Appendix FEIR-8

Oak Resource Management Plan

Oak Resource Management Plan

Resource Management and Development Plan and Spineflower Conservation Plan, Including the Newhall Ranch Specific Plan, Entrada South, and Valencia Commerce Center Planning Areas

Los Angeles County, California

SEPTEMBER 2023

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Table of Contents

SECTION **PAGE NO.**

Acronyms and Abbreviations v

Summary vii

1 Introduction 1
- 1.1 ORMP Study Area 1
- 1.2 Supporting Documents 7
- 1.3 Summary of Requirements 7
  - 1.3.1 County of Los Angeles Requirements 7
  - 1.3.2 Newhall Ranch Specific Plan Program EIR Requirements 11
  - 1.3.3 RMDP/SCP EIS/EIR Requirements 11

2 Summary of Tree and Woodland Types 17
- 2.1 Individual Tree Species 17
  - 2.1.1 Coast Live Oak 17
  - 2.1.2 Valley Oak 17
  - 2.1.3 Scrub Oak 18
  - 2.1.4 Interior Live Oak 18
  - 2.1.5 MacDonald Oak 19
  - 2.1.6 Alvord Oak 19
  - 2.1.7 Mainland Cherry 19
  - 2.1.8 Southern California Black Walnut 19
- 2.2 Woodland Types 20
  - 2.2.1 Coast Live Oak Woodland 20
  - 2.2.2 Mixed Oak Woodland 21
  - 2.2.3 Valley Oak Woodland and Valley Oak/Grass 21
  - 2.2.4 California Walnut Woodland 22

3 Tree and Woodland Assessments and Inventory 23
- 3.1 Individual Oak Trees 23
  - 3.1.1 Individually Mapped Oak Trees 23
  - 3.1.2 High Country SMA and Salt Creek Area Tree Estimates 24
  - 3.1.3 Individual Tree Summary 27
  - 3.1.4 Oak Tree Condition 28
- 3.2 Woodlands 28
- 3.3 Other Native Tree Species 30

4 Oak Tree and Woodland Impact Analysis 31
4.1 Individual Trees 31
4.1.1 Oaks 31
4.1.2 Other Tree Species 35
4.1.3 Potential Indirect Impacts 35
4.2 Woodlands 35

5 Mitigation Program Framework 39
5.1 Mitigation for Oak Resources Impacts 40
5.1.1 Individual Tree Mitigation 40
5.1.2 Woodland Mitigation 41
5.2 Mitigation Areas 42
5.2.1 Site Selection 42
5.2.2 Mitigation Areas by Proposed Project Site 44
5.3 Additional Planting Areas for Individual Trees 49
5.3.1 Fuel Modification Zone Tree Planting 49
5.3.2 Landscape Tree Plantings 49
5.3.3 Restored Canyon Drainage Systems 49
5.4 Mitigation Schedule 50

6 Planting Plan 51
6.1 Oak Tree Source Requirements and Size 51
6.2 Oak Tree Planting Densities and Quantities 51
6.3 Identified Oak Tree Capacity 52
6.4 Site Preparation 53
6.4.1 Soil Decompaction and Surface Contouring 53
6.4.2 Soil Amendments 53
6.4.3 Weed/Debris Removal 53
6.4.4 Irrigation System Installation 53
6.4.5 Initial Weed Control 54
6.5 Plant and Seed Installation 54
6.6 Planting Plan 55
6.7 Tree Tagging and Mapping 58
6.8 Fencing and Protection 59

7 Maintenance Plan 61
7.1 General Habitat and Tree Maintenance Guidelines 61
7.1.1 Pest Management 61
7.1.2 Weed Control 61
7.1.3 Irrigation System 62

7.1.4 Trash and Debris Removal 62
7.1.5 Tree Protection and Fencing and Signage Maintenance 62
7.1.6 Tree Care 62
7.2 Maintenance Schedule 63
8 Monitoring Plan 65
8.1 Monitoring Principles 65
8.2 Monitoring and Reporting Schedule 65
8.2.1 Individual Trees 66
8.2.2 Woodlands 66
8.3 Monitoring Methods 67
8.3.1 Individual Trees 67
8.3.2 Woodlands 67
8.4 Performance Standards 68
8.4.1 Individual Trees 68
8.4.2 Woodlands 69
8.5 Adaptive Management Program 70
8.6 Preserved Tree and Woodland Monitoring 70
8.7 Documentation 71
8.8 Reporting 72
8.9 Mitigation Program Completion 73
8.9.1 Individual Project Mitigation Completion 73
8.9.2 Overall ORMP Mitigation Program Completion 73
8.10 Contingency Measures 73
9 Long-Term Management Plan 75
9.1 Management and Maintenance Responsibilities 75
9.2 Management Actions 75
9.3 Long-Term Monitoring 75
9.4 Reporting 75
10 References 77

TABLES

1 Additional BIO-22c Oak Tree Replacement Ratios 13
2 Optimal Woodland Densities and Acorn Planting Quantities, by Oak Woodland Type 14
3 CDFG Jurisdictional Permanent Impacts Mitigation Ratios 15
4 Species Distribution for Oak Trees (Heritage Oaks in Parentheses) 23
5 Tree Tally and Estimate for the High Country SMA and Salt Creek Area 27

