Continued Implementation of Two Long-term Management Plans for the Rancho Cañada de Pala Preserve Appendices

Appendix A

SANTA CLARA VALLEY WATER DISTRICT

Rancho Cañada de Pala Preserve Areas 1 & 2
Long-term Management Plan

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I. BACKGROUND

1.0 INTRODUCTION

1.1. Purpose of Property Purchase

In December 2015, the Santa Clara Valley Water District (SCVWD) purchased the Rancho Cañada de Pala Preserve (Preserve) from The Nature Conservancy (TNC) in part for the purpose of providing mitigation in perpetuity for impacts associated with the SCVWD's 2002 Multi-Year Stream Maintenance Program (SMP) under the Stream and Watershed Protection Program (S&WPP). The Preserve may also provide mitigation for other SCVWD projects to be identified in the future, pending prior agency approval. The agencies that required the mitigation (Permitting Agencies) associated with the 2002 S&WPP are the California Department of Fish and Wildlife (CDFW), U.S. Army Corps of Engineers (Corps), and San Francisco Regional Water Quality Control Board (SF RWQCB).

The Preserve is divided into three Areas (Areas 1, 2, and 3) that collectively total 1,758 acres (Figure 1). Areas 1 and 2, which encompass 1,221 acres, are the subject of this Long-term Management Plan (LTMP). In 2000, an easement on a portion of the Preserve (Area 1) was transferred by the Kammerer family to Catellus Land Development Corporation to be used as mitigation for impacts on the California tiger salamander (CTS; *Ambystoma californiense*) elsewhere (G. Kammerer pers. comm.; SF RWQCB 1999). Catellus Land Development Corporation recorded a Conservation Easement (CE) on the approximately 840-acre Area 1 of the Preserve in favor of TNC (as the Grantee). Two years later, TNC purchased the underlying fee from the Kammerer family and until December 2015, owned the entire Preserve. The SCVWD obtained ownership of the Preserve (including Areas 1, 2, and 3) in December 2015, with a perpetual CE held by TNC on Area 1.

In December 2015, the SCVWD recorded a CE (also held by TNC) on the entirety of Area 3 (320 acres) to provide mitigation for the 2002 SMP. Area 3 includes 6.6 miles of S&WPP-designated streams (waters of the U.S./State and California Fish and Game Code Section 1600 jurisdiction) and their associated buffers (219.89 acres), for which the SCVWD is claiming 2002 SMP mitigation credit. The long-term management of Area 3 is described in a separate LTMP. The SCVWD is not recording any additional CEs on the Preserve at this time.

Because a CE is already present on Area 1, this portion of the Preserve will not provide mitigation for current or future SCVWD projects. Area 2 of the Preserve may provide mitigation for other SCVWD projects, either currently identified or to be identified in the future. If Area 2 is proposed for future mitigation, it would be subject to the requirements of the regulatory agencies governing that mitigation.

1.2. Purpose of this Long-term Management Plan

The existing Area 1 CE and Kammerer Ranch CTS Management Plan (Catellus Development Corporation et al. 2000), which TNC and CDFW are currently working to update, require TNC to implement certain management, monitoring, and reporting activities (and restrict certain other activities) in Area 1 to benefit the CTS. These CTS-specific activities in Area 1 will continue to be performed by TNC. This LTMP for Areas 1 and 2 will supplement TNC's management, monitoring, and reporting activities. The purpose of this LTMP is to ensure that Areas 1 and 2 of

the Preserve are monitored, maintained, and managed in a manner that preserves all of their conservation values (not just those associated with CTS) and is consistent with the existing Area 1 CE.

The conservation values of Areas 1 and 2 are as follows:

- Over 23 miles of seasonal and intermittent streams, as well as 10 ponds (four seasonal and six perennial)

- A mosaic of open rangeland and varied vegetation types (i.e., blue and valley oak woodland, California annual grassland, foothill pine/oak woodland, mixed oak forest, northern mixed/chamise chaparral, and valley oak savanna) that provide habitat for a wide variety of birds, mammals, reptiles, amphibians, and invertebrates

- Potential breeding and upland dispersal habitat for the federally threatened California red-legged frog (CRLF; *Rana draytonii*), also a state species of special concern; potential breeding and upland dispersal habitat for the state and federally threatened CTS; potential breeding and foraging habitat for the western pond turtle (WPT; *Actinemys marmorata*) and American badger (*Taxidea taxus*), state species of special concern; and potential foraging habitat for the foothill yellow-legged frog (FYLF; *Rana boylii*), also a state species of special concern

- Ecological connectivity to the surrounding open space and watershed land network

This LTMP establishes objectives, priorities, and tasks to monitor, manage, maintain, and report on the overall conservation values within Areas 1 and 2, which will be managed according to the LTMP.

The LTMP Goals are to:

- Preserve and allow for the improvement of the conservation values of Areas 1 and 2

- Provide coordinated, unified management for Areas 1 and 2

- Provide feasible and effective conservation guidelines, standards, and priorities for resource management, monitoring, and adaptive management

- Be compatible with and promote cooperation among the various land owners/managers within the upper ends of the Upper Penitencia Creek and Alameda Creek watersheds (e.g., with respect to grazing regimes and invasive species control) and to help ensure the survival of viable populations of sensitive species and healthy biotic communities in the area as a whole

- Provide flexibility as needed to adapt management practices in response to monitoring and field observations, and to meet revised or newly established mitigation goals for Areas 1 and 2 over time

No initial site improvement plans are included with this LTMP, as no initial site improvements were determined to be needed to ensure the long-term function of infrastructure in Areas 1 and 2 or to facilitate land management.

1.3. Land Manager and Responsibilities

The land manager (Land Manager) is the SCVWD. The SCVWD will implement this LTMP, managing, monitoring, and maintaining Areas 1 and 2 to preserve their habitat and conservation values. As Land Manager, the SCVWD will be responsible for maintaining Areas 1 and 2 in their current condition and consistent with the CE for Area 1. The SCVWD may implement additional, optional resource management activities, such as pond enhancement or creation, not included in this LTMP that improve environmental conditions. These may include site improvement projects or long-term management activities that enhance or improve habitat for particular species or communities. If such additional activities are proposed within the 840-acre Area 1 CE area, these will need to be consistent with the restrictions and allowed uses in the CE, and may require written approval of the CDFW. In response to changing conditions, and as part of adaptive management, the SCVWD may employ new or different management techniques to meet the objectives of this LTMP. Any new subsequent grading, or alteration of the site's hydrology and/or topography by the Land Manager or its representatives, depending on the nature and location of impacts, may require resource agency permits, such as a Streambed Alteration Agreement with the CDFW, a California Endangered Species Act 2081 Incidental Take Permit, a Clean Water Act Section 404 permit from the Corps, and/or a Clean Water Act Section 401 certification with the SF RWQCB.

1.4. Responsibilities of Area 1 Conservation Easement Holder

TNC will continue to hold the existing 840-acre CE on Area 1 and will continue to be responsible for management of Area 1 to comply with this CE. The Kammerer Ranch CTS Management Plan identifies all of the management and monitoring responsibilities for habitat preservation for the CTS in perpetuity within Area 1 (Catellus Development Corporation et al. 2000). As the holder of the CE, TNC is responsible for all ongoing monitoring and management activities required by the CTS Management Plan, which are:

- Performing easement maintenance. TNC performs one inspection of Area 1 per year to monitor perimeter and pond fencing and perform ordinary wear and tear repair on fences and remove trash accumulated within the fenced areas around the CTS ponds.
- Monitoring of CTS and pond biological status. Two qualified TNC biologists conduct one survey per year during approximately the first week of May to monitor and measure pond turbidity, temperature, eutrophication and dissolved oxygen levels, CTS reproduction, CTS numbers, available CTS aestivation habitat, and vegetative cover within 200 feet surrounding the ponds.
- Performing aquatic predator monitoring and control. Two qualified TNC biologists perform one inspection of Area 1 per year to determine whether predators are present in the CTS ponds. If predators are present, TNC drains the ponds after 1 September and removes or eradicates aquatic CTS predators.
- Submitting annual reports. Once annually, TNC submits a letter report and data sheets documenting the results of the maintenance and monitoring activities described above within 30 days upon request from the CDFW.
- Additional fencing. If CDFW determines that additional fencing around the ponds is necessary to protect the CTS or its habitat, TNC or the CDFW (depending on the availability of funds) may erect such fencing.

TNC has been unable to conduct these management activities due to insufficient funds provided in their Management Fee (A. Ramsden, pers. comm.). TNC and CDFW are working to resolve this matter, but regardless of the resolution, the SCVWD will not be responsible for carrying out or funding the management activities specified in the Area 1 CE or CTS Management Plan.

2.0 PROPERTY DESCRIPTION

2.1. Location, Setting, Topography, Hydrology, and Soils

2.1.1. Location and Setting

Areas 1 and 2 of the Preserve comprise approximately 1,221 acres, and are located 8 miles northeast of downtown San José in unincorporated Santa Clara County (Figure 1) on portions of Assessor Parcel Numbers 627-22-011, 042-07-019, 042-07-020, 042-07-021, 042-07-023, 042-07-024, 042-07-025, 042-07-026, 042-07-027, 042-07-028, 042-08-001. Areas 1 and 2 lie on west, east, and south-facing slopes of the Diablo Range, approximately 6 miles northwest of Mount Hamilton. The Diablo Range extends 180 miles from Mount Diablo in the northwest to the Polonio Pass in the southeast; it is largely undeveloped and supports a diverse mix of grassland, scrubland and woodland communities. Cattle ranching and passive recreation are the predominant human uses throughout most of the Diablo Range. Protection of Areas 1 and 2 will add to a growing and increasingly contiguous swath of open space and conservation lands in the Mount Hamilton region that currently include San Francisco Public Utilities Commission lands to the north; Santa Clara County Open Space Authority's (OSA) lands, the SCVWD's Upper Penitencia Creek Property (with Area 3 of the Rancho Cañada de Pala Preserve to be preserved via a CE), and the City of San José's Cherry Flat Reservoir to the west; and the University of California's (UC's) Blue Oak Ranch Reserve (BORR) and Santa Clara County's Joseph D. Grant County Park to the south (Figure 1).

2.1.2. Topography and Hydrology

Elevations on Areas 1 and 2 range from approximately 1900 feet National Geodetic Vertical Datum (NGVD) 29 along Upper Penitencia Creek a stream that runs along the western edge of the Preserve to 3100 feet NGVD29 on the northern border of Area 1 atop Poverty Ridge (Figure 2). Areas 1 and 2 are primarily composed of the steeply sloping hillsides of Poverty Ridge, which are bisected by ephemeral and intermittent drainages that flow down the south- and west-facing slopes into Upper Penitencia Creek, and down the east-facing slopes into Arroyo Hondo (Figure 3). Arroyo Hondo is the only perennial stream on the Preserve, and is located in Area 3 to the east of Areas 1 and 2. Upper Penitencia Creek is a stream that drains a 24 square mile area within the larger Coyote Creek watershed; it runs for approximately 11 miles from its headwaters in the Diablo Range to its confluence with Coyote Creek. Downstream from Areas 1 and 2, Upper Penitencia Creek enters Cherry Flat Reservoir, which was constructed in 1936 to supply water to Alum Rock Park during the summer and prevent floods during the winter. Upper Penitencia Creek then flows through Alum Rock Park before exiting the hills onto the valley floor. From Alum Rock Park, Upper Penitencia Creek flows westward across the Santa Clara Valley floor and through the City of San Jose for about four miles before joining Coyote Creek approximately 10 miles upstream of the San Francisco Bay.

The estimated 30-year (1981–2010) mean annual precipitation at Areas 1 and 2 is 24.83 inches (PRISM 2016), most of which occurs between the months of November and April. Precipitation is the main source of water for the ephemeral and intermittent streams in Areas 1 and 2;

however, natural seeps and springs at the headwaters of drainages where the groundwater table approaches or tops soil surface are present in Areas 1 and 2.

2.1.3. Soils

Areas 1 and 2 are underlain by four soil types within the Gaviota Series and Los Gatos-Gaviota Complex: (1) Gaviota loam 30 to 75 percent slopes; (2) Gaviota gravelly loam 30 to 75 percent slopes, severely eroded; (3) Gaviota-Los Gatos complex, 30 to 50 percent slopes; and (4) Los Gatos-Gaviota complex, 50 to 75 percent slopes (Figure 4). These soils are derived from hard sandstone and shale from the Franciscan formation and younger (Miocene age) marine sediments. The Gaviota series consists of shallow soils that are well-drained and somewhat excessively drained, moderately to severely eroded, low fertility, and may be subject to burning. Serpentine soil inclusions of the Henneke series are common throughout (Natural Resource Conservation Service [NRCS] 2016), in addition to inclusions of the Los Gatos and Vallecitos series (U.S. Soil Conservation Service 1974). Soil complexes on Areas 1 and 2 generally include the Gaviota series on ridges and south-facing slopes, and soils within the Los Gatos series on north-facing slopes. The Los Gatos-Gaviota complex generally includes soils within the Gaviota series on ridges and south-facing slopes, as well as soils within the Los Gatos series on north-facing slopes. The Los Gatos series is well-drained, subject to sheet erosion, and moderately fertile. The complex may also include small areas of Vallecitos rocky loam, Los Osos clay loam, and Altamont clay. Rock outcrops and talus are also scattered across Areas 1 and 2.

2.2. General History and Land Use of Areas 1 and 2

Areas 1 and 2 are largely undeveloped with minimal existing infrastructure. Similar to the rest of the region, Areas 1 and 2 have historically been used for cattle grazing. Information on historic grazing in the region and recent grazing activity within Areas 1 and 2 is provided for context below.

2.2.1. Historic Land Management in the Region

Livestock grazing has existed in Santa Clara County, including in the foothill areas of the Diablo Range, for over 200 years. During the Spanish Period (1722-1822), lands outside of the missions and pueblo settlements in the county were utilized primarily for grazing of livestock and limited agriculture (County of Santa Clara 2004).

With the establishment of large private land grants during the Mexican Period (1822-1846), local residents were able to own and oversee immense acreages of land (a “rancho”), typically thousands of acres in size. Large herds of cattle were allowed to range freely across these immense tracts of land on a year-round basis and were rounded up twice a year during rodeo. Within a rancho, only the existing infrastructure (e.g., house, corral, garden, small orchard) was fenced, while the remainder of the ranch where the cattle roamed was unfenced (County of Santa Clara 2004).

Rancho land ownership continued until this system was challenged by frontier settlers during the American Period (1846-1900). As smaller farms were established throughout the County, open range methods changed, pasture land was reduced, and cattle ranching became concentrated in the foothills. This period included more intensive cattle operations with fencing and water developments being installed, as well as intensive stock farming, with cattle being moved from foothill pastures to valley feed yards to await marketing. With these more intensive

methods, hay production became a necessity (County of Santa Clara 2004). Year-long grazing was probably conducted in most areas.

From the end of the American Period until more recently, year-long and/or seasonal grazing is presumed to have been the strategy of many area ranches with extensive fencing and water developments to utilize all available feed that grew annually. Maximizing livestock numbers was the objective of many area ranches. This strategy still exists on many local ranching operations.

2.2.2. Recent Land Use of Areas 1 and 2

From 1976 until 2001, Areas 1 and 2 were part of a 2,000-acre ranch owned by the Kammerer family. The Kammerer family used the ranch primarily for cattle grazing, but also enjoyed the ranch for wildlife-related uses, including fishing and hunting. Grazing activity on the ranch consisted of a relatively conservative grazing regime (G. Kammerer pers. comm.). In the six years prior to 2001, grazing activity on the ranch consisted of the following:

1995 – 59 cow/calf pairs
1996 – 73 cow/calf pairs, 4 yearlings, 4 bulls
1997 – 47 cow/calf pairs, 4 yearlings, 4 bulls
1998 – 45 cows, 39 calves, 3 bulls
1999 – 45 cows, 39 calves, 3 bulls
2000 – 45 cows

Because the Preserve was obtained by TNC, a grazing regime at or below 50 animal units (AUs) per year has been maintained on the Preserve as a whole (including Areas 1, 2, and 3 collectively) per the requirements of the Management Plan (Exhibit C) of the CE for Area 1 (TNC 2000). This is consistent with the CE for Area 1, which does not require grazing within Area 1 but limits grazing to a maximum of 50 AUs per year (TNC 2000). Although some fencing bisects portions of Area 2, no fencing separates the remaining portions of the Preserve, and livestock grazing is managed for all three areas as a single unit.

2.3. Existing Infrastructure

The existing infrastructure in Areas 1 and 2 is shown on Figure 5. The main drivable road within these areas extends from the southernmost end of Area 2 north through the center of Areas 1 and 2, and then forks east and west along the northern edge of Area 1. The western fork continues to a pond in the northwestern corner of Area 1. The eastern fork road creates two loop roads, one within Areas 1 and 2 and one that extends into Area 3.

The roads within Areas 1 and 2 cross ephemeral and intermittent streams at 16 locations (SC 1–SC 16, Figure 5). Culverts convey flows beneath the road at two locations (SC 9 and SC 10), and wooden retaining walls have been constructed on the downstream sides of road crossings at two locations (SC 3 and SC 6), but otherwise these stream crossings are not associated with any infrastructure. Instead, water travels across the road as sheet flow, and when it is present, it is very shallow (a few inches deep at most). Minor erosional damage is present at the locations of the two retaining walls (SC 3 and SC 6), and additional erosional features, such as large gullies, were observed at SC 1 and SC 2. The infrastructure and/or erosional features at each stream crossing are described below in Table 1.

Table 1. Stream Crossings

Stream Crossing	Infrastructure and/or Erosional Features
SC 1	A gully (approximately 4 feet wide and 6 feet deep) has formed downstream of the road in the stream channel (Photos 1–2, Appendix B). This erosional feature is not currently impacting the roadway itself. No infrastructure is present.
SC 2	A gully (approximately 3 feet wide and 5 feet deep) has formed downstream of the road in the stream channel (Photos 3–4, Appendix B). This erosional feature is not currently impacting the road itself. No infrastructure is present.
SC 3	A nonfunctional culvert is buried next to the road. The inlet and outlet are filled with sediment and the culvert no longer conveys flows. A wooden retaining wall stabilizes the downstream side of the roadway, and has some visible (minor) damage from erosion (Photos 5–6, Appendix B).
SC 4	No infrastructure and/or erosional features present.
SC 5	No infrastructure and/or erosional features present.
SC 6	The road crosses over Upper Penitencia Creek. A small wooden retaining wall stabilizes the downstream side of the roadway, and has some visible (minor) damage from erosion (Photo 7, Appendix B).
SC 7	No infrastructure and/or erosional features are present.
SC 8	No infrastructure and/or erosional features are present.
SC 9	The road crosses over a seasonal wetland/seep at the headwaters of an ephemeral drainage. A culvert passes under the road (Photo 8, Appendix B).
SC 10	The road crosses over a seasonal wetland just upstream of Pond 7. A culvert passes under the road (Photo 9, Appendix B).
SC 11	No infrastructure and/or erosional features are present.
SC 12	No infrastructure and/or erosional features are present.
SC 13	A pig fence intersects the stream channel, just upstream of the road (Photo 10, Appendix B).
SC 14	No infrastructure and/or erosional features are present.
SC 15	No infrastructure and/or erosional features are present.
SC 16	No infrastructure and/or erosional features are present.

Seven segments of abandoned road are present within Areas 1 and 2. These roads have not been driven in the recent past. Most of these road segments spur off of the main drivable roads and follow ridgelines, although one abandoned road segment travels down a steep hillside to Upper Penitencia Creek in the western portion of the site (Figure 5).

There are various fences (e.g., 4- and 5-strand barbed wire fence and pig fence) present along the boundaries of and within Areas 1 and 2 (Figure 5; Photos 10–12, Appendix B). Barbed wire fencing is present along the northern boundary of Area 1 and the western boundary of Areas 1 and 2, and pig fencing is present near the southern boundaries of Areas 1 and 2 between these areas and the BORR to the south. Additional barbed wire fencing is present in the southern portion of the site, mostly within Area 2, encircling three smaller areas, one of which holds a livestock corral. Pond 4 is also surrounded by fencing. The eastern boundary of Area 1 is not separated from Area 3 by fencing. Likewise, Areas 1 and 2 are not separated by fencing. Eleven gates were observed along the fences within or bordering Areas 1 and 2. Portions of the western and southwestern fencelines within Areas 1 and 2 were mapped using aerial photography, and the condition of this fencing is unknown. However, all fencing seen on the site during the field survey was observed to be in good condition.

There are 10 artificial stock ponds located on Areas 1 and 2; six of these ponds are perennial (Ponds 1 and Ponds 4–8, Figure 5), and four are seasonal (Ponds 2, 3, 9, and 10, Figure 5) (Photos 13–14, Appendix B). These numbered ponds are referred to by various names in site-specific documents (e.g., the CTS Management Plan for Area 1); those names are provided in Table 2). A network of perennial ponds connected by streams and wetlands is present in the center of Areas 1 and 2, providing a year-round source of water for cattle. Eight livestock water troughs are dispersed across the western portions of Areas 1 and 2 (Figure 5). Two of the troughs are associated with the livestock corral and ranch house. All of the troughs are directly abutting or adjacent to ephemeral and intermittent streams (Figure 5), and are fed by piping water to the trough from a nearby spring box (Photos 15–16, Appendix B). Leaky pipes and/or overflowing water troughs have created artificial hydrological conditions in small, discrete patches that are able to support wetland plants.

Table 2. Pond Designations

Pond Number	Pond Name(s)
1	Tule Lake
2	CTS Pond
3	Basin Pond
4	Wood Duck Lake
5	Trout Lake
6	Little Trout or Mallard Lake
7	Leaky, Upper Leaky, or Eagle Lake
8	Lower Leaky Lake
9	Close Gorge Pond
10	Far Gorge Pond

A small ranch house is present in Area 2 (Figure 5). This small house has only one room and was historically used for overnight stays on the Preserve by the Kammerers and their guests (Photo 17, Appendix B). This house has not been used recently. A retaining wall is present between the house and the nearby stream, but no erosional features were observed at this location. A minimal outhouse is located adjacent to the ranch house.

2.4. Adjacent Land Uses

Most properties in the general vicinity of Areas 1 and 2 are undeveloped and have been used long-term for cattle grazing; however, not all properties in the vicinity continue to implement cattle grazing. Lands adjacent to Areas 1 and 2 include a combination of public and private ownership for private ranching, parks, research, and mitigation purposes (Figure 1).

Several protected open space areas abut Areas 1 and 2, including Area 3 of the Preserve, which is located immediately east of Area 1. In addition, the UC's BORR is located immediately to the south, and the SCVWD's Upper Penitencia Creek Property, which is protected by a CE, is located immediately to the west. The remaining properties to the north and northwest of Areas 1 and 2 are owned by private landowners who use those lands for cattle ranching (Figure 1).

2.4.1. Blue Oak Ranch Reserve

The BORR, which is a part of the UC Natural Reserve System (NRS), abuts the southern boundaries of Areas 1 and 2 (Figure 1). The 3,260-acre BORR has been administered by the UC Regents and UC Berkeley as a teaching and research area since the BORR became a part of the NRS in 2007 (University of California at Berkeley [UCB] 2013). TNC holds a CE on the property and the County of Santa Clara has an open space agreement with the UC for the area as well (BORR 2013).

Habitats at the BORR are similar to those within Areas 1 and 2 and include non-native and native grassland, oak woodland/savanna (e.g., blue oak, valley oak, black oak and coast live oak) and scrub. In addition, the BORR has extensive riparian habitat, a series of streams, and 17 ponds (UCB 2013).

Livestock grazing is no longer used as a management tool at BORR. Prescribed burning, conducted in collaboration with the California Department of Forestry and Fire Protection (CAL FIRE), is used instead, as necessary, to reduce thatch accumulation and protect against large, damaging fires; to control invasive plant species; and to enhance wildlife habitat (M. Hamilton pers. comm.).

2.4.2. Rancho Cañada de Pala Preserve Area 3

Vegetation types within Area 3 of the Preserve are similar to those within Areas 1 and 2; they include large tracts of oak forests and woodland, valley oak savanna, and small patches of California annual grassland and chaparral habitat. Dominant tree, shrub, and herbaceous species are similar across the entire Preserve, although portions of Areas 1 and 2 to the west of Poverty Ridge (i.e., within Area 2 and approximately half of Area 1) lack foothill pine (*Pinus sabiniana*), whereas it is a major component of the tree canopy to the east of the ridgeline and on Area 3. Ephemeral and intermittent streams in Area 3 are similar to those in Areas 1 and 2, and lack much distinctive riparian tree development. Streams to the west of Poverty Ridge drain into Upper Penitencia Creek, while streams to the east (i.e., within Area 3 and approximately half of Area 1) drain into Arroyo Hondo, the only perennial stream on the Preserve. Due to the steep gradient and rocky slopes leading down to Arroyo Hondo as well as the dense woody vegetation within much of Area 3, livestock more heavily utilize Areas 1 and 2. As a result, both human- and livestock- related disturbances are greater, and occurrences of non-native invasive plant species are more frequent on Areas 1 and 2 of the Preserve. In addition, water features utilized by cattle are more abundant on Areas 1 and 2, all of which have been artificially created to support ranching activities. No ponds are present in Area 3.

TNC has implemented a managed grazing program within all areas of the Preserve since 2001. With the exception of livestock grazing, TNC has not implemented other measures (e.g., use of herbicides) to manage invasive vegetation or weed infestations (S. Gennet pers. comm.).

2.4.3. Upper Penitencia Creek Property

From 1976 until December 2012, the 222-acre Upper Penitencia Creek Property was part of the larger 2,000-acre ranch owned by the Kammerer family. In December 2012, the OSA purchased this 222-acre area surrounding the upper end of Cherry Flat Reservoir with the intention of partnering with the SCVWD. Ownership was transferred to the SCVWD in December 2014 for the purpose of providing mitigation in perpetuity for impacts associated with the SCVWD's 2002 Multi-Year SMP under the S&WPP. The SCVWD retains ownership of the Upper Penitencia Creek Property, with a perpetual CE held by OSA on an approximately 201-acre portion of the property.

Similar to the Preserve, the Upper Penitencia Creek Property was historically used for cattle grazing. From the mid-1970s (or earlier) until December 2012, no formal grazing regime was implemented on the property, and it was lightly grazed using a seasonal grazing strategy. One perennial pond, three seasonal ponds, and one developed spring are present on the Upper Penitencia Creek Property. The property is currently managed by OSA per the 2014 LTMP and CE (SCVWD 2014). Cattle grazing Areas 1 and 2 of the Preserve also graze the eastern side of the Upper Penitencia Creek Property, which is not separated from the Preserve by fencing (Figure 5).

2.4.4. Other Surrounding Lands

Areas 1 and 2 of the Preserve are bordered by private ranch lands to the north and northwest (Figure 1). In the larger surrounding area, the Preserve is surrounded by private ranch lands and a growing, increasingly contiguous swath of open space and conservation lands in the Mount Hamilton region that currently includes San Francisco Public Utilities Commission lands to the north, OSA lands to the west, and Joseph D. Grant County Park to the south (Figure 1). These conservation lands include the OSA's Moore Property located downstream of Cherry Flat Reservoir, purchased in part for the S&WPP, and with a CE held by the SCVWD.

3.0 HABITAT AND SPECIES DESCRIPTIONS

3.1. Vegetation Types

The majority of Areas 1 and 2 is characterized by the steep hillsides of Poverty Ridge. Dense oak forest occurs along the streams that drain to Upper Penitencia Creek, but generally, more open woodland and savanna vegetation types are present on the majority of Areas 1 and 2. Large tracts of California annual grassland and two small patches of northern mixed/chamise chaparral also cover the south-facing slopes on Areas 1 and 2. In addition, small areas of rock outcroppings, talus, and unstable mélange are interspersed across all terrestrial vegetation types. The hillslopes are bisected by ephemeral and intermittent streams that flow down the south- and west-facing slopes into Upper Penitenicia Creek, and down the east-facing slopes through Area 3 and eventually to Arroyo Hondo (Figure 3). Ten perennial and seasonal ponds are associated with these drainages, and several wetlands occur along the stream channels and around the edges of ponds. The vegetation types within Areas 1 and 2 are provided in Table 3 and depicted on Figure 6.

Table 3. Vegetation Types

Vegetation Type	Overall Acreages (ac)
Blue and Valley Oak Woodland	447.7
Valley Oak Savanna	280.8
Mixed Oak Forest	196.6
California Annual Grassland	194.4
Foothill Pine/Oak Woodland	88.0
Northern Mixed/Chamise Chaparral	4.5
Perennial Pond	6.1
Seasonal Pond	0.7
Wetland	2.6
Total acreage	1,221.4

The vegetation map (Figure 6) and vegetation type descriptions below are based on surveys conducted by H. T. Harvey & Associates in May and June 2015. In addition to field observations, vegetation signatures visible on aerial photographs (Google Inc. 2016) and information from the Santa Clara Valley Habitat Plan (VHP; ICF International 2012) were used to assist in the creation of the vegetation map and vegetation type descriptions for Areas 1 and 2. The *Jepson Manual, second edition* (Baldwin et al. 2012) was the principal taxonomic reference used for the botanical work. The vegetation type descriptions that follow also indicate the corresponding habitat classifications designated by the VHP (ICF International 2012), Holland (1986), and the California Wildlife Habitat Relationships System (CWHR) (California Department of Fish and Game [CDFG] 1988), where appropriate. Holland's (1986) habitat classifications were developed as a "coarse filter" to capture the majority of the state of California's biota for the purpose of including natural communities in the California Natural Diversity Database (CNDDB), and it is patterned after TNC's Natural Heritage Program methodology. The CWHR System is a wildlife information system and predictive model for the state's common amphibian, reptile, bird, and mammal species (CDFG 1988).

3.1.1. Blue and Valley Oak Woodland

This vegetation type occurs west of the topmost edge of Poverty Ridge in Areas 1 and 2 (Figure 6; Photos 18–19, Appendix B). The tree canopy of this woodland vegetation type is airy and less dense compared to forest vegetation types. The dominant species include blue oak (*Quercus douglasii*) and valley oak (*Quercus lobata*), and black oak (*Quercus kellogii*) and California buckeye (*Aesculus californica*) are also quite common throughout. The shrub layer in the understory is also sparse in comparison to forested habitats, and includes poison oak (*Toxicodendron diversilobum*), California coffeeberry (*Frangula californica*), various species of snowberry (*Symphoricarpos mollis* and *S. albus* var. *laevigatus*), and coyotebrush (*Baccharis pilularis* ssp. *consanguinea*).

Beneath a dense tree canopy and shrub layer, the ground is largely covered by pine needles and oak leaf litter. The composition of vegetation in the herbaceous layer, where it exists under canopy openings, is almost identical to that of the California annual grassland vegetation type described below under Section 3.1.4, which intergrades with woodlands and savanna on Areas 1 and 2. Grassy areas are dominated by a suite of non-natives that are common across much of Areas 1 and 2, such as wild oats (*Avena fatua* and *A. barbata*), annual dogtail (*Cynosurus*

echinatus), rattail sixweeks grass (*Festuca microstachys*) soft chess (*Bromus hordeaceus*), and Spanish brome (*Bromus madritensis* ssp. *rubens*). Small patches dominated by native grasses are also present in the foothill pine/oak woodland vegetation type, and are composed of wildrye (*Elymus glaucus* and *E. triticoides*), various species of melicgrass (*Melica imperfecta*, *M. torreyana*, and *M. californica*), one-sided bluegrass (*Poa secunda* ssp. *secunda*), purple needlegrass (*Stipa pulchra*), and foothill needlegrass (*Stipa lepida*). The composition of forbs in the understory will shift throughout the growing season, and at the time of the field surveys, common and identifiable species included spreading hedgeparsley, common Pacific pea (*Lathyrus vestitus* var. *vestitus*), Ithuriel's spear (*Triteleia laxa*), yellow mariposa (*Calochortus luteus*), smooth cat's ear (*Hypochaeris glabra*), and gumweed madia (*Madia gracilis*). Serpentine inclusions of the Henneke soil series may occur within open grassy areas of blue and valley oak woodland, as several of the common native bunchgrasses observed in this habitat are serpentine-adapted, including one-sided bluegrass, foothill needlegrass, and purple needlegrass (Holland 1986).

Both the VHP and CWHR include a blue oak woodland habitat type (ICF International 2012 and CDFG 1988). Holland (1986) habitat types also include a blue oak woodland/blue oak series classification.

3.1.2. Valley Oak Savanna

Valley oak savanna occurs on the south- and west-facing slopes of Areas 1 and 2, and is characterized by widely scattered trees and a grassy understory (Figure 6; Photos 20–21, Appendix B). Tree cover is typically 25 percent or less, and is dominated by valley oak, although blue oaks also occur in this vegetation type. Valley oak savanna intergrades with other woodland, chaparral, and grassland vegetation types in Areas 1 and 2. Shrubs are generally lacking in the understory. The herbaceous layer is similar to that of the blue and valley oak woodland (Section 3.1.1), California annual grassland (Section 3.1.4), and foothill pine/oak woodland (Section 3.1.5).

This vegetation type is classified as valley oak woodland in the VHP (ICF International 2012), Holland (1986), and in the CWHR habitat classification scheme (CDFG 1988). Furthermore, it is considered a sensitive natural community the CDFW and is listed in the CNDDB (2016).

3.1.3. Mixed Oak Forest

Stands of mixed oak forest generally occur along ephemeral and intermittent streams in Areas 1 and 2 (Figure 6; Photo 22, Appendix B). This vegetation type is distinct from other oak woodland vegetation types in that it has a relatively closed canopy, and the vegetation signature on aerial photographs shows a variety of colors and textures indicative of co-dominant evergreen and deciduous tree species (Google Inc. 2016). The canopy is composed of a variety of evergreen trees, such as coast live oak (*Quercus agrifolia*); as well as deciduous trees including California bay (*Umbellularia californica*), blue oak, valley oak, and black oak. The relative abundance of the dominant species varies according to ecological gradients. For example, coast live oak and California bay are the most shade tolerant; they thrive in mesic conditions and occur toward the interior of stands of mixed oak forest. In contrast, blue oak and valley oak are the least shade tolerant tend to grow in more open woodland settings on the outer edges of this vegetation type. Blue oak is more tolerant of dry and rocky sites, whereas valley oak requires fertile soils that are common in bottomlands or the lower foothills of the Diablo Range. Interior live oak and black oak are intermediate with regard to shade and moisture tolerance (UC 2015).

The understory cover and composition of shrubs and herbaceous vegetation within Areas 1 and 2 is variable, with greater cover in areas of less dense overstory. Dominant shrub species include poison oak, various species of snowberry, California coffeeberry, and toyon (*Heteromeles arbutifolia*). A thick layer of leaf litter generally covered the ground, precluding the growth of herbaceous species, although trailing blackberry (*Rubus ursinus*) and spreading hedgeparsley (*Torilis arvensis*) were scattered throughout.

The mixed oak forest vegetation type most closely resembles the mixed oak woodland and forest habitat described in the VHP (ICF International 2012) and the coastal oak woodland habitat type designated by the CWHR (CDFG 1988). The coast live oak woodland of Holland (1986) best matches this vegetation type, as it tends to be distributed in patches on protected slopes and in shaded ravines.

3.1.4. California Annual Grassland

Several large tracts of California annual grassland occur on Areas 1 and 2 on south- and west-facing slopes; however, this vegetation type is also a significant component in woodland, savanna, and chaparral vegetation types (Figure 6; Photos 21 and 23, Appendix B). California annual grassland lacks both trees and shrubs. It is dominated by a suite of non-native grasses including wild oats, rattail sixweeks grass, annual dogtail grass, soft chess, and Spanish brome. As previously mentioned (see Section 3.1.1 above), patches dominated by native grasses, some of which are serpentine-adapted species (such as one-sided bluegrass, purple needlegrass, and foothill needlegrass) are also interspersed within this vegetation type. Many of the forbs in this vegetation type had senesced by the time of the May and June 2015 field surveys; however, small areas of grassland were dominated by California cudweed (*Pseudognaphalium californicum*). In addition, smooth cat's ear (*Hypochaeris glabra*), Ithuriel's spear, yellow mariposa, and gumweed madia were common throughout. Rock outcroppings and talus were also observed across this area.

Overall, grasslands in Areas 1 and 2 are typical of lightly disturbed grasslands in the region and are similar to the California annual grassland habitat described by the VHP (ICF International 2012), the non-native grassland type described by Holland (1986), and the annual grassland designation in the CWHR habitat classification scheme (CDFG 1988). However, small areas within grasslands on Areas 1 and 2 are dominated by serpentine-adapted native grasses, such as one-sided bluegrass, purple needlegrass, and foothill needlegrass. These areas would correspond to serpentine bunchgrass grassland habitat described by both the VHP (ICF International 2012) and Holland (1986).

3.1.5. Foothill Pine/Oak Woodland

Foothill pine/oak woodland is co-dominated by gray pine (*Pinus sabiniana*), blue oak, and valley oak (Photos 24–25, Appendix B). The shrub and herbaceous layers of this vegetation type are identical to the blue and valley oak woodland described above under Section 3.1.1. Serpentine inclusions of the Henneke soil series likely occur within this vegetation type, as foothill pine is tolerant of serpentine edaphic conditions, and several of the common native bunchgrasses observed in Area 3 are serpentine-adapted, including one-sided bluegrass, foothill needlegrass, and purple needlegrass (Holland 1986 and Safford et al. 2005).

Both the VHP and CWHR include a foothill pine/oak woodland habitat (ICF International 2012 and CDFG 1988). Holland (1986) habitat types also include a "digger pine"/oak woodland/blue oak series classification.

3.1.6. Northern Mixed/Chamise Chaparral

Two small, discrete patches of chaparral are present on the dry south-facing slopes of Areas 1 and 2 on rocky, well-drained soils. Very few trees are present in this vegetation type; the shrub layer is a dense thicket of chamise (*Adenostema fasciculatum* var. *fasciculatum*). Patches of chaparral on Areas 1 and 2 are relatively inaccessible as a result of steep slopes, and being surrounded by oak forest with a dense understory of poison oak. Biologists were able to view the chaparral through binoculars from the opposing hillside during the field surveys, and to visit this habitat in Area 3 of the Preserve where it is accessible. Aerial photographs (Google Inc. 2016) also assisted in mapping and determining the dominant vegetation, as the color signature of chamise is dark green and distinct from other shrubs that commonly dominant chaparral habitats in vicinity, such as coyotebrush and California sage (*Artemisia californica*). In Area 3 of the Preserve, the chaparral vegetation type is dominated by chamise (Photo 26, Appendix B). Various species of buckwheat, such as slender woolly buckwheat (*Eriogonum gracile*) and coyote mint (*Monardella villosa* ssp. *villosa*) were observed in the herbaceous layer at the time of the field surveys. Grass species observed in the woodland, savanna, and grassland vegetation types on the Preserve (see Section 3.1.1 above for a detailed description) were also common along the edges of chaparral in areas lacking shrubs.

The VHP (ICF International 2012) and Holland (1986) also include a northern mixed/chamise chaparral habitat classification that matches the vegetation type observed on the Preserve, and it most closely resembles the chamise/redshank chaparral habitat classification under the CWHR, which includes impenetrable stands composed entirely of chamise (CDFG 1988).

3.1.7. Perennial Pond

There are six perennial, artificial stock ponds (Ponds 1 and 4–8, Figures 5 and 6) in Areas 1 and 2 (Photos 13 and 27–31, Appendix B). All of these ponds held surface water during the May and June 2015 field surveys. The depth of these ponds is highly variable. Most range from several feet to approximately 15 feet deep over the course of the year; however, Pond 7 can approach depths of 40 feet (L. Serpa, pers. comm.). Seasonal wetlands and perennial marshes surround the edges of the perennial ponds (see Section 3.1.9 below), and also occur in the ephemeral and intermittent stream networks to which the ponds are connected. All of the perennial ponds were man-made to provide a year-round water source for cattle, although Pond 5 is currently surrounded by fencing to exclude livestock (Figure 5). These ponds are fed by runoff from streams and some are connected to groundwater. In addition, water is piped in and out of the ponds as needed to maintain desired water levels. Berms have been constructed around the perimeters of the ponds and serve as dams to prevent water from escaping. In some cases, water leaks through these berms, creating wetlands downstream.

The VHP includes a pond habitat classification (ICF International 2012), whereas the CWHR includes a lacustrine habitat classification that is described as an inland depression that contains standing water (CDFG 1988). While Holland (1986) includes marsh and vernal pool habitat types, open water is not addressed under this habitat classification scheme, and there is no equivalent to the perennial ponds in Areas 1 and 2.

3.1.8. Seasonal Pond

There are four seasonal, artificial stock ponds (Ponds 2, 3, 9, and 10, Figure 6) located in Areas 1 and 2 (Photos 14 and 32–34, Appendix B). Ponds 3 and 10 were completely dry during the

May and June field surveys, while Ponds 2 and 9 still held up to 1 foot of surface water but are expected to completely dry out over the course of the dry season (May through October). A seasonal wetland was evident in the center of Pond 3, and hydrophytic vegetation is likely to become apparent in other seasonal ponds as the water level recedes. All of the seasonal ponds are man-made to provide a water source for cattle during the wet season, and berms have been constructed around their perimeters to help retain water. Each of the ponds is located along an ephemeral or intermittent stream (with the exception of Pond 10) and is partially supported by runoff and potentially also by groundwater. All of the ponds are located in open areas of woodland, savanna, and grassland vegetation types.

The VHP includes a pond habitat classification (ICF International 2012), whereas the CWHR includes a lacustrine habitat classification that resembles the seasonal pond description (CDFG 1988). While Holland (1986) includes marsh and vernal pool habitat types, open water and seasonal wetlands are not addressed under this habitat classification scheme, and there is no equivalent to the seasonal ponds on Areas 1 and 2.

3.1.9. Wetland

Several small patches of wetland habitat are scattered across Areas 1 and 2, all of which are associated with ephemeral and intermittent streams and/or ponds (Figure 6). Perennial marsh wetlands surround the perimeter of perennial ponds in narrow bands that are several feet wide (Photos 27–31, Appendix B), and are also present within and directly abutting streams (Photos 35–36, Appendix B). Various forbs and graminoids that are known to occur in wetlands at least 67 percent of the time (Environmental Laboratory 1987), such as seep monkeyflower (*Mimulus guttatus*), watercress (*Nasturtium officinale*), common spikerish (*Eleocharis macrostachya*), toadrush (*Juncus bufonius*), Pacific rush (*Juncus effusus* ssp. *pacificus*), and Mexican rush (*Juncus mexicanus*) co-dominate these wetlands. Least duckweed *(Lemna minuta)* also coats the surface of the water in many locations (Photo 37, Appendix B). Seasonal wetlands occur at the headwaters of streams and within seasonal ponds (Photo 33, Appendix B); they are dominated by plant species that are equally likely to occur in wetlands and uplands, such as Italian ryegrass (*Festuca perennis*) and seaside barley (*Hordeum marinum*). Seasonal wetlands exhibit a connection to surface water during and immediately following large storm events or during the wet season, and may also be found in areas where groundwater is seeping from the soil surface. For instance, a seep was identified at the headwaters of a stream at SC 9 (Photo 38, Appendix B). Although wetlands were mapped during the field surveys, their full extent within Areas 1 and 2 could not be assessed, and thus, it is likely that additional perennial marsh and seasonal wetlands are present in Areas 1 and 2.

The VHP describes a coastal and valley freshwater marsh habitat classification that closely matches the wetland habitat in Areas 1 and 2; it is dominated by emergent herbaceous plants with either intermittent flooded or perennially saturated soils (ICF International 2012). The wetlands on the site resemble the freshwater marsh/duckweed series and freshwater seep/spikerush series habitats described by Holland (1986), and correspond to the wet meadow habitat classification under the CWHR, which is dominated by rushes (*Juncus* spp.) (CDFG 1988).

3.2. Stream Corridor Characteristics

3.2.1. Vegetation

Vegetation types along ephemeral and intermittent streams within Areas 1 and 2 are consistent with the terrestrial habitats described above under Section 3.1, without any distinctive riparian community. These streams primarily flow through dense mixed oak forest, and the majority of vegetation observed in drainages during the field surveys was composed of native woody species. However, some stream reaches traverse woodland, savanna, and grassland habitats, and their channels support herbaceous species. In addition, the wetlands on the site (see Section 3.1.9) are associated with stream networks, particularly those which connect Ponds 4–8 (Figure 6).

3.2.2. Physical Characteristics

Stream networks consisting of ephemeral and intermittent drainages are spread across Areas 1 and 2, totaling approximately 23.1 miles in stream length (Figure 3). None of the streams on Areas 1 and 2 are mapped as perennial; however, a portion of Upper Penitencia Creek contained substantial flowing water at the time of the May–June 2015 surveys, and this section of the stream may be perennial, especially in years of high local rainfall.

Upper Penitencia Creek drains a 24 square mile area within the larger Coyote Creek watershed; it originates from Poverty Ridge, less than 1 mile from the Preserve, and provides water to Cherry Flat Reservoir (Figure 6; Photo 39, Appendix B). Access to much of the mainstem of Upper Penitencia Creek in Areas 1 and 2 is precluded by steep slopes and dense cover of poison oak. However, at the time of the May–June field surveys, biologists could hear substantial flowing water in a portion of the channel near the southwest corner of the Preserve (Photo 40, Appendix B). Farther downstream on the neighboring Upper Penitencia Creek Preserve to the west (Section 2.5.3), the biologists were able to access the channel during the May–June surveys and determined that the streambed was dry just above Cherry Flat Reservoir. Thus, streamflow goes belowground in some areas. The Cherry Flat dam can be opened and closed to control water flows downstream, and is used to provide a summer water source for Upper Penitencia Creek, which flows through Alum Rock Park, and prevents flooding downstream during the winter. During the field surveys, several inches of surface water were observed in the reach of Upper Penitencia Creek just below Cherry Flat Reservoir. After Upper Penitencia Creek flows through Alum Rock Park it is joined by Arroyo Aguague, another perennial stream. The creek then continues westward across the Santa Clara Valley floor and through the City of San José and joins Coyote Creek approximately 10 miles upstream of San Francisco Bay.

The substrate of Upper Penitencia Creek within Areas 1 and 2 consists of a mosaic of boulders, rock, and soil, although some segments of the channel near the top of Poverty Ridge, where a drivable road crosses the stream, support upland grasses (SC 6, Figure 6; Photo 7, Appendix B). Mixed oak forest is sustained by the water supply, and native woody species occur along the edge of the low-flow channel. Steep ravines on either side of the channel within Areas 1 and 2 prevent the channel from meandering. As a result of the surrounding terrain, cattle cannot access much of Upper Penitencia Creek or its riparian corridor. Moreover, little to no evidence of anthropogenic disturbance was observed in and around the stream during the field surveys.

Intermittent and ephemeral stream networks have a seasonal connection to groundwater or convey flows during and immediately following large storm events, respectively, but all are usually dry by summer. Representative reaches of these streams are depicted in Photos 2, 7, and 10 (Appendix B). These streams originate from the hillsides of Poverty Ridge. Streams that flow down the east-facing slopes of Areas 1 and 2 drain to Arroyo Hondo, a perennial stream that flows along the eastern boundary of Area 3 of the Preserve. In contrast, streams that flow

down the west- and south-facing slopes of Areas 1 and 2 drain to Upper Penitenica Creek. These ephemeral and intermittent streams are primarily fed by surface water from precipitation; however, natural seeps or springs may occur at the headwaters of these drainages where the groundwater table approaches or tops the soil surface. First-order streams are the smallest on Areas 1 and 2; these streambeds have a soil substrate with little rock or cobble that may support upland, annual herbaceous vegetation, and most only carry water during and just after storms. Second-order or greater streams are fed by networks of first-order tributaries and are typically higher gradient, steep-sided, and incised. Their beds and banks consist of a mosaic of cobbles and boulders. Exposed roots and woody debris are variously distributed within second-order streams.

The drivable roads in Areas 1 and 2 cross these streams at 16 locations (SC 1–SC 16, Figure 5). Most of these stream crossings are ford crossings that lack infrastructure, although culverts and wooden retaining walls are present at SC 3, SC 6, SC 9, and SC 10 (Table 1). The majority of the ephemeral and intermittent streams within Areas 1 and 2 appear laterally stable with the exception of large gullies near SC 1 and SC 2 that have been formed by past storm events (Photos 1–4, Appendix B). However, no significant erosional damage was observed at any of the stream crossings in Areas 1 and 2. Limited areas of path formation due to use by cattle and wildlife are present on the stream banks and beds, in addition to some evidence of grazed and/or browsed vegetation by cattle and deer.

The San Francisco Bay Basin (Region 2) Water Quality Control Plan identifies the following beneficial uses within Upper Penitencia Creek: cold freshwater habitat, groundwater recharge, freshwater replenishment, fish migration, preservation of rare and endangered species, fish spawning habitat, warm freshwater habitat, and wildlife habitat (California Regional Water Quality Control Board 2015). The stream habitat in Upper Penitencia Creek in Areas 1 and 2 supports resident rainbow trout (*Oncorhynchus mykiss*) (Leidy et al. 2005, Smith 2013) that use these habitats, but does not support anadromous salmonids or other rare and endangered fish species (see Section 3.3 below).

3.3. Sensitive Species

There are several sensitive species known or expected to utilize Areas 1 and 2, including the CTS, a state and federally threatened species; the CRLF, a federally threatened species and a state species of special concern; and the FYLF and WPT, which are California species of special concern.

The federally threatened Central California Coast steelhead (*Oncorhynchus mykiss*) occurred historically in Upper Penitencia Creek (Leidy et al. 2005). However, the dam at Cherry Flat Reservoir is an impassable barrier to the migration of anadromous fish above the dam. As a result, anadromous fish such as steelhead no longer occur upstream of the dam and are absent from Areas 1 and 2 (Leidy et al. 2005, Smith 2013). Critical habitat for steelhead is not designated within any streams above Cherry Flat Reservoir (National Marine Fisheries Service 2005).

3.3.1. California Tiger Salamander (CTS)

The CTS, which is state and federally listed as threatened, was observed (eggs and larvae) in nine of the 10 ponds in Areas 1 and 2 in January 2015, and in seven of these 10 ponds in February 2016 (L. Serpa pers.comm.). The species is also known to occur in the surrounding region, including at the adjacent BORR (CNDDB 2016, M. Hamilton pers. comm.). All of Area 1

and most of Area 2 include U.S. Fish and Wildlife Service (USFWS) designated critical habitat for this species (Unit 5, Poverty Ridge Unit; Figure 7).

Based on the May–June site surveys and a review of aerial topography, no major barriers or substantial impediments to dispersal occur between ponds known to be occupied by CTS on and off-site and all portions of Areas 1 and 2. Thus, CTS have the potential to occur anywhere on Areas 1 and 2 and to disperse between nearby populations and Areas 1 and 2.

All of the ponds in Areas 1 and 2 are at least several feet deep when full and provide potential breeding habitat for CTS in years of adequate rainfall. At least 20 bullfrogs (*Lithobates catesbeianus*) and several red-eared sliders (*Trachemys scripta*) were observed in Pond 1 during the May–June surveys, and mosquitofish (*Gambusia affinis*) are known to occur in Pond 7 (L. Serpa, pers. comm.). Although these non-native species may prey upon and/or compete with CTS, they do not necessarily preclude the presence of CTS or attempted breeding by CTS. No aquatic predators were observed in other ponds on the site during the May–June surveys.

The ephemeral and intermittent streams within Areas 1 and 2 do not provide suitable breeding habitat for CTS; these streams do not provide water long enough for larval development, and flow in all streams on the Preserve is flashy enough that eggs or larvae would be washed away if eggs were laid in the streams.

CTS depend on burrows of California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gophers (*Thomomys bottae*) to provide moist subterranean refugia during the non-breeding (dry) season as well as during overland movements to and from breeding areas during the wet season. The uplands within Areas 1 and 2 consist of woodland habitats interspersed with grasslands. Burrows of California ground squirrels were observed in extremely high abundance throughout Areas 1 and 2 during the May–June 2015 site visits, and many burrows of Botta's pocket gophers were observed as well. Thus, these uplands provide high-quality habitat CTS breeding in the on-site ponds.

3.3.2. California Red-legged Frog (CRLF)

The CRLF, a federally threatened species and a state species of special concern, is known to occur in the surrounding region (CNDDB 2016). Although no CRLF have been documented within Areas 1 and 2 or the larger Preserve (S. Gennet, L. Serpa pers. comm.), the western halves of Areas 1 and 2 overlap USFWS-designated critical habitat for this species (Unit STC-1; Figure 7).

CRLF have been documented in a number of locations within dispersal distance[1] of Areas 1 and 2 (Figure 7). CRLF are known to occur in at least one pond at the BORR property immediately south of the Preserve (M. Hamilton pers. comm.). Based on a review of aerial topography, no major barriers or substantial impediments to dispersal occur between Areas 1 and 2 and known CRLF occurrences or other potential breeding ponds in the vicinity of the Preserve. Thus, if CRLF are present in the vicinity of Areas 1 and 2, they could disperse to the site from adjacent areas.

[1] The USFWS considers one mile to be typical of the CRLF's dispersal capabilities (USFWS 2005), although CRLF have been recorded dispersing more than 2 miles between aquatic habitats (Bulger et al. 2003).

If CRLF were currently breeding in Areas 1 or 2, they likely would have been detected during CTS monitoring surveys performed by TNC, yet CRLF have not been recorded during such surveys (L. Serpa pers. comm.). However, all of the ponds within Areas 1 and 2 are at least several feet deep when full and provide potential breeding habitat for CRLF in years of adequate rainfall. Although the bullfrogs, mosquitofish, and red-eared sliders present in Ponds 1 and 7 may prey upon CRLF, their presence does not preclude the presence of CRLF or breeding by CRLF.

The ephemeral and intermittent streams within Areas 1 and 2 provide potential non-breeding foraging and dispersal habitat and aquatic refugia for CRLF when they contain water. Although dense vegetative cover is absent from most of these stream reaches, rock crevices and debris provide suitable refugia for CRLF. During the wet season, when most CRLF dispersal occurs, these streams would facilitate dispersal of CRLF across the landscape. In addition, upland habitat surrounding streams and ponds within Areas 1 and 2 includes numerous small mammal burrows which can be used by CRLF as upland refugia.

Based on the known occurrences of CRLF near Areas 1 and 2 and the lack of barriers to dispersal between these occurrences/ponds and Area 1 and 2 streams and ponds, it is likely that CRLF occur within Areas 1 and 2 at least on occasion, and the species may breed in ponds in Areas 1 and 2 in the future.

3.3.3. Foothill Yellow-legged Frog (FYLF)

The FYLF, a state species of special concern, is known to occur in Arroyo Hondo at the southeast corner of Area 3 and within the BORR to the south (CNDDB 2016, Figure 7), and has been observed by TNC staff along the entire section of Arroyo Hondo within Area 3 (L. Serpa pers. comm.). TNC staff have not observed FYLF in Areas 1 or 2, but the CNDDB occurrence of this species slightly overlaps the southernmost portion of Area 1 and the westernmost portion of Area 2 (Figure 7). Based on a review of aerial topography, no barriers to dispersal are present between this occurrence and Areas 1 and 2 and FYLF could potentially disperse upstream into Areas 1 and 2 from Arroyo Hondo.

No perennial streams are present on Areas 1 and 2 to provide breeding habitat or high-quality foraging habitat for FYLF. The ephemeral and intermittent streams within Areas 1 and 2 provide potential nonbreeding habitat for FYLF when they contain water. No pools were observed along these streams during the May–June 2015 site visit; however, if pools were present along these streams, which may occur in wet years and/or during the wet season, they would provide suitable dispersal and foraging habitat for FYLF. FYLF are known to travel up ephemeral and intermittent streams when there is abundant water, and they may use small, isolated pools for foraging and predator avoidance. Thus, FYLF may occur along these streams to some extent when water is present, although they are expected to occur in primarily along perennially stream habitats outside of Areas 1 and 2.

3.3.4. Western Pond Turtle (WPT)

The WPT, a state species of special concern, is known to occur in lower reaches of Arroyo Hondo far downstream from the site, and a record from Isabel Creek is present approximately 4.1 miles to the southeast upstream of Area 3 in Isabel Creek (CNDDB 2016). This species has been observed along the entire reach of Arroyo Hondo within Area 3 by TNC staff, and in 2016 was observed in Areas 1 and 2 in Ponds 1, 6, and 7 by TNC staff (L. Serpa, pers. comm.).

The perennial ponds in Areas 1 and 2 provide high-quality habitat for WPT, as these ponds contain year-round water with suitable basking sites and foraging opportunities. Potentially suitable nesting habitat for WPT occurs in upland areas surrounding these ponds. WPT may disperse across upland habitats in Areas 1 and 2. Streams in these areas also provide potential dispersal habitat for WPT when they contain water, and both seasonal ponds and pools along streams (potentially present in wet years) provide limited foraging habitat for this species. Thus, WPT may occur in upland portions of Areas 1 and 2 and along ephemeral and intermittent drainages when dispersing or nesting, but are primarily expected to occur in perennial ponds.

3.3.5. American Badger

The American badger, a state species of special concern, has been observed in Area 2 of the Preserve by TNC staff (L. Serpa, pers. comm.). Suitable denning and foraging habitat for badgers is present in open habitats throughout Areas 1 and 2, and areas of expansive open grasslands with high concentrations of California ground squirrels (one of the principal prey of the badger) provide high-quality habitat for this species. Badgers denning in the vicinity could potentially occur within Areas 1 and 2 year-round.

3.3.6. Other Sensitive Species

Eleven special-status plant species potentially occur in Areas 1 and 2 for the following reasons: (1) suitable habitat for the species is present; (2) specific edaphic requirements, possibly including serpentine soils, are present; (3) the species is known to occur within the vicinity of Areas 1 and 2 (defined as a 5-mile radius surrounding the Preserve), and (4) Areas 1 and 2 are within the known elevation range of the species. Potentially occurring special-status plant species and their corresponding federal and state listing and the California Native Plant Society rank (CRPR) are presented in Table 4.

