Oak Woodland Assessment Report

SANTA MARGARITA QUARRY, SAN LUIS OBISPO COUNTY CALIFORNIA

Prepared For:

Lehigh Hanson, Inc.
Attn: Terry Marshall
7675 N. Ingram Ave, Suite 103
Fresno, California 93711

Contact:
Dana Riggs
riggs@wra-ca.com

Morgan Trieger
ISA Certified Arborist #WE-8667A
trieger@wra-ca.com

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2169-G East Francisco Blvd., San Rafael, CA 94901 (415) 454-8868 tel (415) 454-0129 fax info@wra-ca.com www.wra-ca.com

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1.0 INTRODUCTION

The purpose of this report is to characterize oak woodland communities present within the proposed Santa Margarita Quarry Extension Project Reclamation Plan Amendment Area (RPA Area, Figure 1) subject to regulation under PRC 21083.4 (Senate Bill 1334) and to determine the significance of oak woodland impacts associated with the proposed quarry extension within the proposed Reclamation Plan Amendment Footprint (RPA Footprint). The results of this oak woodland assessment report are based upon observed conditions within the RPA Area during the site assessment visit conducted in January 2008. Potential impacts associated with the project and available mitigation options are also discussed.

1.1 RPA Description

The RPA Area is comprised of 126.1 acres of an active quarry pit, associated processing facilities, and surrounding undeveloped land. Within the RPA Area, the RPA Footprint is comprised of 94.5 acres, and represents the extent of current and proposed project ground disturbance (Figure 2). The undeveloped land surrounding the existing quarry pit and facilities contains mixed chaparral, oak woodland, and riparian habitats, including a portion of the Salinas River. Land use surrounding the RPA Area is mixed rural residential and open space. Elevations within the RPA Area range from approximately 1,050 feet at the highest ridgetop to 880 feet at the bottom of the existing quarry pit.

1.2 Brief Project Description

The proposed project is the modification of an existing Conditional Use Permit (CUP) and RPA for an extension of the existing quarry operations into approximately 38.4 acres of undisturbed slopes to the west of the existing quarry pit (Figure 2). Extension of the quarry operations will occur in four discrete phases. No change in production capability or intensity is proposed beyond currently permitted levels. Reclamation of the RPA Footprint will occur mining operations at the quarry cease.

1.3 Regulatory Background

In accordance with Article 9 of the State Mining and Geology Board's Reclamation Regulations (CCR 14.2 chapter 8.1), disturbed areas will be revegetated to resemble the habitats present within the Project Area currently. In areas to be reclaimed as oak woodlands, oak trees will be replanted, maintained, and monitored for a sufficient time to ensure their reestablishment in the area as required under Article 9.

California PRC 21083.4 requires each county in California to implement an oak woodland protection policy to mitigate for the loss of oak woodlands resultant from approved projects within their jurisdiction. In this policy, oak trees are defined as all native species of oaks larger

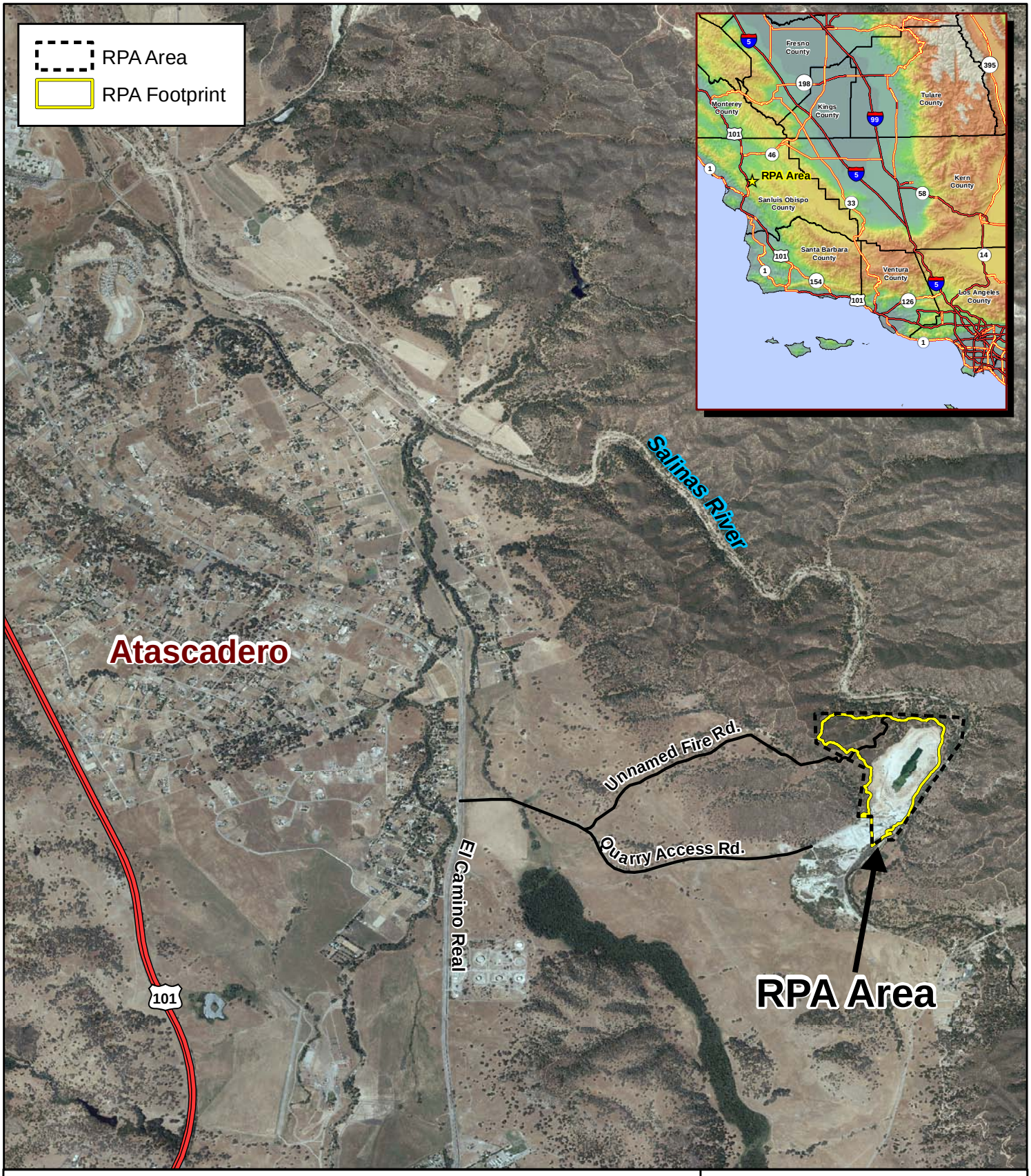

Figure 1. RPA Location Map

Santa Margarita Quarry
San Luis Obispo County, California

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0 0.25 0.5 1 Miles

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Date: March 2012
Aerial: 2010 NAIP
Map By: Michael Rochelle

