BonTerra PSOMAS

First Annual Monitoring Report

Oak Woodland Habitat Revegetation/Mitigation Program for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Environmental Impact Report Mitigation Measure Nos. Bio-D and Bio-E

California Department of Fish and Wildlife Streambed Alteration Agreement No. 1600-2008-0173-R5

Prepared for

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1.0 INTRODUCTION

Note: This document was revised to reflect the corrected references to the type of herbicide used on the mitigation site; i.e., Roundup Custom® (not Roundup Pro®) in Section 2.7 and Section 5.0. All other information in this document remains unchanged versus the October 2016 report.

This is the first annual monitoring report for the County of Los Angeles Department of Public Works' (LACDPW's) *Oak Woodland Habitat Revegetation/Mitigation Program [OWHRMP] for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project* (BonTerra Psomas 2014). This report provides a summary of Year One (January 1, 2015 to April/May 2016) performance as part of the required mitigation program in compliance with the Project's permits and the approved OWHRMP.

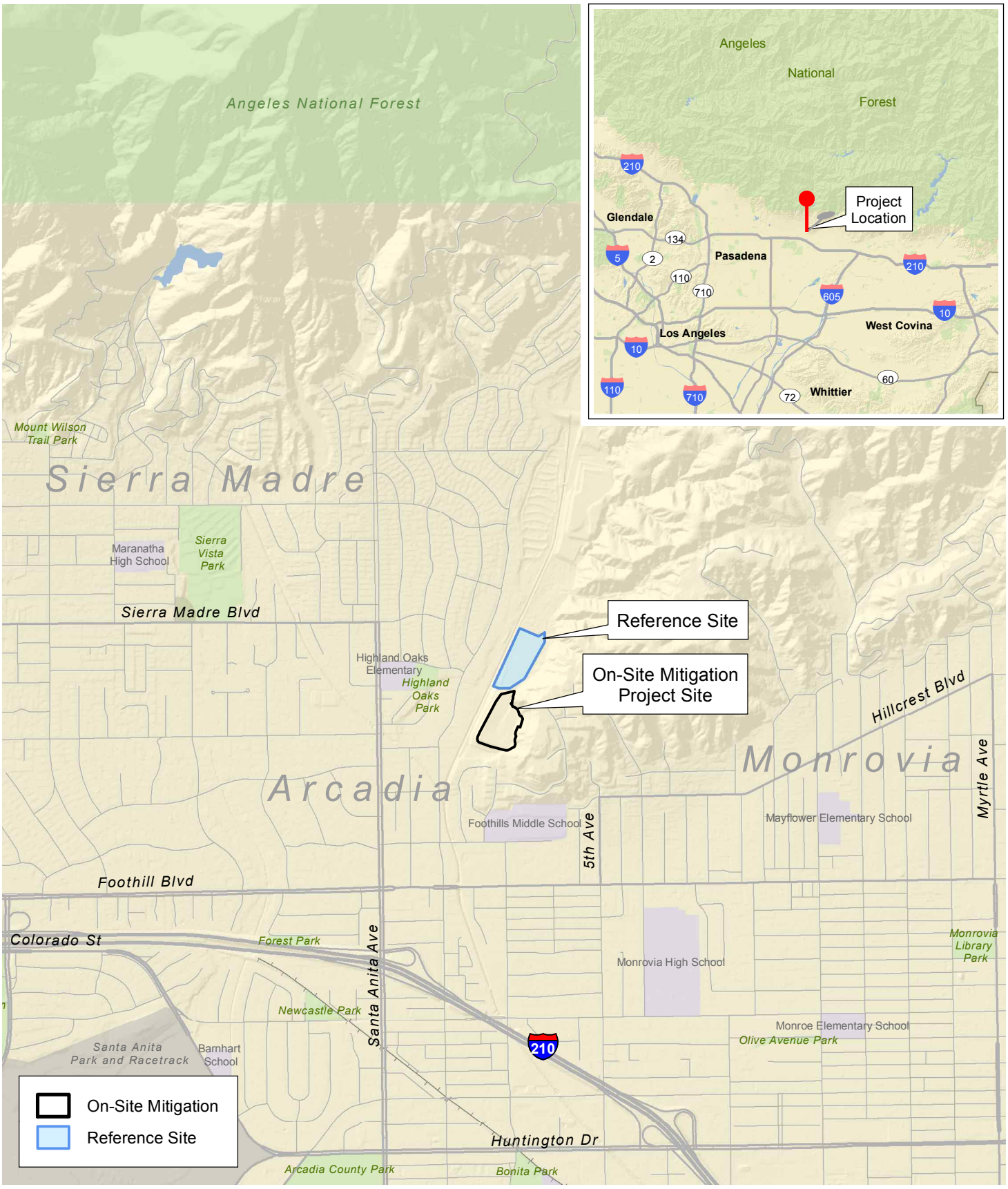
1.1 SEDIMENT REMOVAL PROJECT DESCRIPTION

The Santa Anita Dam Riser Modification and Sediment Removal Project (Project) involved the removal of approximately 330,000 cubic yards of sediment from the Santa Anita Dam and Reservoir and the construction of a riser on the dam's lowest outlet. The dam and reservoir are located on U.S. Forest Service land (i.e., Angeles National Forest [ANF]). The sediment removal and riser construction were performed to ensure compliance with the seismic safety requirements of the California Department of Water Resources, Division of Safety of Dams. The removed sediment was transported via conveyor belt to the Santa Anita Sediment Placement Sites (SPS) located downstream in the City of Arcadia (Exhibits 1 and 2). The sediment generated by the Project was placed on the Middle SPS and the Lower SPS. The Lower SPS was already partially constructed (i.e., it had previously placed sediment) at the time of Project implementation, and approximately 30 feet of additional sediment was placed on the Lower SPS up to its designed capacity (closure) in 2012. Residential development is located to the east, west, and south of the Lower SPS, and natural open space areas (extending into the ANF) are located to the north of the SPS.

1.2 IMPACT AND MITIGATION SUMMARY

1.3 PROJECT IMPACTS

The Project included the removal of approximately 11 acres of native vegetation on the Middle SPS in preparation for sediment placement activities. The vegetation impacted on the Middle SPS included California sycamore/coast live oak riparian forest (CS/CLORF) and coastal sage scrub (CSS) habitat. In addition, approximately 0.5 acre of planted vegetation was removed along the eastern edge of the Lower SPS. The Project impacted a total of 177 coast live oaks (*Quercus agrifolia* var. *agrifolia*), one scrub oak (*Quercus berberidifolia*), and one Engelmann oak (*Quercus engelmannii*). A summary of Project impacts and required mitigation is provided in Table 1.



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Project Vicinity

Exhibit 1

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

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2,000 1,000 0 2,000 Feet

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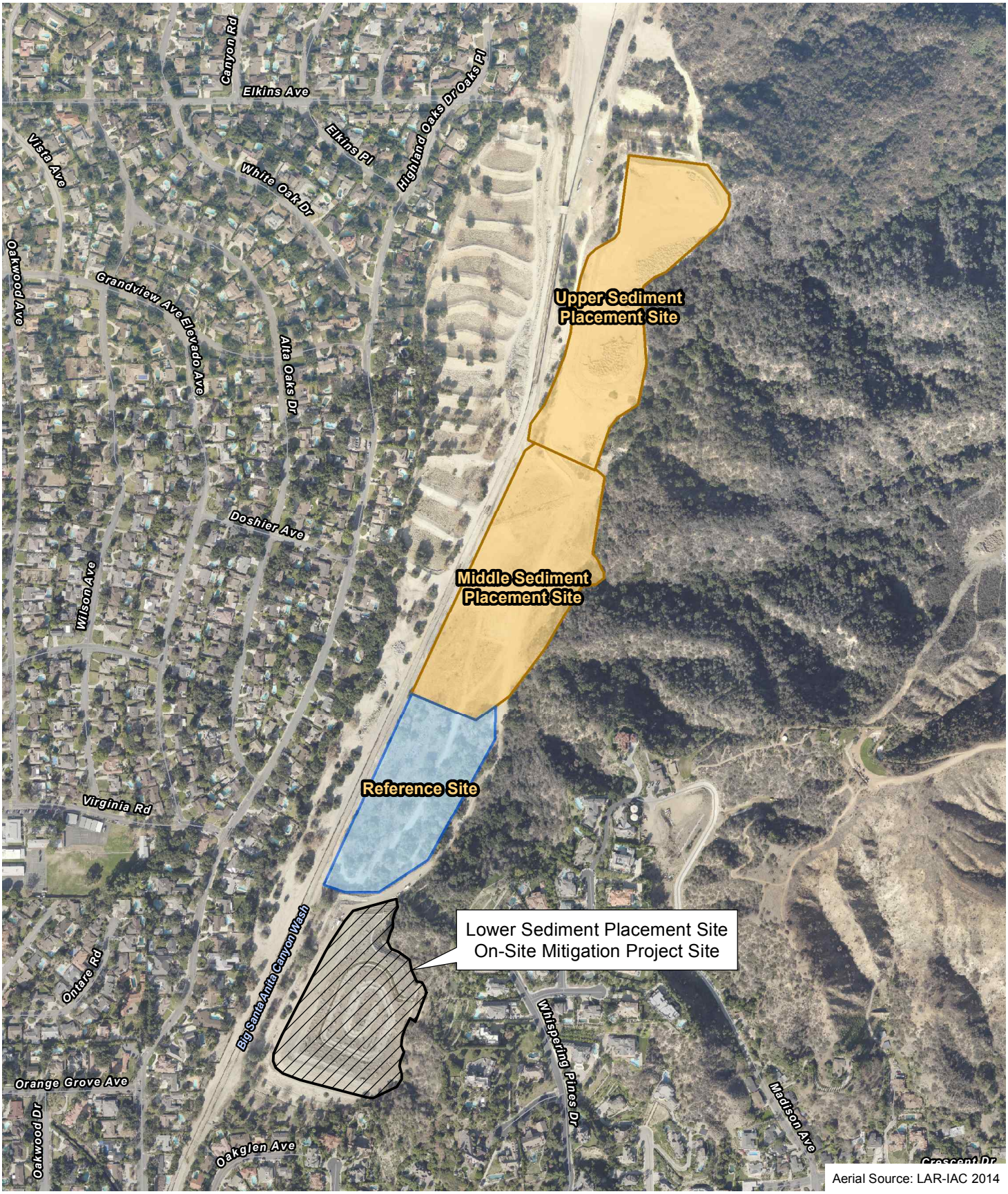

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Sediment Placement Site Locations

Exhibit 2

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

N
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600 300 0 600
Feet

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TABLE 1
PROJECT IMPACTS AND REQUIRED MITIGATION

Vegetation Type	Project Impacts	Required Mitigation[a]
Oak woodland and sage scrub	11 acres (approximate)	On-site habitat creation at the current 8.0-acre Lower SPS, including 5.5 acres of oak woodland creation and 2.5 acres of sage scrub revegetation.
		Permanent protection of 6.9 acres of high-quality, mature sycamore woodland and alluvial scrub habitat located off site at the Big Tujunga Mitigation Bank.[b]
		Purchase and permanent preservation of 4.9 acres of mature oak woodland habitat located in an adjacent, off-site tributary to the Project site.[b]

SPS: Sediment Placement Site; CDFW: California Department of Fish and Wildlife

[a] Specified in the CDFW Streambed Alteration Agreement No. 16 2008-0173-R5.
[b] The detailed terms and conditions, as well as the current status of the off-site components of the mitigation program are not addressed in this document.

1.3.1 PROJECT MITIGATION

The creation of oak woodland (OW) (5.5 acres) and sage scrub habitat (CSS revegetation, 2.5 acres) is required by Mitigation Measures BIO-D and BIO-E in the LACDPW's 2009 *Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project Final Environmental Impact Report* and by the Streambed Alteration Agreement (SAA, No. 1600-2008-0173-R5), which was granted by the California Department of Fish and Wildlife (CDFW) in 2009.

A total of 8.0 acres of habitat are being created on the Lower SPS in partial fulfillment of Project mitigation requirements (Exhibit 3). The overall mitigation program also includes (1) the permanent protection of 6.9 acres of high-quality, mature sycamore woodland and alluvial scrub habitat at LACDPW's Big Tujunga Mitigation Bank site (off site) and (2) the purchase and permanent preservation of 4.9 acres of mature OW habitat located in an adjacent, off-site tributary to the Project site. The detailed terms and conditions of the mitigation program's off-site components are addressed in the CDFW Agreement. Note that this document only addresses the current status of the 8.0 acres of habitat being created in the Lower SPS, and does not address current conditions in either of the off-site mitigation components.

Mitigation project implementation tasks are summarized in this document and include preliminary mitigation tasks, plant materials procurement/installation, and long-term maintenance and monitoring tasks.

1.3.2 RESPONSIBLE PARTIES

Successful mitigation program implementation involves the cooperative efforts of the LACDPW and its team of consultants/contractors/vendors. The LACDPW also coordinates with the CDFW and the City of Arcadia to inform them of the status of mitigation activities and the need for any adaptive management actions. The LACDPW retained BonTerra Psomas (Restoration Ecologist) to prepare the OWHRMP document in 2009 (including the performance of reference site surveys); to participate in community outreach efforts related to the OWHRMP; to provide biological monitoring and documentation services; and to implement the mitigation program. BonTerra Psomas retained the following subcontractors/vendors: (1) S&S Seeds, Inc. (S&S) to collect site-specific native seeds (including oak acorns) and cuttings (e.g., cactus pads) in the Santa Anita Wash/Rio Hondo Subwatershed (started in 2011); (2) El Nativo Growers (ENG) and Rancho

- Photo Station
- Start Point
- End Point
- CSS Transect 50ft
- Oak Woodland Transect 100ft
- Quadrat
- Access Road
- Drainages (1.63 Acres)
- Defensible Space Vegetation Requirement (Approximate)*
- Government-Owned Land
- Parcel Boundary
- Oak Woodland Mitigation (5.50 acres)
- Coastal Sage Scrub Revegetation (2.50 acres)

Weed Abatement Buffer Areas:

- Area 1 (0.78 acres; to East Property Line)
- Area 2 (2.50 acres)
- Area 3a (1.72 acres)
- Area 3b (0.45 acres)
- Area 4 (1.74 acres)

Santa Anita Channel

Photo Station 1

Photo Station 2

Photo Station 3

Photo Station 4

Photo Station 5

cssQ1

cssT1

cssT2

owQ1

owT1

owQ2

owT2

cssT3

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owQ3

owT3

owQ4

owQ5

owT4

cssT4

owT5

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cssQ3

owQ6

Oakglen Ave

*Defensible Space Vegetation Requirement is 100-ft. per City of Arcadia

Aerial Source: LAR-IAC 2014

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Revegetation/Mitigation Sites and Weed Abatement Buffer Areas

Exhibit 3

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

125 62.5 0 125 Feet

Bonterra PSOMAS

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Santa Ana Botanic Garden (RSABG) to collect ferns and rare oaks and to propagate native container plants (started in 2012); (3) Cornerstone Studios, Inc. (Landscape Architect) to prepare irrigation plans and photo simulations for the mitigation site (2013); (4) Nakae & Associates, Inc. (Nakae) to perform mitigation site preparation, installation, and long-term maintenance tasks; and (5) Leatherman BioConsulting, Inc. to provide supplemental botanical surveys and monitoring. A list of responsible parties is provided in Table 2.

TABLE 2
RESPONSIBLE PARTIES

Task/Role	Responsible Parties			
	Entity/Company	**Contact/Email**	**Address**	**Phone Number**
Project Applicant	LACDPW	Belinda Kwan, P.E. BKwan@dpw.county.la.gov	900 South Fremont Ave Alhambra, CA 91802	626.458.6175
Environmental Impact Report	EDAW, Inc. (AECOM) for LACDPW	Fareeha Kibriya Fareeha.Kibriya@aecom.com	999 Town and Country Rd Orange, CA 92868	714.567.2400
Section 1600 Permitting; Mitigation Program Review/Approval	CDFW	Matthew Chirdon Matthew.Chirdon@wildlife.ca.gov	P.O. Box 1797 Ojai, CA 93024	805.640.1165
Mitigation Program Review/Approval	City of Arcadia Public Works Services Department	Tom Tait TTait@ci.arcadia.ca.us	P.O. Box 60021 Arcadia, California 91066-6021	626.305.1386
Vector Control: Inspection/Treatment	San Gabriel Valley Vector Control District	Benjamin Waswa BWaswa@sgvmosquito.org	1145 N Azusa Canyon Rd West Covina, CA 91790	626.814.9466
Off-Site Seed Collection Access (Right-of-Entry Permit Grantors; Voluntary)	City of Monrovia Department of Community Services	Eugene Suk (Park Naturalist) ESuk@ci.monrovia.ca.us	119 W Palm Ave Monrovia, CA 91016	626.255.6799
	City of Sierra Madre Community Services Department	Ryan Baker RBaker@cityofsierramadre.com	232 W Sierra Madre Blvd Sierra Madre, CA 91024	626.355.5278
General Contractor (Sediment Placement/Grading)	Quest Construction	Coley Frerck cjf@qvsw.com	1903 W Parkside Ln, Ste 100 Phoenix, AZ 85027	623.581.9700
Mitigation Planning; Biological Surveys and Long-Term Performance Monitoring	BonTerra Psomas	Richard B. Lewis, III Richard.Lewis@Psomas.com	225 S Lake Ave, Ste 1000 Pasadena, CA 91101	626.351.2000
Preparation of Irrigation Plans and Photo Simulations	Cornerstone Studios, Inc. (Landscape Architect)	Don Wilson, ASLA Don@CSStudios.com	106 W 4th St, 5th Fl Santa Ana, CA 92701	714.973.2200
Propagation of Native Plant Species	El Nativo Growers (Nursery)	Rebecca Nash RNash@ElNativoGrowers.com	200 S Peckham Rd Azusa, CA 91702	626.969.8449
Supplemental Botanical Surveys and Monitoring	Leatherman BioConsulting, Inc.	Sandy Leatherman SandyLeatherman@aol.com	4848 Lakeview Ave, Ste 100E Yorba Linda, CA 92886	714.701.0863
Mitigation Site Preparation, Installation, and Long-Term Maintenance	Nakae & Associates, Inc. (Restoration Contractor)	Kevin Kirchner OCStaff@Nakae.com	11159 Jeffrey Rd Irvine, CA 92602	949.786.0405
Collection/Propagation of Ferns, Rare Oaks, and Other Native Plant Species	Rancho Santa Ana Botanic Garden	Naomi Fraga, PhD NFraga@RSABG.org	1500 N College Ave Claremont, CA 91711	909.625.8767
Native Seed and Cuttings Collection	S&S Seeds, Inc.	Jody Miller JodyMiller@ssseeds.com	6155 Carpinteria Ave Carpinteria, CA 93013	805.684.0436
LACDPW: County of Los Angeles Department of Public Works; CDFW: California Department of Fish and Wildlife				

2.0 PRELIMINARY MITIGATION TASKS

2.1 FINAL GRADING

As described above, final grading of the Lower SPS included the placement of approximately 30 feet of sediment over the pre-existing condition. LACDPW's Lower SPS grading plan included dual, spiraling drainage channels to convey off-site inflows from the eastern slopes to a relocated standpipe. The drainage design optimizes the retention and percolation of these inflows. Final grading was completed by Quest Construction (for LACDPW) in October 2012. The final/closure elevation of the Lower SPS deck area is approximately 650 feet above sea level. Site photographs are provided in Attachment A.

2.2 PROTECTION OF EXISTING RESOURCES

The Lower SPS is a permanent receptor site with drainage facilities subject to LACDPW's ongoing inspection and maintenance to ensure the structural integrity of the SPS and to maintain proper storm water conveyance through the site. In addition to these operational issues, the resource protection measures described below were addressed, specific to the habitat creation program.

2.2.1 BIOLOGICAL RESOURCES

The Restoration Ecologist installed flagging to indicate sensitive habitat areas and other resources (e.g., native vegetation along the eastern edge of the Lower SPS, pre-existing native tree/shrub seedlings in the planting area) to be protected during mitigation implementation, which started in September 2013.

2.2.2 HAZARDOUS MATERIALS

Nakae ensured that no foreign material and/or liquid such as oil, gasoline, or other petroleum products were deposited on the mitigation site or in off-site staging areas. Best management practices were employed and included drip protection beneath vehicles and equipment as well as daily removal of all trash and debris (including micro-trash).

2.2.3 FIRE PREVENTION/SAFETY

Due to the flammable native scrub vegetation in immediate off-site areas, Nakae incorporated fire prevention measures for all activities on site. BonTerra Psomas installed project-specific combination locks on gates at multiple points of entry to the Santa Anita facility in order to facilitate emergency entry/egress as needed. The LACDPW's grading plan included a service road along the east edge of the deck planting area; this narrow alignment has been kept clear of vegetation to enable emergency vehicular access to the manufactured slope and other off-site areas (e.g., private residences, fuel modification zones) to the east of the site.

2.2.4 EROSION CONTROL

Nakae installed erosion-control measures in September 2013, including (1) fully biodegradable straw wattles on slope areas and (2) check dams (constructed of sand bags) in the spiraling drainages. Nakae also removed sediment from all concrete down drains and V-ditches within and adjacent to the planting area to facilitate proper site drainage prior to mitigation implementation.

2.3 SOIL TESTING/TREATMENTS

The planting areas on the Lower SPS consist of placed fill materials. Prior to the placement of the final 30 feet of sediment, the LACDPW performed a compaction analysis in 2011. The analysis indicated that soil compaction on the pre-existing sediment pile ranged from 78 percent to 85 percent within the first 35 feet (below ground surface) and from 89 to 90 percent within the 35- to 53-foot range. Boring activities also indicated that groundwater was located at approximately 50 feet below the ground surface (i.e., approximately 80 feet below the final deck elevation). To improve habitat establishment conditions, the final 30 feet of sediment was placed with construction equipment, but was not compacted beyond the placement efforts, resulting in a degree of compaction not exceeding 80 percent in the upper 30 feet of fill.

Following the final sediment placement, surface soil samples ('bucket samples') were obtained in three locations on the 8.0-acre planting site, including both deck and slope areas. As anticipated, the soil tests did not indicate any seriously problematic chemical or physical properties requiring the use of amendments to enable native plant growth on the mitigation site (Soil & Plant Laboratory, Inc., 2013). The OWHRMP specified that the LACDPW would carefully conserve a large volume of mulched native vegetation associated with the clearing of the Middle SPS. Nakae, under the direction of the Restoration Ecologist, incorporated this material (ripped via heavy machinery) into the Lower SPS deck area to a minimum depth of two feet to improve soil fertility in September 2013. Urea was applied at a rate of 175 pounds per acre, concurrent with the mulch, to effect nitrogen balance/availability upon the beneficial decay of the organic material. The added soil organics will factor in complex subterranean biotic processes.

The final soil surfaces were left uneven/roughened to improve plant and seed establishment conditions (e.g., to provide microhabitats for seedling germination/growth).

2.4 SUBSTRATE ENHANCEMENTS

Oak woodlands in Southern California, including OW mitigation/restoration sites, are typically deficient in coarse woody debris (CWD)—i.e., the vegetative debris that accumulates in mature woodlands upon the growth and decay of oaks and associated woody plant species (Tietje and Waddell et al. 2002; Tietje and Hardy et al. 2015). Prior to Project initiation, the Restoration Ecologist flagged numerous native trees (coast live oak and western sycamore [*Platanus racemosa*]) and native shrubs on the Middle SPS for salvage and re-use as CWD on the Lower SPS mitigation site. The LACDPW directed the General Contractor to carefully remove these materials (native tree trunks, branches, brush piles) which were later stockpiled on the deck of the Lower SPS upon the completion of sediment placement tasks. As directed by the Restoration Ecologist, several of the native trees were removed with large, intact trunks (approximately 20 to 30 feet) attached to a large mass of root tissue (ballast) to be placed as natural 'snags' in excavated pits on the mitigation site. BonTerra Psomas also flagged numerous large boulders and rock piles associated with the Project (i.e., coarse materials isolated from removed sediment) for placement on the Lower SPS mitigation site. Breakage and other boulder damage (e.g., spray painting) was avoided during collection and transport. Large sized boulders were preferentially used in order to create assemblages with larger internal/interstitial gaps to provide niches for a diversity of wildlife species.

Nakae, in coordination with the Restoration Ecologist, installed many tons of CWD and boulder materials in September and October 2013 using a variety of heavy equipment (e.g., excavators, bulldozers, grapples). These preliminary construction tasks included (1) installation of a total of 14 natural snags throughout the deck area in excavated pits up to $^1/_3$ of their length that were stabilized via backfilling and machine recompaction; (2) placement of numerous large tree trunks (prone) and native brush piles; and (3) placement of numerous assemblages of boulders that

were carefully arranged to provide internal gaps/niches for wildlife. Soil was 'heeled-up' against some of these features, especially on east and north aspects, to provide niches for the growth of specialty plants such as lance-leaved dudleya (*Dudleya lanceolata*). Many of the assemblages incorporate both CWD and rock materials, with smaller branches placed erect amid the boulders to provide perching opportunities for bird species, and buckets of oak twigs and leaf litter dumped into rock crevices for the benefit of detritivores (e.g., native termites) in the pile interiors.

Moreover, these materials were placed in a naturalistic manner to mimic a primeval, streamside woodland. The goal of including such substrate enhancements is to immediately provide habitat features (e.g., fallen logs, brush piles, snags) and associated wildlife functions/values (including beneficial decay processes) that would not otherwise exist on an OW habitat creation site for centuries (i.e., until planted trees have grown, senesced, died, and begun to disarticulate).

2.5 HABITAT FENCING AND SIGNAGE

As described in the OWHRMP, a temporary, 8-foot-high fence (exclosure) was constructed at the perimeter of the deck portion of the 5.5-acre OW mitigation site to exclude large mammals (only), thereby reducing herbivory during the initial oak establishment phase. The fence was constructed using wood posts and smooth, horizontal wire [no barbed wire]). The horizontal wires were spaced six inches apart in the lower five-foot portion of the fence to enable smaller mammals to enter the planting area. A total of four locking gates were installed in the fence to provide access for maintenance and monitoring. Two 'drinker' tanks were installed near the northeast corner of the mitigation site (outside the exclosure) to provide alternative water resources for wildlife excluded from the 5.5-acre deck area by the fencing.

BonTerra Psomas designed and Nakae fabricated/installed a total of 12 interpretive signs around the mitigation site to explain the goals of the OWHRMP. The signage describes the native habitats being created on the site; engages readers' assistance in avoiding site damage and reporting concerns to the authorities; and cites the penalties for trespassing under municipal ordinances.

