



# LIVE OAK ASSOCIATES, INC.

an Ecological Consulting Firm

**2016 VALLEY ELDERBERRY LONGHORN BEETLE MONITORING  
MINARETS HIGH SCHOOL PROJECT (1-1-07-F-0307)  
MADERA COUNTY, CALIFORNIA**

By:

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091-08

## EXECUTIVE SUMMARY

On December 2, 2016, Jeff Gurule of Live Oak Associates, Inc. (LOA) surveyed the approximately 2-acre Elderberry Conservation Area (ECA) for blue elderberry (*Sambucus nigra ssp. caerulea*) replacement planting success and presence of the federally threatened valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB). The ECA was created to preserve and protect 96 replacement elderberry plantings as mitigation for the loss of 16 mature elderberry shrubs that resulted from the construction of the Minarets High School. The success criterion for the replacement plantings is 80% survivorship or 77 surviving elderberries. The ECA is currently owned and managed by the Chawanakee Unified School District (District) and is located in the Sierra Nevada foothills of Madera County in the community of O'Neals northeast of the intersection of State Route 41 and Road 200.

During the 2016 survey, Mr. Gurule found all elderberry replacement plantings dead within the Minarets High School ECA. This number equates to 0% survivorship. Individual VELB and potential VELB exit holes were not observed. Irrigation infrastructure had been dismantled. Fencing and signage around the ECA was in good condition. Fencing around the larger open space preserve was found to be broken in one location.

Elderberry plantings failed to meet the success criteria of 80% survivorship; therefore, monitoring must start anew in 2017. The loss of elderberry plantings is the result of insufficient irrigation through the dry season. LOA recommends that the District:

- Plant additional plantings to bring the survivorship over 80%, preferably to 100% or more.
- Make the necessary repairs or replace the existing irrigation system to ensure that all new plantings receive the amount of water necessary to sustain them through the dry season.
- Make the necessary repairs to the perimeter fencing around the open space preserve.
- Follow through with their commitment to place the ECA and broader 200-acre open space preserve under conservation easement, to ensure protection of the ECA in perpetuity.

Adhering to these recommendations will set the District on the path to compliance with the Biological Opinion issued by the U.S. Fish and Wildlife Service for the Minarets High School Project.

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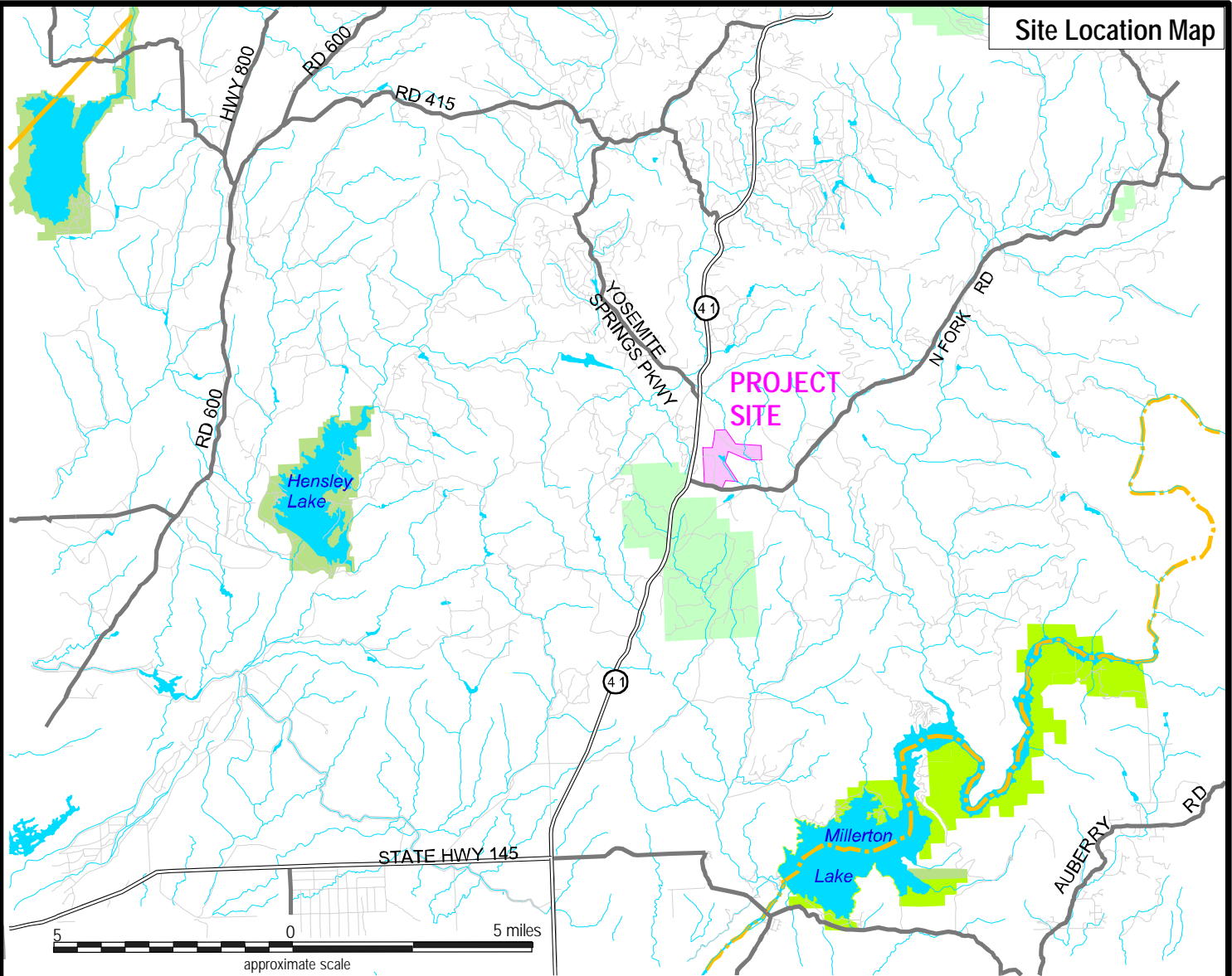
## 1.0 INTRODUCTION