Path: L:\Acad 2000 Files\17000\17122\GIS\ArcMap\2012\Location Area.mxd

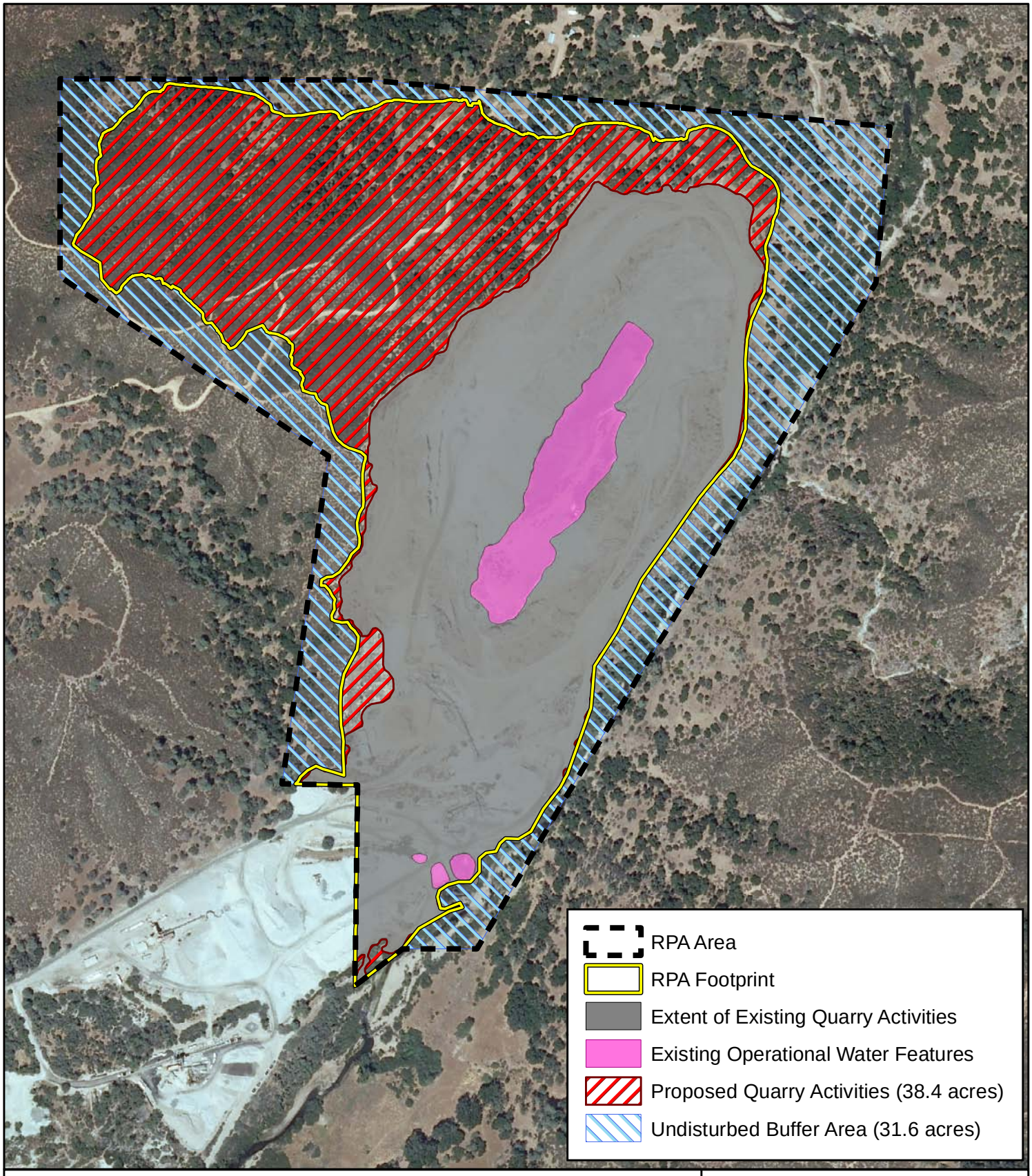

Figure 2. Existing Quarry Activities, Proposed Quarry Activities, and Undisturbed Buffer Area

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Santa Margarita Quarry
San Luis Obispo County, California

0 200 400 800 Feet

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ENVIRONMENTAL CONSULTANTS

Date: April 2012
Aerial: 2010 NAIP
Map By: Michael Rochelle

Path: L:\Acad 2000 Files\17000\17122\GIS\ArcMap\2012\BA\Disturbance Overview.mxd

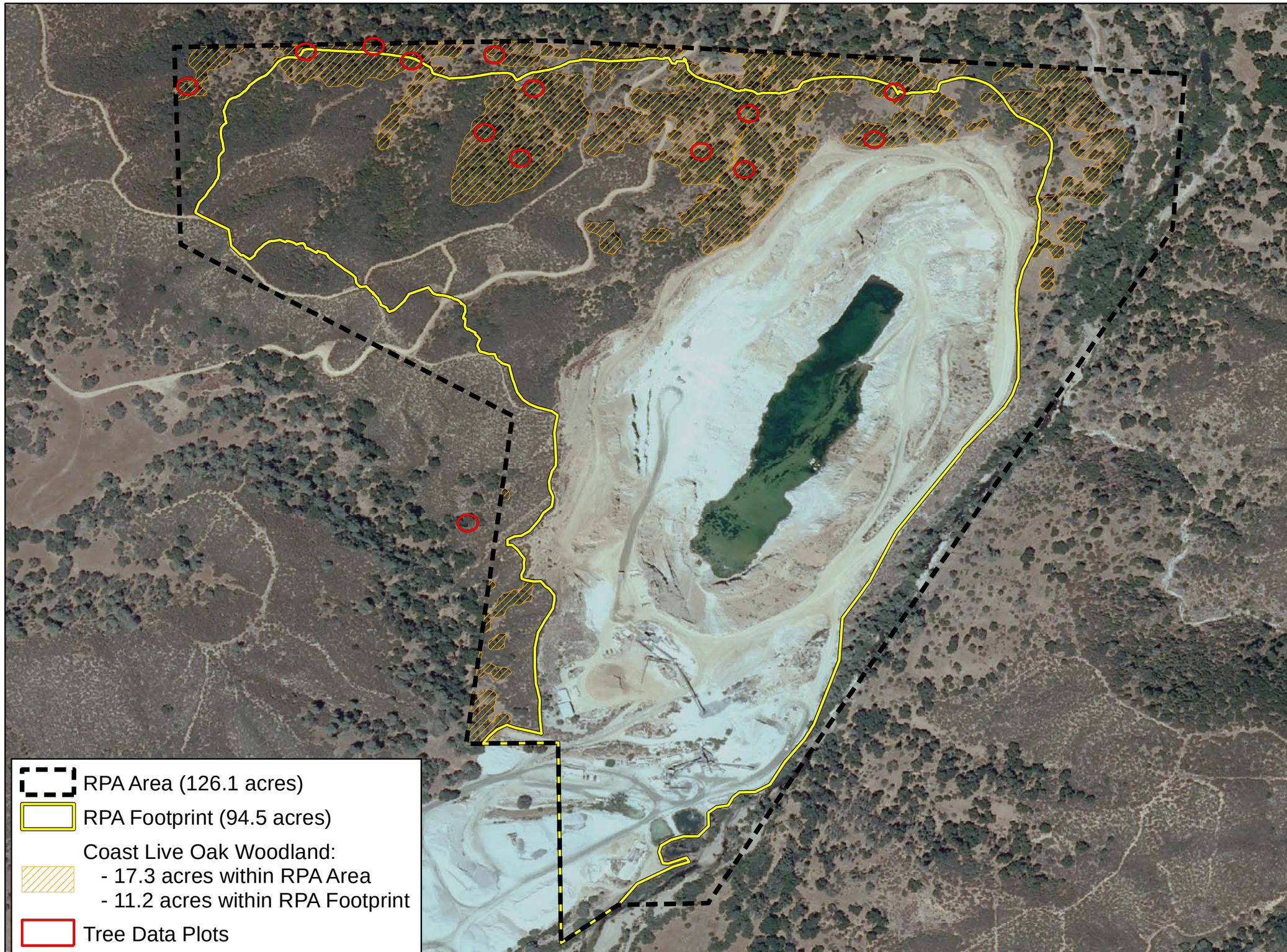
than five inches DBH (diameter at breast height, or 4.5 feet above grade). At least one of four mitigation alternatives for significant conversions of oak woodlands are required in this regulation: 1) conserve oak woodlands through the use of a conservation easement, 2) plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees (planting maintenance must last for seven years, and mitigation plantings shall not fulfill more than one-half the mitigation requirement for the project; this alternative may also be used to restore former oak woodlands), 3) contribute funds to the Oak Woodlands Conservation Fund, as established under Section 1363 (a) of the Fish and Game Code, and 4) other mitigation measures developed by the County.

