HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
Suite 200
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

September 11, 2015 CSD-02.05

Ms. Jennifer Price
County of San Diego Parks and Recreation
5500 Overland Ave., Ste. 410
San Diego, CA. 92123

Subject: Final Annual Report for the Sycamore Canyon and Goodan Ranch Invasive Plant Removal and Habitat Restoration Project (Year 2 – Q4)

Dear Ms. Price:

This annual report represents the results of the final and second annual technical monitoring of the restoration activities at the Sycamore Canyon and Goodan Ranch Invasive Removal and Habitat Restoration Project (Project). Maintenance and monitoring was conducted in accordance with the habitat restoration and non-native plant removal guidelines provided in the Resource Management Plan (County of San Diego 2013) and Vegetation Management Plan (VMP; Dudek 2012).

Project Location and Description

The project is funded through a 2-year San Diego Association of Governments' (SANDAG) Transnet Environmental Mitigation Program (EMP) grant and is intended to remove and treat invasive, non-native plant species that are infesting habitat within the Sycamore Canyon and Goodan Ranch Preserve (Preserve). As a result of the 2003 Cedar Fire, the Preserve has become highly infested with a number of invasive plants listed by the California Invasive Plant Council (Cal-IPC). This project involves treating and removing the high and moderate priority invasive non-native plants as identified in the Preserve VMP and restoring native habitat communities. This work is intended to increase the utilization of the Preserve and adjacent open space properties by federally listed and Multiple Species Conservation Program (MSCP) covered wildlife species.

The Preserve is located within the central portion of the County of San Diego, to the east of Marine Corps Air Station (MCAS) Miramar, south of Scripps Poway Parkway, and west of State Route (SR-) 67, approximately 2 miles north of the City of Santee (Figure 1). The Preserve is located within the U.S. Geological Survey (USGS) 7.5 minute San Vicente Reservoir quadrangle,

Township 14 South, Range 1 West, Sections 21, 22, 26, 27, 28, 33, 34, 35, and Township 15 South, Range 1 West, Sections 2, 3, and 4. Specifically, the restoration areas (RAs) are located within Township 14 South, Range 1 West, Sections 22, 27, and 28 (Figure 2).

Identification of Restoration Areas

A kick-off meeting was held with representatives from HELIX Environmental Planning, Inc. (HELIX; includes HELIX Construction Group), County of San Diego Department of Agriculture Weights and Measures (AWM), and County of San Diego Department of Parks and Recreation (DPR) on October 17, 2013. At the meeting, DPR provided a site tour of the Preserve, and identified access roads and enhancement/ restoration sites. Recommendations were given by HELIX, HELIX Construction Group, and AWM regarding site access and general work feasibility for each of the proposed restoration sites.

Several potential restoration/enhancement sites were denoted as active or passive restoration sites in the VMP prepared by Dudek (2013), and ultimately 4 sites were chosen by the County to actively restore. Habitat in Restoration Areas RA-1 and RA-4 are targeted as upland habitat, and RA-5 is targeted as scrub oak chaparral/riparian habitat. RA-2 is located along the western edge of the Hagey Property (located in the northern portion of the Preserve), and was proposed for passive restoration; therefore, this site is not addressed in the monitoring memos/reports. In addition, RA-6 (located along the western edge of the Preserve) was ultimately not chosen to be restored by DPR and also was not addressed in the monitoring memos/reports. In consultation with DPR, a new restoration area, RA-7, was identified south of the SR-67 staging area for the Preserve, and was approved as a restoration area that will provide additional benefit to the Preserve. RA-7 had become recently disturbed due to its adjacency to the nearby staging area and from unauthorized bike trails. While RA-3 was originally proposed for restoration during this project, RA-7 is more accessible than RA-3, is of a similar acreage (RA-3 and RA-7 are both 0.91 acre), and upland habitat exists at both sites. After each restoration area was identified, the limits were staked, representative photo points were chosen, and avian point count locations were established with the aid of a GPS unit (Figures 3a-3d).

Work Completed

Installation and maintenance work completed between October 2013 and August 2015 is detailed in Table 1. Drought conditions in southern California postponed non-native plant removal and native seed installation at RA-1, 4, 5, and 7, and container plant installation activities at RA-5 until fall 2014 when winter rain was expected. Seed and container plant installation postponement improved plant establishment and seed germination success during drought conditions.

HELIX Construction Group began discing RA-5 on November 26, 2013. Rain was forecasted for November 28, and discing before a rain event is known to promote weed germination. Promoting weed germination at this time was expected to allow AWM enough time to fulfill a sufficient grow-kill cycle at this site for non-native plants prior to any planting/seeding.

Herbicide treatment using backpack sprayers and non-native plant removal during Years 1 and 2 was conducted by AWM within multiple portions of the Preserve (totaling 19 acres) beginning in 2014 (as detailed in Table 1). Non-native plants removed from restoration areas and those treated with herbicide are depicted in Figure 4.

Initial site preparation, container plant installation, and application of native seed mixes were performed by HELIX Construction Group and AWM within the Preserve restoration areas. HELIX removed dead non-native plant material from the restoration areas and disced RA-5 in October 2014 in preparation for planting and/or seeding. On November 11, 2014, HELIX installed 200 container plants throughout RA-5. However, on the December 22, 2014 monitoring visit, it was observed that only a total of 11 installed container plants remained within the restoration area due to herbivory. Between January 23 and 28, 2015, HECG installed 195 container plants with protective cages throughout RA-5 to replace the previously installed container plants that were subject to herbivory. Container plant installation was monitored by HELIX biologists Benjamin Rosenbaum and Amy Mattson, as well as an ASM archaeologist. HELIX watered the container plants at RA-5 in November 2014, and in January, February, May, June, and August 2015 using a water buffalo with a hose attachment. A list of installed container plants and seed are included as Attachment E.

Table 1
WORK COMPLETED

DATE	PERSONNEL	PURPOSE OF VISIT	WORK AREA
October 17, 2013	HELIX, AWM, DPR	Site visit kick off meeting	Sycamore Canyon Preserve
October 26, 2013	HELIX	Discing RA-5	RA-5
November 18, 2013	HELIX	Maintenance monitoring	RA-1, 4, 5, and 7
February 20-21, 2014	AWM	Herbicide Spraying	Ranger station going north east from hiking trail to creek and upstream 50 yards
March 13-18, 2014	AWM	Herbicide spraying	RA-5
March 14, 2014	HELIX	Maintenance monitoring	RA-1, 4, 5, and 7
April 1, 2014	AWM	Herbicide spraying, weed removal	Areas south and east of visitors center
April 3-10, 2014	AWM	Herbicide spraying, weed removal	East of equipment shed, south of the Olive Grove to Sycamore Canyon road
April 11, 2014	AWM	Herbicide spraying, weed removal	RA-5

Table 1 (cont.)
WORK COMPLETED

DATE	PERSONNEL	PURPOSE OF VISIT	WORK AREA
May 12, 2014	HELIX	Maintenance monitoring	RA-1, 4, 5, and 7
July 1, 2014	AWM	Herbicide spraying	Streambed north of visitor center and area behind the dam
September 11-12, 2014	AWM	Survey of herbicide treated areas	All areas treated with herbicide, Dry streambed west and south of visitor center
September 25, 2014	HELIX	Annual technical monitoring	RA-1, 4, 5, and 7
October 22, 2014	AWM	Herbicide treatment of non-native plants	Areas north and south of the Ranger's house
October 22-28, 2014	HELIX	Raked up dead plant material	RA-1, 4, 5, and 7
November 10-11, 2014	HELIX	Installation of 200 container plants	RA-5
November 25, 2014	HELIX	Seeded restoration areas; water container plants	RA-1, 4, 5, and 7
January 23-28, 2015	HELIX	Replacement and watering of 195 container plants	RA-5
February 10, 2015	HELIX	Watering of container plants	RA-5
February 12, 2015	AWM	Removed weeds by hand around container plants and south end of stream	RA-5
February 20, 2015	AWM	Herbicide treatment of weeds	RA-5, south end of stream, north and north east area near shed by office
March 23-25, 2015	AWM	Herbicide treatment of weeds	400' radius around equipment storage; East, west, and south of dam, south of creek 100 yards
March 30, 2015	AWM	Herbicide treatment of weeds	East entrance to .7 miles into the park
April 29-30, 2015	AWM	Herbicide treatment of weeds	Multiple areas throughout preserve
May 1, 2015	AWM	Herbicide treatment of weeds	3-4' off the trail on Cardiac hill
May 11, 2015	AWM	Herbicide treatment of weeds	West and north of RA-5