On December 2, 2016, Live Oak Associates, Inc. (LOA) biologist Jeff Gurule conducted monitoring of a 2-acre Elderberry Conservation Area (ECA) for the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (VELB). The ECA serves as the protected repository of replacement elderberry plantings, the obligatory habitat of the VELB, for mature elderberries removed during the development of the Minarets High School. The ECA is owned and managed by the Chawanakee Unified School District (District), but has yet to be placed under conservation easement. The site is located in the community of O'Neals northeast of the intersection of State Route 41 and Road 200 (see Figure 1).

The ECA was established to mitigate for the loss of 16 blue elderberries (*Sambucus nigra ssp. caerulea*) to the development of the Minarets High School. Monitoring must occur annually for 10 years or seven annual monitoring events over 15 years. As presented in Table 1, 96 elderberry replacement plantings are required to be planted in the ECA per the April 8, 2008 Amended U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BO) issued for the project. Associated species plantings are not required. The BO requires two years of irrigation through the dry season and 80% of the plantings are required to survive at the conclusion of the monitoring. If, during the course of monitoring, the number of surviving elderberry replacement plantings falls below 80%, the monitoring must start anew.

Each year of monitoring since the initial installment of replacement plantings in 2008 has found the replacement plantings in the ECA to have fallen short of meeting the 80% survival success criteria (see Table 1 in Results Section).