Title 22 of the San Luis Obispo County Code, Chapter 22.56: Tree Preservation (San Luis Obispo County 1980) requires a tree permit for the removal of any tree greater than 8 inches diameter at breast height (DBH) within any urban or village reserve lines, or other specific areas identified in the planning area standards. However, the RPA Area lies outside of the jurisdiction of this regulation as it is located east of the village reserve line for the community of Garden Farms, and outside the urban reserve lines for the towns of Atascadero, and Santa Margarita.

The Voluntary Oak Woodlands Management Plan for San Luis Obispo County (Native Tree Committee 2003) implements the voluntary guidelines in the Native Tree Resolution, as adopted by the County Board of Supervisors. The Plan suggests a number of conservation measures including designing projects around existing oak woodlands, clustering development, encouraging landscaping with native oaks, and purchase of conservation easements. However, this plan is voluntary and does not constitute a binding mandate on private landowners or abridge the private property rights of a landowner.

1.4 Survey Summary

Approximately 17.3 acres of oak tree-dominated plant communities were observed in the RPA Area (Figure 3). Of the 17.3 acres, approximately 11.2 acres of oak-tree dominated communities are located in the RPA Footprint. Ninety-seven percent of observed trees were of the species coast live oak (*Quercus agrifolia*), a native oak. The remainder of tree species observed on site were grey pine (*Pinus sabiniana*) and blue oak (*Quercus douglasii*) which are also native trees in this area. The density of trees measured in 14 sample plots averaged 69.3 trees per acre (range 31-123), which, extrapolated over the entire 11.2 acres, results in an estimate of 776 trees in total (or approximately 753 oak trees) within the RPA Footprint. Generally, oak trees are in fair condition with little obvious understory regeneration as is fairly typical throughout the range of coast live oak. All plot data collected during this assessment are presented in Appendix A.



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Santa Margarita Quarry

San Luis Obispo County, California

Figure 3.

Oak Woodlands within the RPA Area

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0 150 300 600
Feet

Date: April 2012
Map by: Michael Rochelle
Image: 2010 NAIP

Path: L:\Acad 2000 Files\17000\17122\GIS\ArcMap\2012\Oak Woodland Report\OakWoodlandResources.mxd

2.0 METHODS

Oak woodland mapping within the RPA Area commenced using a three-step process: preliminary mapping was performed using aerial image recognition software and manual editing in the ArcGIS environment; then a field visit was conducted to ground-truth the preliminary map and collect detailed tree plot data; finally the data was analyzed and the oak woodland map was finalized based on field observations.

The assessment of tree size, distribution, species composition, and health and condition within the Project Area was performed using a sampling scheme based on the preliminary oak woodland map. A sampling scheme was used (as opposed to a complete inventory) due to the difficulty associated with surveying across the steep terrain and through the dense vegetation of the RPA Area. Sample plots were established throughout the wooded areas within the RPA Area, and all trees within the plots were measured for the various attributes of concern. Data collected at each of the tree plots are presented in Appendix A.

Data collected in tree plots were analyzed to create relevant estimates of overall site woodland characteristics including tree density, size, and species composition. A detailed description of the methods used to map woodlands, measure trees, and analyze tree data are presented below. Plant names follow those given in *The Jepson Manual: Vascular Plants of California*, 2nd Edition (Baldwin et al. 2012).

2.1 Preliminary Oak Woodland Mapping from Aerial Imagery

Tree-dominated areas within the RPA Area were delineated on aerial images in the ArcGIS environment. The publicly available National Aerial Image Program (NAIP) full-color aerial images (one meter resolution, 2005) were used as the basis for this image interpretation. Additionally, a 1-foot resolution, black and white aerial image of the RPA Area (June 2007), provided by the quarry owner, was used for supplemental vegetation identification.

Ecognition software (an aerial image interpretation software made by Definiens) was used to segment the aerial image, delineating each individual tree canopy or canopy complex from the remainder of the image. The results of this segmentation were then manually edited based on the more recent black and white image to correct any recent mortality or significant tree growth in the RPA Area.

A buffer of 40 feet was then applied to each individual tree canopy or canopy complex to identify areas between and adjacent to oak trees which are also characterized as oak woodland. Areas outside oak woodland polygons were identified as shrub or herb cover through a supervised editing process. The final map of biological communities present within the RPA Area is presented in the document *Biological Resources Assessment Report, Santa Margarita Quarry, San Luis Obispo, California* (WRA 2012, in preparation). Oak woodland polygons were further refined with the most recent NAIP 1-meter resolution color image (2010) in preparation of this report. The final delineation of oak woodlands within the RPA Area is presented in Figure 2.

2.2 Field Data Collection

Tree-dominated plant communities (>10% tree cover) within the RPA Area were mapped based on aerial photography utilizing aerial image interpretation software. This tree-dominated plant communities map served as the basis for the field sampling design. A sampling design was utilized (as opposed to a 100% survey) to facilitate characterization of the tree-dominated areas over the densely vegetated and steeply sloped terrain of the RPA Area.

The oak tree inventory was performed on January 30 and 31, 2008 by Julie Rentner (ISA Certified Arborist WE-7742A) and Rosie Wilson of WRA. Fourteen circular sample plots of radius 30 feet, each 2,827 square feet (0.06 acres) in size, were established randomly within the mapped oak woodland polygons. This resulted in 0.91 acre of sampled oak habitat, or approximately five percent by area. Sampling was of sufficient frequency to reliably predict the density, species composition, and size of trees subject to relevant regulations with a precision level of 80 percent.

Data was collected on standard data forms. All trees larger than five inches diameter at breast height (DBH) were assessed for DBH, species, canopy radius (defined as the average of three measurements in opposing directions of the longest lateral branch of the crown), health, structure, and overall condition. Narratives for tree ratings are presented in Appendix A. Ratings of poor, fair, and good were translated into scores of 1, 2, and 3 respectively for use in data analysis. Additional plot data collected at each tree plot included notes on special habitat features (nests, tree regeneration, water features, rock outcrops, etc.) and shrub layer percent cover and species composition.

2.3 Data Analysis and Woodland Map Finalization

Plot data were entered into a spreadsheet format and summary statistics were calculated for all of the parameters measured. Data were averaged by plot and are presented in Appendix A. For multi-stemmed trees, the sum of all stems' DBH was used. Field notes were compared with the preliminary oak woodland map which was found to sufficiently predict the presence and canopy cover of oak woodland habitat types within the RPA Area.

3.0 RESULTS

Approximately 17.5 acres of oak woodlands were identified within the RPA Area (Figure 3). Of the 17.3 acres, 11.2 acres are located in the RPA Footprint. Ninety-seven percent of observed trees were of the species coast live oak, a native oak. The remainder of tree species observed on site included grey pine and blue oak which are also native trees in this area. The density of trees measured in 14 sample plots averaged 69.3 trees per acre (range 31-123). The average diameter at breast height of trees across the site was 23 inches, ranging from an average of 12.2 to 33.6 inches in sample plots. Generally, oak trees within the RPA Area are moderate to large in size with little obvious understory regeneration as is fairly typical throughout the range of coast live oak. Trees were assessed for health, structural condition, and overall condition and found to range from good to poor across the site averaging fair in all categories assessed. Tree ratings as well as all plot data collected during this assessment are presented in Appendix A. Figure 2 shows the location of all mapped oak woodland resources within the RPA Area.

