTRUCTION**

The following minimization measures will be implemented prior to and during the construction related activities at the HCP plan area.

#### **7.1.1 Construction Monitor**

A person knowledgeable about the MHJB, BLW, and BLS and their habitats, and approved by the Service, shall be present during initial grading and excavation activities (i.e., clearing of vegetation and stripping of the surface soil layer). The monitor shall be present on site beginning with the installation of temporary fencing prior to clearing of vegetation, and shall conduct regular inspections of the HCP plan area during the initial grading period to ensure compliance with the minimization measures provided in this HCP. The monitor will also periodically visit the HCP plan area throughout the entire construction period to insure that impacts to the HCP plan area are consistent with the project description of this HCP. The monitor shall have authority to immediately stop any activity that does not comply with this HCP, and to order any reasonable measure to avoid the MHJB, BLW, and BLS.

#### **7.1.2 Delineation of Impact Area**

Prior to the initiation of construction, the permittee, in conjunction with the construction monitor, will install a temporary fence along the boundaries of the impact parcel and, if deemed necessary, warning signs will be posted to alert grader and excavator operators plus other construction workers not to proceed beyond the fence. All protective fencing will remain in place until all construction and other site improvements have been completed.

#### **7.1.3 Construction and Operational Requirements**

All project-related parking and equipment storage shall be confined to the impact area or existing paved roads in the adjacent neighborhood. Project-related vehicle traffic shall be restricted to established roads that service the impact area.

#### **7.1.4 Contractor and Employee Orientation**

The construction monitor shall conduct a brief orientation program for all persons who will work on-site during construction. The purpose of the orientation will be to inform equipment operators and field supervisors of the grading limits and construction activity restrictions. In addition, the program will include a brief presentation on the biology of the MHJB, BLW, and BLS as well as the terms of the HCP. The construction monitor will provide these persons with photos of the three covered species. The Service shall provide these photos to the construction monitor if suitable photos cannot be obtained from other sources.

### **7.1.5 Access to HCP Plan Area**

The permit holder shall allow representatives from the Service access to the HCP plan area to monitor compliance with the terms and conditions of this HCP. In addition, since the BLW is a State-listed endangered species, the permit holder shall allow representatives from the California Department of Fish & Game access to the HCP plan area to monitor compliance.

### **7.1.6 Habitat Protection During Construction**

Prior to initial grading, temporary fencing will be erected to minimize the disturbance upon the 14-acre habitat preserve caused from adjacent grading and excavation activities during construction of the new homes, roadways and erosion control. If deemed necessary by the construction monitor, signs will be placed on the fence at locations within 15 feet of the grading footprint, informing operators of the grading equipment of the presence of an endangered species. Signs will include the following language:

**"NOTICE: SENSITIVE HABITAT AREA. GRADING PROHIBITED."**

All equipment operators and field supervisors will attend a pre-construction conference to be conducted by the construction monitor. The purpose of the conference will be to inform all grading and construction workers of the presence of endangered species on and adjacent to the HCP plan area, conduct a site visit to show participants where grading can and cannot occur, identify appropriate dust control measures, inform operators of appropriate protocol should they encounter the MHJB, BLW, or BLS during grading and construction activities, and to advise operators of the penalties that may incur if harm to either endangered species occurs or if workers enter unauthorized areas.

The construction monitor will periodically inspect the site and oversee activities on a regular basis during the grading. Should any violation occur, a "stop work" order will be issued immediately. The Ventura office of the Service will be contacted and the "stop work" order will remain in effect until the issue is resolved.

### **7.1.7 Salvage of Ben Lomond Spineflower**

Depending upon the timing of permit issuance and the start of vegetation clearing and grading activities, seeds of the BLS may be collected from plants growing within the eroded portion of the impact area at the HCP plan area for use in revegetation efforts for the habitat preserve.

### **7.1.8 Slope Stabilization**

As the impact area of the HCP plan area is steep, grading for the new homes and other amenities will occur. Grading and backfill operations will be conducted to avoid slope failures in the neighboring, protected habitat preserve at the HCP plan area. A temporary fence will be constructed around the perimeter of the impact area at the HCP plan area. Heavy equipment will not be permitted beyond the fence. Equipment operators will be informed of the reasons for installation of the fence and will be required to stop work and notify the project's construction monitor and engineer immediately should activities threaten to impact the mitigation area of the HCP plan area.

### **7.1.9 Cover Exposed Soils**

Grading and construction activities are likely to occur during the MHJB's summer flight season, which typically runs from about May 15th to August 15th. Adults of the beetle are attracted to barren sandy soils. To minimize the chances that adult beetles are attracted to sandy soils that are cleared within the impact area during construction, these areas will be covered by tarps, sterile hay, or another appropriate material during the MHJB's flight season to discourage the beetle from using exposed sandy soils within the impact area at the HCP plan area.

## **7.2 MITIGATION MEASURES**

The intent of the habitat preserve is to retain existing native plant communities that will continue to be self-perpetuating and support viable populations of the MHJB, BLW, and BLS. Except for the night lighting mitigation measure, the following mitigation measures will occur within the habitat preserve.

### **7.2.1 Mitigation Site Location**

To offset the anticipated impacts to the MHJB, BLW, and BLS, plus their habitats, the applicant will record a perpetual conservation easement for the 14-acre habitat preserve parcel (Figure 4) at the Bean Creek Estates HCP plan area. As described in Section 4.0, all three covered species have been observed at the HCP plan area primarily within the boundaries of the habitat preserve.

### **7.2.2 Conservation Easement**

The Applicant, will record an easement for the 14-acre habitat preserve to mitigate for the loss of MHJB and BLS within the impact area of their HCP plan area. As described in the attached conservation easement (Appendix C), the applicant is the permittee and grantor of the easement, and the CNLM is the grantee of the easement. The Bean Creek Estates Homeowners' Association will become the successor grantor of the easement once all of the new residential properties are sold by the Applicant.

A copy of the conservation easement grant is attached as Appendix D. The easement will be recorded simultaneously with the recording of the project's final subdivision map. Briefly, the easement grants to the grantee a perpetual conservation easement for the purpose of assuring that the easement property (i.e., the 14-acre habitat preserve at the Bean Creek Estates HCP plan area) will be retained forever in a natural and open space condition to protect the biological resources there. Furthermore, the designated land management agency, the CNLM, is granted various rights and assumes obligations to protect the conservation parcel and to manage the habitat to benefit the covered species. The conservation easement prohibits activities that are incompatible with the preservation and management efforts. For example, encroachment in this area is prohibited except for activities related to the maintenance and protection of habitat and monitoring of the endangered species.