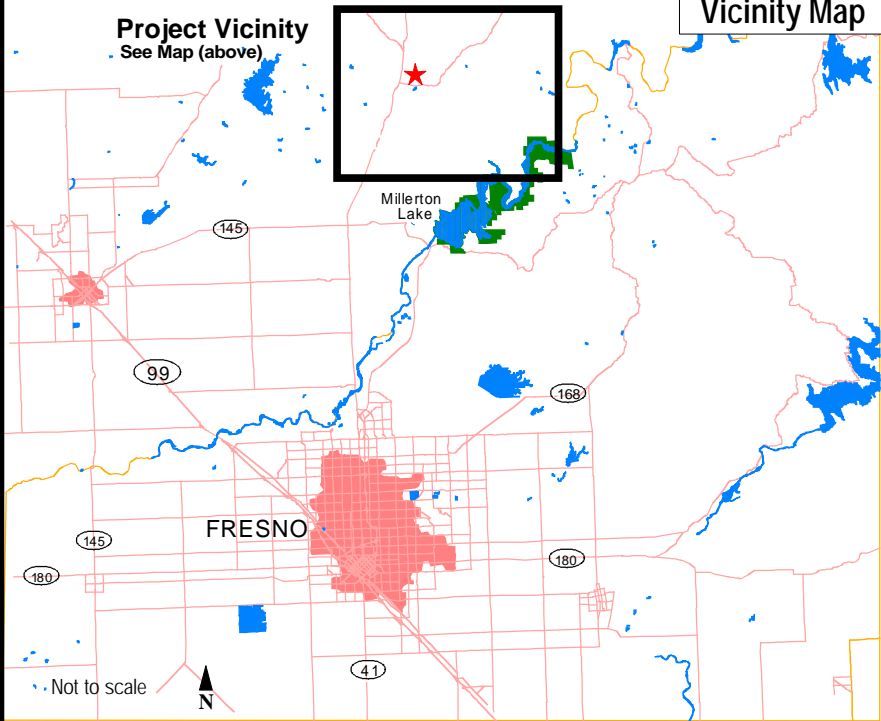
# Site Location Map



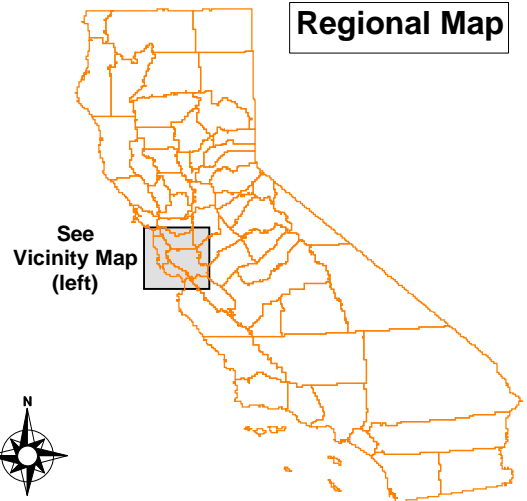
## Project Vicinity

See Map (above)

## Vicinity Map



## Regional Map



**Live Oak Associates, Inc.**

**Minarets H.S. Revised B.A.**  
Site / Vicinity Map

|          |           |          |
|----------|-----------|----------|
| Date     | Project # | Figure # |
| 12/21/05 | 091-06    | 1        |

## 2.0 EXISTING CONDITIONS

The 2-acre ECA is located in the foothills of the central Sierra Nevada on hilly terrain within a greater 200-acre open space preserve. The physical geography of the site is typical of the central Sierra foothills. The elevation of the ECA is approximately 1,400 feet National Geodetic Vertical Datum (NGVD).

Blue oak woodland is the primary habitat of the ECA and the greater open space preserve. Overstory vegetation is provided mainly by widely spaced blue oaks (*Quercus douglasii*) and interior live oaks (*Q. wislizenii*), although a small number of foothill pines (*Pinus sabiniana*) are also present. The shrub understory was found to be poorly developed. Poison oak (*Toxicodendron diversilobum*) and blue elderberry were often associated with rocky outcrops. Other shrubs occasionally encountered during the reconnaissance survey included Mariposa manzanita (*Arctostaphylos viscidus* ssp. *mariposa*), California coffeeberry (*Rhamnus californicus*), bush lupine (*Lupinus albifrons*) and chaparral whitethorn (*Ceanothus leucodermis*). Non-native grasses and forbs, most of European origin, dominated the herbaceous understory. The dominant non-native grasses and forbs included ripgut (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), red brome (*Bromus madritensis* ssp. *rubens*), broad-leaf filaree (*Erodium botrys*), and red-stem filaree (*Erodium cicutarium*). A considerable number of native spring-flowering forbs occur on the site during winters of average to above average rainfall, including Eastwood's fiddleneck (*Amsinckia eastwoodiae*), rusty popcornflower (*Plagiobothrys nothofulvus*), fringe-pod (*Thysanocarpus curvipes*), red maids (*Calandrinia ciliata*), bird's-eye gilia (*Gilia tricolor*), and caterpillar phacelia (*Phacelia cicutaria*). As the spring-flowering annuals set seed and die, summer annuals become prominent. For example, turkey mullein (*Eremopcarpus setigerus*), nude buckwheat (*Eriogonum nudum*) and Heerman's tarweed (*Holocarpha heermanii*) were observed in various locations of the study area. A complete list of vascular plants identified on the open space preserve is presented in Appendix A.

Existing land use is natural pasture land for cattle.

### **3.0 METHODS**

LOA biologist Jeff Gurule monitored the ECA on December 2, 2016. The monitoring survey consisted of walking through the ECA to inspect and count the surviving elderberry replacement plantings and inspect the living plantings for VELB or VELB exit holes. The irrigation system, fencing, and signage were also inspected. Notes were recorded on a field data sheet. The larger open space preserve was also walked and inspected for general ecosystem health. Photographs were taken and observations were noted on a field data sheet.

## 4.0 RESULTS

No living elderberry replacement plantings were identified within the Minarets High School ECA during the December 2016 monitoring survey, which equates to 0% survivorship of the required 96 plantings (Table 1). An historic account of the planting and survival history since the ECA was established is presented in Table 1.

| <b>Year</b> | <b>No. of Plantings</b>   | <b>No. of Survivors by Years End</b> | <b>Required No. of Plantings and % Survival</b> | <b>Actual Percent of Surviving Plants</b> | <b>Reason for Mortality</b>           |
|-------------|---|--------------------------------------|---|---|---------------------------------------|
| 2008        | 90 (Feb.)   | ~50                                  | 96<br>(80% = 77 plants)                         | ~50%                                      | Insufficient irrigation and herbivory |
| 2009        | Unknown number of plantings to bring total live plantings up to 101 | 28                                   | 96<br>(80% = 77 plants)                         | 29%                                       | Insufficient irrigation and herbivory |
| 2010        | 0   | 6                                    | 96<br>(80% = 77 plants)                         | 6%  | Insufficient irrigation               |
| 2011        | 50  | 62                                   | 96<br>(80% = 77 plants)                         | 65%                                       | Insufficient irrigation               |
| 2012        | 0   | 40                                   | 96<br>(80% = 77 plants)                         | 42%                                       | Insufficient irrigation               |
| 2013        | 0   | 10                                   | 96<br>(80% = 77 plants)                         | 10%                                       | Insufficient irrigation               |
| 2014        | 0   | 4                                    | 96<br>(80% = 77 plants)                         | 4%  | Insufficient irrigation               |
| 2015        | 0   | 0                                    | 96<br>(80% = 77 plants)                         | 0%  | Insufficient irrigation               |
| 2016        | 0   | 0                                    | 96<br>(80% = 77 plants)                         | 0%  | Insufficient irrigation               |