3.1 Oak Woodland Characteristics

Coast live oak woodland and forest was found in the bottom of ravines and on north-facing slopes in the RPA Area. Canopy cover of oak woodland polygons ranged from 45 percent to 74 percent with an average of 71 percent over the entire site. Coast live oak woodlands within the RPA Area are completely dominated by coast live oak trees with occasional grey pine in the overstory. Common understory shrubs include poison oak (*Toxicodendron diversilobum*), buck brush (*Ceanothus cuneatus*), toyon (*Heteromeles arbutifolia*), holly-leaf cherry (*Prunus ilicifolia*), and coffeeberry (*Frangula californica*). Common understory herbs include common bedstraw (*Galium aparine*), bracken fern (*Pteridium aquilinum var. pubescens*), coffee fern (*Pellaea andromedifolia*), wild cucumber (*Marah fabacea*), and various annual grasses and forbs. Some understory regeneration of both coast live oak and grey pine were observed throughout the RPA Area but were not measured.

Oaks within the RPA Area (within the tree plots surveyed) were found on average to be in fair condition. The most common causes for oak decline observed during this assessment included root and trunk rot by various fungi and structural defects related to the steep slopes. Fourteen percent of trees surveyed had a rating of poor for overall condition, while 21 percent rated good. Rating narratives and results of the assessment are presented in Appendix A.

3.2 Tree Plot Data

Tree density and species composition

Tree density in each tree plot ranged from 31 to 123 trees per acre, resulting in a site average of 69.3 trees per acre. Extrapolated over the entire 17.3 acres of oak woodlands within the RPA Area, this data estimates that 1,199 oak trees larger than five inches DBH are located in the RPA Area. Of these 1,199 trees, 776 would be removed for the proposed quarry extension within the RPA Footprint. Species composition was uniform with only two of 14 tree plots containing multiple species of tree. Twelve tree plots contained only coast live oak trees.

Tree size

One third of all trees surveyed had more than one trunk at 4.5 feet above grade. The sum of the diameters of all trunks was used in this analysis. Average tree DBH in plots ranged from 12.2 to 33.6 with a site average of 23 inches. Average crown radius in plots ranged from eight to 26 feet with an average of 14.1 feet.

Tree health, structure, and condition

Tree plot average rating for overall health of trees ranged from 1.7 to 2.7. The site average for tree health was 2.1 indicating that trees are generally of fair health. The range of tree plot average structural ratings and overall condition ratings were 1.7 to 2.8 with a site average of 2.2, indicating that trees are generally of fair structure and overall condition. No plots averaged 2.9 or above for any category assessed, nor did any plot average 1.6 or below, indicating that no tree plots observed were particularly in poor or particularly good condition.

Understory shrub species richness and percent cover

The percent cover of shrubs in the understory of tree plots ranged from 20 to 80 percent with a site average of 53 percent. The species richness of the shrub layer ranged from two to eight species observed, with a site average of 3.8. Species observed included poison oak, buck brush, toyon, holly-leaf cherry, coffeeberry, mountain mahogany (*Cercocarpus betuloides*), scrub oak (*Quercus berberidifolia*), chamise (*Adenostoma fasciculatum*), and hillside gooseberry (*Ribes californicum*), which are all common shrub species in the area. Summary data are presented in Table 1.

Table 1. Summary statistics for oak woodlands within the RPA Area

	range	**site average**
Tree Cover (percent aerial cover of trees)	45 - 74	71
Average Tree DBH (inches)	12.2 - 33.6	23.0
Average Tree Canopy Radius (feet)	7.5 - 26.3	14.1
Tree Density (trees per acre)	30.8 - 123.2	69.3
Tree Species Richness (number species in plot)	1 - 2	1.1
Average Tree Condition (1=poor, 2=fair, 3=good)	1.7 - 2.8	2.2
Shrub Cover (percent aerial cover of shrubs)	20 - 80	52.9
Shrub Species Richness (number species in plot)	2 - 8	3.8

4.0 IMPACTS AND MITIGATION

The proposed project will temporarily impact approximately 11.2 acres of oak woodland, in four phases over an approximately 38-year period. Public Resources Code section 21083.4 requires the County to determine whether these impacts constitute a significant effect on oak woodlands, and if so, to require mitigation using conservation easements, replanting oaks, contributing to an oak woodland conservation fund, or other methods developed by the County. Appropriate mitigation for these impacts will be determined in consultation with the County during the application review process. There is opportunity for onsite oak woodland preservation and enhancement on adjacent parcels in the event that mitigation is called for.

Figure 4 depicts the final, post reclamation contours of the proposed quarry extension and suitable oak reclamation areas within the reclaimed RPA Footprint. Plantings will be located on graded benches and slopes and in suitable areas within the reclaimed quarry processing facilities area. Potential suitable oak reclamation areas were determined using ArcGIS. Potential suitable planting areas are those of low to moderate solar radiation exposure on slopes less than 35 percent. The planting suitability analysis is depicted graphically in Figure 5.

Opportunity for onsite oak woodland preservation and enhancement within adjacent parcels exists if mitigation is called for. Figure 6 depicts existing oak woodlands and potential suitable oak woodland planting areas within these parcels. Suitable oak planting areas are those not within existing oak woodland, with low to moderate solar radiation exposure, on slopes less than 35 percent. Potential suitable planting areas were determined though ArcGIS analysis as described above. The planting suitability analysis is depicted graphically in Figure 7.

5.0 DISCUSSION AND CONCLUSION

Oak woodland mapped within the RPA Area were found to contain a common assemblage of species, tree size, and density distribution common to oak woodlands of this type throughout coastal California. Oak trees within the RPA Area were determined to be in fair condition on average, generally suffering from fungal infections and structural defects associated with the steep and relatively unstable slopes on which they grow. The proposed Project will remove all of the oak trees present within the RPA Footprint; estimated to be approximately 776 oak trees.

Under Article 9 of the State Mining and Geology Board Reclamation Regulations (CCR 14.2 Chapter 8.1), revegetation of disturbed areas will be required. Additionally, California PRC 21083.4 requires each county in California to implement an oak woodland protection policy to mitigate for the loss of oak woodlands resultant from approved projects within their jurisdiction. Revegetation will include planting and maintaining oak trees on site. Planting details are provided in the *Reclamation Plan Amendment* prepared by Enviromine (2012)

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Title 22 of the San Luis Obispo County Code requires a tree permit for the removal of any tree greater than eight inches DBH within any urban or village reserve lines, or other specific areas identified in the planning area standards. However, the RPA Area lies outside of the jurisdiction of this regulation in rural areas east of the village reserve line for the community of Garden Farms, and outside the urban reserve lines for the towns of Atascadero, and Santa Margarita.