2.6 IRRIGATION SYSTEM INSTALLATION

Cornerstone Studios, Inc. designed and Nakae installed, a temporary irrigation system on the 8.0-acre mitigation site in 2013, which includes overhead spray components (site-wide) and a separately valved system of individual bubblers at each oak planting location. Irrigation system installation included the construction of a new water meter by the City of Arcadia Public Works Services Department (PWSD) near the intersection of Highland Oaks Drive and East Woodland Avenue. Nakae installed a new gate valve in the same box as the PWSD meter, and a new backflow preventer device (caged) was installed in the same general location. Water is delivered to the Lower SPS via a four-inch mainline that extends north from the point of connection along the alignment of the Santa Anita Channel.

2.7 INTERIM WEED ABATEMENT

Interim weed abatement was performed on the mitigation site between the completion of sediment placement in 2012 and mitigation implementation in September 2013. Interim weed abatement tasks included the hand-pulling of weed species prior to seed dispersal to reduce future weed occurrence in the planting areas. Nakae also removed/treated weeds during the performance of preliminary mitigation tasks. Only glyphosate-based herbicides that are approved for use in aquatic habitat areas by the U.S. Environmental Protection Agency (USEPA)(e.g., Roundup Custom®) are used on the mitigation site in accordance with the terms of the OWHRMP. As described below, voluntary weed abatement buffer areas (surrounding the habitat creation area) were also established at the time of mitigation installation.

2.8 WEED ABATEMENT BUFFER AREAS

Voluntary weed abatement buffer areas (Buffer Areas) were established around the perimeter of the 8.0-acre mitigation site by Nakae and the Restoration Contractor to avoid the proliferation of weeds in adjacent areas and to reduce the contamination of the mitigation site by weed seeds (Exhibit 3). Buffer Area 1 (0.78 acre) extends up the slope to the eastern property boundary, and Buffer Area 2 (2.50 acres) includes the slopes (1 level) south and west of the mitigation site. Additional Buffer Areas (3a [1.72 acres], 3b [0.45 acre], and 4 [1.74 acres]) are being established in July 2016 (Year Two) to further protect the mitigation site from weed contamination. A number of invasive/non-native, ornamental tree species such as Shamel ash (*Fraxinus uhdei*) will be removed from Buffer Areas 3a and 4 (outside the nesting bird season) as part of pending work. Some of the ornamental trees will be treated via the slash/paint (herbicide) method in order to retain the snags for wildlife value. Upon the start of weeding in Buffer Areas 3a/3b/4, a total of 7.2 acres of adjacent land will be under voluntary weed control to benefit mitigation site performance.

Protective wire cages were installed around approximately 50 volunteer coast live oak seedlings in Buffer Area 2 to reduce deer herbivory impacts, which were observed to be severe at that time. Since mitigation implementation in 2013, several of these oaks have exhibited good growth due to the protective caging. In addition, as the result of ongoing weed control, a large number of volunteer shrub and herb seedlings have arisen in Buffer Areas 1 and 2, such that the Buffer Areas provide valuable ancillary habitat for wildlife present on the mitigation site.

More than 20 mature, non-native Mexican fan palms (*Washingtonia robusta*) and other invasive perennial plant species were voluntarily removed by LACDPW from an off-site manufactured slope (not part of Buffer Areas) to the east of the mitigation site. These plants were removed to improve mitigation site performance by eliminating a significant source of off-site weed seeds. LACDPW secured rights-of-entry from several private landowners, and Nakae removed this exotic vegetation in 2013, in coordination with the Restoration Ecologist.

A summary of weed abatement activities in buffers and adjacent areas (on site and off site) is provided in Table 3.

TABLE 3
BUFFER/ADJACENT WEED ABATEMENT AREAS

Buffer Area No.	Dates		Description
	Start	End	
1	September 2013	Ongoing	Removal of all annual/perennial weeds.
2	September 2013	Ongoing	
3a	July 2016	Ongoing	Removal of non-native trees (some pine trees retained). Removal of all annual/perennial weeds.
3b	July 2016	Ongoing	
4	July 2016	Twice per year	Removal of all annual/perennial weeds.
East Slope (Off Site)	October 2014	October 2014	One-time removal of invasive fan palms and other non-native/perennial plant species.

3.0 NATIVE PLANT MATERIALS

The OWHRMP specifies that all mitigation plant materials (seeds, cuttings, container plants) shall be of local origin (i.e., from the Santa Anita Wash/Rio Hondo Subwatershed). Seed production for a range of plant species varies from year to year; in addition, the mitigation program is being implemented in a period of extended, marked drought, which is suppressing growth, flowering, and fruit/seed production for many plant species. Therefore, in order to obtain seed materials of adequate quantity and diversity, S&S started local seed collection tasks in June 2011 (2.5 years prior to mitigation installation) in coordination with the Restoration Ecologist. Seed collection in 2011 was limited to the LACDPW's Santa Anita property; however, the LACDPW subsequently secured access to off-site open space areas in the Cities of Arcadia, Monrovia, and Sierra Madre for more extensive, ongoing seed collection. In particular, S&S and the Restoration Ecologist have coordinated extensively with City of Monrovia park rangers on seed collection for several key plant species within the City's approximate 1,400-acre Hillside Wilderness Preserve.

Container plants of numerous species have been propagated to date by ENG and RSABG. The Restoration Ecologist performs regular inspections of nursery plants to assess plant habit and health. Numerous plants are 'de-potted' during each inspection, to assess root development (i.e., root-to-shoot ratio, circling/pot-bound roots). Both ENG (Azusa) and RSABG's (Claremont) facilities are located in the vicinity of the Arcadia site, which may benefit the planting stock in adapting to the local climate.

S&S and/or the Restoration Ecologist also collected root/stem cuttings of local native plant species for the propagation of container plants (e.g., California fuchsia [*Epilobium canum* ssp. *canum*] and California hedgenettle [*Stachys bullata*]) or for immediate translocation/planting on the mitigation site (e.g., basket rush [*Juncus textilis*], and California blackberry [*Rubus ursinu*s]).

More than 119 native plant species (seed and/or cuttings) have been collected to date in the local subwatershed; this represents a diversity of installed plant species that is nearly four times greater than the diversity of the conceptual plant/seed palettes (31 plant species) that were listed in the OWHRMP. Most of these seeds/cuttings are being collected on an opportunistic basis during the extensive scouting activities that are performed in the subwatershed. In some cases, only trace amounts of seed have been collected (e.g., < 0.01 pound of showy beard tongue [*Penstemon spectabilis*] and < 0.01 pound of cardinal catchfly [*Silene laciniata*]) due to scarce plant occurrences and/or drought-related low seed productivity in the region. The amounts of harvested seed are limited to avoid over-collection that would impact source plant regeneration (as noted for the ferns and rare oak species described below). It is important to establish these locally scarce plants on the habitat creation site—even in trace quantities—for the unique ecosystem services these species provide. Seed was collected from as many individual plants (and individual plant populations) as practicable for each species to optimize genetic diversity.

The container plants, cuttings, and seed species and quantities installed to date on the mitigation site are listed in Attachment B.

3.1 OAK SPECIES

Acorns of four species of native oaks—coast live oak, canyon live oak (*Quercus chrysolepis*), San Gabriel oak (*Quercus durata* var. *gabrielensis*), and Engelmann oak—were collected in the local subwatershed. Coast live oak acorns were collected from a minimum of 50 individual trees to adequately incorporate the genetic diversity of the local tree population in the created woodland habitat. San Gabriel oak and Engelmann oak are rare plant species (i.e., both have a California Rare Plant Rank [CRPR] of 4.2, 'Plants of limited distribution – a watch list'); therefore, acorns of these species were judiciously collected by RSABG and the Restoration Ecologist, to avoid over-

collection from the source plants. Some Engelmann oak acorns were also obtained from public rights-of-way in developed areas in the local subwatershed (i.e., from roadway gutters) when observed beneath massive 'heritage' trees of this species (i.e., specimens assumed to be naturally occurring). Canyon live oak acorns were obtained from trees found at relatively low elevations in the subwatershed. Oak acorns were collected and stored for direct seeding on the site, and were also propagated as container plants (seedlings [in 'liners'] and 'T4' [deep one-gallon] sizes). A substantial volume of natural oak leaf litter (e.g., leaves, twigs, acorns/caps) was carefully conserved and separately stockpiled during relocation of the salvaged CWD to be applied as a preferred mulch to the numerous oak planting locations on the mitigation site.

3.2 SHRUBS/SUBSHRUBS

A large variety of shrub/subshrub propagules were collected in the subwatershed, including species adapted to grow in moist/shady woodland understory conditions (i.e., hillside gooseberry [*Ribes californicum*] and species adapted to survive in hot/dry, south-facing or west-facing slope conditions (e.g., white sage [*Salvia apiana*]). Large, evergreen shrub species such as laurel sumac (*Malosma laurina*) and sugarbush (*Rhus ovata*) were propagated in limited numbers, and excluded from the applied seed mixes in order to avoid excessive cover of these species on the mitigation site (i.e., to avoid the creation of chaparral habitat rather than OW or CSS, which would be contrary to program goals). Vining subshrubs such as chaparral virgin's bower (*Clematis lasiantha*) and heartleaf bush penstemon (*Keckiella cordifolia*) were propagated for planting in association with large shrubs (or CWD) into which they can beneficially clamber.

3.3 CACTUS AND YUCCA

S&S, in coordination with the Restoration Ecologist, collected a total of 300 cuttings (pads) of Vasey's prickly pear (*Opuntia ×vaseyi*) from the Middle SPS in June 2013. The cactus pads were selected from a minimum of ten separate cactus patches and were delivered to ENG for propagation. A maximum of ten pads were collected from any individual plant, to avoid adversely impacting the plants' overall structure and value for wildlife. Seeds of chaparral yucca (*Hesperoyucca whipplei*), a fibrous shrub, were obtained so it could be included with the cactus in designated patches of spiniferous vegetation—exclusive of woody shrub species—in order to diversify the mosaic of subhabitats to be created on the mitigation site.

3.4 ANNUAL/PERENNIAL HERBS

A great variety of native grass and herb propagules was also collected in the subwatershed. Upland woodland and scrub habitat creation/restoration sites are often deficient in native herbaceous (non-woody) species cover and/or diversity. The herbaceous component (e.g., wildflowers, grasses) of California OW habitats has been altered (Rissman, A.R., et al., 2008) as the result of various anthropogenic impacts such as physical disturbance (grading), grazing, altered fire regimes, altered soil hydrology, agricultural land uses, and the deliberate or accidental introduction of invasive plant species. As with woody plants, each herbaceous plant species (e.g., false-mustard [*Eulobus californicus*] and coast range onion grass [*Melica imperfecta*]) supports a unique suite of arthropods (e.g., bees, beetles, butterflies) that use these plants for nectar (with important pollination effects); feed on the plants' leaves/roots/stems (various life stages, including larvae); or prey upon other associated fauna. Each of these smaller organisms makes a unique contribution to a complex food web in a natural habitat. Portions of the OW and CSS planting areas have been designated for herbaceous vegetation only (i.e., shrub species were excluded); these native grass/herb meadows are expected to support an increasing diversity of arthropods. The seed of several native herb species that prefer mesic/shaded niches were combined into a specialized, supplemental seed mix (a total of 60 small packets) that was scratched into crevices on the north and east aspects of the CWD and boulder assemblages in fall 2015.

3.5 FERN SPECIES

RSABG, in coordination with the Restoration Ecologist, collected rhizomes (roots) from five species of native ferns (e.g., coffee cliff-brake [*Pellaea andromedifolia*]) in the local subwatershed, starting in 2013. The rhizomes were collected from multiple, geographically separated populations of ferns of each species to optimize the genetic diversity of the collection. RSABG propagated the collected rhizomes into five-gallon 'stock plants' (for long-term nursery culture), from which several hundred smaller plants are being derived for planting on the mitigation site. By the use of multiple collection sites and by the culture of stock plants, hundreds of nursery plants with varied genetics are being created with minimized impact on wild plant populations. It would not normally be feasible to include ferns in a revegetation palette for a barren/exposed planting area such as the Lower SPS; however, due to the ample substrate enhancements provided for this program (CWD, boulder assemblages), sheltered niches were immediately available for targeted installation of ferns and other plants with particular light/moisture preferences (e.g., Dudley's clarkia [*Clarkia dudleyana*], a native wildflower) as observed in nearby habitats in the San Gabriel Mountain foothills.

3.6 RIPARIAN SPECIES

The spiraling drainages on the site convey both storm flows and nuisance flows (e.g., irrigation of fuel modification zones), from the adjacent slopes and residences. A variety of volunteer riparian plant species (e.g., fall flat sedge [*Cyperus eragrostis*], fringed willowherb [*Epilobium ciliatum* ssp. *ciliatum*]) became established in the drainages during the preliminary mitigation phase (2012–2013), which will continue into the installation and long-term maintenance phases of the program. These volunteer riparian plant species were preserved on the site and were augmented via the collection and planting of other riparian plant species (e.g., wrinkled rush [*Juncus rugulosus*], great marsh evening primrose [*Oenothera elata* ssp. *hirsutissima*]) via seed or cuttings. The 8.0-acre habitat creation site (and associated weed abatement buffer areas) exhibits a wide range of aspects, hydrologic conditions, and microtopographic features that provide opportunities for high botanical diversity.

4.0 MITIGATION INSTALLATION

Nakae performed mitigation site installation tasks (planting and seeding) in two phases, as summarized below. Mitigation installation was completed in late December 2014, and the long-term maintenance period started on January 1, 2015.

- **Phase 1 Installation (January/February 2014)**
  - 4,963 container plants and cuttings (21 species)
  - 135 pounds of native seed (hydroseeded and/or hand-seeded)
- **Phase 2 Installation (December 2014)**
  - 1,973 container plants and cuttings (27 species)
  - 25 pounds of native seed (hand-seeded only)

4.1 CONTAINER PLANTING (2014)

4.1.1 OAK SPECIES

A total of 464 oaks (*Quercus* spp.) were installed via container planting on the 5.5-acre oak woodland mitigation site. Native oaks were also established via direct-seeding of acorns (multiple oak species). Oaks that are established via the direct seeding of acorns develop deep taproots that allow better access to soil moisture for the developing seedlings (McCreary and McPhierson, 2005; Young and Evans, 2005) versus container-planted oaks. The oak planting locations were staked by the Restoration Ecologist. The majority of the selected planting sites (399 caged locations) occur along an east or north aspect immediately adjacent to CWD/boulder assemblages in order to provide (1) protection from hot afternoon sun; (2) some protection from drying winds; and (3) access to persistent soil moisture (beneath the assemblages) for the developing oak roots. Nakae used a machine auger (Dingo™) to create the oak planting holes, which were pre-watered prior to planting/seeding. A minimum of ten acorns were installed in each coast live oak planting location, along with one small coast live oak seedling. Mycorrhizal inoculum (AM-120™) was included in the backfilled soil at each location, along with one unit of fertilizer (Bio Pak 16-6-8™). The acorns were planted within the top one-inch of soil, then covered with one to two inches of salvaged oak leaf litter. Protective caging (above ground, only) was installed around each oak planting site, as follows: (1) 6-foot-high by 20-inch-wide chicken wire cylinders anchored with T-posts for planting sites within the 8-foot wildlife exclosure and (2) approximately 4-foot-high by 6-foot-wide caging (steel wire mesh) for oaks planted outside the exclosure. Shade cloth (70 percent) was wrapped around the tops and southwest aspect of each cage (180 degrees coverage), for added protection from afternoon sun and herbivory (by deer). All container plants were installed within 24 hours after delivery on the site to avoid plant decline during prolonged on-site storage.

4.1.2 NON-OAK SPECIES

For both installation phases, the Restoration Ecologist marked the container planting locations using color-coded wire flags for each plant species. The planting area layouts roughly follow the conceptual planting plans provided in the OWHRMP (i.e., naturalistic/non-linear). Slope species were located according to their preferred aspects (e.g., hairy bush monkeyflower [*Mimulus aurantiacus* var. *pubescens*] on north-facing versus south-/west-facing slopes). A number of polygons were flagged and planted with cactus and yucca (spiniferous plants) and/or herbaceous species only, as described above. All planting holes were pre-watered, and mycorrhizae and fertilizer packets were installed at each location, as described above. The overall goals of the

planting design were to create a habitat mosaic on the mitigation site and to take advantage of niche habitat opportunities for plant species with special requirements. Also, a number of California sagebrush plants (*Artemisia californica*, a relatively fast-growing shrub) were installed on the southwest aspect of some of the planted oaks, to function as temporary 'nurse plants' to enhance wind protection and shading for the developing oak seedlings. The initial container shrub/subshrub planting density (Phases 1 and 2) was approximately 600 plants per acre on the combined CSS and OW mitigation sites.

4.2 SEED APPLICATION (2014)

Seed species were installed via hydroseeding and/or hand-broadcasting. The seeds of native grass species were only installed via hand-broadcasting. All seed mixes were stored in a dark, cool place and not allowed to become damp prior to application. All of the seed mix labels were retained by the Restoration Contractor and provided to the Restoration Ecologist. A granular form of mycorrhizal inoculum (AM-120™) was added to the hydroseed mixes at a rate of 60 pounds per acre. An agriculturally suitable marking dye was also included in the hydroseed mix. Slope stabilization was provided by Flexterra™ Flexible Growth Medium, applied at a rate of 3,500 pounds per acre in the hydroseeding process. As described above, the Restoration Ecologist flagged a number polygons on the CSS and OW sites for the establishment of spiniferous plants (cactus/yucca) or strictly herbaceous (non-woody) plant species via planting and/or seeding.

4.3 SUPPLEMENTAL PLANTING AND SEEDING (2015-2016)

The Restoration Ecologist coordinated/monitored the collection and propagation of supplemental seed and cutting materials with RSABG and S&S in 2015, including field collections from open space areas in the Cities of Monrovia and Sierra Madre (LACDPW secured access to Sierra Madre open space areas for seed/plant collection in 2014). Supplemental planting and seeding occurred in December 2015/February 2016, and a summary of these materials is provided in Attachment B. The 1,197 supplemental container plants (11 species) included primarily native ferns (309 plants) of five different species: foothill needle grass (*Stipa lepida*, 641 plants); plus a variety of native shrubs, perennials, and succulents, several of which did not previously occur on the mitigation site.

Supplemental seeding of oak acorns (16.1 pounds) occurred on the OW site in October 2015 to provide added contingency plants toward compliance with mitigation performance standards. Approximately 25 pounds of non-oak seeds (27 species) of primarily herbaceous plants (such as wild Canterbury bells [*Phacelia minor*] and cliff desert dandelion [*Malacothrix saxatilis*]) were installed on the OW and CSS mitigation sites (1) to improve vegetative cover and diversity and (2) to further establish a rich seed bank of native herbaceous species in the topsoil. In the event of wildfire or other site disturbance, the recovery of damaged areas could be expedited through the expression of this native seed bank. A total of 60 packets of mixed, locally collected, herbaceous plant species (e.g., silver rock-lettuce [*Stephanomeria cichoriacea*]) were also prepared and installed among the numerous boulder and woody debris assemblages on the site. Several of the plant species from the packets have already germinated and bloomed in these niches, including Dudley's clarkia and scarlet larkspur (*Delphinium cardinale*).

Additional planting and seeding will occur in future years of the maintenance and monitoring period, with an emphasis on the introduction of new plant species to the mitigation site—especially along the spiraling drainages.

5.0 MITIGATION MAINTENANCE

Mitigation installation was completed in December 2014, and the seven-year to ten-year mitigation maintenance clock began on January 1, 2015. Nakae performs maintenance tasks on the mitigation site and in adjacent Buffer Areas in compliance with the terms of the OWHRMP. Maintenance of the 8.0-acre site is very complex due to the innovative restoration methods being employed on the site (e.g., CWD placement); the temporary exclusion of large mammals (e.g., keeping gates closed and locked at all times); the presence of an abundance of native and non-native plant species; rapid colonization by wildlife species; the operational issues associated with the structural integrity of the Lower SPS (e.g., drainage facilities); tasks related to adjacent residential land uses (e.g., vector control, quiet entry protocols); and other issues.

The highest priority for mitigation site performance is the growth and survival of planted oaks. Nakae performs judicious watering and careful maintenance. As the growing branch tips of the oaks rise above deer browsing height, Nakae is removing the upper four feet of caging to enable the trees to assume a natural, spreading form. The lower two feet of temporary caging is being left in place as a longer-term rodent deterrent.

The mitigation site and adjacent buffer weed-abatement areas are essentially weed free, as non-native plant species are promptly treated and removed when observed during regular maintenance activities. Nakae removes weeds prior to seed production/dispersal to avoid re-infestation of the site. Herbicide use is minimized in favor of hand-pulling of weeds whenever possible. Only glyphosate-based herbicides that are approved for use in aquatic habitat areas by the USEPA (e.g., Roundup Custom®) are used on the mitigation site in accordance with the terms of the OWHRMP.

Nakae is monitoring some minor erosion on the off-site slopes to the east of the mitigation site (i.e., Weed Abatement Area No. 1); however, there is no significant erosion on the mitigation site, and there has been no problematic trespassing or trash deposition in the vicinity. Nakae is maintaining the concrete down-drains and V-ditches to ensure they are clear of sediment and debris to facilitate the County's ongoing inspection of the Lower SPS' integrity. Supplemental irrigation (bubblers only) is currently being applied to the OW (SPS deck) mitigation site approximately every six to eight weeks, depending on weather conditions. No irrigation has been applied to the CSS planting areas (SPS slopes) since June 9, 2015. The frequency of irrigation will continue to be decreased to foster adaptation of native plant species to the arid growing conditions in this region.

BonTerra Psomas Biologists perform nesting bird surveys associated with all maintenance tasks performed by Nakae during the nesting bird season, which is defined in project permits and authorizations as February 1 to September 15. When sensitive biological resources are observed (e.g., nesting birds), these environmentally sensitive areas are marked in the field via flagging tape and/or signage. The biologist remains on site as needed to coordinate maintenance tasks in the vicinity of these resources, and to assist with plant species identification.

The LACDPW, BonTerra Psomas, and Nakae periodically coordinate with representatives of the San Gabriel Valley Vector Control District (SGVVCD) to discuss ongoing, potential mosquito vector issues associated with the drainage channels on the site. The SGVVCD typically performs vector control via the application of *Bacillus thuringiensis* (BTi), a bacterial/biological control material. SGVVCD applied a volatile mineral oil to control more mature mosquito larvae following a few past inspections (to maintain compliance with public health and safety codes); however, since project initiation, the LACDPW and BonTerra Psomas have requested that SGVVCD use only BTi on the site (rather than other materials, to the extent practicable) to minimize adverse impacts on mitigation habitat (e.g., impacts to arthropod species diversity and abundance). Nakae

regularly removes vegetation from the central portion of each drainage channel (i.e., an area approximately three feet in width) to facilitate inspection and treatment tasks, per SGVVCD requirements. In addition, except for a small number of volunteer willows and sycamore trees, woody vegetation is removed from the cross-section of the drainages to similarly facilitate SGVVCD access. The narrow berm between the drainages is kept nearly 100 percent unvegetated to provide a foot path for perpetual access by LACDPW and SGVVCD personnel.

6.0 MITIGATION PERFORMANCE STANDARDS

Project mitigation performance standards were prepared in coordination with the CDFW and incorporate the terms and conditions of EIR mitigation measures BIO-D/BIO-E and the CDFW SAA. A summary of mitigation performance standards is provided in Tables 4 and 5.

TABLE 4
OAK WOODLAND PERFORMANCE STANDARDS

Year	Native Percent Cover (Minimum)							Non-Native Percent Cover[e]	Native Vegetation Diversity[f]	Oak Tree Survival (Percent)[g]
	Trees[a]	Shrubs[a]			Succulents[a]	Herbs[a]	Total[e]			
		Large[b]	Medium[c]	Subshrubs[d]						
1							**25.0**	< 5		80
2							**40.0**	< 5		80
3	0.5	3.0	14.0	3.0	0.5	25.0	**55.0**	< 5	15	80
4							**65.0**	< 5		80
5	1.0	4.0	16.0	4.0	1.0	30.0	**75.0**	< 5	18	80
6							**75.0**	< 5		80
7	1.5	5.0	18.0	5.0	2.0	30.0	**75.0**	< 5	20	80
8							**75.0**	< 5		80
9							**75.0**	< 5		80
10	2.0	5.0	18.0	5.0	2.0	30.0	**75.0**	< 5	24	80

[a] Absolute Cover
[b] Large evergreen shrubs such as toyon (*Heteromeles arbutifolia*).
[c] Includes medium shrubs (evergreen or deciduous) such as little graceful golden currant (*Ribes aureum* ssp. *gracillimum*).
[d] Includes subshrubs and vining shrubs (evergreen or deciduous) such as California blackberry (*Rubus ursinus*).
[e] Class Cover
[f] Number of Species. Statistical diversity (Shannon Diversity Index) will also be compared to the reference site in Years 3, 5, 7, and 10.
[g] Relative to the initial planting quantities specified in the OWHRMP.

TABLE 5
COASTAL SAGE SCRUB PERFORMANCE STANDARDS

Year	Native Percent Cover (Minimum)						Non-Native Percent Cover[e]	Native Vegetation Diversity[f]
	Shrubs[a]			Succulents[a]	Herbs[a]	Total[e]		
	Large[b]	Medium[c]	Sub-shrubs[d]					
1						**25.0**	< 5	
2						**40.0**	< 5	
3	2.0	24.0	2.0	0.5	8.0	**55.0**	< 5	10
4						**65.0**	< 5	
5	3.0	28.0	3.0	1.0	10.0	**75.0**	< 5	12
6						**75.0**	< 5	
7	4.0	35.0	4.0	2.0	15.0	**75.0**	< 5	15
8						**75.0**	< 5	
9						**75.0**	< 5	
10	5.0	50.0	5.0	2.0	15.0	**75.0**	< 5	18

[a] Absolute Cover
[b] Large evergreen shrubs such as sugarbush (*Rhus ovata*).
[c] Includes medium shrubs (evergreen or deciduous) such as California buckwheat (*Eriogonum fasciculatum* var. *foliolosum*).
[d] Includes subshrubs and vining shrubs (evergreen or deciduous) such as chaparral virgin's bower (*Clematis lasiantha*).
[e] Class Cover
[f] Number of Species. Statistical diversity (Shannon Diversity Index) will also be compared to the reference site in Years 3, 5, 7, and 10.

6.1 OAK TREE SURVIVAL AND GROWTH

As noted in Table 4, the performance standard for survival of planted oaks is 80 percent, relative to the initial planting quantity of oaks specified in the OWHRMP. Therefore, the survival standard for coast live oaks is 287 trees (initial quantity per OWHRMP: 358 trees) and the survival standard for Engelmann oaks is 4 trees (initial quantity per OWHRMP: 5 trees). A greater quantity and diversity of oak species has been planted on the mitigation site to-date than was specified in the OWHRMP, including a total of 399 caged planting locations and numerous additional planted and volunteer oak seedlings.