### **7.2.3. CC&R's of the Bean Creek Estates Homeowners' Association**

Prior to the City of Scotts Valley's issuance of the first certificate of occupancy for the project, the permit applicant, Mr. Tom Masters, will record CC&R's, in general conformance with the CC&R's attached as Appendix H and containing the following provisions:

- (a) The Bean Creek Estates Homeowners Association shall maintain a policy of insurance which provides for coverage of damages up to a maximum of \$1,000,000 per occurrence and \$2,000,000 aggregate for the habitat preserve area.
- (b) The owner of each lot is liable for all damages to the habitat preserve area and/or improvements thereon (including, without limitation, damage to species and plants identified in the Habitat Conservation Plan and to fencing and signage) caused by such owner, or any occupant of the owner's lot, or visitor, contractor or agent of the such owner, except for that portion of the damage fully covered by insurance of the Association.
- (c) Prohibition of the following uses in the habitat preserve area: (i) entry by persons, household pets or mechanized or non-mechanized vehicles of any kind except for the purpose of maintenance and repair as provided in the Habitat Conservation Plan; (ii) dumping or storage of materials of any kind including, without limitation, garbage, debris, construction materials, motor vehicle or machine parts, appliances, furniture, household cleaners and chemicals, hazardous materials and/or lawn cuttings or other landscaping materials; (iii) planting of gardens or installation of landscaping of any kind; (iv) removal of trees or vegetation (other than for fire prevention as specified in the Habitat Conservation Plan); (v) construction or placement of patios, pathways, decking, fencing, outbuildings, recreational facilities, play equipment or structures of any kind; (vi) installation of lighting; and, (vii) fires.
- (d) The owner of each lot is prohibited from planting invasive plant species.

#### **7.2.4 Habitat Protection**

Upon the recording of the conservation easement (Appendix D), the permittee shall install fencing, as necessary, around the perimeter of the habitat preserve. One or more gates will also be installed to facilitate access for habitat management and monitoring activities. Signs, identifying this portion of the HCP plan area as a habitat preserve, will also be placed on the fence. The text and location of signage should be subject to review and approval of the City of Scotts Valley, the CNLM, and the Service.

#### **7.2.5 Night Lighting**

Males of the MHJB are active at dusk and may be attracted to lights along the streets or exterior lights on the new residences. For this reason all street lights and exterior residential lights will use bulbs that do not attract insects.

### **7.3 HABITAT MANAGEMENT AND MONITORING ACTIVITIES**

Management of the vegetation in the 14-acre habitat preserve will be necessary to benefit the MHJB, BLW, and BLS not only during the term of the permit for incidental take, but also in perpetuity. Similarly, monitoring of the three covered species will be necessary to demonstrate that the management activities achieve the desired results. This section describes the types of habitat management and species monitoring activities that are expected to occur. Details of the fuel management plan are also presented.

The management and monitoring activities described in this HCP are based on the principles of adaptive management, which allow the conservation measures to be adjusted over time based on results of each year's monitoring to better ensure that the biological goals and objectives of this HCP are achieved. The 14.0 acre preserve parcel currently supports populations of the three covered species; however, it is unknown whether this parcel will perpetually function in this manner. Thus, the adaptive management plan is based on this uncertainty and implements actions intended to maintain these populations, and where feasible, improve habitat quality to increase population numbers and area of occupation.

### **7.3.1 Habitat Management**

The primary goal of the management program for the habitat preserve parcel is to permanently maintain and protect 14 acres of Coast Range Ponderosa Pine Forest, Mixed Evergreen Forest, and Riparian Woodland habitats. The permittee has been advised by their environmental consultants and the Service that the habitat within the 14-acre preserve parcel supports all of the covered species, but that the quality of the habitat can be improved to benefit all three covered species. If monitoring results indicate that the success criteria are not being achieved and the quality of habitat is declining, adaptive management will be utilized to adjust the current management techniques to achieve the success criteria to the maximum extent practicable.

A Property Analysis Record ("PAR") was completed by the CNLM to determine the costs of initial management and compliance activities as well as the costs of perpetual habitat management and species monitoring activities at the preserve parcel. A copy of the PAR is attached (Appendix G) along with the PAR letter, the latter which details assumptions used to prepare the PAR. These costs are summarized in Section 8.7. Applicant will provide funding to the designated land management agency to carry out the following management activities in perpetuity, as identified in the PAR and PAR letter:

- a) On-going repair of the fencing which protects the habitat preserve area;
- b) On-going maintenance and repair of signage which will be erected at the property boundaries and along trails to control access and use of the habitat preserve area;
- c) Site inspections will occur quarterly at the habitat preserve to insure that trespass is not occurring, that fencing is properly protecting the habitat, and that timely repairs are made;
- d) Removal of any illegally dumped items and on-going debris removal as needed;
- e) Invasive, non-native plants will be controlled and, if feasible, eliminated from the habitat preserve by appropriate eradication procedures (Note: herbicides should be avoided, if possible), with efforts focused on, but not limited to French broom, pampas grass and invasive annual grasses and weeds;
- f) Management of the habitat preserve to promote the growth of BLW and BLS by maintaining barren or sparsely vegetated ground and reduction in cover of annual grasses and weeds;
- g) Implementation of the fuel management plan on an as-needed basis;
- h) Photo-documentation of the site should occur at least annually to assess changes in vegetation and condition of the habitat preserve; and

- i) Monitoring of the MHJB, BLW and BLS, using reconnaissance-level surveys, relative abundance or quantitative sampling methods, photo-documentation, and mapping techniques, as appropriate, to document changes in annual distributions and abundances, responses to management actions at the open space area, and reporting on the status of these endangered species and the conditions of the site (see following sections for more discussion of monitoring methods and reporting requirements).

The permittee has been advised that by implementing these activities at the frequencies listed above, habitat that presently supports the covered species will likely be maintained in its current condition or improved as a result of increased management activities. The attached Management and Funding Agreement (Appendix I) identifies the responsibilities of the Applicant and the CNLM.