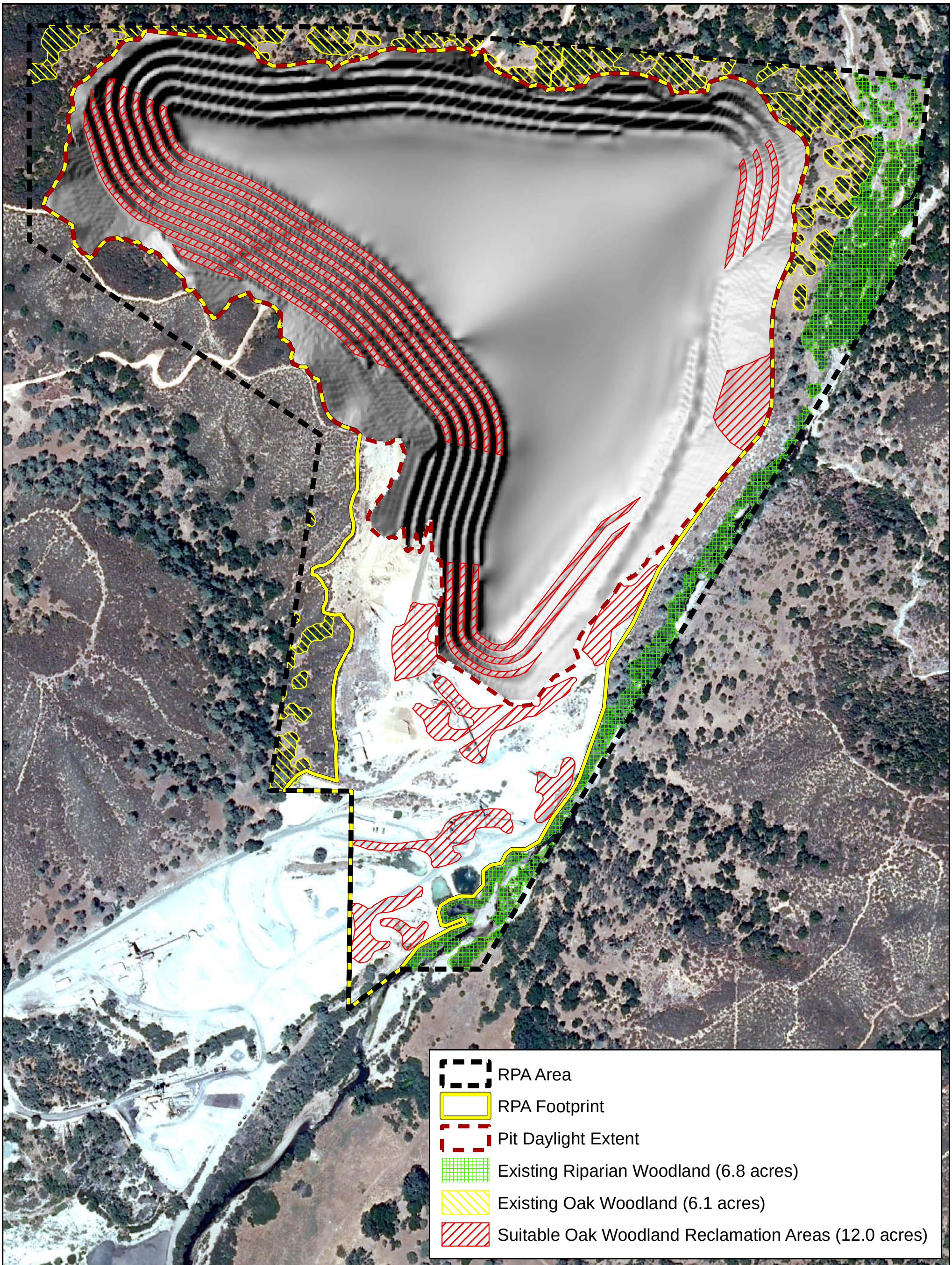

Figure 4. Suitable Oak Woodland Reclamation Areas within the RPA Area

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Feet

Santa Margarita Quarry
San Luis Obispo County, California

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Date: April 2012
Map By: Michael Rochelle
Base Source: 2010 NAIP

Path: L:\Acad 2000 Files\17000\17122\GIS\ArcMap\2012\Oak Woodland Report\RPA Oak Mitigation Areas Revised.mxd

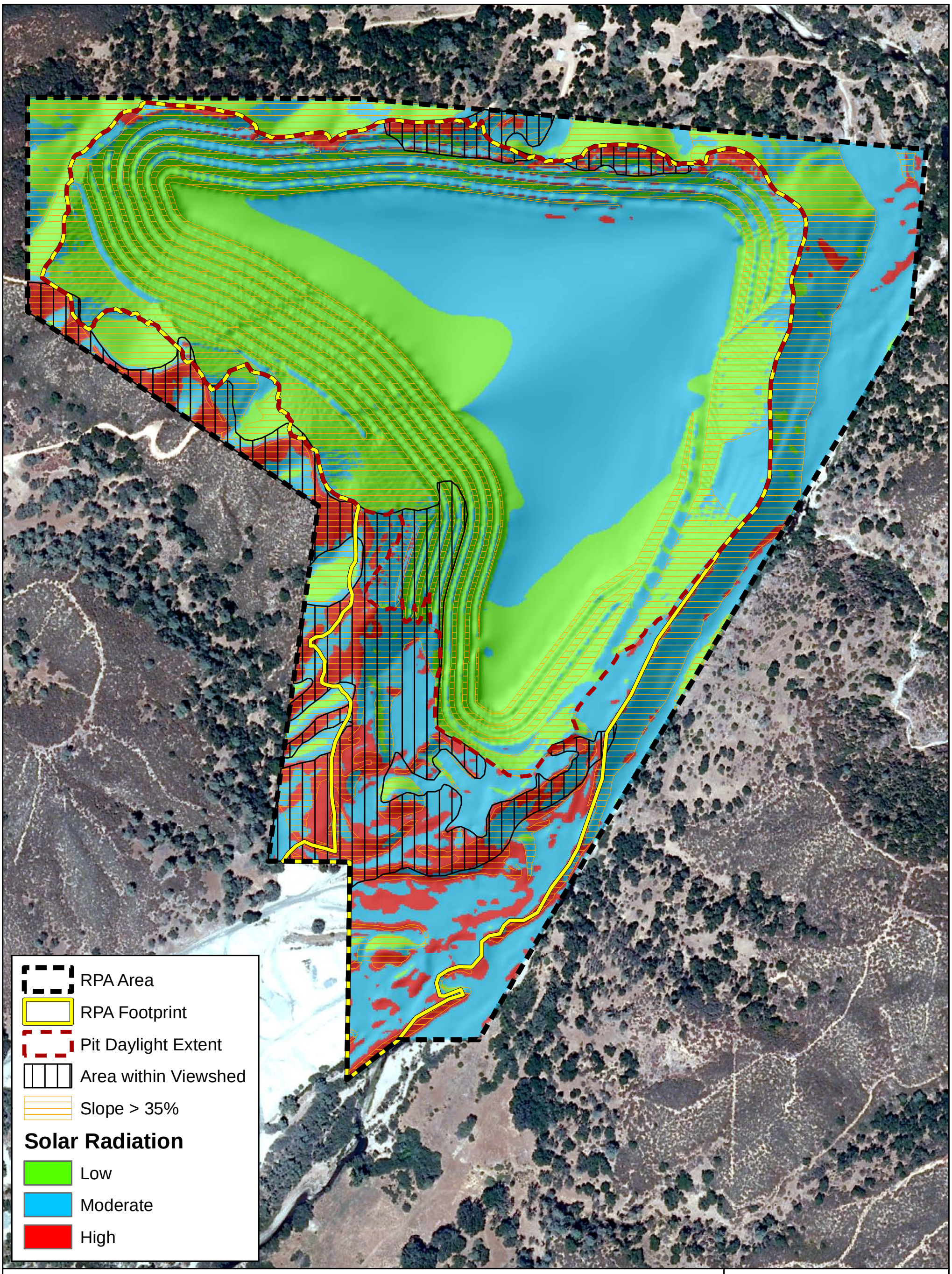

Figure 5. RPA Area Oak Reclamation Suitability Analysis

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Santa Margarita Quarry
San Luis Obispo County, California

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Date: April 2012
Map By: Michael Rochelle
Base Source: 2010 NAIP

Path: L:\Acad 2000 Files\17000\17122\GIS\ArcMap\2012\Oak Woodland Report\RPA Solar Radiation_Viewshed_Slope Analysis.mxd