There is a two percent canopy cover requirement for oak tree species at the end of the seven-year to ten-year maintenance period. The planted oaks must be self-sufficient for a period of two years without supplemental irrigation in order to be eligible for sign off.

As described in the OWHRMP, the oak trees installed on the mitigation site will be assessed by a qualified Arborist. Criteria for assessing tree health include visual evidence of vigor, such as the amount of foliage; leaf color and size; presence and length of new shoot growth; presence of branch or twig dieback; severity of insect infestation; the presence of disease, heart rot, fire damage, or mechanical damage; the amount of new growth; the appearance of bark; and the presence of and rate of callous development over wounds. Structural integrity will also be evaluated with respect to branch attachment; branch placement; presence of decay; presence of exposed roots due to soil erosion; and stability. The health of each tree will be recorded on a scale of 1 to 5 based on the criteria presented in Table 6.

TABLE 6
OAK TREE HEALTH RATING CRITERIA

Rating	Criteria
5	Tree in excellent health with abundant foliage, new leaf growth, and shoot elongation; no signs of herbivory, insect infestation, disease, fungus growth, or limb/trunk damage.
4	Tree in very good health with ample green foliage and new leaf growth; minor signs of drought stress, herbivory, insect infestation, decreased shoot growth, or loss of vigor.
3	Tree in moderate health with limited or uneven new leaf growth; moderate signs of drought stress; noticeable insect activity; decay on branches; noticeable herbivory damage.
2	Tree in poor health with existing leaves yellowing; limited/stunted new leaf growth; decreased shoot growth from previous year; dark-colored cracks or abnormalities on trunk; presence of fungus; observable decay on trunk or major limbs; sap bleeding from trunk; significant insect infestation; extensive herbivory; thinning canopy.
1	Tree in obvious decline with existing leaves yellowing and no new leaf growth; extensive limb or trunk damage; large cracks or other decay on trunk; bleeding sap; dieback of more than 30% of the canopy; a general lack of vigor.

6.2 VEGETATION COVER AND DIVERSITY

As detailed in Tables 4 and 5, the OWHRMP includes performance standards for both vegetation cover (i.e., the percent of the mitigation site that is covered by various classes of plant species [e.g., large shrubs]), and vegetation diversity—i.e., plant species richness (number of species present) and diversity (statistical). Vegetation cover performance is assessed on an annual basis via the performance of vegetation transects (point-intercept) and quadrats, as described below. The vegetation cover standards reflect the goal of creating a mosaic of habitat areas with substantial structural diversity. Based on these sampling methods, the various vegetation diversity metrics to be used are outlined in Table 7.

TABLE 7
VEGETATION DIVERSITY METRICS

Metric	Equation	Variables
Density of Species 'i' (D_i)	$D_i = n_i / A$	n_i = total individuals of species 'i'
		A = total area sampled
Relative Density for Species 'i' (RD_i)	$RD_i = N_i / \Sigma n$	n_i = number of individuals of species 'i'
		Σn = total number of individuals of all species (plots)
Cover for Species 'i' (C_i)	$C_i = a_i / A$	a_i = total area covered for species 'i'
		A = total area sampled
Relative Cover of Species 'i' (RC_i)	$RC_i = C_i / \Sigma C$	C_i = cover for species 'i'
		ΣC = sum of cover for all species
Frequency of Species 'i' (f_i)	$f_i = j_i / k$	j_i = number of plots containing species 'i'
		k = total number of plots
Relative Frequency of Species 'i' (RF_i)	$RF_i = f_i / \Sigma f$	f_i = frequency of species 'i'
		Σf = sum of frequencies of all species
Shannon Diversity Index (H')	$H = -\sum_{i=1}^{R} p_i \log p_i$	R = total number of species encountered
		p_i = species 'i' as a proportion of R

6.2.1 SHANNON DIVERSITY INDEX

A diversity index provides a more comprehensive indication of the vegetative composition beyond 'richness', which is simply the number of plant species observed to be present (either via quantitative surveys [e.g., transects, quadrats] or qualitative observation) in a habitat area. The Shannon Diversity Index accounts for plant species' relative abundance (i.e., commonness or scarcity) and 'evenness' (i.e., how evenly the individuals in the plant community are distributed over the landscape) in a habitat area, as expressed in the following equation (H = the Shannon Diversity Index).

$$H = -\sum_{i=1}^{R} (p_i \log p_i)$$

For the present application, p_i is the proportion of individuals of species 'i' relative to the total number of all individual plants (all species); 'R' is the number of plant species encountered; and $\sum$ is the sum from species 1 to species R. The highest potential value of 'H' (for a particular study area with 'R' number of species) occurs when all species are equally abundant in the sampling area (e.g., Species 1: 10 individuals; Species 2: 10 individuals . . . Species R: 10 individuals).

Higher values of 'H' represent more diverse biological communities. To illustrate, a weed-free orange grove with no other types of fruit trees present would have an 'H' value of 0, as 'p_i' would equal 1 (one type of fruit tree) and would be multiplied by 'log 1' which equals 0. Whatever method of sampling/counting the grove's composition, whatever numbers of samples are obtained, or in whatever locations, the same value (zero) of 'H' would result due to the singularity of fruit tree type throughout the grove. By contrast, if there are numerous different kinds of fruit trees—evenly distributed throughout the grove—then the 'H' value would be high, because each sample (in every location) would contain a diversity of fruit tree types, and the sum of the '$p_i \log p_i$' values would increase with each new species of fruit tree uniformly added to the grove's mix of trees.

A vegetation survey was performed on the Middle SPS reference site in 2013, and a summary of these results was included in the 2013 *Reference Site Survey Report – Oak Woodland Habitat Revegetation/Mitigation Program for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project* (Reference Site Report), which was appended to the OWHRMP. The Reference Site Report and the OWHRMP have been revised (2016) to reflect a comparative re-computation of the value of 'H' on the reference site in 2013, based on the original field data. As shown in Table 8 below, the values of 'H' on the reference site (derived from quadrat data) reflect the impact of the dense cover of ripgut brome (*Bromus diandrus*) on statistical diversity (i.e., with ripgut brome included in the computations, the value of 'H' approaches zero), whereas in excluding ripgut brome, the reference sites would exhibit low (CSS) to moderate (California sycamore/coast live oak riparian forest) diversity. These results are relevant for OWHRMP performance because (1) despite the presence of numerous, heritage oak and sycamore trees, the statistical diversity of the reference site in 2013 was vanishingly low due to its nearly monotypic, weedy understory and (2) the absence of a 'carpet' of weedy herbs on the mitigation site is expected to result in significantly higher diversity than the reference site would exhibit at the three, five, seven, and ten-year marks.

It is important to note that the Shannon Diversity Index does not necessarily indicate the ecological health of a study area, as there is no differentiation between native and non-native species (e.g., a study area with an abundance of diverse, evenly occurring weedy plant species would present a high value of 'H', but provide relatively poor ecosystem services compared to native vegetation).

TABLE 8
SHANNON DIVERSITY INDEX (REFERENCE SITE: 2013)

Habitat Type	Ripgut Brome Included in Computation[a]	Number of Plant Species[b]		Shannon Diversity Index = H[b]	
		Native	Non-Native	Result	Potential[c]
CS/CLORF[d]	**Yes**	**18**	**11**	**0.01**	**3.37**
	No	18	10	2.47	3.33
CSS[e]	**Yes**	**19**	**6**	**0.03**	**3.22**
	No	19	5	0.77	3.18

[a] Ripgut brome (*Bromus diandrus*—a non-native, invasive grass species) constituted a dense understory and was disproportionately represented on the CSS and CS/CLORF reference sites (2013 survey) in terms of both percent cover and numbers of individual plants. For example, on Quadrat No. C-01 (CSS), the estimated number of individual *Bromus diandrus* plants was 155,000, while the total number of individual plants on Quadrat No. C-01 (all species combined) was 155,586 (i.e., 99.6 percent of all plants combined).
[b] Based on quadrat data.
[c] Based on the number of plant species (native + non-native) sampled.
[d] CS/CLORF: California sycamore/coast live oak riparian forest.
[e] CSS: coastal sage scrub.

6.3 MITIGATION REMEDIAL PROCEDURES

In the event that performance standards are not met, remedial measures shall be implemented based on site observations and survey results, as summarized in Tables 9 and 10.

TABLE 9
OAK WOODLAND MITIGATION REMEDIAL PROCEDURES

Performance Standard	Non-Compliance	Potential Remedial Measures
25%, 40%, 55%, 65%, and 75% cover of native species at Years 1, 2, 3, 4, and 5, respectively, and 75% for Years 6 through 10, and native plant cover goals for growth forms as listed in Table 4.	>5% deviation below specified cover throughout 10% or more of the entire site (i.e., if 10% or more of the site is 5% below the cover standard, the entire site will be considered non-compliant).	Reseeding and replanting with appropriate plant species and quantities, irrigation system adjustments, and/or additional weed control shall be recommended, as needed, to facilitate <5% deviation below specified cover throughout 10% or more of the entire site, and 5% maximum weed cover.
5% maximum cover of non-native plant species.		
80% survival of oak trees	Less than 80% survival.	Replanting, irrigation system adjustments, and/or additional weed control shall be recommended, as needed, to facilitate 80% survival of oak trees.
Minimum native plant species richness of 15, 18, 20, and 24 species at Years 3, 5, 7, and 10, respectively.	Plant species richness below the established minimum number of species for Years 3, 5, 7, and 10.	Planting and/or seeding with additional native plant species of local origin.
Shannon Diversity Index ('H') comparable to reference site.	Values of 'H' below reference site values in Years 3, 5, 7, or 10.	Enhancement measures to improve vegetative diversity (e.g., planting/seeding).

TABLE 10
COASTAL SAGE SCRUB MITIGATION REMEDIAL PROCEDURES

Performance Standard	Non-Compliance	Potential Remedial Measures
25%, 40%, 55%, 65%, and 75% cover of native species at Years 1, 2, 3, 4, and 5, respectively, and 75% for Years 6 through 10, and native plant cover goals for growth forms as listed in Table 5.	>5% deviation below specified cover throughout 10% or more of the entire site (i.e., if 10% or more of the site is 5% below the cover standard, the entire site will be considered non-compliant).	Reseeding and replanting with appropriate plant species and quantities, irrigation system adjustments, and/or additional weed control shall be recommended, as needed, to facilitate <5% deviation below specified cover throughout 10% or more of the entire site, and 5% maximum weed cover.
5% maximum cover of non-native plant species.		
Minimum native plant species diversity of 10, 12, 15, and 18 species at Years 3, 5, 7, and 10, respectively.	Plant species richness below the established minimum number of species for Years 3, 5, 7, and 10.	Planting and/or seeding with additional native plant species of local origin.
Shannon Diversity Index ('H') comparable to reference site.	Values of 'H' below reference site values in Years 3, 5, 7, or 10.	Enhancement measures to improve vegetative diversity (e.g., planting/seeding).

6.4 MITIGATION SIGN OFF

When the final (Year Ten) performance standards have been achieved, and if at least seven years of maintenance have been completed, the LACDPW will meet on site with the CDFW, the City of Arcadia, and the Restoration Ecologist to verify the successful establishment of OW (developing) and CSS habitats. Upon its approval of the mitigation program, the CDFW will prepare a memorandum to confirm the completion of the program and the cessation of required maintenance and monitoring tasks. If the mitigation project does not meet performance standards in a timely manner and there are no feasible remedial measures to achieve project compliance, an alternate mitigation program shall be identified by the LACDPW in coordination with the CDFW and the City of Arcadia. Alternate mitigation measures may include habitat creation/restoration at an alternate site(s); participation in an approved mitigation bank; or any other appropriate measure approved by the LACDPW. The selection of an alternate mitigation site will include the evaluation of geographic location (e.g., the Santa Anita Canyon vicinity), land ownership, elevation, slope steepness, aspect, soils, proximity to existing preserved native habitat, weed conditions, and other ecological and logistical factors. The planning and implementation of the alternate mitigation program will be the responsibility of the LACDPW.

7.0 MITIGATION PERFORMANCE MONITORING

Mitigation monitoring tasks in Year One (January 1, 2015 to April/May 2016) included both qualitative and quantitative assessments of mitigation performance. Qualitative surveys include an assessment of native plant species growth, reproduction, or mortality; pest problems; irrigation system performance; invasive weed species establishment; and wildlife species use (resident and migrant species). The quantitative survey methodology was prepared in coordination with CDFW and is described in detail in the OWHRMP (e.g., the quadrat sampling area constitutes at least 2.0 percent of the combined OW and CSS-vegetated habitat areas on the mitigation site. Nesting bird surveys were performed in association with mitigation maintenance tasks, and a summary of all wildlife observations on the site is provided below. The vegetation cover and diversity values as well as the results of the oak tree assessment are discussed in Section 7.4 below.

Geographic Information Systems (GIS) was used to generate random, point-intercept transect locations and random vegetation quadrat locations for the measurement of native vegetation conditions (foliar cover and species diversity [richness]) on the mitigation site. BonTerra Psomas Botanists Ian Cain and Katie Gallagher and BonTerra Psomas Biologists Trevor Bristle and Sarah Thomas performed the quantitative vegetation surveys on April 15 and 22, 2016. Mr. Bristle and Ms. Thomas are qualified to perform nesting bird surveys (as described in the OWHRMP, which states that individual transects or quadrats would be moved to alternate random locations as needed to avoid impacts to nesting birds). Quantitative surveys were performed during the nesting bird season which is defined as February 1 to September 15 in project permits and EIR mitigation measures.

The quantitative surveys were performed in the spring (rather than exactly one year after the start of the ten-year maintenance period on January 1) in order to sample the vegetation during the period when most plant species are actively growing and most detectable.

7.1 TRANSECTS

A total of six 100-foot point intercept transects (1.0-foot intercepts) were performed on the OW mitigation site and a total of six 50-foot point-intercept transects (1.0-foot intercepts) were performed on the CSS mitigation site. Species incidence was recorded at each transect intercept as either native or non-native species, “both”, or “no plant”, and ground cover was recorded at each intercept as either bare soil, rock/cobble, leaf litter, fine woody debris, coarse woody debris, or ‘other’ (e.g., concrete V-ditch). The transect data were compiled to yield the percent native and non-native class cover, and ground cover (by category). Transect photographs are provided in Attachment A.

7.2 QUADRATS

A total of nine 20-foot by 40-foot quadrats were performed to assess plant species density and diversity, including 6 locations on the OW mitigation site, and 3 locations on the CSS mitigation site. The total quadrat sampling areas were 4,800 square feet (sf) on the OW mitigation site, and 2,400 sf on the CSS mitigation site, for a total quadrat sampling area of 7,200 sf. The quadrats were created using measuring tapes, wire flags, and flagging tape. The location of all transects and quadrats are shown on Exhibit 3. Vegetation characteristics were independently evaluated via quadrats for the two mitigation habitat types present on site (i.e., OW and CSS) using the following characteristics (metrics): plant species richness (number of species sampled); density of native trees (all species); density of native shrubs (all species); density, relative density, cover, relative cover, frequency, and relative frequency of each plant species; and the Shannon Diversity Index (see Attachment C, References) was computed to yield the species diversity for each habitat type. This index represents the sampled abundance and evenness of species in the study

area. The vegetation diversity values are discussed in Section 7.4, Results, below. The metrics, equations, and variables used to derive these values are provided in Table 7. Quadrat photographs are provided in Attachment A.

7.3 OAK TREE ASSESSMENT

BonTerra Psomas Certified Arborist Mr. Bristle (International Society of Arboriculture Certificate Number WE-10233A) and Ms. Gallagher surveyed the mitigation site on May 17 and June 2, 2016, to evaluate the planted/seeded oak trees and to characterize their growth and health. As noted above, a total of four planted oak species are present on the mitigation site. No minimum size threshold was observed for the tree survey. The tree locations were recorded using a hand-held global positioning system (GPS) device. During the survey, each tree was marked with a pre-numbered metal tag and the following data were collected: diameter at breast height (or at a lower, representative height), tree height, and canopy width.

7.4 RESULTS

The plant species density and diversity results (e.g., richness, abundance) based on survey quadrats are discussed below, and a detailed table of density and diversity data (quadrats) and computations is provided in Attachment C, and detailed percent cover data (transects) is provided in Attachment D.

7.4.1 NATIVE PLANT DENSITY

A summary of Year One native shrub/subshrub and herb density is provided in Table 11 and includes an extrapolated estimate of the number of plants per acre. A total of 18 native shrub/subshrub species were sampled in quadrats (4,800 sf, total) on the OW site, and 14 native shrub/subshrub species were sampled in quadrats (2,400 sf, total) on the CSS site (i.e., approximately twice the number of shrub species sampled in each habitat type on the reference site survey in 2013). A total of 2,280 native herb plants were sampled in quadrats on the OW site, and 286 native herb plants were sampled in quadrats on the CSS site.

TABLE 11
NATIVE PLANT DENSITY

Habitat Type	Plant Category	Native Plant Density*	
		Per 4,800 sf (All Quadrats Combined)	Per 1.0 Acre
Oak Woodland	Shrubs/Subshrubs	121 (1 per 39.7 sf)	1,098
	Herbs	2,280 (1 per 2.1 sf)	20,691
		Per 2,400 sf (All Quadrats Combined)	Per 1.0 Acre
Coastal Sage Scrub	Shrubs/Subshrubs	249 (1 per 10.4 sf)	2,259
	Herbs	286 (1 per 16.8 sf)	2,595

sf: square feet
* Includes seedlings

The OW and CSS mitigation sites were designed to exhibit a mosaic of understory vegetation types with a moderate to high density of shrubs in some areas. By design, the CSS site exhibits a higher density of shrubs than the OW site, and the OW site exhibits large polygons of herbaceous/meadow vegetation with plantings of oak and scattered shrubs.

7.4.2 NATIVE PLANT FREQUENCY

A summary of Year One native plant frequency is provided in Table 12, and the computations of native plant frequency are provided in Attachment C.

TABLE 12
NATIVE PLANT FREQUENCY

No. Quadrats (20 ft x 40 ft)[a,b]	Sampled Plant Species[c]
Oak Woodland Mitigation Site (6 Quadrats)	
6 of 6	*Clarkia purpurea* var. *quadrivulnera, Cyperus eragrostis, Quercus agrifolia* var. *agrifolia, Solanum americanum*
5 of 6	*Acmispon glaber* var. *glaber, Artemisia californica, Artemisia douglasiana, Camissoniopsis hirtella, Pseudognaphalium californicum*
4 of 6	*Eriogonum fasciculatum* var. *foliolosum, Mimulus aurantiacus* var. *pubescens, Phacelia ramosissima, Ribes aureum* var. *gracillimum*
3 of 6	*Brickellia californica, Ceanothus oliganthus, Salvia mellilfera*
2 of 6	12 species
1 of 6	17 species
Coastal Sage Scrub Mitigation Site (3 Quadrats)	
3 of 3	*Acmispon glaber* var. *glaber, Artemisia californica, Datura wrightii, Eriogonum fasciculatum* var. *foliolosum, Rhus ovata, Salvia mellifera*
2 of 3	*Camissoniopsis hirtella, Clarkia purpurea* var. *quadrivulnera, Hesperoyucca whipplei, Mimulus aurantiacus* var. *pubescens, Pseudognaphalium canescens*
1 of 3	21 species

[a] ft: feet
[b] f_i: frequency of species 'i' ($f_i = j_i /k$; j_i = number of plots (quadrats) containing species 'i'; k = total number of plots)
[c] For categories with more than 10 plant species, only the quantity of species is listed.

Approximately 43 percent of all plant species that have been observed during ongoing monitoring tasks were sampled during the first annual quantitative survey. Ongoing qualitative assessments indicate that many of these non-sampled plant species are relatively rare on the site (e.g., only one prickly phlox [*Linanthus californicus*] individual, a seeded subshrub species, has been observed on the mitigation site to date). Despite the scarcity of some native plant species on the site, these species provide elements of diversity (e.g., only five container plants of thickleaf yerba santa [*Eriodictyon crassifolium*] have been installed to date on the OW site, yet a beneficial native species of leaf beetle [*Trirhabda eriodictyonis*] that uses this shrub as its host plant [larval food plant] has already been observed on these planted shrubs).

7.4.3 VEGETATION PERCENT COVER

A summary of Year One vegetation percent cover is provided in Tables 13 and 14. The detailed computations of vegetation percent cover are provided in Attachments C and D.

TABLE 13
VEGETATION PERCENT COVER: OAK WOODLAND

Oak Woodland							
	Year One Results (*Final Standard Currently Met or Exceeded)			Minimum Cover Per Vegetation Class/Year			
Plant Species	**Q**	**T**	**Average**	**3**	**5**	**7**	**10**
Native							
Trees							
Quercus agrifolia var. *agrifolia*	1.03	1.50	1.27	0.5	1.0	1.5	2.0
Sambucus nigra ssp. *caerulea*	2.50	0.83	1.67				
Subtotal – Trees	***3.53***	***2.33***	***2.93***				
Large Shrubs							
Baccharis salicifolia ssp. *salicifolia*	0.33	2.33	1.33				
Ceanothus leucodermis	0.02	0.50	0.26				
Ceanothus oliganthus	0.35	0.00	0.18				
Frangula californica ssp. *californica*	0.00	1.17	0.58				
Malosma laurina	0.85	2.83	1.84				
Rhamnus ilicifolia	0.00	0.17	0.08				
Rhus ovata	0.35	2.17	1.26				
Subtotal – Large Shrubs	***1.90***	***9.17***	****5.53***	3.0	4.0	5.0	5.0
Medium Shrubs							
Artemisia californica	6.35	6.50	6.43				
Eriogonum fasciculatum var. *foliolosum*	2.33	1.33	1.83				
Mimulus aurantiacus var. *pubescens*	3.68	0.83	2.26				
Ribes aureum var. *gracillimum*	0.70	1.50	1.10				
Salvia apiana	0.02	0.17	0.09				
Senecio flaccidus var. *douglasii*	0.02	0.00	0.01				
Salvia mellifera	3.17	3.17	3.17				
Subtotal – Medium Shrubs	***16.27***	***13.50***	***14.88***	14.0	16.0	18.0	18.0
Subshrubs							
Acmispon glaber var. *glaber*	9.70	5.67	7.68				
Brickellia californica	0.20	0.50	0.35				
Clematis lasiantha	0.02	0.00	0.01				
Hazardia squarrosa var. *grindelioides*	0.02	0.00	0.01				
Keckiella cordifolia	0.00	0.33	0.17				

TABLE 13
VEGETATION PERCENT COVER: OAK WOODLAND

Oak Woodland							
	Year One Results (*Final Standard Currently Met or Exceeded)			Minimum Cover Per Vegetation Class/Year			
Plant Species	**Q**	**T**	**Average**	**3**	**5**	**7**	**10**
Rubus ursinus	0.02	0.00	0.01				
Toxicodendron diversilobum	0.33	0.00	0.17				
Subtotal – Subshrubs	***10.28***	***6.50***	****8.39***	3.0	4.0	5.0	5.0
Succulents							
Hesperoyucca whipplei[a]	0.02	0.00	0.01				
Subtotal – Succulents	***0.02***	***0.00***	***0.01***	0.5	1.0	2.0	2.0
Herbs							
Artemisia douglasiana	4.68	8.33	6.51				
Calystegia macrostegia	0.00	1.17	0.58				
Camissoniopsis hirtella	0.08	1.33	0.71				
Clarkia dudleyana	0.00	8.33	4.17				
Clarkia purpurea var. *quadrivulnera*	3.18	0.00	1.59				
Cyperus eragrostis	3.70	6.50	5.10				
Datura wrightii	0.50	4.00	2.25				
Elymus condensatus	0.83	0.00	0.42				
Epilobium ciliatum ssp. *ciliatum*	0.35	0.83	0.59				
Eulobus californicus	0.02	0.33	0.18				
Euphorbia polycarpa	0.03	0.00	0.02				
Galium aparine	0.02	0.00	0.01				
Heterotheca grandiflora	0.02	0.00	0.01				
Logfia filaginoides	0.08	0.00	0.04				
Lupinus hirsutissimus	0.18	0.33	0.26				
Marah macrocarpa	0.02	0.00	0.01				
Melica imperfecta	0.00	0.50	0.25				
Penstemon spectabilis var. *spectabilis*	0.03	0.67	0.35				
Phacelia cicutaria	0.18	0.67	0.43				
Phacelia distans	0.18	12.00	6.09				
Phacelia minor	0.03	0.17	0.10				
Phacelia ramosissima	0.37	0.00	0.18				
Pseudognaphalium californicum	3.38	10.00	6.69				

TABLE 13
VEGETATION PERCENT COVER: OAK WOODLAND

Oak Woodland							
	Year One Results (*Final Standard Currently Met or Exceeded)			Minimum Cover Per Vegetation Class/Year			
Plant Species	**Q**	**T**	**Average**	**3**	**5**	**7**	**10**
Pseudognaphalium canescens	0.50	0.00	0.25				
Pseudognaphalium stramineum	0.00	0.33	0.17				
Salvia columbariae	0.00	0.33	0.17				
Solanum americanum	1.87	2.17	2.02				
Stachys bullata	0.67	0.33	0.50				
Stipa lepida	0.18	0.17	0.18				
Subtotal – Herbs	***21.10***	***58.50***	****39.80***	25.0	30.0	30.0	30.0
Non-Native							
Erodium cicutarium	0.00	0.17	0.08				
Bromus diandrus	0.02	0.00	0.01				
Bromus madritensis ssp. *rubens*	0.03	0.00	0.02				
Conium maculatum	0.02	0.00	0.01				
Euphorbia peplus	0.05	0.00	0.03				
Festuca myuros	0.02	0.33	0.18				
Lepidium didymum	0.02	0.17	0.09				
Melilotus indica	0.02	0.00	0.01				
Poa annua	0.03	0.00	0.02				
Polygonum aviculare	0.17	0.00	0.08				
Polypogon monspeliensis	0.03	0.00	0.02				
Polypogon viridis	0.00	0.33	0.17				
Pseudognaphalium luteoalbum	0.35	0.50	0.43				
Rumex acetosella	0.02	0.00	0.01				
Senecio vulgaris	0.02	0.00	0.01				
Sisymbrium irio	0.00	0.17	0.08				
Sonchus asper	0.07	0.00	0.03				
Sonchus oleraceus	0.02	0.33	0.18				
Veronica anagallis-aquatica	0.00	1.00	0.50				
Subtotal – Non-Native	**0.87**	**3.00**	**1.93**				

TABLE 13
VEGETATION PERCENT COVER: OAK WOODLAND

Oak Woodland							
	Year One Results (*Final Standard Currently Met or Exceeded)			Minimum Cover Per Vegetation Class/Year			
Plant Species	Q	T	Average	3	5	7	10
Absolute Percent Cover							
Total Absolute Native Species Cover	**53.10**	**90.00**	**71.55**				
Total Absolute Non-Native Species Cover	**0.87**	**3.00**	**1.93**				
Total Absolute Cover (All)	**53.97**	**93.00**	**73.48**				
Class Percent Cover							
Native		71.17					
Non-Native		1.67					
Both		1.50					
No Plant		25.67					
Summary							
Total Native Class Cover		**72.67**		55.0	75.0	75.0	75.0
Total Non-Native Class Cover[b]		***3.17**		5.0[b]	5.0[b]	5.0[b]	5.0[b]
Total Unvegetated		**25.67**					
Ground Cover (No Performance Standard)							
Bare Soil	63.58	21.17	**42.37**				
Rock/Cobble	14.50	4.83	**9.67**				
Leaf Litter	8.75	17.50	**13.13**				
Fine Woody Debris	6.83	48.83	**27.83**				
Coarse Woody Debris	5.00	7.67	**6.33**				
PVC Pipe	1.00	0.00	**0.50**				
Straw Wattle	0.33	0.00	**0.17**				

Q: Quadrats (estimated cover [mean]); T: Transects (measured cover [mean]); PVC: polyvinyl chloride

[a] Species is listed as a 'succulent' with respect to performance standards, although botanically it is a 'fibrous shrub'.
[b] The ongoing maximum allowed cover of non-native plant species is 5%

Note: Totals may not add due to rounding.