### **7.3.2 Fuel Management Plan**

1. Fuel Management Plan. Lands to the east, west and south of the Bean Creek Estates home sites will be subject to this Fuel Management Plan. The primary objective of this Fuel Management Plan is to promote public safety by controlling the spread of wildland fires through the habitat and open space areas.

2. Fuel Management Areas. Two Fuel Management Areas, as determined by the Scotts Valley Fire District, are shown in Figure 4 and will be managed in accordance with the regulations of this Fuel Management Plan to prevent the spread of fires from the habitat and open space area to the home sites and to adjacent properties:

- (a) approximately 100 feet from the front exterior walls of the homes constructed on Lots 2, 3, 4, 5, 7, 10, and 11, and from the west-facing exterior wall of the home constructed on Lot 6, and from the southeast and southwest-facing exterior walls of the home constructed on Lot 12;;
- (b) approximately 30 feet from the south-facing exterior wall of the home constructed on Lot 6, and from the east-facing exterior walls of the homes constructed on Lots 1, 2, 3, 4, 5, and 6.

3. Management Requirements. The management requirements in the Fuel Management Area are as follows:

- (a) Prior to occupancy of the first home, the developer shall “flag” the boundaries of the Fuel Management Areas. Following the completion of the flagging, the developer shall have a qualified landscape contractor trim and prune brush and remove limbs from all mature trees up to a height of ten feet, to the satisfaction of the Scotts Valley Fire District, excluding however, all state and federally listed special status plant species (currently identified as Silver-leaved manzanita, Ben Lomond Wallflower and Ben Lomond spineflower). This provision is not intended to require the removal of any plants unless such plants are proposed for removal under the Habitat Conservation Plan. The person designated "construction monitor" in the Habitat Conservation Plan shall accompany the

landscape contractor to identify the special status plant species for the landscape contractor, and shall inform the landscape contractor of appropriate protocol should the contractor encounter either the Mount Hermon June Beetle or the special status plant species during trimming and pruning operations and of the penalties the contractor may incur if endangered species are harmed.

- (b) One year following the actions described above, and annually thereafter, the CNLM shall request the Scotts Valley Fire District to perform an inspection of the Fuel Management Area. Based on that inspection, the Scotts Valley Fire District shall provide direction as to the amount and extent of necessary pruning, trimming and limb removal, if any, and the CNLM shall cause the work to be performed.

4. Responsibility for Fuel Management. The management requirements for the Fuel Management Areas will also be incorporated into the subdivision CC&R's, and the Conservation Easement. The homeowners of Bean Creek Estates, as provided in the CC&R's, will be charged an annual assessment which will be paid to the CNLM to manage the Conservation Easement, including the Fuel Management Area.

The CC&R's shall provide that Bean Creek Estates Homeowners Association is responsible for assuring that the CNLM and its contractors comply with the requirements of the Fuel Management Area. Should a fire occur in the habitat and open space area and the requirements of the Fuel Management Area have not been met, the Homeowners Association can and will be liable for all damages to surrounding structures and property and all costs incurred for fire suppression.

5. Other Fire Prevention Provisions. In addition to the requirements of the Fuel Management Area, the following fire prevention provisions shall be incorporated into the CC&R's:

- (a) All homeowners shall regularly trim, prune and/or cut all shrubs, grasses and trees on their lots to the satisfaction of the Scotts Valley Fire District.
- (b) All homes shall have sprinkler systems which conform with the requirements of the City of Scotts Valley and the Scotts Valley Fire District.
- (c) Wood shakes are prohibited as roofing materials.
- (d) Fire resistance materials shall be used in the construction of the homes.

### **7.3.3 Species Monitoring Activities**

Presently, approximately 5.5 acres of the 14.0-acre, on-site, habitat preserve supports Coast Range Ponderosa Pine Forest, which supports known populations of the MHJB, BLW, and BLS. At this time the overall quality of this habitat is generally high. Nonetheless, management activities will need to be performed to maintain and improve the quality of habitat within the habitat preserve parcel to benefit these covered species. For this reason, monitoring of the

covered species will be an important component of the mitigation efforts to demonstrate that the management actions benefit these species, to document the success of the mitigation program, and to identify remedial actions or contingency measures if the planned mitigation activities do not meet the biological goals of this HCP. Therefore, the permittees will provide funds to the designated land management agency for the maintenance, protection, management, and monitoring of covered species and the habitat preserve parcel in perpetuity in accordance with the provisions of Section 8.7. Annual monitoring of the covered species will provide data to assure that the biological goals of this HCP will be met and will provide additional information to the Service regarding the distribution and abundance of the MHJB, BLW, and BLS.

The individual(s) who conduct the monitoring for the designated land management agency will need to have a recovery permit for the MHJB or the monitoring activities can be performed under the take permit issued to the permittee. No permits are necessary to monitor the BLW and BLS.

#### **7.3.3.1 Mount Hermon June Beetle**

Adults of the MHJB are active at dusk for approximately one hour on evenings between about mid-May and mid-August. Because they are attracted to lights, black light traps that capture the adult beetle and keep it alive are the preferred survey technique for monitoring the beetle's presence-absence and abundance at the habitat preserve. A minimum of five nightly surveys of the habitat preserve should be conducted during the beetle's annual flight season during each year when development activities (including revegetation) occur. Once the take permit transfers from the development company to the Bean Creek Estates Homeowners' Association and/or to the CNLM, annual monitoring should continue for the next three consecutive years, and thereafter can be performed on an every other year basis for the next six years. At that point in time, the frequency of monitoring may be reduced to once every five years, assuming that the goals of this HCP are being met. Based on site topography and resident vegetation, a minimum of 10 light traps should be placed at the habitat preserve, positioned to attract MHJB from locations near each trap. Additional traps should be placed in other portions of the Bean Creek Estates HCP plan area to assess the degree of take that may be occurring in these portions of the site. The number of MHJB adults attracted to each trap will be summarized in the annual monitoring report of the permit.

#### **7.3.3.2 Ben Lomond Wallflower and Ben Lomond Spineflower.**

Surveys will be conducted during the peak flowering periods of the BLW and BLS to monitor the populations of these endangered plants. The biological monitor will walk throughout appropriate portions of the 14-acre habitat preserve to locate and map patches of both plants on a suitable base map, and estimate the area of coverage/abundance for each patch of reasonable size. The biological monitor will photo-document the occurrences of these patches, will evaluate the condition of the habitat preserve for the BLW and BLS, and will make recommendations to the land management agency as to how to enhance habitat for both plants as appropriate. Locations targeted for reestablishment of both plants will also be monitored in a manner appropriate to estimate survival rates of restoration plants. The findings of these surveys will be summarized in the annual monitoring report.