Historically, arcuate bush mallow (*Malacothamnus arcuatus*) and fragrant fritillary (*Fritillaria liliacea*) have been recorded approximately 2 miles west of Areas 1 and 2 near Alum Rock Park and Upper Penitencia Creek (CNDDB 2016). Other historical records of special-status plant species in the vicinity of Areas 1 and 2 include Mount Day rockcress (*Boechera rubicundula*), known from only one population on Oak Ridge near the summit of Mount Day, directly east of Arroyo Hondo (CNDDB 2016). The current status of this historical population is not known, as the majority of the steep hillsides and ravines of Mount Hamilton and the surrounding mountains are privately owned, and thus survey effort on these lands has been low. There is some potential for arcuate bush mallow and Mount Day rockcress to be present on rocky slopes or chaparral vegetation types on Areas 1 and 2, whereas fragrant fritillary may occur in open grassy areas, seeps, or on serpentine inclusions, as it is a weak indicator of serpentine soils.

Extant populations of several special-status plant species have been recorded in the vicinity of Areas 1 and 2 more recently (i.e., within the past two decades) (CNDDB 2016). Santa Clara red ribbons (*Clarkia concinna* ssp. *automixa*) has been observed on the Preserve by TNC staff (L. Serpa, pers. comm.). Santa Cruz mountain pussy paws (*Calyptridium parryi* var. *hesseae*) is known from fewer than 20 occurrences across the state of California, and an extant population occurs near Black Mountain to the northeast of Areas 1 and 2. Several extant populations of most-beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*) have also been observed to the north of Areas 1 and 2 in the Arroyo Hondo canyon. Along Kincaid Road to the southeast of Areas 1 and 2, near the Lick Observatory and Mount Hamilton, showy madia (*Madia radiata*), bent-flowered fiddleneck (*Amsinckia lunaris*), chaparral harebell (*Campanula exigua*), and Santa Clara red ribbons have all been recently documented (CNDDB 2016). Chaparral harebell has

been recently observed at several other locations in the vicinity of Areas 1 and 2; on Furtado Open Space Preserve near Alum Rock Falls Road to the west, in the vicinity of Mount Day and Oak Ridge, and on the BORR (CNDDB 2016 and Bainbridge 2008). Other special-status plants found on the BORR include Santa Clara red ribbons, Santa Clara thorn mint (*Acanthomintha lanceolata*), and serpentine leptosiphon (*Leptosiphon ambiguus*) (Bainbridge 2008).

Showy madia has the potential to occur on clayey soils or shale in open grassy areas on Areas 1 and 2; it is often (but not always) found on serpentine soils (Baldwin et al. 2012). Santa Cruz mountain pussy paws may be present on gravelly soils in all woodland and chaparral vegetation types on Areas 1 and 2 Santa Clara red ribbons could potentially occur in wooded or forested areas of the Preserve. Chaparral harebell, most-beautiful jewelflower, and Santa Clara thorn mint are all strong indicator species of serpentine soils, and may be present on chaparral vegetation types, open grassy areas, or on rock/talus slopes. Serpentine leptosiphon is a strict serpentine endemic, and would only be expected to occur on the Henneke soil inclusions within grassy areas of Areas 1 and 2.

In addition to the species mentioned above, a number of special-status wildlife species could potentially occur within Areas 1 and 2, based on the presence of suitable habitat and/or documented occurrences nearby. Table 4 provides a comprehensive list of all special-status plant and wildlife species that may occur within Areas 1 and 2. Species that have been observed within Areas 1 and 2 are indicated in bold type.

Table 4. Potential Sensitive Species[1]

Common Name	Scientific Name	Federal Status[2]	State Status[2]	Other Status[2]
AMPHIBIANS				
California tiger salamander	***Ambystoma californiense***	**Threatened**	**Threatened**	
California red-legged frog	*Rana draytonii*	Threatened	SSC	
Foothill yellow-legged frog	*Rana boylii*	None	SSC	
REPTILES				
Western pond turtle	***Emys marmorata***	**None**	**SSC**	
BIRDS				
Cooper's hawk	***Accipiter cooperii***	**None**	**WL**	**IUCN:LC**
Sharp-shinned hawk	*Accipiter striatus*	None	WL	
Golden eagle	***Aquila chrysaetos***	**BCC**	**FP**	**IUCN:LC**
Ferruginous hawk	*Buteo regalis*	BCC	WL	IUCN:LC
Northern harrier	*Circus cyaneus*	None	SSC	IUCN:LC
White-tailed kite	*Elanus leucurus*	None	FP	IUCN:LC
Bald eagle	*Haliaeetus leucocephalus*	BCC	Endangered, FP	IUCN:LC
Osprey	*Pandion haliaetus*	None	WL	IUCN:LC
Merlin	*Falco columbarius*	None	WL	IUCN:LC
Prairie falcon	*Falco mexicanus*		WL	IUCN:LC
American peregrine falcon	*Falco peregrinus anatum*	BCC	FP	

Common Name	Scientific Name	Federal Status[2]	State Status[2]	Other Status[2]
Vaux's swift	*Chaetura vauxi*	None	SSC	IUCN:LC
Nuttall's woodpecker	***Picioides nuttallii***	**BCC**	**None**	**IUCN:LC**
American dipper	*Cinclus mexicanus*	None	None	IUCN:LC
Loggerhead shrike	*Lanius ludovicianus*	BCC	SSC	IUCN:LC
Yellow-billed magpie	***Pica nuttalli***	**BCC**	**None**	**IUCN:LC**
Oak titmouse	***Baeolophus inornatus***	**BCC**	**None**	**IUCN:LC**
Grasshopper sparrow	*Ammodramus savannarum*	None	SSC	IUCN:LC
MAMMALS				
Pallid bat	*Antrozous pallidus*	None	SSC	IUCN:LC
Yuma myotis	*Myotis yumanensis*	None	None	IUCN:LC
American badger	***Taxidea taxus***	**None**	**SSC**	**IUCN:LC**
Ringtail	*Bassariscus astutus*	None	FP	IUCN:LC
PLANTS				
Arcuate bush mallow	*Malacothamnus arcuatus*	None	None	CRPR 1B.2
Bent-flowered fiddleneck	*Amsinckia lunaris*	None	None	CRPR 1B.2
Chaparral harebell	*Campanula exigua*	None	None	CRPR 1B.2
Fragrant fritillary	*Fritillaria liliacea*	None	None	CRPR 1B.2
Most-beautiful jewelflower	*Streptanthus albidus* ssp. *peramoenus*	None	None	CRPR 1B.2
Mount Day rockcress	*Boechera rubicundula*	None	None	CRPR 1B.1
Santa Clara red ribbons	*Clarkia concinna* ssp. *automixa*	None	None	CRPR 4.3
Santa Clara thorn mint	*Acanthomintha lanceolata*	None	None	CRPR 4.2
Santa Cruz mountain pussy paws	*Calyptridium parryi* var. *hesseae*	None	None	CRPR 1B.1
Serpentine leptosiphon	*Leptosiphon ambiguus*	None	None	CRPR 4.2
Showy madia	*Madia radiata*	None	None	CRPR 1B.1

[1] Bold indicates species observed within Areas 1 and 2
[2] Status codes –
BCC = USFWS Birds of Conservation Concern;
SSC = California Species of Special Concern;
FP = Fully Protected;
WL= Watch List;
IUCN:LC = The World Conservation Union- Least Concern Species;
CRPR:
Rank 1A = Plants considered extinct.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants considered extinct in California and elsewhere.

Rank 2B = Plants rare, threatened, or endangered in California but more common elsewhere.
Rank 3 = Plants about which more information is needed - review list.
Rank 4 = Plants of limited distribution - watch list.

These rankings are further described by the following threat code extensions:

1: seriously endangered in California.
2: fairly endangered in California.
3: not very endangered in California

II. LONG-TERM MANAGEMENT AND MONITORING PLAN

4.0 LONG-TERM MANAGEMENT GOAL AND APPROACH

The overall goal of long-term management is to maintain the overall conservation values of Areas 1 and 2 (Section 1.2). This goal will be met through routine monitoring and management of the conditions that support biological resources in Areas 1 and 2, by maintaining existing management infrastructure, and by providing for security as detailed below. The SCVWD will obtain all necessary permits and approvals prior to the initiation of management and maintenance actions requiring such permits and approvals.

The management practices for Areas 1 and 2 include managed livestock grazing, road maintenance, invasive weed control, monitoring, and adaptive management. These areas of focus are expected to support all conservation values of Areas 1 and 2. The SCVWD, as owner and manager of Areas 1 and 2, will monitor the Areas' condition as described in the sections below, focusing on aspects that may warrant management actions. The SCVWD will also coordinate with TNC regarding the results of TNC's monitoring efforts and management activities, as described in Section 1.4, to ensure that SCVWD and TNC efforts are complementary and consistent.

This LTMP has been written with the intent to ensure that the conservation values of Areas 1 and 2 are protected. The LMTP tasks listed below are all the responsibility of the Land Manager.

4.1. Adaptive Management

While it is not anticipated that major additional management actions will be needed, an objective of long-term management and monitoring is to identify any issues that arise and use an adaptive management approach to determine what follow-up actions might be appropriate. Adaptive management is an approach to natural resource management which incorporates monitoring to determine the effectiveness of, and what changes may be needed to enact appropriate management practices over time, including corrective actions when needed to support the conservation values of Areas 1 and 2.

The management objectives and approaches described in this LTMP were established based on existing information on the condition and resources of Areas 1 and 2, the effects of past management activities, and the experience of natural resource professionals in designing resource management approaches. The management approach described in this LTMP will be adapted as necessary to maintain existing biological resource value based on monitoring results.

In addition, adaptive management may involve the implementation of new measures to protect natural resource values as new problems are noted, new research and techniques become available, or as problems are noted in new areas. For each of the resource issues described below, specific criteria will be monitored. These criteria are related primarily to resource management issues that are related to the SCVWD's management activities, such as grazing, rather than those outside the SCVWD's control, such as proliferation of feral pigs. The monitoring results will be reviewed not only in the context of whether or not there are potential management problems, but also in comparison to prior monitoring results to identify trends in resource management issues. Persistent problems or adverse trends will trigger an adaptive management decision-making process. First, based on the type and severity of the problem,

and an assessment regarding whether the issue is within the SCVWD's control, experienced land management staff will determine whether an on-the-ground corrective action is necessary, or whether further monitoring (perhaps at an increased frequency) is appropriate to determine the extent or persistence of the problem. Second, if corrective action is needed, those staff will identify the most appropriate adaptive management response, tailored to the resource issue. Those staff chosen to accomplish monitoring and adaptive management decision-making responsibilities will have the knowledge, training, and experience to accomplish these responsibilities. Agencies and the Area 1 CE Holder will be consulted for approval of any such adaptive management changes or corrective actions.

5.0 BIOLOGICAL RESOURCE MANAGEMENT AND MONITORING

Areas 1 and 2 currently support sensitive habitats (i.e., streams and ponds) and provide habitat for a number of plant and animal species, including special-status species. As a result, monitoring for potential signs of habitat degradation (e.g., erosion at streams) and for sensitive resources (such as sightings of special-status species) will occur. Each of the sections below includes a detailed description of the management and monitoring approaches for individual resources, stressors (such as invasive species), and management measures (such as managed grazing). In addition, more general monitoring for site conditions will occur during quarterly inspections by the Land Manager. A General Site Monitoring Checklist (see Appendix C) will be used during routine (e.g., quarterly) site visits to record information that will be monitored on a quarterly basis and to record incidental observations of species or issues of interest.

TNC is responsible for certain monitoring and management activities in Area 1 required by the existing Area 1 CE and Kammerer Ranch CTS Management Plan (listed in Section 1.4 above). Some of these activities overlap with the responsibilities of the SCVWD specified in this long-term management and monitoring plan discussed below (e.g., fence maintenance within Area 1). The SCVWD and TNC will communicate closely to share information that may be useful to both parties, avoid any management conflicts or inconsistencies, and avoid redundancy in monitoring, reporting, and management. The discussion of biological resource management and monitoring that follows assumes that information collected by TNC will be shared with the SCVWD and that any necessary management activities that are the responsibility of TNC will not have to be performed by the SCVWD.

5.1. Element A. Streams, Springs, and Ponds (Waters of the U.S./State)

Objective: Monitor, conserve, and manage the streams and ponds in Areas 1 and 2.

As described above in Sections 3.1 and 3.2, ephemeral and intermittent streams and seasonal and perennial ponds are present throughout Areas 1 and 2. Despite the history of moderate grazing on the Preserve, the streams and ponds in Areas 1 and 2 show few signs of adverse livestock impacts and provide habitat for a variety of plants and animals. The ponds in Areas 1 and 2 support substantial wetland vegetation. Upper Penitencia Creek is relatively inaccessible to both humans and livestock due to topography and density of vegetation, and thus, the drainage and the associated riparian corridor are in good condition. The majority of the ephemeral and intermittent streams show little or no evidence of excessive trampling, inappropriate livestock grazing, or other adverse conditions related to livestock grazing. Erosional features were noted at two locations where ephemeral and intermittent streams cross a drivable road on Areas 1 and 2 (SC 1 and SC 2, Figure 5; see Section 3.2.2). Large gullies have formed near SC 1 and SC 2, but they do not hinder vehicle access (Photos 1–4, Appendix

B). The conditions of these resources in Areas 1 and 2 will be described in detail, to serve as the baseline for comparison of future monitoring results, as discussed under Task A1.1 below.

The majority of the ephemeral and intermittent streams within Areas 1 and 2 appear laterally stable (i.e. there was little to no evidence of erosion within the stream channel or on the stream banks). The drivable roads in Areas 1 and 2 cross drainages at 16 locations (SC 1–SC 16, Figure 5; Table 1). Culverts convey flows beneath the road at two locations (SC 9 and SC 10), but otherwise water travels across roads as sheet flow, and when it is present, it is very shallow (a few inches deep at most). Wooden retaining walls have been constructed on the downstream side of the road at two other locations (SC 3 and SC 6) and are exhibiting some minor damage from erosion. Limited areas of path formation due to use by cattle and wildlife are present on the stream banks and bed, in addition to some evidence of grazed and/or browsed vegetation by cattle and deer were observed during the field surveys.

Four manageable sources of potential impacts on the streams, ponds, and springs within Areas 1 and 2 have been identified (though not yet observed): (1) inappropriate livestock use of the watershed, which could lead to increased runoff and erosion; (2) intrusion by cattle into sensitive areas; (3) sediment input into streams from road erosion; and (4) trespassing impacts such as trampling of vegetation. A potential future management action that may be appropriate if impacts to pond-associated wetlands increase would be excluding livestock from ponds in Areas 1 and 2 to prevent livestock from foraging on pond vegetation, which reduces cover and foraging opportunities for aquatic wildlife species. Less controllable impacts to these areas may also occur from use by wildlife, such as deer and feral pigs. Management of such regional issues is not covered by this LTMP; however, on-site efforts to control nuisance wildlife species that cause damage to resources and/or infrastructure in conjunction with regional efforts and consistent with plan goals and objectives would be allowed (control of feral pigs, for example).

The approach to protecting, managing, and enhancing stream and pond conditions in Areas 1 and 2 is to:

1. Monitor and maintain residual dry matter (RDM) at levels sufficient to protect the soils (see Section 5.2.3 below). Ensure sufficient vegetative cover, thus reducing the potential for watershed lands erosion and for increased runoff into streams.

2. Implement a grazing strategy, as presented in Section 5.2.2, to provide relatively low grassland vegetation with appropriate conditions for burrowing mammals and the species (such as CTS) that utilize their burrows while minimizing the potentially adverse effects of livestock grazing during the hot/dry summer season (once grass forage is dried) when livestock tend to congregate near water sources. This will minimize routine cattle intrusion into the vicinity of ponds and streams in Areas 1 and 2. In addition, maintain the existing watering troughs and install new troughs if they are determined to be needed in the future. Ensure troughs are present in sufficient numbers and locations to provide an adequate and preferred water source for cattle, thus deterring cattle utilization of the natural water sources in Areas 1 and 2. Similarly, mineral and protein supplements for cattle will be located well away from sensitive aquatic resources.

3. Conduct annual monitoring of sensitive areas (i.e., streams and ponds) that are accessible to cattle to determine that the identified conservation values of Areas 1 and 2 are being met.

4. Take additional measures (e.g., installation of additional troughs and mineral and protein supplements) that may be needed to adapt the grazing plan in a manner that better supports the conservation values of Areas 1 and 2.

5. Institute a regular road maintenance program to properly configure roads to minimize erosion potential (Section 6.2).

Task A1. Stream and pond condition monitoring. Conduct annual late spring (May–June) qualitative monitoring to assess the condition of streams, springs, ponds, and associated wetland habitats. Tasks include:

A1.1. Conduct pre-implementation monitoring. Start-up monitoring will begin in late spring 2016. In spring 2016, identify stream and pond areas most susceptible to degradation over the long term. Such areas will include areas accessible to cattle near roads or heavily used cattle paths. Identify and map these monitoring stations with GPS/GIS and prepare a monitoring location base map for use in subsequent years. Photograph each monitoring station and GPS-locate the photo point so that photos taken in subsequent years will be comparable to the baseline photos. Although these monitoring stations will focus on areas most susceptible to degradation, they will also be stratified across Areas 1 and 2 using the following criteria: (1) proximity to troughs on adjacent lands of the Preserve (i.e., Area 1) and other areas that may concentrate cattle; (2) habitat/vegetation type, such as ephemeral or intermittent stream or seasonal or perennial pond, and (3) stream order. These criteria will ensure that aquatic monitoring stations are representative of various conditions across Areas 1 and 2. It is anticipated that approximately 20 monitoring stations will be established.

At each aquatic habitat monitoring station, an Aquatic Habitat Monitoring Checklist will be completed (see Appendix C). This checklist contains features associated with habitat condition and quality, focusing on presence or absence of potential adverse conditions that are manageable by the SCVWD and that can be used to determine whether problems are occurring over the long term. In combination with comparison of site photos from one monitoring effort to the next, the information on this checklist will allow for site conditions to be tracked over time with minimal error resulting from observer interpretation. The Aquatic Habitat Monitoring Checklist and photos from spring 2016 will serve as the description of the baseline condition of each monitoring station.

Based on these baseline conditions, the SCVWD will identify a general goal for the long-term management of aquatic resources at each station. For stations where baseline conditions are undegraded and existing habitat quality is high, the goal will be to maintain existing conditions over the long term. For stations where some existing problem or degradation is evident, and the source of that degradation can be feasibly managed by the SCVWD, the goal will be to improve habitat conditions. The individual items in the Aquatic Habitat Monitoring Checklist will serve as the measures of habitat condition for purposes of determining management success, as described in Section A1.2.

A1.2. Conduct implementation monitoring. Annual field review of the stream and pond monitoring stations will be conducted in May–June by completing the Aquatic Habitat Monitoring Checklist and taking photos from the same locations and facing the same directions as the baseline photos for each station.

Following each monitoring effort, the Aquatic Habitat Monitoring Checklist and photos for each station will be compared both to the baseline information described in Task A1.1 above and to

the monitoring results from the immediately prior monitoring effort to determine whether any evidence of adverse conditions has appeared, and to determine trends in habitat conditions. Because the individual items in the Aquatic Habitat Monitoring Checklist will serve as the measures of habitat condition, success of management activities will depend on (a) the goal of management (i.e., maintain or improve conditions), (b) the trends in habitat conditions, and (c) whether any observed management issue is within the SCVWD's control, as follows:

- Habitat conditions are being maintained – this would indicate successful management for stations where the goal was maintenance of conditions, but unsuccessful management at stations where the goal was improvement of conditions. If the goal at a given station is improvement of conditions, and improvement in a feature that is manageable by the SCVWD is not noted for two consecutive monitoring periods (i.e., the third monitoring effort after a problem was first noted), this would trigger the need for adaptive management action, as described in Task A2 below.
- Habitat conditions are improving – this would indicate successful management for any station.
- Habitat conditions are degrading – if the condition of a manageable issue (i.e., one related to grazing or trespass) is degrading, this would indicate unsuccessful management for any station and would trigger the need for adaptive management action, as described in Task A2 below. If the issue is not within the SCVWD's control (e.g., fire), then the SCVWD will review what management actions it might be able to take, but this would not necessarily indicate unsuccessful management.

In addition, issues pertaining to the condition of aquatic resources, and trends in condition, will be noted incidentally during other monitoring activities and site visits. The General Site Monitoring Checklist contains entries designed to facilitate the recording of observations regarding potential problems related to aquatic resources anywhere on Areas 1 and 2. Due to the geographic breadth of the various monitoring activities proposed on Areas 1 and 2, incidental monitoring using the General Site Monitoring Checklist will allow for issues outside of the monitoring stations to be adequately detected and addressed.

Task A2. Stream and pond adaptive management actions. If goals of habitat management in a given area are not being met as determined by monitoring at aquatic resource monitoring stations or incidental observations (i.e., due to degradation of aquatic resource condition relative to baseline levels or persistence of an undesirable condition related to manageable activities), adaptive management activities would be triggered. The precise adaptive management activity employed will depend on a number of factors, including the nature of the problem itself (e.g., erosion, proliferation of invasive species), the cause of the problem (e.g., whether erosion is due to trespassers), the severity of the problem (e.g., whether the problem warrants an immediate change in management or more frequent monitoring to determine whether the problem will be corrected naturally), and whether the problem is within the SCVWD's management control. Consideration will be given, in particular, to conditions potentially detrimental to streams, springs, and ponds. For example, relocation of mineral or protein supplements or watering troughs may be adequate to encourage cattle to move away from sensitive areas. Temporary electric fencing may be used to exclude livestock from problematic areas on a short term or seasonal basis. Permanent fencing may be utilized if problems persist, especially in sensitive resource areas based on comparison of monitoring data to baseline conditions and the goals for a given station. Any new permanent fencing needed within Area 1 will be coordinated with TNC, and will be the responsibility of the SCVWD to maintain.

5.2. Element B. Livestock Grazing Management

5.2.1. Objective/Overview

The objective of the LTMP is to implement a livestock grazing strategy that maintains and may improve the conservation values that currently exist within Areas 1 and 2. Within oak woodland and annual grassland habitats in California, moderate amounts of livestock grazing have been shown to positively contribute toward a variety of rangeland ecosystem services such as water quality, forage production, habitat for native species of plants and animals including special-status species such as the CTS and CRLF, and other ecosystem services (Hormay 1946; Heady 1956; Bartolome et al. 1980; Barry et al. 2011; Ford et al. 2013).

Without livestock grazing, many of the ecosystem services typically provided by California's oak woodland and annual grassland rangelands (described above) could be expected to be adversely affected (Barry et al. 2011). These adverse effects could include reduced grassland species diversity (Heady 1956), increased accumulation of thatch from non-native, annual grasses that would increase wildfire fuel loads and wildfire risk and decreased habitat values for California ground squirrels (Horn and Fitch 1942), whose burrows provide critical aestivation habitat for CTS and refugia for CRLF during the dry season (Barry et al. 2011, Ford et al. 2013, OSA 2013).

As described above in Section 2.2.2, grazing throughout the Preserve (i.e., including Areas 1, 2, and 3) has been held at or below 50 AUs per year since 2001, when the TNC acquired the Preserve from the Kammerer family. Although some fencing is present in Area 2, no fencing separates the remaining portions of the Preserve and livestock grazing in Areas 1 and 2 is managed in conjunction with grazing management throughout the Preserve. Such grazing management has appropriately maintained high-quality upland habitat conditions throughout the Preserve. Livestock grazing has affected wetland habitats in Areas 1 and 2 (e.g., due to trampling and grazing of wetland vegetation) to some extent. However, these wetland habitats continue to provide high ecological values, and although some improvements could be achieved (e.g., by installing protective fencing if needed in the future), no changes to the approach (e.g., installation of fencing to allow for independent grazing management of Areas 1, 2, and/or 3) are proposed at this time.

The SCVWD will administer the grazing lease for the Preserve (i.e., including Areas 1, 2, and 3), and all grazing management will be the responsibility of the SCVWD. If the SCVWD proposes future changes to the grazing regime (e.g., the installation of new fencing), the SCVWD will coordinate with TNC as needed to ensure that the requirements for the Area 1 CE and CTS Management Plan continue to be met.

5.2.2. Grazing Management Prescriptions

Grazing management prescriptions for Areas 1 and 2 are described below. These prescriptions apply to the entire Preserve, because Areas 1, 2, and 3 are managed together and will thus be grazed as a single unit in conjunction with the grazing prescriptions for the existing CE on Area 1. The Land Manager will work cooperatively with the CE holder and the grazing tenant to ensure that Areas 1 and 2 are managed consistently with the goals and objectives of this LTMP. Regular RDM monitoring (see Section 5.2.3) will occur in Areas 1 and 2 to verify that the grazing management objectives defined for these areas are being met. In the event that the RDM objective is not being met for these areas, the Land Manager will implement remedial measures (such as increased coordination with the CE holder and, if necessary, installation of

fencing to allow for independent management of Areas 1 and 2) to ensure that the objective is achieved. The SCVWD may also implement additional measures in the future, such as the installation of livestock exclusion fencing to allow for the recruitment of valley oak seedlings, in conformance with this LTMP.

5.2.2.1. Grazing Intensity

In California's oak woodlands and annual grasslands, grazing intensity is typically measured by RDM that exists in the fall (September–October) prior to fall rains (Bartolome et al. 2006). Due to factors such as variations in topography, soils, rainfall, and patchy forage use, a variety of RDM values are expected, but in general the RDM goal for Areas 1 and 2 will be 1,000–1,500 pounds per acre (lbs/acre). This RDM goal is approximately twice the recommended minimum RDM level for regions of California with climate and vegetation similar to Areas 1 and 2 (Bartolome et al. 2006) and corresponds to Conservative Stocking (see Barry et al. 2011), which is thought to positively contribute to a variety of rangeland ecosystem services and would additionally contribute to the identified livestock grazing management objective (see Section 5.2.1). Conservative stocking rates, as expressed by a target RDM range of 1,000 to 1,500 lbs/acre, would also minimize livestock use of streams in an effort to protect the conservation values of these areas from the potentially adverse effects of inappropriate livestock grazing.

5.2.2.2. Animal Kind and Class

Cow/calf pairs are the recommended kind and class of grazing animals for Areas 1 and 2. Cow/calf pairs are readily available and are already used to graze Areas 1, 2, and 3 of the Preserve.

5.2.2.3. Livestock Grazing Season-of-use

Currently, livestock graze the Preserve year-round, due in part to the difficulty of transporting animals to and from the Preserve and in part because such year-round grazing has not compromised the ecological values of the Preserve (grazing effects on Area 3 are addressed in the separate Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan). Thus, the permitted season of grazing use for the Preserve will be year-round provided that the overall conservation values of Areas 1 and 2 are being maintained as determined through regular monitoring and minimum RDM standards are met at the end of the grazing season (i.e., September–October, generally).

5.2.2.4. Stocking Rate

Given a recommended fall RDM of approximately 1,000 to 1,500 lbs/acre and an approximate average annual forage production of 1,300 to 1,500 lbs/acre across most of Areas 1 and 2 (NRCS 2014), Areas 1 and 2 could support approximately 15 AUs for a 12-month grazing period in a year with average forage production (assuming continuous grazing during that 12-month period). Because Areas 1, 2, and 3 are shared, and thus will be grazed by the SCVWD's grazing lessee in conjunction, there is no practical way to ensure a specific stocking rate in Areas 1 and 2. Further, because the cows would only have calves for 6 or 7 months, the numbers of cows that could be supported is higher than this estimate. Thus, continuing year-round grazing of the entire Preserve with up to 50 AUs is proposed, as this stocking rate and seasonality have been maintaining high-quality habitat conditions.

Minor adjustments in stocking rate by the operator may be permitted (taking into account the 50 AUs per year limitation) with the prior approval of the Land Manager. Any adjustments in target RDM levels will need to be evaluated by a California-licensed Certified Rangeland Manager (CRM) to determine if the proposed changes will still allow accomplishment of LTMP objectives. Periodic observations of site conditions will be completed by the Land Manager throughout the grazing period to confirm that actual RDM levels are similar to target levels and to proactively identify years where the permitted grazing period may need to be reduced to meet RDM targets.

5.2.2.5. Other Considerations

All existing infrastructure and livestock facilities (Figure 5) will be retained, monitored, and maintained as presented in Section 6.1.

Supplemental feeding of hay will not be allowed within Areas 1 and 2. Supplemental feeding can concentrate soil disturbance and introduce invasive plants via contaminated hay.

The placement of salt, other mineral blocks, and molasses or other protein supplements may occur to assist in livestock health and distribution. The placement of mineral supplements will be only at designated sites that are approved by the Land Manager, after surveys are conducted to assure sensitive habitats are avoided and undesirable concentrations of livestock are minimized. Utilization of supplemental elements for purposes of ecological management is discussed further in Section 5.1, Streams and Ponds.

5.2.3. Livestock Grazing Monitoring

Two types of grazing monitoring will be conducted. First, implementation monitoring will be conducted to determine if the grazing prescriptions are being implemented as presented in the LTMP. Second, grazing intensity (RDM) monitoring will be conducted to determine if RDM goals are being achieved. Monitoring methods are adapted from Wildland Solutions (2008), Guenther (2007) (Appendix E) and practices used on nearby OSA-managed lands (McGraw 2012, OSA 2013).

Monitoring may be performed by a technician, biologist, or the operator if that person has been trained in such monitoring. Although RDM monitoring does not need to be performed by a CRM, a CRM will be involved in decisions regarding long-term changes in management (i.e., revisions to the LTMP, such as stocking rates or timing) made as a result of RDM monitoring. Inter-annual changes in management (such as stocking rates or timing to meet yearly RDM goals) made as a result of RDM monitoring will be made at the judgment of the Land Manager, but will be in conformance with this LTMP.

5.2.3.1. Implementation Monitoring

Task B1. Livestock grazing implementation monitoring. Conduct implementation monitoring to confirm that the grazing strategy is being conducted as specified in the LTMP.

A grazing log will be maintained by the Land Manager staff with the assistance of the grazing lessee. The Land Manager will visually inspect Areas 1 and 2 quarterly, as access allows, to confirm the presence of cattle and to inspect range conditions.

The log, which will be maintained in a spreadsheet to facilitate use, will include:

1. The number of AUs known on the Preserve (based on records provided from the grazing lessee, if available) and within Areas 1 and 2 (based on incidental observations of livestock in favored grazing conditions).

2. The quarterly and annual weather conditions (i.e., rainfall)

3. A checklist for the general phenology and productivity of key forage plants (i.e., annual grasses), including the onset of the germinating rains, the date when 1 inch of new growth was observed, and senescence of the forage plants

4. The approximate amount of forage growth and remaining RDM to aid in the determination of proactively reducing the permitted grazing period and/or number of grazing animals to meet the RDM target.

This information can help managers track the various factors that influence inter-annual variability in grazing within Areas 1 and 2.

5.2.3.2. RDM Monitoring

Information regarding RDM is collected in a practical manner that is adequate to assess how well the RDM goals have been met. The monitoring program is designed to provide the Land Manager useful information on RDM levels as they relate to objectives. The goal is that 80% of Areas 1 and 2 meet the RDM objective (see Grazing Intensity, Section 5.2.2.1).

Two types of RDM monitoring will be conducted annually: (1) RDM reference plot monitoring and (2) Areas 1 and 2 RDM status monitoring. For this process to be most useful, the same field personnel must first conduct the reference site monitoring followed by the RDM zone evaluation.

All RDM sampling is conducted once per year in mid to late September or early October, prior to the onset of seasonal rains.

Task B2. RDM reference plot monitoring. Detailed information will be collected at selected RDM reference plot monitoring sites to validate visual RDM estimates collected in Task B3, below. Information collected at the reference sites is not intended to be extrapolated as representing the entirety of Areas 1 and 2; however, the reference sites will be located in areas expected to receive preferential livestock use (e.g., relatively flat areas of annual grassland or valley oak savanna with adequate water) and reflect the general conditions of the area in which it is located. The information is intended to represent that portion of the field being surveyed and serve as a reference for documenting the RDM status of Areas 1 and 2.

Ten RDM reference plot sites have been identified within Areas 1 and 2 (Figure 8). These reference sites are located in areas that are as large as possible given surrounding conditions, and were sited in locations that are likely to receive typical livestock use (e.g., areas that are relatively flat and open grassland or oak savanna or near water sources). These areas include grassy openings in mixed oak woodland and open areas of annual grassland that are relatively flat (Figure 6). Areas with a dense tree canopy in foothill pine/oak woodland and mixed oak forest vegetation types are unlikely to meet the RDM target even in the absence of livestock grazing, and will thus be excluded from RDM monitoring. Such areas have dense stands of live oaks or brush, which will suppress forage production irrespective of livestock use (Frost et al. 1997) and are typically lightly used by livestock because they provide relatively little forage. However, visual monitoring of cattle use of Areas 1 and 2 will be conducted concurrently with

other monitoring activities to ensure that cattle are not using these densely vegetated areas. If cattle are observed to be regularly using these areas, an additional reference plot will be added that is representative of the areas the cattle are using. The ten RDM reference sites are distributed across Areas 1 and 2 to the extent feasible based on accessibility. The sites are representative of the general grazing area in Areas 1 and 2, capable of responding similarly to management actions, and capable of producing herbage representative of these areas.

At each RDM reference plot:

1. Confirm that the location is representative of the general area that year. If not, relocate to a nearby suitable location. GPS any modified location.

2. Take overview photographs in all four cardinal directions from the sample point from approximately 5' above the ground. This is intended to both record vegetation characteristics in the vicinity of site and to provide overview scenes of Areas 1 and 2 at standardized locations over time.

3. Photograph the RDM plot using "second step" (Robel pole monitoring) as described in Appendix D.

4. Clip and collect all herbage within a 13.25-inch diameter circular or 12-inch square frame plot. Weigh the herbage in grams and convert to lbs/acre using the following formulas (Wildland Solutions 2008):

   Circular 13.25-inch diameter hoop plot:
   (grams clipped) x 100 = lbs/acre of RDM

   Square 12-inch frame plot
   (grams clipped) x 96 = lbs/acre of RDM

5. Note the estimated amount of herbage remaining on ground after the plot is clipped.

6. Note the general botanical composition of sample (annual or perennial grasses, forbs, weeds).

7. Air dry any wet or green samples 2–3 days prior to weighing.

Task B3. Areas 1 and 2 RDM Status Monitoring Protocol. After conducting the RDM reference site monitoring and obtaining the results, the amount of RDM can be visually estimated in Areas 1 and 2 according to seven RDM classes listed in Table 5.

Table 5. RDM Evaluation Classes for Grazed Area 1 and 2 Lands[1]

Vegetation type	RDM objective for Site	Residual Dry Matter (RDM) Level		
		RDM range of values		RDM Class
		% of objective for Areas 1 and 2	Lbs/acre	
		Exceeds 400%	Exceeds 4,000	Very High
		200-400%	2,000-4,000	High
		150-200%	1,500-2,000	Exceeds

Annual grasslands and oak savanna	1,000 -1,500 lbs/acre RDM	100-150%	1,000-1,500	Meets
		50-100%	500-1,000	Below
		<50%	<500	Low
		<10%	<100	Fire

[1]Classes were developed in a manner described in "Monitoring Annual Grassland Residual Dry Matter" (Wildland Solutions 2008).

The general location and extent of those areas within Areas 1 and 2 at least 20 acres in size (or as large as possible) and *not* meeting the target RDM levels will be determined in the field either by field measurement, GPS, or mapping onto paper or other field copy (such as the LTMP vegetation map) and then incorporating those data into a GIS system. Vegetation is naturally patchy, and grazing use is patchy as well. The predominant condition in an area will determine that RDM level, despite inclusions of smaller areas with either higher or lower levels. The goal is that at least 80% of the areas with the potential to meet the RDM target in Areas 1 and 2 will meet the RDM target.

Task B4. Grazing adaptive management actions. If less than 80% of Areas 1 or 2 meets the designated goal, a qualitative assessment will first be performed to determine whether the RDM levels are a problem (i.e., whether the density of the vegetation is preventing the site from achieving the management goals). If site conditions are favorable despite high or low RDM levels, the Land Manager may choose to continue to monitor the RDM levels without implementing further adaptive management actions. However, if the vegetation density is preventing the site from achieving management goals, the Land Manager may implement the adaptive management actions described below.

If adaptive management actions are determined to be needed, an evaluation will be conducted to determine probable causes, assess if and how the condition is potentially detrimental or not to the stated goals, and determine if any corrective actions are needed. If corrective actions are recommended, they will then be implemented as described. Inter-annual fluctuations will occur due to many factors such as excessive rains, drought, timing of rainfall, variable temperatures, and differences in grazing animals and their knowledge of the site, so results from just one year should not be relied upon heavily.

As described previously, the Land Manager will have limited control over livestock grazing in Areas 1 and 2 and will rely on cattle grazing the Preserve as a whole to meet the LTMP's livestock grazing management objectives. Because there is no fencing between Areas 1, 2, and 3 and these areas are grazed together as a unit, cattle will not necessarily be present in all portions of Areas 1 and/or 2 year-round even though the Preserve may be grazed by the grazing lessee year-round. Further, the CE and CTS Management Plan for Area 1 limit the number of cattle on Area 1 to 50 AUs. Thus, the Land Manager will ensure that the grazing prescription described above (e.g., season of use, utilization target) is followed to the maximum extent practical and will coordinate with TNC as the CE holder for Area 1 to ensure that the requirements of the Area 1 CE and CTS Management Plan continue to be met. In the event that the LTMP's grazing management objectives are not met, the Land Manager will attempt to have grazing intensity reduced or increased as necessary, in coordination with TNC as needed. If RDM values consistently and significantly deviate from the management objectives for Areas 1 and 2, the Land Manager may install temporary electric fencing or permanent barbed wire fencing to allow for independent management of Areas 1, 2, and/or 3.

If any changes to grazing management are proposed in the future, they will be coordinated between the SCVWD and TNC as the CE holder for Area 1.

5.3. Element C. Non-Native Invasive Plant Species Management

Objective 1: Minimize the spread of existing non-native invasive plants.

The focus of this objective is:

- Prevention or control of new introductions of high or moderate-ranked California Invasive Plant Council (Cal-IPC) species to Area 3
- Control of existing infestations of high-ranked Cal-IPC species
- Control of those existing Cal-IPC moderate-ranked species that have potential to further degrade Areas 1 and 2 and have a reasonable potential for successful control.

5.3.1. Invasive Plants

The degree of invasiveness of invasive plants is rated by the Cal-IPC as "limited," "moderate", or "high" based on the severity of their ecological impacts (Cal-IPC 2016). The most effective approach to wildland weed management is to focus on early detection and control of invasive species populations, prioritizing high-ranked species with the greatest potential to degrade wildlands, and if feasible, control of moderate-ranked species at a minimal level.

Five invasive plant species have been observed to be present in Areas 1 and 2. Two invasive species, Spanish brome and spreading hedgeparsley, are present in several vegetation types in Areas 1 and 2 (see Section 3.1 Vegetation Types). Spanish brome is ranked by the Cal-IPC as "highly" invasive, and occurs as a co-dominant species with other non-native annual grasses in some open areas within both large and small patches of grassland in blue and valley oak woodland and California annual grassland vegetation types (Photo 41, Appendix B). Spreading hedgeparsley is considered "moderately" invasive, and was observed in mixed oak forest and foothill pine/oak woodland vegetation types during the May and June field surveys.

Spanish brome and spreading hedgeparsley are not specifically included in the invasive species control efforts because their presence in Areas 1 and 2 reflects a larger, regional invasion that is not feasible to control at a site-wide level for Areas 1 and 2 (or for any similar site in the region). Because these are common dominant species in grassland and woodland communities in California, their presence does not degrade the habitat on the site, which was observed to be of very high quality, relative to other sites in the region. Therefore, although these invasive species are present in certain vegetation types in Areas 1 and 2, the management efforts described below are expected to reduce the occurrence of these species within Areas 1 and 2, even though these species are not the focus of the management efforts.

Other noteworthy invasive species that were observed on Areas 1 and 2 in lesser quantities include tocalote (*Centaurea melitensis*; "moderately" invasive) and Italian thistle (*Carduus pycnocephalus*; "moderately" invasive), both of which are present in open grasslands and valley oak savanna (Photo 42, Appendix B). In addition, medusahead (*Elymus caput-medusae*; "highly" invasive) was noted in open, grassy areas within California annual grassland, valley oak savanna, blue and valley oak woodland, and foothill pine/oak woodland vegetation types in Areas 1 and 2, and Medusahead will be the primary focus of invasive species control. efforts because it is considered to be one of the most threatening invasive annual grasses to rangeland production and wildland plant diversity; it often forms near monotypic stands and is an aggressive competitor for soil moisture (DiTomasio 2003). Small, disjunct patches of 5 to 20 individual medusahead plants were observed in Areas 1 and 2 and these small, emerging

populations will be the primary focus of initial invasive species control efforts. For instance, individuals were observed across the tract of California annual grassland to the north of Pond 4 in Area 1, and in openings within the foothill pine/oak woodland on near the border of Area 1 and 3 (see Figure 6). This species is present in higher density on other surrounding lands (SCVWD 2014) than on Areas 1 and 2, and in lower density on Area 3 of the Preserve. Distributional observations of these species within Areas 1 and 2 will be documented, and control will be prioritized based on extent, threat and feasibility.

Integrated Pest Management techniques (biological, mechanical, chemical, combination, etc.) will ensure the most effective control method is utilized for each invasive species while providing the greatest amount of protection to the natural resources within Areas 1 and 2. Management of particular invasive species will be prioritized based on their potential to cause harm to the natural resources in Areas 1 and 2 as well as the ability to effectively control the species.

If goat or sheep grazing is used for invasive plant control, animals will be brought in during the specific season useful to control the target problematic species. Goats and sheep will be concentrated in a specific location for a short duration, contained by an electric fence or similar means within a relatively small area, and allowed to graze with the coordination and oversight of a professional shepherd in order to achieve the weed control objective.

Livestock grazing has been used effectively to help minimize invasive plants on conservation properties but may not be adequate to address all issues. Where cattle grazing is not sufficient, the next preferred line of defense will be the use of non-herbicide methods (i.e., mechanical and hand removal, goats and sheep, and if available, effective biocontrols approved by the California Department of Food and Agriculture's Biological Control Program). In select areas, herbicides may be used where the type of species, size of population or terrain makes the use of other techniques either hazardous or ineffective. For example, in rocky areas whipping and mowing may damage resources and equipment, and hand pulling can be a safety risk due to uneven, steep ground.

Use of herbicides will only be permitted in Areas 1 and 2 if all of the following standards are met:

- Use occurs specifically for control of invasive, non-native plant species.
- Herbicide use shall be guided by label restrictions and any advisories published by the California Department of Pesticide Regulation or the County Agricultural Commission.
- Only herbicides and surfactants registered for aquatic use by the United States Environmental Protection Agency (USEPA) shall be applied within 20 feet of any waterway.
- All non-target plant species will be avoided.
- Herbicide drift will be minimized by complying with all label restrictions.
- Application will be avoided if significant rainfall is predicted in the subsequent 48-hour period.
- The lowest recommended and efficacious rate of herbicide will be used.
- The USEPA pesticide injunction for use of pesticides in CTS and CRLF habitat will be followed, as applicable.
- Unless specifically justified for a particular species (e.g., due to periods of highest effectiveness), application will occur between June 15th and October 15th to avoid application during the wet season when special-status amphibians are most likely to be dispersing across upland areas where invasive plants occur. Application will be made by or under the direct supervision of a state-certified applicator with a minimum of a

Qualified Applicator Certificate license that is under the direction of a licensed pest control advisor with a Pesticide Recommendation for Areas 1 and 2.
- Use will be in accordance with all guidelines and requirements from the Department of Pesticide Regulation.

Prescribed fire can be an effective invasive species management tool and has been successfully employed on other properties, including the adjacent BORR, to control weeds and maintain a natural vegetation mosaic. Typically done in conjunction with other agencies and/or research institutions, prescribed fire may be used as a management tool in Areas 1 and 2. In such cases protocols established by CAL FIRE will be followed, and the necessary permits will be obtained as required from the Bay Area Air Quality Management District. Prior to instituting the use of fire within Areas 1 and 2, a proposal for its use will be submitted for review and approval by the agencies overseeing the required mitigation in the subject areas.

Task C1. Invasive plant monitoring. Perform observational surveys to monitor known moderate to high ranking invasive plant species populations and document new occurrences, or new invasive plant species that have been identified by Cal-IPC as new threats.

C1.1. Conduct a comprehensive survey every 5 years beginning in 2016 to identify the locations of invasive plants. Determine the approximate area (square feet) of each occurrence by field measurement of average width and length, GPS polygon mapping, or other suitable means. Estimate percent cover within each occurrence to the nearest cover class (1-10%, 11-25%, 25-50%, 50-75%, 76-100%) and document locations with GPS. Produce an invasive species occurrence GIS map for documentation and use in the field based on the results. Surveys will focus on those areas known to account for the majority of invasive plant introductions and infestations on wildland sites including along roads, trails, and other known impact areas (e.g., cattle troughs, cattle bedding areas). Surveys will be conducted once during the survey year, in late June or early July, timed to occur when the target plants are flowering, making for easy identification and mapping.

Make incidental observations of invasive plants in conjunction with routine quarterly patrols and other site monitoring. Produce and update an invasive species occurrence GIS map annually, as needed, for documentation and use in the field.

Task C2. Conduct invasive weed control activities. Conduct control activities at appropriate intervals (annually, if needed) in accordance with the procedures listed above. Prioritize management of particular invasive species based on their potential to cause harm to the site's natural resources as well as the ability to effectively control the species. Following Cal-IPC best management practices to stop the spread of invasive plants to new locations, high-ranked invasive species along roads and trails will be of highest priority. Appropriately document and report control activities to the County Agricultural Commissioner as required.

5.4. Element D. California Tiger Salamander (CTS)

Objective: Conserve and allow for improvement of existing habitat that may be suitable for CTS within Areas 1 and 2.

The prescribed monitoring and management activities in Elements A–C above will assist in determining whether the aquatic and upland habitats in Areas 1 and 2 are being maintained in good condition. As discussed in Task A1, damage to sensitive resources will be recorded, and

in Task A2 if detrimental effects of livestock are observed in a particular location, various methods may be used to exclude livestock on a short term, seasonal, or permanent basis.

Task D1. Incidental CTS observations. In the course of all monitoring conducted for Elements A–C and quarterly patrols, surveyors will look for CTS via passive observation. Any sightings of CTS will be documented and reported to the CNDDB. Surveyors will be qualified biologists or other qualified professionals with the training and ability to identify sensitive amphibians in their various life stages. This information will supplement the results of monitoring performed in Area 1 by TNC.

For the CTS, as well all other resources in Areas 1 and 2, the SCVWD reserves the right to perform additional monitoring and habitat enhancement activities as required to determine suitability for or compliance with current or future mitigation needs or other regulatory requirements.

5.5. Element E. California Red-Legged Frog (CRLF)

Objective: Conserve and allow for improvement of existing habitat that may be suitable for CRLF within Areas 1 and 2.

Following the prescribed monitoring and management activities in Elements A–C above will assist in determining whether the aquatic and upland habitat is being maintained in good condition. As discussed in Task A1, damage to sensitive resources will be recorded, and in Task A2 if detrimental effects of livestock are observed in a particular location, various methods may be used to exclude livestock on a short term, seasonal, or permanent basis.

Task E1. Incidental CRLF observations. In the course of all monitoring conducted for Elements A–C and quarterly patrols throughout the Preserve, surveyors will look for CRLF via passive observation. Any sightings of CRLF on the Preserve will be documented and reported to the CNDDB. Surveyors will be qualified biologists or other qualified professionals with the training and ability to identify sensitive amphibians in their various life stages.

For the CRLF, as well all other resources in Areas 1 and 2, the SCVWD reserves the right to perform additional monitoring and habitat enhancement activities as required to determine suitability for or compliance with current or future mitigation needs or other regulatory requirements. These activities would be subject to review and approval by the appropriate regulatory agencies.

5.6. Element F. Other Sensitive Species

Objective: Document observations of other sensitive wildlife and plant species within Areas 1 and 2.

As listed in Table 4, Areas 1 and 2 support or have the potential to support several other sensitive wildlife and plant species. Preserve management practices will build upon techniques which have been favorable in the past, and implementation of the prescribed monitoring and management activities in Elements A–E above will ensure that habitat is being maintained in good condition for these species.

Task F1. Sensitive wildlife and plant observations. In the course of all monitoring conducted for Elements A-E and quarterly patrols, note any incidental observations of other sensitive

wildlife or plant species. Any occurrences of federally listed, state-listed, or CNPS-Rare Plant Rank 1A or 1B species not previously documented will be reported to the CNDDB.

6.0 INFRASTRUCTURE AND FACILITIES

The SCVWD will obtain all necessary permits and approvals prior to the initiation of any infrastructure and facilities maintenance actions requiring such permits and approvals.

Construction materials needed in support of infrastructure and facilities management are expected to include items such as base rock for road maintenance, fencing supplies (t-posts, steel posts, barbed wire rolls, electric fencing wire, grounding rods), and possibly troughs. Materials are not brought in until a week before work is to begin, with project extent roughly one month or less. BMPs for such projects would include silt fencing and wattles around rock and soil piles to prevent materials from leaving the work site, storage of materials in an area that has little to no grade to prevent transport of material, and storage sites located outside of any sensitive species or habitat areas, as well as any additional best management practices denoted in CEQA or permits covering these actions.

6.1. Element G. Grazing Infrastructure: Fencing, Gates, and Troughs

Objective 1: Monitor condition of fences, gates, and troughs to ensure they are maintained to facilitate the grazing regime and management, prevent unauthorized public access and allow necessary access for quarterly patrols and management of Areas 1 and 2.

Objective 2: Allow for future installation of new, or modification or removal of existing fencing, gates, troughs, and other grazing-related infrastructure if indicated for adaptive management of grazing or other resource-related purpose. No new fencing, gates, or troughs are recommended initially.

Objective 3: Utilize temporary means, such as electric fencing, for short-term exclusion or inclusion needs.

- Maintenance of gates and troughs as necessary to allow for appropriate grazing management of the entire Preserve will occur.
- As part of operations, the grazing tenant conducts routine maintenance of fencing. Fences will be maintained as necessary by replacing posts and/or wires. All replaced or additional fencing will adhere to current wildlife-friendly fencing standards, such as those used in nearby areas by the OSA (Appendix E). Signage will be installed at potential access points to indicate Preserve boundaries and/or areas closed to public access. No areas requiring new fencing are currently known. However, fencing may be added adaptively in the future if necessary to control grazing within Areas 1 and 2, which are currently open to cattle grazing with each other and the rest of the Preserve. If additional fencing is needed, the SCVWD will coordinate with the TNC so that grazing limitations within Area 1 continue to be met. The SCVWD will be responsible for maintaining any new fencing that is installed to meet requirements of this LTMP.
- BORR maintains the pig fencing along the southern boundary of Areas 1 and 2 between the Preserve and the BORR.
- TNC maintains the fencing along the northern and western boundaries of Area 1, as well as all fencing around CTS ponds in Area 1.

- The SCVWD will monitor and maintain all remaining fencing along its boundaries, including the barbed-wire livestock fences along western and southwestern boundaries of Area 2, and within the central portions of Area 2. Several of these fences are located outside of the Preserve boundary. However, this is due to the need to locate fences based on topographical features instead of property lines, and it is the responsibility of the SCVWD to maintain these fences.
- If any new troughs are placed within Areas 1 and 2 in the future, they will:
    - Have float valves to minimize water usage;
    - Have protection of the float valves to minimize breakage due to cattle;
    - Be cleaned, as needed, during the summer and early fall to avoid cleaning during the amphibian breeding season (November–July); and
    - Have mechanisms that allow wildlife to escape and avoid drowning.
    - Any new troughs will be constructed per NRCS Stock Watering specifications (Appendix E).
- Low ground pressure, four-wheel all-terrain vehicles (ATVs) may be used off-road for facilities monitoring, maintenance, or installation purposes, but are otherwise not permitted for off-road use within Areas 1 and 2. ATV use would be limited to the dry season when soils would not be impacted, would only be in upland areas, and would not be permitted in sensitive areas (such as along streams, with the exception of existing road crossings).

Task G1. Annual monitoring. Annually assess, in conjunction with grazing tenant, the condition of fences and troughs to confirm that all are properly maintained. Record the location, type, and recommendations if a fence or trough needs repair or replacement.

Task G2. Adaptive management actions. New fencing, gates, troughs, and other grazing-related infrastructure such as weather stations will be installed as needed for further site improvement as indicated by adaptive management, and as funding allows.

6.2. Element H. Roads

Objective: Monitor and maintain roads to provide access and minimize erosion and sedimentation issues

Task H1. Road monitoring. Inspect road conditions annually each May (after the rainy season) to determine the condition of the road surfaces and stream crossings. During year 1 May monitoring, the conditions of all road crossings (i.e., gullies or erosion present, culvert intact, damaged, % clogged) will be noted for use in subsequent years. The location and nature of issues observed at or away from stream crossings will be noted.

Task H2. Routine road maintenance. Maintain the existing drivable and abandoned roads as frequently as needed to preserve them in good condition. It is expected that the roads will need to be mowed approximately two times a year. It is also expected that the roads will require re-grading approximately once every five years. To maintain the surface, the upper few inches of the roads will be disced, tilled, or otherwise loosened prior to grading, and the loosened material will then be graded back into the road. This will ensure that no spoils are deposited on road edges, all materials will be re-incorporated into the road, and the road elevation will not decline over time. Roads will be out-sloped where appropriate or otherwise graded to facilitate sheet flow and minimize concentration of water and formation of rills and gullies. When necessary, some road segments may be rocked or otherwise armored to reduce the potential for erosion.

Where erosion is present on the sides of roads these areas may be re-graded and re-shaped to prevent further erosion.

When the roads are wet and tread damage could occur from a vehicle, vehicles will not be used by those parties having vehicle access rights. Alternative means of road access during wet conditions will be used, such as access by foot, horse, or an ATV/SxS (Side by Side vehicle). Following this practice will minimize road damage.

Task H3. Minor woody vegetation removal. Remove or trim live trees, dead trees, brush, and/or woody debris where required by fire protection agencies, for treatment of disease, for public and Land Manager staff safety, for patrol vehicle access, for recreational access as allowed under this LTMP, or for fire breaks for defensible space purposes at utility lines or at the property lines.

6.3. Element I. Pipelines and Spring Boxes

Objective: Monitor and maintain any pipelines or spring boxes used to supplement water flow to troughs or on-site ponds.

Task I1. Annual monitoring. Annually assess the use and condition of any pipelines and spring boxes associated with troughs or on-site ponds. Record location, type and requirements for repair, and ensure that the Land Manager meets all terms of use and maintenance as described in the CE.

6.4. Element J. Existing Ranch House

Objective: Monitor the condition of the existing ranch house.

Task J1. Annual monitoring. Annually assess the use and condition of the existing ranch house, which could potentially be used by trespassers. Record any evidence of use or structure deterioration and determine if action is needed.

Task J2. Adaptive management actions. If trespassers are detected using the existing ranch house or if the condition of the structure deteriorates (e.g., due to earthquake damage) and becomes unsafe, the SCVWD may board up or demolish the structure.

7.0 SECURITY, SAFETY AND PUBLIC ACCESS

7.1. Element K. Public Access

Objective: To allow public recreation and scientific study consistent with the terms of the conservation easement for Area 1 and the resource management objectives of this LTMP.

While no public access to Areas 1 and 2 is planned at this time, the SCVWD may allow public access to these areas in the future. Such public access not only provides recreational opportunities to the public but is also important in public education on issues of biodiversity and the importance of conservation, and in allowing scientific research within Areas 1 and 2. Such access and education helps to maintain public support of conservation and assistance in obtaining public funds and grants for land acquisition and management. Potential future trail

locations would only consist of the existing drivable roads within Areas 1 and 2; these trails would include 36,536 linear feet (6.9 miles) of trail on the existing, drivable ranch roads.

The existing drivable roads within Areas 1 and 2 will be maintained to facilitate site patrol and resource management projects (Section 6.2); however vehicular access to this road will be limited to Land Manager and CE holder staff, contractors, and invitees, and will not be available for public vehicular use. Drivable roads are those roads up to 10 feet wide with natural or baserock surfaces that can accommodate maintenance and emergency vehicles.

The CE holder plans to conduct educational and natural history tours of the Preserve. These tours or studies would occur not more than four times a year and would consist of not more than 30 people each entry.

If public access beyond use by occasional researchers is proposed in the future, the SCVWD would coordinate with the CE Holder for Area 1 regarding the type and amount of public access and any appropriate conditions, restrictions, or additional monitoring related to public access. Any future public access will be consistent with the CE for Area 1.

7.2. Element L. Trash and Trespass

Objective 1: Monitor sources of trash and trespass.

Objective 2: Collect and remove trash, repair vandalized structures and rectify trespass impacts to prevent degradation of Areas 1 and 2 from unauthorized human uses.

Task L1. Ongoing patrol monitoring. If observed during each site visit, remove and record occurrences of trash and/or trespass; record type, location and management recommendations to avoid, minimize, or rectify impacts. This task will be conducted quarterly. Because TNC monitors and removes trash only on an annual basis, and only on Area 1, the SCVWD's trash removal will be performed in addition to TNC's trash removal. Trash and trespass issues will be monitored using the General Site Monitoring Checklist (Appendix C).

Task L2. Annually remove or rectify problems. Conduct an annual trash and trespass results review, identify any patterns, and determine if adaptive management actions are needed.

8.0 ELEMENT M. REPORTING

Objective: Compile monitoring results for Areas 1 and 2.

The SCVWD will compile monitoring results annually at the end of each monitoring year, including the monitoring checklists for Areas 1 and 2 (Appendix C). If the SCVWD pursues using Areas 1 and 2 for mitigation purposes in the future, additional monitoring and reporting requirements will be determined at that time.

A summary of the long term management tasks to be implemented and the timing of these activities are presented below (Table 6).