Aside from the spring of the initial planting, annual monitoring of the ECA has found elderberry survivorship below the required 80%, and for the second year in a row no surviving elderberries were observed in the ECA. The annual monitoring has also found the drip irrigation system consistently in disrepair. During the last four monitoring years no effort to irrigate the shrubs was detected and the irrigation system was found to be largely dismantled during the 2016 survey. The last reported watering efforts occurred in 2011. No VELB or VELB exit holes were found during the survey, as no live stems were available for VELB habitation. Selected photos of the site are located in Appendix B.

Drought conditions in the region diminished somewhat during the 2015/2016 rainy season. As a result, the larger open space preserve in which the ECA is located was found to be moister than it has in the last four years of severe drought. Wetland vegetation was beginning to reestablish itself in wetland swales but was still less prevalent than pre-drought years. The shrub and tree layers still appear to be recovering from drought conditions. Germination and growth of shrub and tree seedlings is likely still hampered by recent drought conditions.

Five-strand barbed wire fencing was found to be in good condition around the entire perimeter of the ECA. Five-strand barbed wire is also installed around the perimeter of the open space preserve. However, fencing at the southern edge of the narrow northeast arm of the open space preserve was broken two and a half years ago by a fallen oak limb, which tore the wire from the fence posts. As a result cattle from the neighboring property appear to be grazing this arm of the open space preserve. Ample signage exists at strategic locations around the ECA and larger open space preserve (see Appendix B).

## 5.0 DISCUSSION

The following discussion summarizes the results of all monitoring of the ECA to date and provides recommendations to help the District meet the success criteria of the elderberry replacement planting effort. Several BO compliance issues have consistently been identified since monitoring began in 2008. First, survivorship of the elderberry plantings has yet to meet the success criteria of 80%; the yearly die off of elderberry plantings is the result of inadequate irrigation through the dry season and absence of replanting. Second, all plant installations that occurred after the initial 2008 planting effort were done so without notifying the Service-approved biologist. Third and finally, the ECA and larger open space preserve have yet to be placed under a conservation easement.

The following actions are recommended to set the District on the path to compliance with the USFWS BO:

- The District, under the supervision of the Service-approved biologist (Jeff Gurule or Austin Pearson of LOA), will plant additional plantings to bring the survivorship over 80%, preferably to 100% or more.
- The District will make the necessary repairs or replace the existing irrigation system to ensure that all new plantings receive the amount of water necessary to sustain them through the dry season.
- The District will make the necessary repairs to fencing around the larger open space preserve. If part of the District's grazing plan is to allow cattle from the neighboring property to graze the fenced section with the broken fence, the District should install a gate at the location of the fence break or other more appropriate area to allow the District control over the grazing pressure on this area of the ECA through the ability to exclude neighboring cattle, if necessary.
- The District will follow through with their commitment to place the ECA and broader 200-acre open space preserve under conservation easement, to ensure protection of the ECA in perpetuity.

Because elderberry survivorship was less than 80% at the time of the 2016 annual monitoring, the monitoring period will start anew in 2017. The status of the ECA and the District's efforts to ensure success of the ECA will be assessed again during the 2017 monitoring survey.

## LITERATURE CONSULTED OR CITED

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D. G. Wilken, editors, 2012. *The Jepson Manual: Vascular Plants of California, second edition*. University of California Press, Berkeley.

Bar, Cheryl B. 1991. The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*), U.S. Fish and Wildlife Service, Sacramento, California

Sawyer and Keeler-Wolf 1995. A Manual of California Vegetation. California Native Plant Society

**APPENDIX A:  
VASCULAR PLANT LIST**

**APPENDIX A  
VASCULAR PLANTS OF THE  
MINARETS HIGH SCHOOL OPEN SPACE PRESERVE**

The plant species listed below have been observed on the study area during surveys conducted by LOA from spring of 1998 to December 2016. The U.S. Fish and Wildlife Service wetland indicator status of each plant has been shown following its common name.