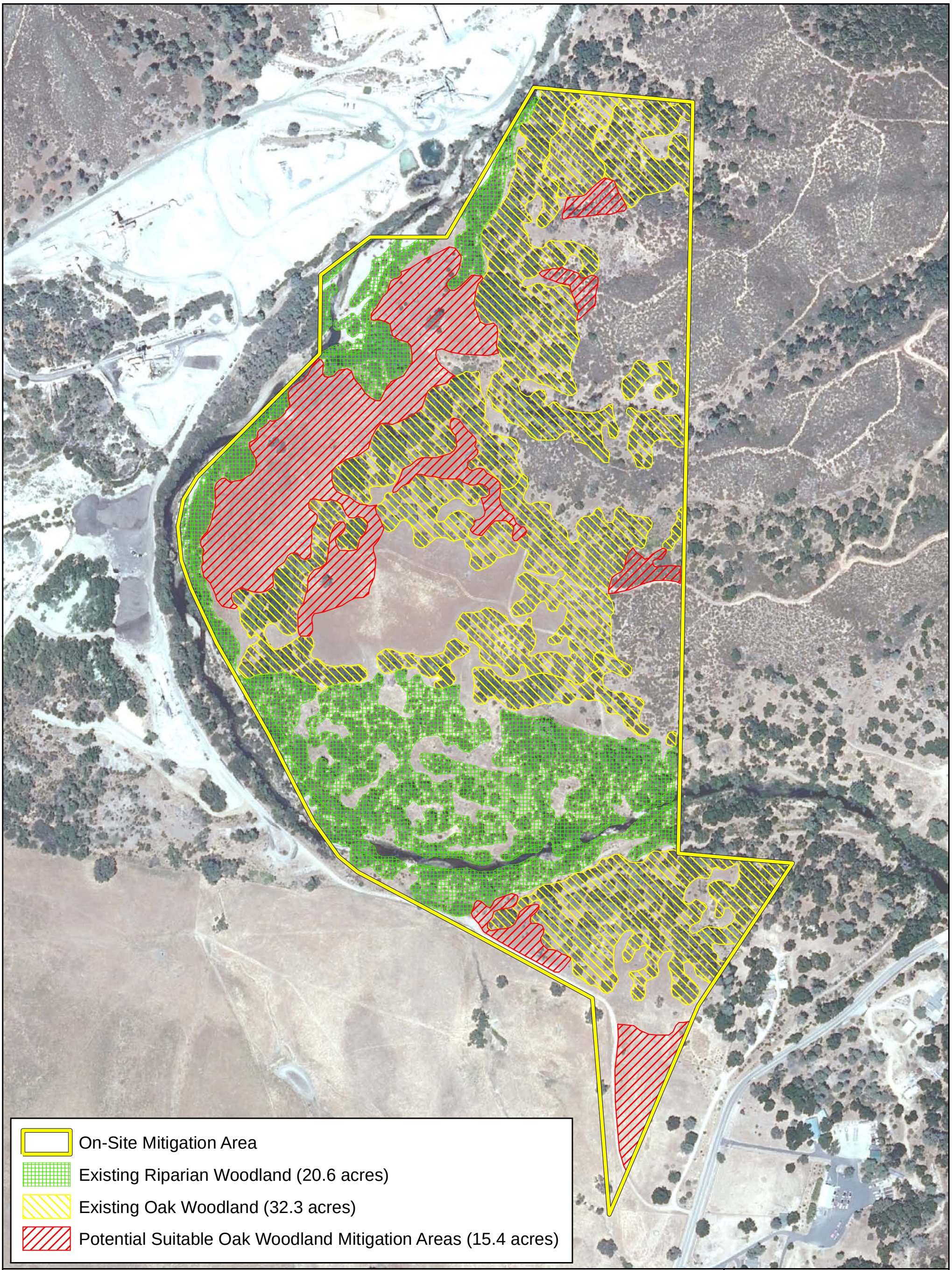

Figure 6. On-Site Mitigation Area Existing Oak Woodlands and Potential Suitable Oak Woodland Mitigation Areas

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Santa Margarita Quarry
San Luis Obispo County, California

Date: April 2012
Map By: Michael Rochelle
Base Source: 2010 NAIP

Path: L:\Acad 2000 Files\17000\17122\GIS\ArcMap\2012\Oak Woodland Report\On-Site Parcel Habitats Revised.mxd

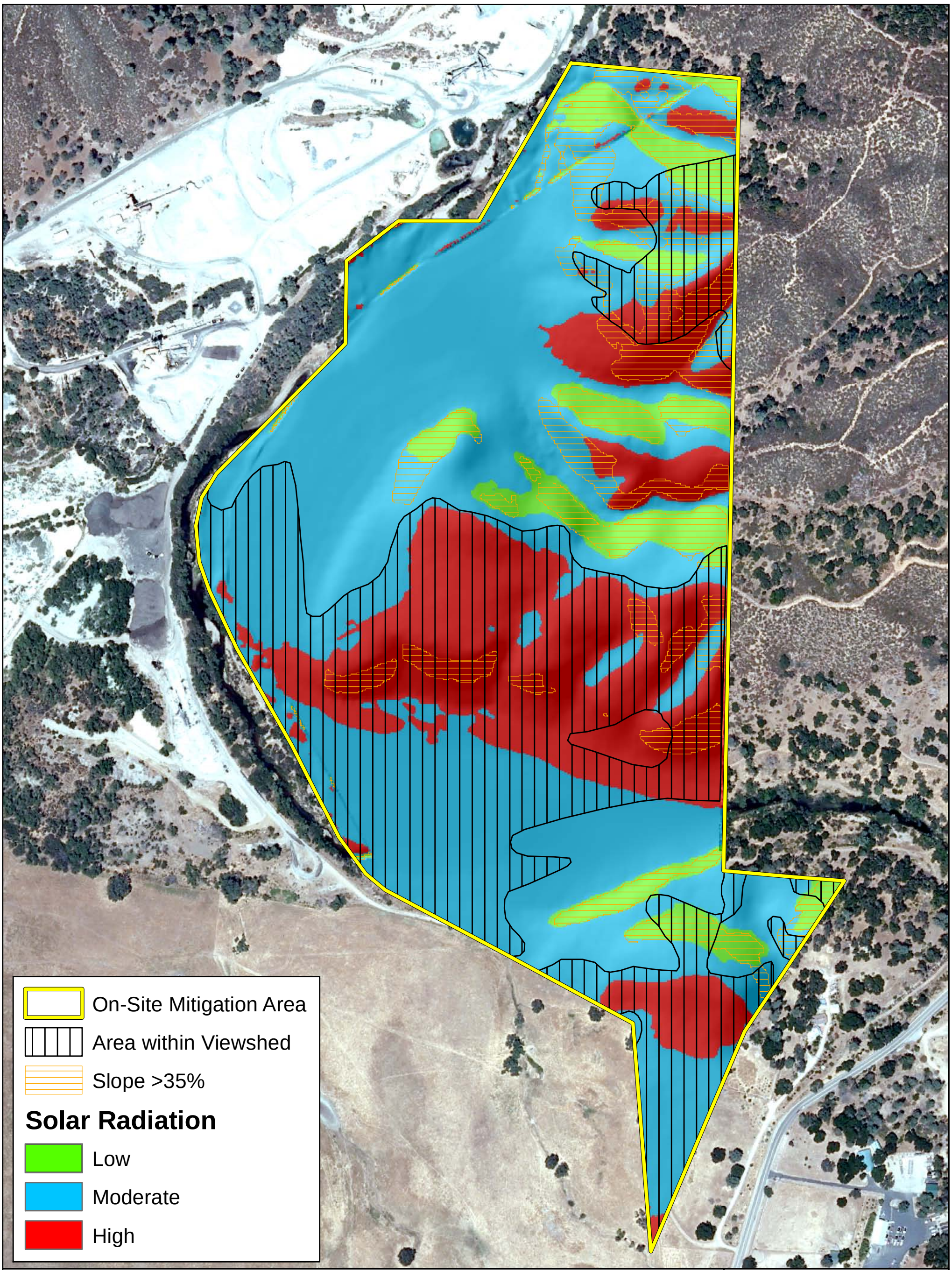

Figure 7. On-Site Mitigation Area Oak Woodland Mitigation Suitability Analysis

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ENVIRONMENTAL CONSULTANTS

Santa Margarita Quarry
San Luis Obispo County, California

Date: April 2012
Map By: Michael Rochelle
Base Source: 2010 NAIP

Path: L:\Acad 2000 Files\17000\17122\GIS\ArcMap\2012\Oak Woodland Report\Solar Radiation_Viewshed_Slope Analysis_Onsite.mxd