Table 1 (cont.) **WORK COMPLETED**			
DATE	**PERSONNEL**	**PURPOSE OF VISIT**	**WORK AREA**
May 13, 2015	HELIX	Watering of container plants	RA-5
June 16-17, 2015	HELIX	Watering of container plants	RA-5
July 13, 2015	AWM	Manual removal of weeds	178 yards north of small white bridge and on the eastern side of the road
July 15-17, 2015	AWM	Manual removal of weeds	South and east of small white bridge
July 28-29, 2015	AWM	Manual removal of weeds	RA-5
August 3-5, 2015	AWM	Manual removal of weeds	RA-5
August 19-21, 2015	AWM	Manual removal of weeds	Northeast and southeast of RA-4
August 19-20, 2015	HELIX	Watering of container plants	RA-5
August 24-26, 2015	AWM	Manual removal of weeds	RA-4, northeast and east of RA-4
August 27, 2015	HELIX	Installation of native seed	RA-1, 4, and 7
August 28, 2015	AWM	Manual removal of weeds	RA-4 and southwest of access road to RA-5

Monitoring of Restored/Treated Areas

Mr. Rosenbaum conducted quarterly monitoring visits of the restoration areas, and performed annual monitoring of the restoration areas on September 25, 2014 and August 27, 2015. Representative photographs were taken at established photo points at all restoration areas during each monitoring visit, and initial photographs and photographs taken during the final monitoring visit are included in Attachment A. Incidental animal species observations utilizing habitat during all Year 1 and Year 2 monitoring visits are included in Attachment B. Native and non-native plants observed at the restoration areas during Years 1 and 2 are included in Attachment C. Nomenclature in this report follows Baldwin *et al.* (2012) for Latin names of plants. Nomenclature also follows American Ornithologists Union (2013) for birds and Glassberg (2001) for butterflies.

Restoration Area 1 (RA-1)

Initial qualitative observations of RA-1 assessed native cover at 50 percent of the restoration area, and non-native cover comprised approximately 60 percent of the restoration area. Non-native species consisted of mustard (*Brassica sp.*), red brome (*Bromus madritensis* ssp. *rubens*), soft chess (*Bromus hordeaceus*), and tocalote (*Centaurea melitensis*). At the time of the initial

observation, majority of the non-native individuals at RA-1 had already set seed and died off or gone dormant. AWM did not conduct maintenance work at RA-1 during Year 1 (Table 1). Both the native and non-native cover during the Year 1 annual assessment remained unchanged from initial site conditions. The site was seeded with a native seed mix (Attachment E) on November 10, 2014 following the Year 1 annual assessment. During the following year, California sagebrush (*Artemisia californica*) and Californica buckwheat individuals from the applied seed mix were observed emerging within RA-1.

During the Year 2 annual assessment, native plant cover within RA-1 was estimated to have increased to approximately 60 percent. Recently germinated species observed included laurel sumac (*Malosma laurina*) and California buckwheat (*Eriogonum fasciculatum*), both of which were included in the seed mix installed on November 10, 2014. Non-native cover was much reduced from previous years and only comprised approximately 1 percent of RA-1. Non-native species consisted primarily of stinkwort (*Dittrichia graveolens*). Stinkwort is considered a highly invasive species, and this was the first observation of the plant within any of the active restoration areas. AWM did not conduct maintenance work at RA-1 during Year 2 (Table 1). Native and non-native species percent cover at RA-1 during the 2-year project are represented in Table 2.

Table 2
RA-1 MONITORING RESULTS

Percent Cover	Year 0	Year 1	Year 2
Native Species	50	50	60
Non-native Species	60	60	1

Restoration Area 4 (RA-4)

Initial qualitative observations of RA-4 concluded native cover to be 40 percent, and non-native cover to be approximately 15 percent of the restoration area. Most of the restoration area comprised bare ground. Non-native species consisted of mustard, red brome, and tocalote. At the time of the initial observation, a majority of the non-native individuals at RA-4 had already set seed and died off or gone dormant. AWM did not conduct maintenance work at RA-4 during Year 1 (Table 1). Both the native and non-native cover during the Year 1 annual assessment remained unchanged from initial site conditions. During the Year 2 monitoring following seed application in November 2014, California sagebrush and black sage (*Salvia mellifera*) individuals from the applied seed mix were observed emerging at the site.

During the Year 2 annual assessment, native cover had increased to approximately 50 percent, and non-native cover was minimal and comprised approximately 3 percent of the restoration area. However, most of RA-4 remained bare ground although this could be due to the absence of annual species that had emerged during the spring. Recently germinated species observed included black sage, California sagebrush, broom baccharis (*Baccharis sarothroides*), and California buckwheat. Black sage, California sagebrush, and California buckwheat were included in the seed mix applied in November 2014. Non-native cover consisted primarily of

tocalote and fountain grass (*Pennisetum* sp.). Native and non-native species percent cover at RA-4 during the 2-year project are represented in Table 3. Work conducted by AWM at RA-4 during Year 2 included manual removal and herbicide treatment of non-native/invasive plants (Table 1).

Table 3
RA-4 MONITORING RESULTS

Percent Cover	Year 0	Year 1	Year 2
Native Species	40	40	50
Non-native Species	15	15	3

Restoration Area 5 (RA-5)

Initial qualitative observations of RA-5 concluded native cover to be 5 percent, and non-native cover at RA-5 to be dominant, comprising approximately 80 percent of the restoration area. Non-native species consisted of mustard, red brome, artichoke thistle (*Cynara cardunculus*), tamarisk (*Tamarix sp.*), and tocalote. At the time of the initial observation, a majority of the non-native individuals at RA- 5 had already set seed and died off or gone dormant. AWM conducted manual removal and herbicide treatment of non-native/invasive plants at RA-5 during Year 1. Although native cover during the Year 1 annual assessment remained at 5 percent, non-native cover at RA-5 had been reduced to 3 percent of the restoration site. Almost all plant life within RA-5 had been removed due to discing and herbicide treatment activities. Following the container plant installation and seed application in November 2014, seedlings of California poppy (*Eschscholzia californica*), California goldfields (*Lasthenia californica*), pygmy lupine (*Lupinus bicolor*), and black sage were observed emerging throughout the site. However, of the 200 container plants installed, only a total of 11 container plants remained within the restoration area in December 2014 due to herbivory. These plants included 7 mountain mahogany (*Cercocarpus betuloides*), 2 California sagebrush, and 2 California buckwheat. Many plants within the Preserve were water stressed due to continued drought conditions, and the installation of healthy container plants provided food for wildlife. Replacement plants were installed in January 2015 with protective cages to prevent future herbivory.

During the Year 2 annual assessment, native plant cover within RA-5 had increased to approximately 40 percent. Recently germinated species observed included laurel sumac, California sagebrush, California everlasting (*Pseudognaphalium californicum*), black sage, broom baccharis, and California buckwheat. California sagebrush, black sage, and buckwheat were included in the seed mix applied in November 2014. Non-native cover was moderate and comprised approximately 30 percent of RA-5. Non-native species consisted of annual species including pigweed, mustard, filaree, red brome, prickly sow-thistle, tocalote, and non-native grasses. A few of the container plant cages had become full of pigweed, while others had minimal non-native plants and non-native grasses growing within the cages. The majority of container plants installed in January 2015 were observed to be alive and healthy, although approximately 65 individuals appeared to be water stressed or to have died. Survival of installed container stock at RA-5 was approximately 68 percent if counting only healthy individuals, but could be higher if water stressed individuals survive until winter rains or resprout. AWM

conducted manual removal and herbicide treatment of non-native/invasive plants at RA-5 during Year 2, including removing non-native plants from within container plant caging. Native and non-native species percent cover at RA-5 during the 2-year project are represented in Table 4.