OBL - Obligate  
 FACW - Facultative Wetland  
 FAC - Facultative  
 FACU - Facultative Upland  
 UPL - Upland  
 +/- - Higher/lower end of category  
 NR - No review  
 NA - No agreement  
 NI - No investigation

**ANACARDIACEAE — Sumac Family**

|                                   |            |     |
|-----------------------------------|------------|-----|
| <i>Rhus trilobata</i>             | Skunkbush  | NI  |
| <i>Toxicodendron diversilobum</i> | Poison Oak | UPL |

**APIACEAE - Carrot Family**

|                         |                   |     |
|-------------------------|-------------------|-----|
| <i>Daucus pusillus</i>  | Queen Anne's Lace | UPL |
| <i>Eryngium vaseyi</i>  | Button Celery     | FAC |
| <i>Torilis arvensis</i> | Torilis           | UPL |

**ASCLEPIADACEAE - Milkweed Family**

|                             |                 |     |
|-----------------------------|-----------------|-----|
| <i>Asclepias cordifolia</i> | Purple Milkweed | UPL |
| <i>Asclepias speciosa</i>   | Showy Milkweed  | FAC |

**ASTERACEAE - Sunflower Family**

|   |                        |      |
|---|------------------------|------|
| <i>Achyrrachaena mollis</i>                           | Blow-wives             | UPL  |
| <i>Artemesia douglasiana</i>                          | Mugwort                | FAC  |
| <i>Chamomilla suaveolens</i>                          | Rayless Pineapple Weed | UPL  |
| <i>Cirsium vulgare</i>                                | Bull Thistle           | FACU |
| <i>Eriophyllum confertiflorum</i>                     | Golden Yarrow          | UPL  |
| <i>Filago californica</i>                             | Herba Impia            | UPL  |
| <i>Gnaphalium stramineum</i>                          | Cudweed                | UPL  |
| <i>Hemizonia fitchii</i>                              | Tarweed                | UPL  |
| <i>Holocarpha heermanii</i>                           | Heerman's Tarweed      | UPL  |
| <i>Hypochaeris glabra</i>                             | Smooth Cat's Ear       | UPL  |
| <i>Madia</i> sp.                                      | Tarweed                | UPL  |
| <i>Lasthenia</i> sp.                                  | Goldfields             | FAC  |
| <i>Micropus californicus</i> ssp. <i>californicus</i> | Slender Cottonweed     | UPL  |
| <i>Psilocarphus tenellus</i> ssp. <i>tenellus</i>     | Woolly Marbles         | FAC  |
| <i>Silybum marianum</i>                               | Milk Thistle           | UPL  |

**BRASSICACEAE - Mustard Family**

|                           |           |     |
|---------------------------|-----------|-----|
| <i>Athysanus pusillus</i> | Athysanus | UPL |
|---------------------------|-----------|-----|

|  |                          |      |
|--|--------------------------|------|
| <i>Brassica nigra</i>                              | Black Mustard            | UPL  |
| <i>Draba verna</i>                                 | Shad-flower              | UPL  |
| <i>Lepidium nitidum</i> ssp. <i>nitidum</i>        | Peppergrass              | UPL  |
| <i>Streptanthus diversifolius</i>                  | Varied-Leaf Jewel Flower | UPL  |
| <i>Thysanocarpus curvipes</i>                      | Fringepod                | UPL  |
| <b>BORAGINACEAE - Borage Family</b>                |                          |      |
| <i>Amsinckia eastwoodiae</i>                       | Eastwood's Fiddleneck    | UPL  |
| <i>Amsinckia menziesii</i> ssp. <i>intermedia</i>  | Rancher's Fireweed       | UPL  |
| <i>Plagiobothrys nothofulvus</i>                   | Rusty Popcornflower      | UPL  |
| <i>Plagiobothrys stipitatus</i>                    | Slender Popcornflower    | OBL  |
| <i>Plagiobothrys tener</i>                         | Slender Popcornflower    | OBL  |
| <b>CALLITRICHACEAE - Water-Starwort Family</b>     |                          |      |
| <i>Callitriche marginata</i>                       | Winged Water-Starwort    | OBL  |
| <b>CAMPANULACEAE - Bellflower Family</b>           |                          |      |
| <i>Downingia cuspidata</i>                         | Cuspidate Downingia      | OBL  |
| <b>CAPRIFOLIACEAE — Honeysuckle Family</b>         |                          |      |
| <i>Lonicera hispidula</i> ssp. <i>vacillans</i>    | Chaparral Honeysuckle    | UPL  |
| <i>Sambucus mexicana</i>                           | Blue Elderberry          | FAC  |
| <b>CARYOPHYLLACEAE - Pink Family</b>               |                          |      |
| <i>Cerastium fontanum</i> ssp. <i>vulgare</i>      | Mouse-eared Chickweed    | FACU |
| <i>Minuartia californica</i>                       | California Sandwort      | UPL  |
| <i>Silene gallica</i>                              | Common Catchfly          | UPL  |
| <i>Spergularia</i> sp.                             | Sand-Spurrey             |      |
| <i>Stellaria media</i>                             | Common Chickweed         | FACU |
| <b>CHENOPODIACEAE - Goosefoot Family</b>           |                          |      |
| <i>Chenopodium album</i>                           | White Goosefoot          | FAC  |
| <b>CRASSULACEAE — Stonecrop Family</b>             |                          |      |
| <i>Crassula tillaea</i>                            | Moss Pygmy-weed          | NI   |
| <b>CYPERACEAE - Sedge Family</b>                   |                          |      |
| <i>Cyperus eragrostis</i>                          | Umbrella Sedge           | FACW |
| <i>Eleocharis macrostachya</i>                     | Creeping Spikerush       | OBL  |
| <b>CUCURBITACEAE - Gourd Family</b>                |                          |      |
| <i>Marah horridus</i>                              | Man-root                 | UPL  |
| <b>ELATINACEAE — Waterwort Family</b>              |                          |      |
| <i>Elatine californica</i>                         | California Waterwort     | OBL  |
| <b>ERICACEAE — Heath Family</b>                    |                          |      |
| <i>Arctostaphylos viscida</i> ssp. <i>mariposa</i> | Mariposa Manzanita       | UPL  |
| <b>EUPHORBIACEAE - Spurge Family</b>               |                          |      |
| <i>Eremocarpus setigerus</i>                       | Turkey Mullein           | UPL  |
| <b>FABACEAE - Pea Family</b>                       |                          |      |
| <i>Lotus purshianus</i>                            | Spanish clover           | UPL  |
| <i>Lotus scoparius</i>                             | Deerweed                 | UPL  |
| <i>Lotus strigosus</i>                             | Lotus                    | UPL  |
| <i>Lupinus albifrons</i>                           | Bush Lupine              | UPL  |
| <i>Lupinus benthamii</i>                           | Spider Lupine            | UPL  |
| <i>Lupinus bicolor</i>                             | Bicolor Lupine           | UPL  |