The Voluntary Oak Woodlands Management Plan for San Luis Obispo County (Native Tree Committee 2003) implements the voluntary guidelines for oak woodland conservation, however, compliance with this plan is voluntary.

6.0 REFERENCES

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APPENDIX A. TREE PLOT AND SURVEY DATA

Hanson Santa Margarita Quarry - Tree Plot Data

January 30-31, 2008

Plot ID	Trees / Acre	Tree Species Richness	Average DBH (inches)	Average Crown Radius (feet)	Average Health	Average Structure	Average Condition	Shrub Cover	Shrub Species Richness	Shrubs present*
					1 = Poor, 2 = Fair, 3 = Good					
1	61.6	1	17.2	13.3	2.0	2.0	2.0	30%	2	Ce be, To di
2	46.2	1	32.0	26.3	1.7	2.7	2.0	60%	3	Ce cu, Pr il, To di
3	61.6	1	21.7	13.3	2.3	2.1	2.0	70%	3	Ce cu, He ar, To di
4	92.4	1	18.0	17.5	2.2	1.8	1.9	70%	4	Ce be, Ce cu, Pr il, To di
5	123.2	1	12.2	8.4	1.9	1.9	1.7	60%	5	Ce be, Pr il, To di, Ce cu, Ri ca
6	46.2	1	30.0	13.0	1.8	1.7	2.0	70%	8	Ce cu, He ar, To di, Pr il, Ce be, Ri ca, Fr ca, Ad fa
7	77	1	18.0	11.2	1.8	2.6	2.3	70%	2	Pr il, To di
8	92.4	1	22.9	12	2.0	1.9	1.9	70%	3	To di, Pr il, Ri ca
9	92.4	1	24.1	12.8	1.0	1.5	1.0	60%	3	To di, Ri ca, Pr il
10	61.6	2	28.9	17.0	2.4	2.8	2.8	30%	3	To di, Sa ni, Ba pi
11	30.8	1	33.6	19.0	2.0	2.5	2.3	30%	2	Ce cu, To di
12	46.2	1	22.9	14.0	2.7	1.8	2.7	20%	2	Pr il, To di
13	77.0	1	20.4	15.0	2.3	2.4	2.5	50%	6	Sa me, Pr il, Ce cu, Ac gl, Ad fa, To di
14	61.6	2	20.5	15.0	2.4	2.3	2.6	80%	7	Di au, He wh, Pr il, Sa me, He ar, Fr ca, Ac gl

***sp code**	**scientific name**	**common name**
Ad fa	*Adenostoma fasciculatum*	chamise
Ba pi	*Baccharis pilularis*	coyote brush
Ce be	*Cercocarpus betuloides*	mountain mahogany
Ce cu	*Ceanothus cuneatus*	buck brush
He ar	*Heteromeles arbutifolia*	toyon
Ac gl	*Acmispon glaber* [*Lotus scoparius*]	deerweed

***sp code**	**scientific name**	**common name**
Di au	*Diplacus* [*Mimulus*] *auriculatus*	sticky monkey flower
Pr il	*Prunus ilicifolia*	holly-leaf cherry
Fr ca	*Frangula* [*Rhamnus*] *californica*	coffee berry
Ri ca	*Ribes californicum*	hillside gooseberry
Sa me	*Salvia mellifera*	black sage
Sa ni	*Sambucus nigra* [*S. mexicanus*]	blue elderberry
To di	*Toxicodendron diversilobum*	poison oak
He wh	*Hesperoyucca* [*Yucca*] *whipplei*	chaparral yucca

Hanson Santa Margarita Quarry - Tree Survey Data

January 30-31, 2008

Plot ID	Tree ID	Species*	DBH (inches)	Sum of DBH (inches)	Canopy Radius (ft)	Health 1 = Poor, 2 = Fair, 3 = Good	Structure	Condition	Notes
1	1	*Quercus agrifolia*	*15.7*	15.7	12	2	2	2	covered in poison oak, decay and some broken branches
1	2	*Quercus agrifolia*	*23.7*	23.7	20	2	2	2	branch dieback, bark decay, trunk rot
1	3	*Quercus agrifolia*	*14.4*	14.4	14	2	2	2	Bark decay, rot, sparse crown
1	4	*Quercus agrifolia*	*14.9*	14.9	7	2	2	2	see above
2	5	*Quercus agrifolia*	*13*	13	14	2	3	2	crown sparse, twig dieback, nice foliage
2	6	*Quercus agrifolia*	*23.3, 25.7*	49	35	2	3	2	leaf dieback, branch dieback, leaves scorched
2	7	*Quercus agrifolia*	*15.3, 18.8*	34.1	30	1	2	2	leaf dieback, branch dieback, leaves scorched, fungus on bole, bark rotting away
3	8	*Quercus agrifolia*	*17.9, 8.9*	26.8	15	2	2.5	2	Leaves curling, sunburned, branch and twig dieback, bark decay
3	9	*Quercus agrifolia*	*21.5*	21.5	16	2	2.5	2	thin crown, bark decay, trunk cavity
3	10	*Quercus agrifolia*	*18.1*	18.1	9	2	2	2	mushrooms, galls, ants, branch decay, bark decay
3	11	*Quercus agrifolia*	*20.3*	20.3	13	3	1.5	2	trunk scar, large branch dieback, nice foliage
4	12	*Quercus agrifolia*	*13.4, 12.3, 11.2, 10.3, 11.2, 6.1*	64.5	16	2	3	2.5	full crown, nice foliage, trunk/bark decay, some medium branch dieback
4	13	*Quercus agrifolia*	*14*	14	7	1	1.5	1	thin poor foliage, lost a big trunk
4	14	*Quercus agrifolia*	*5.8*	5.8	4	2	1	1.5	suppressed, moss and decay, fungus, broken branches
4	15	*Quercus agrifolia*	*4.5*	4.5	5	3	1	2	growing from decayed dead trunk
4	16	*Quercus agrifolia*	*9.1*	9.1	5	3	2	2.5	as above, big woodrat nest and many small oaks growing beneath
4	17	*Quercus agrifolia*	*10.3*	10.3	8	2	2	2	some fungus
5	18	*Quercus agrifolia*	*9.9*	9.9	8	1	2	1	weak thin crown
5	19	*Quercus agrifolia*	*11.9*	11.9	7	2	3	2	ants, fungus, woodrat nest
5	20	*Quercus agrifolia*	*5*	5	6	3	1.5	2	stubby trunk, 5' tall with thin branches
5	21	*Quercus agrifolia*	*20.2*	20.2	12	1	2	1	ants, twig galls, broken branches all over