Table 4
RA-5 MONITORING RESULTS

Percent Cover	Year 0	Year 1	Year 2
Native Species	5	5	40
Non-native Species	80	3	30

Restoration Area 7 (RA-7)

Initial qualitative observations of RA-7 concluded native plant cover to be 45 percent, and non-native cover comprised approximately 15 percent of the restoration site. A majority of the restoration site comprised bare ground. Non-native species consisted of mustard, red brome, and tocalote. A majority of the non-native individuals had already set seed and died off or gone dormant. One MSCP-covered species variegated dudleya *(Dudleya variegata*) was observed at RA-7 (location depicted in Figure 3d) during Year 1 on May 12, 2014. AWM did not conduct maintenance work at RA-7 during Year 1 (Table 1). Both the native and non-native cover during the Year 1 annual assessment remained unchanged from initial cover estimates.

During the Year 2 annual assessment, native plant cover within RA-7 was estimated to have increased to 60 percent, and non-native cover was reduced to 3 percent and consisted primarily of red brome, tocalote, and non-native grasses. Native and non-native species percent cover at RA-7 during the 2-year project are represented in Table 5. AWM did not conduct maintenance work at RA-7 during Year 2 (Table 1).

Table 5
RA-7 MONITORING RESULTS

Percent Cover	Year 0	Year 1	Year 2
Native Species	45	45	60
Non-native Species	15	15	3

Sensitive Species Assessment

Habitat at each restoration area was inspected for sensitive plant species (including MSCP-covered species) during each site visit. Sensitive plant species were not previously documented within RA-1, 4, and 5 (Dudek, 2013), and were not observed during Years 1 and 2 at these restoration areas. One MSCP covered plant, variegated dudleya, was observed at RA-7 during the Year 1, May 21, 2014 site visit (Figure 3d). Other sensitive plants previously documented at or directly adjacent to RA-7 (San Diego thornmint [*Acanthomintha ilicifolia*] and small-flowered morning glory [*Convolvulus simulans*]) were not observed during Years 1 and 2. Sensitive plants willowy monardella (*Monardella viminea*) and California Adder's tongue

(*Ophioglossum californicum*) that were previously documented in other portions of the Preserve outside of RA-1, 4, 5, and 7 (Dudek, 2013) were also not observed within the RAs during Years 1 and 2.

Sensitive animal species observed during the Year 2 June and August 2015 monitoring visits included a Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*; MSCP covered animal species) within RA-5 (Figure 3c). Black-tailed jackrabbits (*Lepus californicus*) were also observed in multiple areas of the Preserve during Years 1 and 2, running across access roads.

Habitat for sensitive species California gnatcatcher (*Polioptila californica californica*) was improved by implementation of this project. California gnatcatcher utilizes upland habitat, which was present at RA-1 (black sage-laurel sumac vegetation community), RA-4 (black sage vegetation community), and RA-7 (black sage-laurel sumac vegetation community). Habitat for sensitive species least Bell's vireo (*vireo bellii*) is typically willow dominated riparian. While RA-5 was revegetated as riparian habitat, it is a scrub oak-mountain mahogany vegetation community with one isolated willow (*Salix laevigata*) that would not support least Bell's vireo. Both sensitive species of bird were not observed at any restoration areas during Years 1 and 2.

Invasive Plant Treatment Areas

Additional weed treatment areas throughout the Preserve (as conducted by AWM) were observed to be successful, and should positively contribute to restoring much of the Preserve back to a native habitat. Diligent removal of non-native plants before they flower/drop seed helps to extirpate the species from the Preserve, and diminishes the non-native seed bank within the soil. AWM treated areas along main access roads to help eliminate the spread of non-native plants by public use of these roads. Additional treated areas such as the creeks near the ranger office also aids in reducing the spread of non-native plants throughout the Preserve during rain events.

Annual Avian Point Counts

The annual avian point counts were conducted on May 12, 2014 and March 25, 2015. Point count locations were established at each restoration site and these locations are depicted in Figures 4a-4d. The results of the avian point counts are compiled in Attachment D.

Wildlife Observations

As noted above, incidental animal species observations utilizing habitat within the Preserve during Years 1 and 2 monitoring are provided in Attachment B. Observations included a total of 3 mammal species, 27 bird species, and 5 reptile species, and 6 invertebrate species.

Discussion

Of the installed plant seed, 8 species were observed germinating at the restoration sites during Year 2: California goldfields, California poppy, California plantain (*Plantago erecta*), golden yarrow (*Eriophyllum confertiflorum*), laurel sumac, buckwheat, California sagebrush, and black

sage. Year 2 performance standards, as stated in the Task Order, have a success criteria of 60 percent of installed seed species observed to be present onsite. While only 50 percent of installed seed species were observed to have germinated, recruitment of other native plants species that had recently germinated and were not included in the seed mix palettes included California everlasting and broom baccharis. The restoration sites were also hand seeded again on August 27, 2015, and with upcoming winter rains it is expected that additional species will continue to germinate. Native diversity was approximately 83 percent overall for all restoration areas. Approximately 53 of the 64 plants observed at the restoration areas during Year 2 were native plant species. Non-native species cover at all restoration sites ranged between 1 and 3 percent, while RA-5 had an approximate non-native cover of 30 percent. Year 2 performance standards state that there should be no more than 40 percent non-native cover compared to similar adjacent habitat, which is met by all restoration sites. Year 2 performance standards state a survival rate of 75 percent for installed container plants. While the survival rate of container plants at RA-5 was just below this standard, it is possible that with upcoming winter rains many of the water stressed container plants will re-sprout new foliage.

Overall, this project has made considerable improvements to RA-1, 4, 5, and 7, as well as additional areas treated by AWM. Non-native plant cover was significantly reduced at all restoration areas, and the non-native seed bank was also reduced due to continued removal and herbicide treatments. Application of native seed and native container plants increased the coverage and diversity of native plants onsite, and they should continue to establish after project completion. Drought conditions persisted during Year 1 and delayed some restoration activities, and minimal irrigation led to diminished seed germination, container plant herbivory, and container plants appearing water stressed during this time. Site access was also a limiting factor, as access roads within the Preserve are closed following rain events, access road widths did not allow for hydroseeding, and RA-4 could only be accessed by hiking through dense vegetation and up a steep slope. While these conditions limited the success of the project, activities that occurred during Year 2 were successful and upcoming winter rains should contribute positively to the site after project completion.

Management Recommendations

Recommendations to aide in the success of this restoration effort include installation of temporary irrigation systems that could be charged by a water truck to increase the efficiency of watering and to be able to water those sites less accessible (i.e., RA-4 and 7). If drought conditions continue despite the forecasted winter rains, irrigation of all the RAs would aide in continued native seed germination and container plant survival. Continued non-native plant removal within the RAs would also allow establishment of native seedlings and ultimately result in an increase in native plant cover. This is especially important for RA-5, which occurs in a large flat area subject to public trespassing that impacts native plant establishment. Non-native plants should be removed from the protective container plant cages at RA-5 to prevent over-crowding, and the cages should be removed after the plants have become established and before the cages are outgrown. Stinkwort observed at RA-1 should be removed before flowering/dropping seed as it is highly invasive and has the potential to spread throughout the Preserve. The blooming period for stinkwort is September – November.

Please feel free to contact me or Jasmine Bakker (619-462-1515) if you have any questions.

Sincerely,

Benjamin Rosenbaum
Biologist

Enclosures:

Figure 1	Regional Location Map
Figure 2	Project Vicinity Map (USGS Topography)
Figures 3a-3d	Photo Points, Avian Point Count, and Sensitive Species Locations
Figure 4	Integrated Pest Control (Areas of Herbicide Treatment)
Attachment A	Sycamore Canyon and Goodan Ranch Preserve Representative Site Photographs
Attachment B	Sycamore Canyon and Goodan Ranch Preserve Animal Species Observed or Detected
Attachment C	Sycamore Canyon and Goodan Ranch Preserve Plant Species Observed
Attachment D	Avian Point Count Data Form Sycamore Canyon and Goodan Ranch Preserve
Attachment E	Sycamore Canyon and Goodan Ranch Preserve Plant and Seed Installation Lists

REFERENCES

American Ornithologists' Union (AOU). 2013. The AOU Checklist of North American Birds. URL: http://www.aou.org/checklist/north/suppl/51.php

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds.). 2012. The Jepson manual: vascular plants of California, second edition. Berkeley, CA: University of California Press.