#### **7.3.4 Annual Monitoring Report**

An annual monitoring report will be prepared for submission to the Service, the permittee, California Department of Fish & Game, the City of Scotts Valley, and the CNLM. The responsibilities for preparing the annual monitoring report and the information that will be included in the report are described in Section 8.6.2.

#### **7.4 SCHEDULE FOR IMPLEMENTATION**

Upon issuance of the incidental take permit, the various minimization and mitigation measures described in the prior sections of this HCP will occur at the HCP plan area in both the impact area as well as the adjacent habitat preserve. The various management techniques described in this document will be implemented according to the schedule detailed in Table 3.

Temporary fencing will be erected to protect the open space area prior to the start of grading at the impact area. The construction monitor will assist in staking the limit of grading and the alignment of the fence. This monitor will conduct pre-construction meetings with grading and construction personnel to inform them about the presence of special status species at the HCP plan area and appropriate protocol should the BLW and BLS be encountered. The monitor will periodically visit the site to insure that all grading and construction activities comply with the parameters established in this HCP.

The habitat preserve will be protected permanently under a conservation easement before any construction activities at the HCP plan area commence. Permanent protective fencing will be installed by the developer and subsequently maintained by the CNLM. Habitat enhancement activities will focus upon management of existing habitat for BLW and BLS, maintenance of plants indigenous to the ponderosa pine forest, and control of invasive non-native plants, to the extent reasonable and practical. Control of invasive plant species will be achieved by manual removal methods appropriate for each target invasive species, and habitat management techniques, such as mowing, grazing, and controlled burns to favor the indigenous plant species. The timing of these activities will be determined by the phenology of the targeted invasive plants. French broom, pampas grass and other invasive plant species will be removed from the conservation parcel. To some degree, these techniques will be experimental, especially during the initial years of the habitat management efforts to identify the particular methods plus their timing(s) and intensities to achieve the biological goals of this HCP in a cost-effective manner and, if necessary, identify appropriate remedial actions.

Annual monitoring of the conservation parcel and the three covered species will occur in perpetuity. An annual report will be prepared by the designated land management agency and submitted to the Service, California Dept. of Fish & Game, the City of Scotts Valley, and the permittee. This report will describe the monitoring activities performed, the results, and recommendations for any necessary remedial actions to achieve the goals of the HCP. Reporting requirements are discussed further in Section 8.6.

**Table 4. Implementation Schedule for Habitat Management and Species Monitoring Activities at the Bean Creek Estates HCP plan area**

Management or Monitoring Activity	Months in Year 1									Seasons after Year 1			
	A	M	J	J	A	S	O	N	D	Win	Spr	Sum	Fall
Installation of temporary protective fencing, signs, and hay bales around the impact area	■												
Installation of permanent protective fencing and signs around the habitat preserve	■												
Quarterly inspections and maintenance of habitat preserve	■		■		■		■			■	■	■	■
Monitoring of MHJB		■									■		
Monitoring of BLW and BSF		■									■		
Annual monitoring report								■	■				

## 8.0 PLAN IMPLEMENTATION

### **8.1 BIOLOGICAL GOALS AND OBJECTIVES**

The overall goal of this HCP is to permanently protect 14.0 acres of Coast Range Ponderosa Pine Forest, Mixed Evergreen Forest, and Riparian Woodland at the HCP plan area as a habitat protection area for the loss of 4.07 acres of Mixed Evergreen Forest caused by the proposed construction of thirteen new residences within the impact area at the HCP plan area. Permanent protection of the 14 acres of habitat within the open space area will be accomplished through a recorded conservation easement. In addition, protected habitats at the conservation parcel will be managed in perpetuity in a manner that supports populations of the MHJB, BLW, and BLS. Finally, the permittee will implement several measures during grading and construction at the HCP plan area to minimize impacts to the endangered species.

The goals and objectives identified for the three covered endangered species and their habitats are similar.

**Goal #1:** Facilitate conservation and recovery of the three endangered species by preserving and, if feasible, enhancing their populations within the habitat parcel.

**Objective 1:** Maintain or increase the distribution of the three endangered species within the habitat parcel.

**Objective 2:** Maintain or increase the abundance of the three endangered species within the habitat parcel.

**Objective 3:** Improve our understanding of the ecological factors influencing the distribution, abundance, and population persistence of the three endangered species within the habitat parcel.

**Goal #2:** Maintain and enhance the structure and species composition of the native plant communities within the habitat parcel.

**Objective 1:** Control, and when feasible, eradicate invasive plants.

**Objective 2:** Maintain and enhance the species diversity, cover, and areal coverage of native sandhills plant species and communities within the habitat parcel.

### **8.2 IDENTIFICATION OF PROJECT REPRESENTATIVE**

Prior to initiating ground-disturbing activities, the permittee shall designate a representative responsible for communications with the Service and for overseeing compliance with the Section 10(a)(1)(B) permit. Initially, the designated representative is Mr. Tom Masters. He can be contacted via mail at 28225 Robinson Canyon Road, Carmel, CA 93923, or via telephone at (831) 625-0413, or via email at masterst@mac.com. If a substitute representative is designated, the Service shall be notified in writing of the representative's name and contact information.

### **8.3 IDENTIFICATION OF CONSTRUCTION AND BIOLOGICAL MONITORS**

Subject to approval by the Service, Kathy Lyons will be the construction monitor for this project. Duties of the construction monitor are provided in Section 7.1. She can be contacted at the Biotic Resources Group, 2551 S. Rodeo Gulch #12, Soquel, CA 95073, phone (831) 476-4803, fax (831) 476-8038, and via email at [brg@cruzio.com](mailto:brg@cruzio.com). Dr. Richard Arnold will assist Ms. Lyons on matters pertaining to the MHJB. He can be contacted at Entomological Consulting Services, Ltd., 104 Mountain View Court, Pleasant Hill, CA 94523, phone (925) 825-3784, fax (925) 827-1809, and via email at [bugdctr@comcast.net](mailto:bugdctr@comcast.net).