|   |                       |       |
|---|-----------------------|-------|
| <i>Lupinus densiflora</i>                     | Whorled Lupine        | UPL   |
| <i>Lupinus formosus</i> ssp. <i>robustus</i>  | Lupine                | UPL   |
| <i>Lupinus stiversii</i>                      | Harlequin Lupine      | UPL   |
| <i>Trifolium ciliolatum</i>                   | Clover                | UPL   |
| <i>Trifolium hirtum</i>                       | Rose Clover           | UPL   |
| <i>Trifolium microcephalum</i>                | Small-head Clover     | FACU  |
| <i>Trifolium variegatum</i>                   | White-tip Clover      | FACW- |
| <i>Trifolium wildenovii</i>                   | Tomcat Clover         | UPL   |
| <b>FAGACEAE - Oak Family</b>                  |                       |       |
| <i>Quercus douglasii</i>                      | Blue Oak              | UPL   |
| <i>Quercus wislizenii</i>                     | Interior Live Oak     | UPL   |
| <b>GENTIANACEAE - Gentian Family</b>          |                       |       |
| <i>Centaurium venustum</i>                    | Canchalagua           | UPL   |
| <b>GERANIACEAE - Geranium Family</b>          |                       |       |
| <i>Erodium botrys</i>                         | Broad-leaf Filaree    | UPL   |
| <i>Erodium cicutarium</i>                     | Red-stemmed Filaree   | UPL   |
| <i>Geranium dissectum</i>                     | Geranium              | UPL   |
| <i>Geranium molle</i>                         | Geranium              | UPL   |
| <b>HIPPOCASTANACEAE — Buckeye Family</b>      |                       |       |
| <i>Aesculus californica</i>                   | California Buckeye    | UPL   |
| <b>HYDROPHYLLACEAE - Waterleaf Family</b>     |                       |       |
| <i>Nemophilla maculata</i>                    | Fivespot              | UPL   |
| <i>Nemophylla menziesii</i>                   | Baby Blue-eyes        | UPL   |
| <i>Phacelia ciliata</i>                       | Phacelia              | UPL   |
| <i>Pholistoma auratum</i> ssp. <i>auratum</i> | Fiesta flower         | UPL   |
| <b>HYPERICACEAE - St. John's Wort Family</b>  |                       |       |
| <i>Hypericum perforatum</i>                   | Klamathweed           | UPL   |
| <b>JUNCACEAE — Rush Family</b>                |                       |       |
| <i>Juncus balticus</i>                        | Baltic Rush           | OBL   |
| <i>Juncus bufonius</i>                        | Toad Rush             | FACW  |
| <i>Juncus xiphioides</i>                      | Iris-leaved Rush      | OBL   |
| <b>MALVACEAE - Mallow Family</b>              |                       |       |
| <i>Sidalcea calycosa</i> ssp. <i>calycosa</i> | Annual Checker-mallow | OBL   |
| <b>MARSILEACEAE - Marsilea Family</b>         |                       |       |
| <i>Marsilea vestita</i> ssp. <i>vestita</i>   | Marsilia              | OBL   |
| <b>LAMIACEAE - Mint Family</b>                |                       |       |
| <i>Mentha pulegium</i>                        | Pennyroyal            | FACW  |
| <b>LILIACEAE - Lily Family</b>                |                       |       |
| <i>Allium hyalinum</i>                        | Glassy Onion          | NI*   |
| <i>Brodiaea elegans</i> ssp. <i>elegans</i>   | Harvest Brodiaea      | FACU  |
| <i>Calochortus superbus</i>                   | Star-Tulip            | UPL   |
| <i>Calochortus venustus</i>                   | Star-Tulip            | UPL   |
| <i>Chlorogalum pomeridianum</i>               | Soap Plant            | UPL   |
| <i>Dichelostemma capitatum</i>                | Blue Dicks            | UPL   |
| <i>Triteleia hyacinthina</i>                  | White Brodiaea        | FACW  |
| <i>Triteleia ixioides</i> ssp. <i>scabra</i>  | Pretty Face           | UPL   |