County of San Diego (County). 2013. Resource Management Plan for Sycamore Canyon/Goodan Ranch Preserves. June. Available at: http://www.sandiegocounty.gov/ content/dam/ sdc/common_components/images/parks/doc/RMD/Stoneridge_RMP_Final.pdf

Glassberg, J. 2001. Butterflies through Binoculars. The West. A Field Guide to the Butterflies of Western North America. Oxford University Press. New York.

Dudek. 2012. Sycamore Canyon and Goodan Ranch Preserves Vegetation Management Plan. November.

I:\PROJECTS\CG\SD\GSD-02.05_SycamoreCanyon\Map\AA_FinalReport\Fig1_Regional.mxd CSD-02.05 03/31/14 -JP

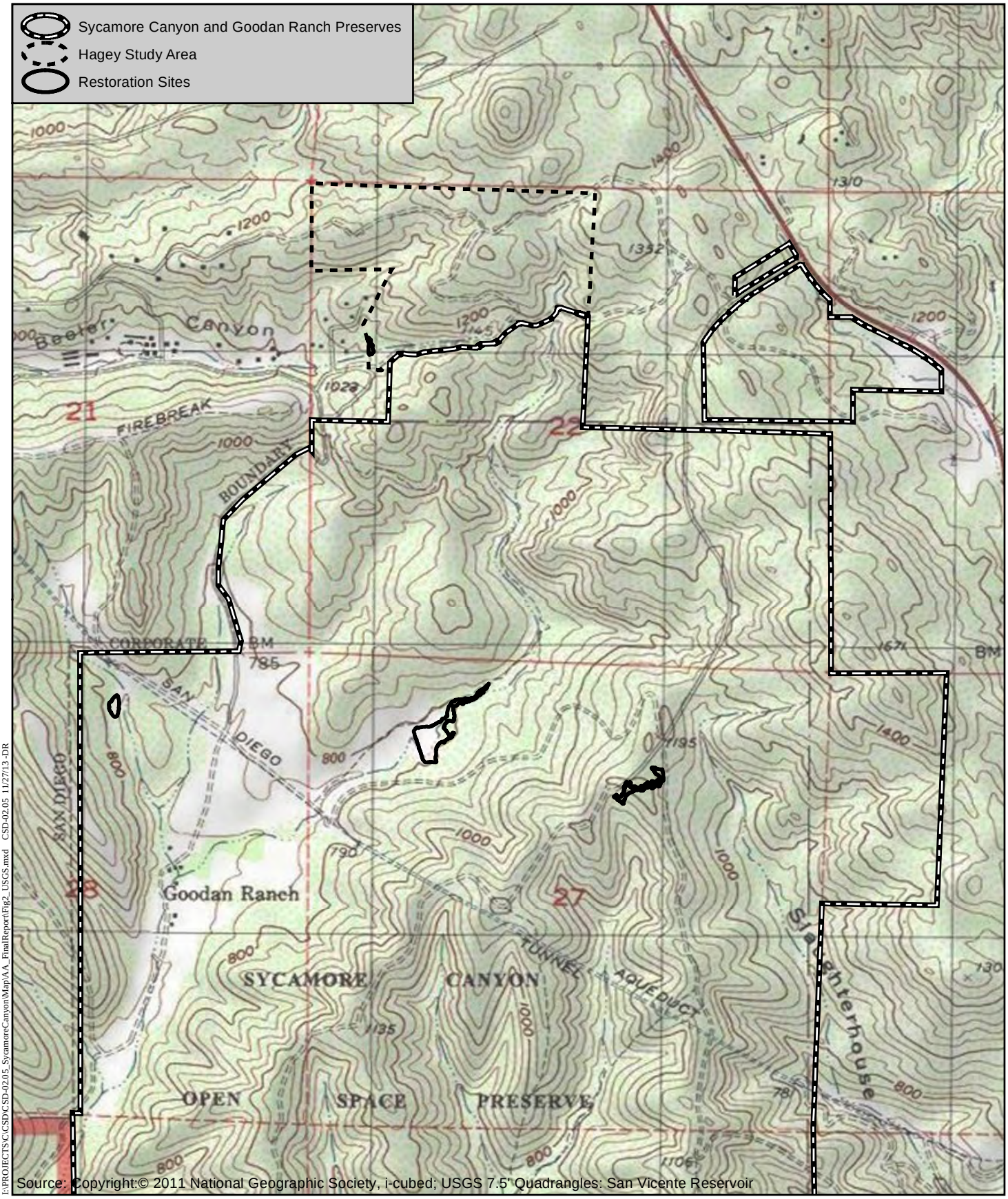
Regional Location Map

SYCAMORE CANYON/GOODAN RANCH PRESERVE

HELIX Environmental Planning

N 0 8 Miles

Figure 1



I:\PROJECTS\CG\CGSD\CGSD-02.05_SycamoreCanyon\Map\AA_FinalReport\Fig2_USGS.mxd CSD-02.05 11/27/13 -DR

Project Vicinity Map (USGS Topography)

SYCAMORE CANYON/GOODAN RANCH PRESERVE

HELIX Environmental Planning

N 0 1,500 Feet

Figure 2

Photo Points, Avian Point Count, and Sensitive Species Locations/Restoration Area 1