Table 6. Long Term Management Tasks and Timing

Task No.	Task	Frequency	Timing
A. Streams, Springs, and Ponds			
A1	Stream and pond condition monitoring	Annually	May/June
A2	Stream and pond adaptive management actions	As needed	Dry season
B. Livestock Grazing Management			
B1	Livestock grazing implementation monitoring	Quarterly	Quarterly
B2	RDM reference plot monitoring	Annually	Mid-Sept.–early Oct., before rains start
B3	Areas 1 and 2 RDM status monitoring protocol	Annually	Mid-Sept.–early Oct., before rains start
B4	Grazing adaptive management actions	As needed	As needed
C. Invasive Plant Species Management			
C1	Invasive plant monitoring	Comprehensive – every 5 years Incidental - annually	Late June or early July*
C2	Conduct annual invasive weed control activities	Annually, if needed	Dry season. Variable timing dependent on species and techniques
D. CTS			
D1	Incidental CTS observations	Ongoing	Conducted with other annual monitoring and quarterly patrols
E. CRLF			
E1	Incidental CRLF observations	Ongoing	Conducted with other annual monitoring and quarterly patrols
F. Other Sensitive Species			
F1	Document observations of other sensitive wildlife and plant species within Areas 1 and 2	Ongoing	Conducted with all other annual monitoring and quarterly patrols
G. Grazing Infrastructure: Fences, Gates, and Troughs			
G1	Annual monitoring	Annually	Dry season
G2	Adaptive management actions	As needed	As needed
H. Roads			
H1	Road monitoring	Once annually (general)	General - May
H2	Routine road maintenance	Approximately once/5 years	Dry season
H3	Minor woody vegetation removal	As needed	Variable
I. Pipelines and Spring Boxes			

Task No.	Task	Frequency	Timing
I1	Annual Monitoring	Annually	Dry season
J. Existing Ranch House			
J1	Annual Monitoring	Annually	Conducted with other annual monitoring patrols
J2	Adaptive management actions	As needed	Dry season
K. Public Access			
	Optional		
L. Trash and Trespass			
L1	Quarterly patrol monitoring	Quarterly	Conducted with all other annual monitoring and quarterly patrols
L2	Annually remove or rectify problems	Annually	June
M. Reporting			
M1	Compile monitoring results	Annually	By Dec. 31

*Target monitoring timing is late June or early July or based on the phenology of each invasive species.

9.0 TRANSFER, REPLACEMENTS, AMENDMENTS, AND NOTICES

9.1. Amendments

The Land Manager may revise the LTMP to better meet management objectives and preserve the habitat and conservation values of Areas 1 and 2. Such amendments will be considered required management components and shall be implemented by the Land Manager.

9.2. Notices

Any notices regarding this LTMP shall be directed as follows:

Land Manager and Property Owner:

Santa Clara Valley Water District (SCVWD)
Ms. Lisa Porcella
5750 Almaden Expressway
San Jose CA 95118
Phone: (408) 630- 2741
lporcella@valleywater.org

Area 1 CE Holder:

The Nature Conservancy
Stewardship Department
201 Mission Street, 4th Floor
San Francisco, CA 94105
Phone: (415) 777-0487
einlander@tnc.org

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APPENDIX A

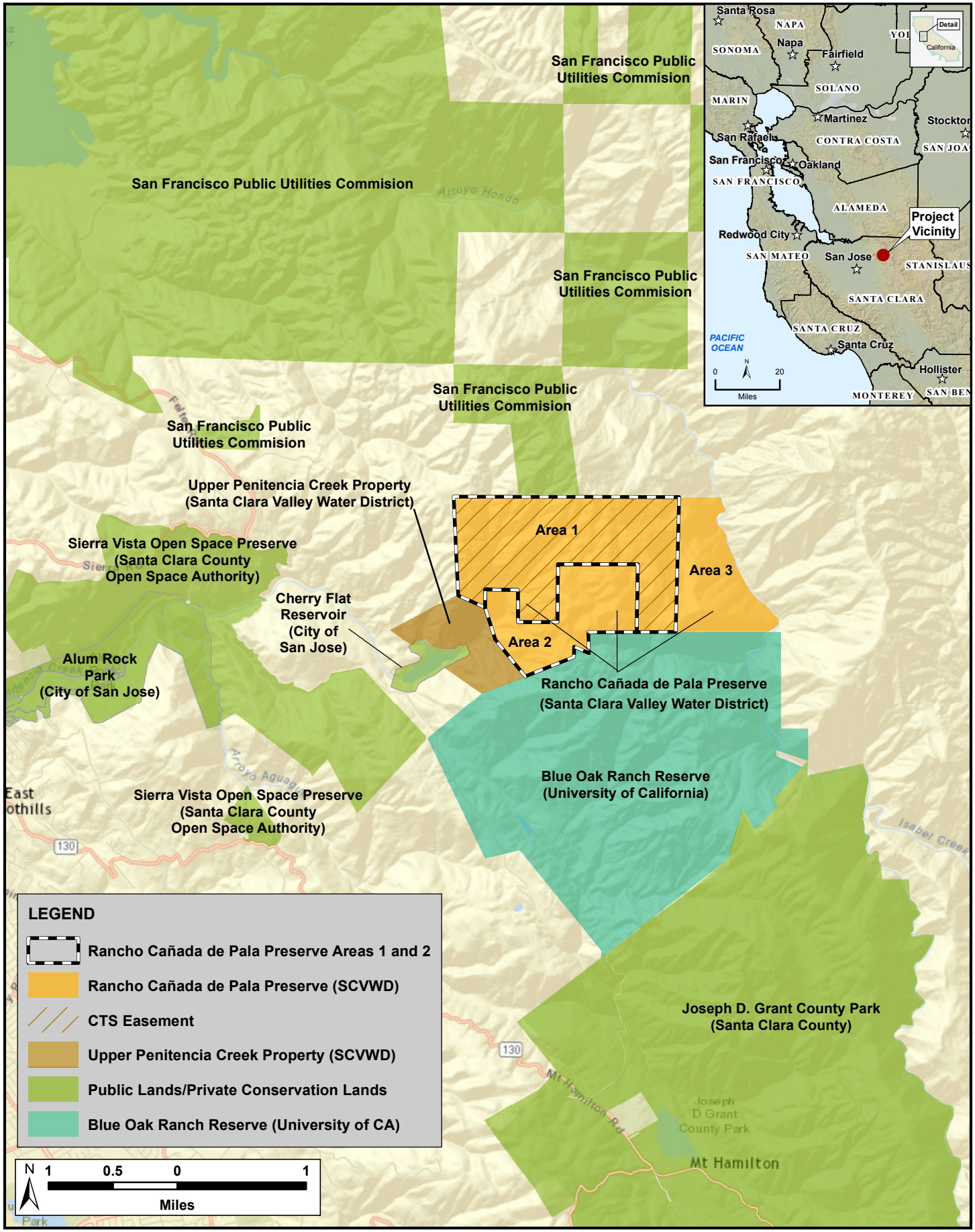


Figure 1: Vicinity Map

Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan
August 2015

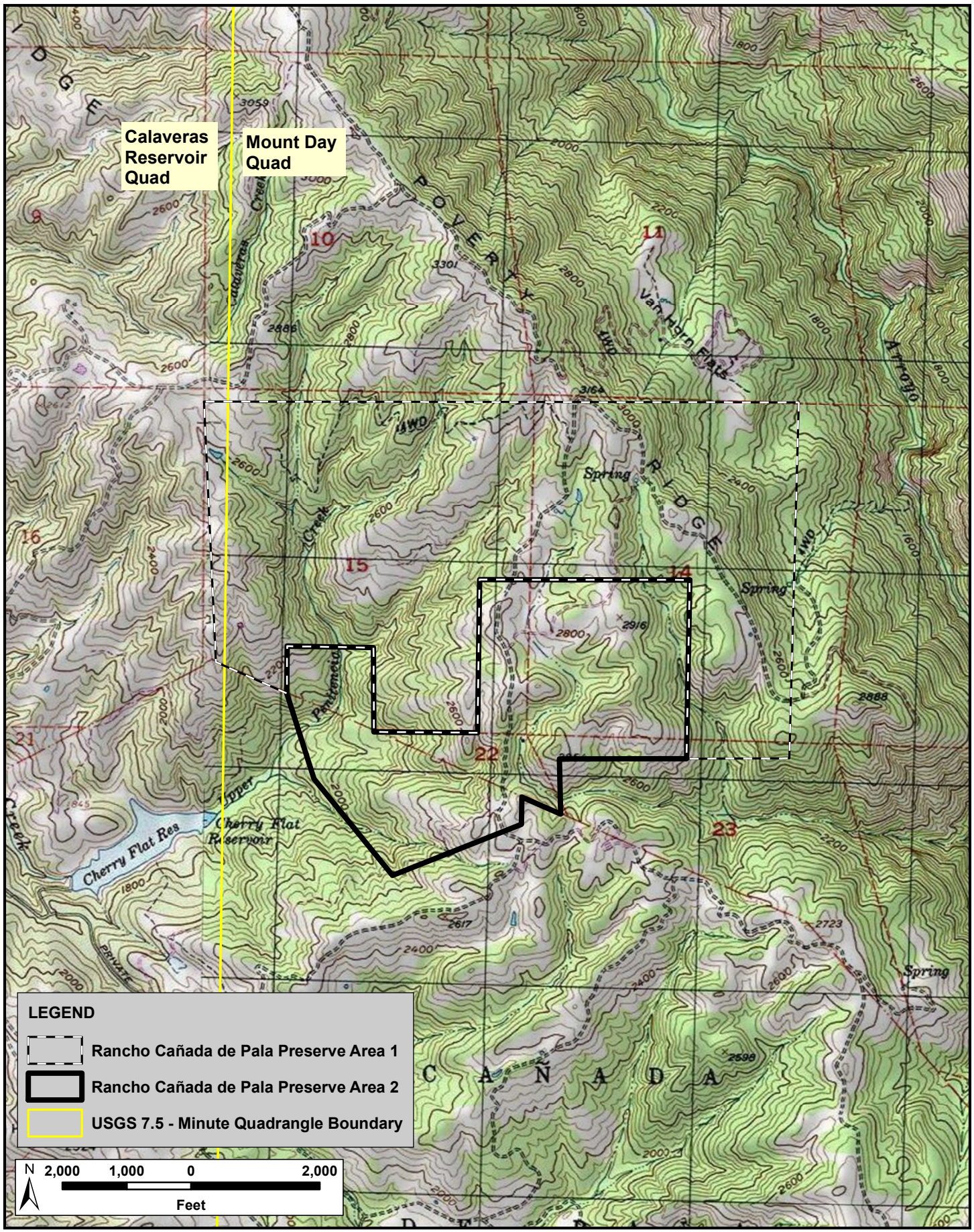


Figure 2: USGS 7.5 - Minute Quadrangle

Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan
August 2015

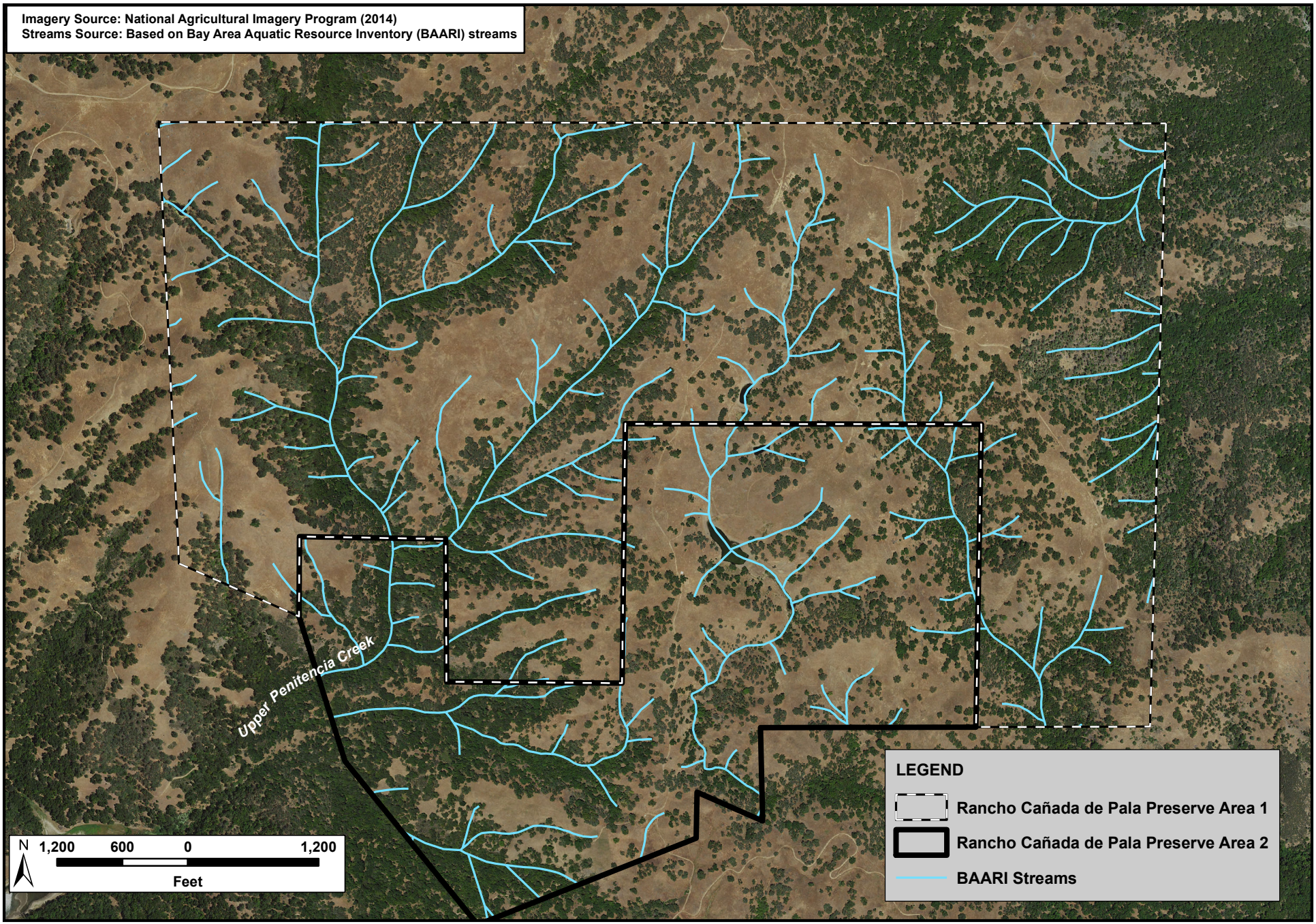


Figure 3: Streams and Tributaries

Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan
August 2015

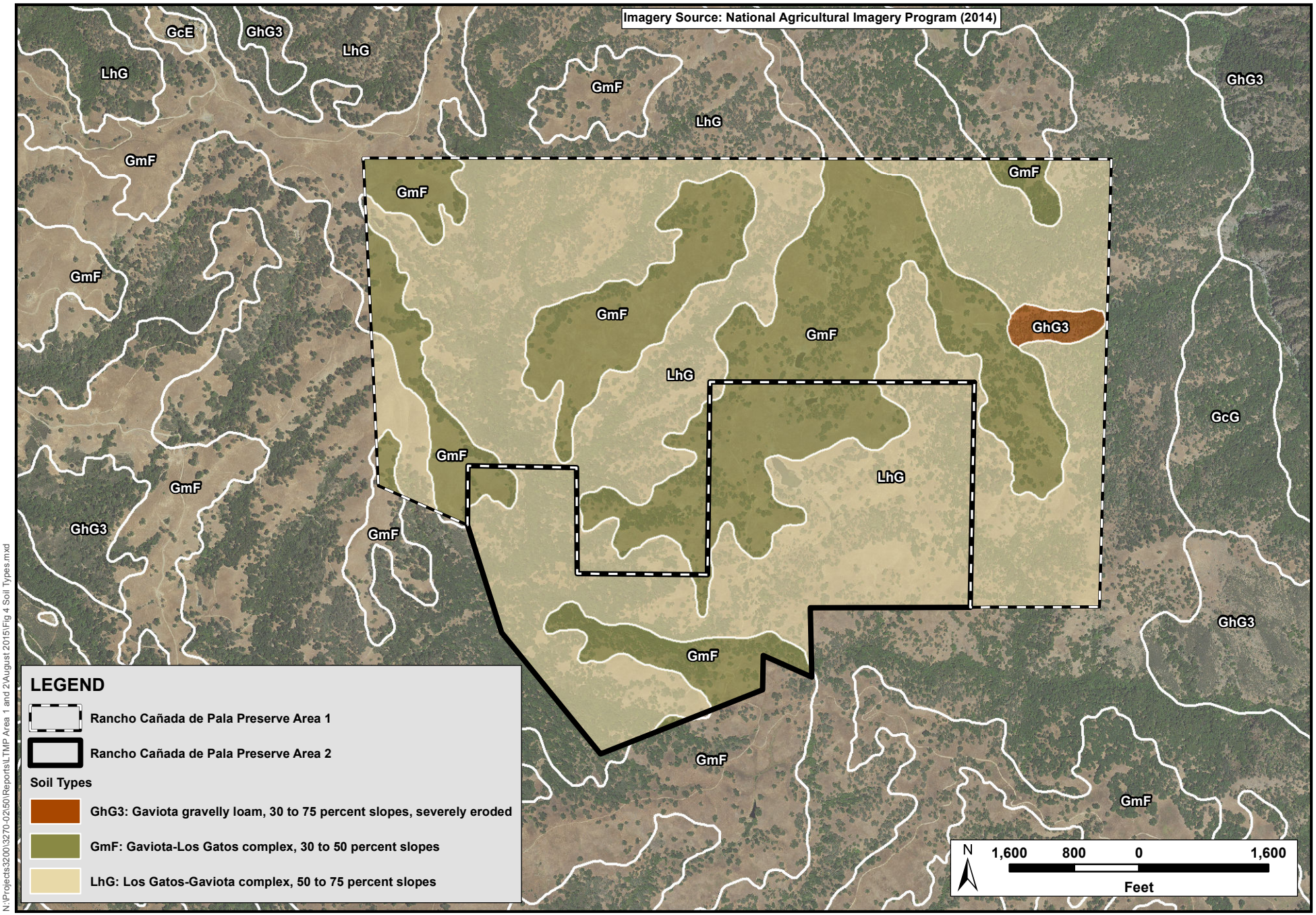


Figure 4: Soil Types
Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan
August 2015

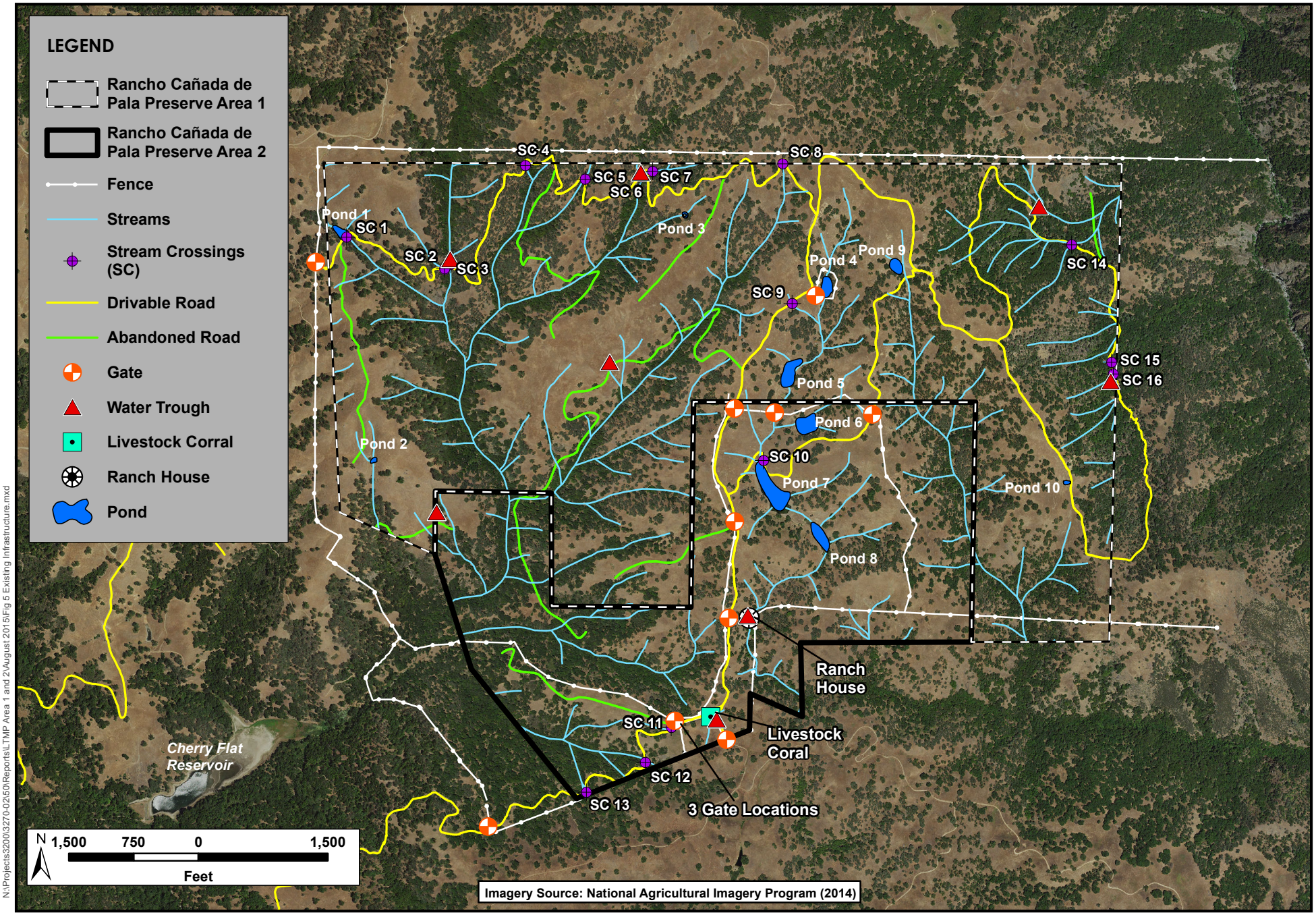


Figure 5: Existing Infrastructure

Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan
August 2015

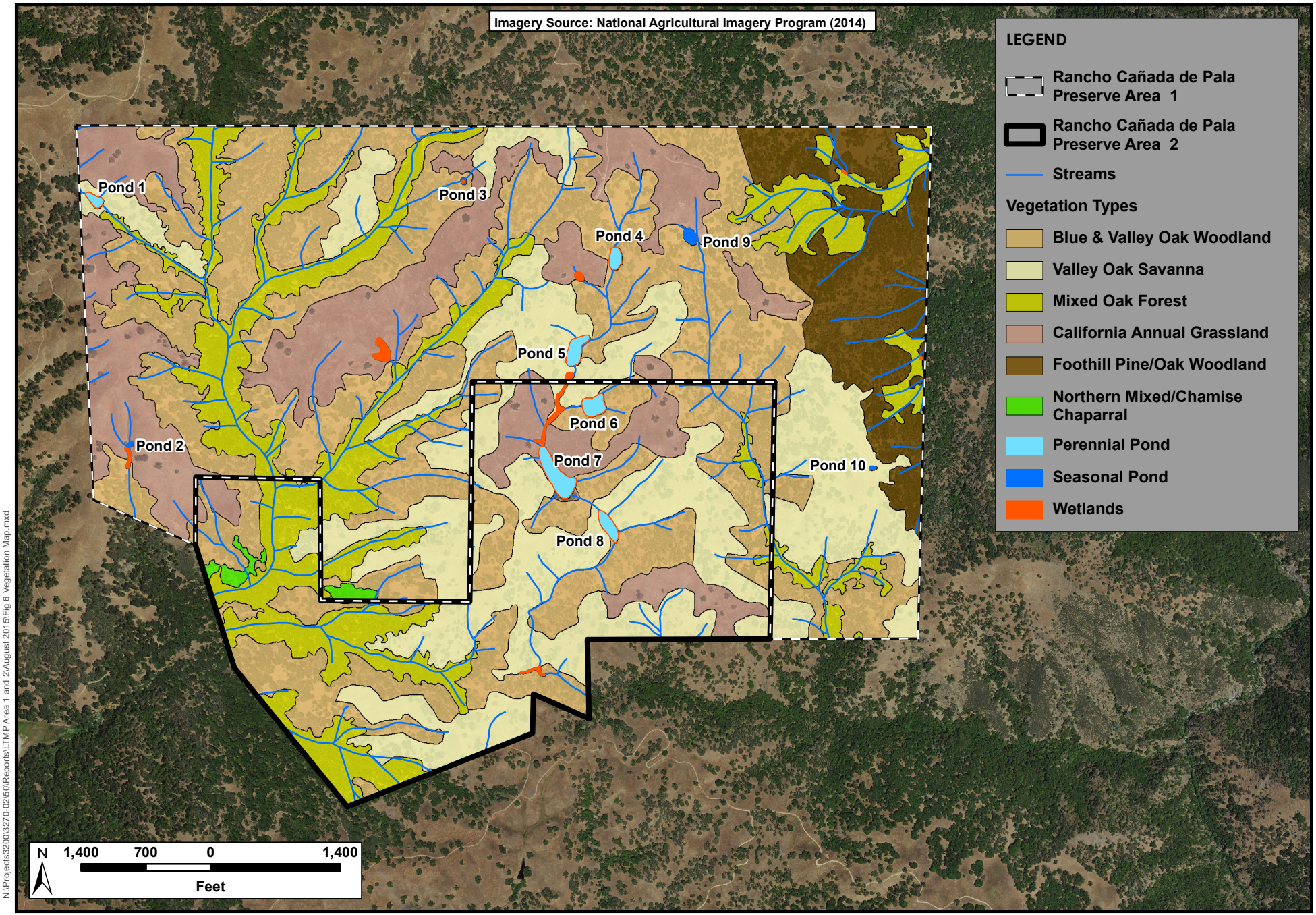


Figure 6: Vegetation Map
Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan
August 2015

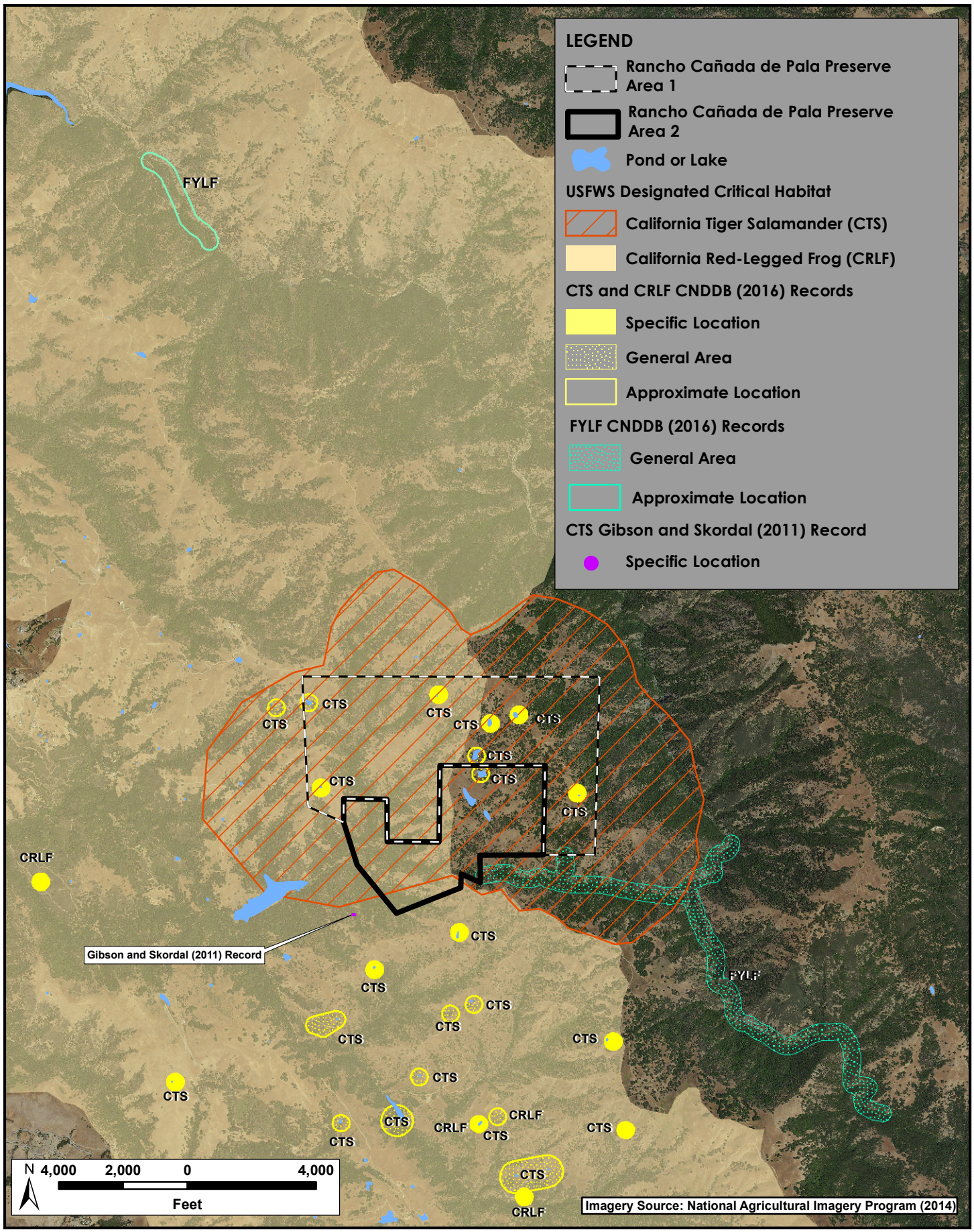


Figure 7: CTS, CRLF and FYLF Occurrences and/or Critical Habitat in the Vicinity

Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan

March 2016

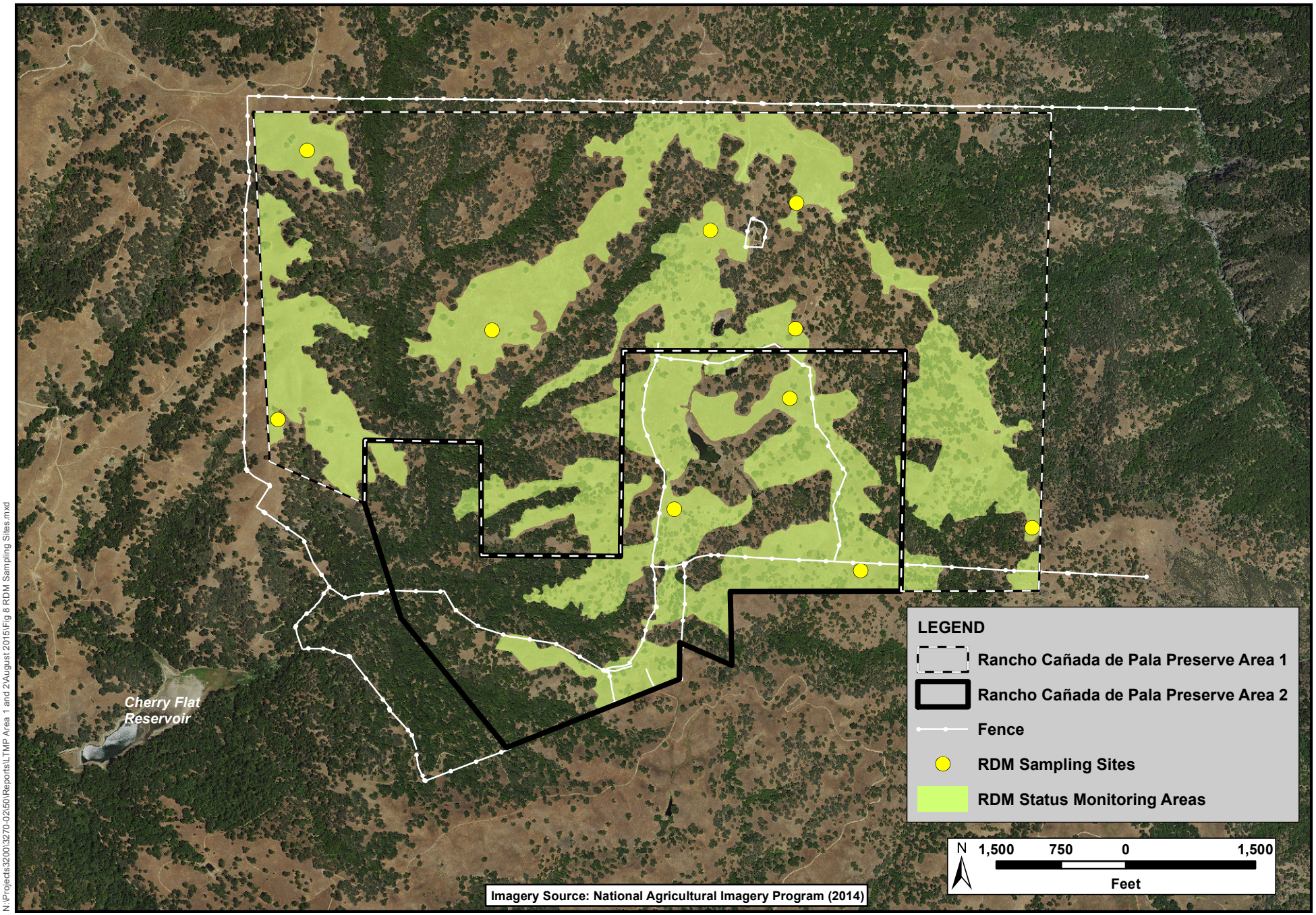


Figure 8: RDM Sampling Sites

Rancho Cañada de Pala Preserve Areas 1 and 2 Long-term Management Plan
August 2015

APPENDIX B



Photo 1. A large gully near stream crossing SC1, downstream of the road.



Photo 2. The upslope (top) end of the gully at SC1. The photo of the ephemeral drainage was taken facing downstream.



Photo 3. The upslope (top) end of the gully on the downstream side of SC2.



Photo 4. Photo of gully at SC2 taken from the road, facing downstream.



Photo 5. Nonfunctional culvert at SC3.



Photo 6. A wooden retaining wall stabilizing the downstream side of SC3.



Photo 7. The road crossing over an intermittent section of Upper Penitencia Creek at SC6 that was dry at the time of the May and June field surveys. A small wooden retaining wall stabilizes the downstream side of the road.



Photo 8. Culvert outlet at SC9.



Photo 9. Culvert outlet at SC10.



Photo 10. A pig fence crossing the ephemeral stream channel on the upstream side of SC13.



Photo 11. Barbed wire fence and gate to exclude cattle from Pond 4.



Photo 12. View of barbed wire fence in the eastern part of Area 1.



Photo 13. Pond 7 (also called Eagle Lake), which is perennial.



Photo 14. Pond 10, which is seasonal and was dry during the May and June field surveys.



Photo 15. Trough to the northwest of SC14.



Photo 16. Trough near SC16 is located in Area 1 near the border of Area 3.



Photo 17. Old one-room ranch house and adjacent retaining wall.



Photo 18. Blue and valley oak woodland vegetation type on Areas 1 and 2.



Photo 19. Blue and valley oak woodland vegetation type on Areas 1 and 2.



Photo 20. Valley oak savanna vegetation type on Areas 1 and 2.



Photo 21. View of valley oak savanna intergrading with California annual grassland on Areas 1 and 2. The tract of grassland in this photo is dominated by wild oats.



Photo 22. The understory of the mixed oak forest vegetation type on Areas 1 and 2.



Photo 23. Patch of California annual grassland dominated by rattail sixweeks grass.



Photo 24. Foothill pine/oak woodland vegetation type on Areas 1 and 2.



Photo 25. View of the foothill pine/oak woodland vegetation type on Areas 1 and 2.



Photo 26. Northern mixed/chamise chaparral on the eastern portion of the Preserve (Area 3).



Photo 27. Perennial Pond 1 with wetlands along the perimeter.



Photo 28. Perennial Pond 4 with wetlands along the perimeter.



Photo 29. Perennial Pond 5 with wetlands along the perimeter.



Photo 30. Perennial Pond 6 with wetlands along the perimeter.



Photo 31. Perennial Pond 8 with wetlands along the perimeter.



Photo 32. Seasonal Pond 2.



Photo 33. Seasonal Pond 3 with seasonal wetland in center.



Photo 34. Seasonal Pond 9.



Photo 35. Wetlands within the stream network that connects Ponds 4-8.



Photo 36. Wetlands within the stream network that connects Ponds 4-8.



Photo 37. Least duckweed on the surface of the water in wetland habitat.



Photo 38. Photo of a seep at the headwaters of the stream near SC9.



Photo 39. Facing downstream along Upper Penitencia Creek, which flows through Areas 1 and 2.



Photo 40. Dense forest and shrubs cover the steep slopes leading down to Upper Penitencia Creek. This photo was taken on a hillside above a perennial section of the stream.



Photo 41. Spanish brome growing on the Preserve.



Photo 42. Italian thistle growing on the Preserve.

APPENDIX C

General Site Monitoring Checklist – Rancho Cañada de Pala Preserve Areas 1 and 2

Monitor Name_____ **Monitoring Date**_____

Locations visited_____

Resource Status and Management				
Grazing implementation monitoring being performed?				
Depth/extent of water in ponds				
California tiger salamander/red-legged frog observed?				
Other sensitive plant or animal species observed?				
Potential Adverse Conditions				
Question	**Answer[1]**	**Type, Location, Description of Condition, Potential Cause**	**Comparison to Prior Monitoring Condition**	**Recommendations?**
Invasive plant concentrations observed?				
Evidence of trash observed?				
Evidence of trespass observed?				
Problems with gates, fences, troughs, or corral?				
Problems with spring box or water conveyance systems?				
Problems with roads?				
Management Activities Undertaken				
Any repair, remediation, management activities undertaken?				
Notes:				

[1] Y = Yes, N = No, NS = Not Sure, NA = Not Applicable

Aquatic Habitat Monitoring Checklist – Rancho Cañada de Pala Preserve Areas 1 and 2

Monitor Name_____ **Monitoring Date**_____ **Monitoring Station**_____ **Aquatic Feature Type**_____

Resource Status	
Water present (and depth)?	
Woody vegetation present (and species)?	
Seedlings or saplings of woody plants observed?	

Potential Adverse Conditions				
Question	**Answer[1]**	**Location, Description of Condition, Potential Cause**	**Comparison to Prior Monitoring Condition**	**Recommendations?**
Cattle observed in streams or riparian areas?				
Bare soil in or along banks of feature?				
Unstable or eroding stream banks (e.g., rills, gullies)?				
Erosion at road or culvert (e.g., rills, gullies)?				
Headcuts present?				
Vegetation trampling evident?				
Excessive sedimentation evident?				
Visual water quality problems evident (debris, odor, color?)				
Damage from pigs or deer?				
Unusual disturbance (e.g., fire, ORV, trespassing)?				
Notes:				

[1] Y = Yes, N = No, NS = Not Sure, NA = Not Applicable

APPENDIX D

Wildland Solutions
RDM Monitoring Procedure

Keith Guenther

November 2007 version

Annually create an RDM zone map and a pasture success map with supporting information collected at monitoring reference sites that shows how well each pasture/management unit meets established RDM objectives for a property. A three part process is involved.

1. Prior to monitoring there is a need to establish the RDM classes to be utilized. The RDM classes of course need to reflect RDM objectives for the site.
2. Collection of supporting information at RDM reference monitoring sites.
3. Development of an annual pasture success map.

Part 1: Establish RDM classes to be utilized in monitoring

Prior to field mapping a decision needs to be made as to what and how many RDM classes are to be utilized. There is no specific best number, some examples are:

A minimum of 2 classes is required.

- Meets the objective
- Does not meet the objective.

UCCE publication 8092 (2006) recommends the use of 3 RDM classes:

- RDM level is high (exceeds the objective)
- RDM level is moderate (meets the objective)
- RDM level is low (below the objective)

Hormay and Faucett, USFS technical note 21 (1942) used 7 classes:

- None use
- Very light use
- Light use
- Moderately light use
- Moderate use (recommended level of use)
- Close use
- Very close use

The RDM classes utilized for monitoring RDM on a typical California annual grassland site producing 1,800-2,000 lbs/acre could be as follows:

- *RDM is more than 1,600 lbs/acre*
- *RDM is between 1,200-1,600 lbs/acre*
- *RDM is between 800-1,200 lbs/acre (established objective)*
- *RDM is between 400-800 lbs/acre*
- *RDM is below 400 lbs/acre*
- *RDM has been removed by fire and is below 100 lbs/acre*

The RDM classes utilized for monitoring RDM on a highly productive coastal prairie site producing 4,000 lbs/acre could be as follows:

- *RDM exceeds 3,600 lbs/acre*
- *RDM is between 2,400-3,600 lbs/acre*
- *RDM is between 1,800-2,400 lbs/acre*
- *RDM is between 1,200-1,800 lbs/acre (established objective)*
- *RDM is between 600-1,200 lbs/acre*
- *RDM is below 600 lbs/acre*
- *RDM has been removed by fire and is below 100 lbs/acre*

Part 2: Collect supplemental supporting information at reference monitoring sites.

Supplemental information can be collected at selected reference monitoring sites to validate and document what the person conducting the RDM zone mapping is seeing. Information collected at the reference monitoring sites is not intended to be extrapolated as representing the entire management unit or pasture. The information is intended to represent that portion of the pasture being surveyed and serve as a reference for documenting the status of a specific RDM zone.

First step - Locate reference monitoring sites

Reference monitoring sites are located in a manner that samples and records the general condition of a portion of a management unit or pasture. Reference monitoring sites are used to provide supporting documentation for the RDM zone maps. The number of reference sites in a pasture depends on the size and complexity of the pasture. A minimum of one reference site is usually established in each pasture with additional monitoring sites added when pastures are over 600 acres.

Reference monitoring sites are typically:

1. Located within a uniform vegetation type, and capable of responding to management actions. *The site should have relatively uniform vegetation and preferably be 1 acre in size.*

2. Located away from water. *¼ mile is a distance that should avoid the heavy use of sites often associated with water developments.*

3. Located for good access. *Sites should be accessible to facilitate monitoring, avoid sites that are within 20 feet of a road or 50 feet of a fence.*

4. Located on a site that is capable of producing herbage typical of the area. *For the typical California annual grassland site that would mean an area capable of producing 2,000 lbs/acre of RDM.*

Reference monitoring sites at times may be established in low use areas and high use areas to better document the actual range of impacts that may be occurring on large diverse management units. When interpreting an RDM zone map, a reference monitoring site in a potentially high use area near water that has an RDM level that meets the established RDM goal would imply that the pasture as a whole meets the RDM objective. A reference monitoring site in a potentially low use area with an RDM level that

does not meet an established RDM objective would reinforce the point that more than likely most of or all of the pasture did not meet the RDM objective.

Second step - record photo points at reference monitoring sites

1. A Robel pole is placed at a point that shows representative use of the vegetation within the vicinity of the reference monitoring site.

2. Two golf balls are placed about 6" apart on each side of the Robel pole. If vegetation is matted the golf balls are placed on the ground not on the vegetation, in a manner that helps to show herbage quantity.

3. Photos are taken looking in a northerly direction. Photos taken looking north reduce any potential glare on the camera lens and provide optimum light on vegetation.

4. A tripod is utilized to provide more stable pictures with better clarity.

5. The first picture is taken from about a 10 foot distance with tripod set at 5 feet height. With a digital camera it is zoomed in to a point that still includes all 4 golf balls.

6. A second more distant picture is taken from 20 feet with tripod set at 5 feet height. The camera is zoomed to a setting where the Robel pole height appears to be about 1/2- to 2/3 of the picture frame height.

7. The film numbers or digital photo numbers of each picture is recorded on a worksheet for each photo as the photos may all look alike at a later date. A consistent numbering system is utilized. An example is pcr023dyy where pcr is the property code, the number is the reference monitoring site number the d is distance of photo N or G, Near or General and the last 2 digits are the year of photo. Consistent numbering helps transfer field data smoothly into the annual report. With digital cameras the date stamp is utilized when available. A1.2 megapixel image size is considered adequate as photos for most reports do not need to exceed 3"x5".

Third step - estimate RDM class at monitoring reference sites

An estimate of RDM herbage is made utilizing the RDM classes established in part one of the monitoring plan. The classes are used with the desired goal usually being the middle class and 2-3 classes above and 2-3 classes below the desired level plus the burned by fire class.
Clipping and weighing of RDM is conducted as needed to confirm that estimates are being made accurately. The procedure for clipping and weighing RDM is described in the *Wildland Solutions Residual Dry Matter (RDM) Monitoring photo-guide and the UCCE publication 8092. The scales for weighing RDM are set to 0 with the bag attached or the weight of the bag that holds the RDM is subtracted after weighing.*

Fourth step - document any additional information
Additional information such as visual estimates of plant composition, weedy species, noxious weeds, perennial grasses, unusual wildlife seen, GPS coordinates, general location and anything of note that might be of use to future managers is added as comment notes on a standard form for the project. The amount and types of supplemental data collected will vary depending on the needs of each project. A sample form is shown on page 9.

Fifth step - transfer field information to digital format.
This step provides the ability to archive the field data collected and make multiple copies for future reference and analysis. A format that uses a MS WORD based form allows efficient entry of data.

Sixth step - create a supporting report
The GIS database developed for the monitoring reference sites can be utilized to create a summary report for inclusion in the appendix of the annual RDM monitoring report.

Seventh step – add reference monitoring site locations to the RDM zone map
Placing the location of the monitoring reference sites on the RDM zones map created for the project provides the ability for anyone to easily review the data collected for specific reference sites. The ability for managers to be able to readily identify reference sites that have unusually high or unusually low levels of RDM is a very useful feature when assessing grazing patterns and making management adjustments.

Part 3: Develop RDM zone and pasture success maps

RDM zone or use-pattern maps are developed to show RDM levels that occur within a pasture at the time a survey is made. Pastures typically have a variety of soils, aspects, vegetation and non-uniform livestock use that requires interpretation when developing an RDM zone map.

First step – collect field data

A 1:24,000 scale USGS topographic map, which includes management unit or pasture boundaries and important features such as livestock water, fences and roads, is utilized as a base field map for recording data.

Mapping of RDM zones is conducted by visually examining an adequate amount of the pasture to determine and map which of the 3-7 RDM classes occur within the pasture. A combination of reference photographs, descriptive narrative and clipping and weighing RDM within representative areas is utilized to determine the RDM class for a particular portion of a pasture (Guenther 1998). Mapping units are generally no smaller than 20 acres. The RDM zones are delineated and recorded before leaving a given pasture.

When mapping RDM patterns for a property attention is focused on those areas capable of producing herbage and RDM that is typical for the area during a normal growing season. Notes

are made on the map regarding specific information obtained, especially from monitoring reference sites, and sites that have been clipped and weighed.

Livestock tend to graze in a patchy manner, heavily using small areas and lightly using an adjacent area. Boundaries between RDM zones are recorded on the map. When determining the boundary between two classes it is often necessary to decide that an area is "mostly" within a given class and an adjacent area is "mostly" in a higher or lower class. The boundary is placed on the map where one "mostly" shifts to the other "mostly". Features such as topographic breaks in slope, changes in aspect and the resulting vegetation changes influence livestock use patterns and often can be used to help determine the boundary between two use classes. Interestingly, even though 6 classes of RDM are typically utilized, most pastures tend to only have 2-3 RDM zone classes as cattle tend to spread out and locate areas of good remaining forage before severely impacting a significant portion of any pasture. The result is that pastures tend to be mostly light-moderate use or moderate-heavy use.

Second step - input data collected into GIS database

Data from the field maps is transferred into a GIS database to allow creation and display of information as an RDM zone map (Fig 1 page 7). The ability to archive and analyze data allows the development of the annual pasture success maps (Fig 2 page 8).

Third step - calculate acreage of each mapped zone

A query of the database calculates the acreage for each RDM zone mapped within a pasture. A simple calculation then determines the percentage of a pasture that meets or does not meet a specific RDM class for the pasture.

Fourth step - determine how well each pasture meets the objective (success)

The criteria used to measure success are quantitative and color coded for visual display. An example with 2 classes above the established objective and 2 classes below the objective could be:

- *90% of pasture exceeds 3,000 lbs/acre RDM*
- *90% of pasture exceeds 2,000 lbs/acre RDM*
- *90% of pasture exceeds 1,200 lbs/acre RDM (established objective)*
- *10-35% of pasture is below 1,200 lbs/acre RDM*
- *more than 35% of pasture is below 1,200 lbs/acre RDM*

The criteria could as well have been:

Three simple classes for success described as:

- 80% of pasture exceeds objective
- 80% of pasture meets objective
- More than 20% of pasture below objective

Or five classes used to describe levels of success:

- High (RDM more than 200% of minimum)
- Exceeds the objective(RDM is 150-200% of minimum)
- Meets the objective (RDM is from 100-150% of minimum)
- Below the objective (10-35% of area below minimum)
- Low (more than 35% of area below minimum)

Fifth step - prepare the pasture success map with legend.

Each pasture is assigned one of 3-6 success classes depending on how well it meets the established objective. Pastures are considered to be within an identified success class if a specific percentage of the pasture is at or above the RDM level for the class (typically 80 or 90%. A GIS based map is prepared with color coded levels for pasture success to facilitate visual review and evaluation of success on a management unit or pasture basis.

Sixth step - prepare a pasture summary table

The database associated with the GIS program can be utilized to create a summary report for each pasture that is exported in a text format for inclusion in the appendix of the annual RDM monitoring report. The current year's data can then be compared to data collected for each pasture from previous years.

References:

Bartolome, James W. William E. Frost, Neil K. McDougald, Michael Connor. 2006. California Guidelines for Residual Dry Matter (RDM) Management on Coastal and Foothill Annual Rangelands. UCCE pub 8092 http://anrcatalog.ucdavis.edu./pdf/8092.pdf

Guenther, Keith. 1998. Residual Dry Matter (RDM) monitoring photo-guide. Wildland Solutions. http://www.wildlandsolutions.com/rdm.html

Hormay, A.L. and A. Fausett. 1942. Standards for judging the degree of forage utilization on California annual type ranges. CA Forest and Range Experiment Station Technical Note 21.
en pastures are over 600 acres.

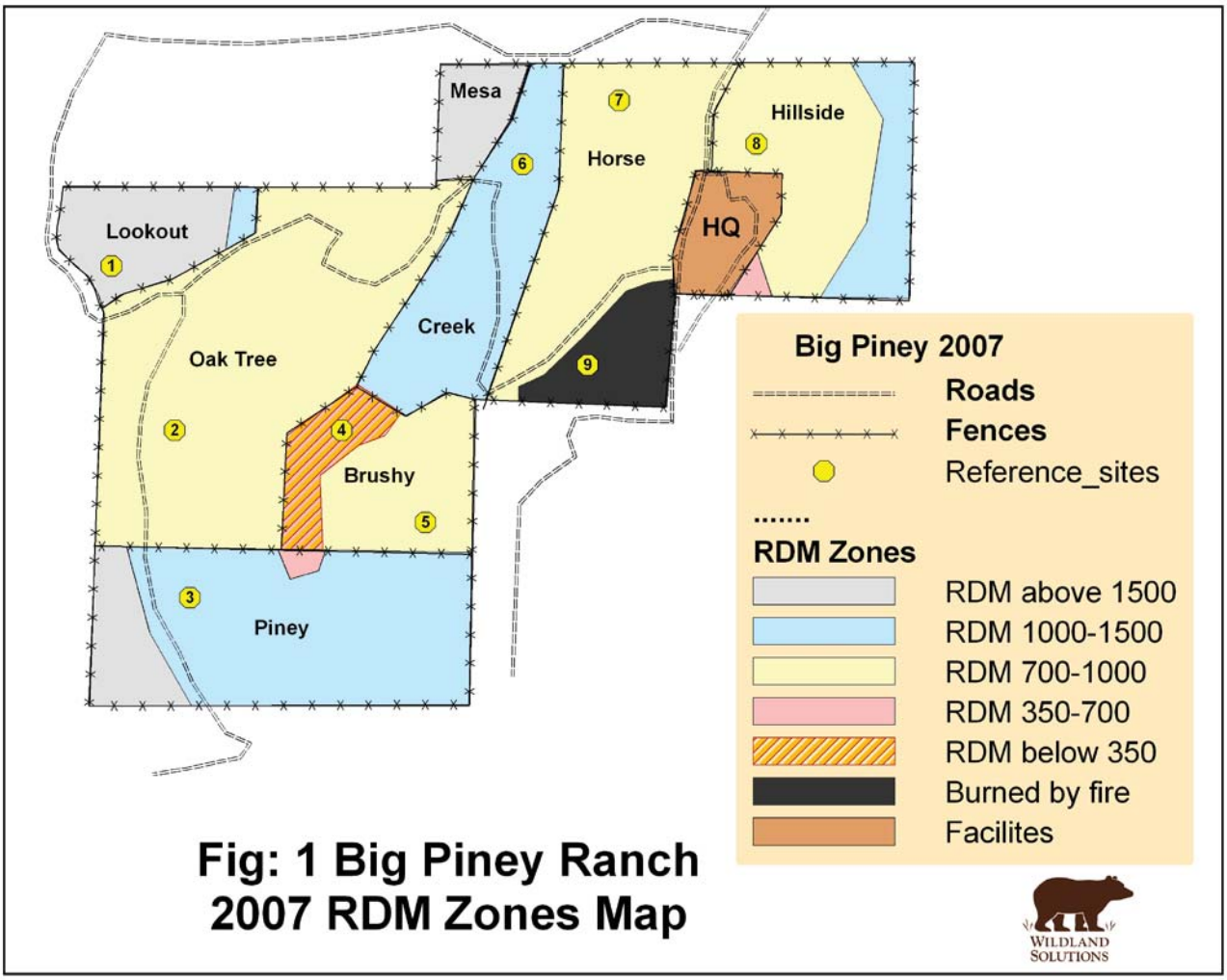


Fig: 1 Big Piney Ranch 2007 RDM Zones Map

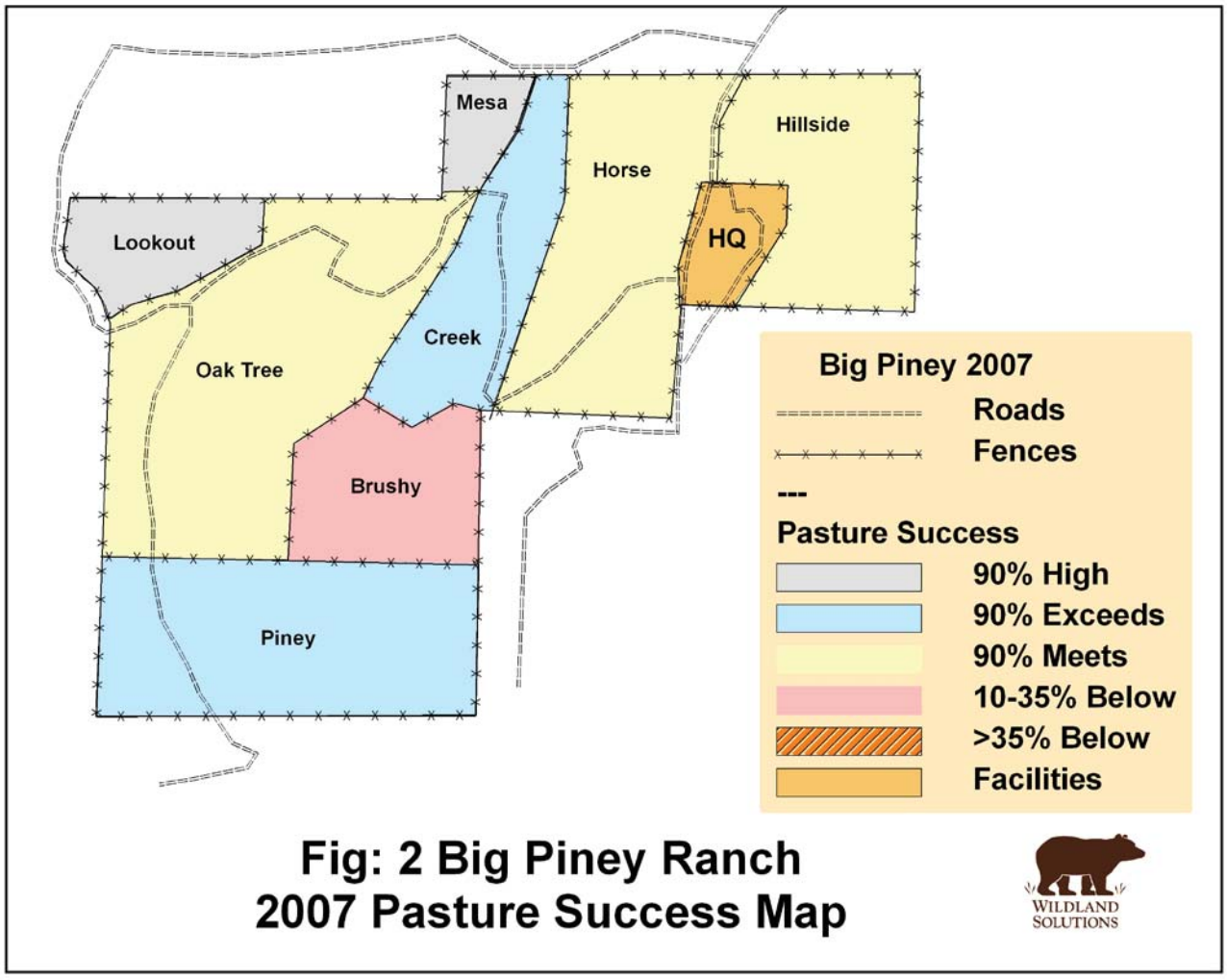


Fig: 2 Big Piney Ranch
2007 Pasture Success Map

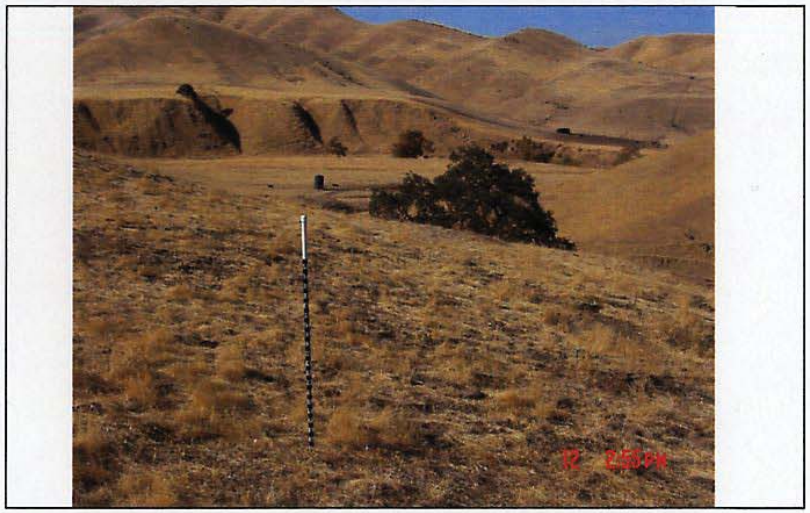
WILDLAND SOLUTIONS

- **Project:** *TNC- Mount Hamilton*
- **Ranch: Simon Newman**
- **Pasture name: Bear Gulch**

- **UTM Coordinates: UTM base** *27*
  East: 0664231 North: 4121284
- **General location:**

- **Herbage composition:**
  - **Perennial Grass:..... %**
  - **Annual Grass:.....95 %**
  - **Forbs:..... 4 %**
  - **Tree leaves:..... %**
  - **Weeds: ..... 1 %**

Comments:
Weeds: Scattered Mullein Weed, Tarweed and Vinegar Weed.