**LYTHRACEAE - Loosestrife Family**

|                              |                        |     |
|------------------------------|------------------------|-----|
| <i>Ammannia coccinea</i>     | Purple ammannia        | OBL |
| <i>Lythrum hyssopifolium</i> | California Loosestrife | OBL |

**ONAGRACEAE - Evening Primrose Family**

|  |                    |     |
|--|--------------------|-----|
| <i>Cammissonia sierrae</i> ssp. <i>sierrae</i> | Sierra Sun Cup     | UPL |
| <i>Clarkia affinis</i>                         | Farewell-to-Spring | UPL |
| <i>Clarkia unguiculata</i>                     | Farewell-to-Spring | UPL |
| <i>Epilobium brachycarpum</i>                  | Willow Herb        | UPL |

**PAPAVERACEAE - Poppy Family**

|                                 |                  |     |
|---------------------------------|------------------|-----|
| <i>Eschscholzia californica</i> | California Poppy | UPL |
| <i>Eschscholzia lobbiai</i>     | Frying Pans      | UPL |
| <i>Platystemon californicus</i> | Cream Cups       | OBL |

**PINACEAE — Pine Family**

|                        |               |     |
|------------------------|---------------|-----|
| <i>Pinus sabiniana</i> | Foothill Pine | UPL |
|------------------------|---------------|-----|

**POACEAE - Grass Family**

|  |                           |       |
|--|---------------------------|-------|
| <i>Aira caryophylllea</i>                      | Silver European Hairgrass | UPL   |
| <i>Avena fatua</i>                             | Wild Oat                  | UPL   |
| <i>Avena barbata</i>                           | Slender Wild Oat          | UPL   |
| <i>Briza minor</i>                             | Little Quaking Grass      | FACW- |
| <i>Bromus diandrus</i>                         | Ripgut                    | UPL   |
| <i>Bromus hordeaceus</i>                       | Soft Chess                | FACU  |
| <i>Bromus madritensis</i> ssp. <i>rubens</i>   | Red Brome                 | UPL   |
| <i>Bromus tectorum</i>                         | Cheat Grass               | UPL   |
| <i>Deschampsia cespitosa</i>                   | Tufted Hairgrass          | FACW  |
| <i>Hordeum brachyantherum</i>                  | Meadow Barley             | FACW  |
| <i>Hordeum marinum</i> ssp. <i>gussonianum</i> | Mediterranean Barley      | FACW  |
| <i>Hordeum murinum</i> ssp. <i>leporinum</i>   | Barley                    | FACU  |
| <i>Lolium multiflorum</i>                      | Perennial ryegrass        | UPL   |
| <i>Lolium perenne</i>                          | Perennial Ryegrass        | FAC   |
| <i>Melica torreyana</i>                        | Torrey's Melic Grass      | UPL   |
| <i>Poa annua</i>                               | Annual Bluegrass          | FACW- |
| <i>Poa secunda</i>                             | Perennial Bluegrass       | UPL   |
| <i>Polypogon monspeliensis</i>                 | Annual Rabbitfoot Grass   | FACW+ |
| <i>Vulpia bromoides</i>                        | Vulpia                    | FACW  |
| <i>Vulpia microstachys</i>                     | Vulpia                    | UPL   |
| <i>Vulpia myuros</i>                           | Rat-tail Fescue           | FACU  |

**POLEMONIACEAE - Phlox Family**

|   |                  |     |
|---|------------------|-----|
| <i>Gilia capitata</i>                     | Capitate Gilia   | UPL |
| <i>Gilia tricolor</i> ssp. <i>diffusa</i> | Bird's Eye Gilia | UPL |
| <i>Linanthus ciliatus</i>                 | Whisker Brush    | UPL |
| <i>Linanthus montanus</i>                 | Mustang Clover   | UPL |