TABLE 14
VEGETATION PERCENT COVER: COASTAL SAGE SCRUB

Coastal Sage Scrub							
	Year One Results (*Final Standard Currently Met or Exceeded)			Minimum Cover Per Vegetation Class/Year			
Plant Species	**Q**	**T**	**Average**	**3**	**5**	**7**	**10**
Native							
Trees							
Quercus agrifolia var. *agrifolia*	0.03	0.00	0.02				
Sambucus nigra ssp. *caerulea*	0.03	0.00	0.02				
Subtotal – Trees	***0.07***	***0.00***	***0.03***				
Large Shrubs							
Ceanothus leucodermis	0.03	0.00	0.02				
Ceanothus oliganthus	0.03	0.00	0.02				
Cercocarpus betuloides var. *betuloides*	0.03	0.00	0.02				
Malosma laurina	2.67	1.33	2.00				
Rhus ovata	0.40	2.67	1.53				
Subtotal – Large Shrubs	***3.17***	***4.00***	***3.58***	2.0	3.0	4.0	5.0
Medium Shrubs							
Artemisia californica	20.00	17.00	18.50				
Eriogonum fasciculatum var. *foliolosum*	14.00	11.33	12.67				
Mimulus aurantiacus var. *pubescens*	6.70	0.33	3.52				
Salvia apiana	0.03	0.00	0.02				
Salvia mellifera	18.33	11.67	15.00				
Subtotal – Medium Shrubs	***59.07***	***40.33***	***49.70***	24.0	28.0	35.0	50.0
Subshrubs							
Acmispon glaber var. *glaber*	28.33	36.00	32.17				
Brickellia californica	0.03	0.67	0.35				
Clematis lasiantha	0.03	0.00	0.02				
Hazardia squarrosa var. *grindelioides*	0.03	0.00	0.02				
Subtotal – Subshrubs	***28.43***	***36.67***	****32.55***	2.0	3.0	4.0	5.0
Succulents							
Hesperoyucca whipplei[a]	0.07	0.33	0.20				
Opuntia ×vaseyi	0.00	1.33	0.67				
Subtotal – Succulents	***0.07***	***1.67***	***0.87***	0.5	1.0	2.0	2.0

TABLE 14
VEGETATION PERCENT COVER: COASTAL SAGE SCRUB

Coastal Sage Scrub							
	Year One Results (*Final Standard Currently Met or Exceeded)			Minimum Cover Per Vegetation Class/Year			
Plant Species	**Q**	**T**	**Average**	**3**	**5**	**7**	**10**
Herbs							
Calystegia macrostegia	0.03	0.00	0.02				
Camissoniopsis hirtella	0.07	0.67	0.37				
Clarkia dudleyana	0.00	2.67	1.33				
Clarkia purpurea var. *quadrivulnera*	0.37	0.00	0.18				
Cyperus eragrostis	0.03	0.00	0.02				
Datura wrightii	0.70	3.67	2.18				
Elymus condensatus	0.67	1.00	0.83				
Eriogonum elongatum	0.00	0.33	0.17				
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	0.03	0.00	0.02				
Eulobus californicus	0.03	0.67	0.35				
Logfia filaginoides	0.03	0.00	0.02				
Lupinus bicolor	0.03	0.00	0.02				
Lupinus hirsutissimus	0.03	0.00	0.02				
Phacelia cicutaria	0.00	0.67	0.33				
Phacelia distans	0.03	0.00	0.02				
Phacelia minor	0.03	0.00	0.02				
Pseudognaphalium canescens	0.07	0.00	0.03				
Solanum americanum	0.67	2.33	1.50				
Subtotal – Herbs	***2.83***	***12.00***	***7.42***	8.0	10.0	15.0	15.0
Non-Native							
Bromus diandrus	0.03	0.00	0.02				
Festuca myuros	0.03	0.00	0.02				
Galium parisiense	0.33	0.00	0.17				
Hypochaeris radicata	0.33	0.00	0.17				
Pseudognaphalium luteoalbum	0.00	0.67	0.33				
Rumex acetosella	0.03	0.00	0.02				
Sonchus asper	0.03	0.00	0.02				
Torilis arvensis	0.03	0.00	0.02				
Trifolium hirtum	0.07	0.00	0.03				

TABLE 14
VEGETATION PERCENT COVER: COASTAL SAGE SCRUB

Coastal Sage Scrub							
	Year One Results (*Final Standard Currently Met or Exceeded)			Minimum Cover Per Vegetation Class/Year			
Plant Species	**Q**	**T**	**Average**	**3**	**5**	**7**	**10**
Subtotal – Non-Native	**0.90**	**0.67**	**0.78**				
Absolute Percent Cover							
Total Absolute Native Species Cover	**93.63**	**94.66**	**94.15**				
Total Absolute Non-Native Species Cover	**0.90**	**0.67**	**0.78**				
Total Absolute Cover (All)	**94.53**	**95.33**	**94.93**				
Class Percent Cover							
Native		84.00					
Non-Native		0.33					
Both		0.33					
No Plant		15.33					
Summary							
Total Native Class Cover		***84.33**		55.0	75.0	75.0	75.0
Total Non-Native Class Cover[b]		***0.67**		5.0[b]	5.0[b]	5.0[b]	5.0[b]
Total Unvegetated		**15.33**					
Ground Cover (No Performance Standard)							
Bare Soil	65.67	18.33	**42.00**				
Rock/Cobble	9.33	6.67	**8.00**				
Leaf Litter	15.33	30.33	**22.83**				
Fine Woody Debris	6.00	39.33	**22.67**				
Straw Wattle	3.00	3.00	**3.00**				
PVC Pipe	0.67	0.00	**0.33**				
Concrete V-Ditch	0.00	2.33	**1.17**				

Q: Quadrats (estimated cover [mean]); T: Transects (measured cover [mean]); PVC: polyvinyl chloride.

[a] Species is listed as a 'succulent' with respect to performance standards, although botanically it is a 'fibrous shrub'.
[b] The ongoing maximum allowed cover of non-native plant species is 5%.

Note: totals may not add due to rounding.

For all vegetation performance categories shown in Tables 13 and 14, the mean value of listed quadrat and transect results is used, except for native and non-native class cover, which includes transect data only. This is because the quadrat data do not reflect native vs. non-native species areal coincidence (class cover), and the point intercept transect data do not necessarily reflect individual plant occurrences (i.e., a single plant [large tree, shrub] may be intersected multiple times on a single transect). Photos of all transect locations are provided in Attachment A.

As measured via transects, the native class cover is 72.67 percent on the OW mitigation site and 84.33 percent on the CSS mitigation site; the non-native class cover is 3.17 percent on the OW mitigation site and 0.67 percent on the CSS mitigation site. However, the non-native absolute cover was estimated via quadrats to be less than one percent on both mitigation sites. The final (Year Ten) performance standard is 75 percent native cover (OW and CSS); therefore, the OW site has essentially met this standard, and the CSS site already exceeds program requirements. Both mitigation sites (OW and CSS) are well below the maximum allowed non-native plant cover of five percent.

The absolute cover of all tree species was sampled at 2.93 percent on the OW mitigation site, of which coast live oak constitutes 1.27 percent cover. The estimated total canopy area of oak species resulting from the oak tree assessment was 2.29 percent. The precise value of oak cover on the site likely falls within the range of these 2 values (1.27 and 2.29 percent); moreover, the Year One results indicate excellent progress toward achieving the final (Year Ten) performance standard of 2 percent minimum cover of oak tree species on the OW mitigation site.

The absolute cover of large shrub species (8 species combined OW and CSS [all categories below]) is 5.53 on the OW mitigation site, and 3.58 percent on the CSS mitigation site. The absolute cover of medium shrub species (7 species) is 14.88 percent on the OW mitigation site, and 49.70 percent on the CSS mitigation site. The absolute cover of subshrub species (7 species) is 8.39 percent on the OW mitigation site, and 32.55 percent on the CSS mitigation site. The absolute cover of succulent species (2 species) is 0.01 percent on the OW mitigation site, and 0.87 percent on the CSS mitigation site (this category includes chaparral yucca, which is actually a fibrous shrub). The absolute cover of native herbaceous species (35 species of grasses/herbs) is 39.80 percent on the OW mitigation site, and 7.42 percent on the CSS mitigation site. Year One performance meets or exceeds performance standards for many of these vegetation categories. Due to the slow growth of native cacti, it is not expected that the OW or CSS sites will meet this vegetation class cover standard for another few years.

A moderately high degree of leaf litter and fine woody debris was sampled on the OW and CSS mitigation sites. Coarse woody debris was sampled at 6.33 percent cover, and rock/cobble (boulders) was sampled at 9.67 percent, on the OW mitigation site. Beneficial decay processes, including the growth of fungi (several species), have been observed in the CWD assemblages. These decay processes naturally occur in woodland habitats as a part of biological resource nutrient cycles. It is important to note that, without the installation of the salvaged woody material, such processes would not otherwise occur on a habitat creation/restoration site for many years.

7.4.4 NATIVE PLANT DIVERSITY

A total of 58 native plant species and 22 non-native plant species were sampled by quadrats and/or transects performed on the OW and CSS mitigation sites. The mitigation program has exceeded the final (Year Ten) performance standards for native species richness; that is, 24 species on the OW mitigation site (53 species sampled in Year One) and 18 species on the CSS site (36 species sampled in Year One), as listed in Tables 13 and 14. A total of 135 native plant species have been observed on the 8.0-acre mitigation site; that is, approximately 45 percent of

these plant species were sampled on quadrats and/or transects in Year One. Therefore, both the sampled and actual vegetative richness on the site far exceed performance standards.

As described above, the reference sites exhibited vanishingly low values of 'H' (Shannon Diversity Index) in 2013, due to the high degree of invasion by non-native grasses that is typical of natural habitats in the region. Due to effective weed control and the establishment of highly diverse vegetative cover, the mitigation sites are expected to continue to exhibit significantly higher diversity than the reference sites will exhibit at the three, five, seven, and ten-year marks (when comparative sampling shall occur under the terms of the OWHRMP). A summary of Year One values of 'H' on the mitigation site is listed in Table 15.

TABLE 15
SHANNON DIVERSITY INDEX (YEAR ONE: 2016)

Habitat Type	Sampling Area	Number of Plant Species[a]		Shannon Diversity Index = H[a] (*Final Standard Currently Met or Exceeded)	
		Native	Non-Native	Result	Potential[b]
Oak Woodland	Reference Site (2013)[c]	18	11	0.01	3.37
	Mitigation Site (2016)	**45**	**15**	**2.34**	**4.09**
Coastal Sage Scrub	Reference Site (2013)	19	6	0.03	3.22
	Mitigation Site (2016)	**32**	**8**	**2.76**	**3.69**

[a] Based on quadrat data.
[b] Based on the number of plant species (native + non-native) sampled.
[c] CS/CLORF = California Sycamore/Coast Live Oak Riparian Forest.

7.4.5 OAK PERFORMANCE

A total of 392 living oak plants occur in planting cages, and only these caged/tagged oaks were assessed during the survey. Numerous additional planted and volunteer oaks (>100 saplings/seedlings) occur on the mitigation site, comprising a substantial contingency. The mean trunk diameter for all measured oak species in Year One is 0.36 inch. Based on the individual, caged oak assessments, the total canopy area for all oak species is approximately 5,480 square feet (or 2.3 percent cover of oak species on the 5.5-acre oak mitigation site) as derived from estimated canopy diameter data, where $A = \pi r^2$ (A = area; π = 3.1416; r = radius). This value (2.3 percent) is slightly higher than the mean oak cover value (1.3 percent) obtained during project quadrats and transects on the OW site. The mean height of oak species is approximately 5.5 feet.

A total of 363 oak plants were proposed in the OWHRMP, and there is an 80 percent survival performance criterion (per CDFW) based on that quantity of oaks (i.e., there shall be a minimum of 290 surviving oaks at the end of the 7-year to 10-year maintenance period). Therefore, Year One oak survival performance far exceeds 100 percent versus the initial planting quantity specified in the OWHRMP. A summary of the size distribution of the assessed oak species is provided in Table 16, and all collected tree data is provided in Attachment E.

The overall health of each oak plant (*Quercus* spp.) was rated on a scale of 1 to 5 as described in Table 6 (per the OWHRMP). The health of almost all oaks in Year One is excellent, with a mean health rating of 4.89. Living oak trees occur in 392 of the 399 cages; however, as noted above, numerous other living oak plants occur on the mitigation site. It is anticipated that some thinning of oak plants may be needed in the later years of the maintenance period to yield the best density of oak species on the mitigation site. However, annual seeding of multiple oak species will continue for the first five years of the maintenance period, regardless of observed oak

performance, to optimize the resiliency of the planted oak population to a variety of habitat stresses such as acute drought, fire, disease, herbivory, or other damage.

TABLE 16
OAK SIZE DISTRIBUTION AND COVER

Oak Species[a]	No. of Plants[a]/Diameter Class (inches)[b]					Total	Mean Diameter (inches)[a]	Approx. Canopy Area (square feet)[c]	
	<0.25	0.25–0.49	0.50	0.75	1.0–2.0			Mean	Total
Quercus agrifolia	56	148	97	26	21	**348**	0.39	15.24	5,303.00
Quercus chyrolepis[d]									
Quercus durata var. *gabrielensis*	21	2	0	0	0	**23**	0.12	4.77	109.66
Quercus engelmannii	11	10	0	0	0	**21**	0.18	3.18	66.76
All *Quercus* spp.	**88**	**160**	**97**	**26**	**21**	**392**	**0.36**	**13.98**	**5,479.50**

[a] Includes only the oaks occurring inside planting cages (numerous other planted/volunteer oaks occur on the mitigation site).
[b] Sum of the 2 largest trunks. The dbh (stem/trunk diameter) is measured at 4.5 feet above ground level (or at a lower, representative height).
[c] Based on estimated tree canopy diameter, where $A = \pi r^2$ (A = area; π = 3.1416; r = radius).
[d] Only small seedlings (< 3 inches in height) of *Q. chrysolepis* were observed on the site in 2016 (acorns planted in fall 2015).

7.4.6 WILDLIFE SPECIES

Hundreds of vertebrate wildlife species, and even more numerous species of arthropods/insects, use OW habitats in California (Tietje and Purcell et al. 2005). A greater abundance and diversity of these species are found in woodlands that include a high density of CWD (snags, downed wood, brush piles) that provide nesting/perching/shelter opportunities and the beneficial decay processes associated with these habitat features. The mitigation site was designed to incorporate a large volume of rock and woody material and a large variety of native plant species to immediately provide high wildlife value. The 8.0-acre mitigation site contains a range of habitat conditions, from dry slopes to moist north-facing slopes and created streambeds, offering varied resources for wildlife.

BonTerra Psomas employs a range of wildlife specialists (e.g., herpetologists, ornithologists) who work alongside the vegetation specialists (e.g., arborists, botanists) and the licensed restoration contractor (Nakae), contributing their hundreds of years of combined field experience and unique expertise to the design and long-term monitoring of the habitat creation site (e.g., the selection and landscape configuration of optimal salvaged native tree trunks to be used for the placed snags and the arrangement of boulders to resemble archaic outcrops resulting from natural geological processes). As noted above, nesting bird surveys are conducted in association with maintenance activities performed during the nesting bird season, and biological resources are monitored/protected in compliance with the CDFW SAA and EIR Mitigation Measures. Wildlife observations are recorded on a year-round basis during supplemental planting and seeding tasks, qualitative monitoring inspections, and during annual quantitative surveys (quadrats/transects).

A total of four species of birds have been observed nesting on the mitigation site to date, including killdeer (*Charadrius vociferous*), common yellowthroat (*Geothlypis trichas*), acorn woodpecker (*Melanerpes formicivorus*), and California towhee (*Melozone crissalis*). Acorn woodpeckers have nested in cavities in the placed snags for three consecutive years (2014, 2015, and 2016) and woodpeckers are also caching acorns on site in several of the snags. California ground squirrels (*Otospermophilus beecheyi*), rock wrens (*Salpinctes obsoletus*), native reptiles (including striped racer [*Masticophis lateralis*], a snake species), raptors, and other wildlife species are increasingly colonizing the created boulder and woody debris piles and perching on the installed snags. Baja California treefrogs (*Pseudacris hypochondriaca*) have been observed breeding in the created

streambeds. A total of 95 native vertebrate wildlife species (82 native bird species) have been observed on the mitigation site, in addition to numerous native invertebrate species (e.g., blue mud wasp [*Chalybion* sp.], green lynx spider [*Peucetia viridans*]) since mitigation installation began in September 2013. As described in Section 5.0, BonTerra Psomas coordinates with the SGVVCD on vector-control activities to optimize the development of a complex food web (e.g., beneficial aquatic invertebrates) on the mitigation site. Herbicide use is minimized to the extent practicable in favor of non-chemical methods of pest and weed control. Several plywood boards ('artificial cover') were placed on the site in 2014 to facilitate the ongoing detection of reptiles and other wildlife species on the site.

BonTerra Psomas installed several new features on the mitigation site in 2016, including (1) a 'camera trap' (motion-activated video camera) to provide enhanced, 24-hour wildlife observation data; (2) two western bluebird nest boxes (per National Audubon Society guidelines); and (3) mason bee nest houses. The LACDPW installed all of these items on a voluntary basis to enhance wildlife values and monitoring on the site. Large mammals including southern mule deer (*Odocoileus hemionus*) and black bear (*Ursus americanus*), as well as coyotes (*Canis latrans*), have been observed using the two drinker tanks that were installed at the northeast of the Lower SPS. The compendia of all native plant and wildlife species observed on the site are provided in Attachments F and G.

8.0 CONCLUSION

As of June 2016 (1.5 years after the completion of mitigation installation), the OW and CSS sites already support an excellent diversity of plant species and are developing varied vegetation structure (vertical stratification) and cover (horizontal/mosaic). A total of 135 native plant species have been observed on the site, including trees, shrubs, subshrubs, vines, succulents, herbs, grasses, ferns, spike-moss, and emergent plant species. Oak tree seedling/sapling survival far exceeds 100 percent (compared to the quantities specified in the OWHRMP) due to the initial planting of oaks and additional germination of seeded and volunteer oaks on the site. Many of the oak saplings now exceed six to eight feet in height, and the oaks exhibit overall excellent health, as determined by a Certified Arborist. The sampled vegetation cover and diversity already meet or exceed most of the final (Year Ten) performance standards. Irrigation of the OW site (bubblers only) is being steadily decreased to adapt the planted oaks to seasonal arid conditions and irrigation was discontinued on the CSS site in June 2015.

Wildlife species diversity and abundance is exceptionally high (95 native vertebrate species) at the 1.5 year mark, not only due to vegetative cover and diversity, but also due to the large volume of coarse woody debris (including placed natural snags) and boulder assemblages that were installed on the site in 2013. Numerous species of birds have nested on the site, including three consecutive years in which acorn woodpeckers have nested in cavities in the placed snags. Wildlife species are increasingly colonizing the naturalistic debris piles on the site. Native arthropods are increasingly observed on the site, including a variety of bees, beetles, butterflies, and other insect species. Wildlife use of the mitigation site to date has exceeded all expectations of the project team.

Additional planting and seeding will occur on the mitigation site in 2016–2017 to further improve habitat conditions. The temporary exclosure fence will remain in place until the planted oaks (and other vegetation) are sufficiently established to withstand herbivory and trampling by large mammals (deer and bears). The LACDPW and its consultants/contractors will continue to assertively maintain and monitor the habitat creation site in compliance with project permits and authorizations.

9.0 REFERENCES

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ATTACHMENT A

SITE PHOTOGRAPHS

January 2011. Native tree trunks, brush piles, and leaf litter, were carefully salvaged by the County of Los Angeles Department of Public Works (LACDPW) during vegetation clearing activities associated with the sediment removal project.

September 2013. The Restoration Contractor (Nakae & Associates, Inc.) performed soils preparation, including the incorporation of mulched native vegetation into the oak woodland mitigation site via machine ripping.

September 2013. Installation and re-compaction of natural oak snags on the mitigation site.

September 2013. The Restoration Ecologist (BonTerra Psomas) coordinated the placement of coarse woody debris with the Restoration Contractor.

September 2013. The Restoration Contractor placed salvaged rock in numerous assemblages in coordination with the Restoration Ecologist. Only large boulders were used for this purpose, in order to create sizeable internal/interstitial gaps for wildlife shelter.

November 2013. A naturalistic array of placed snags and a scatter of boulders and coarse woody debris. Many tons of these materials were placed on the site.

Site Photographs

Attachment A-1

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra PSOMAS

(07/20/2016 JAZ) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-1_photosL_11x17L_20160720.pdf

October 2013. S&S Seeds/Noll Seed Company collecting acorns of coast live oak along Santa Anita Wash. Acorns were collected from a minimum of 50 oak trees on the site, to adequately sample the genetic diversity of the oak population.

January 2014. The Restoration Ecologist (BonTerra Psomas) performed ongoing inspections of contract-grown container materials at the nurseries, including the 'de-potting' of several specimens to assess root development.

January 2014. Rancho Santa Ana Botanic Garden collected acorns of rare oaks, and rhizomes (roots) of several native fern species, for propagation as container plants (e.g., these 5-gallon 'stock plants' of coastal woodfern).

January 2014. The Restoration Contractor installed contract-grown container plants in naturalistic layouts flagged by the Restoration Ecologist.

February 2014. After the completion of hydroseeding (green area, foreground), hand seeding of herbaceous species was performed in select patches that were planted only with native succulents (cactus and yucca) and containerized native herbs.

March 2015. The Restoration Contractor performs ongoing maintenance to avoid the proliferation of weed species while protecting sensitive biological resources.

Site Photographs

Attachment A-2

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra PSOMAS

(07/20/2016 JAZ) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-2_photosL_11x17L_20160720.pdf

December 2015. BonTerra Psomas' Restoration Ecologist identifying suitable niche planting sites for native ferns (foreground: a nursery flat of coffee cliff-brake) among a placed boulder assemblage. Rhizomes of several native fern species were collected in the local sub-watershed and propagated as container plants by Rancho Santa Ana Botanic Garden (RSABG).

March 2016. Planted coastal woodfern propagated by RSABG from rhizomes collected in the local subwatershed. A total of five native fern species, and native bush spike moss, have become established on the formerly barren mitigation site. These plant species do not occur on typical habitat restoration sites in Southern California.

March 2015. The Restoration Ecologist performs ongoing assessments of vegetative cover and diversity on the site and catalogs the wide variety of native arthropods/insects that are colonizing the planting area.

September 2015. Robust growth of a planted coast live oak tree amid placed coarse woody debris and a diverse understory of native shrubs and herbaceous plants. Two large, placed natural snags are in the background.

September 2015. The Restoration Contractor is carefully removing the caging from coast live oak saplings that have grown above deer-browsing height.

March 2016. Recently germinated seedlings of Engelmann oak that were collected in the local subwatershed and planted on the oak woodland mitigation site in fall 2015. Supplemental seeding of local oak species will occur each year for the first five years of the long-term maintenance and monitoring program.

Site Photographs

Attachment A-3

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra PSOMAS

(07/20/2016 JAZ) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-3_photosL_11x17L_20160720.pdf

July 2016. Planted coast live oak (far left), western bluebird nest box (right), and placed oak/sycamore snags (background), amid diverse planted/seeded herbs (e.g., mugwort, California everlasting) and shrubs (e.g., little graceful golden currant, California buckwheat).

May 2015. The coarse woody debris (CWD) and clambering native herbs (e.g. branching phacelia, coast morning-glory) offer a sense of an ancient landscape on the recently installed habitat area.

May 2016. A boulder assemblage with placed branches to provide perches for birds. The naturalistic outcrops were designed to retain emergent (uncovered) rock surfaces as the surrounding vegetation grows to maturity. A red-tailed hawk is perched on a placed natural snag in the background.

July 2016. The boulder and CWD assemblages were configured to provide both internal shelter and points of entry for wildlife species. Several of these features are already inhabited by California ground squirrels, and a variety of reptiles are regularly observed on the site (e.g., striped racer—a native snake species).

October 2015. Placed piles of salvaged native brush provide valuable cover for wildlife and improve moisture retention/percolation.

May 2016. A seeded meadow was established between the debris assemblages and planted oaks on the oak woodland site. The native herbaceous species shown here include purple clarkia, hairy everlasting, wild heliotrope phacelia, stinging lupine, white nightshade, wild Canterbury bells, and Wright's jimsonweed.