SYCAMORE CANYON/GOODAN RANCH PRESERVE

HELIX Environmental Planning

N 0 50 Feet

Figure 3a

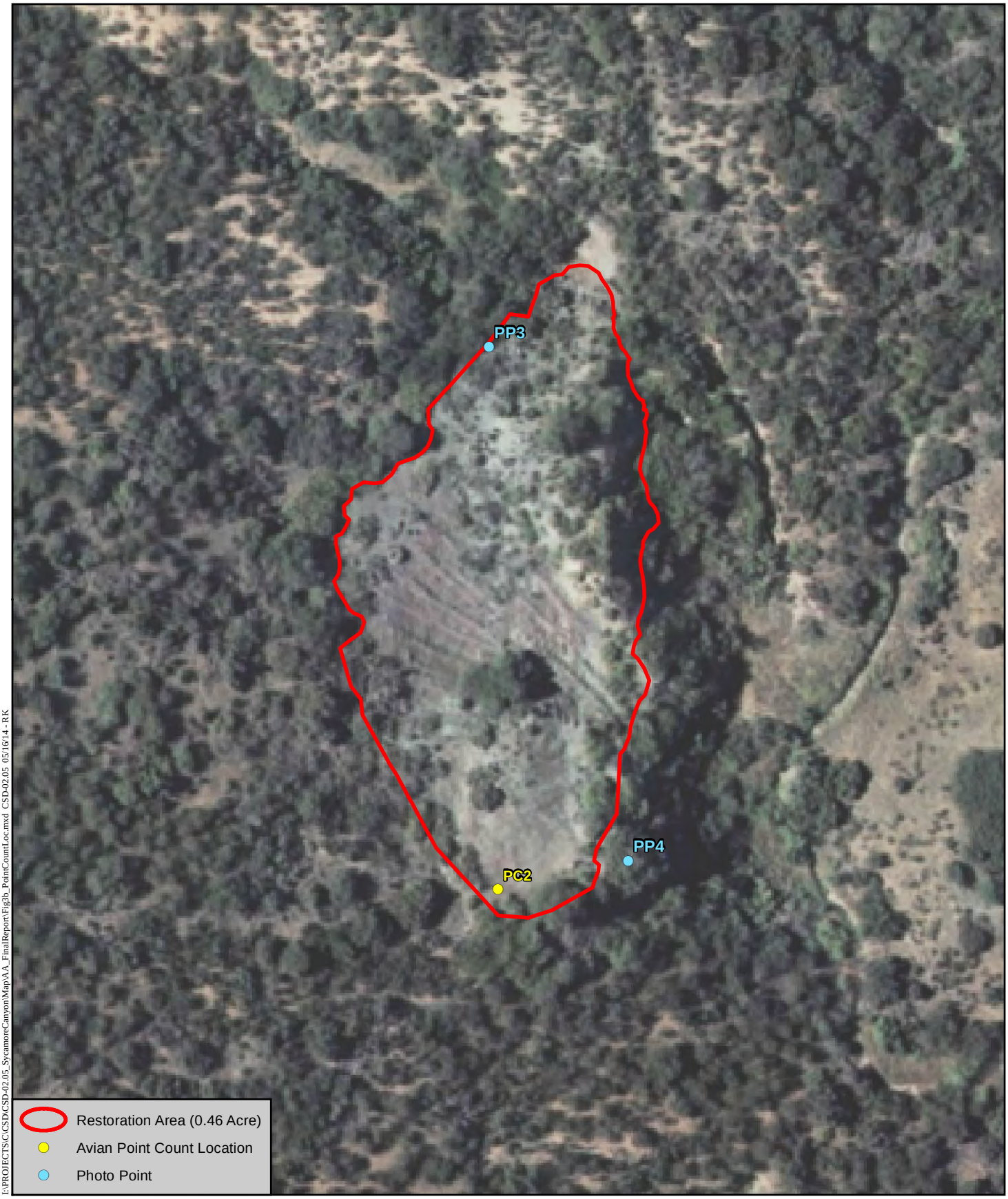


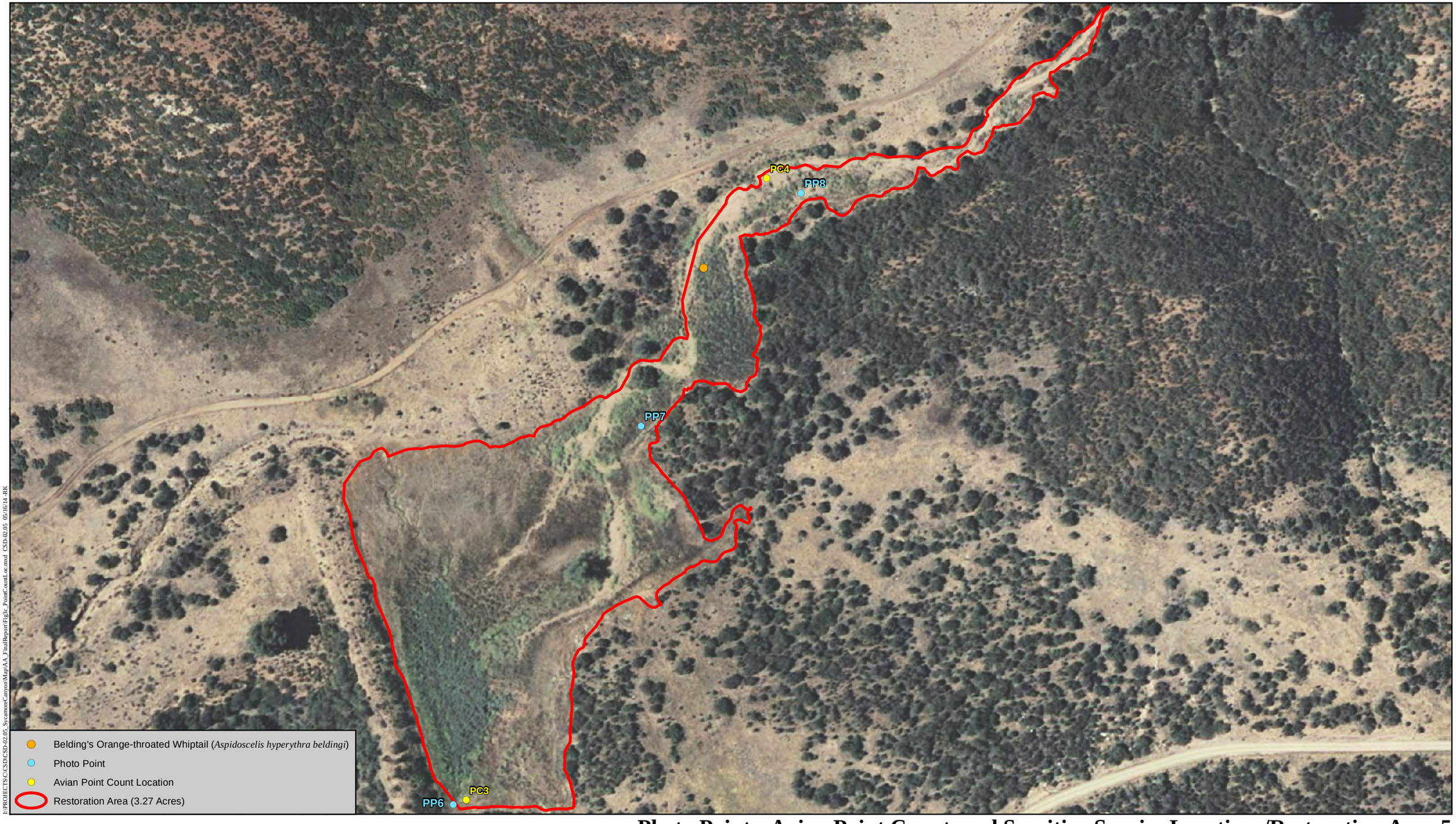
Photo Points, Avian Point Count, and Sensitive Species Locations/Restoration Area 4

SYCAMORE CANYON/GOODAN RANCH PRESERVE

HELIX Environmental Planning

N 0 50 Feet

Figure 3b



I:\PROJECTS\C\CSD\CSD-02.05_SycamoreCanyonMap\AA_FinalReport\Fig3c_PointCountLoc.mxd CSD-02.05 05/16/14 -RK

Photo Points, Avian Point Count, and Sensitive Species Locations/Restoration Area 5

SYCAMORE CANYON/GOODAN RANCH PRESERVE

HELIX Environmental Planning

N

0 100 Feet

Figure 3c

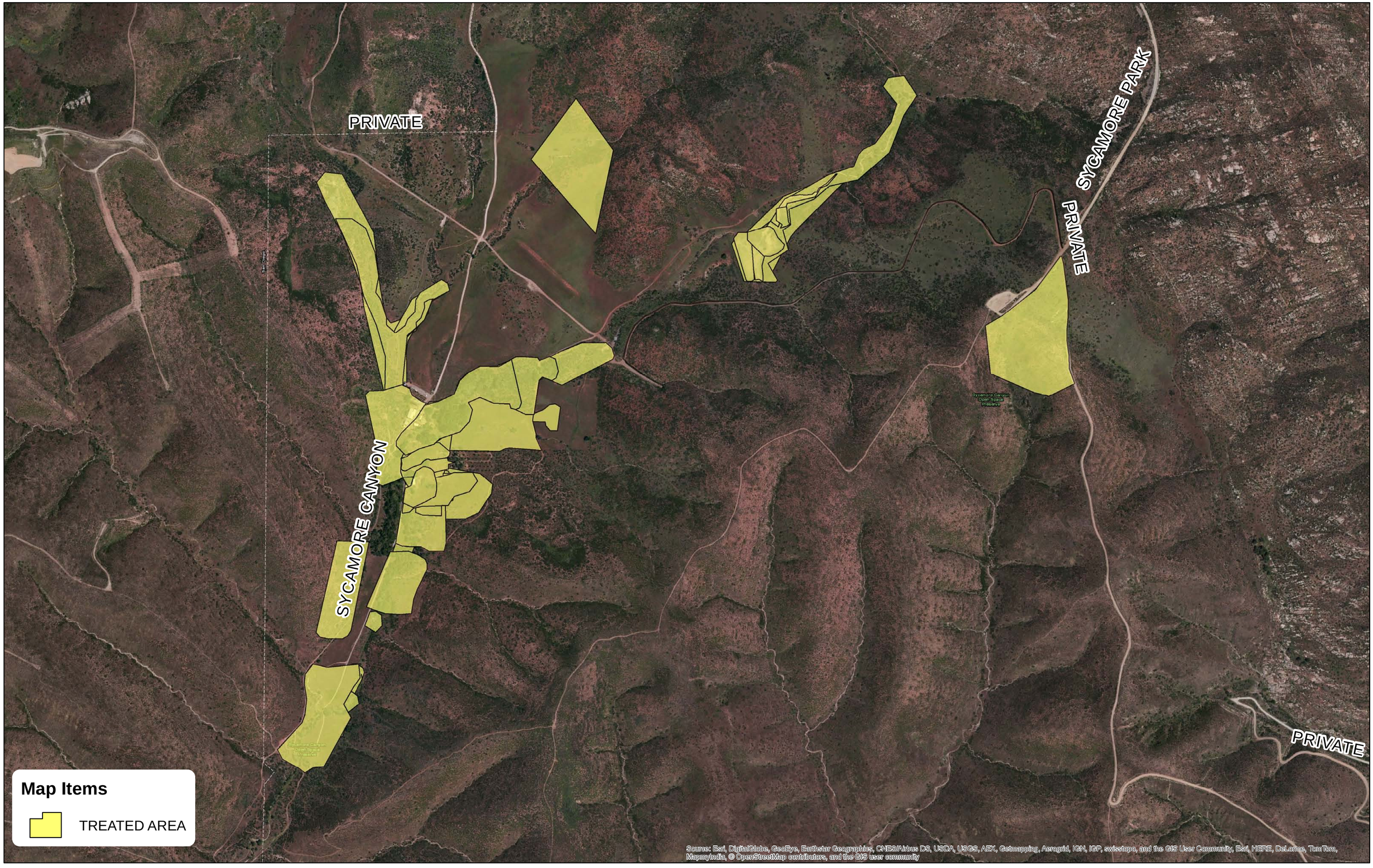
I:\PROJECTS\CSD\CSD-02.05_SycamoreCanyon\Map\AA_FinalReport\Fig3d_PointCountLoc.mxd CSD-02.05 05/16/14 -DR, RK