**POLYGONACEAE - Buckwheat Family**

|                                 |                  |     |
|---------------------------------|------------------|-----|
| <i>Chorizanthe membranacea</i>  | Pink Spineflower | OBL |
| <i>Eriogonum nudum</i>          | Nude Buckwheat   | UPL |
| <i>Eriogonum roseum</i>         | Rosey Buckwheat  | UPL |
| <i>Pterostegia drymarioides</i> | Pterostegia      | UPL |



|  |                          |      |
|--|--------------------------|------|
| <i>Rumex crispus</i>                                     | Curley Dock              | FACW |
| <b>PORTULACACEAE — Portulaca Family</b>                  |                          |      |
| <i>Calandrinia ciliata</i>                               | Red Maids                | UPL  |
| <i>Claytonia perfoliata</i>                              | Miner's Lettuce          | UPL  |
| <i>Montia fontanum</i>                                   | Water Chickweed          | OBL  |
| <b>PRIMULACEAE - Primrose Family</b>                     |                          |      |
| <i>Anagallis arvensis</i>                                | Scarlet Pimpernell       | FAC  |
| <b>PTERIDACEAE — Brake Family</b>                        |                          |      |
| <i>Pellaea mucronata</i> var. <i>mucronata</i>           | Bird's-foot Fern         | UPL  |
| <i>Pentagramma triangularis</i> ssp. <i>triangularis</i> | Goldenback Fern          | UPL  |
| <b>RANUNCULACEAE — Buttercup Family</b>                  |                          |      |
| <i>Delphinium</i> sp.                                    | Larkspur                 |      |
| <i>Delphinium hansenii</i> ssp. <i>ewanianum</i>         | Ewan's Larkspur          | UPL  |
| <i>Ranunculus aquatilis</i>                              | White-water Buttercup    | OBL  |
| <i>Ranunculus occidentalis</i>                           | Western Buttercup        | FAC  |
| <b>RHAMNACEAE — Buckthorn Family</b>                     |                          |      |
| <i>Ceanothus cuneatus</i>                                | Wedgeleaf Ceonothus      | UPL  |
| <i>Ceanothus leucodermis</i>                             | Chaparral White-thorn    | UPL  |
| <i>Rhamnus californica</i> ssp. <i>occidentalis</i>      | California Coffeeberry   | UPL  |
| <b>RUBIACEAE - Madder Family</b>                         |                          |      |
| <i>Galium parisiense</i>                                 | Wall Bedstraw            | FACU |
| <b>SALICACEAE - Willow Family</b>                        |                          |      |
| <i>Salix laevigata</i>                                   | Red Willow               | FACW |
| <b>SCROPHULARIACEA — Figwort Family</b>                  |                          |      |
| <i>Collinsia heterophylla</i>                            | Chinese Houses           | UPL  |
| <i>Gratiola ebracteata</i>                               | Bractless Hedge-hyssop   | OBL  |
| <i>Mimulus guttatus</i>                                  | Common Monkeyflower      | OBL  |
| <i>Mimulus floribundus</i>                               | Floriferous Monkeyflower | OBL  |
| <i>Mimulus layneae</i>                                   | Monkeyflower             | UPL  |
| <i>Orthocarpus cuspidatus</i> ssp. <i>cryptanthus</i>    | Purple Owl's Clover      | UPL  |
| <i>Castilleja attenuata</i>                              | Valley Tassels           | UPL  |
| <i>Penstemon brevissimus</i>                             | Gaping Penstemon         | UPL  |
| <i>Scrophularia californica</i>                          | California Bee Plant     | UPL  |
| <i>Veronica peregrina</i> ssp. <i>xalapensis</i>         | Purslane Speedwell       | OBL  |
| <b>SOLANACEAE - Nightshade Family</b>                    |                          |      |
| <i>Solanum xantii</i>                                    | Nightshade               | UPL  |
| <b>URTICACEAE — Nettle Family</b>                        |                          |      |
| <i>Urtica urens</i>                                      | Dwarf Nettle             | UPL  |
| <b>VALERIANACEAE - Valerian Family</b>                   |                          |      |
| <i>Plectritis macrocera</i>                              | Longhorn Plectritis      | FAC  |
| <b>VERBENACEAE - Vervain Family</b>                      |                          |      |
| <i>Verbena hastata</i>                                   | Blue Vervain             | FAC  |
| <b>VISCACEAE - Mistletoe Family</b>                      |                          |      |
| <i>Phoradendron villosum</i>                             | Oak Mistletoe            | UPL  |
| <b>VITACEAE - Grape Family</b>                           |                          |      |
| <i>Vitis californica</i>                                 | California Wild Grape    | UPL  |

**APPENDIX B:  
SELECTED PHOTOGRAPHS**



**The dead remains of elderberries in the ECA at far right and left.**



**Fencing and signage around ECA in good condition.**



**Broken fencing still in disrepair at the south edge of northeastern arm of open space preserve. Cattle trail from neighboring property (background) can enter open space preserve (foreground).**