Monitoring Site #smn61 Date 10/12/2004
Slope: 7 % Aspect: Northeast
Residual Dry Matter Class: 1000

Surveyor: *Keith Guenther*, *Wildland Solutions*

- **Project:**
- **Ranch:**
- **Pasture name:**

- **UTM Coordinates: UTM base**
  East: North:
- **General location:**

- **Herbage composition:**
  - **Perennial Grass:..... %**
  - **Annual Grass:..... %**
  - **Forbs:..... %**
  - **Tree leaves: ..... %**
  - **Weeds: ..... %**

Comments:

Distance photo with General View

Close photo with detail view

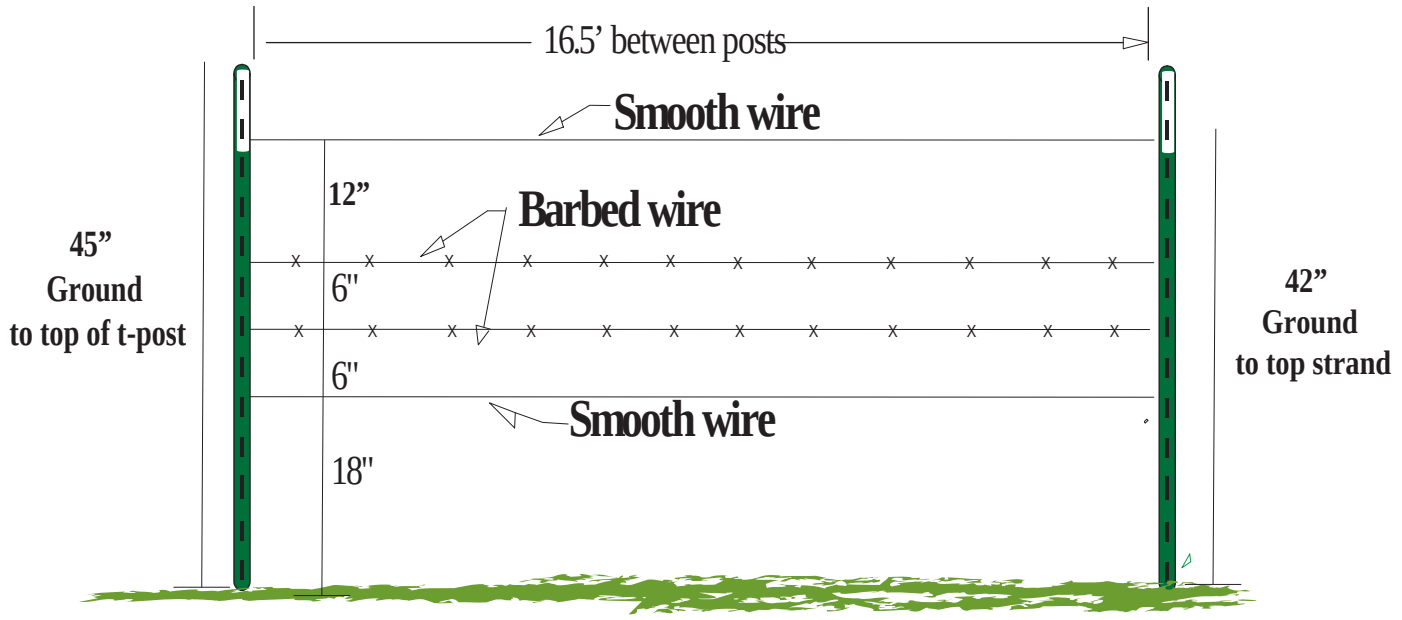
Monitoring Site # Date
Slope: % Aspect:
Residual Dry Matter Class:

Surveyor:

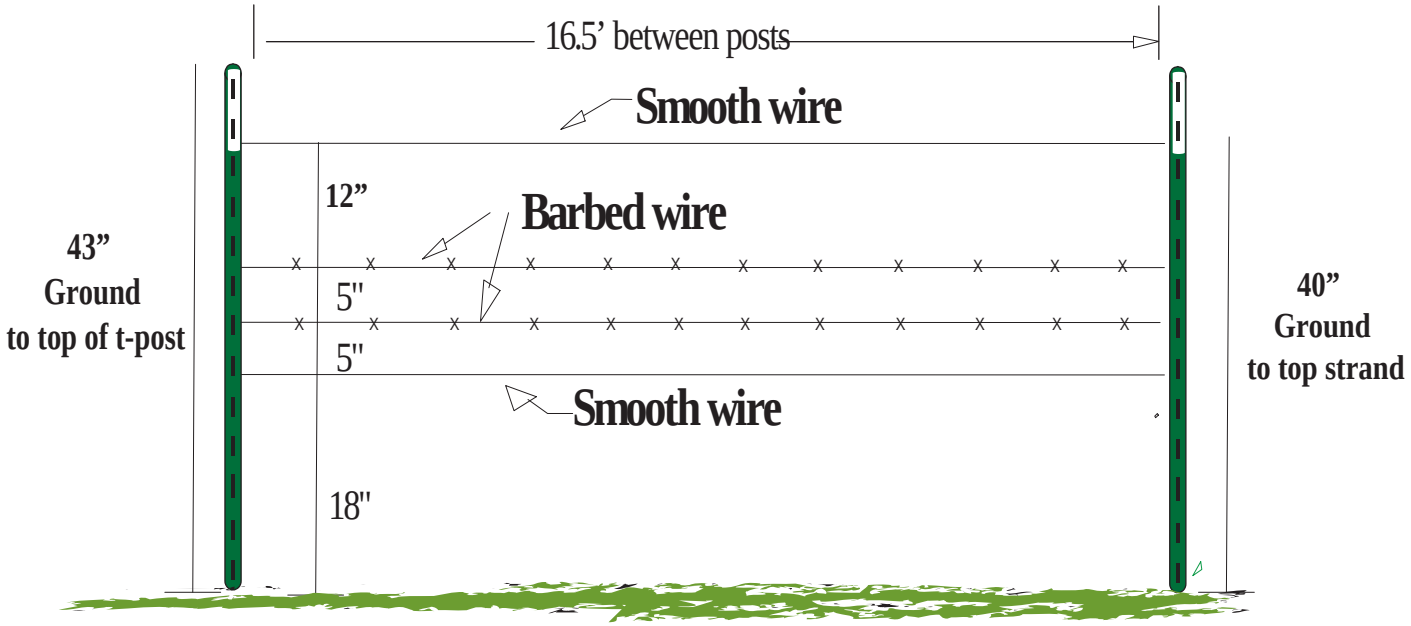
APPENDIX E

Santa Clara County Open Space Authority
Fencing Standards
Standard Cattle Grazing

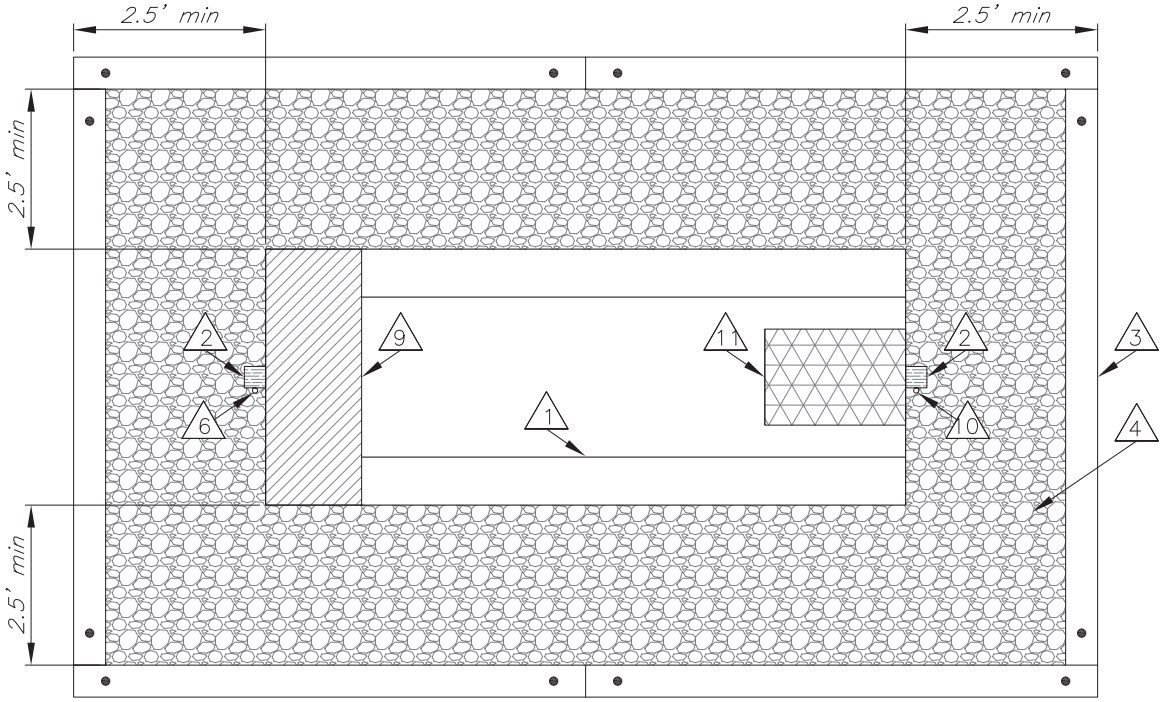
Road Side - Use 66″ (5.5′) t-posts

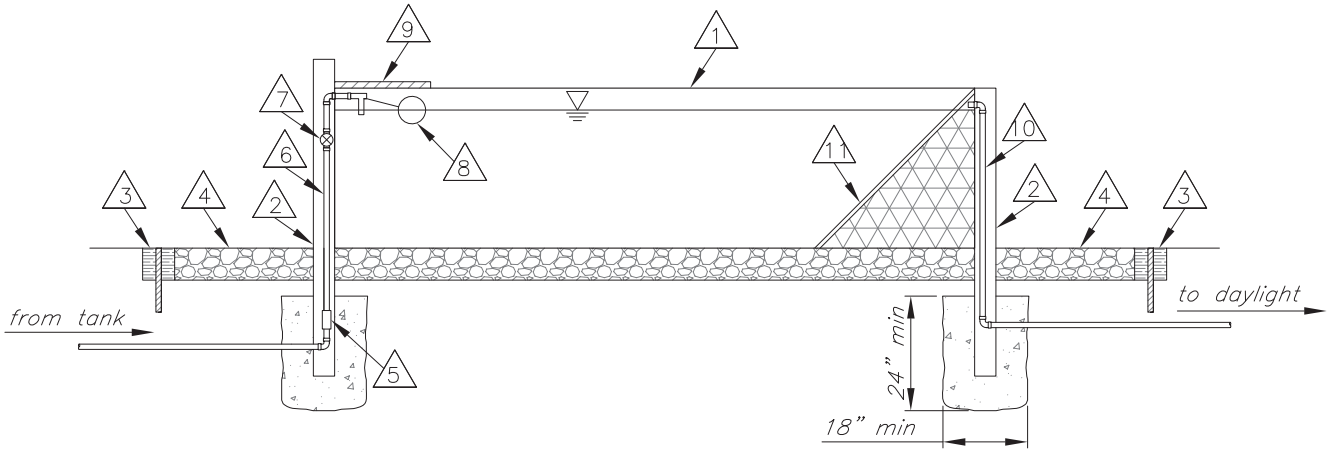


Interior Fencing - Use 60″ (5.0′) t-posts



Ordering t-posts:
All t-posts are green
Roadside t-post length is 66” (5.5’)
Interior t-post length is 60” (5.0’)





CONSTRUCTION NOTES

1. Provide fabricated steel trough.
2. Provide steel pole anchor posts set in sack mix concrete as shown.
3. Provide pressure treated 6"x6" or railroad tie held to ground with 18" long #6 rebar or 1" steel pipe.
4. Provide 6" thick pad of 3" minus river run cobble over 6oz non-woven geotextile fabric.
5. Provide Coupling from 2" schedule 40 PVC to 1" galvanized steel pipe.
6. Provide galvanized steel pipe feed line.
7. Provide 100 psi rated gate valve.
8. Provide Watts ST1000 1" standard float valve or approved equal.
9. Provide steel float guard.
10. Provide 1" galvanized steel pipe overflow line. Pipe to daylight no less than 20 feet from trough onto 1'x3' stabilized pad.
11. Provide wildlife escape ramp. Ramp shall be expanded steel welded to a rigid frame and extend to the bottom of the trough.

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

CONSTRUCTION DETAIL – TROUGH
STOCKWATER SYSTEM

Grower

Santa Clara County, California

File No. *Stockwater-Details.dwg*

Drawing No. *2012-1*

Sheet *1* of *1*

Appendix B

SANTA CLARA VALLEY WATER DISTRICT

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan

Prepared by

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Santa Clara Valley Water District

with

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November 2015

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I. BACKGROUND

1.0 INTRODUCTION

1.1 Purpose of Property Purchase

In December 2015, the Santa Clara Valley Water District (SCVWD) will purchase the Rancho Cañada de Pala Preserve (Preserve) from The Nature Conservancy (TNC) in part for the purpose of providing mitigation in perpetuity for impacts associated with the SCVWD's 2002 Multi-Year Stream Maintenance Program (SMP) under the Stream and Watershed Protection Program (S&WPP). The Preserve may also provide mitigation for other SCVWD projects to be identified in the future, pending prior agency approval. The agencies that required the mitigation (Permitting Agencies) associated with the 2002 S&WPP are the California Department of Fish and Wildlife (CDFW), U.S. Army Corps of Engineers (Corps), and San Francisco Regional Water Quality Control Board (SF RWQCB).

The Preserve is divided into three Areas (Areas 1, 2, and 3) that collectively total 1,758 acres (Figure 1). Area 3, which encompasses 320 acres, is the subject of this Long-term Management Plan (LTMP) and includes 6.6 miles of S&WPP-designated streams (waters of the U.S./State and California Fish and Game Code Section 1600 jurisdiction) and their associated buffers (220.60 acres with 0.71 acres subtracted for the existing road alignments); these are the acreages and resources for which SCVWD is claiming 2002 SMP mitigation credit. Information about the S&WPP and mitigation credits is provided in Section 1.5; Appendix C includes a detailed accounting of the S&WPP crediting.

In 2000, an easement on a portion of the Preserve (Area 1) was transferred by the Kammerer family to Catellus Land Development Corporation to be used as mitigation for impacts on the California tiger salamander (CTS; *Ambystoma californiense*) elsewhere (G. Kammerer pers. comm.; SF RWQCB 1999). Catellus Land Development Corporation recorded a Conservation Easement (CE) on the approximately 840-acre Area 1 of the Preserve in favor of TNC (as the Grantee). Two years later, TNC purchased the underlying fee from the Kammerer family, and TNC now owns the entire Preserve. The SCVWD will obtain ownership of the Preserve (including Areas 1, 2, and 3), with a perpetual CE held by TNC on Area 1. Because a CE is already present on Area 1, this portion of the Preserve will not provide mitigation for current or future SCVWD projects.

No existing CEs are present within Areas 2 and 3 of the Preserve. The SCVWD is in the process of recording a CE on the entire Area 3 to provide mitigation for the 2002 SMP, as described above. The SCVWD is not recording any CEs on Area 2 at this time; however, Area 2 may provide mitigation for other SCVWD projects, either currently identified or to be identified in the future. If Area 2 is proposed for future mitigation, it would be subject to the requirements of the regulatory agencies governing that mitigation. It is anticipated that a separate CE and LTMP would be prepared for Area 2.

1.2 Purpose of this Long-term Management Plan and Relationship to Conservation Easement

The purpose of this LTMP is to ensure that Area 3 of the Preserve is monitored, maintained, and managed in a manner that preserves its conservation values in perpetuity and is consistent with both the Area 3 CE and the SCVWD's mitigation goals.

The conservation values of Area 3, in accordance with the SCVWD's mitigation goals and the physical characteristics of Area 3, are as follows:

1. Over 5.4 miles of seasonal streams and 1.2 miles of perennial stream

2. A mosaic of open rangeland and varied vegetation types (i.e., California annual grassland, foothill pine/oak woodland, mixed oak forest, mixed riparian forest, northern mixed/chamise chaparral, and valley oak savanna) that provide habitat for a wide variety of birds, mammals, reptiles, amphibians, and invertebrates

3. Potential breeding and upland dispersal habitat for the federally threatened California red-legged frog (CRLF; *Rana draytonii*), also a state species of special concern; potential upland dispersal habitat for the state and federally threatened California tiger salamander (CTS; *Ambystoma californiense*) and foraging and potential breeding habitat for the foothill yellow-legged frog (FYLF; *Rana boylii*), western pond turtle (WPT; *Emys marmorata*), and potential breeding and foraging habitat for the American badger (*Taxidea taxus*), all of which are state species of special concern

4. Ecological connectivity to the surrounding open space and watershed land network

Aside from the seasonal and perennial streams and associated watershed protection buffers, the SCVWD is not claiming mitigation credit for conservation of these resources within Area 3.

This LTMP establishes objectives, priorities, and tasks to monitor, manage, maintain, and report on the waters of the U.S./State and 1600 jurisdiction and overall conservation values within Area 3, which will be managed according to the LTMP. In addition, this LTMP is a binding and enforceable instrument, implemented by the CE that will cover Area 3. The areas that will be covered by the approximately 320-acre 2015 CE for Area 3 are defined in the CE, and consist of the 219.9 acres of Stream and Watershed Protection Buffers (adjusted for the presence of roads) for 18.3 freshwater wetland mitigation credits, which is more than the remaining 15.2 mitigation credits required under the S&WPP for impacts associated with the SMP. The CE establishes the prohibited activities within these applicable areas. The CE and LTMP together will provide for the long-term protection, maintenance, and management of this CE area and its conservation values.

The LTMP Goals are to:

- Meet the compensatory mitigation requirements of the SCVWD's 2002 SMP

- Preserve and allow for the improvement of the conservation values of Area 3

- Provide coordinated, unified management for Area 3

- Provide feasible and effective conservation guidelines, standards, and priorities for resource management, monitoring, and adaptive management

- Be compatible with and promote cooperation among the various land owners/managers within the upper ends of the Upper Penitencia Creek and Alameda Creek watersheds (e.g., with respect to grazing regimes and invasive species control) and to help ensure

the survival of viable populations of sensitive species and healthy biotic communities in the area as a whole

- Provide flexibility as needed to adapt management practices in response to monitoring and field observations, and to meet revised or newly established mitigation goals for Area 3 over time

Also included within this document, though not part of long-term management per se, nor required to satisfy the terms of SCVWD mitigation, are discretionary initial site improvement actions (Section 4.0) to rehabilitate one degraded road crossing associated with a stream in Area 3 and to repair a headcut at a second location in order to repair minor erosion issues. These initial site improvements are also intended to ensure the long-term function of the Area 3 infrastructure and to facilitate land management.

1.3 CE Holder and Responsibilities

TNC will serve as the CE holder for the CE that will be placed on the entire 320 acres that comprise Area 3 of the Preserve. The CE holder is responsible for ensuring that the terms of the CE are met so that the conservation values of Area 3 are preserved or improved. The CE holder will be responsible for annual monitoring for and reporting on compliance with the terms of the CE. The CE holder will perform, at least once annually, compliance monitoring inspections of Area 3 of the Preserve to identify any prohibited uses. The CE holder will prepare reports on the results of the compliance monitoring inspections and provide these reports to SCVWD. SCVWD shall provide these reports to the Permitting Agencies as a part of the annual LTMP reporting process described in Section 9.0.

1.4 Land Manager and Responsibilities

The land manager (Land Manager) is the SCVWD. The SCVWD will implement this LTMP, managing and monitoring Area 3 in perpetuity to preserve its habitat and conservation values. As the Land Manager, the SCVWD will be responsible for maintaining Area 3 in a condition at least as good as its current condition consistent with the CE, although it is anticipated that LTMP implementation will result in improved environmental conditions. The SCVWD may implement additional, optional resource management activities not included in this LTMP that further improve environmental conditions beyond the requirements of this LTMP. These may include site improvement projects or long-term management activities that enhance or improve habitat for particular species or communities. If such additional activities are proposed within the CE area, these will need to be consistent with the restrictions and allowed uses in the CE, and may require written approval of the Permitting Agencies. The addition of new management or enhancement activities may require an LTMP amendment approved in writing by the Permitting Agencies; whether such a formal amendment is necessary will be determined in consultation with the Permitting Agencies. In response to changing conditions, and as part of adaptive management, the SCVWD may employ new or different management techniques to meet the objectives of this LTMP. Any new subsequent grading or alteration of the site's hydrology and/or topography by the Land Manager or its representatives would be for restoration or enhancement purposes and will require amendment to this LTMP and the necessary permits, such as a Streambed Alteration Agreement with the CDFW, a California Endangered Species Act 2081 Incidental Take Permit, a Clean Water Act Section 404 permit from the Corps, and/or a Clean Water Act Section 401 certification from the SF RWQCB.

1.5 Stream and Watershed Protection Program (S&WPP or Program) and SMP Mitigation Credits

The S&WPP provides out-of-kind, stream mitigation for wetland mitigation credit for the 2002 SMP. The S&WPP Mitigation Monitoring Plan (MMP) is provided in Appendix J of the 2002 SMP Final Environmental Impact Report (SCH# 2000102055).

The S&WPP provides a standard crediting formula for acquisition properties. Mitigation credit units are determined as follows:

- Maximum credit: 10:1 (acres:credit) - including land nearest to the stream. For every 10 acres of area preserved within 50 feet (ft) of the centerline on first-order streams and within 150 ft of centerline on second-order and larger streams, 1 acre is credited.

- Minimum credit: 15:1 (acres:credit) - including watershed land farther from the stream. For every 15 acres of area preserved within 150 to 500 ft of the centerline of second-order and larger streams, 1 acre is credited.

The S&WPP map is depicted on Figure 10 (Appendix C), which shows the Area 3 streams, their alpha and/or numeric designations, and their associated buffers. Table 6 (Appendix C) presents the corresponding stream order, lengths, buffer acreages, and resulting S&WPP credit data. Streams within Area 3 were mapped using the Bay Area Aquatic Resource Inventory stream mapping data from the San Francisco Estuary Institute. S&WPP 50-foot, 150-foot and 500-foot stream buffers were mapped and acreages determined using GIS, per the methods described in the S&WPP MMP. Subsequently, the existing roads (10-foot width) were subtracted from the buffer areas.

In summary, the Area 3 S&WPP credit area includes 219.9 acres for 18.3 wetland mitigation credits; 35.9 and 74.1 acres are within 50- and 150-foot buffers, respectively, for 11.0 credits, and 109.9 acres are within 500-foot buffers for 7.3 credits.

2.0 PROPERTY DESCRIPTION

2.1 Location, Setting, Topography, Hydrology, and Soils

2.1.1 Location and Setting

Area 3 of the Preserve is approximately 320 acres, and is located 9 miles northeast of downtown San José in unincorporated Santa Clara County (Figure 1) on all of parcel 042-20-010 and portions of parcels 041-07-022 and 042-07-019. Area 3 lies on east and south-facing slopes of the Diablo Range, approximately 5.5 miles northwest of Mt. Hamilton. The Diablo Range extends 180 miles from Mt. Diablo in the northwest to the Polonio Pass in the southeast. The Diablo Range is largely undeveloped and supports a diverse mix of grassland, scrubland, and woodland communities. Cattle ranching and passive recreation are the predominant human uses throughout most of the Diablo Range. Permanent protection of Area 3 will add to a growing and increasingly contiguous swath of open space and conservation lands in the Mt. Hamilton region that currently include San Francisco Public Utilities Commission lands to the north; Santa Clara County Open Space Authority's (OSA) lands, the SCVWD's Upper Penitencia Creek Property, and the City of San José's Cherry Flat Reservoir to the west; and the University of California's (UC's) Blue Oak Ranch Reserve (BORR) and Santa Clara County's Joseph D. Grant County Park to the south (Figure 1).

2.1.2 Topography and Hydrology

Elevations on Area 3 range from approximately 1400 feet National Geodetic Vertical Datum (NGVD) 29 along Arroyo Hondo, a perennial stream that runs along the eastern edge of Area 3, to 2900 feet NGVD29 in the southwest corner (Figure 2). Area 3 is primarily composed of the steeply sloping hillsides of Poverty Ridge, which are bisected by ephemeral and intermittent drainages that flow into Arroyo Hondo (Figure 3). Arroyo Hondo drains a large portion of the watershed on the slopes of Mt. Hamilton; its mainstem originates at the confluence of Isabel Creek and Smith Creek at the northern tip of Joseph D. Grant County Park, 1.5 miles southeast of Area 3. The drainage then flows northward through a deep gorge, bound by Oak Ridge to the east and Poverty Ridge to the west, for approximately 13 miles and drains to Calaveras Reservoir. Calaveras Dam was constructed in 1913 in response to the increasing demand for drinking water in the San Francisco Bay Area at the turn of the 20th century. The reservoir is now the San Francisco Bay Area's largest local drinking water supply, and along with Calaveras Creek, Arroyo Hondo is one of its principal tributaries.

The estimated 30-year (1981-2010) mean annual precipitation at Area 3 is 24.83 inches (PRISM 2015), most of which occurs between the months of November and April. Precipitation is the main source of water for the ephemeral and intermittent streams within Area 3; however, natural seeps and springs at the headwaters of drainages where the groundwater table approaches or tops soil surface are present on adjacent portions of Area 1.

2.1.3 Soils

Area 3 is underlain by three soil types within the Gaviota Series and Los Gatos-Gaviota Complex: (1) Gaviota loam, 30 to 75 percent slopes; (2) Gaviota gravelly loam, 30 to 75 percent slopes, severely eroded; and (3) Los Gatos-Gaviota complex, 50 to 75 percent slopes (Figure 4). These soils are derived from hard sandstone and shale from the Franciscan formation and younger (Miocene age) marine sediments. The Gaviota series consists of shallow soils that are well-drained and somewhat excessively drained, moderately to severely eroded, and of low fertility, and that may be subject to burning. Serpentine soil inclusions of the Henneke series are common throughout (Natural Resources Conservation Service [NRCS] 2015), in addition to inclusions of the Los Gatos and Vallecitos series (U.S. Soil Conservation Service 1974). The Los Gatos-Gaviota complex generally includes soils within the Gaviota series on ridges and south-facing slopes, as well as soils within the Los Gatos series on north-facing slopes. The Los Gatos series is well-drained, subject to sheet erosion, and moderately fertile. This complex may also include small areas of Vallecitos rocky loam, Los Osos clay loam, and Altamont clay. Rock outcrops and talus slopes occur throughout portions of Area 3, and much of what underlies the eastern-facing slope down to Arroyo Hondo is unstable mélange, an assortment of rock fragments of all sizes that have been arranged by earthflow landslides.

2.2 General History and Land Use of Area 3

Area 3 is undeveloped and has minimal existing infrastructure. Similar to the rest of the region, Area 3 has historically been used for cattle grazing. Information on historic grazing in the region and recent grazing activity within Area 3 is provided for context below.

2.2.1 Historic Land Management in the Region

Livestock grazing has existed in Santa Clara County, including in the foothill areas of the Diablo Range, for over 200 years. During the Spanish Period (1722-1822), lands outside of the missions and pueblo settlements in the county were utilized primarily for grazing of livestock and limited agriculture (County of Santa Clara 2004).

With the establishment of large private land grants during the Mexican Period (1822-1846), local residents were able to own and oversee immense acreages of land (a "rancho"), typically thousands of acres in size. Large herds of cattle were allowed to range freely across these immense tracts of land on a year-round basis and were rounded up twice a year during rodeo. Within a rancho, only the existing infrastructure (e.g., house, corral, garden, small orchard) was fenced, and the remainder of the ranch where the cattle roamed was unfenced (County of Santa Clara 2004).

Rancho land ownership continued until this system was challenged by frontier settlers during the American Period (1846-1900). As smaller farms were established throughout the County, open range methods changed, pasture land was reduced, and cattle ranching became concentrated in the foothills. This period included more intensive cattle operations with fencing and water developments being installed, as well as intensive stock farming, with cattle being moved from foothill pastures to valley feed yards to await marketing. With these more intensive methods, hay production became a necessity (County of Santa Clara 2004). Year-long grazing was probably conducted in most areas.

From the end of the American Period until more recently, year-long and/or seasonal grazing is presumed to have been the strategy of many area ranches with extensive fencing and water developments to utilize all available feed that grew annually. Maximizing livestock numbers was the objective of many area ranches. This strategy still exists on many local ranching operations.

2.2.2 Recent Land Use of Area 3

From 1976 until 2001, Area 3 was part of a 2,000-acre ranch owned by the Kammerer family. The Kammerer family used the ranch primarily for cattle grazing, but also enjoyed the ranch for wildlife-related uses, including fishing and hunting. Grazing activity on the ranch consisted of a relatively conservative grazing regime (G. Kammerer pers. comm.). In the six years prior to 2001, grazing activity on the ranch consisted of the following:

1995 – 59 cow/calf pairs
1996 – 73 cow/calf pairs, 4 yearlings, 4 bulls
1997 – 47 cow/calf pairs, 4 yearlings, 4 bulls
1998 – 45 cows, 39 calves, 3 bulls
1999 – 45 cows, 39 calves, 3 bulls
2000 – 45 cows

Because the Preserve was obtained by TNC, a grazing regime at or below 50 animal units (AUs) per year has been maintained on the Preserve as a whole (including Areas 1, 2, and 3 collectively) per the requirements of the Management Plan (Exhibit C) of the CE for Area 1 (TNC 2000). No fencing currently separates Area 3 from Areas 1 and 2 (Figure 5), and therefore livestock grazing is managed for all three areas as a single unit.

2.3 Existing Infrastructure

The existing infrastructure in Area 3 is shown on Figure 5. One main drivable dirt road, which represents the easternmost portion of a larger loop road that extends into Area 3 from Area 1, traverses the westernmost portion of Area 3. This road skirts the western boundary of Area 3 from its midpoint south until it turns west back into Area 1. The total length of the portion of this road that traverses Area 3 is 0.51 miles.

The drivable road in Area 3 crosses ephemeral and intermittent streams at five locations (SC 1–5, Figure 5). These stream crossings are not associated with any infrastructure, such as culverts; rather, they are ford crossings. The drainages are shallowly incised at each stream crossing. Water travels across the road as sheet flow, and when it is present, it is very shallow (a few inches deep at most) (Photo 1, Appendix B, Figure 6). However, a collapsed wooden retaining wall was observed at SC 4 during the field surveys. Previously, the wall functioned to stabilize the stream banks, and has since been damaged by high water flows and erosion (Photo 2, Appendix B, Figure 6). At the same location, a headcut and gully have formed on the downstream side of the road. At the time of the May–June 2015 surveys, SC 4 was impassable by vehicles and this prevented driving along the entirety of the road within Area 3 (Photo 3, Appendix B, Figure 6), although all portions of this loop road were accessible from adjacent Area 1. Only one additional erosional feature was noted at the stream crossings on Area 3: a small headcut beginning to form on the downstream side of SC 5 (Photo 4, Appendix B, Figure 6).

One abandoned road and one trail are also present within Area 3. The abandoned road has not been driven in the recent past, and the trail also consists of an abandoned road that has not been driven recently (but has been used for pedestrian access). The abandoned road runs in a northwest-southeast direction and provides access to the southeastern portion of Area 3, and the trail currently serves as a foot trail leading downslope to Arroyo Hondo.

There are various fences (e.g., 4- and 5-strand barbed wire fence and pig fence) present along portions of the boundaries of and within Area 3 (Figure 5). Barbed wire fencing is present along the northern boundary of Area 3, and pig fencing is present near the southern boundary of Area 3 between Area 3 and the BORR to the south. A small section of barbed wire fencing is present along the trail to Arroyo Hondo at the top of the Arroyo Hondo gorge to exclude cattle from potentially entering the steep gorge; otherwise, extremely steep topography (and in some areas, very dense vegetation) precludes cattle access to the Arroyo Hondo canyon. The western boundary of Area 3 is not separated from Area 1 by fencing, and no additional internal fencing bisects Area 3 (Figure 5). No gates were observed along the fences within or bordering Area 3. Portions of the northern and southern fence lines within Area 3 were mapped using aerial photography, and the condition of this fencing is unknown. However, all fencing seen on the site during the field survey was observed to be in good condition.

No ponds are present within Area 3, and no cattle troughs are present within this Area. However, a water trough is located immediately adjacent to Area 3 within Area 1, along the loop road which enters Area 3 near its middle. A second water trough is present approximately 950 feet west of the northern portion of Area 3 within Area 1, and a seasonal pond is present approximately 530 feet west of the southern portion of Area 3 within Area 1.

2.4 Existing Easements

Area 3 of the Preserve contains one existing right of way easement – the drivable road depicted on Figure 5. All the roads in Figure 5 have been subtracted from any mitigation credit calculation.

2.5 Adjacent Land Uses

Most properties in the general vicinity of Area 3 are undeveloped and have been used long-term for cattle grazing; however, not all properties in the vicinity continue to implement cattle grazing. Lands adjacent to Area 3 include a combination of public and private ownership for private ranching, parks, research, and mitigation purposes (Figure 1).

Several protected open space areas abut Area 3, including Area 1 of the Preserve, which is located immediately west of Area 3. In addition, the UC's BORR is located immediately to the south of Area 3, and the SCVWD's Upper Penitencia Creek Property, which is protected by a CE, is located west of the Preserve. The remaining properties to the north and east of Area 3 are owned by private landowners who use those lands for cattle ranching (Figure 1).

2.5.1 Blue Oak Ranch Reserve

The BORR, which is a part of the UC Natural Reserve System (NRS), abuts the southern boundary of Area 3 (Figure 1). The 3,260-acre BORR has been administered by the UC Regents and UC Berkeley as a teaching and research area because the BORR became a part of the NRS in 2007 (University of California at Berkeley [UCB] 2013). TNC holds a CE on the property and the County of Santa Clara has an open space agreement with the UC for the area as well (BORR 2013).

Habitats at the BORR are similar to those within Area 3 and include non-native and native grassland, oak woodland/savanna (e.g., blue oak, valley oak, black oak and coast live oak) and scrub. In addition, the BORR has extensive riparian habitat, a series of streams, and 17 ponds (UCB 2013).

Livestock grazing is no longer used as a management tool at BORR. Prescribed burning, conducted in collaboration with the California Department of Forestry and Fire Protection (CAL FIRE), is used instead, as necessary, to reduce thatch accumulation and protect against large, damaging fires; to control invasive plant species; and to enhance wildlife habitat (M. Hamilton pers. comm.).

2.5.2 Rancho Cañada de Pala Preserve Areas 1 and 2

Vegetation types within Areas 1 and 2 of the Preserve are similar to those within Area 3 and include large tracts of oak forests and woodland, valley oak savanna, and California annual grassland, and small patches of chaparral habitat. Dominant tree, shrub, and herbaceous species are similar across the entire Preserve, although portions of Areas 1 and 2 to the west of Poverty Ridge (i.e., within Area 2 and approximately half of Area 1) lack foothill pine (*Pinus sabiniana*), which is a major component of the tree canopy to the east of the ridgeline. Ephemeral and intermittent streams in Areas 1 and 2 are similar to those in Area 3, and lack much distinctive riparian tree development. Streams to the west of Poverty Ridge drain into Upper Penitencia Creek, and streams to the east (i.e., within Area 3 and approximately half of Area 1) drain into Arroyo Hondo, the only perennial stream on the Preserve. Because of the

steep gradient and rocky slopes leading down to Arroyo Hondo as well as the dense woody vegetation within much of Area 3, livestock more heavily utilize Areas 1 and 2. As a result, both human- and livestock-related activities are greater, and occurrences of nonnative invasive plant species are more frequent, on Areas 1 and 2 of the Preserve. In addition, water features utilized by cattle are more abundant on Areas 1 and 2, some of which have been artificially created to support ranching activities. Eight cattle troughs and 10 seasonal and perennial ponds are present within Areas 1 and 2. Wetlands are often associated with these ponds, and further, some seeps and springs occur on Areas 1 and 2 of the Preserve.

TNC has implemented a managed grazing program within all areas of the Preserve since 2001. With the exception of livestock grazing, TNC has not implemented other measures (e.g., use of herbicides) to manage invasive vegetation or weed infestations (S. Gennet pers. comm.).

2.5.3 Upper Penitencia Creek Property

From 1976 until December 2012, the 222-acre Upper Penitencia Creek Property was part of the larger 2,000-acre ranch owned by the Kammerer family. In December 2012, the OSA purchased this 222-acre area surrounding the upper end of Cherry Flat Reservoir with the intention of partnering with the SCVWD. Ownership was transferred to the SCVWD in December 2014 for the purpose of providing mitigation in perpetuity for impacts associated with the SCVWD's 2002 Multi-Year SMP under the S&WPP. The SCVWD retains ownership of the Upper Penitencia Creek Property, with a perpetual CE held by OSA on an approximately 201-acre portion of the property.

Similar to the Preserve, the Upper Penitencia Creek Property was historically used for cattle grazing. From the mid-1970s (or earlier) until December 2012, no formal grazing regime was implemented on the property, and it was lightly grazed using a seasonal grazing strategy. One perennial pond, three seasonal ponds, and one developed spring are present on the Upper Penitencia Creek Property. The property is currently managed by OSA per the 2014 LTMP and CE (SCVWD 2014). Cattle grazing Areas 1 and 2 of the Preserve also graze the eastern side of the Upper Penitencia Creek Property, which is not separated from the Preserve by fencing.

2.5.4 Other Surrounding Lands

Area 3 of the Preserve is bordered by private ranch lands to the north and east (Figure 1). In the larger surrounding area, the Preserve is surrounded by private ranch lands and a growing, increasingly contiguous swath of open space and conservation lands in the Mt. Hamilton region that currently includes San Francisco Public Utilities Commission lands to the north, OSA lands to the west, and Joseph D. Grant County Park to the south (Figure 1). These conservation lands include the OSA's Moore Property located downstream of Cherry Flat Reservoir, purchased in part for the S&WPP, and with a CE held by the SCVWD.

3.0 HABITAT AND SPECIES DESCRIPTIONS

3.1 Vegetation Types

The majority of Area 3 is characterized by steep hillsides dominated by oak forest and woodland and interspersed with more open grassland, chaparral, and savanna. The hillslopes are bisected by 17 ephemeral and intermittent streams that flow into Arroyo Hondo (Figure 3). In addition, riparian forest occurs within the deep gorge of Arroyo Hondo that runs along the

eastern border of Area 3. The vegetation types within Area 3 are provided in Table 1 and depicted on Figure 7.

Table 1. Vegetation Types

Vegetation Type	Overall Acreages (acre)
Mixed Riparian Forest	6.0
Mixed Oak Forest	114.9
Foothill Pine/Oak Woodland	140.3
Valley Oak Savanna	26.2
California Annual Grassland	9.8
Northern Mixed/Chamise Chaparral	22.8
Total acreage	320.0

The vegetation map (Figure 7) and vegetation type descriptions below are based on surveys conducted by H. T. Harvey & Associates in May and June 2015. In addition to field observations, vegetation signatures visible on aerial photographs (Google Inc. 2015) and information from the Santa Clara Valley Habitat Plan (VHP; ICF International 2012) were used to assist in the creation of the vegetation map and vegetation type descriptions for Area 3. The *Jepson Manual, second edition* (Baldwin et al. 2012) was the principal taxonomic reference used for the botanical work. The vegetation type descriptions that follow also indicate the corresponding habitat classifications designated by the VHP (ICF International 2012), Holland (1986), and the California Wildlife Habitat Relationships System (CWHR) (California Department of Fish and Game [CDFG] 1988), where appropriate. Holland's (1986) habitat classifications were developed as a "coarse filter" to capture the majority of the state of California's biota for the purpose of including natural communities in the California Natural Diversity Database (CNDDB), and it is patterned after TNC's Natural Heritage Program methodology. The CWHR System is a wildlife information system and predictive model for the state's common amphibian, reptile, bird, and mammal species (CDFG 1988).

3.1.1 Mixed Riparian Forest

Mixed riparian forest only occurs in a narrow corridor along Arroyo Hondo, and is bound by steep, rocky slopes directly to the east and west (Photo 5, Appendix B). The overstory of this vegetation type is dominated by small trees and shrubs that are rooted along the edges of the low-flow channel and atop cobble bars, such as white alder (*Alnus rhombifolia*) (Photo 6, Appendix B) and various species of willow, primarily dusky willow (*Salix melanopsis*) and sandbar willow (*Salix exigua*). The understory of riparian forest is sparsely vegetated, as large boulders, exposed bedrock, deep pools, and quickly flowing water preclude plant growth in many areas (Photo 7, Appendix B). Naked sedge (*Carex nudata*) almost exclusively dominates the herbaceous plant community, where its cespitose habit creates large hummocks that rise above the water and can provide a suitable substrate for plants and wildlife that offers protection from floods and herbivory.

Mixed riparian forest is sustained by water from the associated riverine system, which holds water year-round. Woody debris is common throughout this area, providing good habitat and shelter for fish, amphibians, and aquatic invertebrates. As a result of the surrounding terrain, very dense vegetation (chaparral) in some areas, and the small section of barbed wire fence along the only trail that leads to Arroyo Hondo, livestock cannot access the riparian corridor of

Arroyo Hondo, and thus, the area has been left relatively undisturbed and generally lacks non-native vegetation.

The mixed riparian forest vegetation type most closely resembles the mixed riparian forest and woodland habitat type described in the VHP (ICF International 2012), the Central Coast arroyo willow riparian forest/mixed willow series described by Holland (1986), and CWHR montane riparian forest habitat classification (CDFG 1988).

3.1.2 Mixed Oak Forest

Stands of mixed oak forest generally occur along ephemeral and intermittent drainages on the east-facing slopes of Area 3 (Figure 7; Photos 8-9, Appendix B, Figure 6). This vegetation type is distinct from other oak woodland vegetation types in that it has a relatively closed canopy, and the vegetation signature on aerial photographs shows a variety of colors and textures indicative of co-dominant broad-leaved evergreen and deciduous tree species (Google Inc. 2015). The canopy is composed of a variety of evergreen trees, such as interior live oak (*Quercus wislizenii*), coast live oak (*Quercus agrifolia*), and California bay (*Umbellularia californica*), as well deciduous trees including blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), and black oak (*Quercus kellogii*). The relative abundance of the dominant species varies according to ecological gradients. For example, coast live oak and California bay are the most shade tolerant; they thrive in mesic conditions and occur toward the interior of stands of mixed oak forest. In contrast, blue oak and valley oak are the least shade tolerant and tend to grow in more open woodland settings on the outer edges of this vegetation type. Blue oak is more tolerant of dry and rocky sites, whereas valley oak requires fertile soils that are common in bottomlands or the lower foothills of the Diablo Range. Interior live oak and black oak are intermediate with regard to shade and moisture tolerance (UC 2015).

The understory cover and composition of shrubs and herbaceous vegetation within Area 3 are variable, with greater cover in areas of less dense overstory. Dominant shrub species include poison oak (*Toxicodendron diversilobum*), various species of snowberry (*Symphoricarpos mollis* and *S. albus* var. *laevigatus*), California coffeeberry (*Rhamnus californica*), and toyon (*Heteromeles arbutifolia*). Common forbs amidst a thick layer of leaf litter include yerba buena (*Clinopodium douglasii*), Pacific sanicle (*Sanicula crassicaulis*), and spreading hedgeparsley (*Torilis arvensis*). Vines are also widespread throughout mixed oak forest on Area 3, including trailing blackberry (*Rubus ursinus*), pink honeysuckle (*Lonicera hispidula*) and western white clematis (*Clematis ligusticifolia*).

The mixed oak forest vegetation type most closely resembles the mixed oak woodland and forest habitat described in the VHP (ICF International 2012), the coastal oak woodland habitat type designated by the CWHR (CDFG 1988), and the coast live oak woodland of Holland (1986).

Because of the topographic position of this vegetation type, which is situated on very steep slopes, features such as rock outcroppings, talus, and unstable mélange intersect patches of the forests mapped within Area 3. Notably, inaccessible rocky areas are present on the east-facing slopes towering above Arroyo Hondo; these areas were also observed within all of the terrestrial habitats described below in Sections 3.1.3 through 3.1.6. Rocky areas support a few shrub species, such as sticky monkeyflower (*Mimulus aurantiacus*), California sage (*Artemisia californica*), and poison oak, as well as forbs such broadleaf stonecrop (*Sedum spathulifolium*), canyon live-forever (*Dudleya cymosa* ssp. *paniculata*), and goldblack fern (*Pentagramma triangularis* ssp. *triangularis*).

3.1.3 Foothill Pine/Oak Woodland

Foothill pine/oak woodland can be distinguished from mixed oak forest by its density and species composition (Figure 7; Photo 10, Appendix B, Figure 6). The tree canopy of this vegetation type is less dense than that of mixed oak forest, and it is dominated by foothill pine, valley oak, and blue oak. Although black oak, interior live oak, and California buckeye (*Aesculus californica*) are not the dominant tree species of this vegetation type, they are quite common throughout. The shrub layer in the understory is also sparse in comparison to the mixed oak forest habitat type, and includes poison oak, California coffeeberry, various species of snowberry, and coyotebrush (*Baccharis pilularis* ssp. *consanguinea*).

Beneath a dense tree canopy and shrub layer, the ground is largely covered by pine needles and oak leaf litter. The composition of vegetation in the herbaceous layer under canopy openings is almost identical to that of the California annual grassland vegetation type described below under Section 3.1.6. Grassy areas are dominated by a suite of non-natives that are common across much of Area 3, such wild oats (*Avena fatua* and *A. barbata*), annual dogtail (*Cynosurus echinatus*), rattail sixweeks grass (*Festuca microstachys*), soft chess (*Bromus hordeaceus*), and Spanish brome (*Bromus madritensis* ssp. *rubens*). Small patches dominated by native grasses are also present in the foothill pine/oak woodland vegetation type, and are composed of wildrye (*Elymus glaucus* and *E. triticoides*), various species of melicgrass (*Melica imperfecta*, *M. torreyana*, and *M. californica*), one-sided bluegrass (*Poa secunda* ssp. *secunda*), purple needlegrass (*Stipa pulchra*), and foothill needlegrass (*Stipa lepida*).

The composition of forbs in the understory will shift throughout the growing season, and at the time of the field surveys, common and identifiable species included spreading hedgeparsley, common Pacific pea (*Lathyrus vestitus* var. *vestitus*), Ithuriel's spear (*Triteleia laxa*), yellow mariposa (*Calochortus luteus*), and gumweed madia (*Madia gracilis*). Serpentine inclusions of the Henneke soil series likely occur within this vegetation type, as foothill pine is tolerant of serpentine edaphic conditions, and several of the common native bunchgrasses observed in Area 3 are serpentine-adapted, including one-sided bluegrass, foothill needlegrass, and purple needlegrass (Holland 1986 and Safford et al. 2005).

Both the VHP and CWHR include a foothill pine/oak woodland habitat (ICF International 2012 and CDFG 1988). Holland (1986) habitat types also include a "digger pine"/oak woodland/blue oak series classification.

3.1.4 Valley Oak Savanna

Valley oak savanna occurs on the south-facing slopes of Area 3, and is characterized by widely scattered trees and a grassy understory (Figure 7; Photo 11, Appendix B). Tree cover is typically 25 percent or less, and is dominated by valley oak, although blue oaks also occur in this vegetation type. Valley oak savanna intergrades with foothill pine/oak woodland, northern mixed/chamise chaparral, and California annual grassland within Area 3. Shrubs are generally lacking in the understory. The herbaceous layer is similar to that of the clearings in foothill pine/oak woodland (Section 3.1.3) and California annual grassland (Section 3.1.6) habitat types.

This vegetation type is classified as valley oak woodland in the VHP (ICF International 2012), Holland (1986), and in the CWHR habitat classification scheme (CDFG 1988). Furthermore, it is considered a sensitive natural community the CDFW and is listed in the CNDDB (2015).

3.1.5 Northern Mixed/Chamise Chaparral

Chaparral is present on dry south and west-facing slopes and on rocky, well-drained soils (Figure 4; Photo 12, Appendix B, Figure 6). As such, the rock outcroppings described above under Section 3.1.2 are especially common within or adjacent to this vegetation type (Photo 13, Appendix B, Figure 6). Northern mixed/chamise chaparral was mapped in a number of relatively small, discrete stands, but also intergrades with the understory of foothill pine/oak woodland and with California annual grassland in some areas. Very few trees are present in this vegetation type; the shrub layer is a dense thicket of chamise (*Adenostema fasciculatum* var. *fasciculatum*), and the herbaceous layer is dominated by deerweed (*Acmispon glaber* var. *glaber*). In addition, substantial cover of various buckwheat species, including slender woolly buckwheat (*Eriogonum gracile*), and coyote mint (*Monardella villosa* ssp. *villosa*) was observed in the herbaceous layer at the time of the field surveys. Grass species observed in the woodland, savanna, and grassland vegetation types on Area 3 (see Section 3.1.3 above for a detailed description) are also common along the edges of chaparral and in areas lacking shrubs.

The VHP (ICF International 2012) and Holland (1986) also include a northern mixed/chamise chaparral habitat classification that matches the vegetation type description for Area 3, and it most closely resembles the chamise/redshank chaparral habitat classification under the CWHR, which includes impenetrable stands composed entirely of chamise (CDFG 1988).

3.1.6 California Annual Grassland

Only one large contiguous patch of annual grassland occurs within Area 3, on a steep southern-facing slope; however, annual grassland is also a significant component in the understory clearings of foothill pine/oak woodland, valley oak savanna, and northern mixed/chamise chaparral (Figure 7; Photo 14, Appendix B). California annual grassland lacks both trees and shrubs. It is dominated by a suite of non-native grasses including wild oats, rattail sixweeks grass, annual dogtail grass, soft chess, and Spanish brome. As previously mentioned (see Section 3.1.3 above), patches dominated by native grasses, some of which are serpentine-adapted species (such as one-sided bluegrass, purple needlegrass, and foothill needlegrass), are also interspersed within this vegetation type. Many of the forbs in this vegetation type had senesced by the time of the May and June 2015 field surveys; however, small areas of grassland were dominated by California cudweed (*Pseudognaphalium californicum*). In addition, smooth cat's ear (*Hypochaeris glabra*), Ithuriel's spear, yellow mariposa, and gumweed madia were common throughout. Rock outcroppings, talus, and unstable mélange also occur within the large patch of California annual grassland on Area 3.

Overall, grasslands in Area 3 are typical of lightly disturbed grasslands in the region and are similar to the California annual grassland habitat described by the VHP (ICF International 2012), the non-native grassland type described by Holland (1986), and the annual grassland designation in the CWHR habitat classification scheme (CDFG 1988). However, small areas within grasslands on Area 3 are dominated by serpentine-adapted native grasses, such as one-sided bluegrass, purple needlegrass, and foothill needlegrass. These areas would correspond to serpentine bunchgrass grassland habitat described by both the VHP (ICF International 2012) and Holland (1986).

3.2 Stream Corridor Characteristics

3.2.1 Vegetation

Vegetation along streams within Area 3 is described along with the terrestrial habitats described above under Section 3.1. The only perennial stream within Area 3, Arroyo Hondo, runs along the eastern boundary of Area 3 and supports mixed riparian forest, a unique vegetation type that does not occur elsewhere in Area 3 or on the Preserve as a whole (Figure 7, see Section 3.1.1). Ephemeral and intermittent stream networks intersect all of the terrestrial habitats in Area 3, but primarily flow through dense mixed oak forest (Figure 7; see Section 3.1.2). Although stream reaches that traverse stands of chaparral or grassland may support herbaceous species within their channels, the majority of vegetation observed in drainages during the field surveys were native woody species.

3.2.2 Physical Characteristics

Eighteen stream networks consisting of one perennial drainage and 17 ephemeral and intermittent drainages are spread across Area 3, totaling approximately 6.6 miles in stream length (Figure 3). Eleven of these drainages, totaling approximately 2.7 miles, are second-order or higher stream systems. The remaining 3.9 miles are first-order streams. All ephemeral and intermittent stream networks are seasonally wet or convey flows during and immediately following large storm events, but all are usually dry by summer. Representative reaches of these ephemeral and intermittent streams are depicted in Photos 1, 2, and 4 (Appendix B, Figure 6). In contrast, Arroyo Hondo is a perennial stream that conveys flows year-round. The low-flow channel of this stream supported deep pools of water during the May–June 2015 field surveys, which took place at the beginning of the dry season following a below-average year of rainfall (75 percent of normal precipitation) (PRISM 2015). Representative locations along Arroyo Hondo are depicted in Photos 5, 7, and 15–17 (Appendix B).

Ephemeral and intermittent streams within Area 3 generally originate from the top of Poverty Ridge to the west, or mid-slope on the eastern-facing hillsides below the ridgeline. Each stream then flows down the east-facing slopes of Area 3 via creases in the rolling hills, eventually draining to Arroyo Hondo in the steep ravine below. Surface water from precipitation primarily feeds the ephemeral and intermittent streams; however, natural seeps or springs occur at the headwaters (on adjacent portions of Area 1) of some drainages where the groundwater table approaches or tops the soil surface. First-order streams are the smallest on Area 3; these streambeds have a soil substrate with little rock or cobble that may support upland, annual herbaceous vegetation, and most only carry water during and just after storms. Second-order or greater streams are fed by networks of first-order tributaries and are typically higher gradient, steep-sided, and incised. Their beds and banks consist of a mosaic of cobbles and boulders. Exposed roots and woody debris are variously distributed within second-order streams.

The majority of the ephemeral and intermittent streams within Area 3 appear laterally stable. The single drivable road in Area 3 crosses these drainages at five locations (SC 1–SC 5, Figure 5), and these stream crossings are all ford crossings that lack infrastructure, with the exception of one collapsed wooden retaining wall at SC 4 (Photo 2, Appendix B, Figure 6). Previously, the wall functioned to stabilize the stream banks, and has since been damaged by high water flows and erosion. At the same location, a headcut and gully have formed on the downstream side of the road. One headcut was also noted on the downstream side of SC 5 (Photo 4, Appendix B, Figure 6), but the remainder of the stream crossings did not exhibit any significant erosional damage (Photo 1, Appendix B, Figure 6). Limited areas of path formation caused by use by

cattle and wildlife are present on the stream banks and bed, in addition to some evidence of grazed and/or browsed vegetation by cattle and deer were observed during the field surveys.

Arroyo Hondo, a perennial stream, receives surface flows from the ephemeral and intermittent drainages on Area 3. In addition, it drains a large portion of the watershed on the slopes of Mt. Hamilton. It is one of the principal tributaries that supply water to Calaveras Reservoir; the mainstem of the drainage originates at the confluence of Isabel Creek and Smith Creek at the northern tip of Joseph D. Grant County Park to the southeast, and then flows northward through a deep gorge. The substrate of the stream is largely composed of boulders and exposed bedrock that help to shape the step-pool and cascade morphology of the stream. As such, waterfalls and pools that retain water at a significant depth year-round are present in this drainage. Cobble bars and areas of sediment deposition likely shift annually as they are transported by high flows during the wet season and flood events. Mixed riparian forest (see Section 3.1.1 above) is sustained by the year-round water supply, and native woody species and hydrophytes are scattered along the edge of the low-flow channel and on cobble bars where adequate amounts of soil have been deposited for plant growth. Steep ravines on either side of Arroyo Hondo prevent the channel from meandering, and wet season water depths generally range from 9 to15 feet, with flows from 2,030 to 7,340 cubic feet per second (Stream Gauge # 11173200, USGS 2015). Woody debris is common throughout this area, providing good habitat and shelter for fish, amphibians, and aquatic invertebrates. As a result of the surrounding terrain and fencing across the only trail that leads to the top of the canyon, cattle cannot access Arroyo Hondo or its riparian corridor, and thus, the area has been left relatively undisturbed and generally lacks non-native vegetation. Moreover, little to no evidence of anthropogenic disturbance was observed in and around Arroyo Hondo during the field surveys.

The *San Francisco Bay Basin (Region 2) Water Quality Control Plan* identifies the following beneficial uses within Arroyo Hondo: cold freshwater habitat, preservation of rare and endangered species, fish spawning habitat, and wildlife habitat (California Regional Water Quality Control Board 2015). The stream habitat in Arroyo Hondo in Area 3 supports resident rainbow trout (*Oncorhynchus mykiss*) (Leidy et al. 2005, Smith 2013) that use these habitats, but does not support anadromous salmonids or other rare and endangered fish species (see Section 3.3 below).

3.3 Sensitive Species

There are several sensitive species known or expected to utilize Area 3, including the CTS, a state and federally threatened species; the CRLF, a federally threatened species and a state species of special concern; and the FYLF, WPT, and American badger, which are California species of special concern.

The federally threatened Central California Coast steelhead occurred historically in Arroyo Hondo, Isabel Creek, and Smith Creek (Leidy et al. 2005). However, Calaveras Dam, which was constructed in 1913, is an impenetrable barrier to the upstream migration of anadromous fish to streams above the dam, including Arroyo Hondo, Isabel Creek, and Smith Creek. As a result, anadromous fish such as steelhead no longer occur upstream of the dam, and are absent from Area 3 (Leidy et al. 2005, Smith 2013). Critical habitat for steelhead is not designated within any streams above Calaveras Reservoir (NMFS 2005).

3.3.1 California Tiger Salamander (CTS)

The CTS, which is state and federally listed as threatened, was observed (eggs and larvae) in ponds in adjacent Areas 1 and 2 in January 2015 (L. Serpa pers. comm.). This species is known to occur in the surrounding region (CNDDB 2015), and most of Area 3 includes U.S. Fish and Wildlife Service (USFWS) designated critical habitat for this species (Unit 5, Poverty Ridge Unit; Figure 8). However, no ponds are present within Area 3, and there are no known records of CTS within Area 3. The streams within Area 3, including Arroyo Hondo, do not provide suitable breeding habitat for CTS; ephemeral and intermittent streams do not provide water long enough for larval development, and flow in all streams on the Preserve is flashy enough that eggs or larvae would be washed away if eggs were laid in the streams.