The designated land management agency will be the CNLM, which will also serve as the biological monitor for the habitat preserve. A management agreement for the CNLM to assume these responsibilities is attached (Appendix I). Sherry Teresa is the Executive Director and can be contacted at: 425 E. Alvarado Street, Suite H, Fallbrook, CA 92028, phone (760) 731-7790, fax (760) 731-7791, or email at [steresa@cnlm.org](mailto:steresa@cnlm.org). Duties of the biological monitor are provided in Sections 7.1.7, 7.3.1 through 7.3.4 and 8.6.2.

### **8.4 RESPONSIBILITIES**

As specified in the Service's Habitat Conservation Planning Handbook, an Implementing Agreement (IA) is not required for low-effect HCP's unless requested by the permit applicant. This HCP has been prepared under the assumption that all responsibilities of the parties involved with this project will be identified either in this HCP, the conservation easement (Appendix D), the CC&R's of the homeowners' association (Appendix H), and the permit conditions of the incidental take permit. For this reason, an IA has not been prepared.

The permittees understand that they are responsible for implementing this HCP in accordance with the specifications for mitigation. The permittees will satisfy their mitigation responsibilities by permanently protecting 14.0 acres of habitat for the three covered species on the neighboring habitat preserve and providing the funds described in the PAR analysis (Appendix G) to perform the various habitat protection, management, restoration, and monitoring activities.

All habitats within the habitat preserve parcel will be protected via a conservation easement (Appendix D), held by the CNLM, which will assume all responsibilities for annual monitoring and reporting, as described herein. It will also complete all obligations assigned to it within the Section 10 permit and the HCP.

### **8.5 PLAN DURATION**

The applicant seeks a six-year permit from the Service to cover those activities associated with the incidental take of MHJB, BLW, and BLS on the 4.07-acre impact area at their HCP plan area. The six-year period is necessary because not all thirteen new homes may be built simultaneously. In addition, the six-year permit period is needed to insure that the monitoring of the habitat preserve demonstrates that protection of this site benefits the endangered MHJB, BLW and BLS.

## **8.6 REPORTING**

### **8.6.1 Post-Construction Compliance Report**

A post-construction compliance report prepared by the construction monitor shall be forwarded to the CNLM, the Service (Ventura office), California Dept. of Fish & Game (Monterey office), and City of Scotts Valley (Planning Department) within 60 calendar days of the completion of construction. This report shall provide the following information:

- 1) Dates that construction occurred;
- 2) Pertinent information concerning the permittee's success in meeting the project's mitigation measures;
- 3) An explanation of failure to meet such measures, if any;
- 4) Known project effects on federally-listed species, if any;
- 5) Occurrences of incidental take of federally listed species, if any; and
- 6) Other pertinent information.

### **8.6.2 Annual Mitigation Monitoring Reports**

Site inspections, exotics control and removal, re-establishment of covered plant species, habitat management activities, fence repairs, and monitoring for the MHJB, BLW and BLS will occur annually at the conservation parcel throughout the term of the permit and as needed in perpetuity. Thus, monitoring reports will be prepared annually by the biological monitor, i.e., the CNLM, and submitted to the Service (Ventura office), California Dept. of Fish & Game (Monterey office), and City of Scotts Valley (Planning Department) by December 31<sup>st</sup> of each monitoring year. This report shall include:

- 1) A brief summary of project activities accomplished during the reporting year;
- 2) Description of any project impacts due to construction, habitat management, or species monitoring activities; An assessment of the condition of the habitat at the mitigation site;
- 3) Dates and results of MHJB monitoring;
- 4) Dates and results of BLW and BLS monitoring;
- 5) A brief discussion of other monitoring efforts that occurred during the past year and whether restoration goals are being achieved;
- 6) Incidental take occurrences for each of the covered species (i.e., number of individuals, how take occurred, location and dates of take, and disposition of any dead or injured individuals);
- 7) Identify any problems and any corrective measures undertaken to insure that the biological goals are met, including a description of any changed or unforeseen circumstances that occurred;
- 8) Recommendations for pertinent adaptive management to solve existing or anticipated problems;
- 9) a brief description of which aspects of the conservation strategy were implemented;
- 10) summarize funding expenditures, balances, and accrual; and
- 11) Copies of any photos used for photo-documentation purposes.

## **8.7 FUNDING**

The various parties responsible for funding all minimization, mitigation, and perpetual

habitat management and species monitoring activities are described in this section. The City of Scotts Valley agrees to adopt all construction minimization measures (Sections 7.1.1 through 7.1.9) and mitigation measures (Sections 7.2.1 through 7.2.4) as conditions of project approval. Normal bonding and insurance requirements of the City will assure that these measures are adequately funded by the Applicant, which understands that a failure to provide adequate funding, and a consequent failure to implement the terms of this HCP in full, could result in temporary permit suspension or permit revocation. The construction monitor and the City will assure that the developer complies with all of these measures.

The CNLM will be responsible for implementing all habitat management and species monitoring activities (Sections 7.3.3 through 7.3.4, and 8.6.2). The Applicant will pay the CNLM a lump sum payment for land management and species monitoring.

The Applicant has established a budget to fund all tasks described in this HCP. The budget is for activities that will occur during the six-year duration of the incidental take permit while development of the impact area is completed. The budget includes minimization measures at the HCP plan area, including construction monitoring and worker orientation, costs of preparing and recording a conservation easement, installation of protective fencing and signage for the habitat preserve, implementation of the Fuel Management Plan, and an irrevocable assessment to fund management activities of the mitigation site by the CNLM. Estimated costs for construction monitoring and minimization measures described in this HCP and for the six-year permit period are itemized in Table 5. These costs were determined by the PAR (Appendix G). The estimated cost for all implementation tasks (aka Initial & Capital Tasks and Costs) is \$156,704.26.

<b>Task</b>	<b>Total Cost (\$)</b>
Site Construction and Maintenance	\$3,760.00
Biotic Surveys	\$83,436.00
Habitat Restoration	\$3,930.00
Public Services	\$5,610.00
General Site Maintenance	\$1,680.00
Reporting	\$6,110.00
Field Equipment	\$330.00
Operations	\$10,029.82
Contingency	\$11,488.58
Administration	\$30,329.86
<b>Grand Total</b>	<b>\$156,704.26</b>

Habitat management and species monitoring of the habitat preserve in perpetuity (i.e., after the permit expires) will be funded annually by an endowment established by the applicant with the CNLM. Habitat management activities at the habitat preserve parcel will include, but will not be limited to: site inspections, removal and control of exotic plants, fence repairs, monitoring of the MHJB, BLW and BLS, implementation of the Fuel Management Plan and

preparation of annual reports of such activities, as necessary to maintain the habitat preserve parcel in conditions suitable for the protection of its habitat value in perpetuity. Based on the PAR, estimated costs for long-term habitat management and monitoring activities (aka Ongoing Tasks and Costs) are itemized in Table 6. The annual amount needed is initially expected to be \$19,063.44, but this figure will be adjusted annually using an appropriate cost of living index. The endowment needed to generate this annual income is \$423,644.00. Thus the total contribution to CNLM for initial and capital costs, as well as ongoing costs, is \$580,349.00.