Photo Points, Avian Point Count, and Sensitive Species Locations/Restoration Area 7

SYCAMORE CANYON/GOODAN RANCH PRESERVE

HELIX Environmental Planning

Figure 3d



SYCAMORE CANYON AND GOODAN RANCH PRESERVE

INTEGRATED PEST CONTROL

JULY 1, 2015

0 1,250 2,500 5,000 Feet

N

SanGIS We Have San Diego Covered!

S:\PROGRAMS\GIS\AWM.gdb\ACP\ACP_031709

Figure 4

Attachment A
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
REPRESENTATIVE SITE PHOTOGRAPHS

Photo point 1: Restoration Area 1 facing north

Photo point 2: Restoration Area 1 facing south

Photo point 3: Restoration Area 4 facing south

Attachment A (cont.)
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
REPRESENTATIVE SITE PHOTOGRAPHS

Photo point 4: Restoration Area 4 facing north

Photo point 5: Restoration Area 4 (vantage point) facing west

Photo point 6: Restoration Area 5 facing north

Photo point 7: Restoration Area 5 facing south

Photo point 7: Restoration Area 5 facing north

Photo point 8: Restoration Area 5 facing northeast

Attachment A (cont.)
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
REPRESENTATIVE SITE PHOTOGRAPHS

Photo point 8: Restoration Area 5 facing southwest

Photo point 9: Restoration Area 7 facing east

Photo point 9: Restoration Area 7 facing west

Photo point 10: Restoration Area 7 facing east

Photo point 10: Restoration Area 7 facing west

Photo point 11: Restoration Area 7 facing east

Photo point 11: Restoration Area 7 facing west

Access road adjacent to RA-4 (left), and dry creek adjacent to the access road near RA-4 (right) cleared of senesced mustard by AWM

Cardiac hill (left) and the main access road (right) cleared of senesced mustard by AWM

Attachment A (cont.)
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
REPRESENTATIVE SITE PHOTOGRAPHS

Bike trail adjacent to the main access road (left) and the dry creek near the ranger office (right) cleared of non-native plants by AWM

THIS PAGE INTENTIONALLY LEFT BLANK

Attachment B
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
ANIMAL SPECIES OBSERVED OR DETECTED

TAXON		SCIENTIFC NAME	COMMON NAME
INVERTEBRATES			
Order	Family		
Lepidoptera	Hesperiidae	*Erynnis funeralis**	funereal duskywing
	Lycaenidae	--*	unidentified blue
	Nymphalidae	*Vanessa* sp.*	unidentified lady
	Pieridae	*Anthocharis sara**	Sara orangetip
	Riodinidae	*Apodemia mormo virgulti*	Behr's metalmark
Odonata*	--	--	dragonfly
VERTEBRATES			
Reptiles			
Order	Family		
Squamata	Colubridae	*Pituophis catenifer**	gopher snake
	Phrynosamtidae	*Sceloprus occidentalis**	western fence lizard
	Phrynosamtidae	*Uta stansburiana**	common side-blotched lizard
	Teiidae	*Ascidoscelis hyperythra beldingi*★	Belding's orange-throated whiptail
	Phrynosamtidae	*Sceloporus occidentalis longipies*	great basin fence lizard
Birds			
Order	Family		
Accipitriformes	Accipitridae	*Buteo jamaicensis*	Red-tailed hawk
Cathartiformes	Cathartidae	*Cathertes aura**	turkey vulture
Columbiformes	Columbidae	*Zenaida macroura*	Mourning dove
Cuculiformes	Cuculidae	*Geococcyx californianus**	greater roadrunner
Falconiformes	Falconidae	*Falco sparverius**	American kestrel
Galliformes	Odontophoridae	*Callipepla californica**	California quail

Attachment B (cont.)
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
ANIMAL SPECIES OBSERVED OR DETECTED

TAXON		**SCIENTIFC NAME**	**COMMON NAME**
VERTEBRATES (cont.)			
Order	Family		
Passeriformes	Aegithalidae	*Psaltriparus minimus**	American bushtit
	Corvidae	*Aphelocoma californica*	western scrub-jay
		Corvus corax	common raven
		Melozone crissalis	California towhee
	Emberizidae	*Carduelis psaltria**	lesser goldfinch
		*Melospiza melodia**	song sparrow
		*Pipilo maculatus**	spotted towhee
	Fringillidae	*Haemorhous mexicanus*	house finch
		Carduelis psaltria	lesser goldfinch
		*Zonotrichia leucophrys**	white-crowned sparrow
	Hirundinidae	*Petrichelidon pyrrhonota**	cliff swallow
	Icteridae	*Icterus cucullatus**	hooded oriole
		*Sturnella neglecta**	western meadowlark
	Mimidae	*Mimus polyglottos**	northern mockingbird
		*Toxostoma redivivum**	California thrasher
	Sylviidae	*Chamaea fasciata**	Wrentit
	Turdidae	*Sialia mexicana**	western bluebird
	Tyrannidae	*Sayornis nigricans**	black phoebe
		*Sayornis saya**	Say’s phoebe
Piciformes	Picidae	*Melanerpes formicivorus**	acorn woodpecker
Trochiliformes	Trochilidae	*Calypte anna**	Anna’s hummingbird

Attachment B (cont.)
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
ANIMAL SPECIES OBSERVED OR DETECTED

TAXON		**SCIENTIFC NAME**	**COMMON NAME**
VERTEBRATES (cont.)			
Order	Family		
Mammals			
Order	Family		
Carnivora	Canidae	*Canis latrans clepticus**	coyote
Lagomorpha	Leporidae	*Lepus californicus*★	Black-tailed jackrabbit
	Leporidae	Sylvilagus audubonii*	desert cottontail

★Sensitive Species; MSCP Covered
*Species observed during previous monitoring visits in Years 1 and 2; all other species were observed in August 2015 during the Year 2 annual monitoring visit.