Several known occurrences of CTS are located within 1.3 miles (the maximum known dispersal capabilities of this species) of Area 3. CTS have been recorded in ponds in Areas 1 and 2 of the Preserve as recently as January 2015 (L. Serpa pers. comm.), including a pond in Area 1 as close as 530 ft west of Area 3. In January 2015, visual surveys around the edges of ponds in Areas 1 and 2 detected both eggs and larvae (L. Serpa pers. comm.). CTS are also known to occur on the adjacent BORR (CNDDB 2015, M. Hamilton pers. comm.). Based on the May–June site surveys and a review of aerial topography, no major barriers or substantial impediments to dispersal occur between these ponds and Area 3. Thus, CTS have the potential to disperse between these nearby ponds and Area 3.

CTS depend on burrows of California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gophers (*Thomomys bottae*) to provide moist subterranean refugia during the non-breeding (dry) season as well as during overland movements to and from breeding areas during the wet season. The uplands within Area 3 consist of woodland habitats interspersed with grasslands. Burrows of California ground squirrels and Botta's pocket gophers were observed in low abundance within Area 3 during the May–June 2015 site visits, likely because of the high-density wooded vegetation present in Area 3 and the extremely steep slopes. However, numerous burrows of these species are present in the immediately adjacent Area 1, which is characterized by more open habitats.

Some CTS likely disperse onto Area 3 from breeding habitats on adjacent lands, as no barriers to dispersal are present between nearby occurrences and Area 3.

3.3.2 California Red-legged Frog (CRLF)

The CRLF, a federally threatened species and a state species of special concern, is known to occur in the surrounding region (CNDDB 2015), although no CRLF have been documented within Area 3 or the larger Preserve (S. Gennet pers. comm.). Area 3 does not overlap USFWS-designated critical habitat for this species, but critical habitat for CRLF is present within Areas 1 and 2 to the west (Unit STC-1; Figure 8).

CRLF have been documented in a number of locations within dispersal distance[1] of Area 3 (Figure 8). CRLF are known to occur in at least one pond at the BORR property immediately

[1] The USFWS considers one mile to be typical of the CRLF's dispersal capabilities (USFWS 2005), although CRLF have been recorded dispersing more than 2 miles between aquatic habitats (Bulger et al. 2003).

south of Area 3 (M. Hamilton pers. comm.). Based on review of aerial topography, no major barriers or substantial impediments to dispersal occur between Area 3 and known CRLF occurrences or other potential breeding ponds in the vicinity of the Preserve. Thus, if CRLF are present in the vicinity of Area 3, they could disperse to Area 3 from adjacent areas.

No ponds are present within Area 3 to provide suitable breeding habitat for CRLF. Arroyo Hondo provides at least marginal-quality breeding habitat, as this species could attempt breeding in pools, but flashy flows during rain events may disrupt egg masses and wash them downstream. Arroyo Hondo does provide high-quality non-breeding aquatic foraging and dispersal habitat, as its perennial nature in an otherwise relatively dry landscape would be attractive to CRLF. The ephemeral and intermittent streams within Area 3 provide potentially non-breeding foraging and dispersal habitat and aquatic refugia for CRLF when they contain water. Although dense vegetative cover is absent from most of these stream reaches, rock crevices and debris provide suitable refugia for CRLF. During the wet season, when most CRLF dispersal occurs, these streams would facilitate dispersal of CRLF across the landscape. In addition, upland habitat surrounding streams and ponds within Area 3 includes some cracks and small mammal burrows which could be used by CRLF for upland refugia. As described above for CTS, only small numbers of small mammal burrows are present within Area 3. Nevertheless, cracks and woody debris provide sufficient refugia for dispersing CRLF within Area 3.

Based on the known occurrences of CRLF near Area 3, and the lack of barriers to dispersal between these occurrences/ponds and Area 3 streams, it is likely that CRLF occur within Area 3.

3.3.4 Foothill Yellow-legged Frog (FYLF)

The FYLF, a state species of special concern, is known to occur in Arroyo Hondo at the southeast corner of Area 3 and within the BORR to the south (CNDDB 2015, Figure 8) and has been observed by TNC staff along the entire section of Arroyo Hondo within Area 3 (L. Serpa pers. comm.).

The section of Arroyo Hondo within Area 3 provides high-quality habitat for FYLF, as this fast-moving perennial stream contains many pools and areas of riffles and runs of varying depth suitable for breeding and foraging FYLF. The ephemeral and intermittent streams within Area 3 provide potential nonbreeding habitat for FYLF when they contain water. No pools were observed along these streams during the May–June 2015 site visit; however, if pools were present along these streams, which may occur in wet years and/or during the wet season, they would provide suitable dispersal and foraging habitat for FYLF. FYLF are known to travel up ephemeral and intermittent streams when there is abundant water, and they may use small, isolated pools for foraging and predator avoidance. Thus, FYLF may occur along these streams to some extent when water is present, although they are expected to occur in Area 3 primarily along Arroyo Hondo.

3.3.5 Western Pond Turtle (WPT)

The WPT, a state species of special concern, is known to occur in lower reaches of Arroyo Hondo far downstream from the site, and a record from Isabel Creek is present approximately 4.1 miles to the southeast upstream of Area 3 in Isabel Creek (CNDDB 2015). Based on a review of aerial topography, WPT in Arroyo Hondo or Isabel Creek, which is tributary to Arroyo Hondo, could disperse along these streams to Area 3. This species has been observed along the entire reach of Arroyo Hondo within Area 3 by TNC staff (L. Serpa pers. comm.).

The section of Arroyo Hondo within Area 3 provides high-quality habitat for WPT, as this perennial stream contains many pools of varying depth suitable for foraging and rocks suitable for basking. Potentially suitable nesting habitat for WPT occurs along the banks of Arroyo Hondo within Area 3, but due to the steep, rocky terrain on the site, if WPT nest on the site they likely do so very close to Arroyo Hondo. Similarly, WPT are unlikely to disperse along the ephemeral and intermittent streams within Area 3 due to the extremely steep terrain. Nevertheless, these streams and the upland portions of Area 3 provide potential dispersal habitat for WPT when they contain water, and if pools were present along these streams in wet years they would provide limited foraging habitat for this species. Thus, WPT may occur in upland portions of Area 3 and along ephemeral and intermittent drainages when dispersing or nesting, but are primarily expected to occur along or near Arroyo Hondo.

3.3.6 American Badger

The American badger, a state species of special concern, has been observed in Area 2 of the Preserve by TNC staff (L. Serpa pers. comm.). Suitable denning and foraging habitat for badgers is present in open habitats within Area 3, although higher-quality habitat for badgers occurs to the west in Areas 1 and 2, where more expansive open grasslands and higher concentrations of California ground squirrels (one of the principal prey of the badger) are present. Badgers denning in the vicinity could potentially occur within Area 3 year-round.

3.3.7 Other Sensitive Species

Twelve special-status plant species have the potential to occur in Area 3 for the following reasons: (1) suitable habitat for the species is present, (2) specific edaphic requirements, possibly including serpentine soils, are present, (3) the species is known to occur within the vicinity of Area 3 (defined as a 5-mile radius surrounding the Preserve), and (4) Area 3 is within the known elevation range of the species. Potentially occurring special-status plant species and their corresponding federal and state listing and the California Native Plant Society rank (CRPR) are presented in Table 2.

Historically, arcuate bush mallow (*Malacothamnus arcuatus*) and fragrant fritillary (*Fritillaria liliacea*) have been recorded approximately 3–4 miles west of Area 3 near Alum Rock Park and Upper Penitencia Creek (CNDDB 2015). Other historical records of special-status plant species in the vicinity of Area 3 include Mount Day rockcress (*Boechera rubicundula*), known from only one population on Oak Ridge near the summit of Mount Day, directly east of Arroyo Hondo (CNDDB 2015). In addition, hospital canyon larkspur (*Delphinium californicum* ssp. *interius*) was historically recorded along Kincaid Road near Mount Hamilton, to the southeast of Area 3. The current status of these historical populations is not known, as the majority of the steep hillsides and ravines of Mount Hamilton and the surrounding mountains are privately owned, and thus survey effort on these lands has been low. There is some potential for arcuate bush mallow and Mount Day rockcress to be present on rocky slopes or chaparral vegetation types on Area 3, whereas fragrant fritillary may occur in open grassy areas, seeps, or on serpentine inclusions, as it is a weak indicator of serpentine soils. Hospital canyon larkspur may occur in open woodland vegetation types, such as foothill pine/oak woodland and/or valley oak savanna.

Extant populations of several special-status plant species have been recorded in the vicinity of Area 3 more recently (i.e., within the past two decades) (CNDDB 2015). Santa Clara red ribbons (*Clarkia concinna* ssp. *automixa*) has been observed on the Preserve by TNC staff (L. Serpa pers. comm.). Santa Cruz mountain pussy paws (*Calyptridium parryi* var. *hesseae*) is known

from fewer than 20 occurrences across the state of California, and an extant population occurs near Black Mountain to the northeast of Area 3. Several extant populations of most-beautiful jewelflower (*Streptanthus albidus* ssp. *peramoenus*) have also been observed to the north of Area 3 in the Arroyo Hondo canyon. Along Kincaid Road to the southeast of Area 3, near the Lick Observatory and Mount Hamilton, showy madia (*Madia radiata*), bent-flowered fiddleneck (*Amsinckia lunaris*), chaparral harebell (*Campanula exigua*), and Santa Clara red ribbons have all been recently documented (CNDDB 2015). Chaparral harebell has been recently observed at several other locations in the vicinity of Area 3; on Furtado Open Space Preserve near Alum Rock Falls Road to the west, in the vicinity of Mount Day and Oak Ridge, and on the BORR (CNDDB 2015, Bainbridge 2008). Other special-status plants found on the BORR include Santa Clara red ribbons, Santa Clara thorn mint (*Acanthomintha lanceolata*), and serpentine leptosiphon (*Leptosiphon ambiguus*) (Bainbridge 2008).

Showy madia has the potential to occur on clayey soils or shale in open grassy areas on Area 3; it is often (but not always) found on serpentine soils (Baldwin et al. 2012). Santa Cruz mountain pussy paws may be present on gravelly soils in woodland and chaparral vegetation types across Area 3, such as such as foothill pine/oak woodland, valley oak savanna, and northern mixed/chamise chaparral. Santa Clara red ribbons could potentially occur in wooded or forested areas of the property. Chaparral harebell, most-beautiful jewelflower, and Santa Clara thorn mint are all strong indicator species of serpentine soils, and may be present on chaparral vegetation types, open grassy areas, or on rock/talus slopes across Area 3. Serpentine leptosiphon is a strict serpentine endemic, and would only be expected to occur on the Henneke soil inclusions within grassy areas on the property.

In addition to the species mentioned above, a number of special-status wildlife species could potentially occur within Area 3, based on the presence of suitable habitat and/or documented occurrences nearby. Table 2 provides a comprehensive list of all special-status plant and wildlife species that may occur within Area 3. Species that have been observed within Area 3 are indicated in bold type.

Table 2. Known and Potential Sensitive Species [1]

Common Name	Scientific Name	Federal Status[2]	State Status[2]	Other Status[2]
AMPHIBIANS				
California tiger salamander	*Ambystoma californiense*	Threatened	Threatened	
California red-legged frog	*Rana draytonii*	Threatened	SCC	
Foothill yellow-legged frog	***Rana boylii***	**None**	**SCC**	
REPTILES				
Western pond turtle	***Emys marmorata***	**None**	**SSC**	
BIRDS				
Cooper's hawk	***Accipiter cooperii***	**None**	**WL**	**IUCN:LC**
Sharp-shinned hawk	*Accipiter striatus*	None	WL	
Golden eagle	***Aquila chrysaetos***	**BCC**	**FP**	**IUCN:LC**
Ferruginous hawk	*Buteo regalis*	BCC	WL	IUCN:LC
Northern harrier	*Circus cyaneus*	None	SSC	IUCN:LC

Common Name	**Scientific Name**	**Federal Status[2]**	**State Status[2]**	**Other Status[2]**
White-tailed kite	*Elanus leucurus*	None	FP	IUCN:LC
Bald eagle	*Haliaeetus leucocephalus*	BCC	Endangered, FP	IUCN:LC
Osprey	*Pandion haliaetus*	None	WL	IUCN:LC
Merlin	*Falco columbarius*	None	WL	IUCN:LC
Prairie falcon	*Falco mexicanus*		WL	IUCN:LC
American peregrine falcon	*Falco peregrinus anatum*	BCC	FP	
Vaux's swift	*Chaetura vauxi*	None	SSC	IUCN:LC
Nuttall's woodpecker	***Picioides nuttallii***	**BCC**	**None**	**IUCN:LC**
American dipper	***Cinclus mexicanus***	**None**	**None**	**IUCN: LC**
Loggerhead shrike	*Lanius ludovicianus*	BCC	SSC	IUCN:LC
Yellow-billed magpie	***Pica nuttalli***	**BCC**	**None**	**IUCN:LC**
Oak titmouse	***Baeolophus inornatus***	**BCC**	**None**	**IUCN:LC**
MAMMALS				
Pallid bat	*Antrozous pallidus*	None	SSC	IUCN:LC
Yuma myotis	*Myotis yumanensis*	None	None	IUCN:LC
American badger	*Taxidea taxus*	None	SSC	IUCN:LC
Ringtail	*Bassariscus astutus*	None	FP	IUCN: LC
PLANTS				
Arcuate bush mallow	*Malacothamnus arcuatus*	None	None	CRPR 1B.2
Bent-flowered fiddleneck	*Amsinckia lunaris*	None	None	CRPR 1B.2
Chaparral harebell	*Campanula exigua*	None	None	CRPR 1B.2
Fragrant fritillary	*Fritillaria liliacea*	None	None	CRPR 1B.2
Hospital canyon larkspur	*Delphinium californicum* ssp. *interius*	None	None	CRPR 1B.2
Most-beautiful jewelflower	*Streptanthus albidus* ssp. *peramoenus*	None	None	CRPR 1B.2
Mount Day rockcress	*Boechera rubicundula*	None	None	CRPR 1B.1
Santa Clara red ribbons	*Clarkia concinna* ssp. *automixa*	None	None	CRPR 4.3
Santa Clara thorn mint	*Acanthomintha lanceolata*	None	None	CRPR 4.2
Santa Cruz mountain pussy paws	*Calyptridium parryi* var. *hesseae*	None	None	CRPR 1B.1
Serpentine leptosiphon	*Leptosiphon ambiguus*	None	None	CRPR 4.2
Showy madia	*Madia radiata*	None	None	CRPR 1B.1

[1] Bold indicates species observed within Area 3
[2] Status codes –
BCC = USFWS Birds of Conservation Concern;

SSC = California Species of Special Concern;
FP = Fully Protected;
WL= Watch List;
IUCN:LC = The World Conservation Union- Least Concern Species;
CRPR:

Rank 1A = Plants considered extinct.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants considered extinct in California and elsewhere.
Rank 2B = Plants rare, threatened, or endangered in California but more common elsewhere.
Rank 3 = Plants about which more information is needed - review list.
Rank 4 = Plants of limited distribution - watch list.

These rankings are further described by the following threat code extensions:

1: seriously endangered in California.
2: fairly endangered in California.
3: not very endangered in California

II. INITIAL SITE IMPROVEMENTS

4.0 INITIAL SITE IMPROVEMENT PROJECTS

Although Area 3 in its current condition meets the criteria required to provide mitigation under the SCVWD's S&WPP for the SMP, road rehabilitation at a stream crossing (SC 4) and the repair of a headcut at a second location (SC 5) are proposed in order to repair minor erosion issues (Figure 5; see Sections 4.1 and 4.2 below). These discretionary, voluntary, early implementation projects would likely be conducted within the first 5 years of work under the LTMP, but they are not part of routine long-term management. These actions are included in this document only for the purpose of allowing a comprehensive California Environmental Quality Act (CEQA) analysis of Area 3 activities. Should it be determined that the initiation of management and maintenance actions require agency permits and/or approvals, the SCVWD will obtain all necessary permits and approvals prior to initiating such actions.

4.1 Road Rehabilitation

Road rehabilitation will repair one stream crossing (SC 4) in Area 3 observed to have erosion and potential maintenance issues (Photos 2-3, Appendix B, Figure 6). In this location, the drainage has eroded into the roadbed, which was previously stabilized by a wooden retaining wall that has collapsed. Although these issues are minor, placement of small amounts of 6–12 inch rock just downstream from the stream crossing, and smaller rock within the road bed, will allow for continued use of the road and limit further erosion. Additional repairs at this location are not anticipated to be needed, but the stability of the repair will be monitored as part of the routine road condition monitoring (Section 7.2). Routine road maintenance (i.e., to maintain the road surface and minimize erosion) will be conducted as described in Section 7.2.

4.2 Headcut Repair

A minor headcut is present just downstream of SC 5. This headcut is just beginning to form, but it may create a small amount of erosion within the stream (Photo 4, Appendix B, Figure 6). Although this issue is extremely minor, placement of a few 12–24-inch boulders at this location will buffer the flow of water and prevent further erosion of the headcut. Additional repairs at this location are not anticipated to be needed, but the stability of the repair will be monitored as part of the routine stream condition monitoring. Routine monitoring and management of streams will be conducted as described in Section 6.1.

III. LONG-TERM MANAGEMENT AND MONITORING PLAN

5.0 LONG-TERM MANAGEMENT GOAL AND APPROACH

The overall goal of long-term management is to foster the long-term viability of Area 3's waters of the U.S/State and 1600 jurisdiction and overall conservation values (Section 1.2). This goal will be met through routine monitoring and management of the conditions that support Area 3's biological resources, by maintaining existing infrastructure, and by providing for security as detailed below. The SCVWD will obtain all necessary permits and approvals prior to the initiation of management and maintenance actions requiring such permits and approvals.

The major management practice for Area 3 is the management of sensitive habitats, including streams and riparian corridors. In addition, managed livestock grazing, road maintenance, invasive weed control, monitoring, and adaptive management will occur. These areas of focus are expected to support all conservation values of Area 3. The SCVWD, as owner and manager of Area 3, will monitor the Area's condition as described in the sections below, focusing on aspects that may warrant management actions.

This LTMP has been written with the intent to ensure that the conservation values of Area 3 are protected. The CE holder for Area 3 plays the important role of CE monitoring and reporting to ensure that the terms of the CE recorded on Area 3 of the Preserve are upheld by the Land Manager. The LMTP tasks listed below are all the responsibility of the Land Manager. The CE holder will be responsible for independently assessing and reporting on the Landowner's compliance with the terms of the CE using the property description and natural resource inventory contained in this LTMP as a reference point. Monitoring will verify the Preserve's condition on an annual basis using the Conservation Interest Compliance Monitoring Report included here as Appendix G.

5.1 Adaptive Management

Although it is not anticipated that major additional management actions will be needed, an objective of long-term management and monitoring is to identify any issues that arise and use an adaptive management approach to determine what follow-up actions might be appropriate. Adaptive management is an approach to natural resource management which incorporates monitoring to determine the effectiveness of, and what changes may be needed to enact, appropriate management practices over time, including corrective actions when needed to support Area 3's conservation values.

The management objectives and approaches described in this LTMP were established based on existing information on Area 3's condition and resources, the effects of past management activities, and the experience of natural resource professionals in designing resource management approaches. The management approach described in this LTMP will be adapted as necessary to maintain and improve biological resource value based on monitoring results.

In addition, adaptive management is expected to involve the implementation of new measures to protect natural resource values as new problems are noted, new research and techniques become available, or as problems are noted in new areas. For each of the resource issues described below, specific criteria will be monitored. These criteria are related primarily to resource management issues that are related to the SCVWD's management activities, such as grazing, rather than those outside the SCVWD's control, such as proliferation of feral pigs. The

monitoring results will be reviewed not only in the context of whether or not there are potential management problems, but also in comparison to prior monitoring results to identify trends in resource management issues. Persistent problems or adverse trends will trigger an adaptive management decision-making process. First, based on the type and severity of the problem, and an assessment regarding whether the issue is within the SCVWD's control, experienced land management staff will determine whether an on-the-ground corrective action is necessary, or whether further monitoring (perhaps at an increased frequency) is appropriate to determine the extent or persistence of the problem. Second, if corrective action is needed, those staff will identify the most appropriate adaptive management response, tailored to the resource issue. Those staff chosen to accomplish monitoring and adaptive management decision-making responsibilities will have the knowledge, training, and experience to accomplish these responsibilities. Agencies and the CE Holder will be consulted for approval of any such adaptive management changes or corrective actions. A check-in process with the Permitting Agencies has been built into the annual reporting structure for Area 3 management (see Section 9.0 Element K).

6.0 BIOLOGICAL RESOURCE MANAGEMENT AND MONITORING

Area 3 currently supports sensitive habitats (i.e., streams) and provides habitat for a number of plant and animal species, including special-status species. As a result, monitoring for potential signs of habitat degradation (e.g., erosion at streams) and for sensitive resources (such as sightings of special-status species) will occur. Each of the sections below includes a detailed description of the management and monitoring approaches for individual resources, stressors (such as invasive species), and management measures (such as managed grazing). In addition, more general monitoring for site conditions will occur during quarterly inspections by the Land Manager. A General Site Monitoring Checklist (see Appendix D) will be used during routine (e.g., quarterly) site visits to record information that will be monitored on a quarterly basis and to record incidental observations of species or issues of interest.

6.1 Element A. Streams (Waters of the U.S./State)

Objective: Monitor, conserve, and manage Area 3's streams.

As described above in Section 3.2, ephemeral, intermittent, and perennial streams are present in a number of areas within Area 3. Despite the history of moderate grazing in Area 3, these streams are relatively undegraded and provide habitat for a variety of plants and animals. Arroyo Hondo, a perennial stream, is relatively inaccessible to both humans and livestock, and thus, the drainage and the associated riparian corridor are in pristine condition. Further, the majority of the ephemeral and intermittent streams in Area 3 show little or no evidence of excessive trampling, inappropriate levels of livestock grazing, or other adverse conditions related to livestock grazing management. Erosional features were noted at two locations where ephemeral and intermittent streams cross the drivable road on Area 3 (SC 4 and SC 5, Figure 5; see Section 3.2.2). A collapsed wooden retaining wall, headcut, and gully are present at SC 4, and would need to be repaired to allow vehicles to travel on the road (Photo 2, Appendix B, Figure 6; see Section 4.1). One headcut was also noted on the downstream side of SC 5; it does not hinder vehicle access (Photo 4, Appendix B, Figure 6), but repairing this small headcut is addressed in Section 4.2 above as one of the initial site improvements to be performed. The conditions of Area 3's watercourses will be described in detail, to serve as the baseline for comparison of future monitoring results, as discussed under Task A1.1 below.

The majority of the ephemeral and intermittent streams within Area 3 appear laterally stable. The single drivable road in Area 3 crosses these drainages at five locations (SC 1–SC 5, Figure 5), and these stream crossings are all ford crossings that lack infrastructure, with the exception of one collapsed wooden retaining wall at SC 4 (Photo 2, Appendix B, Figure 6). Previously, the wall functioned to stabilize the stream banks, and has since been damaged by high water flows and erosion. At the same location, a headcut and gully have formed on the downstream side of the road. One headcut was also noted on the downstream side of SC 5 (Photo 4, Appendix B, Figure 6), but the remainder of the stream crossings did not exhibit any significant erosional damage (Photo 1, Appendix B, Figure 6). Limited areas of path formation caused by use by cattle and wildlife are present on the stream banks and bed, in addition to some evidence of grazed and/or browsed vegetation by cattle and deer were observed during the field surveys.

Proposed initial road rehabilitation, described in Section 4.1, will improve the eroded stream at SC 4 (Photo 2, Appendix B, Figure 6). In this location, the drainage has eroded into the roadbed, which was previously stabilized by a wooden retaining wall that has collapsed. Although these issues are minor, placement of small amounts of 6–12 inch rock just downstream from the stream crossing, and smaller rock within the road bed, will allow for continued use of the road and limit further erosion. Routine road maintenance (i.e., to maintain the road surface and minimize erosion) will also be conducted as described in Section 7.2. No rehabilitation of the minor headcut located downstream of SC 5 is currently proposed, as this erosion is minor and does not hinder vehicle access. Monitoring of the rehabilitation site at SC 4 and the minor erosion at SC 5 will be conducted in conjunction with routine road condition monitoring (Section 7.2).

Four manageable sources of potential impacts on the streams within Area 3 have been identified (though not yet observed): (1) inappropriate livestock use of the watershed, which could lead to increased runoff and erosion; (2) intrusion by cattle into sensitive areas; (3) sediment input into streams from road erosion; and (4) trespassing impacts such as trampling of vegetation. Less controllable impacts to these areas may also occur from use by wildlife, such as deer and feral pigs. Management of these latter, more regional issues is not covered by this LTMP; however, on-site efforts to control nuisance wildlife species that cause damage to resources and/or infrastructure in conjunction with regional efforts and consistent with plan goals and objectives would be allowed (control of feral pigs, for example).

The approach to protecting, managing, and enhancing stream conditions in Area 3 is to:

1. Monitor and maintain residual dry matter (RDM) at levels sufficient to protect the soils (see Section 6.2 below). Ensure sufficient vegetative cover, thus reducing the potential for watershed lands erosion and for increased runoff into streams.

2. Implement a grazing strategy, as presented in Section 6.2, to minimize the potentially adverse effects of livestock grazing during the hot/dry summer season (once grass forage is dried) when livestock tend to congregate near water sources on the adjacent lands of the Preserve (Areas 1 and 2). This will minimize routine cattle intrusion into the vicinity of streams on Area 3. Mineral and protein supplements for cattle will be located well away from sensitive aquatic resources.

3. Conduct annual monitoring of sensitive areas (i.e., streams) that are accessible to cattle to determine that Area 3's identified conservation values are being met.

4. Take additional measures (e.g., installation of mineral and protein supplements) that may be needed to adapt the grazing plan in a manner that better supports Area 3's conservation values.

5. Rehabilitate one existing degraded road area (i.e., the stream crossing that is currently contributing to minor erosion) and institute a regular road maintenance program to properly configure roads to minimize erosion potential (Sections 4.0 and 7.2).

Task A1. Stream condition monitoring. Conduct annual late spring (May–June) qualitative monitoring to assess the condition of streams and associated riparian habitats. Tasks include:

A1.1. Conduct pre-implementation monitoring. Start-up monitoring will begin in late spring 2016. In spring 2016, identify stream areas most susceptible to degradation over the long term. Such areas will include areas accessible to cattle near roads or heavily used cattle paths. Identify and map these monitoring stations with GPS/GIS and prepare a monitoring location base map for use in subsequent years. Photograph each monitoring station and GPS-locate the photo point so that photos taken in subsequent years will be comparable to the baseline photos. Although these monitoring stations will focus on areas most susceptible to degradation, they will also be stratified across Area 3 using the following criteria: (1) proximity to troughs on adjacent lands of the Preserve (i.e., Area 1) and other areas that may concentrate cattle; (2) habitat/vegetation type, such as perennial stream, ephemeral and intermittent stream, and mixed riparian forest, and (3) stream order. These criteria will ensure that aquatic monitoring stations are representative of various conditions across Area 3. It is anticipated that approximately 10 monitoring stations will be established.

At each aquatic habitat monitoring station, an Aquatic Habitat Monitoring Checklist will be completed (see Appendix D). This checklist contains features associated with habitat condition and quality, focusing on presence or absence of potential adverse conditions that are manageable by the SCVWD and that can be used to determine whether problems are occurring over the long term. In combination with comparison of site photos from one monitoring effort to the next, the information on this checklist will allow for site conditions to be tracked over time with minimal error resulting from observer interpretation. The Aquatic Habitat Monitoring Checklist and photos from spring 2016 will serve as the description of the baseline condition of each monitoring station.

Based on these baseline conditions, the SCVWD will identify a general goal for the long-term management of aquatic resources at each station. For stations where baseline conditions are undegraded and existing habitat quality is high, the goal will be to maintain existing conditions over the long term. For stations where some existing problem or degradation is evident, and the source of that degradation can be feasibly managed by the SCVWD, the goal will be to improve habitat conditions. The individual items in the Aquatic Habitat Monitoring Checklist will serve as the measures of habitat condition for purposes of determining management success, as described in Section A1.2.

A1.2. Conduct implementation monitoring. Annual field review of the stream monitoring stations will be conducted in May–June by completing the Aquatic Habitat Monitoring Checklist and taking photos from the same locations and facing the same directions as the baseline photos for each station.

Following each monitoring effort, the Aquatic Habitat Monitoring Checklist and photos for each station will be compared both to the baseline information described in Task A1.1 above and to

the monitoring results from the immediately prior monitoring effort to determine whether any evidence of adverse conditions has appeared, and to determine trends in habitat conditions. Because the individual items in the Aquatic Habitat Monitoring Checklist will serve as the measures of habitat condition, success of management activities will depend on (a) the goal of management (i.e., maintain or improve conditions), (b) the trends in habitat conditions, and (c) whether any observed management issue is within the SCVWD's control, as follows:

- Habitat conditions are being maintained – this would indicate successful management for stations where the goal was maintenance of conditions, but unsuccessful management at stations where the goal was improvement of conditions. If the goal at a given station is improvement of conditions, and improvement in a feature that is manageable by the SCVWD is not noted for two consecutive monitoring periods (i.e., the third monitoring effort after a problem was first noted), this would trigger the need for adaptive management action, as described in Task A2 below.

- Habitat conditions are improving – this would indicate successful management for any station

- Habitat conditions are degrading – if the condition of a manageable issue (i.e., one related to grazing or trespass) is degrading, this would indicate unsuccessful management for any station and would trigger the need for adaptive management action, as described in Task A2 below. If the issue is not within the SCVWD's control (e.g., fire), then the SCVWD will review what management actions it might be able to take, but this would not necessarily indicate unsuccessful management.

In addition, issues pertaining to the condition of aquatic resources, and trends in condition, will be noted incidentally during other monitoring activities and site visits. The General Site Monitoring Checklist contains entries designed to facilitate the recording of observations regarding potential problems related to aquatic resources anywhere on Area 3. Because of the geographic breadth of the various monitoring activities proposed on Area 3, incidental monitoring using the General Site Monitoring Checklist will allow for issues outside of the monitoring stations to be adequately detected and addressed.

Task A2. Stream adaptive management actions. If goals of habitat management in a given area are not being met as determined by monitoring at aquatic resource monitoring stations or incidental observations (i.e., because of degradation of aquatic resource condition relative to baseline levels or persistence of an undesirable condition related to manageable activities), adaptive management activities would be triggered. The precise adaptive management activity employed will depend on a number of factors, including the nature of the problem itself (e.g., erosion, proliferation of invasive species), the cause of the problem (e.g., whether erosion is caused by trespassers), the severity of the problem (e.g., whether the problem warrants an immediate change in management or more frequent monitoring to determine whether the problem will be corrected naturally), and whether the problem is within the SCVWD's management control. Consideration will be given, in particular, to conditions potentially detrimental to streams. For example, relocation of mineral or protein supplements or watering troughs may be adequate to encourage cattle to move away from sensitive areas. Temporary electric fencing may be used to exclude livestock from problematic areas on a short term or seasonal basis. Permanent fencing may be utilized if problems persist, especially in sensitive resource areas based on comparison of monitoring data to baseline conditions and the goals for a given station.

6.2 Element B. Livestock Grazing Management

6.2.1 Objective/Overview

The objective of the LTMP is to implement a livestock grazing strategy that maintains and may improve the conservation values that currently exist within Area 3. Within oak woodland and annual grassland habitats in California, conservative or moderate amounts of livestock grazing have been shown to positively contribute toward a variety of rangeland ecosystem services such as water quality, forage production, habitat for native species of plants and animals including special-status species such as the CTS and CRLF, and other ecosystem services (Hormay 1946, Heady 1956, Bartolome et al. 1980, Barry et al. 2011, Ford et al. 2013). Managed livestock grazing also supports the goals of the S&WPP.

Without livestock grazing, many of the ecosystem services typically provided by California's oak woodland and annual grassland rangelands (described above) could be expected to be adversely affected (Barry et al. 2011). These adverse effects could include reduced grassland species diversity (Heady 1956), increased accumulation of thatch from non-native, annual grasses that would increase wildfire fuel loads and wildfire risk and decreased habitat values for California ground squirrels (Horn and Fitch 1942), whose burrows provide critical aestivation habitat for CTS and refugia for CRLF during the dry season (Barry et al. 2011, Ford et al. 2013, OSA 2013).

As described above in Section 2.2.2, grazing throughout the Preserve (i.e., including Areas 1, 2, and 3) has been held at or below 50 AUs per year since 2001, when the TNC acquired the Preserve from the Kammerer family. No fencing separates Area 3 from Areas 1 and 2, and thus livestock grazing in Area 3 is managed in conjunction with grazing management in these other areas. Such grazing management has appropriately maintained high-quality habitat conditions in all three areas, and thus no changes to the approach (e.g., installation of fencing to allow for grazing management of Area 3 independently of Areas 1 and 2 management) are proposed.

6.2.2 Grazing Management Prescriptions

Grazing management prescriptions for Area 3 are described below. These prescriptions apply to the entire Preserve, because Areas 1, 2, and 3 are contiguous and will thus be grazed as a single unit in conjunction with the grazing prescriptions for the existing CE on Area 1. The Land Manager will work cooperatively with the CE holder and the grazing tenant to ensure that Area 3 is managed consistently with the goals and objectives of this LTMP. Regular RDM monitoring (see Section 6.2.3) will occur in Area 3 to verify that the grazing management objectives defined for Area 3 are being met. In the event that the RDM objective is not being met for this area, the Land Manager will implement remedial measures (such as increased coordination with the CE holder and, if necessary, installation of fencing to allow for management of Area 3 independent of Area 1) to ensure that the objective is achieved.

6.2.2.1 Grazing Intensity

In California's oak woodlands and annual grasslands, grazing intensity is typically measured by RDM that exists in the fall (September–October) prior to fall rains (Bartolome et al. 2006). Because of factors such as variations in topography, soils, rainfall, and patchy forage use, a variety of RDM values are expected, but in general the RDM goal for Area 3 will be 1,000–1,500 pounds per acre (lbs/acre). This RDM goal is approximately twice the recommended minimum RDM level for regions of California with climate and vegetation similar to Area 3 (Bartolome et

al. 2006) and corresponds to Conservative Stocking (see Barry et al. 2011), which is thought to positively contribute to a variety of rangeland ecosystem services and would additionally contribute to the identified livestock grazing management objective (see Section 6.2.1). Conservative stocking rates, as expressed by a target RDM range of 1,000 to 1,500 lbs/acre, would also minimize livestock use of streams in an effort to protect the conservation values of these areas from the potentially adverse effects of inappropriate livestock grazing.

6.2.2.2 Animal Kind and Class

Cow/calf pairs are the recommended kind and class of grazing animals for Area 3. Cow/calf pairs are readily available and are already used to graze Area 3 as well as Areas 1 and 2 of the Preserve.

6.2.2.3 Livestock Grazing Season-of-use

Currently, livestock graze the Preserve year-round, due in part to the difficulty of transporting animals to and from the Preserve and in part because such year-round grazing has not compromised the ecological values of Area 3 (grazing effects on Areas 1 and 2 will be addressed in the separate Rancho Cañada de Pala Preserve Areas 1 & 2 Long-term Management Plan, which is in preparation). Thus, the permitted season of grazing use for the Preserve will be year-round provided that the overall conservation values of Area 3 are being maintained as determined through regular monitoring and minimum RDM standards are met at the end of the grazing season (i.e., September – October, generally).

6.2.2.4 Stocking Rate

Given a recommended fall RDM of approximately 1,000 to 1,500 pounds (lbs)/acre and an approximate average annual forage production of 1,300 to 1,500 lbs/acre across most of Area 3 (NRCS 2014), Area 3 could support approximately nine AUs. However, lower-productivity mixed and live oak forests and woodlands produce less forage than more productive annual grasslands and valley oak savannas. Therefore, the number of AUs appropriate for Area 3 would be far less than nine. Because Area 3 is shared with Areas 1 and 2, and thus will be grazed by the SCVWD's grazing lessee in conjunction with surrounding areas, there is no practical way to ensure a specific stocking rate in Area 3. Continuing year-round grazing of the entire Preserve with up to 50 AUs is proposed, as this stocking rate and seasonality have been maintaining high-quality habitat conditions.

Minor adjustments in stocking rate by the operator may be permitted (taking into account the 50 AU per year limitation) with the prior approval of the Land Manager. Any adjustments in target RDM levels will need to be evaluated by a California-licensed Certified Rangeland Manager (CRM) to determine if the proposed changes will still allow accomplishment of LTMP objectives. Periodic observations of site conditions will be completed by the Land Manager throughout the grazing period to confirm that actual RDM levels are similar to target levels and to proactively identify years where the permitted grazing period may need to be reduced to meet RDM targets.

6.2.2.5 Other Considerations

All existing infrastructure and livestock facilities (Figure 5) will be retained, monitored, and maintained as presented in Section 7.1.

Supplemental feeding of hay will not be allowed within Area 3. Supplemental feeding can concentrate soil disturbance and introduce invasive plants via contaminated hay.

The placement of salt, other mineral blocks, and molasses or other protein supplements may occur to assist in livestock health and distribution. The placement of mineral supplements will be only at designated sites that are approved by the Land Manager, after surveys are conducted to assure sensitive habitats are avoided and undesirable concentrations of livestock are minimized. Utilization of supplemental elements for purposes of ecological management is discussed further in Section 6.1, Streams.

6.2.3 Livestock Grazing Monitoring

Two types of grazing monitoring will be conducted. First, implementation monitoring will be conducted to determine if the grazing prescriptions are being implemented as presented in the LTMP. Second, grazing intensity (RDM) monitoring will be conducted to determine if RDM goals are being achieved. Monitoring methods are adapted from Wildland Solutions (2008), Guenther (2007) (Appendix E), and practices used on nearby OSA-managed lands (McGraw 2012, OSA 2013).

Monitoring may be performed by a technician, biologist, or the operator if that person has been trained in such monitoring. Although RDM monitoring does not need to be performed by a CRM, a CRM will be involved in decisions regarding long-term changes in management (i.e., revisions to the LTMP, such as stocking rates or timing) made as a result of RDM monitoring. Inter-annual changes in management (such as stocking rates or timing to meet yearly RDM goals) made as a result of RDM monitoring will be made at the judgment of the Land Manager, but will be in conformance with this LTMP.

6.2.3.1 Implementation Monitoring

Task B1. Livestock grazing implementation monitoring. Conduct implementation monitoring to confirm that the grazing strategy is being conducted as specified in the LTMP.

A grazing log will be maintained by the Land Manager staff with the assistance of the grazing lessee. The Land Manager will visually inspect Area 3 quarterly, as access allows, to confirm the presence of cattle and to inspect range conditions.

The log, which will be maintained in a spreadsheet to facilitate use, will include:

1. The number of AUs known on the Preserve (based on records provided from the grazing lessee, if available) and within Area 3 (based on incidental observations of livestock in favored grazing conditions).

2. The quarterly and annual weather conditions (i.e., rainfall)

3. A checklist for the general phenology and productivity of key forage plants (i.e., annual grasses), including the onset of the germinating rains, the date when 1 inch of new growth was observed, and senescence of the forage plants

4. The approximate amount of forage growth and remaining RDM to aid in the determination of proactively reducing the permitted grazing period and/or number of grazing animals to meet the RDM target.

This information can help managers track the various factors that influence inter-annual variability in grazing within Area 3.

6.2.3.2 RDM Monitoring

Information regarding RDM is collected in a practical manner that is adequate to assess how well the RDM goals have been met. The monitoring program is designed to provide the Land Manager useful information on RDM levels as they relate to objectives. The goal is that 80% of Area 3 meets the RDM objective (see Grazing Intensity, Section 6.2.2.1).

Two types of RDM monitoring will be conducted annually: (1) RDM reference plot monitoring and (2) Area 3 RDM status monitoring. For this process to be most useful, the same field personnel must first conduct the reference site monitoring followed by the RDM zone evaluation.

All RDM sampling is conducted once per year in mid to late September or early October, prior to the onset of seasonal rains.

Task B2. RDM reference plot monitoring. Detailed information will be collected at selected RDM reference plot monitoring sites to validate visual RDM estimates collected in Task B3, below. Information collected at the reference sites is not intended to be extrapolated as representing the entirety of Area 3; however, the reference sites will be located in areas expected to receive preferential livestock use (e.g., relatively flat areas of annual grassland or valley oak savanna with adequate water) and reflect the general conditions of the area in which it is located. The information is intended to represent that portion of the field being surveyed and serve as a reference for documenting the RDM status of Area 3.

Three RDM reference plot sites have been identified within Area 3 (Figure 9). These reference sites are located in areas that are as large as possible given surrounding conditions and that are likely to receive typical livestock use (e.g., areas that are relatively flat and open grassland or oak savanna or near water sources). These areas include grassy openings within foothill pine-oak woodland, as the larger patches of California annual grassland in Area 3 are on extremely steep slopes that would preclude cattle grazing (Figure 7). Areas with a dense tree canopy in foothill pine/oak woodland, mixed riparian forest, mixed oak forest, and chaparral vegetation types are unlikely to meet the RDM target even in the absence of livestock grazing, and will thus be excluded from RDM monitoring. Such areas have dense stands of live oaks or brush, which will suppress forage production irrespective of livestock use (Frost et al. 1997) and are typically lightly used by livestock because they provide relatively little forage. However, visual monitoring of cattle use of Area 3 will be conducted concurrently with other monitoring activities to ensure that cattle are not using these densely vegetated areas. If cattle are observed to be regularly using these areas, an additional reference plot will be added that is representative of the areas the cattle are using. The three RDM reference sites are distributed across Area 3 to the extent feasible based on accessibility. The sites are representative of the general grazing area in Area 3, capable of responding similarly to management actions, and capable of producing herbage representative of that area.

At each RDM reference plot:

1. Confirm that the location is representative of the general area that year. If not, relocate to a nearby suitable location. GPS any modified location.

2. Take overview photographs in all four cardinal directions from the sample point from approximately 5' above the ground. This is intended to both record vegetation characteristics in the vicinity of site and to provide overview scenes of Area 3 at standardized locations over time.

3. Photograph the RDM plot using "second step" (Robel pole monitoring) as described in Appendix E.

4. Clip and collect all herbage within a 13.25-inch diameter circular or 12-inch square frame plot. Weigh the herbage in grams and convert to lbs/acre using the following formulas (Wildland Solutions 2008):

   Circular 13.25-inch diameter hoop plot:
   (grams clipped) x 100 = lbs/acre of RDM

   Square 12-inch frame plot
   (grams clipped) x 96 = lbs/acre of RDM

5. Note the estimated amount of herbage remaining on ground after the plot is clipped.

6. Note the general botanical composition of sample (annual or perennial grasses, forbs, weeds).

7. Air dry any wet or green samples 2–3 days prior to weighing.

Task B3. Area 3 RDM Status Monitoring Protocol. After conducting the RDM reference site monitoring and obtaining the results, the amount of RDM can be visually estimated in Area 3 according to seven RDM classes listed in Table 3.

Table 3. RDM Evaluation Classes for Grazed Area 3 Lands[1]

Vegetation type	RDM objective for Site	Residual Dry Matter (RDM) Level		
		RDM range of values		RDM Class
		% of objective for Area 3	Lbs/acre	
Foothill pine/oak woodland and valley oak savanna	1,000 -1,500 lbs/acre RDM	Exceeds 400%	Exceeds 4,000	Very High
		200-400%	2,000-4,000	High
		150-200%	1,500-2,000	Exceeds
		100-150%	1,000-1,500	Meets
		50-100%	500-1,000	Below
		<50%	<500	Low
		<10%	<100	Fire

[1]Classes were developed in a manner described in "Monitoring Annual Grassland Residual Dry Matter" (Wildland Solutions 2008).

The general location and extent of those areas within Area 3 at least 20 acres in size (or as large as possible, given the generally forested structure of Area 3) and *not* meeting the target RDM levels will be determined in the field either by field measurement, GPS, or mapping onto paper or other field copy (such as the LTMP vegetation map) and then bringing the info into a GIS system. Vegetation is naturally patchy, and grazing use is patchy as well. The predominant condition in an area will determine that RDM level, despite inclusions of smaller areas with

either higher or lower levels. The goal is that at least 80% of the areas with the potential to meet the RDM target in Area 3 will meet the RDM target. As discussed above, these areas include grassy openings within foothill pine-oak woodland.

Task B4. Grazing adaptive management actions. If less than 80% of Area 3 is at or above the designated goal, an evaluation will be conducted to determine probable causes, assess if the condition is potentially detrimental or not to the stated goals, and determine if any corrective actions are needed. If corrective actions are recommended, they will then be implemented as described. Inter-annual fluctuations will occur because of many factors such as excessive rains, drought, timing of rainfall, variable temperatures, and differences in grazing animals and their knowledge of the site, so results from just one year should not be relied upon heavily.

As described previously, the Land Manager will have limited control over livestock grazing in Area 3 and will rely on cattle grazing the Preserve as a whole to meet the LTMP's livestock grazing management objectives. Because there is no fencing between Areas 1, 2, and 3 and these areas are grazed together as a unit, cattle will not necessarily be present in Area 3 year-round even though the Preserve may be grazed year-round. Further, the CE and CTS Management Plan for Area 1 limit the number of cattle on Area 1 to 50 AUs. Thus, the Land Manager will ensure that the grazing prescription described above (e.g., season of use, utilization target) is followed to the maximum extent practical and will coordinate with the CE holder for Area 1 to ensure that the requirements of the Area 1 CE and CTS Management Plan continue to be met. In the event that the LTMP's grazing management objectives are not met, the Land Manager will attempt to have grazing intensity reduced or increased as necessary, in coordination with the Area 1 CE holder as needed. If RDM values consistently and significantly deviate from Area 3's objectives, the Land Manager may install temporary electric fencing or permanent barbed wire fencing to allow for management of Area 3 independent of Areas 1 and 2.

If any changes to grazing management are proposed in the future, they will be coordinated between the SCVWD, the CE holder for Area 3, the CE holder for Area 1, and with the Permitting Agencies.

6.3 Element C. Non-Native Invasive Plant Species Management

Objective: Minimize the spread of existing non-native invasive plants.

The focus of this objective is:

1. Prevention or control of new introductions of high or moderate-ranked California Invasive Plant Council (Cal-IPC) species to Area 3

2. Control of existing infestations of high-ranked Cal-IPC species

3. Control of those existing Cal-IPC moderate-ranked species that have potential to further degrade Area 3 and have a reasonable potential for successful control.

6.3.1 Invasive Plants

The degree of invasiveness of invasive plants is rated by the Cal-IPC as "limited," "moderate", or "high" based on the severity of their ecological impacts (Cal-IPC 2015). The most effective approach to wildland weed management is to focus on early detection and control of invasive

species populations, prioritizing high-ranked species with the greatest potential to degrade wildlands, and if feasible, control of moderate-ranked species at a minimal level. Two invasive species, Spanish brome and spreading hedgeparsley, are present in several vegetation types in Area 3 (see Section 3.1 *Vegetation Types*). Spanish brome is ranked by the Cal-IPC as "highly" invasive, and occurs as a co-dominant species with other nonnative annual grasses in some open areas within both large and small patches of grassland in foothill pine/oak woodland, valley oak savanna, and California annual grassland vegetation types (Photo 18, Appendix B). Spreading hedgeparsley is considered "moderately" invasive, and was observed in mixed oak forest and foothill pine/oak woodland vegetation types during the May and June field surveys. Although it is not a dominant species, Italian thistle (*Carduus pycnocephalus*; "moderately" invasive) is also present across Area 3, occurring in open grasslands and valley oak savanna (Photo 19, Appendix B).

Spanish brome and spreading hedgeparsley are not specifically included in the invasive species control efforts because their presence in Area 3 reflects a larger, regional invasion that is not feasible to control at a site-wide level for Area 3 (or for any similar site in the region). Because these are common dominant species in grassland and woodland communities in California, their presence does not degrade the habitat on the site, which was observed to be of very high quality, relative to other sites in the region. Further, the majority of the areas within the stream buffers in Area 3 are within the dense mixed oak forest vegetation type (Figures 7 and 10), which has a high cover of native trees and shrubs and a sparse herbaceous layer. Therefore, although these invasive species are present in certain vegetation types in Area 3, they are only present within a small proportion (i.e., less than 20 percent) of the stream buffers in Area 3, which are the focus of the SCVWD's management efforts. Thus, the management efforts described below are expected to reduce the occurrence of these species within Area 3, even though these species are not the focus of the management efforts.

Other noteworthy invasive species that were observed on Area 3 in lesser quantities include tocalote (*Centaurea melitensis*; "moderately" invasive) and medusahead (*Elymus caput-medusae*; "highly" invasive). Medusahead will be the primary focus of invasive species control efforts because it is considered to be one of the most threatening invasive annual grasses to rangeland production and wildland plant diversity; it often forms near monotypic stands and is an aggressive competitor for soil moisture (DiTomaso 2003). Although it occurs in higher densities on Areas 1 and 2, and in other surrounding lands (SCVWD 2014), than on Area 3, early detection of this species on Area 3 is still possible, as only a few individual medusahead plants were observed. Distributional observations of these species within the Area 3 will be documented, and control will be prioritized based on extent, threat and feasibility.

Integrated Pest Management techniques (biological, mechanical, chemical, combination, etc.) will ensure the most effective control method is utilized for each invasive species and provide the greatest amount of protection to the natural resources within Area 3. Management of particular invasive species will be prioritized based on their potential to cause harm to Area 3's natural resources as well as the ability to effectively control the species.

If goat or sheep grazing is used for invasive plant control, animals will be brought in during the specific season useful to control the target problematic species. Goats and sheep will be concentrated in a specific location for a short duration, contained by an electric fence or similar means within a relatively small area, and allowed to graze with the coordination and oversight of a professional shepherd in order to achieve the weed control objective.

Livestock grazing has been used effectively to help minimize invasive plants on conservation properties but may not be adequate to address all issues. Where cattle grazing is not sufficient, the next preferred line of defense will be the use of non-herbicide methods (i.e., mechanical and hand removal, goats and sheep, and if available, effective biocontrols approved by the California Department of Food and Agriculture's Biological Control Program). In select areas, herbicides may be used where the type of species, size of population or terrain makes the use of other techniques either hazardous or ineffective. For example, in rocky areas whipping and mowing may damage resources and equipment, and hand pulling can be a safety risk because of uneven, steep ground.

Use of herbicides will only be permitted in Area 3 if all of the following standards are met:

- Use occurs specifically for control of invasive, non-native plant species.
- Herbicide use shall be guided by label restrictions and any advisories published by the California Department of Pesticide Regulation or the County Agricultural Commission.
- Only herbicides and surfactants registered for aquatic use by the United States Environmental Protection Agency (USEPA) shall be applied within 20 feet of any waterway.
- All non-target plant species will be avoided.
- Herbicide drift will be minimized by complying with all label restrictions.
- Application will be avoided if significant rainfall is predicted in the subsequent 48-hour period.
- The lowest recommended and efficacious rate of herbicide will be used.
- The USEPA pesticide injunction for use of pesticides in CTS and CRLF habitat will be followed, as applicable.
- Unless specifically justified for a particular species, application will occur between June 15th and October 15th. Application will be made by or under the direct supervision of a state-certified applicator with a minimum of a Qualified Applicator Certificate license that is under the direction of a licensed pest control advisor with a Pesticide Recommendation for Area 3.
- Use will be in accordance with all guidelines and requirements from the Department of Pesticide Regulation.

Prescribed fire can be an effective invasive species management tool and has been successfully employed on other properties, including the adjacent BORR, to control weeds and maintain a natural vegetation mosaic. Typically done in conjunction with other agencies and/or research institutions, prescribed fire may be used as a management tool on Area 3. In such cases protocols established by CAL FIRE will be followed, and the necessary permits will be obtained as required from the Bay Area Air Quality Management District. Prior to instituting the use of fire within Area 3, a proposal for its use will be submitted for review and approval by the agencies overseeing the required mitigation in the subject areas.

Task C1. Invasive plant monitoring. Perform observational surveys to monitor known moderate to high ranking invasive plant species populations and document new occurrences, or new invasive plant species that have been identified by Cal-IPC as new threats.

C1.1. Conduct a comprehensive survey every 5 years beginning in 2016 to identify the locations of invasive plants. Determine the approximate area (square feet) of each occurrence by field measurement of average width and length, GPS polygon mapping, or other suitable means. Estimate percent cover within each occurrence to the nearest cover class (1-10%, 11-25%, 25-50%, 50-75%, 76-100%) and document locations with GPS. Produce an invasive species occurrence GIS map for documentation and use in the field based on the results. Surveys will focus on those areas known to account for the majority of invasive plant introductions and infestations on wildland sites including along roads, trails, and other known impact areas (e.g., cattle troughs, cattle bedding areas). Surveys will be conducted once during the survey year, in late June or early July, timed to occur when the target plants are flowering, making for easy identification and mapping.

C1.2. In intervening years, make incidental observations of invasive plants in conjunction with routine quarterly patrols and other site monitoring. Update the invasive species GIS map annually, as needed.

Task C2. Conduct invasive weed control activities. Conduct control activities at appropriate intervals (annually, if needed) in accordance with the procedures listed above. Prioritize management of particular invasive species based on their potential to cause harm to the site's natural resources as well as the ability to effectively control the species. Following Cal-IPC best management practices to stop the spread of invasive plants to new locations, high-ranked invasive species along roads and trails will be of highest priority. Appropriately document and report control activities to the County Agricultural Commissioner as required.

6.4 Element D. California Tiger Salamander (CTS)

Objective: Conserve and allow for improvement of existing habitat that may be suitable for CTS within Area 3.

The prescribed monitoring and management activities in Elements A–C above will assist in determining whether the aquatic and upland habitats in Area 3 are being maintained in good condition. As discussed in Task A1, damage to sensitive resources will be recorded, and in Task A2 if detrimental effects of livestock are observed in a particular location, various methods may be used to exclude livestock on a short term, seasonal, or permanent basis.

Task D1. Incidental CTS observations. In the course of all monitoring conducted for Elements A-C and quarterly patrols, surveyors will look for CTS via passive observation. Any sightings of CTS will be documented and reported to the CNDDB. Surveyors will be qualified biologists or other qualified professionals with the training and ability to identify sensitive amphibians in their various life stages.

For the CTS, as well all other resources in Area 3, the SCVWD reserves the right to perform additional monitoring and habitat enhancement activities as required to determine suitability for or compliance with current or future mitigation needs or other regulatory requirements. Such activities would be subject to review and approval by the Permitting Agencies.

6.5 Element E. California Red-Legged Frog (CRLF)

Objective: Conserve and allow for improvement of existing habitat that may be suitable for CRLF within Area 3.

Following the prescribed monitoring and management activities in Elements A–C above will assist in determining whether the aquatic and upland habitat is being maintained in good condition. As discussed in Task A1, damage to sensitive resources will be recorded, and in Task A2 if detrimental effects of livestock are observed in a particular location, various methods may be used to exclude livestock on a short term, seasonal, or permanent basis.

Task E1. Incidental CRLF observations. In the course of all monitoring conducted for Elements A-C and quarterly patrols throughout the Preserve, surveyors will look for CRLF via passive observation. Any sightings of CRLF on the Preserve will be documented and reported to the CNDDB. Surveyors will be qualified biologists or other qualified professionals with the training and ability to identify sensitive amphibians in their various life stages.

For the CRLF, as well all other resources in Area 3, the SCVWD reserves the right to perform additional monitoring and habitat enhancement activities as required to determine suitability for or compliance with current or future mitigation needs or other regulatory requirements. These activities would be subject to review and approval by the appropriate regulatory agencies.

6.6 Element F. Other Sensitive Species

Objective: Document observations of other sensitive wildlife and plant species within Area 3.

As listed in Table 2, Area 3 supports or has the potential to support several other sensitive wildlife and plant species. Preserve management practices will build upon techniques which have been favorable in the past, and implementation of the prescribed monitoring and management activities in Elements A–E above will ensure that habitat is being maintained in good condition for these species.

Task F1. Sensitive wildlife and plant observations. In the course of all monitoring conducted for Elements A-E and quarterly patrols, note any incidental observations of other sensitive wildlife or plant species. Any occurrences of federally listed, state-listed, or CNPS-Rare Plant Rank 1A or 1B species not previously documented will be reported to the CNDDB.

7.0 INFRASTRUCTURE AND FACILITIES

The SCVWD will obtain all necessary permits and approvals prior to the initiation of any infrastructure and facilities maintenance actions requiring such permits and approvals.

Construction materials needed in support of infrastructure and facilities management are expected to include items such as base rock for road maintenance, fencing supplies (t-posts, steel posts, barbed wire rolls, electric fencing wire, grounding rods), and possibly troughs. Materials are not brought in until a week before work is to begin, with project extent roughly one month or less. Best management practices for such projects would include silt fencing and wattles around rock and soil piles to prevent materials from leaving the work site, storage of materials in an area that has little to no grade to prevent transport of material, and storage sites

located outside of any sensitive species or habitat areas, as well as any additional best management practices denoted in CEQA or permits covering these actions.

7.1 Element G. Grazing Infrastructure: Fencing, Gates, Troughs

Objective 1: Monitor condition of fences, gates, and troughs to ensure they are maintained to facilitate the grazing regime and management, prevent unauthorized public access, and allow necessary access for quarterly patrols and management of Area 3.

Along the top of the Arroyo Hondo canyon, prohibitively steep topography excludes cattle from accessing the stream, and the only fencing that will be monitored and maintained is the short section of barbed-wire fence that crosses the existing trail to Arroyo Hondo (Figure 5).

Objective 2: Allow for future installation of new, or modification or removal of existing fencing, gates, troughs, and other grazing-related infrastructure if indicated for adaptive management of grazing or other resource-related purpose.

No new fencing, gates or troughs are recommended initially.

Objective 3: Utilize temporary means, such as electric fencing, for short-term exclusion or inclusion needs.

No gates or troughs are currently present on Area 3, and none are currently proposed. Maintenance of gates and troughs as necessary to allow for appropriate grazing management of the entire Preserve, including Area 3, will occur; however, these activities are addressed in a separate LTMP for Areas 1 and 2. Therefore, the remainder of this section pertains only to activities on Area 3.

As part of operations, the grazing tenant conducts routine maintenance of fencing. Fences will be maintained as necessary by replacing posts and/or wires. All replaced or additional fencing will adhere to current wildlife-friendly fencing standards, such as those used in nearby areas by the OSA (Appendix F). Signage will be installed at potential access points to indicate Preserve boundaries and/or areas closed to public access. No areas requiring new fencing are currently known. However, fencing may be added adaptively in the future if necessary to control grazing within Area 3, which is currently open to cattle grazing on adjacent Areas 1 and 2.