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Site Photographs

Attachment A-4

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Bonterra PSOMAS

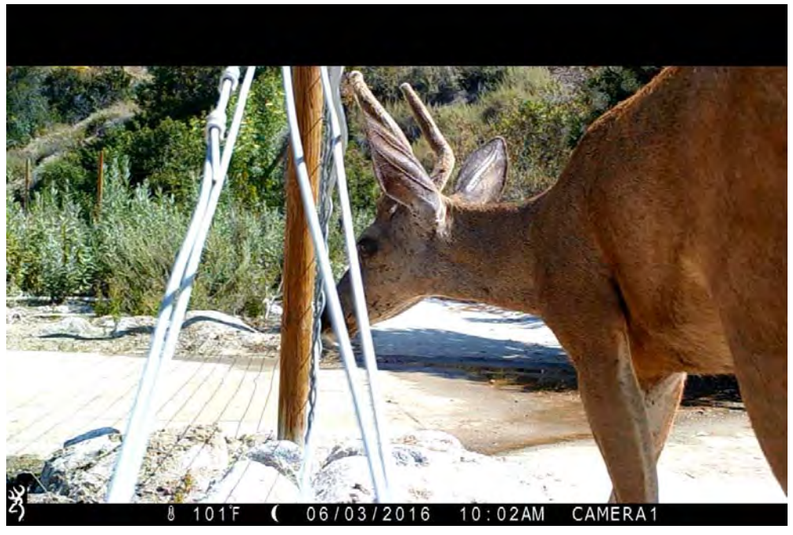
(07/22/2016 LEW) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-4_photosD_11x17L_20160722.pdf

September 2014. The Restoration Contractor (Nakae & Associates, Inc.) installed interpretive signage at several locations around the mitigation site, using information prepared by the Restoration Ecologist (BonTerra Psomas) and approved by the County of Los Angeles Department of Public Works (LACDPW).

January 2014. The LACDPW and the Restoration Ecologist coordinate with the San Gabriel Valley Vector Control District (SGVVCD) on their mosquito inspections and treatments. The SGVVCD uses ecologically friendly materials/methods to minimize adverse impacts on beneficial aquatic insects to enhance the complex food web on the habitat site.

March 2015. The Restoration Ecologist monitors the breeding cycle of native Baja California treefrogs on the habitat creation site.

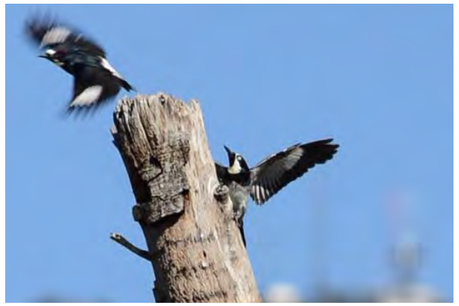
May 2016. BonTerra Psomas installed a motion-activated 'camera trap' to assess round-the-clock wildlife activities on the site. The temporary, wildlife-friendly exclosure fence (visible in photo) is eight feet high, and is constructed of smooth wire only (no barbed wire).



June 2016. Mule deer have been observed (directly, and via camera) testing the eight-foot-high wildlife fence. Deer have also been observed moving locally around the exclosure fence, which was off-set from the adjacent toe-of-slope for this reason.

June 2016. Coyotes were captured on video readily moving through the exclosure fence, as intended per design. The fencing is meant to exclude only larger mammals (bears and deer) until the planted oaks are large enough to withstand herbivory, and the vegetation is sufficiently mature to resist trampling damage.

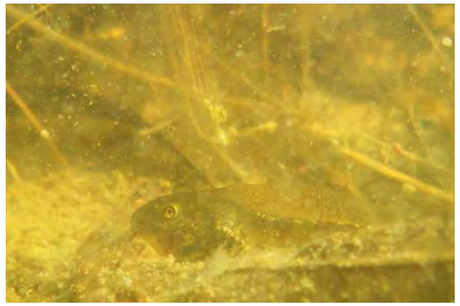

acorn woodpecker nesting


acorn woodpeckers


Allen's hummingbird


American kestrel


American robin


Baja California treefrog tadpole


Bewick's wren


California ground squirrel


canyon wren


Cassin's kingbird


western fence lizard


common yellowthroat nest


phainopepla


red-tailed hawk


rock wren


common side-blotched lizard


turkey vulture


western bluebird


western meadowlark


willow flycatcher


blue mud wasp


bordered plant bug


cactus bug


cochineal insect


crab spider and prey


dewy spider web


duskywing

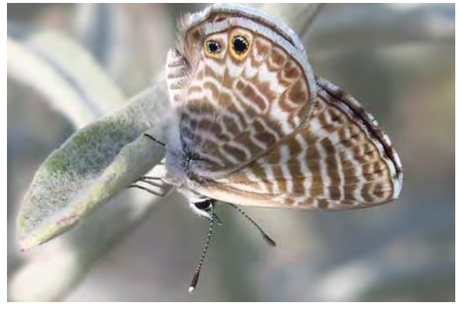

eufala skipper


green lynx spider


honeybee swarm


ladybird beetle


leaf beetle


marine blue


mason bee house


Mexican bush katydid


Silvestri's scorpion


sunflower seed fly


three-lined lema beetle


wandering glider


white-lined sphinx moth caterpillar


California blackberry


California hedgenettle


cardinal catchfly


caterpillar phacelia


coast morning-glory


Douglas' threadleaf ragwort


Dudley's clarkia


false-mustard


golden woolly sunflower


great marsh evening primrose


hairy bush monkeyflower.


heartleaf bush penstemon


lance-leaved dudleya


purple clarkia


scarlet larkspur


showy beardtongue


smooth stem blazing star


stinging lupine


Vasey's prickly pear


wild Canterbury bells

Site Photographs – Native Plants

Attachment A-8

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

April 2016. Oak woodland Transect No. 1.

April 2016. Oak woodland Transect No. 2.

April 2016. Oak woodland Transect No. 3.

April 2016. Oak woodland Transect No. 4.

April 2016. Oak woodland Transect No. 5.

April 2016. Oak woodland Transect No. 6.

D:\Projects\CoLADPW\J254\Graphics\1AMR\ExA_photosL_11x17L_20160720.ai

Site Photographs

Attachment A-9

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra PSOMAS

(07/22/2016 LEW) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-9_photosL_11x17L_20160720.pdf

April 2016. Coastal sage scrub Transect No. 1.

April 2016. Coastal sage scrub Transect No. 2.

April 2016. Coastal sage scrub Transect No. 3.

April 2016. Coastal sage scrub Transect No. 4.

April 2016. Coastal sage scrub Transect No. 5.

April 2016. Coastal sage scrub Transect No. 6.

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Site Photographs

Attachment A-10

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra PSOMAS

(07/22/2016 LEW) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-10_photosL_11x17L_20160720.pdf

April 2016. Oak woodland Quadrat No. 1.

April 2016. Oak woodland Quadrat No. 2.

April 2016. Oak woodland Quadrat No. 3.

April 2016. Oak woodland Quadrat No. 4.

April 2016. Oak woodland Quadrat No. 5.

April 2016. Oak woodland Quadrat No. 6.

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Site Photographs

Attachment A-11

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

Bonterra PSOMAS

(07/22/2016 LEW) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-11_photosK_11x17L_20160720.pdf

April 2016. Coastal sage scrub Quadrat No. 1.

April 2016. Coastal sage scrub Quadrat No. 2.

April 2016. Coastal sage scrub Quadrat No. 3.

July 2013. Oak woodland reference site (Middle Sediment Placement Site [SPS]). Although the reference site contains numerous mature coast live oak and western sycamore trees, the understory vegetation is predominantly weedy (e.g., ripgut brome [grass]).

January 2011. The coastal sage scrub reference site (Middle SPS) exhibits patches of native scrub and a dense understory of weedy grasses and herbs.

October 2012. The Middle SPS reference site contains some natural boulders and coarse woody debris, which are beneficial habitat features that are being re-created on the Lower SPS mitigation site.

September 2013. Photo Station No. 1. The northern portion of the Lower Sediment Placement Site (SPS)(coastal sage scrub mitigation site) during mitigation site installation tasks.

September 2013. Photo Station No. 2. The western slope of the Lower SPS (coastal sage scrub mitigation site) during mitigation site installation tasks.

September 2013. Photo Station No. 3. The southern slope of the Lower SPS (coastal sage scrub mitigation site) during mitigation site installation tasks.

March 2016. Photo Station No. 1.

September 2016. Photo Station No. 2.

March 2016. Photo Station No. 3.

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Site Photographs

Attachment A-13

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra PSOMAS

(07/22/2016 LEW) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-13_photosM_11x17L_20160720.pdf

September 2013. Photo Station No. 4. The deck of the Lower Sediment Placement Site (oak woodland mitigation site) during the placement of salvaged mulch.

March 2016. Photo Station No. 4.

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Site Photographs

Attachment A-14

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

BonTerra PSOMAS

(7/22/2016 LEW) R:\Projects\CoLADPW (DPW)\J254 (prvsly 243)\Graphics\1AMR\ExA-14_photosN_11x17L_2photos_20160720.pdf

January 2013. Photo Station No. 5. The deck of the Lower Sediment Placement Site (oak woodland mitigation site) prior to project implementation. A temporary stockpile of salvaged boulders is visible to the left.

March 2016. Photo Station No. 5.

Site Photographs

Attachment A-15

First Annual Monitoring Report: Oak Woodland Habitat Revegetation/Mitigation Program
Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project

ATTACHMENT B

NATIVE CONTAINER PLANT, CUTTINGS, AND SEED SPECIES

TABLE B-1
NATIVE CONTAINER PLANT AND CUTTINGS SPECIES

Container Plants and Cuttings Species[a]		Container Plants and Cuttings Quantities			
Scientific Name	**Common Name**	**Phase I (Jan–Feb 2014)**	**Phase II (Dec 2014)**	**Supplemental (2015–2016)**	**Total**
Acmispon glaber var. *glaber*	deerweed	400	0	0	**400**
Acourtia microcephala (cuttings)	sacapellote	0	10	0	**10**
Artemisia californica	California sagebrush	1,050	0	0	**1,050**
Artemisia douglasiana (cuttings)	mugwort	10	0	0	**10**
Artemisia douglasiana	mugwort	0	100	0	**100**
Asclepias californica (cuttings)	California milkweed	0	10	0	**10**
Aspidotis californica	California lace fern	0	0	6	**6**
Asclepias fascicularis[b]	narrow-leaf milkweed	0	0	0	**0**
Ceanothus leucodermis	whitebark ceanothus	0	75	0	**75**
Cercocarpus betuloides var. *betuloides*	birchleaf mountain mahogany	0	50	0	**50**
Clematis lasiantha	chaparral virgin's bower	0	200	0	**200**
Dryopteris arguta	coastal woodfern	0	5	24	**29**
Dudleya lanceolata	lance-leaf dudleya	0	0	32	**32**
Elymus condensatus	giant wildrye	0	80	0	**80**
Epilobium canum ssp. *canum*	California fuchsia	0	0	46	**46**
Eriodictyon crassifolium	thickleaf yerba santa	0	0	5	**5**
Eriogonum fasciculatum var. *foliolosum*	California buckwheat	750	0	0	**750**
Frangula californica ssp. *californica*	California coffeeberry	0	100	0	**100**
Hesperoyucca whipplei	chaparral yucca	150	100	0	**250**
Heteromeles arbutifolia	toyon	55	0	0	**55**
Juncus textilis (cuttings)	basket rush	10	0	0	**10**
Keckiella cordifolia	heartleaf bush penstemon	0	271	0	**271**
Lonicera subspicata var. *denudata*	Johnston's honeysuckle	0	20	0	**20**
Malosma laurina	laurel sumac	40	0	0	**40**
Melica imperfecta	coast range onion grass	150	125	0	**275**
Mimulus aurantiacus var. *pubescens*	hairy bush monkeyflower	425	0	0	**425**
Opuntia ×vaseyi	Vasey's prickly pear	200	100	0	**300**
Pellaea andromedifolia (cuttings)	coffee cliff-brake	5	0	0	**5**
Pellaea andromedifolia	coffee cliff-brake	0	20	128	**148**
Pellaea mucronata var. *mucronata*	bird's-foot cliff-brake	0	5	60	**65**
Penstemon spectabilis var. *spectabilis*	showy beardtongue	75	5	0	**80**
Polypodium californicum	California polypody	0	20	91	**111**
Prunus ilicifolia ssp. *ilicifolia*	holly leaf cherry	0	50	0	**50**
Pseudognaphalium californicum	California everlasting	460	0	0	**460**
Quercus agrifolia var. *agrifolia*[c]	coast live oak	358	0	0	**358**
Quercus agrifolia var. *agrifolia*[d]	coast live oak	0	24	0	**24**
Quercus engelmannii	Engelmann oak	0	57	0	**57**
Quercus durata var. *gabrielensis*	San Gabriel oak	0	25	0	**25**
Rhamnus ilicifolia	hollyleaf redberry	0	31	0	**31**
Rhus aromatica (cuttings)	skunk bush	10	0	0	**10**
Rhus ovata	sugar bush	55	0	0	**55**
Ribes aureum var. *gracillumum*	little graceful golden currant	100	275	0	**375**
Ribes californicum	hillside gooseberry	0	0	29	**29**
Rubus ursinus (cuttings)	California blackberry	10	0	0	**10**
Salvia apiana	white sage	250	150	0	**400**
Salvia mellifera	black sage	400	0	0	**400**
Sambucus nigra ssp. *caerulea*	blue elderberry	0	55	0	**55**
Selaginella bigelovii	bushy spike-moss	0	10	0	**10**
Stachys bullata	California hedgenettle	0	0	135	**135**
Stipa lepida	foothill needle grass	0	0	641	**641**
Total (47 Native Container Plant/Cuttings Species)		**4,963**	**1,973**	**1,197**	**8,133**

[a] Additional container plant and cuttings species will be propagated and installed in 2016–2017.
[b] Seed for this species has yet to be obtained in the Santa Anita Wash/Rio Hondo Subwatershed for propagation.
[c] Initial oak planting locations established via direct sown acorns/seedlings.
[d] Supplemental planting of oaks in "T4" (deep 1-gallon) size.

TABLE B-2
NATIVE SEED SPECIES

Scientific Name	Common Name	Pounds Collected	Seed Quantities				Total Pounds Installed
			Sage Scrub Seed Mixes/Aspect		Hand-Seeding		
			South/West (2.0 acres)	North (0.54 acre)	Oak Woodland	Sage Scrub	
Initial/Conceptual OWHRMP Seed Species (11 Total) Collected by S&S Seeds in the Santa Anita Wash/Rio Hondo Subwatershed and Used for Initial Hydroseeding and Hand-Seeding in January 2014 and December 2014							
Acmispon glaber var. *glaber*	deerweed	43.82	12.00	2.00	8.00	2.40	**24.40**
Artemisia californica	California sagebrush	81.78	8.00	2.00	—	—	**10.00**
Camissoniopsis hirtella	hairy suncup	0.20	—	0.10	0.05	0.05	**0.20**
Eriogonum fasciculatum var. *foliolosum*	California buckwheat	81.95	20.00	5.00	—	—	**25.00**
Hesperoyucca whipplei	chaparral yucca	42.34	1.00	—	—	2.00	**3.00**
Mimulus aurantiacus var. *pubescens*	hairy bush monkeyflower	19.88	0.50	2.00	2.00	1.00	**5.50**
Phacelia cicutaria	caterpillar phacelia	0.56	0.26	0.10	0.10	0.10	**0.56**
Pseudognaphalium californicum	California everlasting	5.54	1.00	1.00	2.00	1.34	**5.34**
Quercus agrifolia var. *agrifolia*	coast live oak	16.92	—	—	1.92	—	**1.92**
Salvia mellifera	black sage	13.14	1.00	1.00	1.00	—	**3.00**
Sambucus nigra ssp. *caerulea*	blue elderberry	6.07	—	—	1.00	0.50	**1.50**
Other Seed Species (27 Total) Collected to Date by S&S Seeds in the Santa Anita Wash/Rio Hondo Subwatershed (applied in 2014 and/or 2015)							
Acer macrophyllum	big leaf maple	1.96	—	—	1.96	—	**1.96**
Artemisia douglasiana	mugwort	8.64	—	—	3.00	—	**3.00**
Ceanothus leucodermis	chaparral whitethorn	0.52	0.20	0.10	—	—	**0.30**
Cercocarpus betuloides var. *betuloides*	birch-leaf mountain-mahogany	4.92	1.00	0.50	—	—	**1.50**
Chaenactis glabruiscula var. *glabruiscula*	yellow pincushion	0.92	0.25	0.10	0.10	0.47	**0.92**
Clarkia purpurea ssp. *quadrivulnera*	purple clarkia	0.20	0.05	0.05	0.05	0.05	**0.20**
Clematis lasiantha	chaparral virgin's bower	4.30	0.80	0.20	1.00	0.25	**2.25**
Datura wrightii	jimson weed	0.56	0.20	0.16	0.10	0.10	**0.56**
Eulobus californicus	false-mustard	0.82	—	—	0.41	0.41	**0.82**
Heteromeles arbutifolia	toyon	5.78	—	—	1.00	—	**1.00**
Lepidospartum squamatum	California scale broom	14.56	—	—	1.00	—	**1.00**
Lupinus hirsutissimus	stinging lupine	11.90	—	—	9.90	2.00	**11.90**
Malacothrix saxatilis	cliff desert dandelion	2.22	—	—	1.11	1.11	**2.22**
Oenothera elata ssp. *hirsutissima*	great marsh evening primrose	0.04	—	—	0.04	—	**0.04**
Penstemon spectabilis var. *spectabilis*	showy beardtongue	5.52	—	—	2.00	3.52	**5.52**
Phacelia distans	wild heliotrope phacelia	0.96	—	—	0.96	—	**0.96**
Phacelia minor	wild Canterbury bells	18.36	—	—	10.15	8.21	**18.36**
Phacelia ramosissima	branching phacelia	2.40	—	—	2.40	—	**2.40**
Prunus ilicifolia ssp. *ilicifolia*	holly leaf cherry	9.20	—	—	4.00	—	**4.00**
Pseudognaphalium stramineum	cotton batting everlasting	3.20	1.00	0.20	1.00	1.00	**3.20**
Quercus agrifolia var. *agrifolia* (2015)	coast live oak	10.00	—	—	10.00	—	**10.00**
Rhamnus ilicifolia	hollyleaf redberry	2.64	—	—	1.89	0.50	**2.39**
Rhus ovata	sugar bush	7.35	—	—	1.00	—	**1.00**
Solanum douglasii	Douglas' nightshade	0.02	—	—	0.02	—	**0.02**
Stachys bullata	California hedgenettle	0.01	—	—	0.01	—	**0.01**
Stipa lepida	foothill needle grass	0.16	—	—	0.03	0.03	**0.06**
Umbellularia californica	California laurel	4.44	—	—	3.00	—	**3.00**
Total (37 Native Seed Species)		**418.71**	**47.26**	**14.51**	**62.20**	**25.04**	**159.01**

TABLE B-2
NATIVE SEED SPECIES

Seed Species (71 Total) Collected to Date by BonTerra Psomas in the Santa Anita Wash/Rio Hondo Subwatershed (Small Quantities, <1.0 Pound Collected per Species, Except as Noted) and Installed on the Mitigation Sites in 2014 and/or 2015

Acer macrophyllum (big leaf maple), *Acourtia microcephala* (sacapellote), *Adenostoma fasciculatum* var. *fasciculatum* (chamise), *Alnus rhombifolia* (white alder), *Amorpha californica* (California false indigo), *Arctostaphylos glauca* (bigberry manzanita), *Brickellia californica* (California brickellbush), *Brickellia nevinii* (Nevin's brickellia), *Castilleja applegatei* (Applegate's indian paintbrush), *Ceanothus leucodermis* (whitebark ceanothus), *Ceanothus oliganthus* (hairy ceanothus), *Cercocarpus betuloides* var. *betuloides* (birch-leaf mountain-mahogany), *Cirsium occidentale* var. *californicum* (California thistle), *Clarkia dudleyana* (Dudley's clarkia), *Clematis lasiantha* (chaparral clematis), *Corethrogyne filaginifolia* (common sandaster), *Datura wrightii* (Jimson weed), *Delphinium cardinale* (scarlet larkspur), *Dudleya lanceolata* (lance-leaf dudleya), *Elymus condensatus* (giant wild rye), *Epilobium canum* ssp. *canum* (California fuchsia), *Ericameria parishii* (Parish's goldenbush), *Erigeron foliosus* var. *foliosus* (leafy daisy), *Eriodictyon crassifolium* (thick-leaf yerba santa), *Eriogonum elongatum* var. *elongatum* (longstem buckwheat), *Eriophyllum confertiflorum* ssp. *confertiflorum* (golden woolly sunflower), *Frangula californica* ssp. *californica* (California coffeeberry), *Galium angustifolium* ssp. *angustifolium* (narrow leaved bedstraw), *Hazardia squarrosa var. grindelioides* (saw-toothed goldenbush), *Hesperoyucca whipplei* (chaparral yucca), *Heteromeles arbutifolia* (toyon), *Heterotheca grandiflora* (telegraph weed), *Holodiscus discolor* (oceanspray), *Juncus rugulosus* (wrinkled rush), *Juncus textilis* (basket rush), *Keckiella cordifolia* (heart-leaved keckiella), *Lathyrus vestitus* (chaparral sweet pea), *Lepidospartum squamatum* (California scale broom), *Linanthus californicus* (prickly phlox), *Lonicera subspicata* var. *denudata* (Johnston's honeysuckle), *Lupinus concinnus* (bajada lupine), *Lupinus longifolius* (pauma lupine), *Lupinus truncatus* (blunt leaved lupine), *Malacothrix saxatilis* (cliff desert dandelion), *Marah macrocarpus* (wild cucumber), *Melica imperfecta* (California melic), *Mentzelia laevicaulis* (smooth stem blazing star), *Mimulus aurantiacus* var. *pubescens* (hairy bush monkeyflower), *Mirabilis laevis* var. *crassifolia* (coastal wishbone bush), *Paeonia californica* (California peony), *Penstemon spectabilis* var. *spectabilis* (showy penstemon), *Phacelia cicutaria* (caterpillar phacelia), *Phacelia ramosissima* (branching phacelia), *Pseudognaphalium bioletti* (bi-color everlasting), *Pseudognaphalium californicum* (California everlasting), *Pseudognaphalium canescens* (hairy everlasting), *Quercus agrifolia* var. *agrifolia* (coast live oak), *Quercus chrysolepis* (canyon live oak; 1.0 lb), San Gabriel oak (*Quercus durata var. gabrielensis*) , *Quercus engelmannii* (Engelmann oak; 5.0 lb), *Rhus ovata* (sugar bush), *Ribes aureum* var. *gracillimum* (little graceful golden currant), *Salvia apiana* (white sage), *Salvia mellifera* (black sage), *Senecio flaccidus* var. *douglasii* (Douglas' threadleaf ragwort), *Silene laciniata* (cardinal catchfly), *Solidago velutina* (California goldenrod), *Stephanomeria cichoriacea* (silver rock-lettuce), *Stipa coronata* (giant needlegrass), *Symphoricarpos* cf. *mollis* (creeping snowberry), *Umbellularia californica* (California laurel).

Cuttings Species (17 Total) and Rare Oak Acorns (2 Species) Collected to Date by BonTerra Psomas, Rancho Santa Ana Botanic Garden, and S&S Seeds in the Santa Anita Wash/Rio Hondo Subwatershed

Scientific Name	Common Name	Notes
Acourtia microcephala	sacapellote	Direct planting on mitigation site.
Artemisia douglasiana	mugwort	Direct planting on mitigation site.
Asclepias californica	California milkweed	For container plant propagation and direct planting on mitigation site.
Aspidotis californica	California lace fern	Rhizome cuttings for container plant propagation and direct planting on mitigation site.
Dryopteris arguta	California wood fern	Rhizome cuttings for container plant propagation (only).
Dudleya lanceolata	lance-leaf dudleya	For container plant propagation and direct planting on mitigation site.
Epilobium canum ssp. *canum*	California fuchsia	Container plant propagation (only).
Juncus textilis	basket rush	Direct planting on mitigation site.
Pellaea andromedifolia	coffee fern	Rhizome cuttings for container plant propagation and direct planting on mitigation site.
Pellaea mucronata var. *mucronata*	bird's foot cliff-brake	Rhizome cuttings for container plant propagation (only).
Polypodium californicum	California polypody	Rhizome cuttings for container plant propagation (only).
Quercus durata var. *gabrielensis*	San Gabriel oak	Container plant propagation.
Quercus engelmannii	Engelmann oak	Container plant propagation.
Rhamnus crocea	spiny redberry	Container plant propagation (only).
Rhus aromatica	skunk bush	Direct planting on mitigation site.
Ribes californicum	hillside gooseberry	Container plant propagation (only).
Rubus ursinus	California blackberry	Direct planting on mitigation site.
Selaginella bigelovii	bushy spike-moss	Direct planting on mitigation site.
Stachys bullata	California hedgenettle	For container plant propagation and direct planting on mitigation site.

OWHRMP: Oak Woodland Habitat Revegetation/Mitigation Program for the Santa Anita Dam Riser Modification and Reservoir Sediment Removal Project; S&S: S&S Seeds; lb: pound.