THIS PAGE INTENTIONALLY LEFT BLANK

Attachment C
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
PLANT SPECIES OBSERVED

FAMILY	SCIENTIFIC NAME	COMMON NAME
DICOTYLEDONES		
Anacardiaceae	*Malosma laurina*	laurel sumac
	Rhus ovata	sugar bush
Asparagaceae	*Chlorogalum pomeridianum*†	wavy-leafed soap plant
	Dichelostemma capitatum†	blue dicks
	Hesperoyucca whipplei	chaparral yucca
Asteraceae	*Artemisia californica*	California sagebrush
	Baccharis salicifolia	mule fat
	Baccharis sarothroides	broom baccharis
	*Centaurea melitensis**	tocalote
	Cercocarpus betuloides	mountain mahogany
	Deinandra fasciculata†	fascicled tarplant
	*Dittrichia graveolens**	stinkwort
	Eriophyllum confertiflorum	golden yarrow
	Gutierrezia californica	California matchweed
	Hazardia squarrosa	sawtooth goldenbush
	Helianthus gracilentus	slender sunflower
	Lasthenia gracilis†	goldfields
	Pseudognaphalium californicum	California everlasting
	*Pseudognaphalium luteoalbum**†	fragrant everlasting cudweed
	*Sonchus asper**	prickly sow-thistle
	Xanthium strumarium	cocklebur
Boraginaceae	*Amsinckia menziesii* var. *intermedia*†	common fiddleneck
	Cryptantha or *Plagiobothrys* sp.†	popcorn flower
	Heliotropium curassavicum	salt heliotrope
	Phacelia cicutaria var. *hispida*†	caterpillar phacelia
	Phacelia parryi†	Parry's phacelia
Brassicaceae	*Brassica sp.** †	mustard sp.
	*Hirschfeldia sp.**†	
	Isocoma menziesii	goldenbush
Caryophyllales	*Chenopodium album*†	lamb's quarters
	Chorizanthe fimbriata†	fringed spineflower
Cistaceae	*Helianthemum scoparium*	common rush-rose
Convolvulaceae	*Calystegia macrostegia*†	false bindweed

Attachment C (cont.)
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
PLANT SPECIES OBSERVED

FAMILY	SCIENTIFIC NAME	COMMON NAME
DICOTYLEDONES		
Crassulaceae	*Dudleya variegata*†★	variegated dudleya
Cucurbitaceae	*Marah macrocarpa*†	wild cucumber
Ericaceae	*Xylococcus bicolor*	mission manzanita
Euphorbiaceae	*Croton setigerus*	doveweed
	*Euphorbia albomarginata**†	rattlesnake spurge
	Euphorbia polycarpa	small-seed sandmat
Fabaceae	*Acmispon glaber*†	deerweed
	Lupinus truncatus†	collared annual lupine
Fagaceae	*Quercus berberidifolia*	scrub oak
Geraniaceae	*Erodium sp.* †	filaree
Lamiaceae	*Salvia apiana*	white sage
	Salvia columbariae†	chia
	Salvia mellifera	black sage
Lamiales	*Plantago erecta*†	California plantain
Papaveraceae	*Eschscholzia californica*†	California poppy
Plantaginaceae	*Penstemon spectabilis*	showy penstemon
Polemoniaceae	*Navarretia hamata*†	hooked pincushion plant
Polygonaceae	*Eriogonum fasciculatum*	California buckwheat
Rhamnaceae	*Ceanothus* spp.	wild lilac
	Rhamnus crocea	spiny redberry
Rosaceae	*Adenostoma fasciculatum*	chamise
	Prunus ilicifolia	hollyleaf cherry
Salicaceae	*Salix laevigata*	red willow
	Salix lasiolepis†	arroyo willow
Tamaricaceae	*Tamarix* sp.*	tamarisk
MONOCOTYLEDONES		
Amaryllidaceae	*Allium sp.* †	onion
Liliaceae	*Calochortus splendens*†	splendid mariposa lily
Iridaceae	*Sisyrinchium bellum*†	western blue-eyed grass
Poaceae	*Avena barbata**†	wild oat
	*Bromus madritensis ssp. rubens**	red brome
	*Pennisetum setaceum**	African fountain grass
	Stipa coronata†	giant needlegrass

Attachment C (cont.)
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
PLANT SPECIES OBSERVED

FAMILY	SCIENTIFIC NAME	COMMON NAME
DICOTYLEDONES		
Pteridaceae	*Pellaea mucronata*†	bird's foot cliffbrake

★Sensitive species; CNPS List 1B.2
*Non-native species
†Species observed during previous monitoring visits in Year 2; all other species were observed during the Year 2 annual monitoring visit.

THIS PAGE INTENTIONALLY LEFT BLANK

Attachment D
AVIAN POINT COUNT DATA FORM
SYCAMORE CANYON AND GOODAN RANCH PRESERVE

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
1	05/12/14	0900	75 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Bushtit	1	0900	10	C
House Finch	1	0900	15	C
Lesser Goldfinch	1	0901	12	C
Cliff Swallow	5	0901	15	FO
Western Scrub Jay	1	0904	20	C
Say's Phoebe	1	0905	20	P

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
2	05/12/14	0910	77 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Mourning Dove	1	0910	20	C
House Finch	1	0910	15	C
Bushtit	1	0911	10	C
Western Scrub Jay	1	0914	10	P

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
3	05/12/14	0925	77 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Red-tailed Hawk	1	0926	50	FO
Bushtit	5	0927	20	F
Western Scrub Jay	1	0929	30	C

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
4	05/12/14	0935	75 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Song Sparrow	1	0935	20	C
Bushtit	5	0935	10	C/F
House Finch	1	0938	15	P
Common Raven	2	0939	50	FO

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
5	05/12/14	0830	70 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Bushtit	2	0831	10	F
California Towhee	1	0833	20	F
House Finch	1	0835	15	C

Attachment D
AVIAN POINT COUNT DATA FORM
SYCAMORE CANYON AND GOODAN RANCH PRESERVE

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
6	05/12/14	0840	70 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Bushtit	5	0840	15	F
Common Raven	1	0841	30	FO
Black Phoebe	1	0843	30	P

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
1	3/25/2015	900	65 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Anna's Hummingbird	1	900	10	S
Song sparrow	1	900	10	S
Common raven	1	901	50	C
Hooded oriole	1	901	50	P
California thrasher	1	902	5	CF
California quail	1	903	50	C
White crowned sparrow	1	904	5	FS

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
2	3/25/2015	920	65 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Anna's hummingbird	1	920	5	P
Northern mockingbird	1	920	10	C
Western scrub jay	1	920	5	C
Anna's hummingbird	2	921	1	CB
California quail	1	921	15	C
Western scrub jay	1	922	10	C

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
3	3/25/2015	935	67 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Mourning dove	1	935	10	C
Wrentit	1	936	15	C
Northern mockingbird	1	936	10	S
California towhee	1	937	5	F
American bushtit	2	938	15	F
Common raven	1	939	10	C

Attachment D
AVIAN POINT COUNT DATA FORM
SYCAMORE CANYON AND GOODAN RANCH PRESERVE

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
4	03/25/15	0945	68 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Western scrub jay	1	0945	10	C
Northern mockingbird	1	0946	20	S
Wrentit	1	0947	30	S
Common Raven	1	0948	50	C
California thrasher	1	0949	60	S

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
5	03/25/14	1000	70 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
Lesser goldfinch	1	1000	10	C
Anna's hummingbird	1	1000	15	s
Turkey vulture	1	1001	100	FO
Wrentit	1	1004	50	C

Point #	Date	Time Start	Temperature	Wind Speed	Cloud Cover
6	03/25/14	1010	70 F	0-5 mph	clear

Species	Abundance	Time Interval	Distance (m)	Behavior
California towhee	1	1010	10	C
Common Raven	1	1011	50	C
Lesser goldfinch	1	1011	100	C
Wrentit	1	1012	200	C
California quail	1	1012	100	C
Northern mockingbird	1	1013	50	S
Red-tailed hawk	1	1013	200	FO

THIS PAGE INTENTIONALLY LEFT BLANK

Attachment E
SYCAMORE CANYON AND GOODAN RANCH PRESERVE
PLANT AND SEED INSTALLATION LISTS

Table 1a **RA-1 SEED PALETTE NOVEMBER 2014** **(0.18 acres)**				
SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**MINIMUM PLS**	**POUNDS PER ACRE**	**POUNDS**
Artemisia californica	California sagebrush	10	3.0	0.54
Ceanothus tomentosus	woolyleaf ceanothus	75	2.0	0.36
Eriogonum fasciculatum	California buckwheat	10	4.0	0.72
Eriophyllum confertiflorum	golden yarrow	25	2.0	0.36
Lasthenia californica	California goldfields	50	2.0	0.36
Lessingia filaginifolia	sand aster	3	2.0	0.36
Lupinus bicolor	pygmy lupine	90	2.0	0.36
Malacothamnus fasciculata	chaparral mallow	10	4.0	0.72
Malosma laurina	laurel sumac	70	5.0	0.9
Mimulus aurantiacus	monkeyflower	2	1.0	0.18
Salvia mellifera	black sage	40	5	0.9
		TOTAL		**5.76**