BORR maintains the pig fencing along the southern boundary of Area 3 between Area 3 and the BORR. Thus, the only existing fence that the SCVWD will monitor and maintain is the barbed-wire livestock fence along the northern boundary of Area 3.

If any new troughs are placed within Area 3 in the future, they will:

1. Have float valves to minimize water usage;
2. Have protection of the float valves to minimize breakage caused by cattle;
3. Be cleaned, as needed, during the summer and early fall to avoid cleaning during the amphibian breeding season (November–July); and
4. Have mechanisms that allow wildlife to escape and avoid drowning.

5. Any new troughs will be constructed per NRCS Stock Watering specifications (Appendix F).

Low ground pressure, four-wheel all-terrain vehicles (ATVs) may be used off-road for facilities monitoring, maintenance, or installation purposes and for easement monitoring purposes, but are otherwise not permitted for off-road use within Area 3. ATV use would be limited to the dry season when soils would not be impacted, would only be in upland areas, and would not be permitted in sensitive areas (such as along streams, with the exception of existing road crossings).

Task G1. Annual monitoring. Annually assess, in conjunction with grazing tenant, the condition of fences and troughs to confirm that all are properly maintained. Record the location, type, and recommendations if a fence or trough needs repair or replacement.

Task G2. Adaptive management actions. New fencing, gates, troughs, and other grazing-related infrastructure such as weather stations will be installed as needed for further site improvement as indicated by adaptive management, and as funding allows.

7.2 Element H. Roads

Objective: Monitor and maintain roads to provide access and minimize erosion and sedimentation issues

Task H1. Road monitoring. Inspect road conditions annually each May (after the rainy season) to determine the condition of the road surfaces and stream crossings. During year 1 May monitoring, the conditions of all road crossings (i.e., gullies or erosion present,) will be noted for use in subsequent years. The location and nature of issues observed at or away from stream crossings will be noted.

Task H2. Routine road maintenance. Maintain the existing drivable and abandoned roads as frequently as needed to preserve them in good condition. It is expected that the roads will need to be mowed approximately two times a year. It is also expected that the roads will require re-grading approximately once every five years. To maintain the surface, the upper few inches of the roads will be disced, tilled, or otherwise loosened prior to grading, and the loosened material will then be graded back into the road. This will ensure that no spoils are deposited on road edges, all materials will be re-incorporated into the road, and the road elevation will not decline over time. Roads will be out-sloped where appropriate or otherwise graded to facilitate sheet flow and minimize concentration of water and formation of rills and gullies. When necessary, some road segments may be rocked (such as the location described in Section 4.0 *Initial Site Improvements*) or otherwise armored to reduce the potential for erosion. Where erosion is present on the sides of roads these areas may be re-graded and re-shaped to prevent further erosion.

When the roads are wet and tread damage could occur from a vehicle, vehicles will not be used by those parties having vehicle access rights. Alternative means of road access during wet conditions will be used, such as access by foot, horse, or an ATV/SxS (Side by Side vehicle). Following this practice will minimize road damage.

Task H3. Minor woody vegetation removal. Remove or trim live trees, dead trees, brush, and/or woody debris where required by fire protection agencies, for treatment of disease, for public and Land Manager staff safety, for patrol vehicle access, for recreational access as

allowed under this LTMP, or for fire breaks for defensible space purposes at utility lines or at the property lines.

8.0 SECURITY, SAFETY, AND PUBLIC ACCESS

8.1 Element I. Public Access

Objective: Allow public recreation and scientific study consistent with the terms of the conservation easement(s) for Area 3 and the resource management objectives of this LTMP.

Although no public access to Area 3 is planned at this time, the SCVWD may allow public access to Area 3 in the future. Such public access not only provides recreational opportunities to the public but is also important in public education on issues of biodiversity and the importance of conservation, and in allowing scientific research within Area 3. Such access and education helps to maintain public support of conservation and assistance in obtaining public funds and grants for land acquisition and management. Potential future trail locations would only consist of the 2,694 linear feet existing, drivable ranch road within Area 3.

The existing drivable road within Area 3 will be maintained to facilitate site patrol and resource management projects (Section 7.2); however vehicular access to this road will be limited to Land Manager and CE holder staff, contractors, and invitees, and will not be available for public vehicular use. Drivable roads are those roads up to 10 feet wide with natural or baserock surfaces that can accommodate maintenance and emergency vehicles.

The CE holder plans to conduct educational and natural history tours of the Preserve. These tours would occur not more than four times a year and would consist of not more than 30 people each entry.

If public access beyond use by occasional researchers is proposed in the future, the SCVWD would coordinate with the CE Holder and the Permitting Agencies regarding the type and amount of public access and any appropriate conditions, restrictions, or additional monitoring related to public access. Any future public access will be consistent with the CE.

8.2 Element J. Trash and Trespass

Objective 1: Monitor sources of trash and trespass.

Objective 2: Collect and remove trash, repair vandalized structures, and rectify trespass impacts to prevent degradation of Area 3 from unauthorized human uses.

Task J1. Ongoing patrol monitoring. If observed during each site visit, remove and record occurrences of trash and/or trespass; record type, location and management recommendations to avoid, minimize, or rectify impacts. This task will be conducted quarterly. Trash and trespass issues will be monitored using the General Site Monitoring Checklist (Appendix D).

Task J2. Annually remove or rectify problems. Conduct an annual trash and trespass results review, identify any patterns, and determine if adaptive management actions are needed.

9.0 ELEMENT K. REPORTING

Objective: Provide annual report of management tasks conducted and general site conditions within the 2015 Conservation Easement area.

Task K1. Prepare annual report. The SCVWD will prepare an annual report for submittal to the permitting resource agencies (i.e., the Corps, SF RWQCB, and CDFW) by December 31. The annual report template is provided in Appendix G. The report will include a summary of the results of monitoring tasks conducted and management actions taken, and it will make recommendations with regard to (1) any habitat enhancement measures deemed necessary, (2) any problems that need attention and (3) any changes in the monitoring or management program that appear to be warranted. The report will cover the area included within the 2015 CE (Area 3).

The report will be prepared annually for the first five years. After five years, the report frequency may be reduced to once every five years, after consultation with and written concurrence by all agencies accepting compensatory mitigation on Area 3 (the SF RWQCB, Corps and CDFW for the 219.9 acres of Stream and Watershed Protection Buffers). The annual Area 3 Conservation Interest Compliance Monitoring Report (see Appendix G for templates) will be included as an appendix.

Task K2. Permitting agency check-in (as-needed). Each year following submittal of the annual report, the Permitting Agencies will be given the opportunity to request a check-in to discuss any changes or other issues regarding site management. The request for a check-in would be made by the Permitting Agencies within one month of receiving the annual report. Depending on the issue(s) to be discussed, the check-in would be scheduled as a phone conference call or sit-down meeting with the Land Manager. Each of the Permitting Agencies would have the option of participating.

A summary of the long term management tasks to be implemented and the timing of these activities are presented below (Table 4).

Table 4. Long Term Management Tasks and Timing

Task No.	Task	Frequency	Timing
A. Streams			
A1	Stream condition monitoring	Annually	May/June
A2	Stream adaptive management actions	As needed	Dry season
B. Livestock Grazing Management			
B1	Livestock grazing implementation monitoring	Quarterly	Quarterly
B2	RDM reference plot monitoring	Annually	Mid-Sept. - early Oct., before rains start
B3	Area 3 RDM status monitoring protocol	Annually	Mid-Sept. - early Oct., before rains start

Task No.	Task	Frequency	Timing
C. Invasive Plant Species Management			
C1.1	Invasive plant monitoring	Comprehensive - every 5 year. Incidental - annually.	Late June or early July*
C1.2	Incidental invasive plant monitoring	Ongoing	Conducted with other annual monitoring and quarterly patrols
C2	Annual invasive weed control activities	Annually	Dry season. Variable timing dependent on species and techniques
D. CTS			
D1	Incidental CTS observations	Ongoing	Conducted with other annual monitoring and quarterly patrols
E. CRLF			
E1	Incidental CRLF observations	Ongoing	Conducted with other annual monitoring and quarterly patrols
F. Other Sensitive Species			
F1	Document observations of other sensitive wildlife and plant species within Area 3	Ongoing	Conducted with all other annual monitoring and quarterly patrols
G. Fences, Gates, and Troughs			
G1	Annual monitoring	Annually	Dry season
G2	New infrastructure - adaptive management	As needed	As needed
H. Roads			
H1	Road monitoring	Once annually (general); after large storms (stream crossings)	General - May; Stream Crossings - after large storms
H2	Routine road maintenance	Mowing–2x/year; Regrading-approximately once/5 years	Dry season
H3	Minor woody vegetation removal	As needed	Variable
J. Trash and Trespass			
J1	Quarterly patrol monitoring	Ongoing	Conducted with all other annual monitoring and quarterly patrols
J2	Annually remove or rectify problems	Annually	June
K. Reporting			
K1	Prepare annual report	Annually for first 5 years; then potentially change to once/5 years	Due Dec. 31
K2	Permitting agency check-in	As needed	As needed

*Target monitoring timing is late June or early July **or** based on the phenology of each invasive species

10.0 TRANSFER, REPLACEMENTS, AMENDMENTS, AND NOTICES

10.1 Transfer

Any subsequent transfer of responsibilities under this LTMP to a different land manager shall be requested by the Land Manager in writing to the agencies overseeing the required mitigation in the subject area (Permitting Agencies), shall require written approval by the Permitting Agencies, and shall be incorporated into this LTMP by amendment. Any subsequent Property Owner will assume Land Manager responsibilities described in this LTMP and as required in the CE, unless otherwise amended in writing by the Permitting Agencies.

10.2 Replacement

If the Land Manager fails to implement the tasks described in this LTMP and is notified of such failure in writing by any of the Permitting Agencies or the CE Holder, Land Manager shall have 90 days to cure such failure. If failure is not cured within 90 days, Land Manager may request a meeting with the Permitting Agencies and the CE Holder to resolve the failure. Such meeting shall occur within 30 days or a longer period if approved by the Permitting Agencies. Based on the outcome of the meeting, or if no meeting is requested, the Permitting Agencies may designate a replacement Land Manager in writing by amendment of this LTMP. If Land Manager fails to designate a replacement Land Manager, then such public or private land or resource management organization acceptable to and as directed by the Permitting Agencies may enter onto the CE Preserve in order to fulfill the purposes of this LTMP.

10.3 Amendments

The Land Manager, Property Owner (if management responsibilities are transferred to an entity other than the SCVWD, as discussed in Section 10.2), CE holder, and 2002 SMP Permitting Agencies (Corps, CDFW, and SF RWQCB) may meet and confer from time to time, upon the request of any one of them, to revise the LTMP to better meet management objectives and preserve the habitat and conservation values of Area 3. There shall be no amendments to Sections 2, 3, or 4 and related components of the Appendices and Figures of this LTMP, as these serve as a baseline from which to compare future conditions of the Preserve. However, future amendments to this LTMP may include supplements to those materials. Any proposed substantive changes to the LTMP shall be discussed with the owner, manager, easement holder and Permitting Agencies and will be designed with input from all parties. Any amendments to the LTMP shall be approved by the Permitting Agencies, the CE Holder, and SCVWD in writing. Such amendments will be considered required management components and shall be implemented by the Land Manager. Amendments to the LTMP are not expected to trigger the need to amend the CE. Any amendments that result in a change in management costs will trigger an amendment to the costs table (Table 5) as well.

10.4 Notices

Any notices regarding this LTMP shall be directed as follows:

Land Manager and Property Owner:

Santa Clara Valley Water District (SCVWD)
Ms. Lisa Porcella
5750 Almaden Expressway
San Jose CA 95118
Phone: (408) 630-2741
lporcella@valleywater.org

SMP-1 Permitting Agencies:

California Department of Fish and Wildlife
Ms. Tami Schane
7329 Silverado Trail
Napa, CA 94558
Phone: (415) 831-4640
tami.schane@wildlife.ca.gov

California Department of Fish and Wildlife
Ms. Brenda Blinn
7329 Silverado Trail
Napa, CA 94558
Phone: (707) 944-5541
Brenda.blinn@wildlife.ca.gov

U.S. Army Corps of Engineers
Ms. Katerina Galacatos
Regulatory Project Manager
Regulatory Division
U.S. Army Corps of Engineers
1455 Market Street, 16th Floor
San Francisco, California 94103-1398
Phone: (415) 503-6763
Katerina.Galacatos@usace.army.mil

San Francisco Bay Regional Water Quality Control Board
Ms. Susan Glendening
Environmental Specialist
San Francisco Estuary Partnership/
San Francisco Regional Water Quality Control Board
1515 Clay St., Suite 1400
Oakland, CA 94612
Phone: (510) 622-2462
susan.glendening@waterboards.ca.gov

CE Holder:

The Nature Conservancy
Stewardship Department
201 Mission Street, 4th Floor
San Francisco, CA 94105
Phone: (415) 777-0487
einlander@tnc.org

11.0 FUNDING, TASK PRIORITIZATION, AND COSTS

The Corps has considered and approved, and the other relevant Permitting Agencies have reviewed, the SCVWD's proposed financial assurances mechanism for funding long-term management of Area 3, as described below. It should be noted that the compensatory mitigation provided on Area 3 was required to fully offset the SCVWD's SMP 1 impacts, which were authorized and primarily incurred prior to issuance of the 2008 Mitigation Rule (33 CFR Parts 325 and 332).

The SCVWD will ensure adequate funding for the long-term management of Area 3 by providing the following three measures of financial assurance: 1) the approval of a Board Resolution, 2) the execution of a Memorandum of Understanding (MOU) between the SCVWD and the Corps, and 3) the establishment of a 'standby fund' in the amount equal to five (5) years of annual management costs as estimated in the LTMP ($147,910) in the form of an auto-renewing Letter of Credit (LOC). These three measures are described in more detail below:

1. Approval of a SCVWD Board Resolution which includes the following elements:
   (a) A summary of the SCVWD's current and projected financial state (establishing SCVWD's ongoing ability to fund the LTMP);
   (b) A finding regarding financial analysis conducted on the annual management costs of the LTMP (Annual Management Costs); and,
   (c) An annual pledge of revenue to cover 100% of the Annual Management Costs estimated at $29,582/year for the Area 3 LTMP. The required Annual Management Costs would be revised at least every five years to reflect the San Francisco-Oakland-San Jose Consumer Price Index for the preceding five years to account for inflation.

2. Execution of an MOU between the SCVWD and the Corps to include the following:
   (a) Provisions defining the purpose of the MOU as ensuring the long-term protection of Area 3 through financial assurance for the LTMP;
   (b) A requirement that the SCVWD provide the financial analysis to calculate the Annual Management Costs;
   (c) A requirement that the SCVWD revise the Annual Management Costs at least every five years to reflect the San Francisco-Oakland-San Jose Consumer Price Index for the preceding five years to account for inflation;
   (d) A requirement that the SCVWD provide written notice to the Permitting Agencies of any cost revisions;
   (e) An express requirement that the SCVWD provide sufficient revenue annually to cover the entire Annual Management Costs; and
   (f) A requirement that the SCVWD establish a standby fund in accordance with paragraph 3.

3. Establishment of a 'standby fund' in the amount equal to five (5) years of annual management cost as estimated in the LTMP ($147,910) in the form of a Letter of Credit (LOC). A LOC is a

document issued on behalf of SCVWD by a financial institution that provides for payment of SCVWD's mitigation obligations to the Corps as a beneficiary in the event that SCVWD is unwilling or unable to complete or remediate them. The standby fund would be utilized in any year when the annual appropriations are insufficient to cover the annual management costs. The LOC would auto-renew after 5 years. Once the LOC has been drawn upon, SCVWD then owes that amount to the financial institution according to the terms of the loan agreement.

The estimated costs of the long-term management tasks are presented in Table 5 below.

Table 5. Long-Term Management Cost Estimates

Monitoring Task and Subtasks		Annual Hours	Annual Labor	Materials & Supplies	Preliminary Cost Estimate	Frequency
A. Stream Monitoring						
A1	Stream Condition Monitoring					
	A1.2. Annual site visit to streams	15	975	NA	975	1x/year
A2	Adaptive Management					
	A2.1. Movement of salt licks	2	130	NA	130	1x/year
	A2.2. Install, check and remove electric fences	20	1300	NA	1300	As needed
B. Livestock Grazing Management						
B1	Grazing Implementation Monitoring					
	B1.1 Dry road conditions monitoring	25	1625	NA	1625	3x/year
	B1.2 Wet road condition monitoring	10	650	NA	650	1x/year
B2	RDM Reference Plot Monitoring	5	325	NA	325	1x/year
B3	RDM Status Monitoring	2	130	NA	130	1x/year
B4	Grazing Lease Oversight and Administration	20	1300	NA	1300	1x/year
C. Invasive Plant Species and Oak Woodland and Savanna Management						
C1	Invasive Plant Monitoring					
	C1.1. Comprehensive surveys	60	3900	NA	3900	1x/year every 5 years
	C1.2. Annual observations	4	260	NA	260	4x/year
C2	Conduct Annual Control Measures	24	1560	1000	2560	1x/year

D. California Tiger Salamander						
D1	Incidental CTS Observations	4	260	NA	260	4x/year
E. California Red-legged Frog						
E1	Incidental CRLF Observations	4	260	NA	260	4x/year
F. Other Sensitive Species						
F1	Document Sensitive Wildlife and Plant Observations in Conjunction with Quarterly Patrols	4	260	NA	260	4x/year
G. Grazing Infrastructure: Fences, Gates, Troughs						
G1	Annual Monitoring	4	260	NA	260	1x/year
G2	New Infrastructure-Adaptive Management					
	G2.1. Fence & gate repair	8	520	350	870	As needed
H. Roads						
H1	Road Inspection (including storm check)	2.5	162.5	NA	162.5	5x/year
H2	Routine Maintenance					
	H2.1 Road Mowing	30	1950	900	2850	2 mowings. year
	H2.2 Road Regrading	1	65	NA	65	Estimated1x/ 5 years
H3	Defensible Space and Veg Clearing	10	650	NA	650	As needed
I. Public Access - N/A						

J. Trash and Trespass						
J1	Quarterly Patrol (included in others, except for admin)	1	65	NA	65	4x/year
J2	Annually Remove Trash or Rectify	2	130	NA	130	As needed
K. Reporting						
K1	Prepare Annual Report	45	2925	NA	2925	1x/year
Totals		302.5	19,662.5	2250	21,912.5	

Contingency (10%) $ 2191

Admin Overhead (25%) $5478

PRELIMINARY ANNUAL COST ESTIMATE TOTAL $29,582
TNC's Annual CE Monitoring and Reporting Costs $4772

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Personal Communications

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Hamilton, Mike (Executive Director of BORR). Telephone conversation with Melissa Newman of H. T. Harvey & Associates, 15 October 2013 and e-mail communication with Melissa Newman of H. T. Harvey & Associates, 16 October 2013.

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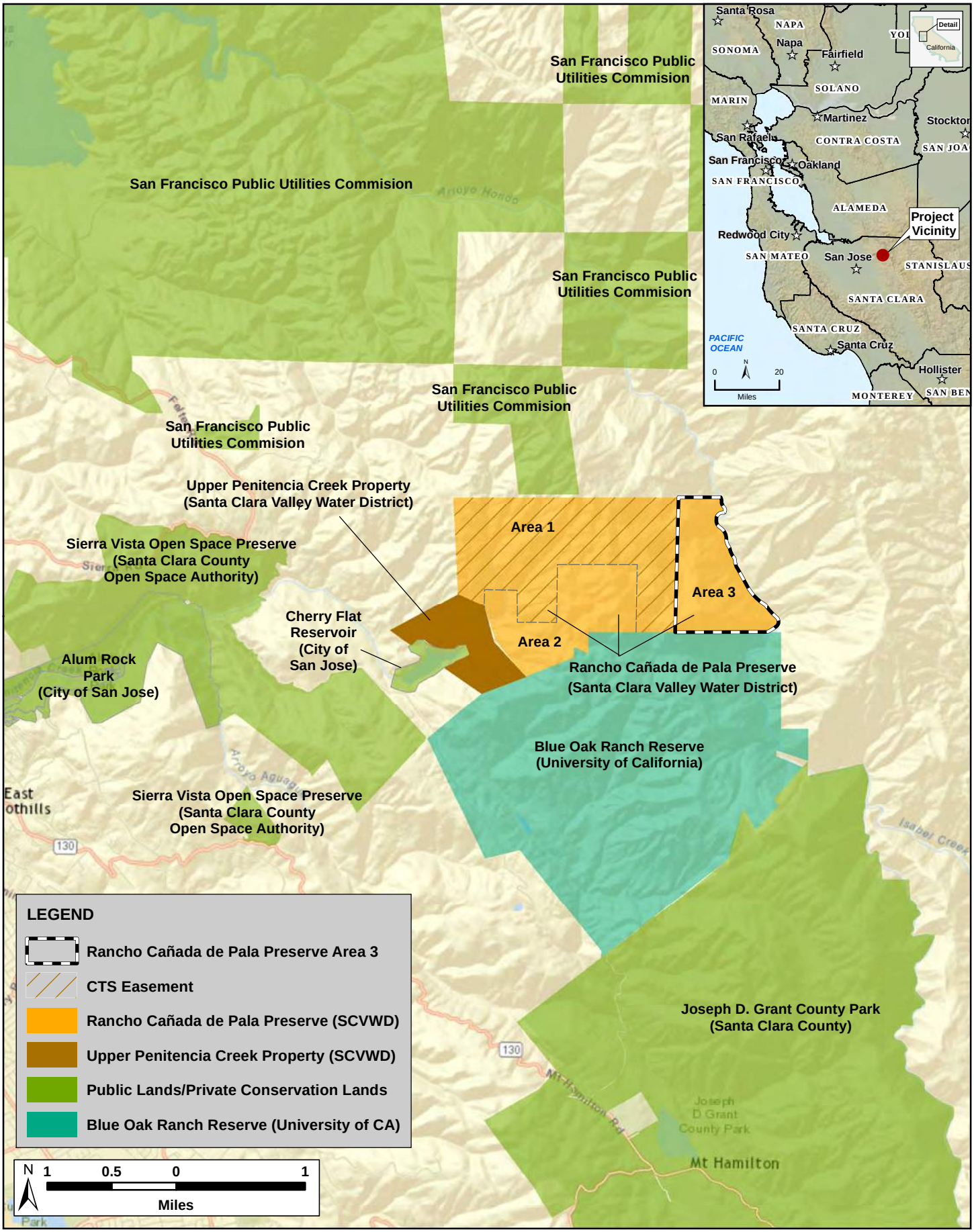
APPENDIX A



N:\Projects320\0327O-02\501\Reports\LTMP Area 3\November 2015\Fig 1 Vicinity Map v2.mxd

Figure 1: Vicinity Map

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

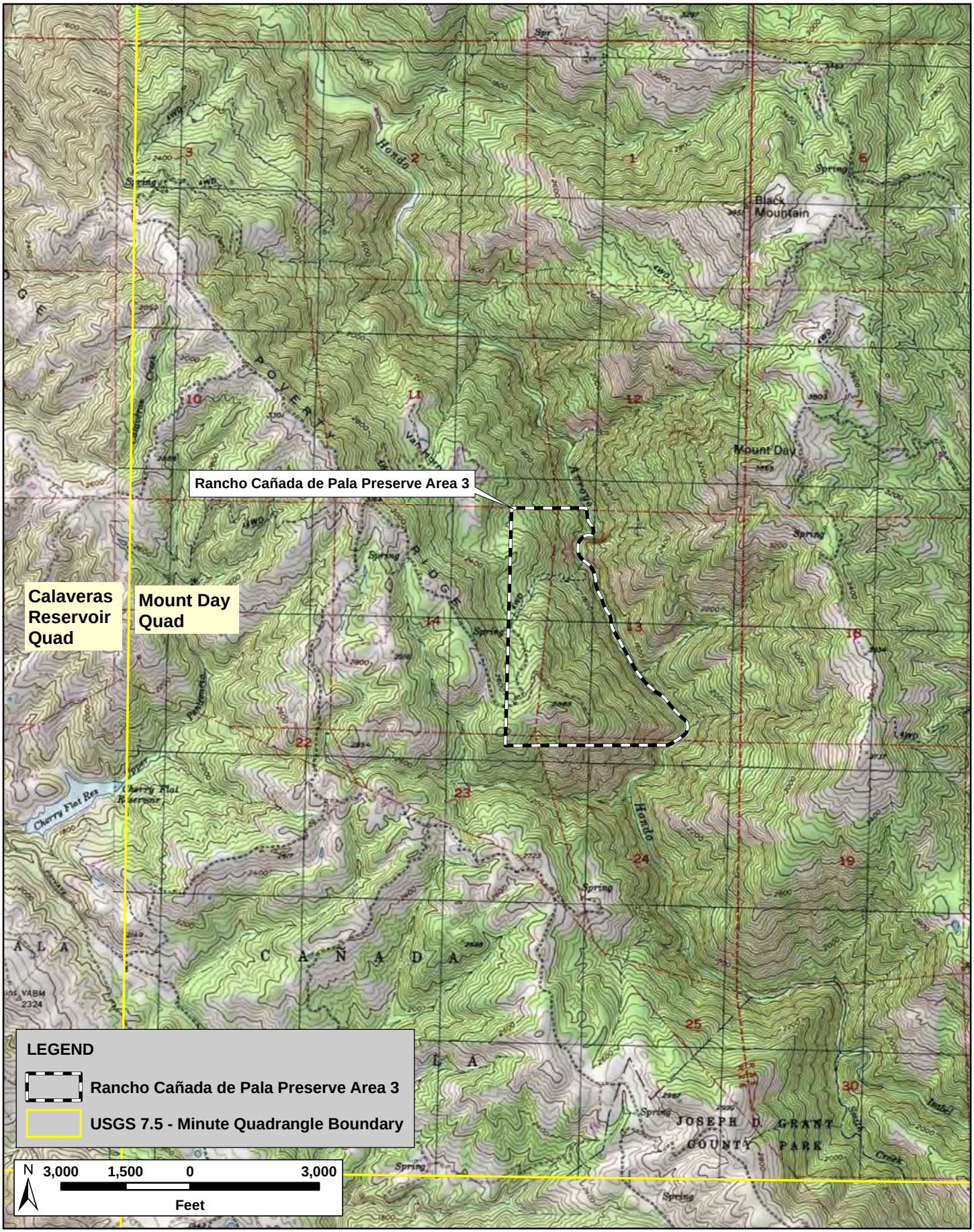


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Figure 2: USGS 7.5 - Minute Quadrangle

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

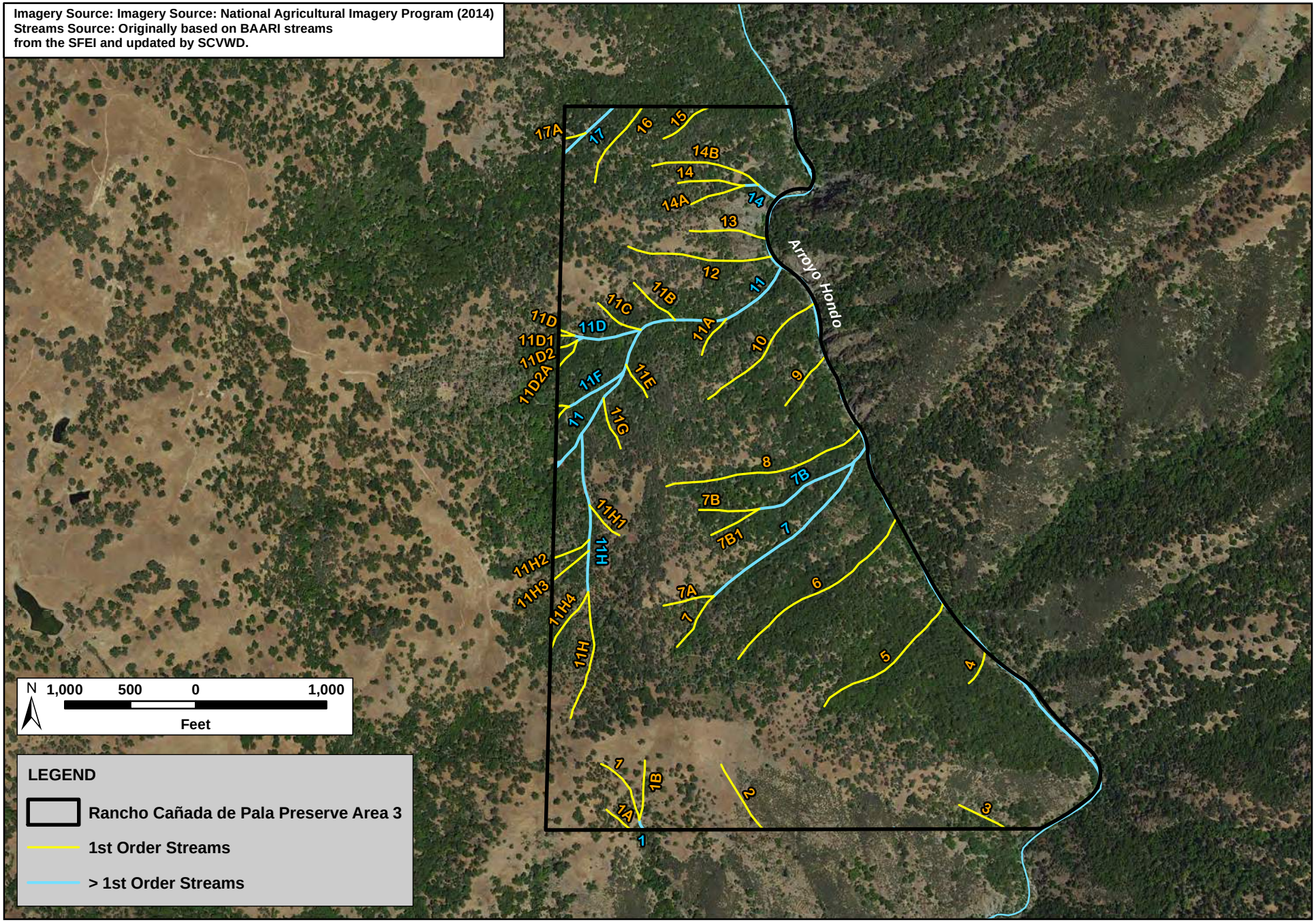


Figure 3: Stream and Tributary Identification Numbers

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

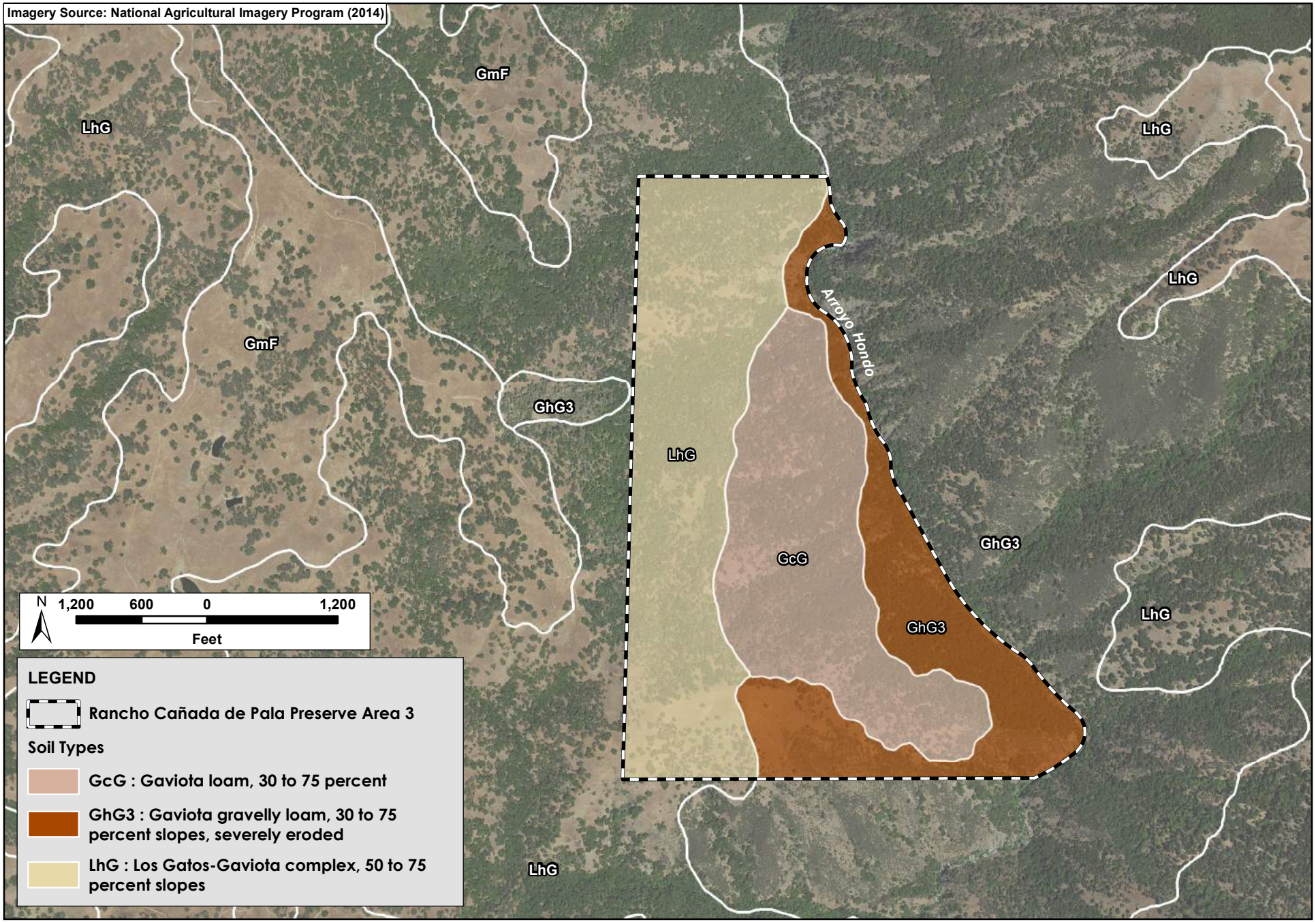


Figure 4: Soil Types
Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

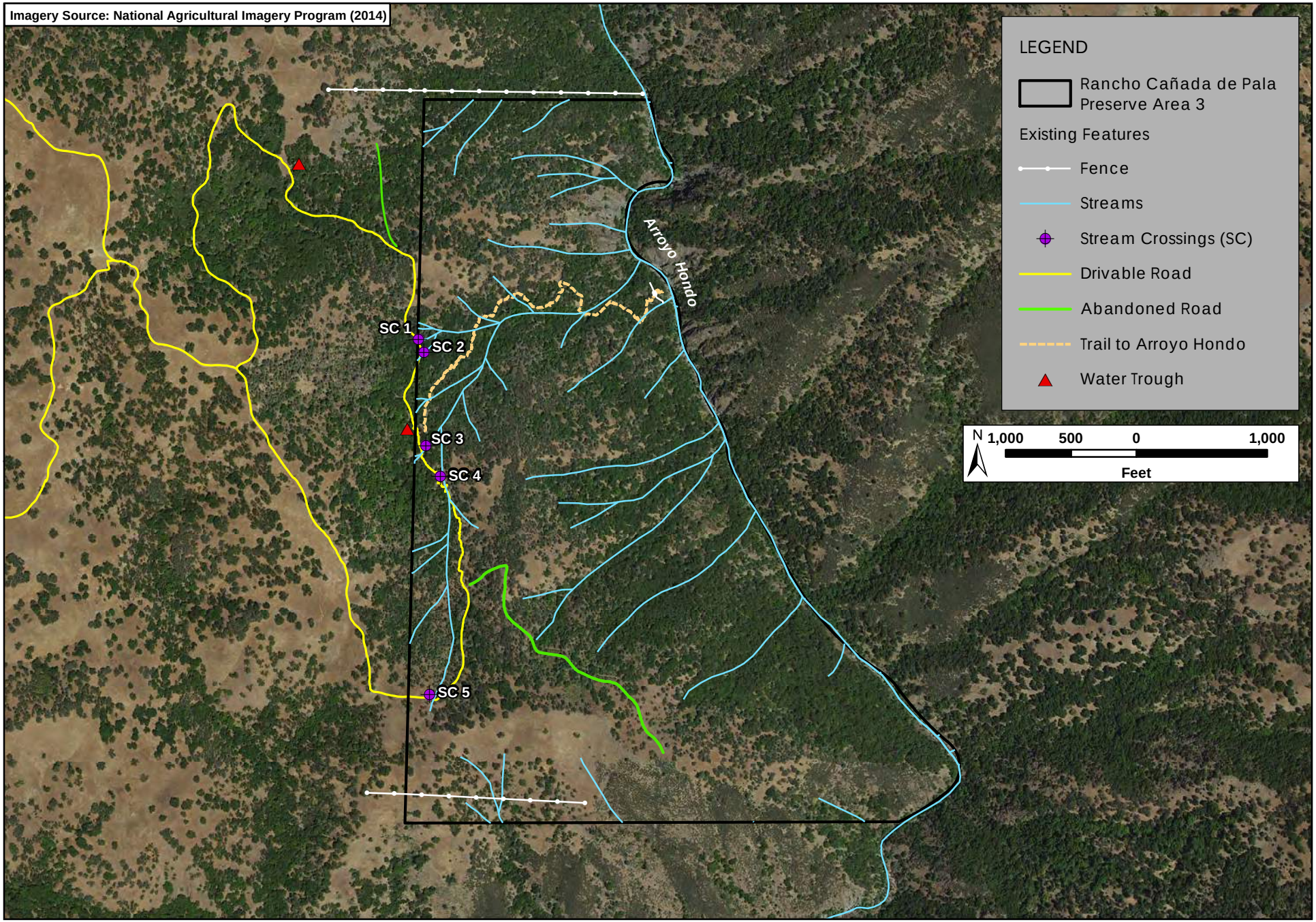


Figure 5: Existing Infrastructure

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

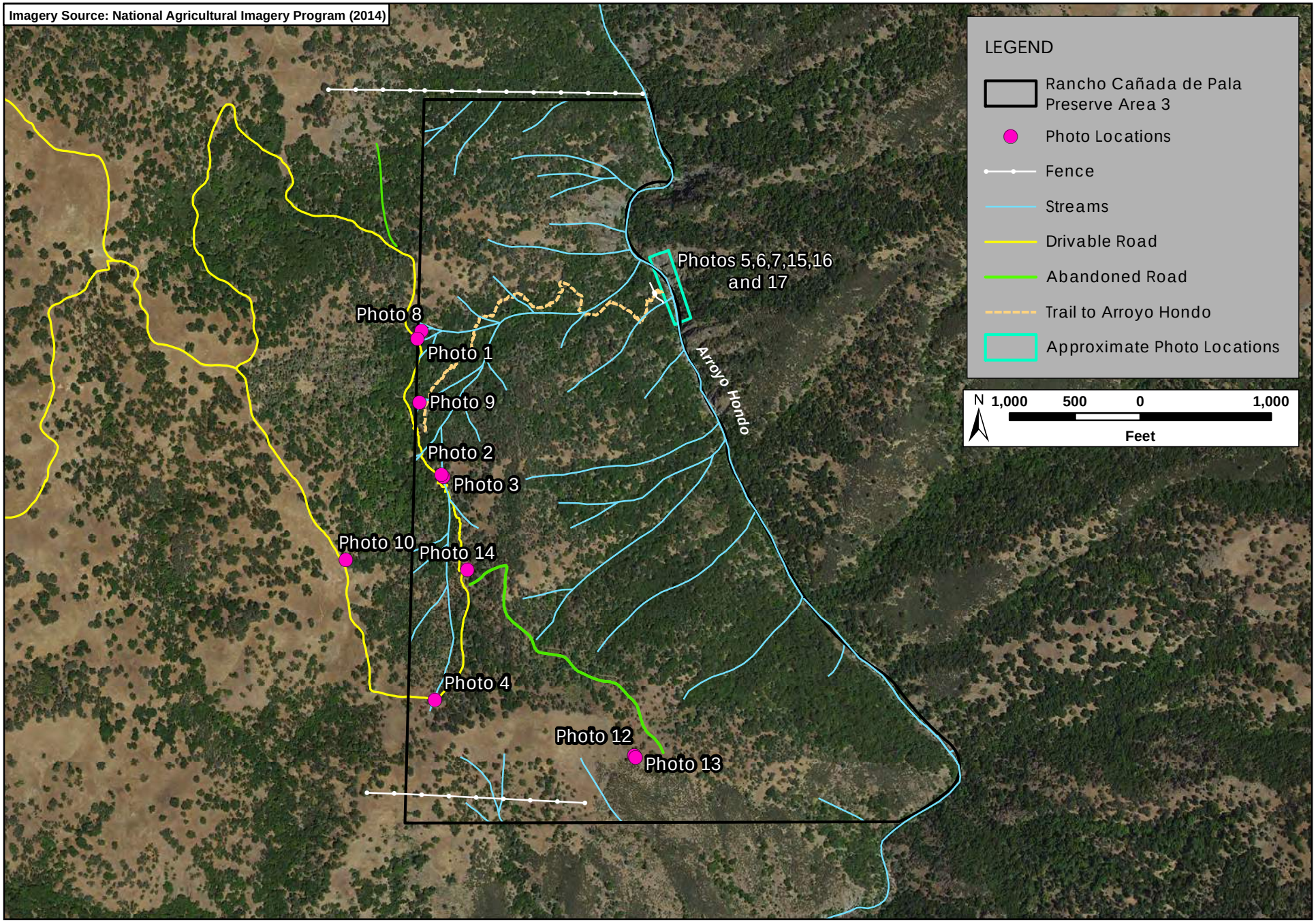


Figure 6: Photo Locations

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

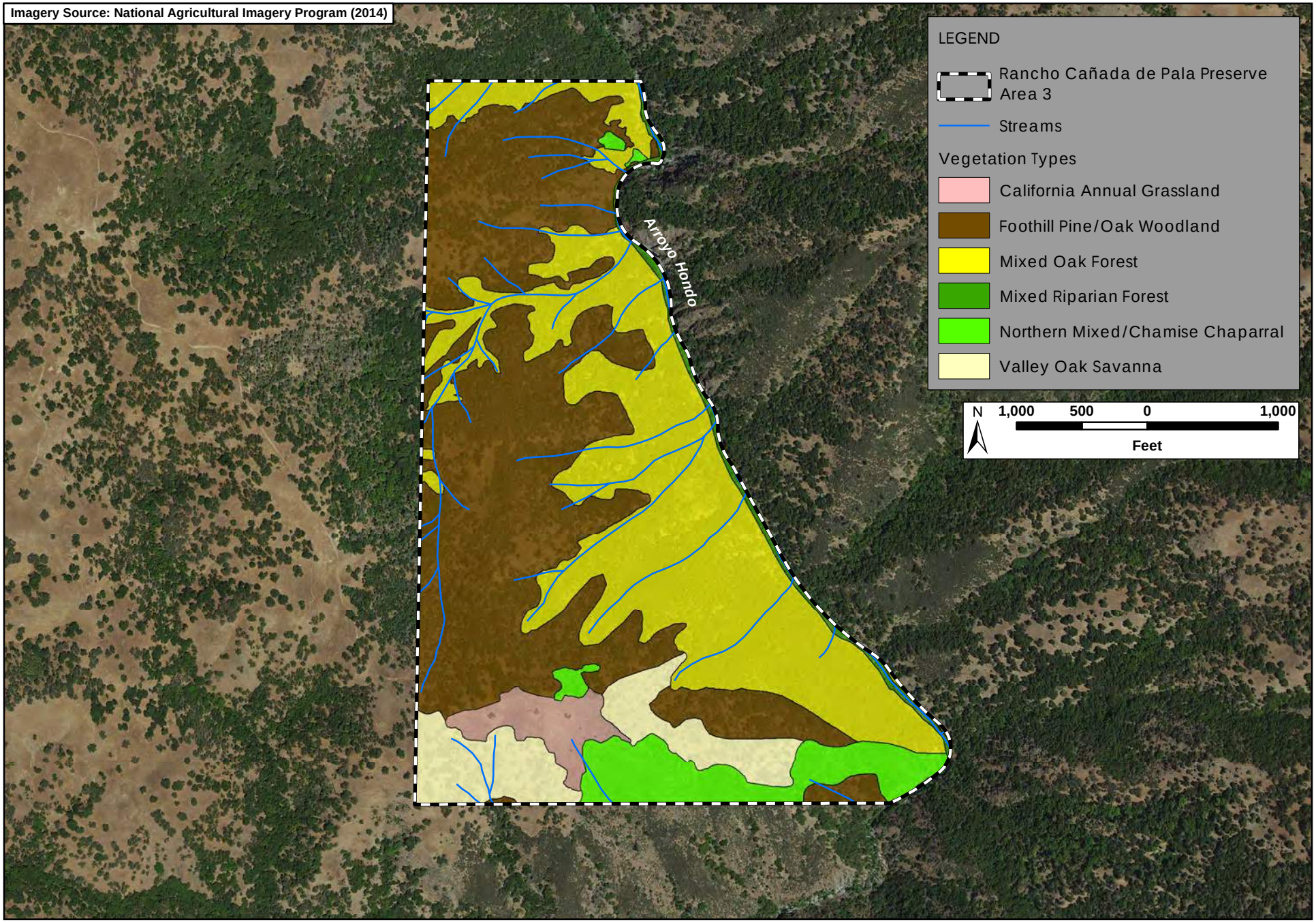


Figure 7: Vegetation Map

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

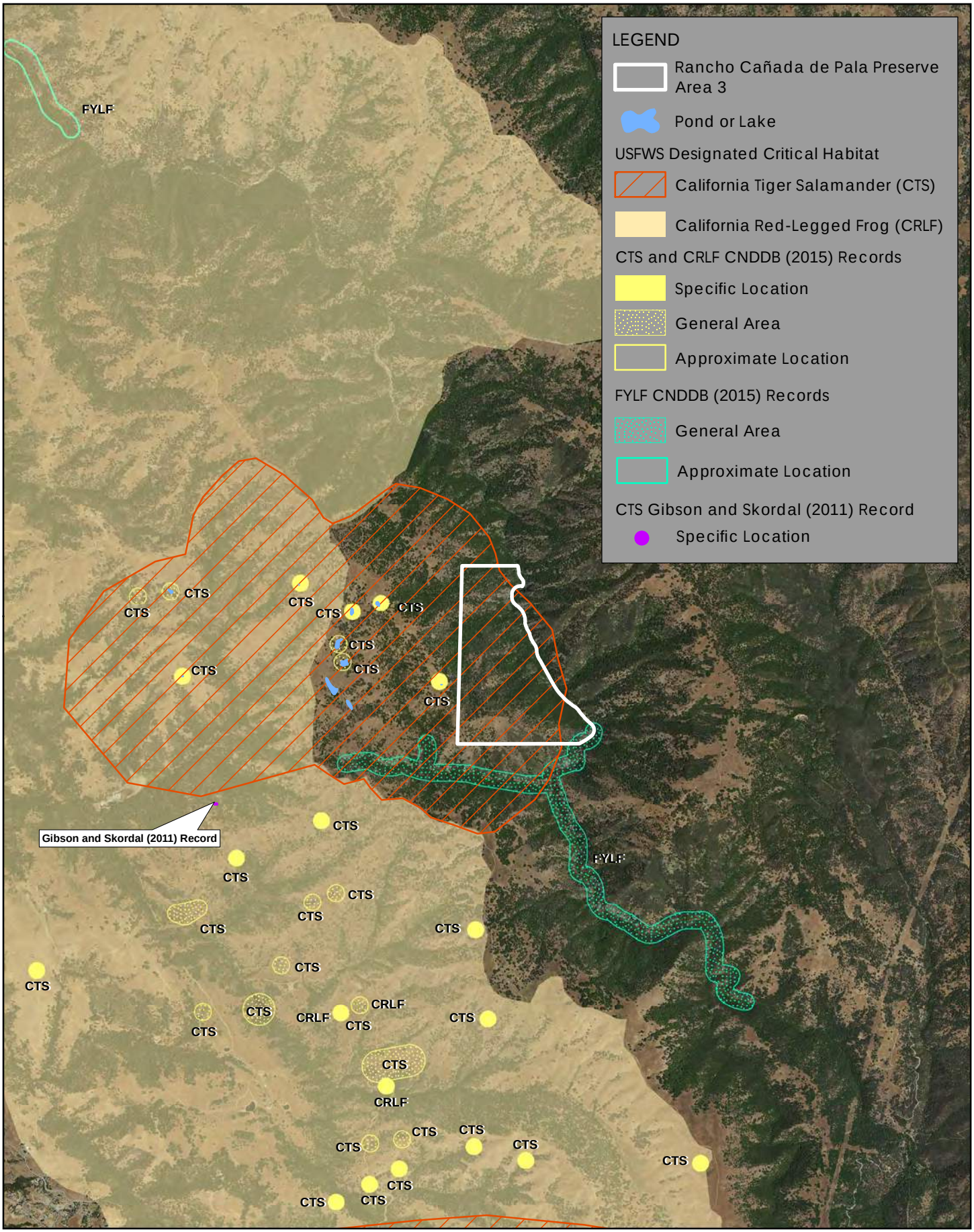


Figure 8: CTS, CRLF and FYLF Occurrences and/or Critical Habitat in the Vicinity

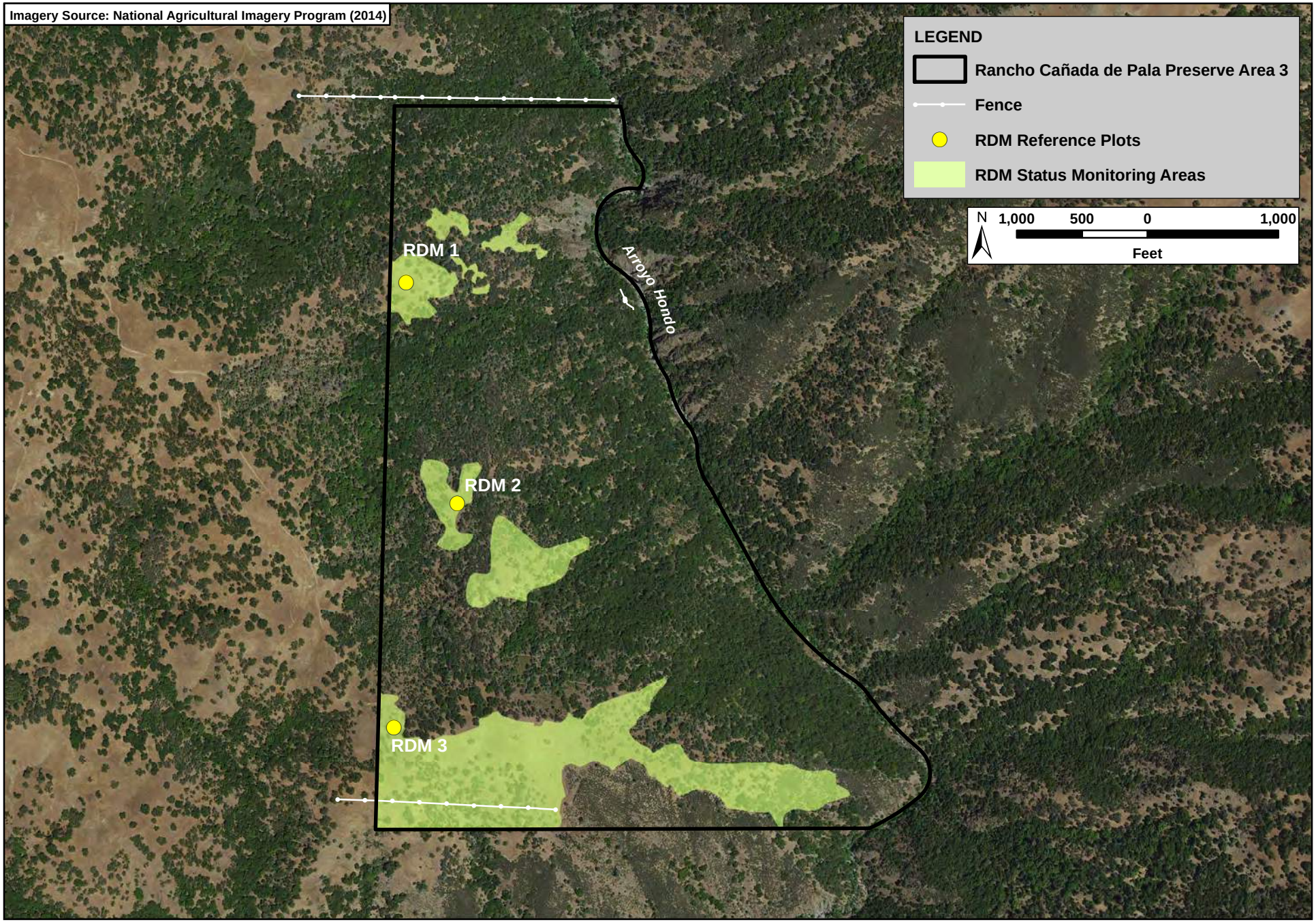


Figure 9: RDM Sampling Sites

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

APPENDIX B



Photo 1. **Ephemeral streams cross the drivable road on Area 3 at several locations. This is a representative photo, taken facing downstream from the road at SC1.**



Photo 2. **Damaged wooden retaining wall and headcut at SC4, just downstream of the drivable road. This stream is ephemeral and only conveys flows during and immediately following storm events.**



Photo 3. **The roadway to the south and upslope of SC4 has not been recently traveled because of the erosional damage at the stream crossing.**



Photo 4. **Small headcut beginning to form at SC5, just downstream of the drivable road.**



Photo 5. **Mixed riparian forest in and along the Arroyo Hondo stream channel.**



Photo 6. **White alder and naked sedge are dominant species in mixed riparian forest on Area 3.**



Photo 7. **Few herbaceous species, with the exception of naked sedge, are able to grow in mixed riparian forest because of quickly flowing water, deep pools, and large boulders in the Arroyo Hondo stream channel.**



Photo 8. **Mixed oak forest understory on Area 3.**



Photo 9. Mixed oak forest understory on Area 3.



Photo 10. View of foothill pine/oak woodland (foreground) on east-facing slopes on Area 3.



Photo 11. **Native grasses occur in some areas in the understory and in open areas of valley oak savanna on Area 3.**



Photo 12. **Chaparral habitat on Area 3 is dominated by chamise and deerweed.**



Photo 13. Rock outcropping on Area 3.



Photo 14. California annual grassland on Area 3.



Photo 15. Representative photo of Arroyo Hondo.



Photo 16. Representative photo of Arroyo Hondo.



Photo 17. Representative photo of Arroyo Hondo.



Photo 18. Spanish brome growing on the Preserve.



Photo 19. Italian thistle growing on the Preserve.