<b>Table 6. Summary of annual ongoing tasks and costs from the PAR for Bean Creek Estates.</b>	
<b>Task</b>	<b>Total Cost (\$)</b>
Site Construction and Maintenance	\$1,400.00
Biotic Surveys	\$5,412.00
Habitat Restoration	\$260.00
Habitat Maintenance	\$1,050.00
Public Services	\$2,370.00
General Site Maintenance	\$560.00
Reporting	\$2,080.00
Field Equipment	\$330.00
Operations	\$514.13
Contingency (10%)	\$1,124.43
Administration (22%)	\$2,721.12
<b>Total Annual Ongoing Costs</b>	<b>\$19,063.44</b>

**8.8 DISPOSITION OF DEAD OR INJURED SPECIMENS**

Dead or injured specimens of the MHJB, BLW, and BLS will be submitted to a designated repository. The designated repository is the University of California, Berkeley, which has both entomological and botanical collections. .

## **9.0 CHANGED AND UNFORESEEN CIRCUMSTANCES**

Section 10 regulations [50 CFR 17.22 (b)(2)(iii)] require that an HCP specify the procedures to be used for dealing with changed and unforeseen circumstances that may arise during the implementation of the HCP. In addition, the Habitat Conservation Plan Assurances (No Surprises) Rule [50 CFR 17.2, 17.22 (b) (5) and (6); 63 F.R.8859] defines changed and unforeseen circumstances and describes the obligations of the permittee and the Service. The purpose of the Assurances Rule is to provide assurances to non-Federal landowners participating in habitat conservation planning under the ESA that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the permittee.

### **9.1 CHANGED CIRCUMSTANCES**

Changed circumstances are defined as changes in circumstances affecting a species or geographic area covered by an HCP that can reasonably be anticipated by plan developers and the Service and for which contingency plans can be prepared (e.g., the new listing of a species, a fire, or other natural catastrophic event in areas prone to such an event). If additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and these additional measures were already provided for in the plan's operating conservation program (e.g., the conservation management activities or mitigation measures expressly agreed to in the HCP or Implementing Agreement (IA), then the permittee will implement those measures as specified in the plan as may be reasonable. However, if additional conservation and mitigation measures are deemed necessary to respond to changed circumstances and such measures were not provided for in the plan's operating conservation program, the Service will not require these additional measures as far as the HCP has been "properly implemented" (properly implemented means the commitments and the provisions of the HCP and the IA have been or are being reasonably implemented).

If a new species that is not covered by the HCP but that may be affected by activities covered by the HCP is listed under the Federal ESA during the term of the section 10 permit, the section 10 permit may be reevaluated by the Service and the HCP covered activities may be modified, as reasonable, to insure that the activities covered under the HCP will not result in take of the newly listed species. The permittee shall implement reasonable modifications to the HCP covered activities identified by the Service as necessary to avoid the likelihood of take of the newly listed species. The permittee shall continue to implement reasonable modifications until such time as the permittee has applied for and the Service has approved an amendment of the Section 10 permit, in accordance with applicable statutory and regulatory requirements, to cover the newly listed species or until the Service notifies the permittee in writing that the modifications to the HCP covered activities are no longer required to avoid the likelihood of take of the newly listed species. If the Service, in consultation with the permittee, determines that the project-related activities cannot be modified to avoid take of a species not covered under the HCP, then the permittee shall cease any activities that may result in take of any species not covered under the HCP until a permit amendment has been issued.

As to other potential changed circumstances, the Applicant has applied for incidental take of the MHJB, BLW, and BLS for the entire 18.07 acre HCP plan area. Although changed

circumstances, such as wildfire, debris flow, erosion, extended drought, earthquake or other natural disaster, may occur at the habitat preserve, the short duration of the permit (i.e., six years) lessens the likelihood that one of these phenomena may cause substantial changes to the habitat preserve during the permit period. Therefore, the Applicant does not anticipate that any additional changed circumstances will occur during the life of the permit on the HCP plan area that will result in unanticipated levels of take of the covered species. Furthermore, some types of changed circumstances, for example a wildfire, may actually enhance habitat values in the long term because Ponderosa Pine is adapted to, and regenerates well after such fires. Winter storms or earthquakes could cause landslide or erosion problems in habitat areas that would require subsequent repairs, such as slope stabilization, repair of fencing, and revegetation. Project grading and infrastructure plans are designed to lessen the potential for erosion and landslides. In addition, the Applicant will record irrevocable assessments against all lots in the project, which in addition to funding for anticipated maintenance, management, and monitoring activities will also provide contingency funding to the CNLM to cover the costs of unexpected repairs, or habitat restoration that may be required as a result of any natural disasters occurring at the habitat preserve.

## **9.2 UNFORESEEN CIRCUMSTANCES**

The policy defines unforeseen circumstances as changes in circumstances that affect a species or geographic area covered by the HCP that could not reasonably be anticipated by plan developers and the Service at the time of the plan's negotiation and development and that result in a substantial and adverse change in status of the covered species. The purpose of the Assurances Rule is to provide assurances to non-Federal landowners participating in habitat conservation planning under the ESA that no additional land restrictions or financial compensation will be required for species adequately covered by a properly implemented HCP, in light of unforeseen circumstances, without the consent of the permittee.

In the case of an unforeseen event, the Applicant or the current permit holder, shall immediately notify the Service staff who have functioned as the principal contacts for the proposed action. In determining whether such an event constitutes an unforeseen circumstance, the Service shall consider, but not be limited to, the following factors: size of the current range of the affected species; percentage of range adversely affected by the HCP; percentage of range conserved by the HCP; ecological significance of that portion of the range affected by the HCP; level of knowledge about the affected species and the degree of specificity of the species' conservation program under the HCP; and whether failure to adopt additional conservation measures would appreciably reduce the likelihood of survival and recovery of the affected species in the wild.