Table 1b **RA-1 SEED PALETTE AUGUST 2015** **(0.18 acres)**				
SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**MINIMUM PLS**	**POUNDS PER ACRE**	**POUNDS**
Artemisia californica	California sagebrush	10	3.0	0.54
Ceanothus tomentosus	woolyleaf ceanothus	75	2.0	0.36
Eriogonum fasciculatum	California buckwheat	10	4.0	0.72
Lasthenia californica	California goldfields	50	2.0	0.36
Lessingia filaginifolia	sand aster	3	2.0	0.36
Lupinus bicolor	pygmy lupine	90	2.0	0.36
Malacothamnus fasciculata	chaparral mallow	10	4.0	0.72
Malosma laurina	laurel sumac	70	5.0	0.9
Mimulus aurantiacus	monkeyflower	2	1.0	0.18
Salvia mellifera	black sage	40	5	0.9
		TOTAL		**5.04**

Table 2a
RA-4 SEED PALETTE NOVEMBER 2014
(0.46 acres)

SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**MINIMUM PLS**	**POUNDS PER ACRE**	**POUNDS**
Acmispon glaber	deerweed	85	1.0	0.46
Adenostoma fasciculatum	chamise	20	4	1.84
Artemisia californica	California sagebrush	10	3.0	1.38
Ceanothus tomentosus	woolyleaf ceanothus	75	4.0	1.84
Eriogonum fasciculatum	California buckwheat	10	2.0	0.92
Eriophyllum confertiflorum	golden yarrow	25	2.0	0.92
Eschscholzia californica	California poppy	85	2.0	0.92
Hazardia squarrosa	sawtooth goldenbush	3	2.0	0.92
Lasthenia californica	California goldfields	50	1.0	0.46
Lessingia filaginifolia	sand aster	3	2.0	0.36
Lupinus bicolor	pygmy lupine	90	2.0	0.92
Malacothamnus fasciculata	chaparral mallow	10	2.0	0.92
Malosma laurina	laurel sumac	70	3.0	1.38
Mimulus aurantiacus	monkeyflower	2	2.0	0.92
Salvia mellifera	black sage	40	3.0	1.38
		TOTAL		**15.18**

Table 2b
RA-4 SEED PALETTE AUGUST 2015
(0.46 acres)

SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**MINIMUM PLS**	**POUNDS PER ACRE**	**POUNDS**
Acmispon glaber	deerweed	85	1.0	0.46
Artemisia californica	California sagebrush	10	3.0	1.38
Ceanothus tomentosus	woolyleaf ceanothus	75	4.0	1.84
Eriogonum fasciculatum	California buckwheat	10	2.0	0.92
Lasthenia californica	California goldfields	50	1.0	0.46
Lessingia filaginifolia	sand aster	3	2.0	0.36
Lupinus bicolor	pygmy lupine	90	2.0	0.92
Malacothamnus fasciculata	chaparral mallow	10	2.0	0.92
Malosma laurina	laurel sumac	70	3.0	1.38
Mimulus aurantiacus	monkeyflower	2	2.0	0.92
Salvia mellifera	black sage	40	3.0	1.38
		TOTAL		**9.2**

Table 3a
RA-5 SEED PALETTE NOVEMBER 2014
(3.2 acres)

SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**MINIMUM PLS**	**POUNDS PER ACRE**	**POUNDS**
Acmispon glaber	deerweed	85	0.5	1.64
Artemisia californica	California sagebrush	10	3.0	9.81
Cercocarpus minutiflorus	Mountain-mahogany	40	4.0	13.09
Eriogonum fasciculatum	California buckwheat	10	1.0	3.27
Eriophyllum confertiflorum	golden yarrow	25	0.5	1.64
Eschscholzia californica	California poppy	85	0.5	1.64
Hazardia squarrosa	sawtooth goldenbush	3	2.0	6.54
Lasthenia californica	California goldfields	50	0.5	1.64
Lessingia filaginifolia	sand aster	3	2.0	6.54
Lupinus bicolor	pygmy lupine	90	2.0	6.54
Mimulus aurantiacus	monkeyflower	2	1.0	3.57
Plantago erecta	dot seed plantain	85	1.0	3.27
Salvia mellifera	black sage	40	3.0	9.81
		TOTAL		**75.21**

Table 3b **RA-5 PLANT PALETTE NOVEMBER 2014** **(3.2 acres)**				
SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**SIZE**	**AVERAGE SPACING (ft)**	**NUMBER OF PLANTS**
Artemisia californica	California sagebrush	1 gallon	3	35
Cercocarpus minutiflorus	mountain mahogany	1 gallon	6	30
Eriogonum fasciculatum	California buckwheat	1 gallon	3	35
Mimulus aurantiacus	monkeyflower	1 gallon	4	30
Quercus agrifolia	coast live oak	1 gallon	15	15
Quercus berberidifolia	scrub oak	1 gallon	6	25
Salvia mellifera	black sage	1 gallon	4	30
		TOTAL		**200**

Table 3c **RA-5 PLANT PALETTE JANUARY 2015** **(3.2 acres)**				
SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**SIZE**	**AVERAGE SPACING (ft)**	**NUMBER OF PLANTS**
Artemisia californica	California sagebrush	1 gallon	3	35
Cercocarpus minutiflorus	mountain mahogany	1 gallon	6	30
Eriogonum fasciculatum	California buckwheat	1 gallon	3	30
Mimulus aurantiacus	monkeyflower	1 gallon	4	30
Quercus agrifolia	coast live oak	1 gallon	15	15
Quercus berberidifolia	scrub oak	1 gallon	6	25
Salvia mellifera	black sage	1 gallon	4	30
		TOTAL		**195**

Table 4a
RA-7 SEED PALETTE NOVEMBER 2014
(0.91 acres)

SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**MINIMUM PLS**	**POUNDS PER ACRE**	**POUNDS**
Acmispon glaber	deerweed	85	0.5	0.46
Adenostoma fasciculatum	chamise	20	3.0	2.73
Artemisia californica	California sagebrush	10	3.0	2.73
Ceanothus tomentosus	woolyleaf ceanothus	75	4.0	2.73
Eriogonum fasciculatum	California buckwheat	10	2.0	1.82
Eriophyllum confertiflorum	golden yarrow	25	0.5	0.46
Eschscholzia californica	California poppy	85	0.5	0.46
Hazardia squarrosa	sawtooth goldenbush	3	2.0	1.82
Lasthenia californica	California goldfields	50	0.5	0.46
Lessingia filaginifolia	sand aster	3	2.0	1.82
Lupinus bicolor	pygmy lupine	90	2.0	1.82
Malacothamnus fasciculata	chaparral mallow	10	2.0	1.82
Mimulus aurantiacus	monkeyflower	2	1.0	0.91
Salvia mellifera	black sage	40	3.0	2.73
		TOTAL		**25.48**

Table 4b
RA-7 SEED PALETTE AUGUST 2015
(0.91 acres)

SEED MIX				
SCIENTIFIC NAME	**COMMON NAME**	**MINIMUM PLS**	**POUNDS PER ACRE**	**POUNDS**
Acmispon glaber	deerweed	85	0.5	0.46
Artemisia californica	California sagebrush	10	3.0	2.73
Ceanothus tomentosus	woolyleaf ceanothus	75	4.0	2.73
Eriogonum fasciculatum	California buckwheat	10	2.0	1.82
Lasthenia californica	California goldfields	50	0.5	0.46
Lessingia filaginifolia	sand aster	3	2.0	1.82
Lupinus bicolor	pygmy lupine	90	2.0	1.82
Malacothamnus fasciculata	chaparral mallow	10	2.0	1.82
Mimulus aurantiacus	monkeyflower	2	1.0	0.91
Salvia mellifera	black sage	40	3.0	2.73
		TOTAL		**17.29**