APPENDIX C

Table 6. S&WP Streams (Waters of the U.S./State), Buffers and Credits

Stream	Order	Linear Feet
1	1	545
1A	1	249
1B	1	459
1	>1	84
2	1	592
3	1	400
4	1	287
5	1	1234
6	1	1655
7	1	485
7	>1	1658
7A	1	393
7B	1	462
7B	>1	828
7B1	1	419
8	1	1579
9	1	482
10	1	1107
11	1	1
11	>1	2527
11A	1	337
11B	1	426
11C	1	396
11D	1	126
11D	>1	522
11D1	1	119
11D2	1	155
11D2	>1	50
11D2A	1	261
11E	1	300
11F	1	144
11F	>1	496
11F1	1	95
11G	1	411
11H	1	998
11H	>1	1220
11H1	1	326
11H2	1	317
11H3	1	359
11H4	1	539
12	1	1110
13	1	597
14	1	512
14	>1	288
14A	1	433
14B	1	855
15	1	442
16	1	701
17	>1	530
17A	1	171
Arroyo Hondo	>1	6246
Total		**34928**

Summary Lengths		
Stream Types	**Linear Ft**	**Miles**
1st Order	20479	3.9
>1st Order	14449	2.7
Total	**34928**	**6.6**

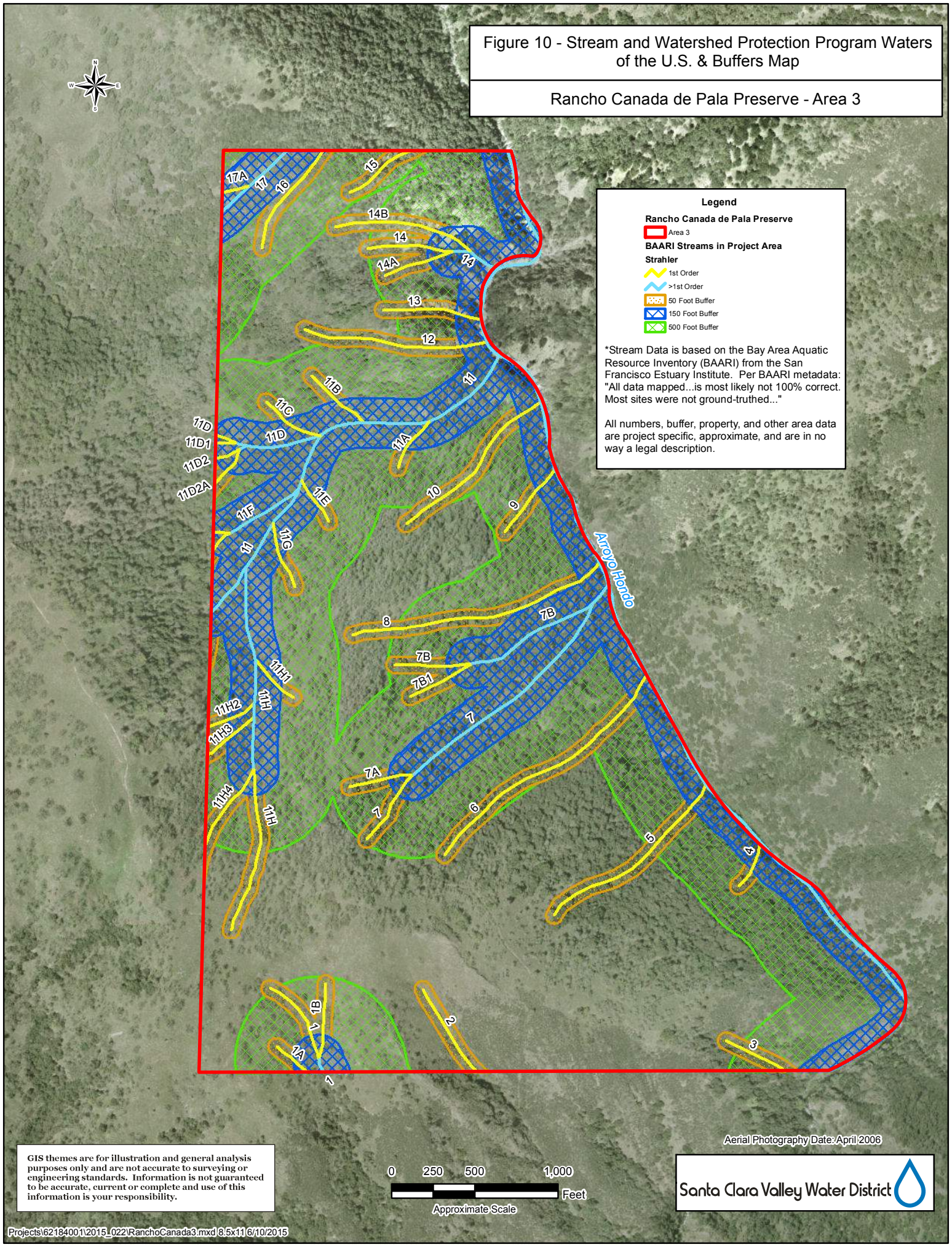
Acres and Credits Summary			
Buffers	**Acres**	**Credit Ratio**	**Credits**
50 ft	36.0	10:1	3.60
150 ft	74.4	10:1	7.44
500 ft	110.2	15:1	7.35
Total	**220.6**		**18.4**

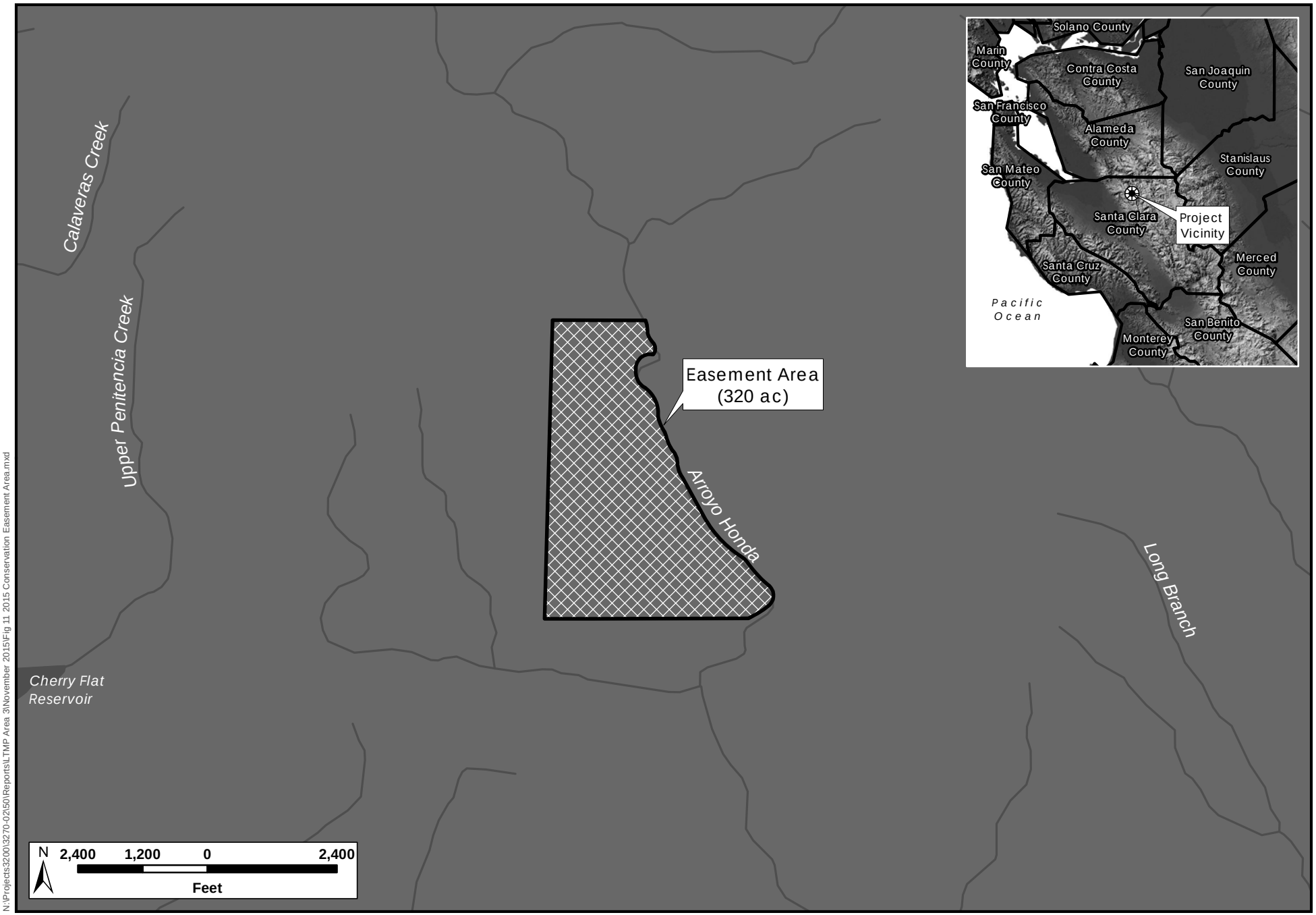
Roads (10 ft width) Intersection with S&WP Buffers			
Buffers	**Linear Ft**	**Acres**	**Credits**
50 ft	253	0.06	0.01
150 ft	1505	0.35	0.04
500 ft	1292	0.30	0.02
Total	**3050**	**0.71**	**0.07**

Adjusted S&WP Credit (minus roads)			
Buffers	**Total S&WP Credit**	**Roads Credit**	**Adjusted S&WP Credit**
50 ft	3.60	0.01	3.59
150 ft	7.44	0.04	7.40
500 ft	7.34	0.02	7.32
Total	**18.4**	**0.07**	**18.3**

Figure 10 - Stream and Watershed Protection Program Waters of the U.S. & Buffers Map

Rancho Canada de Pala Preserve - Area 3





N:\Projects3200\3270-02\50\Reports\LTMP Area 3\November 2015\Fig 11 2015 Conservation Easement Area.mxd

Figure 11: 2015 Conservation Easement Area

Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan
November 2015

APPENDIX D

General Site Monitoring Checklist – Rancho Cañada de Pala Preserve Area 3

Monitor Name_____ **Monitoring Date**_____

Locations visited_____

Resource Status and Management				
Grazing implementation monitoring being performed?				
California tiger salamander/red-legged frog observed?				
Other sensitive plant or animal species observed?				
Potential Adverse Conditions				
Question	**Answer[1]**	**Type, Location, Description of Condition, Potential Cause**	**Comparison to Prior Monitoring Condition**	**Recommendations?**
Invasive plant concentrations observed?				
Evidence of trash observed?				
Evidence of trespass observed?				
Problems with gates, fences, or troughs?				
Problems with roads?				
Management Activities Undertaken				
Any repair, remediation, management activities undertaken?				
Notes:				

[1] Y = Yes, N = No, NS = Not Sure, NA = Not Applicable

Aquatic Habitat Monitoring Checklist – Rancho Cañada de Pala Preserve Area 3

Monitor Name_____ **Monitoring Date**_____ **Monitoring Station**_____ **Aquatic Feature Type**_____

Resource Status	
Water present (and depth)?	
Woody vegetation present (and species)?	
Seedlings or saplings of woody plants observed?	

Potential Adverse Conditions				
Question	**Answer[1]**	**Location, Description of Condition, Potential Cause**	**Comparison to Prior Monitoring Condition**	**Recommendations?**
Cattle observed in streams or riparian areas?				
Bare soil in or along banks of feature?				
Unstable or eroding stream banks (e.g., rills, gullies)?				
Erosion at road (e.g., rills, gullies)?				
Headcuts present?				
Vegetation trampling evident?				
Excessive sedimentation evident?				
Visual water quality problems evident (debris, odor, color?)				
Damage from pigs or deer?				
Unusual disturbance (e.g., fire, ORV, trespassing)?				
Notes:				

[1] Y = Yes, N = No, NS = Not Sure, NA = Not Applicable

APPENDIX E

Wildland Solutions
RDM Monitoring Procedure

Keith Guenther

November 2007 version

Annually create an RDM zone map and a pasture success map with supporting information collected at monitoring reference sites that shows how well each pasture/management unit meets established RDM objectives for a property. A three part process is involved.

1. Prior to monitoring there is a need to establish the RDM classes to be utilized. The RDM classes of course need to reflect RDM objectives for the site.
2. Collection of supporting information at RDM reference monitoring sites.
3. Development of an annual pasture success map.

Part 1: Establish RDM classes to be utilized in monitoring

Prior to field mapping a decision needs to be made as to what and how many RDM classes are to be utilized. There is no specific best number, some examples are:

A minimum of 2 classes is required.

- Meets the objective
- Does not meet the objective.

UCCE publication 8092 (2006) recommends the use of 3 RDM classes:

- RDM level is high (exceeds the objective)
- RDM level is moderate (meets the objective)
- RDM level is low (below the objective)

Hormay and Faucett, USFS technical note 21 (1942) used 7 classes:

- None use
- Very light use
- Light use
- Moderately light use
- Moderate use (recommended level of use)
- Close use
- Very close use

The RDM classes utilized for monitoring RDM on a typical California annual grassland site producing 1,800-2,000 lbs/acre could be as follows:

- *RDM is more than 1,600 lbs/acre*
- *RDM is between 1,200-1,600 lbs/acre*
- *RDM is between 800-1,200 lbs/acre (established objective)*
- *RDM is between 400-800 lbs/acre*
- *RDM is below 400 lbs/acre*
- *RDM has been removed by fire and is below 100 lbs/acre*

The RDM classes utilized for monitoring RDM on a highly productive coastal prairie site producing 4,000 lbs/acre could be as follows:

- *RDM exceeds 3,600 lbs/acre*
- *RDM is between 2,400-3,600 lbs/acre*
- *RDM is between 1,800-2,400 lbs/acre*
- *RDM is between 1,200-1,800 lbs/acre (established objective)*
- *RDM is between 600-1,200 lbs/acre*
- *RDM is below 600 lbs/acre*
- *RDM has been removed by fire and is below 100 lbs/acre*

Part 2: Collect supplemental supporting information at reference monitoring sites.

Supplemental information can be collected at selected reference monitoring sites to validate and document what the person conducting the RDM zone mapping is seeing. Information collected at the reference monitoring sites is not intended to be extrapolated as representing the entire management unit or pasture. The information is intended to represent that portion of the pasture being surveyed and serve as a reference for documenting the status of a specific RDM zone.

First step - Locate reference monitoring sites

Reference monitoring sites are located in a manner that samples and records the general condition of a portion of a management unit or pasture. Reference monitoring sites are used to provide supporting documentation for the RDM zone maps. The number of reference sites in a pasture depends on the size and complexity of the pasture. A minimum of one reference site is usually established in each pasture with additional monitoring sites added when pastures are over 600 acres.

Reference monitoring sites are typically:

1. Located within a uniform vegetation type, and capable of responding to management actions. *The site should have relatively uniform vegetation and preferably be 1 acre in size.*

2. Located away from water. *¼ mile is a distance that should avoid the heavy use of sites often associated with water developments.*

3. Located for good access. *Sites should be accessible to facilitate monitoring, avoid sites that are within 20 feet of a road or 50 feet of a fence.*

4. Located on a site that is capable of producing herbage typical of the area. *For the typical California annual grassland site that would mean an area capable of producing 2,000 lbs/acre of RDM.*

Reference monitoring sites at times may be established in low use areas and high use areas to better document the actual range of impacts that may be occurring on large diverse management units. When interpreting an RDM zone map, a reference monitoring site in a potentially high use area near water that has an RDM level that meets the established RDM goal would imply that the pasture as a whole meets the RDM objective. A reference monitoring site in a potentially low use area with an RDM level that

does not meet an established RDM objective would reinforce the point that more than likely most of or all of the pasture did not meet the RDM objective.

Second step - record photo points at reference monitoring sites

1. A Robel pole is placed at a point that shows representative use of the vegetation within the vicinity of the reference monitoring site.

2. Two golf balls are placed about 6" apart on each side of the Robel pole. If vegetation is matted the golf balls are placed on the ground not on the vegetation, in a manner that helps to show herbage quantity.

3. Photos are taken looking in a northerly direction. Photos taken looking north reduce any potential glare on the camera lens and provide optimum light on vegetation.

4. A tripod is utilized to provide more stable pictures with better clarity.

5. The first picture is taken from about a 10 foot distance with tripod set at 5 feet height. With a digital camera it is zoomed in to a point that still includes all 4 golf balls.

6. A second more distant picture is taken from 20 feet with tripod set at 5 feet height. The camera is zoomed to a setting where the Robel pole height appears to be about 1/2- to 2/3 of the picture frame height.

7. The film numbers or digital photo numbers of each picture is recorded on a worksheet for each photo as the photos may all look alike at a later date. A consistent numbering system is utilized. An example is pcr023dyy where pcr is the property code, the number is the reference monitoring site number the d is distance of photo N or G, Near or General and the last 2 digits are the year of photo. Consistent numbering helps transfer field data smoothly into the annual report. With digital cameras the date stamp is utilized when available. A1.2 megapixel image size is considered adequate as photos for most reports do not need to exceed 3"x5".

Third step - estimate RDM class at monitoring reference sites

An estimate of RDM herbage is made utilizing the RDM classes established in part one of the monitoring plan. The classes are used with the desired goal usually being the middle class and 2-3 classes above and 2-3 classes below the desired level plus the burned by fire class.
Clipping and weighing of RDM is conducted as needed to confirm that estimates are being made accurately. The procedure for clipping and weighing RDM is described in the *Wildland Solutions Residual Dry Matter (RDM) Monitoring photo-guide and the UCCE publication 8092. The scales for weighing RDM are set to 0 with the bag attached or the weight of the bag that holds the RDM is subtracted after weighing.*

Fourth step - document any additional information
Additional information such as visual estimates of plant composition, weedy species, noxious weeds, perennial grasses, unusual wildlife seen, GPS coordinates, general location and anything of note that might be of use to future managers is added as comment notes on a standard form for the project. The amount and types of supplemental data collected will vary depending on the needs of each project. A sample form is shown on page 9.

Fifth step - transfer field information to digital format.
This step provides the ability to archive the field data collected and make multiple copies for future reference and analysis. A format that uses a MS WORD based form allows efficient entry of data.

Sixth step - create a supporting report
The GIS database developed for the monitoring reference sites can be utilized to create a summary report for inclusion in the appendix of the annual RDM monitoring report.

Seventh step – add reference monitoring site locations to the RDM zone map
Placing the location of the monitoring reference sites on the RDM zones map created for the project provides the ability for anyone to easily review the data collected for specific reference sites. The ability for managers to be able to readily identify reference sites that have unusually high or unusually low levels of RDM is a very useful feature when assessing grazing patterns and making management adjustments.

Part 3: Develop RDM zone and pasture success maps

RDM zone or use-pattern maps are developed to show RDM levels that occur within a pasture at the time a survey is made. Pastures typically have a variety of soils, aspects, vegetation and non-uniform livestock use that requires interpretation when developing an RDM zone map.

First step – collect field data

A 1:24,000 scale USGS topographic map, which includes management unit or pasture boundaries and important features such as livestock water, fences and roads, is utilized as a base field map for recording data.

Mapping of RDM zones is conducted by visually examining an adequate amount of the pasture to determine and map which of the 3-7 RDM classes occur within the pasture. A combination of reference photographs, descriptive narrative and clipping and weighing RDM within representative areas is utilized to determine the RDM class for a particular portion of a pasture (Guenther 1998). Mapping units are generally no smaller than 20 acres. The RDM zones are delineated and recorded before leaving a given pasture.

When mapping RDM patterns for a property attention is focused on those areas capable of producing herbage and RDM that is typical for the area during a normal growing season. Notes

are made on the map regarding specific information obtained, especially from monitoring reference sites, and sites that have been clipped and weighed.

Livestock tend to graze in a patchy manner, heavily using small areas and lightly using an adjacent area. Boundaries between RDM zones are recorded on the map. When determining the boundary between two classes it is often necessary to decide that an area is "mostly" within a given class and an adjacent area is "mostly" in a higher or lower class. The boundary is placed on the map where one "mostly" shifts to the other "mostly". Features such as topographic breaks in slope, changes in aspect and the resulting vegetation changes influence livestock use patterns and often can be used to help determine the boundary between two use classes. Interestingly, even though 6 classes of RDM are typically utilized, most pastures tend to only have 2-3 RDM zone classes as cattle tend to spread out and locate areas of good remaining forage before severely impacting a significant portion of any pasture. The result is that pastures tend to be mostly light-moderate use or moderate-heavy use.

Second step - input data collected into GIS database

Data from the field maps is transferred into a GIS database to allow creation and display of information as an RDM zone map (Fig 1 page 7). The ability to archive and analyze data allows the development of the annual pasture success maps (Fig 2 page 8).

Third step - calculate acreage of each mapped zone

A query of the database calculates the acreage for each RDM zone mapped within a pasture. A simple calculation then determines the percentage of a pasture that meets or does not meet a specific RDM class for the pasture.

Fourth step - determine how well each pasture meets the objective (success)

The criteria used to measure success are quantitative and color coded for visual display. An example with 2 classes above the established objective and 2 classes below the objective could be:

- *90% of pasture exceeds 3,000 lbs/acre RDM*
- *90% of pasture exceeds 2,000 lbs/acre RDM*
- *90% of pasture exceeds 1,200 lbs/acre RDM (established objective)*
- *10-35% of pasture is below 1,200 lbs/acre RDM*
- *more than 35% of pasture is below 1,200 lbs/acre RDM*

The criteria could as well have been:

Three simple classes for success described as:

- 80% of pasture exceeds objective
- 80% of pasture meets objective
- More than 20% of pasture below objective

Or five classes used to describe levels of success:

- High (RDM more than 200% of minimum)
- Exceeds the objective(RDM is 150-200% of minimum)
- Meets the objective (RDM is from 100-150% of minimum)
- Below the objective (10-35% of area below minimum)
- Low (more than 35% of area below minimum)

Fifth step - prepare the pasture success map with legend.

Each pasture is assigned one of 3-6 success classes depending on how well it meets the established objective. Pastures are considered to be within an identified success class if a specific percentage of the pasture is at or above the RDM level for the class (typically 80 or 90%. A GIS based map is prepared with color coded levels for pasture success to facilitate visual review and evaluation of success on a management unit or pasture basis.

Sixth step - prepare a pasture summary table

The database associated with the GIS program can be utilized to create a summary report for each pasture that is exported in a text format for inclusion in the appendix of the annual RDM monitoring report. The current year's data can then be compared to data collected for each pasture from previous years.

References:

Bartolome, James W. William E. Frost, Neil K. McDougald, Michael Connor. 2006. California Guidelines for Residual Dry Matter (RDM) Management on Coastal and Foothill Annual Rangelands. UCCE pub 8092 http://anrcatalog.ucdavis.edu./pdf/8092.pdf

Guenther, Keith. 1998. Residual Dry Matter (RDM) monitoring photo-guide. Wildland Solutions. http://www.wildlandsolutions.com/rdm.html

Hormay, A.L. and A. Fausett. 1942. Standards for judging the degree of forage utilization on California annual type ranges. CA Forest and Range Experiment Station Technical Note 21.
en pastures are over 600 acres.

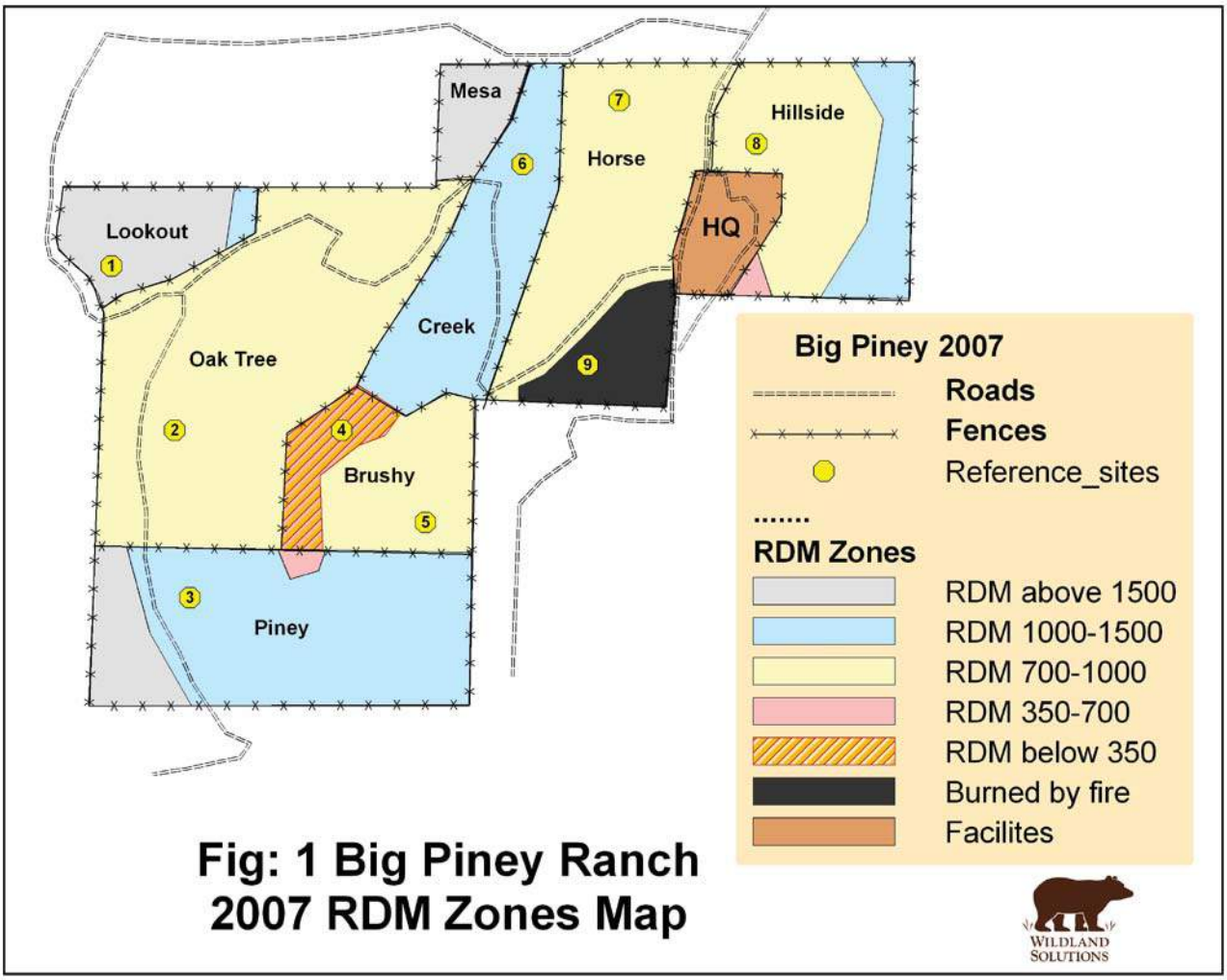


Fig: 1 Big Piney Ranch 2007 RDM Zones Map

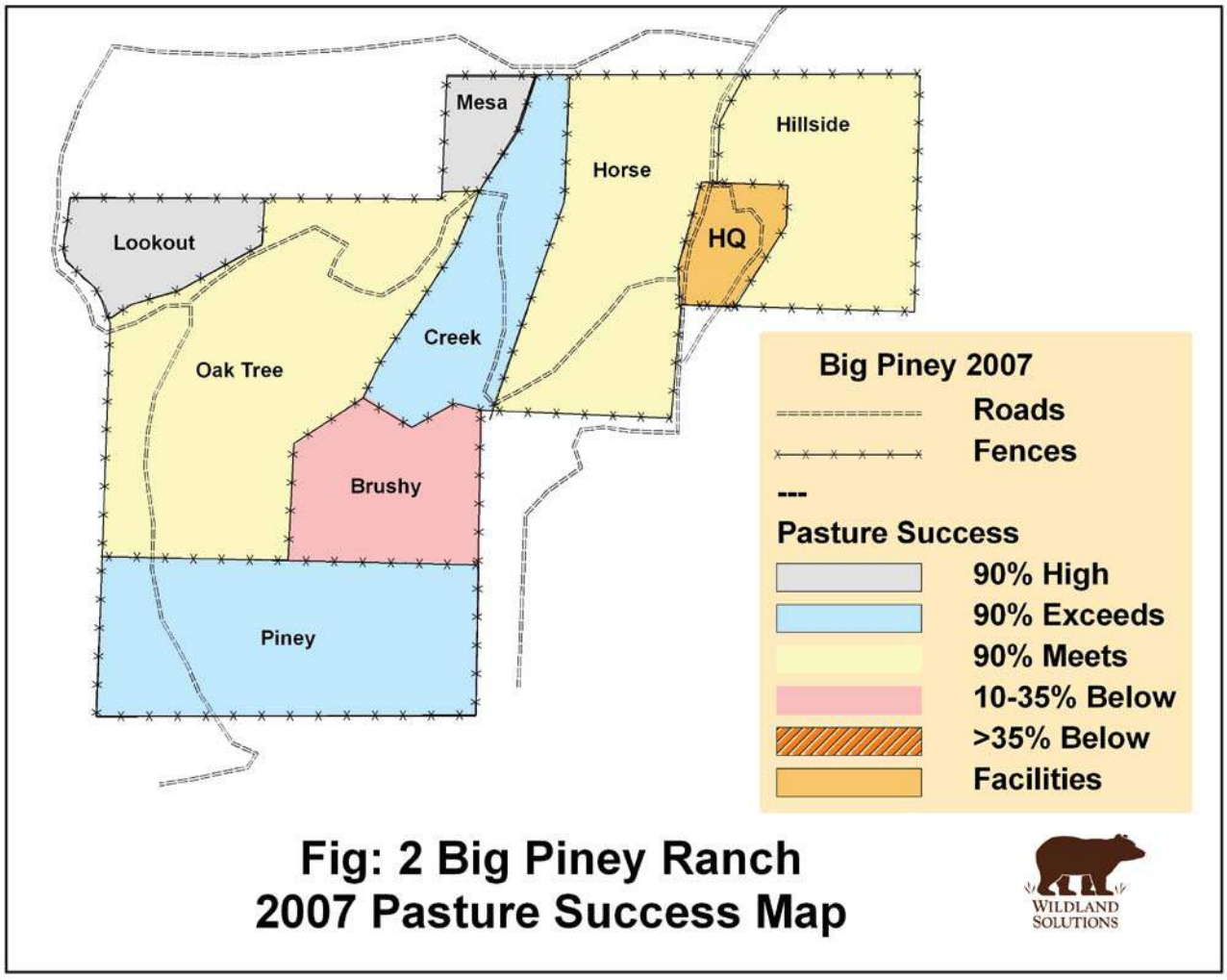


Fig: 2 Big Piney Ranch
2007 Pasture Success Map

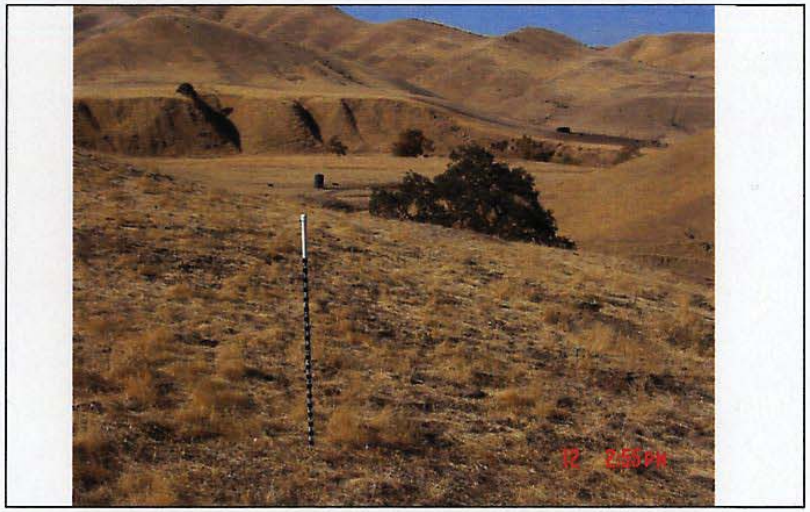
WILDLAND SOLUTIONS

- **Project:** *TNC- Mount Hamilton*
- **Ranch: Simon Newman**
- **Pasture name: Bear Gulch**

- **UTM Coordinates: UTM base** *27*
  East: 0664231 North: 4121284
- **General location:**

- **Herbage composition:**
  - **Perennial Grass:..... %**
  - **Annual Grass:.....95 %**
  - **Forbs:..... 4 %**
  - **Tree leaves:..... %**
  - **Weeds: ..... 1 %**

Comments:
Weeds: Scattered Mullein Weed, Tarweed and Vinegar Weed.





Monitoring Site #smn61 Date 10/12/2004
Slope: 7 % Aspect: Northeast
Residual Dry Matter Class: 1000

Surveyor: *Keith Guenther*, *Wildland Solutions*

- **Project:**
- **Ranch:**
- **Pasture name:**

- **UTM Coordinates: UTM base**
  East: North:
- **General location:**

- **Herbage composition:**
  - **Perennial Grass:..... %**
  - **Annual Grass:..... %**
  - **Forbs:..... %**
  - **Tree leaves: ..... %**
  - **Weeds: ..... %**

Comments:

Distance photo with General View

Close photo with detail view

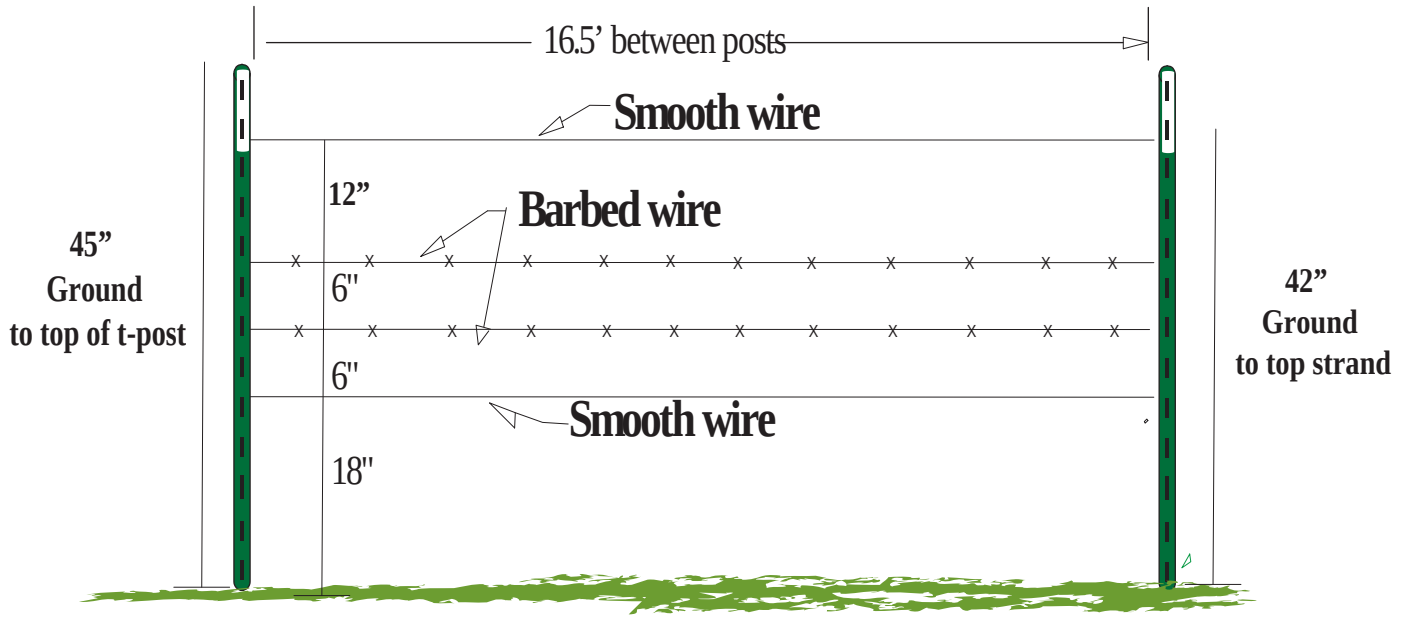
Monitoring Site # Date
Slope: % Aspect:
Residual Dry Matter Class:

Surveyor:

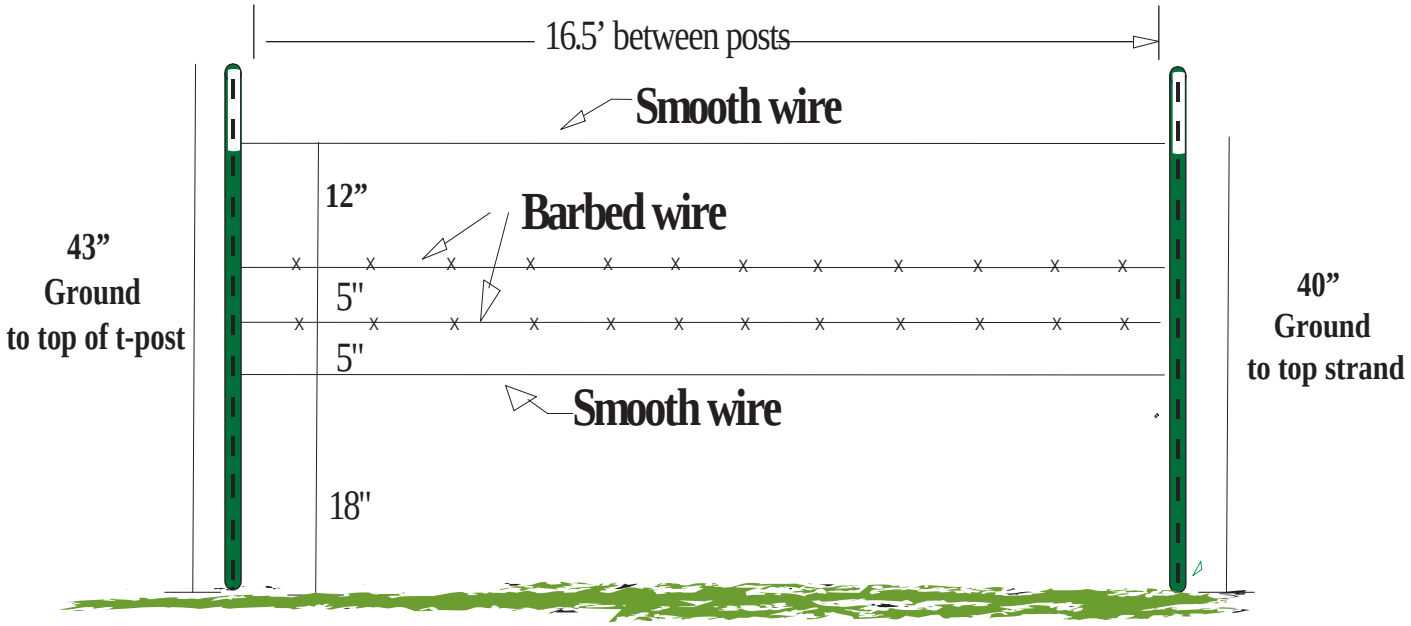
APPENDIX F

Santa Clara County Open Space Authority
Fencing Standards
Standard Cattle Grazing

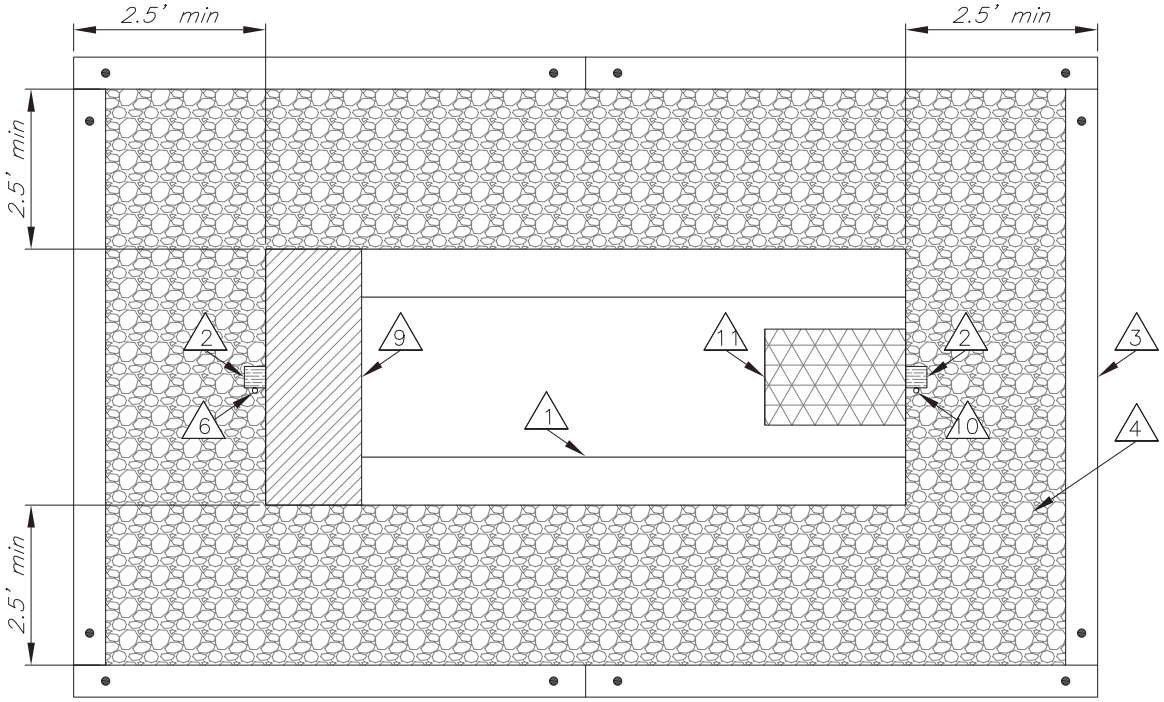
Road Side - Use 66″ (5.5′) t-posts

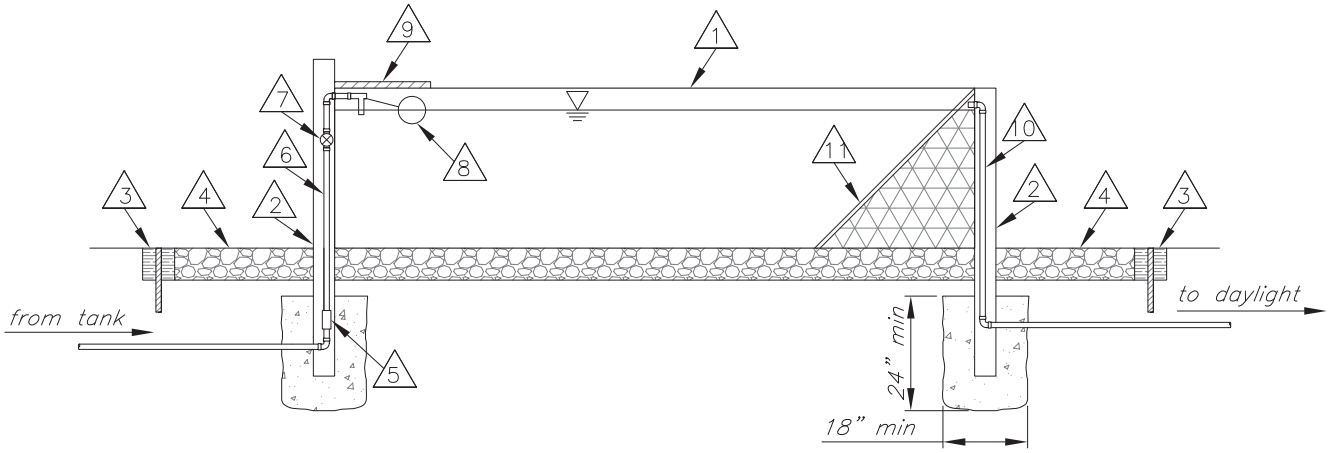


Interior Fencing - Use 60″ (5.0′) t-posts



Ordering t-posts:
All t-posts are green
Roadside t-post length is 66” (5.5’)
Interior t-post length is 60” (5.0’)





CONSTRUCTION NOTES

1. Provide fabricated steel trough.
2. Provide steel pole anchor posts set in sack mix concrete as shown.
3. Provide pressure treated 6"x6" or railroad tie held to ground with 18" long #6 rebar or 1" steel pipe.
4. Provide 6" thick pad of 3" minus river run cobble over 6oz non-woven geotextile fabric.
5. Provide Coupling from 2" schedule 40 PVC to 1" galvanized steel pipe.
6. Provide galvanized steel pipe feed line.
7. Provide 100 psi rated gate valve.
8. Provide Watts ST1000 1" standard float valve or approved equal.
9. Provide steel float guard.
10. Provide 1" galvanized steel pipe overflow line. Pipe to daylight no less than 20 feet from trough onto 1'x3' stabilized pad.
11. Provide wildlife escape ramp. Ramp shall be expanded steel welded to a rigid frame and extend to the bottom of the trough.

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

CONSTRUCTION DETAIL – TROUGH
STOCKWATER SYSTEM

Grower

Santa Clara County, California

File No. *Stockwater-Details.dwg*

Drawing No. *2012-1*

Sheet *1* of *1*

APPENDIX G

Rancho Cañada de Pala Area 3 Long-term Management Plan Reporting Template

The District will submit annual reports to the USACE, CDFW, and RWQCB by December 31 each year. After 5 years, with the concurrence of USACE, CDFW, and RWQCB, reporting may be reduced to every 5 years. Each report will cover monitoring activities of the current year (or previous 5 years for 5 year reports) and will pertain specifically to the SMP 1 mitigation areas but may contain incidental information pertaining to the entire Preserve not subject to agency review for mitigation purposes. Annual reports will include the following information:

Project Information

Project name; applicant information; permit file numbers for all agencies; District contacts information.

Mitigation Site Information

Site location (including a regional map); purposes of the mitigation sites; Fee and Conservation Easement (CE) ownerships; date of initiation of CE and Management Plan; mitigation monitoring year.

Figures

Site map showing the mitigation allocation areas, CE area, and areas of purview of each SMP1 permitting agency (i.e. area corresponding to each agency's mitigation requirement). Additional tables and figures will present monitoring results graphically, where applicable, to facilitate data interpretation and analyses.

Management Plan Elements, Objectives and Tasks (pertaining to the mitigation area)

Table of management plan elements, objectives, tasks.

Summary of Data Collected and Results

Summary of current year's management plan monitoring tasks and results including: RDM monitoring, invasive plant monitoring and control activities; stream and spring monitoring; RLF, CTS and other sensitive species observations; patrols and infrastructure monitoring. Summary of annual CE monitoring results. Tables and figures will be included where applicable, to facilitate data interpretation and analysis.

Discussion: Problems Noted and Proposed Remedial Measures

Discussion of problems noted during the monitoring year, including an analysis of any non-compliance with terms of the LTMP or CE, and a discussion of proposed remedial measures or recommendations to address these problems.

Suggested Management Plan Revisions

Adaptive management recommendations and suggested revisions to the management plan will be discussed.

Appendices

The annual Conservation Interest Compliance Monitoring Report prepared by the CE holder.

Note: Fields throughout this form expand as content is entered.
Entries are not limited to the space displayed in a blank form.

The Nature Conservancy

California Field Office
201 Mission St., 4th Floor
San Francisco, CA 94105

Tel [415] 777-0487
Fax [415] 777-2044
[415] 777-0772
nature.org

CONSERVATION INTEREST COMPLIANCE MONITORING REPORT

NAME

SUMMARY

Monitoring Date

Name of Monitor

Status

Monitor Electronic Signature:

☐ authenticated

PART I

PROPERTY, CONTACTS and VISIT Information

TYPE of Interest

Last Monitoring date from previous year's report

MABR IFMS ID for linking to TNC's CLS system

TNC interest (easement or deed restriction) Acres

County(ies) property located in

IRS-Reportable?

I have reviewed the information above and it is correct to the best of my knowledge:

☐ Yes ☐ No

CONTACTS

Owners

Full Name	
E-mail Address	
Mobile Phone	
Business Phone	
Home Phone	
Role	

On-Site Contacts

Full Name (Select)	
E-mail Address	
Mobile Phone	
Business Phone	
Home Phone	
Role	

I have reviewed the Contact information above and updated it if necessary. It is correct to the best of my knowledge:

☐ Yes ☐ No

If property was transferred since last report mark here: ☐

COSTS and TIME REPORTING

IRS-Reportable conservation easements Budget center(s) used for the work reflected in this report

-8888

additional centers:

COST: If this monitoring was not IRS Reportable (previous page) enter the estimated cost of your time and expenses for this year's monitoring $

THE VISIT

ENTER the Last day of monitoring reflected in THIS REPORT

If this report reflects additional days or earlier visits this year, enter those dates here

Was easement or deed restriction text read and baseline reviewed immediately before site visit?

○ Yes ○ No

Was Owner / representative contacted before visit? ○ Yes ○ No

Indicate who was contacted:

Did the Owner / representative accompany monitor? ○ Yes ○ No

(Indicate who accompanied monitor):

List here anyone else present at visit (other than monitors and owner or representative)

EASEMENT or Deed Restriction AREA INSPECTED

(entire ranch vs. specific areas - describe and, as needed, indicate on MAP)

Natural Communities observed

Rare species: (if present and specifically noted)

PART II

INTEREST (Easement or Deed Restriction) SITE Information

Land Owner / Representative Report
Note land owner or representative comments.

Monitor's Observations
Describe your own direct observations of land use practices on interest lands.

Have there been any changes in these practices from the last monitoring? ○ Yes ○ No
If YES, describe

Adjacent Lands
Note any activities on adjacent properties, if relevant

Weather Notes
Enter any notes about weather in the area during this monitoring year

Catastrophic events
Have there been any catastrophic events since last visit (fire, flood, etc)?
○ Yes ○ No
If YES, describe impact on property

If YES, are there any activities planned to address the damage and/or restore the habitat?
○ Yes ○ No

Are they consistent with the interest terms? ○ Yes ○ No
Comments:

Any Infrastructure Changes?
Mark the box and describe.

☐ Alternative energy installations, e.g. windmill, solar panels etc. (describe)

☐ Barns (describe)

☐ Buildings (describe)

☐ Corrals (describe)

☐ Dumps (describe)

☐ Excavation (describe)

☐ Fences (describe)

☐ Hayfields (describe)

☐ Irrigation (describe)

☐ ' Landfill (describe)

☐ Airplane landing strip (describe)

☐ Mining (describe)

☐ Orchards / tree farms (describe)

☐ Ponds / lakes (describe)

☐ Roads (describe)

☐ Row crops (describe)

☐ Timber harvesting (describe)

☐ Trails (describe)

☐ Utilities (describe)

☐ Vineyards (describe)

☐ Water development /wells (describe)

☐ Other (describe)

Any Management Problems?
Mark the box and describe.

☐ Exotic/invasive plants (describe)

☐ Feral animals (describe)

☐ Disease (describe)

☐ Trespassing (describe)

☐ Litter (describe)

☐ OHVs (describe)

☐ Vandalism (describe)

☐ Erosion (describe)

☐ Pollution (describe)

☐ Overuse (describe)

☐ Deferred maintenance, e.g. fences, etc. (describe)

☐ Other (describe)

Management Related Activities
Have there been any of the following activities since the last monitoring? If YES, mark the box and describe.

☐ Wildlife / Habitat Management / Restoration, e.g. plantings, reintroductions, etc. (describe).

☐ Exotics control, e.g. spraying, pulling, hunting, etc. (describe)

☐ Scientific, e.g. research, surveys, etc. (describe)

☐ Educational, e.g. nature study, tours, etc. (describe)

☐ Other (describe)

PART III

PHOTO DOCUMENTATION and REFERENCES

PHOTOS:

Post photography appropriate for the scale of the site, interest terms and conditions observed.

Photographer's name (use a separate line for each photographer or source	Number of photos	Date taken

If photo location map, purchase receipt or related reference is included note it below

Description of reference	Filename as uploaded

ADDITIONAL RELATED DOCUMENTATION and REFERENCES

Upload and list here any additional documentation.

Filename or Description	Format

PART IV

NARRATIVE and STATUS

SUMMARY and RECOMMENDATIONS

STATUS

Based on your observations, in your best judgment are the terms of the easement or deed restrictions being met? Mark one and add comments below.

Comments: (explain in detail “Pending” or “No, some activities believed to be in violation” status):

Part V

MONITOR INFO

Full Name	
Company	
Job Title	
E-mail Address	
Mobile Phone	
Business Phone	
Role	

APPENDIX H

Easement Documentation Report Certification

Acknowledgement of Condition

Rancho Cañada de Pala Preserve Area 3

This acknowledgement constitutes a part of an Easement Documentation Report ("EDR") prepared in conjunction with a Grant Deed of Conservation Easement ("Conservation Easement") recorded in the Official Records of Santa Clara County, California on _____ as Document No. _____ by The Nature Conservancy, a non-profit corporation organized and existing under the laws of the District of Columbia ("TNC"), over property owned by the Santa Clara Valley Water District ("Owner"). The Conservation Easement covers a tract of land known as Rancho Cañada de Pala Preserve Area 3 located in Santa Clara County, California as more particularly described in the Conservation Easement (the "Property").

The EDR consists of sections 2, 3 and 4 and related components of the Appendices of the attached Rancho Cañada de Pala Preserve Area 3 Long-term Management Plan, which is dated November 2015, was prepared by the Santa Clara Valley Water District and H. T. Harvey and Associates and includes maps and photographs of the Property, consisting of 320 acres more or less. Owner and the Conservancy acknowledge and agree that the EDR is an accurate representation of the Property at the time of the reservation of the Conservation Easement.

This Acknowledgment may be executed in any number of counterparts, each of which when executed shall be deemed to be an original and all of which when taken together shall constitute one and the same agreement.

CONSERVANCY	**OWNER**
THE NATURE CONSERVANCY, a District of Columbia non-profit corporation	SANTA CLARA VALLEY WATER DISTRICT, a California Special District
By: _____ Ethan Inlander, Stewardship Manager	By: _____ Liang Lee , Deputy Operating Officer, Watershed Stewardship and Planning Division
Dated: _____	Dated: _____

Appendix C

MEMORANDUM

TO:	Tiffany Chao	**FROM**:	Shawn Lockwood; Navroop Jassal
SUBJECT:	Biological Site Assessment Rancho Cañada de Pala Preserve Long-term Management Plan Implementation	**DATE**:	4-30-19

Background and Project Description

The Rancho Cañada de Pala Preserve (hereinafter "Preserve") was purchased by the Santa Clara Valley Water District in part to provide mitigation in perpetuity for impacts associated with the 2002 Stream Maintenance Program. It is located toward the upstream end of the Upper Penitencia Creek Watershed approximately nine miles northeast of downtown San José in unincorporated Santa Clara County on Assessor's Parcel Numbers (APNs) 042-07-019, 042-07-020, 042-07-021, 042-07-022, 042-07-023, 042-07-024, 042-07-025, 042-07-026, 042-07-027, 042-07-028, 042-08-001, 042-20-010, and 627-22-011. The Preserve is approximately 1,758 acres, is divided into three areas (Areas 1, 2, and 3) and is managed per two long-term management plans (one for Areas 1 and 2 and a second for Area 3). The project consists of periodic, as-needed landscape, roadway, and grazing infrastructure maintenance within Areas 1, 2, and 3 of the Preserve. The purpose of the long-term management plans is to ensure the Preserve is maintained, monitored, and managed in a manner that preserves all its conservation values. The project activities would include landscape maintenance, fence and gate repair, trough improvements, and monitoring activities.

Landscape maintenance activities would consist of grazing management prescriptions and non-native invasive plant species management. All landscape maintenance work would be conducted using mowers or hand tools such as pruners, pole saws, gas powered weed eaters and blowers.

Infrastructure maintenance activities would consist of minor improvements and repairs to existing fences, gates, roadways, and troughs. Routine road maintenance would minimize erosion and sedimentation issues. All infrastructure maintenance activities would be conducted using manual labor, small power tools, and small construction equipment.

The proposed project activities would involve minor ground disturbance. Best management practices would be incorporated into the project, including pre-activity surveys for avoidance of nesting birds and special-status species. Proposed working hours would be 7:00 a.m. to 5:00 p.m., Monday through Friday.

Biological Resources

Conservation Values

The main purpose of the Preserve's Long-term Management Plans is to ensure that the Preserve is monitored, maintained, and managed in a manner that preserves its conservation values and

is consistent with the Conservation Easements on Areas 1 and 3. The conservation values of the Rancho Canada de Pala Preserve are as follows:

- Over 29 miles of seasonal and intermittent streams, as well as 10 ponds (four seasonal and six perennial)

- A mosaic of open rangeland and varied vegetation types (i.e., blue and valley oak woodland, California annual grassland, foothill pine/oak woodland, mixed oak forest, mixed riparian forest, northern mixed/chamise chaparral, and valley oak savanna) that provide habitat for a wide variety of birds, mammals, reptiles, amphibians, and invertebrates

- Potential breeding and upland dispersal habitat for the federally threatened California red-legged frog (CRLF; *Rana draytonii*), also a state species of special concern; potential breeding and upland dispersal habitat for the state and federally threatened CTS; potential breeding and foraging habitat for the western pond turtle (*Actinemys marmorata*), foothill yellow-legged frog (*Rana boylii*), and American badger (*Taxidea taxus*), state species of special concern.

- Ecological connectivity to the surrounding open space and watershed land network

Sensitive Species

A number of special-status wildlife species could potentially occur within the Preserve, based on the presence of suitable habitat and/or documented occurrences nearby. Table 1 provides a comprehensive list of all special-status plant and wildlife species that may occur.

Table 1. Potential Sensitive Species[1]

Common Name	Scientific Name	Federal Status[2]	State Status[2]	Other Status[2]
AMPHIBIANS				
California tiger salamander	***Ambystoma californiense***	**Threatened**	**Threatened**	
California red-legged frog	*Rana draytonii*	Threatened	SSC	
Foothill yellow-legged frog	***Rana boylii***	**None**	**SSC**	
REPTILES				
Western pond turtle	***Actinemys marmorata***	**None**	**SSC**	
BIRDS				
Cooper's hawk	***Accipiter cooperii***	**None**	**WL**	**IUCN:LC**
Sharp-shinned hawk	*Accipiter striatus*	None	WL	
Golden eagle	***Aquila chrysaetos***	**BCC**	**FP**	**IUCN:LC**
Ferruginous hawk	*Buteo regalis*	BCC	WL	IUCN:LC
Northern harrier	*Circus cyaneus*	None	SSC	IUCN:LC
White-tailed kite	*Elanus leucurus*	None	FP	IUCN:LC
Bald eagle	*Haliaeetus leucocephalus*	BCC	Endangered, FP	IUCN:LC
Osprey	*Pandion haliaetus*	None	WL	IUCN:LC

Common Name	Scientific Name	Federal Status[2]	State Status[2]	Other Status[2]
Merlin	*Falco columbarius*	None	WL	IUCN:LC
Prairie falcon	***Falco mexicanus***		**WL**	**IUCN:LC**
American peregrine falcon	*Falco peregrinus anatum*	BCC	FP	
Vaux's swift	*Chaetura vauxi*	None	SSC	IUCN:LC
Nuttall's woodpecker	***Picioides nuttallii***	**BCC**	**None**	**IUCN:LC**
American dipper	***Cinclus mexicanus***	**None**	**None**	**IUCN:LC**
Loggerhead shrike	*Lanius ludovicianus*	BCC	SSC	IUCN:LC
Yellow-billed magpie	***Pica nuttalli***	**BCC**	**None**	**IUCN:LC**
Oak titmouse	***Baeolophus inornatus***	**BCC**	**None**	**IUCN:LC**
Grasshopper sparrow	***Ammodramus savannarum***	**None**	**SSC**	**IUCN:LC**
MAMMALS				
Pallid bat	*Antrozous pallidus*	None	SSC	IUCN:LC
Yuma myotis	*Myotis yumanensis*	None	None	IUCN:LC
American badger	***Taxidea taxus***	**None**	**SSC**	**IUCN:LC**
Ringtail	*Bassariscus astutus*	None	FP	IUCN:LC
PLANTS				
Arcuate bush mallow	*Malacothamnus arcuatus*	None	None	CRPR 1B.2
Bent-flowered fiddleneck	*Amsinckia lunaris*	None	None	CRPR 1B.2
Chaparral harebell	*Campanula exigua*	None	None	CRPR 1B.2
Fragrant fritillary	*Fritillaria liliacea*	None	None	CRPR 1B.2
Most-beautiful jewelflower	*Streptanthus albidus* ssp. *peramoenus*	None	None	CRPR 1B.2
Mount Day rockcress	*Boechera rubicundula*	None	None	CRPR 1B.1
Santa Clara red ribbons	*Clarkia concinna* ssp. *automixa*	None	None	CRPR 4.3
Santa Clara thorn mint	*Acanthomintha lanceolata*	None	None	CRPR 4.2
Santa Cruz mountain pussy paws	*Calyptridium parryi* var. *hesseae*	None	None	CRPR 1B.1
Serpentine leptosiphon	*Leptosiphon ambiguus*	None	None	CRPR 4.2
Showy madia	*Madia radiata*	None	None	CRPR 1B.1

[1] Bold indicates species observed within Preserve
[2] Status codes –
BCC = USFWS Birds of Conservation Concern;
SSC = California Species of Special Concern;
FP = Fully Protected;
WL= Watch List;
IUCN:LC = The World Conservation Union- Least Concern Species;

CRPR:

Rank 1A = Plants considered extinct.
Rank 1B = Plants rare, threatened, or endangered in California and elsewhere.
Rank 2A = Plants considered extinct in California and elsewhere.
Rank 2B = Plants rare, threatened, or endangered in California but more common elsewhere.
Rank 3 = Plants about which more information is needed - review list.
Rank 4 = Plants of limited distribution - watch list.

These rankings are further described by the following threat code extensions:

1: seriously endangered in California.
2: fairly endangered in California.
3: not very endangered in California

Critical Habitat

The Preserve intersects with critical habitat of two federally listed species, CTS and CRLF. A majority of the Preserve is enclosed within the CTS Critical Habitat Poverty Ridge Unit (East Bay Region – Unit #5). The western half of the Preserve is within the CRLF Critical Habitat STC-1 Unit.

Conclusion

The routine land management tasks associated with the long-term management of the Rancho Canada de Preserve are expected to further the protection and management of high-quality habitats within the Preserve. Thus, the overall effect of the Project on the Preserve's species and habitats is beneficial and project activities are not expected to adversely affect biological resources.