ATTACHMENT C

YEAR ONE QUADRAT DATA (APRIL 2016)

TABLE C-1
COASTAL SAGE SCRUB QUADRAT DATA – YEAR ONE (APRIL 2016)

Plant Species	Habit	Cover			Mean	No. of Individual Plants			Vegetation Cover and Diversity Metrics[a]									
		Q1	Q2	Q3		Q1	Q2	Q3	D_i	RD_i	C_i	RC_i	f_i	Rf_i	p_i	$p_i \log p_i$	H'	Potential H'
Native																		
Acmispon glaber var. *glaber*	subshrub	30.00	35.00	20.00	**28.33**	20	10	11	0.017083	0.053455	0.283333	0.299718	1.000000	0.051724	0.053455	-0.156565	**2.76**	**3.69**
Artemisia californica	medium	15.00	25.00	20.00	**20.00**	40	17	15	0.030000	0.093872	0.200000	0.211566	1.000000	0.051724	0.093872	-0.222085		
Brickellia californica	subshrub	0.00	0.10	0.00	**0.03**	0	2	0	0.000833	0.002608	0.000333	0.000353	0.333333	0.017241	0.002608	-0.015513		
Calystegia macrostegia	herb	0.00	0.10	0.00	**0.03**	0	1	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Camissoniopsis hirtella	herb	0.10	0.00	0.10	**0.07**	15	0	2	0.007083	0.022164	0.000667	0.000705	0.666667	0.034483	0.022164	-0.084430		
Ceanothus leucodermis	large	0.00	0.10	0.00	**0.03**	0	1	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Ceanothus oliganthus	large	0.10	0.00	0.00	**0.03**	3	0	0	0.001250	0.003911	0.000333	0.000353	0.333333	0.017241	0.003911	-0.021684		
Cercocarpus betuloides var. *betuloides*	large	0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Clarkia purpurea var. *quadrivulnera*	herb	1.00	0.10	0.00	**0.37**	150	1	0	0.062917	0.196871	0.003667	0.003879	0.666667	0.034483	0.196871	-0.319956		
Clematis lasiantha	subshrub	0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Cyperus eragrostis	herb	0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Datura wrightii	herb	1.00	0.10	1.00	**0.70**	2	1	4	0.002917	0.009126	0.007000	0.007405	1.000000	0.051724	0.009126	-0.042863		
Elymus condensatus	herb	2.00	0.00	0.00	**0.67**	2	0	0	0.000833	0.002608	0.006667	0.007052	0.333333	0.017241	0.002608	-0.015513		
Eriogonum fasciculatum var. *foliolosum*	medium	7.00	10.00	25.00	**14.00**	8	11	15	0.014167	0.044329	0.140000	0.148096	1.000000	0.051724	0.044329	-0.138133		
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	herb	0.10	0.00	0.00	**0.03**	2	0	0	0.000833	0.002608	0.000333	0.000353	0.333333	0.017241	0.002608	-0.015513		
Eulobus californicus	herb	0.10	0.00	0.00	**0.03**	10	0	0	0.004167	0.013038	0.000333	0.000353	0.333333	0.017241	0.013038	-0.056583		
Hazardia squarrosa var. *grindelioides*	subshrub	0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Hesperoyucca whipplei[b]	succulent	0.00	0.10	0.10	**0.07**	0	2	3	0.002083	0.006519	0.000667	0.000705	0.666667	0.034483	0.006519	-0.032810		
Logfia filaginoides	herb	0.10	0.00	0.00	**0.03**	50	0	0	0.020833	0.065189	0.000333	0.000353	0.333333	0.017241	0.065189	-0.177996		
Lupinus bicolor	herb	0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Lupinus hirsutissimus	herb	0.00	0.00	0.10	**0.03**	0	0	5	0.002083	0.006519	0.000333	0.000353	0.333333	0.017241	0.006519	-0.032810		
Malosma laurina	large	0.00	0.00	8.00	**2.67**	0	0	2	0.000833	0.002608	0.026667	0.028209	0.333333	0.017241	0.002608	-0.015513		
Mimulus aurantiacus var. *pubescens*	medium	20.00	0.10	0.00	**6.70**	30	1	0	0.012917	0.040417	0.067000	0.070874	0.666667	0.034483	0.040417	-0.129679		
Phacelia distans	herb	0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Phacelia minor	herb	0.00	0.00	0.10	**0.03**	0	0	15	0.006250	0.019557	0.000333	0.000353	0.333333	0.017241	0.019557	-0.076945		
Pseudognaphalium canescens	herb	0.10	0.00	0.10	**0.07**	10	0	1	0.004583	0.014342	0.000667	0.000705	0.666667	0.034483	0.014342	-0.060874		
Quercus agrifolia	tree	0.10	0.00	0.00	**0.03**	2	0	0	0.000833	0.002608	0.000333	0.000353	0.333333	0.017241	0.002608	-0.015513		
Rhus ovata	large	0.10	0.10	1.00	**0.40**	1	1	2	0.001667	0.005215	0.004000	0.004231	1.000000	0.051724	0.005215	-0.027412		
Salvia apiana	medium	0.00	0.10	0.00	**0.03**	0	3	0	0.001250	0.003911	0.000333	0.000353	0.333333	0.017241	0.003911	-0.021684		
Salvia mellifera	medium	20.00	20.00	15.00	**18.33**	30	15	7	0.021667	0.067797	0.183333	0.193935	1.000000	0.051724	0.067797	-0.182457		
Sambucus nigra ssp. *caerulea*	tree	0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Solanum americanum	herb	0.00	0.00	2.00	**0.67**	0	0	12	0.005000	0.015645	0.006667	0.007052	0.333333	0.017241	0.015645	-0.065047		
Non-native																		
Bromus diandrus		0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Festuca myuros		0.10	0.00	0.00	**0.03**	50	0	0	0.020833	0.065189	0.000333	0.000353	0.333333	0.017241	0.065189	-0.177996		
Galium parisiense		1.00	0.00	0.00	**0.33**	100	0	0	0.041667	0.130378	0.003333	0.003526	0.333333	0.017241	0.130378	-0.265621		
Hypochaeris radicata		1.00	0.00	0.00	**0.33**	50	0	0	0.020833	0.065189	0.003333	0.003526	0.333333	0.017241	0.065189	-0.177996		
Rumex acetosella		0.00	0.00	0.10	**0.03**	0	0	1	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Sonchus asper		0.10	0.00	0.00	**0.03**	20	0	0	0.008333	0.026076	0.000333	0.000353	0.333333	0.017241	0.026076	-0.095091		
Torilis arvensis		0.10	0.00	0.00	**0.03**	1	0	0	0.000417	0.001304	0.000333	0.000353	0.333333	0.017241	0.001304	-0.008660		
Trifolium hirtum		0.10	0.00	0.10	**0.07**	1	0	1	0.000833	0.002608	0.000667	0.000705	0.666667	0.034483	0.002608	-0.015513		

TABLE C-1
COASTAL SAGE SCRUB QUADRAT DATA – YEAR ONE (APRIL 2016)

Plant Species	Habit	Cover			Mean	No. of Individual Plants			Vegetation Cover and Diversity Metrics[a]									
		Q1	Q2	Q3		Q1	Q2	Q3	D_i	RD_i	C_i	RC_i	f_i	Rf_i	p_i	$p_i \log p_i$	H'	Potential H'
Absolute Cover																		
Total Absolute Native Species Cover		97.50	90.90	92.60	**93.63**													
Total Absolute Non-Native Species Cover		2.50	0.00	0.20	**0.90**													
Total Absolute Cover (All)		102.40	90.90	92.80	**94.53**													
Ground Cover																		
Leaf Litter		10.00	30.00	6.00	**15.33**													
Fine Woody Debris		5.00	8.00	5.00	**6.00**													
Rock/Cobble/Gravel		5.00	20.00	3.00	**9.33**													
Bare Soil		77.50	39.50	80.00	**65.67**													
PVC pipe		0.50	0.50	1.00	**0.67**													
Straw wattle		2.00	2.00	5.00	**3.00**													

[a] The definitions and formulae for all vegetation and diversity metrics are provided in Section 6.2.1.
[b] Species is listed as a 'succulent' with respect to performance standards, although botanically it is a 'fibrous shrub'.

TABLE C-2
OAK WOODLAND QUADRAT DATA – YEAR ONE (APRIL 2016)

Oak Woodland Data and Statistics																							
Plant Species	Habit	Cover							No. of Individual Plants						D_i	RD_i	C_i	RC_i	f_i	Rf_i	p_i	$p_i \log p_i$	H'	Potential H'
		Q1	Q2	Q3	Q4	Q5	Q6	Mean	Q1	Q2	Q3	Q4	Q5	Q6										
Native																								
Acmispon glaber var. *glaber*	subshrub	20.00	0.10	0.10	0.00	3.00	35.00	9.70	15	2	1	0	5	25	0.010000	0.016288	0.097000	0.179741	0.833333	0.035714	0.016288	0.067062	**2.34**	**4.09**
Artemisia californica	medium	3.00	0.10	0.00	15.00	5.00	15.00	6.35	3	3	0	6	4	10	0.005417	0.008823	0.063500	0.117665	0.833333	0.035714	0.008823	0.041735		
Artemisia douglasiana	herb	3.00	10.00	10.00	0.10	5.00	0.00	4.68	4	11	4	1	5	0	0.005208	0.008483	0.046833	0.086782	0.833333	0.035714	0.008483	0.040462		
Baccharis salicifolia ssp. *salicifolia*	large	0.00	2.00	0.00	0.00	0.00	0.00	0.33	0	3	0	0	0	0	0.000625	0.001018	0.003333	0.006177	0.166667	0.007143	0.001018	0.007014		
Brickellia californica	subshrub	0.10	0.00	1.00	0.00	0.10	0.00	0.20	5	0	6	0	5	0	0.003333	0.005429	0.002000	0.003706	0.500000	0.021429	0.005429	0.028319		
Camissoniopsis hirtella	herb	0.10	0.10	0.10	0.10	0.10	0.00	0.08	10	50	1	1	4	0	0.013750	0.022396	0.000833	0.001544	0.833333	0.035714	0.022396	0.085079		
Ceanothus leucodermis	large	0.00	0.00	0.00	0.00	0.00	0.10	0.02	0	0	0	0	0	1	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Ceanothus oliganthus	large	0.00	0.00	0.10	0.00	1.00	1.00	0.35	0	0	1	0	1	1	0.000625	0.001018	0.003500	0.006485	0.500000	0.021429	0.001018	0.007014		
Clarkia purpurea var. *quadrivulnera*	herb	1.00	15.00	1.00	1.00	1.00	0.10	3.18	50	1,000	20	10	50	5	0.236458	0.385137	0.031833	0.058987	1.000000	0.042857	0.385137	0.367481		
Clematis lasiantha	subshrub	0.00	0.00	0.00	0.00	0.10	0.00	0.02	0	0	0	0	1	0	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Cyperus eragrostis	herb	10.00	0.10	10.00	1.00	1.00	0.10	3.70	75	8	150	25	30	1	0.060208	0.098066	0.037000	0.068561	1.000000	0.042857	0.098066	0.227720		
Datura wrightii	herb	0.00	0.00	0.00	0.00	0.00	3.00	0.50	0	0	0	0	0	4	0.000833	0.001357	0.005000	0.009265	0.166667	0.007143	0.001357	0.008961		
Elymus condensatus	herb	0.00	0.00	0.00	5.00	0.00	0.00	0.83	0	0	0	3	0	0	0.000625	0.001018	0.008333	0.015442	0.166667	0.007143	0.001018	0.007014		
Epilobium ciliatum ssp. *ciliatum*	herb	0.00	2.00	0.00	0.10	0.00	0.00	0.35	0	200	0	30	0	0	0.047917	0.078045	0.003500	0.006485	0.333333	0.014286	0.078045	0.199052		
Eriogonum fasciculatum var. *foliolosum*	medium	1.00	0.00	0.00	5.00	3.00	5.00	2.33	2	0	0	4	3	10	0.003958	0.006447	0.023333	0.043237	0.666667	0.028571	0.006447	0.032521		
Eulobus californicus	herb	0.10	0.00	0.00	0.00	0.00	0.00	0.02	1	0	0	0	0	0	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Euphorbia polycarpa	herb	0.00	0.10	0.10	0.00	0.00	0.00	0.03	0	2	5	0	0	0	0.001458	0.002375	0.000333	0.000618	0.333333	0.014286	0.002375	0.014353		
Galium aparine	herb	0.00	0.00	0.00	0.00	0.00	0.10	0.02	0	0	0	0	0	1	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Hazardia squarrosa var. *grindelioides*	subshrub	0.00	0.10	0.00	0.00	0.00	0.00	0.02	0	7	0	0	0	0	0.001458	0.002375	0.000167	0.000309	0.166667	0.007143	0.002375	0.014353		
Hesperoyucca whipplei[a]	succulent	0.00	0.00	0.00	0.00	0.00	0.10	0.02	0	0	0	0	0	6	0.001250	0.002036	0.000167	0.000309	0.166667	0.007143	0.002036	0.012616		
Heterotheca grandiflora	herb	0.00	0.10	0.00	0.00	0.00	0.00	0.02	0	1	0	0	0	0	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Logfia filaginoides	herb	0.50	0.00	0.00	0.00	0.00	0.00	0.08	1	0	0	0	0	0	0.000208	0.000339	0.000833	0.001544	0.166667	0.007143	0.000339	0.002711		
Lupinus hirsutissimus	herb	0.00	0.00	0.10	0.00	1.00	0.00	0.18	0	0	2	0	6	0	0.001667	0.002715	0.001833	0.003397	0.333333	0.014286	0.002715	0.016041		
Malosma laurina	large	0.00	0.00	0.00	0.00	5.00	0.10	0.85	0	0	0	0	1	1	0.000417	0.000679	0.008500	0.015750	0.333333	0.014286	0.000679	0.004951		
Marah macrocarpa	herb	0.00	0.00	0.00	0.00	0.00	0.10	0.02	0	0	0	0	0	2	0.000417	0.000679	0.000167	0.000309	0.166667	0.007143	0.000679	0.004951		
Mimulus aurantiacus var. *pubescens*	medium	4.00	0.00	0.10	0.00	10.00	8.00	3.68	4	0	1	0	5	6	0.003333	0.005429	0.036833	0.068252	0.666667	0.028571	0.005429	0.028319		
Penstemon spectabilis var. *spectabilis*	herb	0.10	0.00	0.00	0.00	0.10	0.00	0.03	2	0	0	0	10	0	0.002500	0.004072	0.000333	0.000618	0.333333	0.014286	0.004072	0.022410		
Phacelia cicutaria	herb	0.10	1.00	0.00	0.00	0.00	0.00	0.18	1	10	0	0	0	0	0.002292	0.003733	0.001833	0.003397	0.333333	0.014286	0.003733	0.020868		
Phacelia distans	herb	0.00	0.00	0.10	0.00	1.00	0.00	0.18	0	0	1	0	12	0	0.002708	0.004411	0.001833	0.003397	0.333333	0.014286	0.004411	0.023925		
Phacelia minor	herb	0.10	0.00	0.00	0.00	0.10	0.00	0.03	2	0	0	0	6	0	0.001667	0.002715	0.000333	0.000618	0.333333	0.014286	0.002715	0.016041		
Phacelia ramosissima	herb	0.10	0.00	0.10	1.00	1.00	0.00	0.37	2	0	8	10	6	0	0.005417	0.008823	0.003667	0.006794	0.666667	0.028571	0.008823	0.041735		
Pseudognaphalium californicum	herb	0.10	15.00	0.10	0.10	5.00	0.00	3.38	20	50	1	1	15	0	0.018125	0.029522	0.033833	0.062693	0.833333	0.035714	0.029522	0.103994		
Pseudognaphalium canescens	herb	1.00	2.00	0.00	0.00	0.00	0.00	0.50	100	200	0	0	0	0	0.062500	0.101798	0.005000	0.009265	0.333333	0.014286	0.101798	0.232585		
Quercus agrifolia var. *agrifolia*	tree	0.10	2.00	0.10	2.00	1.00	1.00	1.03	1	1	1	3	3	6	0.003125	0.005090	0.010333	0.019148	1.000000	0.042857	0.005090	0.026877		
Rhus ovata	large	0.00	0.00	0.00	0.00	0.10	2.00	0.35	0	0	0	0	2	0	0.000417	0.000679	0.003500	0.006485	0.166667	0.007143	0.000679	0.004951		
Ribes aureum var. *gracillimum*	medium	0.10	0.10	2.00	0.00	2.00	0.00	0.70	1	1	2	0	4	0	0.001667	0.002715	0.007000	0.012971	0.666667	0.028571	0.002715	0.016041		
Rubus ursinus	subshrub	0.10	0.00	0.00	0.00	0.00	0.00	0.02	2	0	0	0	0	0	0.000417	0.000679	0.000167	0.000309	0.166667	0.007143	0.000679	0.004951		
Salvia apiana	medium	0.00	0.00	0.00	0.00	0.00	0.10	0.02	0	0	0	0	0	2	0.000417	0.000679	0.000167	0.000309	0.166667	0.007143	0.000679	0.004951		
Salvia mellifera	medium	0.00	0.00	1.00	10.00	0.00	8.00	3.17	0	0	3	3	0	5	0.002292	0.003733	0.031667	0.058678	0.500000	0.021429	0.003733	0.020868		
Sambucus nigra ssp. *caerulea*	tree	0.00	0.00	0.00	15.00	0.00	0.00	2.50	3	0	0	3	0	0	0.001250	0.002036	0.025000	0.046325	0.333333	0.014286	0.002036	0.012616		
Senecio flaccidus var. *douglasii*	medium	0.10	0.00	0.00	0.00	0.00	0.00	0.02	1	0	0	0	0	0	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Solanum americanum	herb	1.00	1.00	0.10	8.00	1.00	0.10	1.87	5	5	2	12	4	1	0.006042	0.009841	0.018667	0.034589	1.000000	0.042857	0.009841	0.045475		

TABLE C-2
OAK WOODLAND QUADRAT DATA – YEAR ONE (APRIL 2016)

Oak Woodland Data and Statistics																						
Plant Species	Habit	Cover							No. of Individual Plants													
		Q1	Q2	Q3	Q4	Q5	Q6	Mean	Q1	Q2	Q3	Q4	Q5	Q6	D_i	RD_i	C_i	RC_i	f_i	Rf_i	p_i	$p_i \log p_i$	H'	Potential H'
Stachys bullata	herb	0.00	2.00	0.00	2.00	0.00	0.00	0.67	0	5	0	6	0	0	0.002292	0.003733	0.006667	0.012353	0.333333	0.014286	0.003733	0.020868		
Stipa lepida	herb	0.00	0.10	0.00	0.00	1.00	0.00	0.18	0	2	0	0	8	0	0.002083	0.003393	0.001833	0.003397	0.333333	0.014286	0.003393	0.019294		
Toxicodendron diversilobum	subshrub	0.00	0.00	0.00	0.00	0.00	2.00	0.33	0	0	0	0	0	1	0.000208	0.000339	0.003333	0.006177	0.166667	0.007143	0.000339	0.002711		
Non-Native																								
Bromus diandrus		0.00	0.00	0.00	0.00	0.00	0.10	0.02	0	0	0	0	0	7	0.001458	0.002375	0.000167	0.000309	0.166667	0.007143	0.002375	0.014353		
Bromus madritensis ssp. *rubens*		0.10	0.10	0.00	0.00	0.00	0.00	0.03	5	1	0	0	0	0	0.001250	0.002036	0.000333	0.000618	0.333333	0.014286	0.002036	0.012616		
Conium maculatum		0.00	0.00	0.00	0.00	0.00	0.10	0.02	0	0	0	0	0	1	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Euphorbia peplus		0.00	0.10	0.00	0.10	0.00	0.10	0.05	0	1	0	2	0	1	0.000833	0.001357	0.000500	0.000926	0.500000	0.021429	0.001357	0.008961		
Festuca myuros		0.00	0.00	0.00	0.10	0.00	0.00	0.02	0	0	0	1	0	0	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Lepidium didymum		0.10	0.00	0.00	0.00	0.00	0.00	0.02	3	0	0	0	0	0	0.000625	0.001018	0.000167	0.000309	0.166667	0.007143	0.001018	0.007014		
Melilotus indica		0.00	0.10	0.00	0.00	0.00	0.00	0.02	0	2	0	0	0	0	0.000417	0.000679	0.000167	0.000309	0.166667	0.007143	0.000679	0.004951		
Polygonum aviculare		1.00	0.00	0.00	0.00	0.00	0.00	0.17	50	0	0	0	0	0	0.010417	0.016966	0.001667	0.003088	0.166667	0.007143	0.016966	0.069164		
Polypogon monspeliensis		0.10	0.00	0.00	0.00	0.00	0.10	0.03	1	0	0	0	0	1	0.000417	0.000679	0.000333	0.000618	0.333333	0.014286	0.000679	0.004951		
Poa annua		0.10	0.00	0.10	0.00	0.00	0.00	0.03	10	0	10	0	0	0	0.004167	0.006787	0.000333	0.000618	0.333333	0.014286	0.006787	0.033884		
Pseudognaphalium luteoalbum		0.00	0.00	1.00	0.10	1.00	0.00	0.35	0	0	200	50	100	0	0.072917	0.118765	0.003500	0.006485	0.500000	0.021429	0.118765	0.253042		
Rumex acetosella		0.00	0.00	0.10	0.00	0.00	0.00	0.02	0	0	1	0	0	0	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Senecio vulgaris		0.10	0.00	0.00	0.00	0.00	0.00	0.02	4	0	0	0	0	0	0.000833	0.001357	0.000167	0.000309	0.166667	0.007143	0.001357	0.008961		
Sonchus asper		0.10	0.10	0.10	0.00	0.00	0.10	0.07	15	2	1	0	0	1	0.003958	0.006447	0.000667	0.001235	0.666667	0.028571	0.006447	0.032521		
Sonchus oleraceus		0.10	0.00	0.00	0.00	0.00	0.00	0.02	1	0	0	0	0	0	0.000208	0.000339	0.000167	0.000309	0.166667	0.007143	0.000339	0.002711		
Absolute Cover																								
Total Absolute Native Species Cover		45.70	52.90	26.10	65.40	47.60	80.90	53.10																
Total Absolute Non-Native Species Cover		1.70	0.40	1.30	0.30	1.00	0.50	0.87																
Total Absolute Cover (All)		47.40	53.30	27.40	65.70	48.60	81.40	53.97																
Ground Cover																								
Leaf Litter		10.00	10.00	0.50	12.00	10.00	10.00	8.75																
Fine Woody Debris		10.00	5.00	1.00	10.00	5.00	10.00	6.83																
Coarse Woody Debris		4.00	9.00	0.00	7.00	10.00	0.00	5.00																
Rock/Cobble/Gravel		25.00	25.00	2.00	10.00	20.00	5.00	14.50																
Bare Soil		50.50	50.00	95.50	60.00	53.00	72.50	63.83																
PVC pipe		0.50	1.00	1.00	1.00	2.00	0.50	1.00																
Straw wattle		0.00	0.00	0.00	0.00	0.00	2.00	0.33																

[a] The definitions and formulae for all vegetation and diversity metrics are provided in Section 6.1.2.
[b] Species is listed as a 'succulent' with respect to performance standards, although botanically it is a 'fibrous shrub'.

ATTACHMENT D

YEAR ONE TRANSECT DATA (2016)

TABLE D-1
COASTAL SAGE SCRUB TRANSECT DATA – YEAR ONE (APRIL 2016)

Plant Species	Habit	Transect Number (50-ft Transects; Percent Cover = Hits x 2)												Mean % Cover	C_i[a]	RC_i[a]
		T-C1		T-C2		T-C3		T-C4		T-C5		T-C6				
		Hits	% Cover	Hits	% Cover	Hits	% Cover	Hits	% Cover	Hits	% Cover	Hits	% Cover			
Native																
Acmispon glaber var. *glaber*	subshrub	21	42.00	25	50.00	21	42.00	14	28.00	17	34.00	10	20.00	**36.00**	0.360000	0.377622
Artemisia californica	medium	14	28.00	5	10.00	14	28.00	13	26.00	0	0.00	5	10.00	**17.00**	0.170000	0.178322
Brickellia californica	subshrub	0	0.00	2	4.00	0	0.00	0	0.00	0	0.00	0	0.00	**0.67**	0.006667	0.006993
Camissoniopsis hirtella	herb	1	2.00	0	0.00	0	0.00	0	0.00	1	2.00	0	0.00	**0.67**	0.006667	0.006993
Clarkia dudleyana	herb	0	0.00	4	8.00	2	4.00	0	0.00	0	0.00	2	4.00	**2.67**	0.026667	0.027972
Datura wrightii	herb	0	0.00	0	0.00	3	6.00	0	0.00	2	4.00	6	12.00	**3.67**	0.036667	0.038462
Elymus condensatus	herb	0	0.00	3	6.00	0	0.00	0	0.00	0	0.00	0	0.00	**1.00**	0.010000	0.010490
Eriogonum elongatum var. *elongatum*	herb	0	0.00	1	2.00	0	0.00	0	0.00	0	0.00	0	0.00	**0.33**	0.003333	0.003497
Eriogonum fasciculatum var. *foliolosum*	medium	2	4.00	1	2.00	8	16.00	11	22.00	6	12.00	6	12.00	**11.33**	0.113333	0.118881
Eulobus californicus	herb	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	2	4.00	**0.67**	0.006667	0.006993
Hesperoyucca whipplei[b]	succulent	0	0.00	1	2.00	0	0.00	0	0.00	0	0.00	0	0.00	**0.33**	0.003333	0.003497
Malosma laurina	large	0	0.00	0	0.00	4	8.00	0	0.00	0	0.00	0	0.00	**1.33**	0.013333	0.013986
Mimulus aurantiacus var. *pubescens*	medium	0	0.00	1	2.00	0	0.00	0	0.00	0	0.00	0	0.00	**0.33**	0.003333	0.003497
Opuntia ×vaseyi	succulent	0	0.00	3	6.00	1	2.00	0	0.00	0	0.00	0	0.00	**1.33**	0.013333	0.013986
Phacelia cicutaria	herb	0	0.00	0	0.00	0	0.00	0	0.00	2	4.00	0	0.00	**0.67**	0.006667	0.006993
Rhus ovata	large	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	8	16.00	**2.67**	0.026667	0.027972
Salvia mellifera	medium	7	14.00	4	8.00	5	10.00	8	16.00	4	8.00	7	14.00	**11.67**	0.116667	0.122378
Solanum americanum	herb	0	0.00	0	0.00	0	0.00	0	0.00	7	14.00	0	0.00	**2.33**	0.023333	0.024476
Non-Native																
Pseudognaphalium luteoalbum		0	0.00	0	0.00	0	0.00	0	0.00	1	2.00	1	2.00	**0.67**	0.006667	0.006993
Absolute Percent Cover																
Total Absolute Native Species Cover		45	90.00	50	100.00	58	116.00	46	92.00	39	78.00	46	92.00	**94.67**		
Total Absolute Non-Native Species Cover		0	0.00	0	0.00	0	0.00	0	0.00	1	2.00	1	2.00	**0.67**		
Total Absolute Cover (All)		45	90.00	50	100.00	58	116.00	46	92.00	40	80.00	47	94.00	**95.33**		
Class Percent Cover																
Native		37	74.00	43	86.00	48	96.00	43	86.00	39	78.00	42	84.00	**84.00**		
Non-Native		0	0.00	0	0.00	0	0.00	0	0.00	1	2.00	0	0.00	**0.33**		
Both		0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	1	2.00	**0.33**		
No Plant		13	26.00	7	14.00	2	4.00	7	14.00	10	20.00	7	14.00	**15.33**		
Summary																
Total Native Class Cover			74.00		86.00		96.00		86.00		78.00		86.00	**84.33**		
Total Non-Native Class Cover			0.00		0.00		0.00		0.00		2.00		2.00	**0.67**		
Total Unvegetated			26.00		14.00		4.00		14.00		20.00		14.00	**15.33**		
Ground Cover																
Bare Soil		0	0.00	8	16.00	2	4.00	27	54.00	10	20.00	8	16.00	**18.33**		
Rock/Cobble		0	0.00	5	10.00	0	0.00	0	0.00	7	14.00	8	16.00	**6.67**		
Leaf Litter		40	80.00	10	20.00	11	22.00	20	40.00	0	0.00	10	20.00	**30.33**		
Fine Woody Debris		3	6.00	24	48.00	35	70.00	2	4.00	30	60.00	24	48.00	**39.33**		
Straw Wattle		0	0.00	3	6.00	2	4.00	1	2.00	3	6.00	0	0.00	**3.00**		
Concrete V-Ditch		7	14.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	**2.33**		

[a] C_i (cover for species 'i') = ai /A (ai = total area covered for species 'i'; A = total area sampled); RC_i (relative cover of species 'i') = Ci / ΣC (ΣC = sum of cover for all species)
[b] Species is listed as a 'succulent' with respect to performance standards, although botanically it is a 'fibrous shrub'.