If the Service determines that additional conservation and mitigation measures are necessary to respond to the unforeseen circumstance where the HCP is being properly implemented, the additional measures required of the permittee must be as close as possible to the terms of the original HCP.

## **10.0 PERMIT AMENDMENT/RENEWAL PROCESS**

### **10.1 AMENDMENTS TO THE PERMIT**

During the specified permit period, amendment of the Section 10(a)(1)(B) permit for the Bean Creek Estates' project would be required for any of the following changes:

- a) significant revision of the permit area boundary;
- b) the listing under the ESA of a new species not currently addressed in this HCP that may be taken by project activities;
- c) modification of any important project action or mitigation component under the HCP, including funding, that may significantly affect authorized take levels, effects of the project, or the nature or scope of the mitigation program; or
- d) any other modification of the project likely to result in significant adverse effects to the MHJB, BLW, and/or BLS not addressed in the original HCP and permit application.

### **10.2 AMENDMENTS TO THE HCP**

This HCP may, under certain circumstances, be amended without amending its associated permit, provided that such amendments are of a minor or technical nature and that the effect on the species involved and the levels of take resulting from the amendment are not significantly different from those described in the original HCP. Examples of minor amendments to the HCP for the Bean Creek Estates project that would not require permit amendment include:

- a) minor revisions to monitoring or reporting protocols;
- b) minor revisions of the HCP's plan area or boundaries; and
- c) minor revisions in project design and construction procedures.

To amend the HCP without amending the permit, the permittee must submit to the Service in writing a description of the proposed amendment, an explanation of why the amendment is necessary or desirable, and an explanation of why the effects of the proposed amendment are believed not to be significantly different from those described in the original HCP. If the Service concurs with the amendment proposal, it shall authorize the HCP amendment in writing, and the amendment shall be considered effective upon the date of the Service's written authorization.

### **10.3 PERMIT RENEWAL**

Upon expiration, the Section 10(a)(1)(B) permit for the Bean Creek Estates project may be renewed, if necessary, without the issuance of a new permit, provided that the permit is renewable, and that biological circumstances and other pertinent factors affecting MHJB, BLW, and BLS at the site are not significantly different than those described in the original HCP. At least thirty (30) days prior to the expiration of this permit, the permittee shall submit to the Service, in writing:

- a) a request to renew the permit;
- b) reference to the original permit number;
- c) certification that all statements and information provided in the original HCP and permit application, together with any approved HCP amendments, are still true and correct, or inclusion of a list of changes;
- d) a description of what take has occurred under the existing permit; and

- e) a description of what portions of the project are still to be completed, if applicable, or what activities under the original permit the renewal is intended to cover.

#### **10.4 PERMIT TRANSFER**

In the event of sale or transfer of ownership of the property by Mr. Tom Masters to another developer during the six (6) year life of the permit, then a new permit application, permit fee, and an Assumption Agreement will be submitted to the Service by the new owner. The new owner will commit to all requirements regarding take authorization and mitigation obligations of this HCP unless otherwise specified in the Assumption Agreement and agreed to in advance with the Service.

Once all homes have been sold by the developer, the permit will transfer from the Applicant to the Bean Creek Estates Homeowners' Association, which will fulfill all requirements of the take authorization and mitigation obligations of this HCP. An Assumption Agreement will be submitted to the Service.

## **11.0 ALTERNATIVES CONSIDERED**

### **11.1 ALTERNATIVE #1: NO-ACTION**

Under the No-action alternative, the Bean Creek Estates 13-unit residential subdivision project would not be implemented. As a result, incidental take of MHJB and adverse affects to the BLW and BLS associated with removal of vegetation from the property and from initial grading activities would be avoided, and no Section 10(a)(1)(B) permit would be required. However, impacts to the MHJB and BLS may be greater in the absence of this HCP. Currently, habitat conditions at the 18.07-acre parcel are slightly degraded due to the presence and abundance of various non-native plants. Without the HCP, habitat quality would probably continue to decline and no prime habitat would be protected to benefit the three endangered species. Therefore, the No-action Alternative is concluded to be of lesser conservation value to the MHJB, BLW, and BLS than the proposed project and accompanying HCP. It would also result in an unnecessary economic burden on the Applicant. For these reasons, the no-action alternative has been rejected.

### **11.2 ALTERNATIVE #2: REDESIGNED PROJECT (REDUCED TAKE)**

Under this alternative, the development footprint of the project would be reduced or relocated to another portion of the site, thereby reducing the loss of potential habitat for the MHJB, BLW, and BLS. Although a Section 10(a)(1)(B) permit would still be required, the amount of mitigation would be less than that provided for the project as proposed. A reduction in the development would not significantly improve onsite habitat for the MHJB, BLW, and BLS and there would still be an increase in human activity that could affect individual animals that may be using the areas. Also, incidental take of MHJB, BLW, and BLS could still occur during initial grading activities. For these reasons, this alternative has been rejected.

### **11.3 ALTERNATIVE #3: PROPOSED ACTION (PERMIT ISSUANCE)**

Under the Proposed Action alternative, the Bean Creek Estates subdivision project would be developed as described in Section 2.0. The Proposed Action would require the issuance of a Section 10(a)(1)(B) permit to allow construction of the project. The project would result in the loss of approximately 4.07 acres of Mixed Evergreen Forest. However, conservation measures as proposed in the HCP would result in greater habitat value for the three endangered species than currently exists on the HCP plan area, due to the presence of exotics that can out compete the BLW and BLS and food plant(s) of the MHJB. The Proposed Action thus provides greater habitat conservation benefits than the No Action and Redesigned project alternatives, and also best meets the needs of the applicant. Therefore, the Proposed Action is the preferred alternative.

## **12.0 HABITAT CONSERVATION PLAN PREPARERS**

Dr. Richard A. Arnold, Kathy Lyons, Todd Graff, and Norman Schwartz prepared this HCP. Dr. Arnold is an entomologist and the President of Entomological Consulting Services, Ltd., of Pleasant Hill, CA. Kathy Lyons is a botanist and the principal of the Biotic Resources Group in Soquel, CA. Mr. Graff is the project's planner and Mr. Schwartz is President of Bolton Hill Company, Inc. of Santa Cruz. Sherry Teresa, Executive Director of the CNLM, provided the information on funding for the perpetual protection and management of the Bean Creek Estates site, plus monitoring of the three covered species.