6 Oak Woodland Acreage by Development Area 29
7 Species Distribution for Southern California Black Walnut and Mainland Cherry Trees 30
8 Oak Tree Impacts by Development Area and Species (Heritage Oaks in Parentheses) 32
9 Non-Oak Tree Impacts by Development Area and Species 35
10 Impacted Woodland Acreages 36
11 Required Oak Tree Mitigation by Development Area and Species 40
12 Required Non-Oak Tree Mitigation by Development Area and Species 41
13 Mitigation Requirements for Oak Habitat Impacts (Upland Areas) 41
14 Mitigation Requirements for Oak Habitat Impacts (Jurisdictional Areas) 42
15 Proposed Oak Woodland Creation and Enhancement Areas 44
16 Mitigation Requirements Summary by Development Area 45
17 Target Woodland Tree Densities by Oak Woodland Type 52
18 Oak Tree Plantings by Species 52
19 Southern Coast Live Oak Riparian Forest Plant Palette 55
20 Coast Live Oak Woodland Plant Palette 56
21 Valley Oak Savanna Seed Mix 57
22 Valley Oak Woodland Plant Palette 58
23 Summary of Performance Standards for Oak Woodland Creation and Enhancement Sites 69

FIGURES

1 Regional Map 3
2 Oak Resources Management Plan (ORMP) Study Area 5
3 Preservation within ORMP Study Area 9
4 Tree and Woodland Locations within ORMP Study Area 25
5 Individual Tree Impacts within ORMP Study Area 33
6 Woodland Impacts within ORMP Study Area 37
7 Woodland Creation/Enhancement and Individual Tree Planting Areas 47

APPENDIX

A Representative Site Photographs

Acronyms and Abbreviations

Acronym/Abbreviation	Definition
amsl	above mean sea level
Cal-IPC	California Invasive Plan Council
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CLAOTO	County of Los Angeles Oak Tree Ordinance
Corps	U.S. Army Corps of Engineers
dbh	diameter at breast height
EIS/EIR	RMDP-SCP Final Environmental Impact Statement / Environmental Impact Report
GIS	geographic information system
GPS	Global Positioning System
I-5	Interstate 5
ORMP	Oak Resource Management Plan
PVC	polyvinyl chloride
RMDP	Newhall Ranch Resource Management and Development Plan
SCP	Spineflower Conservation Plan
SEA	Significant Ecological Area
SMA	Special Management Area
SR-126	State Route 126
VCC	Valencia Commerce Center
WRP	Water Reclamation Plant

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Summary

This Oak Resource Management Plan (ORMP) outlines the multi-layered oak resource mitigation approach for the Newhall Ranch Resource Management and Development Plan (RMDP) and the Spineflower Conservation Plan (SCP) area, including the Newhall Ranch Specific Plan (Specific Plan), Entrada South, and Valencia Commerce Center (VCC) planning areas (hereafter referred to as the RMDP/SCP area). To prepare the ORMP, Dudek evaluated available oak tree and oak woodland information, conducted site assessments and analyses, and developed an oak tree and oak woodland mitigation framework to cohesively satisfy multiple agency requirements. Substantial portions of the RMDP/SCP area include oak trees (*Quercus* spp.) or oak woodlands. A percentage of these trees and woodlands would be impacted by proposed development, while the majority of the oak resources on the Newhall Ranch are not within planned development areas and will be preserved. The work completed during preparation of this ORMP includes the following:

- Establishing oak resource baseline information
- Determining/confirming tree impact levels within the RMDP/SCP area, in total and by individual project
- Determining/confirming woodland impact levels within the RMDP/SCP area, in total and by individual project
- Analyzing mitigation requirements according to the County of Los Angeles Oak Tree Ordinance (CLAOTO), the Specific Plan, the RMDP/SCP Final Environmental Impact Statement / Environmental Impact Report (EIS/EIR), and California Public Resources Code Section 21083.4
- Developing an oak resource mitigation program that satisfies multiple agency requirements while considering the suitability of planting areas, the feasibility of required maintenance and monitoring, and other Newhall Ranch habitat mitigation needs.

Site-specific oak tree reports required by CLAOTO, inclusive of mitigation, have been or are in the process of being prepared for the planned villages within the RMDP/SCP area. These oak tree reports meet the County of Los Angeles's (County's) requirements for oak tree mitigation and have been considered in the preparation of this ORMP. This ORMP summarizes the current status of oak-related information for the RMDP/SCP area and provides a comprehensive plan for coordinating mitigation efforts and requirements so that appropriate tree planting and creation or enhancement of oak woodlands is completed in proportion to the impacts and implemented in a sustainable manner.