TABLE D-2
OAK WOODLAND TRANSECT DATA – YEAR ONE (APRIL 2016)

Plant Species	Habit	Transect Number (100-ft Transects; Hits = Percent Cover)								
		T1	T2	T3	T4	T5	T6	Mean	C_i[a]	RC_i[b]
Native										
Acmispon glaber var. *glaber*	subshrub	11.00	4.00	4.00	15.00	0.00	0.00	**5.67**	0.056667	0.060932
Artemisia californica	medium	4.00	1.00	6.00	0.00	15.00	13.00	**6.50**	0.065000	0.069892
Artemisia douglasiana	herb	6.00	29.00	0.00	11.00	0.00	4.00	**8.33**	0.083333	0.089606
Baccharis salicifolia ssp. *salicifolia*	large	0.00	13.00	0.00	0.00	0.00	1.00	**2.33**	0.023333	0.025090
Brickellia californica	subshrub	0.00	0.00	0.00	1.00	2.00	0.00	**0.50**	0.005000	0.005376
Calystegia macrostegia	herb	0.00	6.00	0.00	1.00	0.00	0.00	**1.17**	0.011667	0.012545
Camissoniopsis hirtella	herb	4.00	0.00	0.00	4.00	0.00	0.00	**1.33**	0.013333	0.014337
Ceanothus leucodermis	large	0.00	0.00	0.00	0.00	3.00	0.00	**0.50**	0.005000	0.005376
Clarkia dudleyana	herb	0.00	13.00	0.00	14.00	18.00	5.00	**8.33**	0.083333	0.089606
Cyperus eragrostis	herb	14.00	2.00	14.00	6.00	0.00	3.00	**6.50**	0.065000	0.069892
Datura wrightii	herb	0.00	0.00	3.00	18.00	0.00	3.00	**4.00**	0.040000	0.043011
Epilobium ciliatum ssp. *ciliatum*	herb	0.00	5.00	0.00	0.00	0.00	0.00	**0.83**	0.008333	0.008961
Eriogonum fasciculatum var. *foliolosum*	medium	2.00	0.00	0.00	0.00	6.00	0.00	**1.33**	0.013333	0.014337
Eulobus californicus	herb	0.00	0.00	0.00	1.00	0.00	1.00	**0.33**	0.003333	0.003584
Frangula californica ssp. *californica*	large	0.00	7.00	0.00	0.00	0.00	0.00	**1.17**	0.011667	0.012545
Keckiella cordifolia	subshrub	0.00	0.00	2.00	0.00	0.00	0.00	**0.33**	0.003333	0.003584
Lupinus hirsutissimus	herb	0.00	0.00	0.00	1.00	0.00	1.00	**0.33**	0.003333	0.003584
Malosma laurina	large	16.00	0.00	0.00	1.00	0.00	0.00	**2.83**	0.028333	0.030466
Melica imperfecta	herb	0.00	0.00	0.00	0.00	0.00	3.00	**0.50**	0.005000	0.005376
Mimulus aurantiacus var. *pubescens*	medium	1.00	0.00	1.00	0.00	0.00	3.00	**0.83**	0.008333	0.008961
Penstemon spectabilis var. *spectabilis*	herb	0.00	0.00	4.00	0.00	0.00	0.00	**0.67**	0.006667	0.007168
Phacelia cicutaria	herb	0.00	0.00	2.00	1.00	1.00	0.00	**0.67**	0.006667	0.007168
Phacelia distans	herb	2.00	5.00	1.00	22.00	27.00	15.00	**12.00**	0.120000	0.129032
Phacelia minor	herb	0.00	0.00	0.00	0.00	0.00	1.00	**0.17**	0.001667	0.001792
Pseudognaphalium californicum	herb	3.00	8.00	0.00	6.00	28.00	15.00	**10.00**	0.100000	0.107527
Pseudognaphalium stramineum	herb	0.00	0.00	0.00	2.00	0.00	0.00	**0.33**	0.003333	0.003584
Quercus agrifolia var. *agrifolia*	tree	0.00	4.00	0.00	0.00	5.00	0.00	**1.50**	0.015000	0.016129
Rhamnus ilicifolia	large	0.00	1.00	0.00	0.00	0.00	0.00	**0.17**	0.001667	0.001792
Rhus ovata	large	0.00	0.00	0.00	0.00	13.00	0.00	**2.17**	0.021667	0.023297
Ribes aureum	medium	0.00	4.00	0.00	1.00	0.00	4.00	**1.50**	0.015000	0.016129
Salvia apiana	medium	0.00	0.00	0.00	1.00	0.00	0.00	**0.17**	0.001667	0.001792
Salvia columbariae	herb	2.00	0.00	0.00	0.00	0.00	0.00	**0.33**	0.003333	0.003584
Salvia mellifera	medium	17.00	0.00	1.00	0.00	1.00	0.00	**3.17**	0.031667	0.034050
Sambucus nigra ssp. *caerulea*	tree	2.00	0.00	0.00	0.00	0.00	3.00	**0.83**	0.008333	0.008961
Solanum americanum	herb	2.00	6.00	0.00	2.00	1.00	2.00	**2.17**	0.021667	0.023297
Stachys bullata	herb	0.00	2.00	0.00	0.00	0.00	0.00	**0.33**	0.003333	0.003584
Stipa lepida	herb	0.00	0.00	0.00	0.00	0.00	1.00	**0.17**	0.001667	0.001792
Non-Native										
Erodium cicutarium		0.00	0.00	0.00	1.00	0.00	0.00	**0.17**	0.001667	0.001792
Festuca myuros		0.00	2.00	0.00	0.00	0.00	0.00	**0.33**	0.003333	0.003584
Lepidium didymum		0.00	0.00	0.00	0.00	0.00	1.00	**0.17**	0.001667	0.001792
Polypogon viridis		0.00	0.00	2.00	0.00	0.00	0.00	**0.33**	0.003333	0.003584
Pseudognaphalium luteoalbum		0.00	0.00	1.00	2.00	0.00	0.00	**0.50**	0.005000	0.005376
Sisymbrium irio		0.00	0.00	0.00	1.00	0.00	0.00	**0.17**	0.001667	0.001792
Sonchus oleraceus		0.00	0.00	0.00	1.00	0.00	1.00	**0.33**	0.003333	0.003584
Veronica anagallis-aquatica		0.00	6.00	0.00	0.00	0.00	0.00	**1.00**	0.010000	0.010753
Absolute Percent Cover										
Total Absolute Native Species Cover		86.00	110.00	38.00	108.00	120.00	78.00	**90.00**		
Total Absolute Non-Native Species Cover		0.00	8.00	3.00	5.00	0.00	2.00	**3.00**		
Total Absolute Cover (All)		86.00	118.00	41.00	113.00	120.00	80.00	**93.00**		
Class Percent Cover										
Native		71.00	80.00	40.00	80.00	88.00	68.00	**71.17**		
Non-Native		0.00	4.00	2.00	4.00	0.00	0.00	**1.67**		
Both		0.00	4.00	1.00	2.00	0.00	2.00	**1.50**		
No Plant		29.00	12.00	57.00	14.00	12.00	30.00	**25.67**		
Summary										
Total Native Class Cover		71.00	84.00	41.00	82.00	88.00	70.00	**72.67**		
Total Non-Native Class Cover		0.00	8.00	3.00	6.00	0.00	2.00	**3.17**		
Total Unvegetated		29.00	12.00	57.00	14.00	12.00	30.00	**25.67**		
Ground Cover										
Bare Soil		5.00	10.00	55.00	30.00	2.00	25.00	**21.17**		
Rock/Cobble		4.00	0.00	0.00	3.00	17.00	5.00	**4.83**		
Leaf Litter		15.00	20.00	20.00	25.00	10.00	15.00	**17.50**		
Fine Woody Debris		66.00	64.00	15.00	35.00	66.00	47.00	**48.83**		
Coarse Woody Debris		10.00	6.00	10.00	7.00	5.00	8.00	**7.67**		

[a] Ci (cover for species 'i') = ai /A (ai = total area covered for species 'i'; A = total area sampled)
[b] RCi (relative cover of species 'i') = Ci / ΣC (ΣC = sum of cover for all species)

ATTACHMENT E

OAK TREE ASSESSMENT DATA (APRIL/MAY 2016)

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
1	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	4.0	12.6	4	3–5
2	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.50	1.00	6.5	3.0	7.1	4	2–5
3	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	4.0	3.0	7.1	4	4
4	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	4.0	12.6	5	4–5
5	San Gabriel oak	*Quercus durata* var. *gabrielensis*	2	0.13	0.12	0.25	3.5	1.5	1.8	5	4–5
6	San Gabriel oak	*Quercus durata* var. *gabrielensis*	4	0.13	0.12	0.25	3.0	2.0	3.1	4	0.5
7	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	7.0	4.0	12.6	4	0.5–5
8	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	4.5	4.0	12.6	5	4–6
9	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	6.5	4.0	12.6	4	3–5
10	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	3.5	9.6	4	4–5
11	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	2.0	3.1	4	2–3
12	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.5	5.0	19.6	5	1–6
13	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	4.5	3.0	7.1	5	1–2
14	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.0	4.0	12.6	5	1
15	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.25	0.75	7.0	4.0	12.6	5	3–7
16	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.75	0.25	1.00	8.0	6.0	28.3	5	3–6
17	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.13	x	0.13	2.5	1.0	0.8	3	0
18	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.75	0.25	1.00	7.5	4.5	15.9	5	5–8
19	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	2.5	4.9	5	1–3
20	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.0	2.5	4.9	5	1–2
21	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.13	x	0.13	3.5	1.0	0.8	5	1–5
22	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.10	0.35	5.0	3.5	9.6	4	0
23	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.00	x	1.00	8.0	7.0	38.5	4	4–7
24	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.13	x	0.13	2.0	0.8	0.4	5	1
25	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.50	1.00	6.0	5.0	19.6	4	1–4
26	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	3.5	9.6	5	2–3
27	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.75	0.25	1.00	7.0	5.0	19.6	4	4–6
28	coast live oak	*Quercus agrifolia* var. *agrifolia*	3	0.75	0.50	1.25	8.0	7.0	38.5	5	1–6
29	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	4	4–5

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
30	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.10	x	0.10	1.5	6.0	28.3	5	0.5
31	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	7.0	6.0	28.3	4	2–4
32	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	10.0	4.0	12.6	5	5–7
33	No Plant										
34	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	5.0	5.0	19.6	5	1
35	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	5.5	23.8	4	1–3
36	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	4.0	12.6	5	0
37	San Gabriel oak	*Quercus durata* var. *gabrielensis*	2	0.10	0.10	0.20	2.0	1.0	0.8	5	1
38	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	10.0	5.0	19.6	5	3–5
39	San Gabriel oak	*Quercus durata* var. *gabrielensis*	2	0.10	0.10	0.20	1.0	0.5	0.2	5	0
40	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	3.0	7.1	5	1–4
41	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	3.0	7.1	5	0.5
42	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.13	0.38	7.0	6.0	28.3	5	2–4
43	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	6.0	28.3	4	3–6
44	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	5.0	19.6	5	3–5
45	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	9.0	8.0	50.3	5	2–4
46	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	5.0	19.6	5	5–8
47	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	5.0	19.6	5	5–7
48	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	7.0	38.5	5	2–7
49	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	1–7
50	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	4.0	4.0	12.6	4	1–2
51	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.00	x	1.00	6.5	10.0	78.5	5	2–9
52	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.25	0.75	7.0	6.0	28.3	5	4–8
53	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	4.0	1.5	1.8	5	5–9
54	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.25	0.75	7.0	9.0	63.6	5	1–7
55	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.50	1.00	7.0	7.0	38.5	5	4–6
56	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.13	0.12	0.25	4.0	2.0	3.1	5	5–7
57	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.5	5.0	19.6	5	2–6
58	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	7.0	2.0	3.1	5	5–8

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
59	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	1.5	0.3	0.0	5	1
60	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	8.0	2.5	4.9	5	4–6
61	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	4.0	2.5	4.9	5	3–8
62	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	3.5	1.0	0.8	5	4–7
63	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.0	7.1	5	3–6
64	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	5.0	19.6	5	1–7
65	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	7.0	38.5	5	3–6
66	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	3.5	1.0	0.8	5	3–4
67	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.13	0.38	6.5	3.5	9.6	5	4
68	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	2.0	3.1	5	3–5
69	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	3.0	7.1	5	4–7
70	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	8.0	2.5	4.9	4	2–5
71	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	1.5	1.8	5	3–4
72	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	2.5	4.9	5	3–6
73	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	6.0	28.3	5	4–6
74	coast live oak	*Quercus agrifolia* var. *agrifolia*	3	0.50	0.25	0.75	8.0	6.0	28.3	5	3–7
75	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	3.0	7.1	5	4–6
76	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	3–7
77	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	1.5	1.8	5	4–6
78	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	6.5	6.0	28.3	5	4–8
79	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	4.0	2.0	3.1	5	4–8
80	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	4.0	12.6	5	1–4
81	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.10	0.10	0.20	1.5	0.8	0.4	5	0–1
82	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	2.5	4.9	5	1–4
83	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	5.0	19.6	5	2–7
84	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.0	7.1	5	5–13
85	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	8.0	4.5	15.9	5	4–6
86	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	6.0	28.3	5	3–7
87	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	4.0	3.0	7.1	5	1–4

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
88	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	4.0	12.6	5	4–8
89	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	5.0	19.6	5	4–10
90	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	3–8
91	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	4.0	1.0	0.8	5	1–4
92	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.75	0.50	1.25	11.0	6.0	28.3	5	5–8
93	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	9.0	6.0	28.3	5	4–5
94	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.10	0.10	0.20	2.5	2.0	3.1	5	2–3
95	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	3.5	9.6	5	2–5
96	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	6.5	5.0	19.6	5	3–7
97	Engelmann oak	*Quercus engelmannii*	1	0.13	x	0.13	2.5	1.5	1.8	5	3–4
98	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	2–4
99	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.5	9.6	5	3–6
100	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.0	1.5	1.8	5	5
101	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.5	8.0	50.3	5	2–3
102	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	5.0	19.6	5	4–9
103	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.10	0.10	0.20	2.5	0.8	0.4	5	2–3
104	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.00	x	1.00	8.0	8.0	50.3	5	3–6
105	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	1.0	0.8	5	4–7
106	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.5	15.9	5	4–10
107	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	6.5	6.0	28.3	5	4–7
108	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	1.0	0.8	5	4–6
109	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	10.0	8.0	50.3	5	3–8
110	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.13	0.38	4.5	3.0	7.1	5	2–5
111	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	1.0	0.5	0.2	5	1–2
112	coast live oak	*Quercus agrifolia* var. *agrifolia*	3	0.13	0.12	0.25	5.5	2.0	3.1	5	2–4
113	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	4.0	12.6	5	4–7
114	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.5	8.0	50.3	5	2–5
115	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	1–4
116	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	4.0	4.5	15.9	5	2–6

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
117	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	5.0	19.6	5	3–6
118	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	1–5
119	Engelmann oak	*Quercus engelmannii*	1	0.13	x	0.13	4.0	2.0	3.1	3	3–5
120	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	5.0	19.6	5	1
121	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	6.0	5.0	19.6	5	2–6
122	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	5.5	2.5	4.9	4	1–2
123	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	5.0	2.5	4.9	5	3–4
124	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	4.0	1.5	1.8	3	1–2
125	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	4–6
126	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	5.5	23.8	5	5–7
127	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.0	6.0	28.3	5	3–6
128	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	9.0	5.0	19.6	5	3–5
129	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	3.0	7.1	5	1–2
130	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.10	0.35	5.0	3.5	9.6	5	1–4
131	Engelmann oak	*Quercus engelmannii*	1	0.13	x	0.13	3.0	2.0	3.1	5	1–4
132	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	8.0	4.5	15.9	5	2–5
133	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	5.0	19.6	5	3–7
134	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	8.0	4.0	12.6	5	4–7
135	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.5	0.1	0.0	5	1
136	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	2.0	3.1	5	3–6
137	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	6.0	10.0	78.5	5	2–4
138	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	2.5	4.9	5	1–5
139	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.0	7.1	5	5–9
140	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	4.0	1.0	0.8	5	3–4
141	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	8.0	4.0	12.6	5	3–7
142	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	6.5	4.5	15.9	5	4–6
143	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	3.0	2.0	3.1	3	4–5
144	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	2.5	1.0	0.8	5	3–4
145	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	6.0	2.5	4.9	5	3–12

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
146	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	1–4
147	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.8	0.1	0.0	5	0–1
148	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	5.5	3.0	7.1	5	3–6
149	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.0	7.1	5	3–7
150	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	5.5	4.0	12.6	5	4–8
151	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	1.0	0.8	0.4	5	1–2
152	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	4.5	15.9	5	3–5
153	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	3–6
154	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.5	0.1	0.0	5	0
155	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	2.5	1.0	0.8	5	1–2
156	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	8.0	5.0	19.6	5	3–6
157	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	6.0	28.3	5	2–7
158	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	2.0	3.1	5	4–7
159	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	5.0	19.6	5	3–7
160	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	6.0	28.3	5	4–6
161	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	4.0	12.6	5	1–5
162	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	8.0	6.0	28.3	5	2–5
163	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.0	7.1	5	4–7
164	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	4–6
165	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	6.0	28.3	5	2–4
166	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	3.5	9.6	5	2–5
167	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	4.5	3.0	7.1	5	2–3
168	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.0	5.0	19.6	5	5
169	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.1	0.1	0.0	5	0
170	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	4–8
171	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	7.0	3.0	7.1	5	4–6
172	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.5	9.6	5	2–5
173	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.25	0.75	9.0	5.0	19.6	5	3–6
174	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	2.5	4.9	5	5–7

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
175	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	5.0	3.0	7.1	5	3–4
176	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	2.5	4.9	5	5–7
177	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.00	x	1.00	10.0	7.0	38.5	5	4–7
178	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	4.0	12.6	5	3–6
179	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	4–8
180	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.20	x	0.20	2.0	1.0	0.8	5	12–14
181	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	3.5	9.6	5	4–8
182	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	5.0	19.6	5	4–5
183	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	6.0	28.3	5	2–5
184	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.3	0.1	0.0	5	0
185	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	3.0	7.1	5	2–5
186	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.20	x	0.20	4.0	1.5	1.8	5	6–9
187	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	3.0	7.1	5	8–10
188	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.0	3.0	7.1	5	4–6
189	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.00	x	1.00	7.5	5.0	19.6	5	2–5
190	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.50	x	1.50	6.0	3.0	7.1	5	4–7
191	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	4.0	12.6	5	2–6
192	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.20	x	0.20	5.0	1.5	1.8	5	4–7
193	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.20	x	0.20	5.0	1.5	1.8	5	6–8
194	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	4.0	12.6	5	4–7
195	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	2.0	3.1	5	1–7
196	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.20	x	0.20	6.5	3.0	7.1	5	2–5
197	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	4.0	12.6	5	4–7
198	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	1.5	1.8	5	3–6
199	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	4.5	2.5	4.9	5	1–4
200	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	3.5	9.6	5	4–6
201	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	9.0	63.6	5	2–4
202	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.75	0.50	1.25	8.0	8.0	50.3	5	4–9
203	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	3.0	7.1	5	2–6

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
204	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	7.0	38.5	5	4–9
205	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	3.5	9.6	5	1–3
206	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.00	x	1.00	9.0	6.0	28.3	5	1–4
207	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.0	5.0	19.6	5	2–4
208	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	5.0	19.6	5	2–7
209	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	1.5	1.8	5	5–9
210	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	4.5	6.0	28.3	4	1–3
211	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	8.0	6.0	28.3	5	3–6
212	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	8.0	5.0	19.6	5	1–2
213	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	4.0	12.6	4	4–5
214	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	5.0	19.6	5	2–5
215	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	3–6
216	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	9.0	6.0	28.3	5	1–3
217	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.0	7.1	5	4–6
218	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	6–8
219	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	4.0	12.6	5	8–12
220	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	3.0	7.1	5	4–10
221	coast live oak	*Quercus agrifolia* var. *agrifolia*	3	0.50	0.50	1.00	8.0	10.0	78.5	5	2–6
222	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.0	6.0	28.3	5	3–6
223	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	3.5	9.6	5	2–6
224	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	9.0	6.0	28.3	5	3–5
225	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.20	x	0.20	3.5	1.0	0.8	5	5–6
226	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	1.0	0.8	5	2–8
227	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	3.0	7.1	5	4–6
228	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	3.5	1.5	1.8	5	2–4
229	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	2.0	3.1	5	2–4
230	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	8.0	3.5	9.6	4	1–2
231	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	4.5	2.0	3.1	5	4–7
232	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	1.0	0.8	5	1–3

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
233	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.5	9.6	5	2–5
234	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	1.0	0.8	5	3–6
235	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	3.5	9.6	5	5–8
236	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	4–9
237	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	8.0	50.3	5	2–5
238	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	10.0	8.0	50.3	5	2–5
239	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.50	1.00	8.0	6.0	28.3	5	3–6
240	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	9.0	7.0	38.5	4	5–9
241	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	3.5	2.0	3.1	5	5–6
242	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	3.0	7.1	5	4–7
243	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.5	1.0	0.8	5	4–5
244	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	7.0	2.0	3.1	5	3–6
245	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.0	7.1	5	8–10
246	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	6.0	4.0	12.6	5	4–7
247	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	2.5	0.3	0.0	5	2–4
248	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	5–9
249	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	4.0	2.0	3.1	5	3–7
250	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	4.0	12.6	5	4–6
251	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.5	1.0	0.8	5	3–5
252	No Plant										
253	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	4.5	15.9	5	2–5
254	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	7.0	38.5	5	2–4
255	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.5	15.9	5	3–8
256	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	3.5	9.6	5	1–3
257	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	4.0	12.6	5	5–8
258	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	7.0	38.5	5	1–2
259	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.5	5.0	19.6	5	2–7
260	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	3.0	7.1	5	3–6
261	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.0	7.1	5	5–7

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
262	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	3–7
263	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.5	5.0	19.6	5	5–9
264	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	5.5	23.8	5	5–7
265	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	1–3
266	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.0	1.0	0.8	5	4–6
267	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	8.0	5.5	23.8	5	5–8
268	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	5.0	19.6	5	4–7
269	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	6.0	28.3	5	3–5
270	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	5.0	19.6	5	2–5
271	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	8.0	50.3	5	4–10
272	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	5.0	19.6	5	3–4
273	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	4.5	2.0	3.1	5	4–6
274	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.5	1.0	0.8	5	3–7
275	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	2–7
276	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	3–5
277	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.5	4.0	12.6	5	4–7
278	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.0	7.1	5	4–6
279	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	1.5	1.8	5	4–6
280	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.5	1.0	0.8	5	3–7
281	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	5–6
282	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	2.5	4.9	5	5–7
283	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	1.5	1.8	5	1–3
284	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	5.0	19.6	5	1–4
285	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	3.0	7.1	5	3–7
286	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	10.0	7.0	38.5	5	6–10
287	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	2–8
288	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	6.0	28.3	5	2–5
289	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.5	4.0	12.6	5	2–7
290	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	7.0	38.5	5	2–6

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
291	No Plant										
292	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	5.0	19.6	5	2–5
293	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	1.0	0.5	0.2	5	1
294	Engelmann oak	*Quercus engelmannii*	1	0.10	x	0.10	5.0	1.5	1.8	5	6–8
295	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	4.0	12.6	5	1–6
296	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	4–7
297	coast live oak	*Quercus agrifolia* var. *agrifolia*	5	0.10	0.10	0.20	3.0	5.0	19.6	3	1–3
298	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	4.0	12.6	5	2–4
299	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.0	7.0	38.5	5	3–5
300	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	5.5	2.0	3.1	5	5–10
301	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	4.5	15.9	5	1–5
302	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.0	7.1	5	4–7
303	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	3.5	2.0	3.1	5	1–3
304	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	5.5	3.5	9.6	5	2–5
305	Engelmann oak	*Quercus engelmannii*	1	0.10	x	0.10	3.5	1.0	0.8	5	3–4
306	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	5.0	19.6	5	2–6
307	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	3.0	7.1	5	2–5
308	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	2–3
309	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	6.0	28.3	5	4–7
310	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	4.0	12.6	5	3–5
311	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	6.0	28.3	5	4–6
312	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	5.0	19.6	5	2–5
313	Engelmann oak	*Quercus engelmannii*	1	0.10	x	0.10	2.5	1.5	1.8	5	2–3
314	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	3.0	7.1	5	3–6
315	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.0	7.1	5	2–5
316	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	4.0	12.6	5	3–6
317	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	3.5	9.6	5	3–6
318	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.3	0.1	0.0	4	0
319	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	3–7

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
320	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	6.0	28.3	5	3–6
321	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	3.5	9.6	5	4–7
322	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	2.0	3.1	5	4–6
323	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	2.5	4.9	5	2–4
324	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.5	0.1	0.0	5	0
325	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	11.0	95.0	5	3–6
326	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	5.0	19.6	5	3–6
327	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	3.0	2.0	3.1	5	4–7
328	No Plant										
329	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.0	1.0	0.8	5	1–3
330	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	4–12
331	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	8.0	5.0	19.6	5	6–10
332	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	1.0	0.8	5	2–5
333	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	6.0	28.3	5	4–7
334	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	10.0	5.0	19.6	5	4–6
335	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	6.0	28.3	5	2–3
336	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.0	4.0	12.6	5	1–5
337	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	2.5	0.8	0.4	5	1–3
338	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	5.0	7.0	38.5	5	3–9
339	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	2.5	4.9	5	2–4
340	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	4.0	12.6	5	3–6
341	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	1.0	0.5	0.2	5	1
342	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	8.0	6.0	28.3	5	3–8
343	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	7.5	5.0	19.6	5	2–5
344	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	3.0	1.5	1.8	5	4–6
345	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	3.5	9.6	5	3-7
346	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	5.0	1.0	0.8	5	5–6
347	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.75	x	0.75	7.0	5.0	19.6	5	6–8
348	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.13	x	0.13	2.5	3.0	7.1	5	0–1