### 13.0 REFERENCES CITED

Arnold, R.A. 1999. 1999 monitoring report for the MHJB at the Hanson Quarry and Freeman mitigation site. Entomological Consulting Services, Ltd. Pleasant Hill, CA.

Arnold, R.A. 2000. 2000 monitoring report on the Mount Hermon June Beetle at the Quail Hollow Quarry. Entomological Consulting Services, Ltd. Pleasant Hill, CA.

Arnold, R.A. 2001. 2001 monitoring report on the Mount Hermon June Beetle at the Hanson Quarry and Freeman mitigation site. Entomological Consulting Services, Ltd. Pleasant Hill, CA.

Arnold, R.A. 2002. Mount Hermon June Beetle survey report for College Heights. Entomological Consulting Services, Ltd. Pleasant Hill, CA.

Bland, D. 1999. Letter report on MHJB presence-absence survey of the Creekside Estates property in Scotts Valley. Submitted to Kathleen Lyons, Principal of the Biotic Resources Group and dated July 16, 1999. 4 pp. & map.

Biotic Resources Group. 2002. Results of special status plant survey, Creekside Estates Property, Scotts Valley, letter of findings prepared by Kathy Lyons and submitted to College Height Development.

Bowman, R.H., et al. 1980. Soil survey of Santa Cruz County, California. U.S. Dept. of Agriculture and Soil Conservation Service in cooperation with the University of California, Agricultural Experiment Station Publication. 148 pp. & maps.

Brunette, A. 1997. The seed bank and population structure of two populations of the rare and endangered plant, *Erysimum teretifolium* (Brassicaceae). Senior paper, Environmental Studies, University of California, Santa Cruz.

BUGGY Data Base. 2003. Report of occurrences for the Mount Hermon June Beetle in Santa Cruz County, CA. Data base maintained by Entomological Consulting Services, Ltd. Pleasant Hill, CA.

California Native Plant Society. 1994. Inventory of rare and endangered vascular plants of California. Special Publication #1, 5<sup>th</sup> ed. 338 pp.

California Natural Diversity Data Base. 2003. Sensitive species report for the Felton 7.5' USGS topographic quadrangle. California Department of Fish & Game.

Cazier, M.A. 1938. A new California *Polyphylla* with notes concerning the variability of certain characters within the genus. The Pan-Pacific Entomologist 14:161-164.

City of Scotts Valley. 1994 General Plan, City-Wide Land Use Plan, Figure LU-1.

- Ertter, B. 1996. Saga of the Santa Cruz spineflower. *Fremontia* 24 (4):8-11.
- Furniss, R.L. and V.M. Carolin. 1977. Western forest insects. U.S. Dept. of Agriculture, Forest Service. Misc. Publication No. 1339. Washington, D.C. 654 pp.
- Hames, R.S., G.J. Gifford, and A.R. Hayes. 1993. An investigation of the soil seed bank of the Bonny Doon Ecological Reserve, Bonny Doon, California. University of California, Santa Cruz.
- International Union for the Conservation of Nature (IUCN). 1994. Red list of threatened animals. Gland, Switzerland. 368 pp.
- Kluse, J. 1994. The effects of habitat on the demographic performance of *Chorizanthe pungens* var. *hartwegiana*. Senior thesis, Environmental Studies, University of California, Santa Cruz. 45 pp.
- Kluse, J. and D.F. Doak. 1999. Demographic performance of a rare California endemic, *Chorizanthe pungens* var. *hartwegiana* (Polygonaceae). *American Midland Naturalist* 142:244-256.
- Levin, A.L. and McGraw, J.M. 1998. The roles of soil type and shade intolerance in limiting the distribution of the edaphic endemic, *Chorizanthe pungens* var. *hartwegiana* (Polygonaceae). *Madrono* 45:119-127.
- Marangio, M.S. and R. Morgan. 1987. The endangered sandhills plant communities of Santa Cruz County. *IN* T.S. Elias, ed. Conservation and management of rare and endangered plants. California Native Plant Society. Sacramento, CA. pp. 267-273.
- Pollock, J.F. 1995. A study of fire and competition effects on *Chorizanthe pungens* var. *hartwegiana* in the sandhills of Santa Cruz County, California, using a stage-based matrix model and Lotka-Volterra competition equations. Senior thesis, Environmental Studies, University of California, Santa Cruz.
- Reveal, J.L. and C.B. Hardham. 1989. A revision of the annual species of the *Chorizanthe* (Polygonaceae: Eriogonoideae) from California. *Phytologia* 67 (5):357-360.
- Terra-Sol Ltd. 1990. Final Focused Environmental Impact Report for 605 Bean Creek Road, dated May 4, 1990, certified by the City of Scotts Valley September 26, 1990].
- U.S. Fish & Wildlife Service. 1994. Endangered and threatened wildlife and plants: endangered status for three plants and threatened status for one plant from sandy and sedimentary soils of central coastal California. *Federal Register* 59:5499.
- U.S. Fish & Wildlife Service. 1997. Endangered and threatened wildlife and plants; determination of endangered status for two insects from the Santa Cruz Mountains of California. *Federal Register* 62:3616-3628.

U.S. Fish & Wildlife Service. 1998. Recovery plan for two insects (*Polyphylla barbata* and *Trimerotropis infantilis*) and four plants (*Chorizanthe pungens* var. *hartwegiana*, *Chorizanthe robusta* var. *hartwegii*, *Erysimum teretifolium*, and *Polygonum hickmanii*). Portland, OR. 83 pp.

U.S. Fish & Wildlife Service. 2001. Endangered and threatened wildlife and plants: final determination of critical habitat for the endangered Zayante Band-Winged grasshopper. Federal Register 66:9219-9233.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1996. Endangered Species Habitat Conservation Handbook. November, 1996.

Young, R.M. 1988. A monograph of the genus *Polyphylla* Harris in America north of Mexico (Coleoptera: Scarabaeidae: Melolonthinae). Bulletin of the University of Nebraska State Museum 11 (2): 115 pp.

Zador, S. 1993. A study of a competitive effects on a rare, endemic plant of the Santa Cruz Mountains. Senior thesis, Environmental Studies, University of California, Santa Cruz. 34 pp.

## 14.0 FIGURES