Appendix D

Pacific Legacy Historic Preservation
Bay Area Division
900 Modoc Street
Berkeley, CA 94707

Phone: 510.524.3991
Fax: 510.524.4419
www.pacificlegacy.com

March 11, 2020

Tiffany Chao
Assistant Environmental Planner,
Environmental Planning Unit
Santa Clara Valley Water District
5750 Almaden Expressway, San Jose, CA 95118
Via Email

Re: Santa Clara Valley Water District Cultural Resources On-Call,
Rancho Cañada de Pala Project, Santa Clara County (PL-3039-01, Task 11)

Dear Ms. Chao:

On behalf of Santa Clara Valley Water District (Valley Water), Pacific Legacy, Inc. conducted a preliminary cultural resources assessment for the proposed Rancho Cañada de Pala Project (Project) in February and March 2020. The assessment included an archival and records search, outreach to the Native American Heritage Commission (NAHC) and local Native American tribal representatives, and an examination of existing geoarchaeological sensitivity data for the Project environs. The Project will involve the formulation of management plans for Areas 1, 2, and 3 of the Rancho Cañada de Pala Preserve (Preserve). These plans will focus on biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. The Preserve spans approximately 1,532.5 acres and straddles Poverty Ridge east of the City of Milpitas and just east of the Cherry Flat Reservoir (*see* Attachment A, Figures 1 and 2). All work performed by Pacific Legacy was intended to comply with implementing regulations and guidelines for Section 106 of the National Historic Preservation Act (36 CFR 800) and the California Environmental Quality Act (14 CCR Section 15000 et seq.).

The archival and records search revealed that no cultural resources have been previously recorded within the Project area, though one prehistoric archaeological site (P-43-002398) has been recorded within a surrounding 0.25-mile radius (*see* Attachment A, Figure 3). The archival and records search also revealed that only 2% of the Project area has been previously surveyed, specifically a 0.6-mile stretch of Penitencia Creek in Areas 1 and 2 and a small area in the southern portion of Area 2. Neither of these areas was examined in the past ten years and would need to be re-examined in support the current Project. Contact with the NAHC revealed that no Native American cultural resources listed in the Sacred Lands File have been reported in the Project area. An examination of geoarchaeological sensitivity data indicates that buried cultural resource potential within the Project area ranges from very low to high, with areas surrounding drainages and springs characterized as most sensitive.

Based on the results of our assessment, we recommend that additional studies be completed in advance of Project implementation. Specifically, we recommend that an intensive pedestrian cultural resources survey be conducted for the Project area, particularly for those areas where

Project activities may result in direct or indirect impact to cultural resources, if present. Any prehistoric or historic period resources discovered during the survey should be recorded on standardized Department of Parks and Recreation (DPR) Forms 523. If they cannot be avoided by Project activities such as road rehabilitation or infrastructure maintenance, these resources should be evaluated for listing in the National Register of Historic Properties (NRHP) and California Register of Historical Resources (CRHR) and treated appropriately. These steps will allow Valley Water to better determine the potential impacts of the Project on cultural resources.

Project Location and Setting

The Project area is in northern Santa Clara County east of the City of Milpitas and the Cherry Flat Reservoir, west of Mount Day, and North of Mount Hamilton. It straddles Poverty Ridge and is marked by extremely rugged terrain that varies in elevation from roughly 1,400 feet to over 2,900 feet above mean sea level (*see* Attachment A, Figure 2). Several springs have been mapped along Poverty Ridge, and two key drainages pass through the Project area. The Upper Penitencia Creek watershed originates on Poverty Ridge and flows south through Areas 1 and 2 before draining into the Cherry Flat Reservoir and then on through Alum Rock Park where it is joined by Arroyo Aguague. The Arroyo Hondo watershed, which is bordered by Poverty Ridge to the west and Oak Ridge to the east, marks the eastern boundary of the Project area and Area 3. It is formed by the confluence of Isabel Creek and Smith Creek and trends northwest before joining Calaveras Creek at the Calaveras Reservoir.

The Project area is located in Township 6 South, Range 2 East, Sections 9 – 16 and 22 – 24 and in the northern portion of the Cañada de Pala Civil Colonies Land Grant. Attachment A, Figure 1 depicts the Project area on the Mount Day 7.5-minute USGS topographic map. Attachment A, Figure 2 depicts the Project area on a true-color orthophoto.

Project Background and Description

Valley Water is formulating two management plans for the Preserve, one that focuses on Areas 1 and 2 and a second that is specific to Area 3. The management plan for Areas 1 and 2 includes the following objectives:

- monitoring, conserving, and managing streams and ponds;
- livestock grazing management;
- minimizing the spread of existing non-native vegetation;
- conserving sensitive biological species such as the tiger salamander and red-legged frog;
- monitoring the condition of fences, gates, and troughs to ensure they are maintained to facilitate the grazing regime;
- installing, modifying, or removing existing fencing, gates, troughs, and other grazing-related infrastructure if indicated for grazing or other resource-related management needs;
- utilizing temporary means, such as electric fencing, for short-term exclusion or inclusion;
- monitoring and maintaining roads to provide access and minimize erosion and sedimentation;

- monitoring and maintaining pipelines or spring boxes used to supplement water flow and troughs or on-site ponds; and
- monitoring the condition of an existing ranch house.

The management plan for Area 3 focuses the following objectives:

- monitoring, conserving, and managing streams;
- livestock grazing management;
- minimizing the spread of existing non-native vegetation;
- conserving and improving habitat for sensitive biological species such as the tiger salamander and red-legged frog;
- monitoring the condition of fences, gates, and troughs to ensure they are maintained to facilitate the grazing regime;
- installing, modifying, or removing existing fencing, gates, troughs, and other grazing-related infrastructure if indicated for grazing or other resource-related management needs;
- installing, modifying, or removing existing fencing, gates, troughs, and other grazing-related infrastructure if indicated for grazing or other resource-related management needs;
- utilizing temporary means, such as electric fencing, for short-term exclusion or inclusion needs; and
- monitoring and maintaining roads to provide access and minimize erosion and sedimentation.

Many of the Project activities associated with these management plans, such as monitoring livestock grazing, biological species, and infrastructure conditions, would be expected to have minimal or no impact on cultural resources. Other activities, such as fencing and road improvements or invasive plant removal, have a greater potential to impact cultural resources that may be present within the Project area.

Archival and Records Search Results

An archival and records search of the California Historical Resources Information System (CHRIS) was completed by the Northwest Information Center (NWIC) on March 3, 2020 for the Project area and a surrounding 0.25-mile radius (NWIC File No. 19-1348). This search included a review of the following:

- *The Historic Properties Directory* (California Office of Historic Preservation 2013);
- *The California Inventory of Historic Resources* (State of California 1976);
- *Archaeological Determination of Eligibility* listings (California Office of Historic Preservation 2012);
- *California Historical Landmarks (*California Office of Historic Preservation 1996);
- *California Points of Historical Interest* listing May 1992 (State of California 1992); and
- The National Register of Historic Places (NRHP) (*Directory of Determinations of Eligibility*, California Office of Historic Preservation, Volumes I and II, 1990; Office of Historic Preservation Computer Listing 1990 and updates).

In addition to the listings and directories above, a GIS database of prior cultural resource studies and known cultural resources was examined for the Project area and a surrounding 0.25-mile radius. Relevant files were provided digitally to Pacific Legacy by the NWIC. Caltrans bridge surveys, ethnographic information, historical literature, and historical maps and documents concerning the general area were reviewed by technical staff at the Berkeley office of Pacific Legacy using online resources and company archives.

The archival and records search revealed that three prior cultural resource studies have been conducted within a 0.25-mile radius of the Project area, and all three just overlap it (*see* Table 1). The earliest of these studies was conducted in 1973 by Jackson, Holman, and Dietz for the Santa Clara County Flood Control and Water District East Zone Flood Control Project (S-004772). It involved the reconnaissance survey of a number of key drainages in central Santa Clara County, including the Upper Penitencia Creek corridor from near its source in Area 1 to its confluence with Coyote Creek in San Jose. Roughly a decade later, Edwards, Simpson-Smith, and Laffey completed a reconnaissance survey of 325 acres centered to either side of an existing access road in the northern portion of the Blue Oak Ranch Reserve that just extends into Area 2 (S-006905). The most recent prior study, conducted in 2009 by Whatford, was centered on the same and additional access roads in the northern portion of the Blue Oak Ranch Reserve. The study spanned 299 acres and encompassed an area north of the Lick Observatory and south of Area 2, overlapping Area 2 by less than 1 acre.

Table 1. Prior Cultural Resource Studies Within the Project Area.

Report Number	Authors	Report Date	Report Title	Study Type	Positive/ Negative*
S-004772	Thomas L. Jackson, Miley P. Holman, and Stephen A. Dietz	1973	An Archaeological Reconnaissance of the Santa Clara County Flood Control and Water District East Zone Flood Control Project	Archaeological, Field study	43-000022, 43-000056, 43-000057, 43-000068, 43-000072, 43-000080
S-006905	Rob Edwards, Charlotte Simpson-Smith, and Glory Anne Laffey	1984	A Preliminary Archaeological Reconnaissance of the Proposed Development on a Portion of Rancho Pilon, Santa Clara County, California	Archaeological, Field study, Other research (~325 acres)	43-000335, 43-000336, 43-000337
S-035833	J. Charles Whatford	2009	Archaeological Survey Report, Blue Oak Ranch Reserve VMP, Rx 1-SCU	Archaeological, Field study (~299 acres)	43-000337, 43-002242, 43-002243, 43-002248, 43-002249, 43-002250, 43-002251, 43-002252

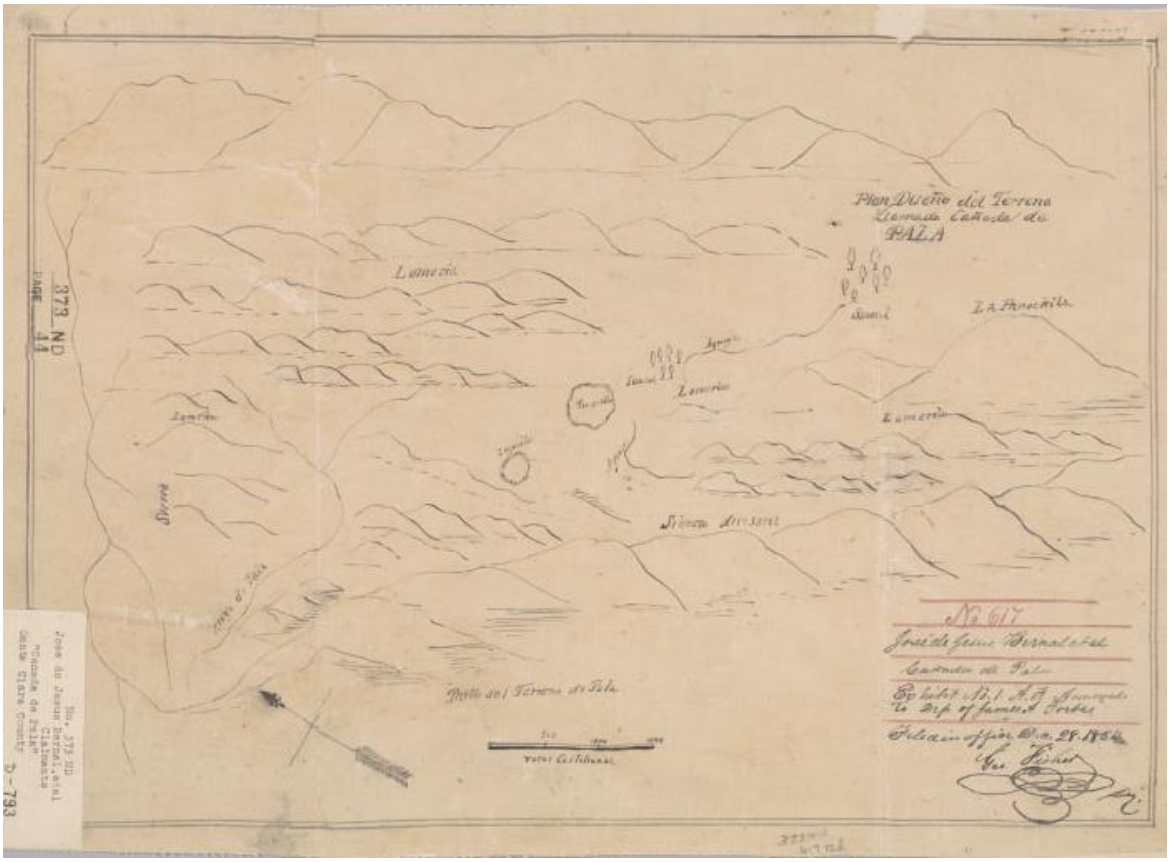
The archival and records search revealed that no cultural resources have been previously recorded within the Project area, and just one resource has been recorded within a surrounding 0.25-mile radius (*see* Table 2 and Attachment A, Figure 3). That resource, P-43-002398, is a prehistoric archaeological site with two loci located in the northeast portion of the Blue Oak Ranch Reserve along an unnamed drainage that feeds into the Arroyo Hondo. Locus 1 is on a south-facing bench just north of the drainage and contains a midden deposit with a sparse lithic

scatter of chert and quartzite flakes and shatter, burnt bone, two possible groundstone fragments, and possible fire-affected rock. Locus 2, located west of Locus 1, is also on a south-facing bench just north of the drainage. It contains a sparse lithic scatter with an obsidian biface fragment, chert and quatzite fragments and shatter, burnt bone, and two possible groundstone fragments. The obsidian biface fragment, a projectile point midpoint fragment, was collected when it was recorded and later sourced to Napa Glass Mountain in Napa County—roughly 88 miles to the northwest. Pieces of weathered possible human bone were noted in Locus 1. A human maxilla, reportedly found at the site before it was formally recorded, could not be relocated (Whatford 2009). Site P-43-002398 has not been evaluated for listing in the NRHP or the CRHR.

Table 2. Known Cultural Resource Within the Project Area.

Resource Designation	Resource Type	Age	Description	Recording Dates and Authors	Report(s) Citations
P-43-002398 BORR Confluence Site	Site	Prehistoric	A prehistoric site comprised of two loci. Locus 1 is on a south-facing bench and contains a midden deposit with a sparse lithic scatter of chert and quartzite flakes and shatter, burnt bone, groundstone fragments, and possible fire-affected rock. Locus 2 is on a south-facing bench near an unnamed seasonal drainage and contains a sparse lithic scatter with an obsidian biface fragment, chert and quatzite fragments and shatter, and burnt bone. Note that the obsidian biface was collected by Hylkema and sourced to the Napa Glass Mt. area. The site has not been evaluated for listing in the NRHP or CRHR.	2009 (Linda Hylkema, J. Charles Whatford, Jess Wilcox, Santa Clara University, California Department of Forestry and Fire Protection | Blue Oak Reserve)	---

The archival and records search did not reveal the presence of any previously recorded historic period built environment resources within the Project area, though it overlaps the boundaries of the Rancho Cañada de Pala, which was granted by the Mexican government to José de Jesús Bernal in 1839. José de Jesús and his brothers built adobes around a spring-fed pond on a ridge overlooking the Santa Clara Valley and pastured horses and cattle on the 15,714 acre *rancho*. Joaquin Bernal, Jose's uncle, occupied Rancho Santa Teresa to the southwest (Beck and Haase 1974; Hoover et al. 1992). Following the Mexican-American War and the 1848 Treaty of Guadalupe Hidalgo, Alta California became a part of the US. As required by the 1851 Land Act, a claim for Rancho Cañada de Pala was filed with the Public Land Commission in 1852. The land was ultimately patented 11 years later in 1863 to José de Jesús Bernal, José Antonio Bernal, and Juan Bernal. The area that encompasses most of present-day Grant Ranch Park was deeded to Bernal's attorney Fredrick Hall in payment for processing his claim. The southern third of the former *rancho* was sold to Samuel Q. Broughton, a native of Kentucky, in 1850. Adam Grant, a founder of the Murphy, Grant & Company dry goods store, purchased his land holdings within the former *rancho* in 1880. His son, Joseph D. Grant, eventually owned 9,533 acres. Santa Clara County acquired Grant Ranch in 1974 for park use. The 1854 *diseño* map of Rancho Cañada de Pala is pictured below.



Diseño Map of Rancho Cañada de Pala ca. 1854 (Forbes 1854).

Native American Contact

On behalf of Valley Water, Pacific Legacy contacted the NAHC to request a search of the Sacred Lands File as it encompasses the Project area on February 11, 2020. Sarah Fonseca, Associate Governmental Program Analyst for the NAHC, responded to the request on February 13, 2020 and reported that no Native American cultural resources listed in the Sacred Lands File have been identified in the Project area. Ms. Fonseca provided a list of local tribal representatives with potential interest in or knowledge of the Project vicinity who might be contacted for further information.

On February 21, 2020, Pacific Legacy sent certified contact letters to Valentin Lopez, Chairperson of the Amah Mutsun Tribal Band; Irenne Zwierlein, Chairperson of the Amah Mutsun Tribal Band of Mission San Juan Bautista; Ann Marie Sayers, Chairperson of the Indian Canyon Mutsun Band of Costanoan; Monica Arellano of the Muwekma Ohlone Indian Tribe of the San Francisco Bay Area; Katherine Perez, Chairperson of the Northern Valley Yokuts Tribe; and Andrew Galvan of the Ohlone Indian Tribe. These letters briefly described the proposed Project and requested any available information regarding Native American cultural resources or areas of concern within or near the Project area. As of March 11, 2020, no responses have been received by Pacific Legacy, but any replies will be forwarded to Valley Water to assist with

formal consultation pursuant to Assembly Bill 52. All available correspondence between Pacific Legacy and the NAHC or local tribal representatives is included in Attachment B.

Project Area Cultural Resource Sensitivity

The Project area lies within the foothills and mountains of the Diablo Range, which extends from the Carquinez Strait in the north to Orchard Peak and Polonio Pass in the south. It is bordered to the northeast by the San Joaquin River, to the southeast by the San Joaquin Valley, the Salinas River to the southwest, and the Santa Clara Valley to the northwest. The Diablo Range, like the broader Coast Ranges of which it is a part, consists mainly of Upper Jurassic-Cretaceous chert, greenstone, and sandstone from the Franciscan Complex, and Upper Cretaceous shale and sandstone from the Great Valley Sequence. The Diablo Range is intersected by major and minor fault zones, including the Calaveras fault, which runs through the Project vicinity. Movement along these faults is partly responsible for the uplift of the hills and mountains that characterize the region's rugged terrain.

Towards the end of the Pleistocene, roughly 15,000 to 11,000 before present (BP), rising sea levels inundated many portions of the San Francisco Bay region that had been exposed during the last glacial maximum (Meyer and Rosenthal 2007:3). Freshwater marshes began to form, and sediments accumulated on the floor of the Santa Clara Valley. Between about 7,000 and 4,000 BP, sedimentation was able to keep pace with inundation following a dramatic decrease in the rate of sea level rise. Extensive tidal marshes developed, and large alluvial floodplains formed that provided a wide range of natural resources that were attractive to Native settlement (Margolin 1978). Many archaeological sites dating to this period have been recorded in the lower Santa Clara Valley (Hildebrandt 1997, Jones 1997), though many have been subsumed by historic to modern period sediments. Historic period changes to the landscape led to widespread erosion of the uplands, rapid sediment deposition in the lowlands, and the formation of deeply incised channels in the alluvium-filled valley.

Historic period erosion in the uplands, spurred largely by deforestation and livestock grazing, increased sediment deposition in the interior valleys of the Diablo Range. This deposition likely buried or obscured numerous prehistoric archaeological sites—a phenomenon that has been documented at sites such as CCO-30 and CCO-308 in the San Ramon Valley, sites at Los Vaqueros Reservoir dating from 700 to 9,900 BP, and sites in the Amador-Livermore Valley dating from 600 to 6,100 BP (Meyer and Rosenthal 2007:14). These sites tend to be found in the interior valleys of the Diablo Range along drainages where sediment has accrued, and former stable land surfaces would have attracted Native American settlement.

Through the correlation of mapped soil types, field observations, vertical soil profiles, and radiocarbon dates compiled through existing studies and original fieldwork, Rosenthal and Meyer (2004a, 2004b) and Meyer and Rosenthal (2007) developed models of mapped soil series and landform age ranges. Their models were predicated on the idea that specific soil types could be related to certain depositional environments and landforms dating to a particular time period. The degree of soil profile development provided through soil series descriptions were used to make relative initial age estimates. In addition to relative soil development, age ranges

also were based on radiocarbon dates, correlations with other dated deposits, the geomorphic position of associated landforms, cross-cutting relationships, and the degree and extent of erosional dissection (Meyer and Rosenthal 2007:15-16). Soil Survey Geographic Database soil map units could thus be consistently associated with landforms that occupy similar geomorphic positions on the landscape. These units could then be grouped by major temporal periods and assigned relative sensitivities for buried cultural resources (Meyer and Rosenthal 2007:25).

Valleys and drainage basins within the Project area are dominated by alluvial deposits dating from the Holocene to the historic period (11,800 to 150 BP) or the latest Pleistocene to the historic period (30,000 to 150 BP). These deposits generally consist of gravel, sand, clay, and silt deposited through erosion and weathering. Soils identified within these areas consist mainly of Los Gatos-Gaviota complex soils formed in residuum from sandstone, shale and meta-sedimentary rock. Because humans tend to occupy stable landforms, most archaeological deposits will be associated with "A" and "B" horizons of surface and buried soils. Typically, Los Gatos series soils feature brown clay loam A1 horizons to yellowish red gravelly clay loam Bt horizons over sandstone bedrock. Gaviota series soils feature shallow brown gravelly loam A1 and A2 horizons over hard meta-sandstone.

Buried archaeological resource potential is generally based on the likelihood that a particular landform will contain buried soils or paleosols. These paleosols represent at least moderately stable landforms that could have supported human use and habitation. Younger surface soils are typically more likely to be on a depositional landform overlying buried, stable surfaces that may contain cultural materials. Accordingly, more recent Late Holocene (4,000 to 2,000 BP) and Latest Holocene to historic period (2,000 to 150 BP) deposits are typically the most sensitive for buried archaeological resources.

Meyer and Rosenthal (2007:25) noted that prehistoric settlements were generally associated with landforms located within valley basins and along major drainages where sediment deposition was most frequent and/or extensive during the Holocene. The current and former margins of the San Francisco Bay and stream or river channels would therefore offer the greatest potential for buried cultural materials. In other studies, Meyer et al. (2010) further refined their geoarchaeological sensitivity model to include measurable environmental variables such as proximity to water, precipitation, slope and aspect, and biotic zones and tested those variables against known archaeological site locations to determine positive or negative correlations. They found that proximity to water, specifically small springs and streams, was a significant factor in determining site location and that degree of slope also was important, though somewhat less significant (Meyer et al. 2010:141). By combining landform age, distance to water, and degree of slope, they were able to create a more robust model of buried archaeological resource potential.

Based on projections of Meyer et al. (2010), interior valleys and watersheds within the Project area will be most sensitive for buried cultural resources. Higher elevation areas, such as along traversable ridges and hills, will have very low sensitivity for buried cultural resources, though there will remain the potential to encounter surface materials and features dating to the

prehistoric through the historic period. During the ethnographic period, the Project area would have been inhabited by the Ohlone or Costanoan, though it was proximate to the traditional territory of the Northern Valley Yokuts to the east in the Central Valley. Travel corridors through the Diablo range likely served as active trade routes linking the Santa Clara Valley and San Francisco Bay region to the Central Valley and beyond. This was hinted at through the presence of non-local obsidian at site P-43-002398, thus we may expect to encounter similar resources within the Project area.

Discussion of Results and Recommendations

The archival and records search revealed no cultural resources within the Project area and one prehistoric archaeological site within a surrounding 0.25-mile radius. The archival and records search also revealed that approximately 23 acres or 2% of the Project area has been previously surveyed, and not within in the past ten years. Contact with the NAHC revealed that no Native American cultural resources listed in the Sacred Lands File have been reported in the Project area. A review of the geoarchaeological sensitivity of the Project area indicates that the interior valleys and watersheds within Areas 1, 2, and 3 will have the potential to reveal buried cultural resources. Within higher elevation areas, such as along traversable ridges and hills, there remains the potential to encounter surface archaeological sites dating to the prehistoric through the historic period.

Based on the findings of our preliminary assessment, we recommend that additional studies be completed in advance of Project implementation. We recommend that an intensive pedestrian cultural resources survey be conducted for all portions of the Project area that may be subject to direct or indirect impacts under the proposed management plans. These would include areas that may be subject to infrastructural development or maintenance (e.g., roads, fences, troughs, pipelines, spring boxes, etc.), biological management (e.g., removal of invasive species vegetation), or stream maintenance activities. Any cultural resources encountered during the pedestrian cultural resources survey should be recorded on appropriate DPR Forms 523. Once these steps have been completed, Valley Water will be able to better determine the potential impacts of the Project on cultural resources and identify ways to avoid or minimize impacts to those resources.

Sincerely,

Lisa Holm
Senior Archaeologist
Pacific Legacy, Inc.
900 Modoc Street
Berkeley, CA 94707
510.524.3991 ext. 102
holm@pacificlegacy.com

Attachments:
Attachment A: Figures
Attachment B: Native American Contact Documentation

References:

Forbes, James Alexander. 1854. Diseño Map of Rancho Cañada de Pala (Plan diseño del terreno llamada Cañada de Pala). Available through the UC Berkeley, Bancroft Library at https://calisphere.org/item/ark:/13030/hb2c6003rj/. Accessed March 2020.

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Jones, T. 1997. Lakes and Estuaries Reconsidered: A Comment on Lacustrine Resource Intensification in the Southern Santa Clara Valley, California. In *Journal of California and Great Basin Anthropology*, 19(2) pp. 281-288.

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Meyer, J. and J.S. Rosenthal. 2007. Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4. Contract No. 04A2098, EA 447600. Prepared and Edited by: Far Western.

Meyer, J., D.C. Young, and J.S. Rosenthal. 2010. Volume I: A Geoarchaeological Overview and Assessment of Caltrans Districts 6 and 9. Cultural Resources Inventory of Caltrans District 6/9 Rural Conventional Highways EA 06-0A7408 TEA Grant. Prepared and Edited by: Far Western Anthropological Research Group, Inc., Davis, California.

Millikin, R., R. Fitzgerald, M. Hylkema, R. Groza, T. Origer, D. Bieling, A. Levanthal, R. Wiberg, A. Gottsfield, D. Gillette, V. Bellifemine, E. Strother, R. Cartier, and D. Fredrickson. 2007. Punctuated Cultural Change in the San Francisco Bay Area. In California Prehistory: Colonization, Culture, and Complexity. Jones, T. and K. Klar editors. Alta Mira Press, Lanham, Maryland.

Rosenthal, J.S. and J. Meyer. 2004a. Landscape Evolution and the Archaeological Record: A Geoarchaeological Study of the Southern Santa Clara Valley and Surrounding Region. In *Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways*. Report prepared by Far Western Anthropological Research Group, Davis.

Rosenthal, J.S. and J. Meyer. 2004b. Cultural Resources Inventory of Caltrans District 10, Rural Conventional Highways. In *Geoarchaeological Study, Vol. 3, Landscape Evolution and the Archaeological Record of Central California*. Report prepared by Far Western Anthropological Research Group, Davis.

ATTACHMENT A: FIGURES

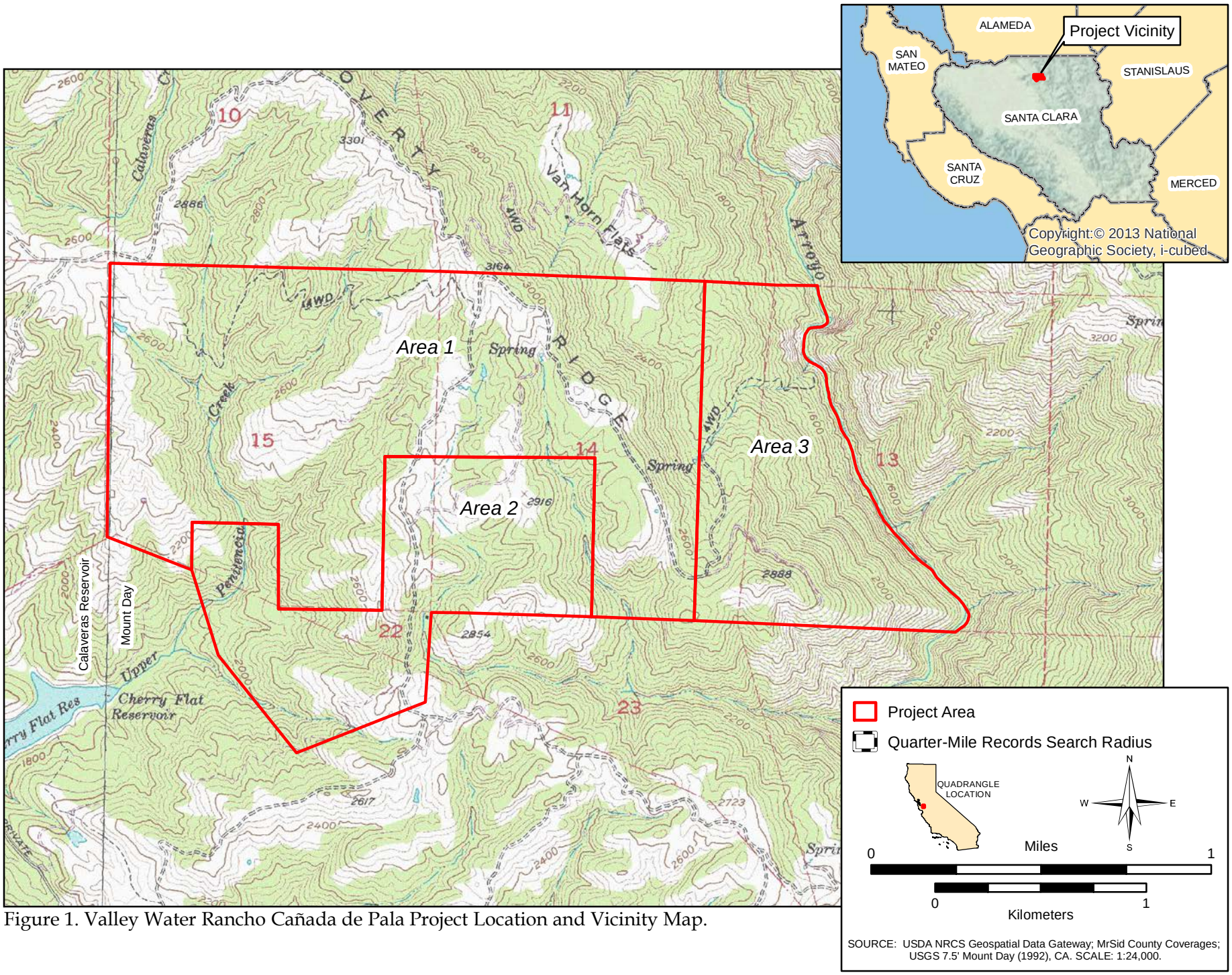

Figure 1. Valley Water Rancho Cañada de Pala Project Location and Vicinity Map.

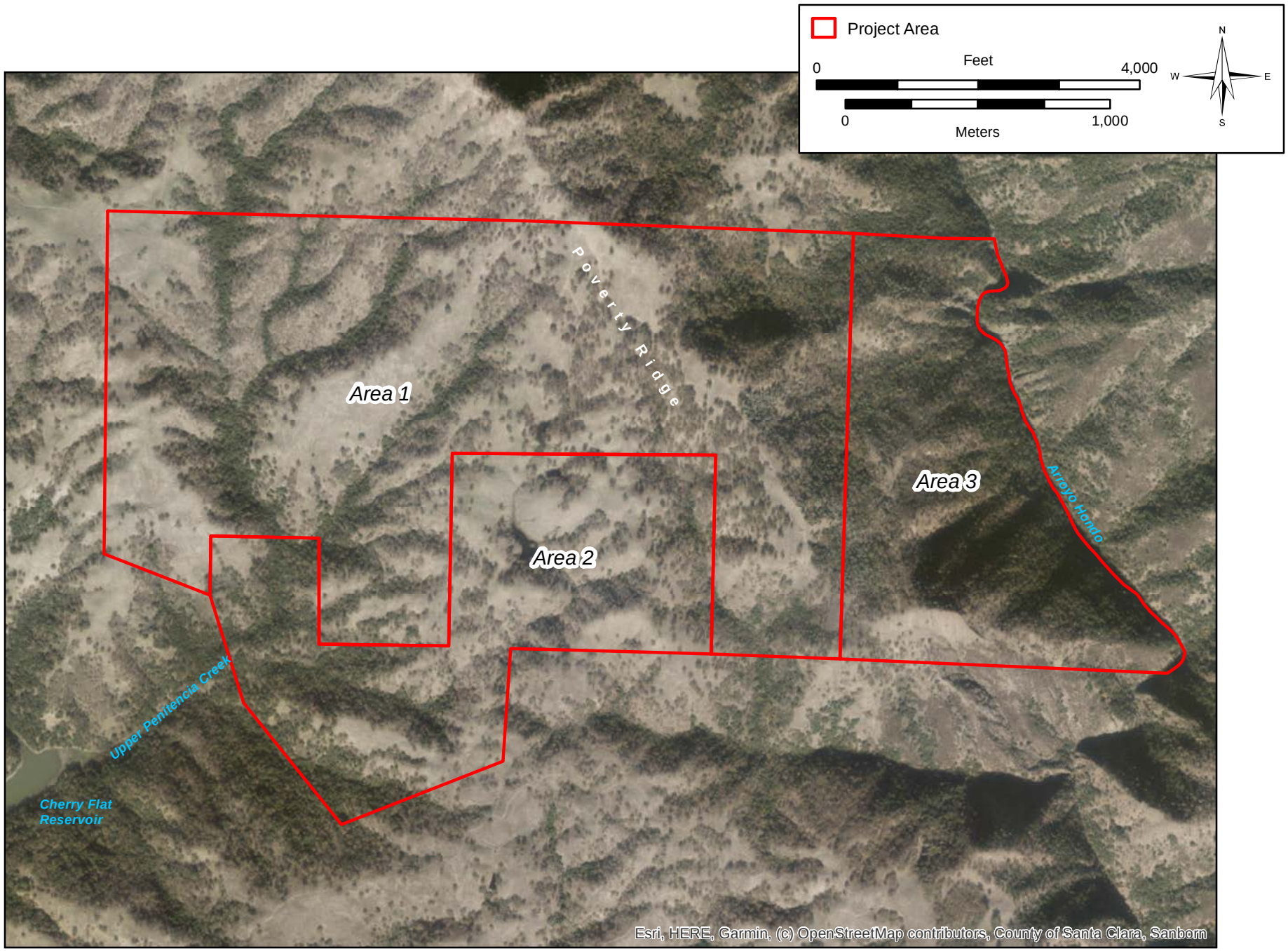

Figure 2. Valley Water Rancho Cañada de Pala Project Area Map.

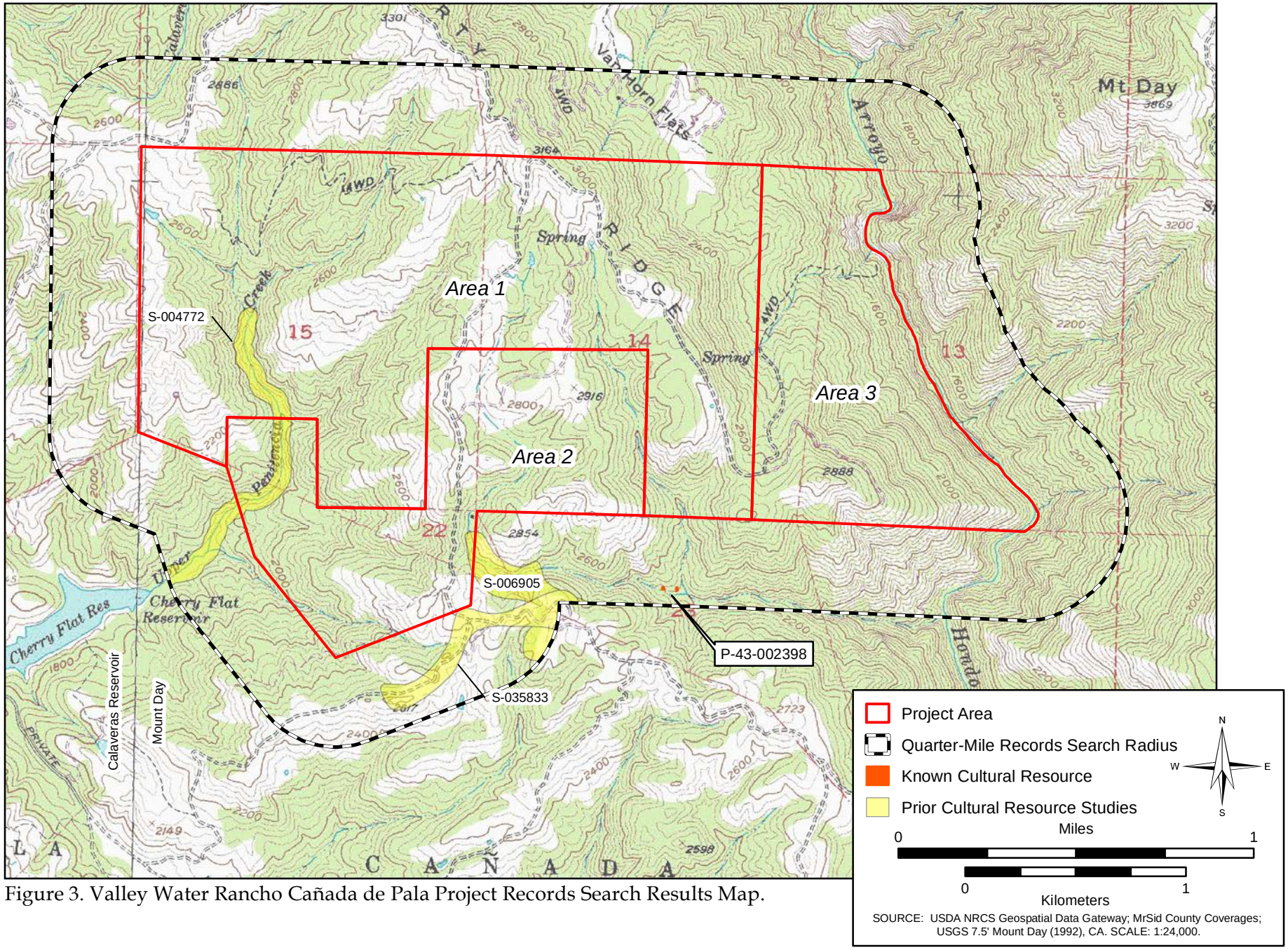

Figure 3. Valley Water Rancho Cañada de Pala Project Records Search Results Map.

ATTACHMENT B: NATIVE AMERICAN CONTACT DOCUMENTATION

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95501
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Valley Water Rancho Cañada de Pala Project (3039-01 Task 11)

County: Santa Clara

USGS Quadrangle

Name: Mount Day

Township: 6 S Range: 2E Section(s): Sections 9, 10 - 16, 22 - 24 and unsectioned lands in the Rancho Canada de Pala Civil Colonies Land Grant

Company/Firm/Agency: Pacific Legacy

Contact Person: Lisa Holm

Street Address: 900 Modoc Street

City: Berkeley, California Zip: 94707

Phone: (510) 524-3991 Extension: 102

Fax:

Email: holm@pacificlegacy.com

Project Description:

On behalf of Valley Water, we are conducting a cultural resources investigation for the RRancho Cañada de Pala Preserve Project, which would span approximately 1,533 acres in the Rancho Cañada de Pala Preserve east of the City of San José. The Project would involve the development of two managements plans that would be implemented in Areas 1, 2, and 3 of the Preserve; these would include biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. We would like to request a search of the Sacred Lands File for the Project area (please see Figures 1 attached). We would also like to request a list of Native American Tribal representatives for Santa Clara County who may have an interest in or knowledge of the Project area. We will be contacting those parties for further consultation. Thank you in advance for your assistance.

☑ Project Location Map is attached

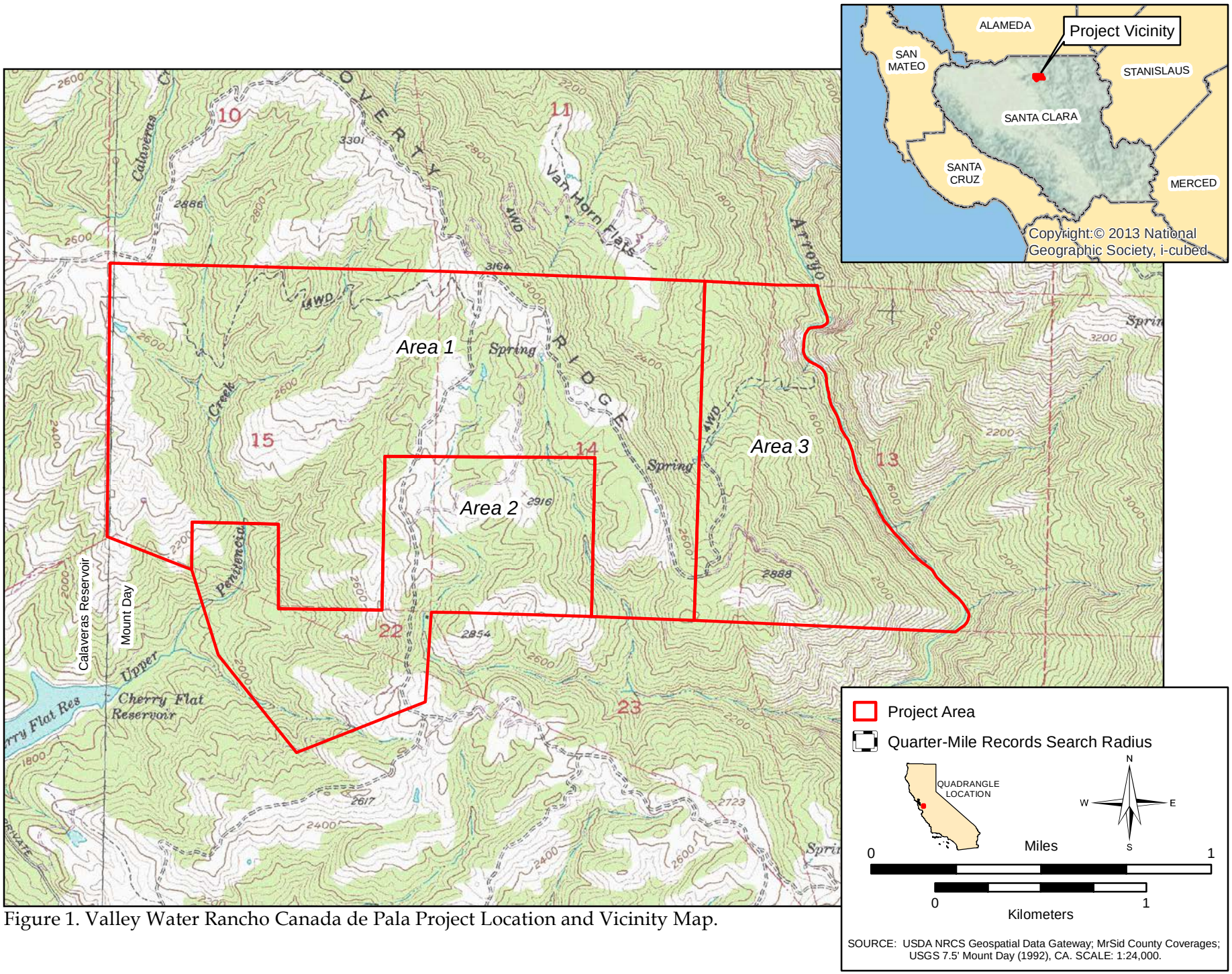

Figure 1. Valley Water Rancho Canada de Pala Project Location and Vicinity Map.

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
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Luiseño

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Karuk

COMMISSIONER
Marshall McKay
Wintun

COMMISSIONER
William Mungary
Paiute/White Mountain Apache

COMMISSIONER
Joseph Myers
Pomo

COMMISSIONER
Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[**Vacant**]

EXECUTIVE SECRETARY
Christina Snider
Pomo

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

February 13, 2020

Lisa Holm, Senior Archaeologist
Pacific Legacy, Inc.

Via Email to: holm@pacificlegacy.com

Re: Valley Water Rancho Canada de Pala Project (3039-01 Task 11), Santa Clara County

Dear Ms. Holm:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Sarah.Fonseca@nahc.ca.gov.

Sincerely,

Sarah Fonseca
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Santa Clara County
2/13/2020

Amah MutsunTribal Band
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA, 95632
Phone: (916) 743 - 5833
vlopez@amahmutsun.org

Costanoan
Northern Valley
Yokut

Amah MutsunTribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
789 Canada Road
Woodside, CA, 94062
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com

Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org

Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano,
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
marellano@muwekma.org

Costanoan

North Valley Yokuts Tribe
Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
Phone: (209) 887 - 3415
canutes@verizon.net

Costanoan
Northern Valley
Yokut

The Ohlone Indian Tribe
Andrew Galvan,
P.O. Box 3388
Fremont, CA, 94539
Phone: (510) 882 - 0527
Fax: (510) 687-9393
chochenyo@AOL.com

Bay Miwok
Ohlone
Patwin
Plains Miwok

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Valley Water Rancho Canada de Pala Project (3039-01 Task 11), Santa Clara County.

Pacific Legacy Historic Preservation
Bay Area Division
900 Modoc Street
Berkeley, CA 94707

Phone: 510.524.3991
Fax: 510.524.4419
www.pacificlegacy.com

February 21, 2020

Valentin Lopez, Chairperson
Amah Mutsun Tribal Band
PO Box 5272
Galt, CA 95632

Re: Santa Clara Valley Water District Rancho Cañada de Pala Project (3039-01 Task 11)

Dear Mr. Lopez,

On behalf of the Santa Clara Valley Water District (now Valley Water), we are conducting a cultural resources investigation for the Rancho Cañada de Pala Preserve Project, which would span approximately 1,533 acres in the Rancho Cañada de Pala Preserve east of the City of San José. The Project would involve the development of two management plans that would be implemented throughout the entire preserve. These plans would include biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. The Project area is located in Township 6 South, Range 2 East, Sections 9, 10–16, and 22–24, and unsectioned lands in the Rancho Cañada de Pala Civil Colonies Land Grant, depicted in the attached figure on the Mount Day, California, 7.5-minute USGS topographic map.

A request for a search of the Sacred Lands Inventory has been submitted to the Native American Heritage Commission (NAHC). Their review failed to indicate the presence of cultural resources in the immediate Project area. The NAHC provided your name to us and indicated that you may have knowledge of or concerns about the Project vicinity. If appropriate, please provide us with any information you may have regarding locations of concern to local Native American groups within the Project area. This information will be used for Project planning and will be kept confidential. If you do not feel it is appropriate to divulge the type of resource, it can be noted as an "environmentally sensitive area."

At present, there is no set date for implemetation of the proposed management plans. You may respond by mail, email, phone, or visit our office in Berkeley to inspect our research files. We look forward to receiving your reply within 30 days. If you have any questions, please contact me at (510) 524-3991, ext. 109. Thank you for your kind attention to this matter.

Sincerely,

Shanna Streich

Shanna Streich
Staff Archaeologist,
Bay Area Division
streich@pacificlegacy.com

Attachment: Figure 1. Project Location Map.

Pacific Legacy Historic Preservation
Bay Area Division
900 Modoc Street
Berkeley, CA 94707

Phone: 510.524.3991
Fax: 510.524.4419
www.pacificlegacy.com

February 21, 2020

Irenne Zwierlein, Chairperson
Amah Mutsun Tribal Band of Mission San Juan Bautista
789 Canada Road
Woodside, CA 94062

Re: Santa Clara Valley Water District Rancho Cañada de Pala Project (3039-01 Task 11)

Dear Ms. Zwierlein,

On behalf of the Santa Clara Valley Water District (now Valley Water), we are conducting a cultural resources investigation for the Rancho Cañada de Pala Preserve Project, which would span approximately 1,533 acres in the Rancho Cañada de Pala Preserve east of the City of San José. The Project would involve the development of two management plans that would be implemented throughout the entire preserve. These plans would include biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. The Project area is located in Township 6 South, Range 2 East, Sections 9, 10–16, and 22–24, and unsectioned lands in the Rancho Cañada de Pala Civil Colonies Land Grant, depicted in the attached figure on the Mount Day, California, 7.5-minute USGS topographic map.

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Bay Area Division
streich@pacificlegacy.com

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Bay Area Division
900 Modoc Street
Berkeley, CA 94707

Phone: 510.524.3991
Fax: 510.524.4419
www.pacificlegacy.com

February 21, 2020

Ann Marie Sayers, Chairperson
Indian Canyon Mutsun Band of Costanoan
PO Box 28
Hollister, CA 95024

Re: Santa Clara Valley Water District Rancho Cañada de Pala Project (3039-01 Task 11)

Dear Ms. Sayers,

On behalf of the Santa Clara Valley Water District (now Valley Water), we are conducting a cultural resources investigation for the Rancho Cañada de Pala Preserve Project, which would span approximately 1,533 acres in the Rancho Cañada de Pala Preserve east of the City of San José. The Project would involve the development of two management plans that would be implemented throughout the entire preserve. These plans would include biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. The Project area is located in Township 6 South, Range 2 East, Sections 9, 10–16, and 22–24, and unsectioned lands in the Rancho Cañada de Pala Civil Colonies Land Grant, depicted in the attached figure on the Mount Day, California, 7.5-minute USGS topographic map.

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At present, there is no set date for implemetation of the proposed management plans. You may respond by mail, email, phone, or visit our office in Berkeley to inspect our research files. We look forward to receiving your reply within 30 days. If you have any questions, please contact me at (510) 524-3991, ext. 109. Thank you for your kind attention to this matter.

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Shanna Streich
Staff Archaeologist,
Bay Area Division
streich@pacificlegacy.com

Attachment: Figure 1. Project Location Map.

Pacific Legacy Historic Preservation
Bay Area Division
900 Modoc Street
Berkeley, CA 94707

Phone: 510.524.3991
Fax: 510.524.4419
www.pacificlegacy.com

February 21, 2020

Monica Arellano
Muwekma Ohlone Indian Tribe of the SF Bay Area
20885 Redwood Road, Suite 232
Castro Valley, CA 94546

Re: Santa Clara Valley Water District Rancho Cañada de Pala Project (3039-01 Task 11)

Dear Ms. Arellano,

On behalf of the Santa Clara Valley Water District (now Valley Water), we are conducting a cultural resources investigation for the Rancho Cañada de Pala Preserve Project, which would span approximately 1,533 acres in the Rancho Cañada de Pala Preserve east of the City of San José. The Project would involve the development of two management plans that would be implemented throughout the entire preserve. These plans would include biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. The Project area is located in Township 6 South, Range 2 East, Sections 9, 10–16, and 22–24, and unsectioned lands in the Rancho Cañada de Pala Civil Colonies Land Grant, depicted in the attached figure on the Mount Day, California, 7.5-minute USGS topographic map.

A request for a search of the Sacred Lands Inventory has been submitted to the Native American Heritage Commission (NAHC). Their review failed to indicate the presence of cultural resources in the immediate Project area. The NAHC provided your name to us and indicated that you may have knowledge of or concerns about the Project vicinity. If appropriate, please provide us with any information you may have regarding locations of concern to local Native American groups within the Project area. This information will be used for Project planning and will be kept confidential. If you do not feel it is appropriate to divulge the type of resource, it can be noted as an "environmentally sensitive area."

At present, there is no set date for implemetation of the proposed management plans. You may respond by mail, email, phone, or visit our office in Berkeley to inspect our research files. We look forward to receiving your reply within 30 days. If you have any questions, please contact me at (510) 524-3991, ext. 109. Thank you for your kind attention to this matter.

Sincerely,

Shanna Streich
Staff Archaeologist,
Bay Area Division
streich@pacificlegacy.com

Attachment: Figure 1. Project Location Map.

Pacific Legacy Historic Preservation
Bay Area Division
900 Modoc Street
Berkeley, CA 94707

Phone: 510.524.3991
Fax: 510.524.4419
www.pacificlegacy.com

February 21, 2020

Katherine Perez, Chairperson
North Valley Yokuts Tribe
PO Box 717
Linden, CA 95236

Re: Santa Clara Valley Water District Rancho Cañada de Pala Project (3039-01 Task 11)

Dear Ms. Perez,

On behalf of the Santa Clara Valley Water District (now Valley Water), we are conducting a cultural resources investigation for the Rancho Cañada de Pala Preserve Project, which would span approximately 1,533 acres in the Rancho Cañada de Pala Preserve east of the City of San José. The Project would involve the development of two management plans that would be implemented throughout the entire preserve. These plans would include biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. The Project area is located in Township 6 South, Range 2 East, Sections 9, 10–16, and 22–24, and unsectioned lands in the Rancho Cañada de Pala Civil Colonies Land Grant, depicted in the attached figure on the Mount Day, California, 7.5-minute USGS topographic map.

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February 21, 2020

Andrew Galvan
The Ohlone Indian Tribe
PO Box 3388
Fremont, CA 94539

Re: Santa Clara Valley Water District Rancho Cañada de Pala Project (3039-01 Task 11)

Dear Mr. Galvan,

On behalf of the Santa Clara Valley Water District (now Valley Water), we are conducting a cultural resources investigation for the Rancho Cañada de Pala Preserve Project, which would span approximately 1,533 acres in the Rancho Cañada de Pala Preserve east of the City of San José. The Project would involve the development of two management plans that would be implemented throughout the entire preserve. These plans would include biological resource management and monitoring, livestock grazing management, non-native invasive species management, road rehabilitation and maintenance, and infrastructure maintenance. The Project area is located in Township 6 South, Range 2 East, Sections 9, 10–16, and 22–24, and unsectioned lands in the Rancho Cañada de Pala Civil Colonies Land Grant, depicted in the attached figure on the Mount Day, California, 7.5-minute USGS topographic map.

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Shanna Streich

Shanna Streich
Staff Archaeologist, Bay Area Division
streich@pacificlegacy.com

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Valentin Lopez, Chairperson
Amah Mutsun Tribal Band
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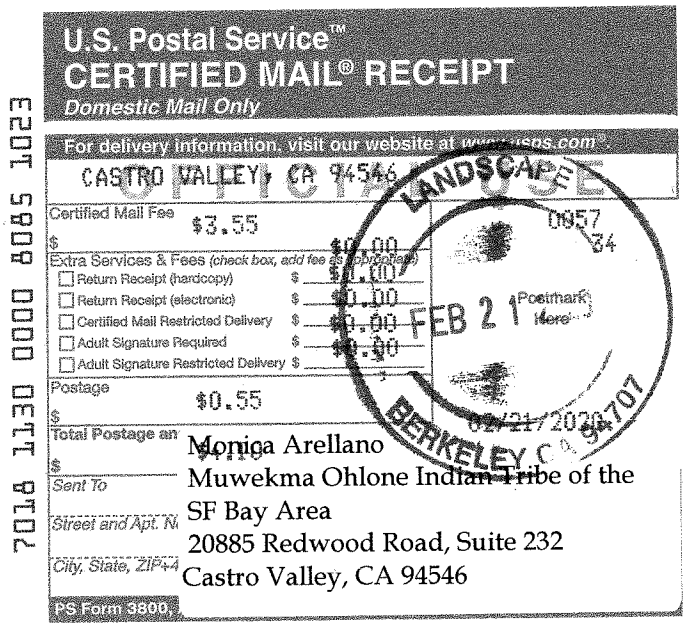
Galt, CA 95632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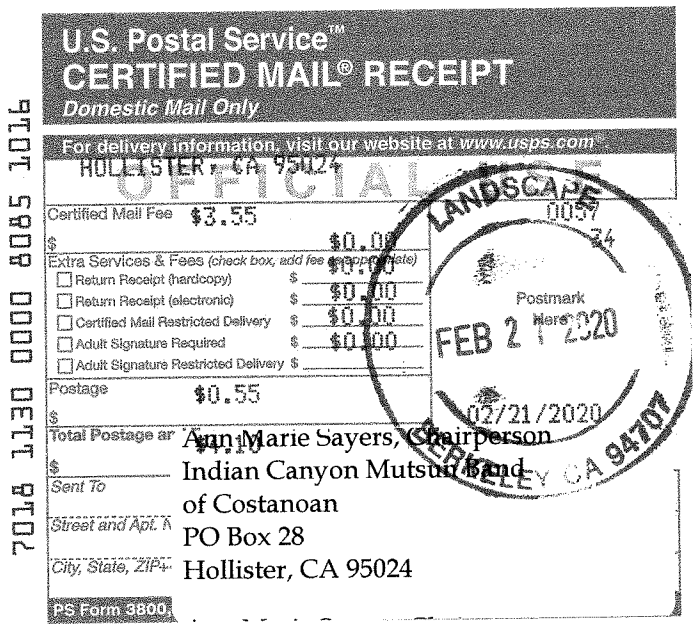
Monica Arellano
Muwekma Ohlone Indian Tribe of the
SF Bay Area
20885 Redwood Road, Suite 232
Castro Valley, CA 94546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of Costanoan
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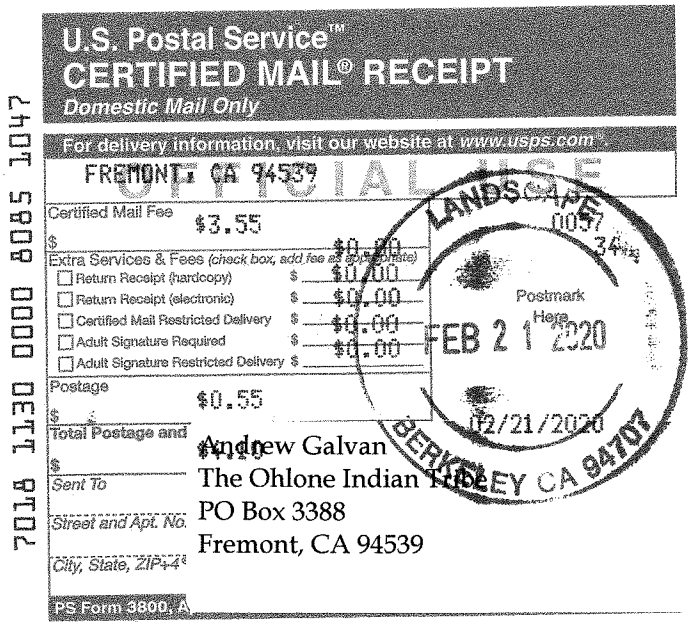
Hollister, CA 95024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