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
349	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.50	0.50	1.00	8.0	7.0	38.5	5	3–6
350	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.10	x	0.10	1.5	6.0	28.3	5	0
351	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	6.0	5.0	19.6	5	2–5
352	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.25	x	0.25	5.0	4.0	12.6	5	6–8
353	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.25	x	0.25	4.0	4.0	12.6	5	4–8
354	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.13	x	0.13	2.0	1.5	1.8	5	3–4
355	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.13	0.38	5.0	4.0	12.6	5	4–7
356	San Gabriel oak	*Quercus durata* var. *gabrielensis*	4	0.10	0.10	0.20	1.5	2.0	3.1	5	0–3
357	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	8.0	50.3	5	5–7
358	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	3.5	2.5	4.9	5	0–1
359	No Plant										
360	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.10	x	0.10	1.5	0.5	0.2	5	3–5
361	No Plant										
362	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.13	x	0.13	1.5	0.8	0.4	5	3–4
363	Engelmann oak	*Quercus engelmannii*	1	0.10	x	0.10	0.5	0.5	0.2	5	3
364	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	1.5	0.8	0.4	5	0
365	Engelmann oak	*Quercus engelmannii*	2	0.10	0.10	0.20	1.0	1.5	1.8	4	2
366	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	2.0	1.5	1.8	5	3–4
367	Engelmann oak	*Quercus engelmannii*	1	0.13	x	0.13	3.5	3.0	7.1	5	4–6
368	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	4.0	2.5	4.9	3	2
369	Engelmann oak	*Quercus engelmannii*	2	0.25	0.13	0.38	4.0	3.0	7.1	5	3–4
370	Engelmann oak	*Quercus engelmannii*	1	0.25	x	0.25	3.0	2.0	3.1	3	4
371	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	4.0	2.5	4.9	5	3–5
372	Engelmann oak	*Quercus engelmannii*	1	0.13	x	0.13	2.5	1.0	0.8	5	2–3
373	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	0.3	0.1	0.0	5	0
374	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	1.00	x	1.00	10.0	8.0	50.3	4	4–8
375	San Gabriel oak	*Quercus durata* var. *gabrielensis*	5	0.10	0.10	0.20	1.5	1.5	1.8	5	1–3
376	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	3.0	7.1	5	5–8
377	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.75	0.50	1.25	8.0	7.0	38.5	4	6–8

TABLE E-1
OAK TREE ASSESSMENT DATA (APRIL–MAY 2016)

Tree #	Tree Species[a]		# Main Trunks	Diameter			Height (ft)	Canopy Diameter (ft)	Canopy Area (sf)	Health Rating	Shoot Elongation (in)
	Common Name	Scientific Name		1st Trunk	2nd Trunk	Sum of Two Trunks					
378	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.13	x	0.13	4.5	1.0	0.8	5	5–6
379	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	x	0.25	4.5	4.0	12.6	5	2–7
380	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.5	4.0	12.6	5	2–6
381	No Plant										
382	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	8.0	5.5	23.8	5	1–7
383	San Gabriel oak	*Quercus durata* var. *gabrielensis*	3	0.10	0.10	0.20	2.0	1.5	1.8	5	6
384	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.50	x	0.50	9.0	5.0	19.6	5	1–7
385	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.10	x	0.10	1.0	1.0	0.8	5	0
386	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	4.5	15.9	5	3–6
387	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	3.0	1.0	0.8	5	6–7
388	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.13	x	0.13	3.5	1.0	0.8	5	3–5
389	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	7.0	4.0	12.6	5	3–4
390	coast live oak	*Quercus agrifolia* var. *agrifolia*	3	0.25	0.25	0.50	10.0	6.0	28.3	5	3–5
391	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.10	x	0.10	2.5	1.0	0.8	5	4–5
392	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.10	x	0.10	2.0	0.5	0.2	5	5
393	Engelmann oak	*Quercus engelmannii*	2	0.13	0.10	0.23	2.0	1.5	1.8	5	3–4
394	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	7.0	8.0	50.3	5	2–8
395	San Gabriel oak	*Quercus durata* var. *gabrielensis*	5	0.10	0.10	0.20	1.0	1.0	0.8	5	1–3
396	coast live oak	*Quercus agrifolia* var. *agrifolia*	2	0.25	0.25	0.50	6.0	5.0	19.6	5	4–7
397	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	6.5	2.5	4.9	4	2–4
398	coast live oak	*Quercus agrifolia* var. *agrifolia*	1	0.25	x	0.25	5.0	5.0	19.6	5	4–5
399	San Gabriel oak	*Quercus durata* var. *gabrielensis*	1	0.10	x	0.10	2.0	1.0	0.8	4	2–3
		Total				**143.1**			**5,479.5**		
		Mean				**0.36**	**5.48**	**3.67**	**13.98**	**4.89**	

ft: feet; in: inches; sf: square feet; diameter is measured at 4.5 feet above ground level (or at a lower, representative height); height and canopy diameter values are based on visual estimates.

a The quantities of each living oak species on the site (392 total) are as follows: *Quercus agrifolia* var. *agrifolia*: 348; *Quercus engelmannii*: 21; *Quercus durata* var. *gabrielensis*: 23.

ATTACHMENT F

NATIVE PLANT COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

TABLE F-1
NATIVE PLANT COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (135 Native Plant Species)		Special Status	Wetland Rank
Scientific Name	**Common Name**		
LYCOPHYTES			
SELAGINELLACEAE–SPIKE-MOSS FAMILY			
Selaginella bigelovii	bushy spike-moss		
FERNS			
DRYOPTERIDACEAE–WOOD FERN FAMILY			
Dryopteris arguta	coastal woodfern		
POLYPODIACEAE–POLYPODY FAMILY			
Polypodium californicum	California polypody		
PTERIDACEAE–BRAKE FAMILY			
Aspidotis californica	California lace fern		
Pellaea andromedifolia	coffee cliff-brake		
Pellaea mucronata var. *mucronata*	bird's-foot cliff-brake		
CERATOPHYLLALES			
CERATOPHYLLACEAE–HORNWORT FAMILY			
Ceratophyllum demersum	vascular hornwort		OBL
EUDICOTS			
ADOXACEAE–MUSKROOT FAMILY			
Sambucus nigra ssp. *caerulea*	blue elderberry		FAC
ANACARDIACEAE–SUMAC FAMILY			
Malosma laurina	laurel sumac		
Rhus aromatica	skunk bush		FACU
Rhus ovata	sugar bush		
Toxicodendron diversilobum	western poison oak		FACU
APOCYNACEAE–DOGBANE FAMILY			
Asclepias californica	California milkweed		
ASTERACEAE–SUNFLOWER FAMILY			
Acourtia microcephala	sacapellote		
Ambrosia acanthicarpa	annual bur-sage		
Artemisia californica	California sagebrush		
Artemisia douglasiana	Douglas' sagebrush		FAC
Baccharis pilularis ssp. *consanguinea*	coyote brush		
Baccharis salicifolia ssp. *salicifolia*	mule fat		FAC
Brickellia californica	California brickellbush		FACU
Chaenactis glabriuscula var. *glabriuscula*	yellow pincushion		
Cirsium occidentale	cobwebby thistle		
Corethrogyne filaginifolia	common sand aster		
Deinandra fasciculata	fascicled tarplant		FACU
Encelia californica	California encelia		
Ericameria nauseosa	rubber rabbitbrush		
Ericameria parishii var. *parishii*	Parish's goldenbush		
Erigeron canadensis	horseweed		FACU
Eriophyllum confertiflorum var. *confertiflorum*	golden woolly sunflower		
Hazardia squarrosa var. *grindelioides*	southern saw toothed goldenbush		

TABLE F-1
NATIVE PLANT COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (135 Native Plant Species)		Special Status	Wetland Rank
Scientific Name	**Common Name**		
Helianthus annuus	annual sunflower		FACU
Heterotheca grandiflora	telegraph weed		
Heterotheca sessiliflora ssp. *fastigiata*	upright sessileflower false goldenaster		
Lasthenia gracilis	common goldfields		
Lepidospartum squamatum	California scale-broom		FACU
Logfia filatinoides	California cottonrose		
Malacothrix saxatilis	cliff desert dandelion		
Pseudognaphalium biolettii	bi-color everlasting		
Pseudognaphalium californicum	California everlasting		
Pseudognaphalium canescens	hairy everlasting		FACU
Pseudognaphalium stramineum	cotton batting everlasting		FAC
Senecio flaccidus var. *douglasii*	Douglas' threadleaf ragwort		
BORAGINACEAE–BORAGE FAMILY			
Cryptantha intermedia var. *intermedia*	common cryptantha		
Eriodictyon crassifolium	thickleaf yerba santa		
Eriodictyon parryi	poodle-dog bush		
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	spotted hideseed		
Phacelia cicutaria	caterpillar phacelia		
Phacelia distans	wild heliotrope phacelia		OBL
Phacelia minor	wild Canterbury bells		
Phacelia ramosissima	branching phacelia		FACU
CACTACEAE–CACTUS FAMILY			
Opuntia ×vaseyi	Vasey's prickly pear		
Opuntia littoralis	coastal prickly pear		
CAPRIFOLIACEAE–HONEYSUCKLE FAMILY			
Lonicera subspicata var. *denudata*	Johnston's honeysuckle		
CARYOPHYLLACEAE–PINK FAMILY			
Silene laciniata	cardinal catchfly		
CONVOLVULACEAE–MORNING-GLORY FAMILY			
Calystegia macrostegia	coast morning-glory		
CRASSULACEAE–STONECROP FAMILY			
Dudleya lanceolata	lance-leaved dudleya		
CUCURBITACEAE–GOURD FAMILY			
Marah macrocarpa	large fruit wild cucumber		
EUPHORBIACEAE–SPURGE FAMILY			
Euphorbia polycarpa	many seed spurge		
FABACEAE–LEGUME FAMILY			
Acmispon brachycarpus	short fruit lotus		
Acmispon glaber var. *glaber*	deerweed		
Acmispon maritimus var. *maritimus*	coastal lotus		
Acmispon strigosus	strigose lotus		
Lupinus concinnus	bajada lupine		
Lupinus hirsutissimus	stinging lupine		

TABLE F-1
NATIVE PLANT COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (135 Native Plant Species)		Special Status	Wetland Rank
Scientific Name	**Common Name**		
Lupinus longifolius	long leaf lupine		
Lupinus succulentus	arroyo lupine		
Lupinus truncatus	cut leaf lupine		
FAGACEAE–OAK FAMILY			
Quercus agrifolia var. *agrifolia*	coast live oak		
Quercus chrysolepis	canyon live oak		
Quercus durata var. *gabrielensis*	San Gabriel oak	CRPR 4.2	
Quercus engelmannii	Engelmann oak	CRPR 4.2	
GROSSULARIACEAE–GOOSEBERRY FAMILY			
Ribes aureum var. *gracillimum*	little graceful golden currant		FAC
Ribes californicum	hillside gooseberry		
LAMIACEAE–MINT FAMILY			
Salvia apiana	white sage		
Salvia columbariae	chia		
Salvia mellifera	black sage		
Stachys bullata	California hedgenettle		
LOASACEAE–BLAZING STAR FAMILY			
Mentzelia laevicaulis	smooth stem blazing star		
LYTHRACEAE–LOOSESTRIFE FAMILY			
Ammannia coccinea	valley redstem		OBL
NYCTAGINACEAE–FOUR O'CLOCK FAMILY			
Mirabilis laevis var. *crassifolia*	coastal wishbone plant		
ONAGRACEAE–EVENING PRIMROSE FAMILY			
Camissoniopsis hirtella	hairy suncup		
Clarkia dudleyana	Dudley's clarkia		
Clarkia purpurea ssp. *quadrivulnera*	purple clarkia		
Epilobium brachycarpum	tall annual willowherb		
Epilobium canum ssp. *canum*	California fuchsia		
Epilobium ciliatum ssp. *ciliatum*	fringed willowherb		FACW
Eulobus californicus	false-mustard		
Oenothera elata ssp. *hirsutissima*	great marsh evening primrose		FACW
OXALIDACEAE–OXALIS FAMILY			
Oxalis californica	California wood-sorrel		
PAPAVERACEAE–POPPY FAMILY			
Eschscholzia californica	California poppy		
PHRYMACEAE–LOPSEED FAMILY			
Mimulus aurantiacus var. *pubescens*	hairy bush monkeyflower		FACU
Mimulus cardinalis	scarlet monkeyflower		FACW
Mimulus guttatus	seep monkeyflower		OBL
PLANTAGINACEAE–PLANTAIN FAMILY			
Keckiella cordifolia	heartleaf bush penstemon		
Penstemon spectabilis var. *spectabilis*	showy beardtongue		
Penstemon spectabilis var. *subviscosus*	glandular showy beardtongue		

TABLE F-1
NATIVE PLANT COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (135 Native Plant Species)		Special Status	Wetland Rank
Scientific Name	**Common Name**		
PLATANACEAE–SYCAMORE FAMILY			
Platanus racemosa	western sycamore		FAC
POLEMONIACEAE–PHLOX FAMILY			
Linanthus californicus	prickly phlox		
POLYGONACEAE–BUCKWHEAT FAMILY			
Eriogonum elongatum var. *elongatum*	longstem buckwheat		
Eriogonum fasciculatum var. *foliolosum*	leafy California buckwheat		
Persicaria lapathifolia	willow smartweed		FACW
RANUNCULACEAE–BUTTERCUP FAMILY			
Clematis lasiantha	chaparral virgin's bower		
Delphinium cardinale	scarlet larkspur		
RHAMNACEAE–BUCKTHORN FAMILY			
Ceanothus leucodermis	whitebark ceanothus		
Ceanothus oliganthus	hairy ceanothus		
Frangula californica ssp. *californica*	California coffeeberry		
Rhamnus ilicifolia	hollyleaf redberry		
ROSACEAE–ROSE FAMILY			
Cercocarpus betuloides var. *betuloides*	birch-leaf mountain mahogany		
Heteromeles arbutifolia	toyon		
Prunus ilicifolia ssp. *ilicifolia*	holly leaf cherry		
Rubus ursinus	California blackberry		FAC
RUBIACEAE–COFFEE FAMILY			
Galium angustifolium ssp. *angustifolium*	narrow leaved bedstraw		
Galium aparine	common bedstraw		FACU
SALICACEAE–WILLOW FAMILY			
Populus fremontii ssp. *fremontii*	Fremont cottonwood		FAC
Salix exigua var. *hindsiana*	Hind's willow		FACW
Salix gooddingii	Goodding's black willow		FACW
Salix laevigata	red willow		FACW
Salix lasiolepis	arroyo willow		FACW
SOLANACEAE–NIGHTSHADE FAMILY			
Datura wrightii	Wright's jimsonweed		
Solanum americanum	white nightshade		FACU
Solanum douglasii	Douglas' nightshade		FAC
URTICACEAE–NETTLE FAMILY			
Urtica dioica ssp. *holosericea*	hoary stinging nettle		FAC
VERBENACEAE–VERVAIN FAMILY			
Verbena lasiostachys	western vervain		FAC
MONOCOTS			
AGAVACEAE–AGAVE FAMILY			
Hesperoyucca whipplei	chaparral yucca		
CYPERACEAE–SEDGE FAMILY			
Cyperus eragrostis	tall flatsedge		FACW

TABLE F-1
NATIVE PLANT COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (135 Native Plant Species)		Special Status	Wetland Rank
Scientific Name	**Common Name**		
JUNCACEAE–RUSH FAMILY			
Juncus rugulosus	wrinkled rush		OBL
Juncus textilis	basket rush		FACW
Juncus xiphioides	iris leaved rush		OBL
POACEAE–GRASS FAMILY			
Elymus condensatus	giant wildrye		FACU
Eragrostis mexicana ssp. *virescens*	Chilean love grass		FACU
Festuca microstachys	Pacific fescue		
Leptochloa fusca	bearded sprangletop		
Melica imperfecta	coast range onion grass		
Stipa coronata	crested needle grass		
Stipa lepida	foothill needle grass		
TYPHACEAE–CATTAIL FAMILY			
Typha domingensis	southern cattail		OBL

LEGEND:

Special Status:

Federal (USFWS):
FE = Endangered
FT = Threatened

State (CDFW):
SE = Endangered
ST = Threatened
SR = Rare

CRPR – California Rare Plant Rank

1A. Presumed extirpated in California and either rare or extinct elsewhere
1B. Rare, Threatened, or Endangered in California and elsewhere
2A. Presumed extirpated in California, but more common elsewhere
2B. Rare, Threatened, or Endangered in California, but more common elsewhere
3. Plants about which we need more information - a review list
4. Plants of limited distribution - a watch list

Threat Code Extensions

None Plants lacking any threat information
.1 Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat)
.2 Moderately threatened in California (20–80% of occurrences threatened/moderate degree and immediacy of threat)
.3 Not very threatened in California (<20% of occurrences threatened/low degree and immediacy of threat or no current threats known)Special status designations updated on 12/21/2014

ATTACHMENT G

WILDLIFE COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

TABLE G-1
WILDLIFE COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (Vertebrates): 95 Native Species (Cumulative)		Special Status	2013	2014	2015	2016	Cumulative (All Species)
AMPHIBIANS							
***AMPHIBIA*–AMPHIBIANS**							
HYLIDAE–TREEFROGS							
Pseudacris hypochondriaca	Baja California treefrog				X	X	X
***LEPIDOSAURIA*–LIZARDS AND SNAKES**							
PHRYNOSOMATIDAE–SPINY LIZARDS							
Sceloporus occidentalis	western fence lizard		X	X	X	X	X
Uta stansburiana	common side-blotched lizard		X	X	X	X	X
TEIIDAE–WHIPTAIL LIZARDS							
Aspidoscelis tigris	tiger whiptail		X	X	X	X	X
COLUBRIDAE–COLUBRID SNAKES							
Masticophis lateralis	California striped racer			X	X	X	X
Mastocophis flagellum	red coachwhip					X	X
Pituophis catenifer	gophersnake					X	X
VIPERIDAE–VIPERS AND PITVIPERS							
Crotalus oreganus	western rattlesnake				X	X	X
BIRDS							
***AVES*–BIRDS**							
ANATIDAE–SWAN, GOOSE, AND DUCK FAMILY							
Branta canadensis	Canada goose				X		X
ODONTOPHORIDAE–NEW WORLD QUAIL FAMILY							
Callipepla californica	California quail			X	X		X
ARDEIDAE–HERONS							
Ardea herodias	great blue heron				X		X
CATHARTIDAE–NEW WORLD VULTURES							
Cathartes aura	turkey vulture			X	X	X	X
ACCIPITRIDAE–HAWKS, KITES, EAGLES, AND ALLIES							
Accipiter cooperii	Cooper's hawk		X	X	X	X	X
Buteo jamaicensis	red-tailed hawk		X	X	X	X	X

TABLE G-1
WILDLIFE COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (Vertebrates): 95 Native Species (Cumulative)		Special Status	2013	2014	2015	2016	Cumulative (All Species)
CHARADRIIDAE–PLOVERS							
Charadrius vociferus	killdeer		X	X[b]	X	X	X
COLUMBIDAE–PIGEONS AND DOVES							
Patagoienas fasciata	band-tailed pigeon				X	X	X
Streptopelia decaocto[a]	Eurasian collared-dove				X		X
Zenaida macroura	mourning dove		X	X	X	X	X
TYTONIDAE–BARN OWLS							
Tyto alba	barn owl					X	X
APODIDAE–SWIFTS							
Aeronautes saxatalis	white-throated swift			X	X	X	X
TROCHILIDAE–HUMMINGBIRDS							
Archilochus alexandri	black-chinned hummingbird				X		X
Calypte anna	Anna's hummingbird		X	X	X	X	X
Calypte costae	Costa's hummingbird				X		X
Selasphorus rufus	rufous hummingbird				X	X	X
Selasphorus sasin	Allen's hummingbird		X	X	X	X	X
Selasphorus sp.	Allen's/rufous hummingbird			X	X	X	X
PICIDAE–WOODPECKERS							
Melanerpes lewis	Lewis's woodpecker		X	X			X
Melanerpes formicivorus	acorn woodpecker			X[b]	X[b]	X[b]	X
Picoides nuttallii	Nuttall's woodpecker				X	X	X
Picoides pubescens	downy woodpecker				X		X
Colaptes auratus	northern flicker			X	X	X	X
FALCONIDAE–FALCONS							
Falco sparverius	American kestrel			X	X	X	X
Falco columbarius	merlin			X			X
PSITTACIDAE–PARROTS							
Amazona viridigenalis[a]	red-crowned parrot				X	X	X

TABLE G-1
WILDLIFE COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (Vertebrates): 95 Native Species (Cumulative)		Special Status	2013	2014	2015	2016	Cumulative (All Species)
TYRANNIDAE–TYRANT FLYCATCHERS							
Contopus sordidulus	western wood-pewee				X		X
Empidonax traillii	willow flycatcher				X		X
Empidonax difficilis	Pacific-slope flycatcher				X		X
Sayornis nigricans	black phoebe		X	X	X	X	X
Sayornis saya	Say's phoebe			X	X		X
Myiarchus cinerascens	ash-throated flycatcher			X	X	X	X
Tyrannus vociferans	Cassin's kingbird			X	X	X	X
Tyrannus verticalis	western kingbird			X	X		X
VIREONIDAE–VIREOS							
Vireo gilvus	warbling vireo				X		X
CORVIDAE–JAYS AND CROWS							
Aphelocoma californica	western scrub-jay		X	X	X	X	X
Corvus brachyrhynchos	American crow				X		X
Corvus corax	common raven		X	X	X	X	X
HIRUNDINIDAE–SWALLOWS							
Stelgidopteryx serripennis	northern rough-winged swallow			X	X	X	X
Hirundo rustica	barn swallow				X	X	X
PARIDAE–TITMICE							
Baeolophus inornatus	oak titmouse					X	X
AEGITHALIDAE–BUSHTITS							
Psaltriparus minimus	bushtit		X	X	X	X[b]	X
TROGLODYTIDAE–WRENS							
Salpinctes obsoletus	rock wren			X	X	X	X
Catherpes mexicanus	canyon wren			X			X
Troglodytes aedon	house wren		X	X	X	X	X
Thryomanes bewickii	Bewick's wren		X	X	X	X	X
POLIOPTILIDAE–GNATCATCHERS AND GNATWRENS							
Polioptila caerulea	blue-gray gnatcatcher			X			X

TABLE G-1
WILDLIFE COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (Vertebrates): 95 Native Species (Cumulative)		Special Status	2013	2014	2015	2016	Cumulative (All Species)
REGULIDAE–KINGLETS							
Regulus calendula	ruby-crowned kinglet			X	X		X
SYLVIIDAE–SYLVIID WARBLERS							
Chamaea fasciata	wrentit			X	X	X	X
TURDIDAE–THRUSHES AND ROBINS							
Sialia mexicana	western bluebird			X	X	X	X
Catharus guttatus	hermit thrush				X		X
Turdus migratorius	American robin			X	X	X	X
MIMIDAE–THRASHERS							
Mimus polyglottos	northern mockingbird		X	X	X	X	X
STURNIDAE–STARLINGS							
Sturnus vulgaris[a]	European starling				X		X
MOTACILLIDAE–PIPITS							
Anthus rubescens	American pipit		X				X
BOMBYCILLIDAE–WAXWINGS							
Bombycilla cedrorum	cedar waxwing				X	X	X
PTILOGONATIDAE–SILKY-FLYCATCHERS							
Phainopepla nitens	phainopepla			X		X	X
PARULIDAE–WOOD-WARBLERS							
Oreothlypis celata	orange-crowned warbler				X	X	X
Oreothlypis ruficapilla	Nashville warbler					X	X
Geothlypis tolmiei	MacGillivray's warbler				X		X
Geothlypis trichas	common yellowthroat		X	X[b]			X
Setophaga petechia	yellow warbler				X		X
Setophaga coronata	yellow-rumped warbler		X	X	X	X	X
Setophaga occidentalis	hermit warbler				X		X
Cardellina pusilla	Wilson's warbler				X	X	X

TABLE G-1
WILDLIFE COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (Vertebrates): 95 Native Species (Cumulative)		Special Status	2013	2014	2015	2016	Cumulative (All Species)
EMBERIZIDAE–SPARROWS							
Pipilo maculatus	spotted towhee		X	X	X	X	X
Aimophila ruficeps	rufous-crowned sparrow			X		X	X
Melozone crissalis	California towhee		X	X	X	X[b]	X
Chondestes grammacus	lark sparrow				X	X	X
Melospiza melodia	song sparrow		X	X	X	X	X
Melospiza lincolnii	Lincoln's sparrow			X		X	X
Zonotrichia leucophrys	white-crowned sparrow		X	X	X	X	X
Junco hyemalis	dark-eyed junco				X	X	X
CARDINALIDAE–CARDINALS, GROSBEAKS, AND ALLIES							
Piranga ludoviciana	western tanager				X		X
Pheucticus melanocephalus	black-headed grosbeak			X			X
Passerina caerulea	blue grosbeak				X		X
Passerina amoena	lazuli bunting				X		X
ICTERIDAE–BLACKBIRDS							
Sturnella neglecta	western meadowlark			X			X
Molothrus ater[a]	brown-headed cowbird				X		X
Icterus cucullatus	hooded oriole			X	X	X	X
Icterus bullockii	Bullock's oriole			X	X	X	X
FRINGILLIDAE–FINCHES							
Carpodacus mexicanus	house finch		X	X	X	X	X
Carduelis pinus	pine siskin				X		X
Carduelis psaltria	lesser goldfinch		X	X	X	X	X
Carduelis lawrencei	Lawrence's goldfinch				X		X
Carduelis tristis	American goldfinch			X	X		X
PASSERIDAE–OLD WORLD SPARROWS							
Passer domesticus[a]	house sparrow				X		X
ESTRILDIDAE–WAXBILLS AND MANNIKINS							
Lonchura punctulata[a]	nutmeg mannikin		X	X			X

TABLE G-1
WILDLIFE COMPENDIUM (SEPTEMBER 2013 TO JUNE 2016)

Species (Vertebrates): 95 Native Species (Cumulative)		Special Status	2013	2014	2015	2016	Cumulative (All Species)
MAMMALS							
***MAMMALIA*–MAMMALS**							
SCIURIDAE–SQUIRRELS							
Otospermophilus beecheyi	California ground squirrel			X	X	X	X
CANIDAE–DOGS, WOLVES, FOXES							
Canis latrans	coyote				X	X	X
URSIDAE–BEARS							
*Ursus americanus**	black bear			X		X	X
MEPHITIDAE–SKUNKS							
Mephitis mephitis	striped skunk					X	X
CERVIDAE–DEER							
Odocoileus hemionus	southern mule deer		X	X	X	X	X
Total Vertebrate Species Observed			**27**	**56**	**79**	**63**	**101**

* Naturalized species.
[a] Non-Native species.
[b] Species observed nesting on the site.