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January 30-31, 2008

Plot ID	Tree ID	Species*	DBH (inches)	Sum of DBH (inches)	Canopy Radius (ft)	Health 1 = Poor, 2 = Fair, 3 = Good	Structure	Condition	Notes
5	22	*Quercus agrifolia*	*5.9, 8.2*	14.1	6	2	2	2	fungus, rotting bark, sparse foliage
5	23	*Quercus agrifolia*	*16.7*	16.7	16	1	2	1.5	lost major and minor branches, rotting bark
5	24	*Quercus agrifolia*	*11.9*	11.9	6	2	2	2	thin canopy
5	25	*Quercus agrifolia*	*7.8*	7.8	6	3	1	2	main bole 5' tall, 2 x 3' branches
6	26	*Quercus agrifolia*	*6.8, 15.6*	22.4	12	1.5	3	2	twig dieback, rotting bark
6	27	*Quercus agrifolia*	*19.6*	19.6	12	2	1	2	ants, big trunk cavities, basal sprouts
6	28	*Quercus agrifolia*	*14.6, 17.5, 16*	48.1	15	2	1	2	woodrat nest, basal sprouts
7	29	*Quercus agrifolia*	*9.6*	9.6	7	1	2	2	thin crown, twig dieback, bark sparse, scars
7	30	*Quercus agrifolia*	*15.6*	15.6	11	1.5	3	2	leaves browning, thin crown, twig dieback, larger branch dieback, thin bark
7	31	*Quercus agrifolia*	*14.5, 14.8*	29.3	14	2	3	2.5	thin crown, small branch dieback, leaves okay, galls
7	32	*Quercus agrifolia*	*7.4, 7.2*	14.6	9	2.5	3	3	nice leaves, twig dieback
7	33	*Quercus agrifolia*	*20.7*	20.7	15	2	2	2	some branch dieback, twig dieback, bark rot, leaves browning, moderate crown
8	34	*Quercus agrifolia*	*18.2, 14, 15.2*	47.4	17	1.5	1	1.5	twig dieback, leaves browning, woodrat nest, major trunk failure, fungus, basal sprouts, bark rot, scars
8	35	*Quercus agrifolia*	*15.1*	15.1	9	2.5	2	2	branch dieback, twig dieback, fair crown
8	36	*Quercus agrifolia*	*15.4*	15.4	8	2	2	2	see above, leaves brown, crown sparse, major twig dieback
8	37	*Quercus agrifolia*	*19*	19	16	2	3	3	fair crown, big scars, bark rot
8	38	*Quercus agrifolia*	*11.9, 9.2*	21.1	7	2	1	1	suppressed, thin crown, trunk very damaged by fire, rot
8	39	*Quercus agrifolia*	*19.6*	19.6	15	2	2.5	2	crown dieback, unoccupied bird nest
9	40	*Quercus agrifolia*	*15.4, 15.2*	30.6	12	3	2	2	nice foliage, twig dieback, bark rot, branch dieback
9	41	*Quercus agrifolia*	*12.7, 33.4*	46.1	18	2	2	2	large trunk failure, scars, branch dieback, twig dieback, moderate crown

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Plot ID	Tree ID	Species*	DBH (inches)	Sum of DBH (inches)	Canopy Radius (ft)	Health	Structure	Condition	Notes
						1 = Poor, 2 = Fair, 3 = Good			
9	42	*Quercus agrifolia*	*18.8*	18.8	14	2.5	3	3	leaner, bark decay, branch dieback, unoccupied bird nest
9	43	*Quercus agrifolia*	*8.6*	8.6	8	1	1.5	1	scraggly, scars, trunk decay, suppressed
9	44	*Quercus agrifolia*	*19.1*	19.1	15	2.5	2.5	3	leaner, some branch and twig dieback
9	45	*Quercus agrifolia*	*9.5, 12*	21.5	10	1	1.5	1	lots of fungus, bark rot, overtaken by poison oak, branch and twig dieback
10	46	*Quercus agrifolia*	*16.8*	16.8	12	2	3	3	twig dieback, branch dieback, crown okay
10	47	*Quercus agrifolia*	*13.5, 16.2*	29.7	15	2	2	2	leaner, thin crown, twig dieback, bark intact
10	48	*Pinus sabiniana*	*8*	8	11	3	3	3	straight trunk, thinnish crown, nice foliage
10	49	*Quercus agrifolia*	*13.6, 17, 18.2, 12.1*	60.9	30	2.5	3	3	twig dieback, nice bark, some branch dieback
11	50	*Quercus agrifolia*	23.2	23.2	18	2	3	2.5	fungus, bark rot, unoccupied bird nest
11	51	*Quercus agrifolia*	*13.5, 14, 16.4*	43.9	20	2	2	2	major trunk failure, twig galls and dieback, thin crown
12	52	*Quercus agrifolia*	*10.6*	10.6	10	3	2.5	3	little lean, some twig dieback, bark rot
12	53	*Quercus agrifolia*	*25*	25	20	3	2	3	small trunk cavity, major branch dieback, twig dieback
12	54	*Quercus agrifolia*	*33.1*	33.1	12	2	1	2	nice foliage, lost one major trunk, branch dieback, big trunk cavities
13	55	*Quercus agrifolia*	*24.4, 14.5*	38.9	18	1	2	2	brown leaves, rotting trunk, basal sprouts, fungus, branch dieback, major branch failure
13	56	*Quercus agrifolia*	*14.4*	14.4	15	2.5	2	2	poison oak on trunk, bark rotten, twig dieback, branch dieback, nice foliage
13	57	*Quercus agrifolia*	*15.6*	15.6	14	2	3	2.5	Poison oak on trunk, bark rot, branch dieback, twig dieback
13	58	*Quercus agrifolia*	*10.3, 7.4*	17.7	12	3	3	3	woodrat nest, trunk scars, major branch dieback, basal sprouts, nice foliage
13	59	*Quercus agrifolia*	*8.1, 7.4*	15.5	16	3	2	3	forked, basal sprouts, nice foliage
14	60	*Quercus agrifolia*	*12.9, 13.5*	26.4	20	2	3	3	thin crown, branch rot, twig dieback
14	61	*Quercus agrifolia*	*19.1*	19.1	18	3	2	2.5	nice crown, bark rot, small branch dieback

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14	62	*Quercus agrifolia*	*21.7*	21.7	16	2.5	3	3	small branch dieback, twig dieback, lichens and mosses, nice bark
14	63	*Pinus sabiniana*	*14.8*	14.8	6	2	1	2	ants, thin crown, nasty lean, many dead branches

* *Quercus agrifolia* = coast live oak, *Pinus sabiniana* = grey pine

Rating narratives for tree assessment	
General Condition	
good	Tree shows condition of foliage, bark, and overall structure characteristic of the species and lacking obvious defect or disease
fair	Tree shows condition of foliage, bark, and overall structure characteristic of the species with some evidence of stress, defect, or disease
poor	Tree shows condition of foliage, bark, and overall structure uncharacteristic of the species with obvious evidence of stress, defect, or disease
Health	
good	Tree is free from symptoms of disease and stress
fair	Tree shows some symptoms of disease or stress including twig and small branch dieback, evidence of fungal / parasitic infection, thinning of crown, or poor leaf color
poor	Tree shows symptoms of severe decline
Structure	
good	Tree is free from major structural defects
fair	Tree shows some structural defects in branches but overall structure is stable
poor	Tree shows structural failure of a major branch or codominant trunk

APPENDIX B. REPRESENTATIVE PHOTOGRAPHS

Appendix B. Representative Photographs
Top: Steep slopes within the RPA Area supporting typical coast live oak woodland habitat.
Bottom: Coast live oak woodland habitat and typical understory.
Photographs taken January 31, 2008

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