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1 Introduction

This Oak Resources Management Plan (ORMP) addresses oak tree and oak woodland resource impacts and mitigation for the Newhall Ranch Resource Management and Development Plan (RMDP) and Spineflower Conservation Plan (SCP) study area, including the Newhall Ranch Specific Plan (Specific Plan), Entrada South, and Valencia Commerce Center (VCC) planning areas (RMDP/SCP area). The purpose of the ORMP is to detail project goals and guidelines for mitigating impacts to oak resources through (1) enhancing existing oak woodlands through resource management, including planting and weed control; (2) establishing new oak woodlands in suitable areas that have been previously disturbed; (3) replacing oak trees as a component of habitat restoration in temporarily impacted areas that supported oak trees and oak woodlands prior to development; and (4) planting oak trees in open space to mitigate individual oak tree impacts in accordance with the County of Los Angeles Oak Tree Ordinance (CLAOTO).

The Newhall Ranch RMDP is a conservation, mitigation, and permitting plan for the long-term management of sensitive biological resources within the 11,999-acre Specific Plan area (Specific Plan area) located in northern Los Angeles County (Figure 1). The Specific Plan was approved by the County of Los Angeles (County) in May 2003 (County of Los Angeles 2003), and subsequent development plans; subdivision maps; and federal and state permitting, consultations, and agreements will be required to implement build-out of the Specific Plan area, which is projected to occur over the next 20 to 25 years. The SCP is a conservation and management plan to permanently protect and manage a system of preserves designed to maximize the long-term persistence of the San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*) (spineflower) within the Specific Plan area, VCC planning area, and Entrada South planning area.

The RMDP is proposed in conjunction with the SCP to create a combined RMDP/SCP project. The RMDP/SCP boundaries extend beyond the Specific Plan area and include all or portions of the following additional project areas: Entrada South, VCC, and some off-site improvement areas. Because the infrastructure components of the RMDP would facilitate development of the Specific Plan and Entrada South (i.e., Magic Mountain Parkway extension), and because such development would result in impacts to the spineflower, thus necessitating an Incidental Take Permit and SCP, the U.S. Army Corps of Engineers (Corps) and California Department of Fish and Game (CDFG; now California Department of Fish and Wildlife (CDFW)) elected to prepare a comprehensive Environmental Impact Statement / Environmental Impact Report (EIS/EIR).[1] In addition to addressing impacts to the spineflower, the RMDP/SCP Final EIS/EIR addresses impacts to oak trees and oak woodlands and identifies measures to mitigate such impacts, which are identified and presented in this ORMP.

1.1 ORMP Study Area

The study area (14,600 acres), for the purposes of this ORMP, includes the following tract maps: Landmark Village, Mission Village, Homestead South, Homestead North, Potrero Village, Entrada South, and VCC, as well as three

[1] The EIR portion of the EIS/EIR and Newhall Ranch RMDP/SCP project was approved by the CDFG on December 3, 2010. The CDFG also approved the spineflower Incidental Take Permit covering Newhall's landholdings, including the Homestead South site. For its part, the Corps approved the EIS portion of the EIS/EIR and the RMDP/SCP project, pursuant to a Record of Decision for the Least Environmentally Damaging Practical Alternative and other supporting documents, in January 2011. The Record of Decision was signed in August 2011.The CDFW subsequently published a Final Additional Environmental Analysis in June 2017, updating the EIR portion of the EIS/EIR to address certain issues related to greenhouse gas emissions and avoidance measures for the unarmored threespine stickleback.

areas outside tract map boundaries: High Country Special Management Area (SMA), Salt Creek SMA, and the Water Reclamation Plant (WRP)–Utility Corridor. The land use designations within the study area include residential, industrial, mixed-use, parks and recreation, public facilities, preserved area, SMA/Significant Ecological Area (SEA), and natural Open Area. The RMDP identifies numerous infrastructure facilities related to the development of these land uses (e.g., bridges, drainage improvements, viewing platforms, and debris and water quality basins) and provides an evaluation of the management of resources in the context of this infrastructure development. Resource management occurs through a design development process that seeks to avoid and minimize impacts, and through the implementation of mitigation that offsets unavoidable significant impacts both during and after construction of project components.

The ORMP study area lies roughly 0.5 mile west of Interstate 5 (I-5) and largely southwest of the junction of I-5 and State Route 126 (SR-126). Site elevations range from 825 feet above mean sea level (amsl) in the Santa Clara River bottom at the Ventura County / Los Angeles County line to approximately 3,200 feet amsl on the ridgeline of the Santa Susana Mountains along the ORMP study area's southern boundary (Figure 2). The study area is located to the north and south of SR-126, from Homestead Canyon in the northwest to I-5, and from Chiquito Canyon to the north to the canyons of the High Country Special Management Area (SMA) in the extreme south.



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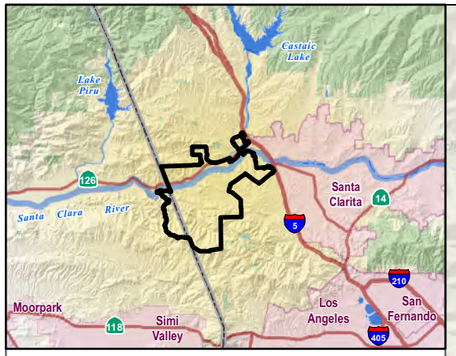
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FIGURE 1

Regional Map

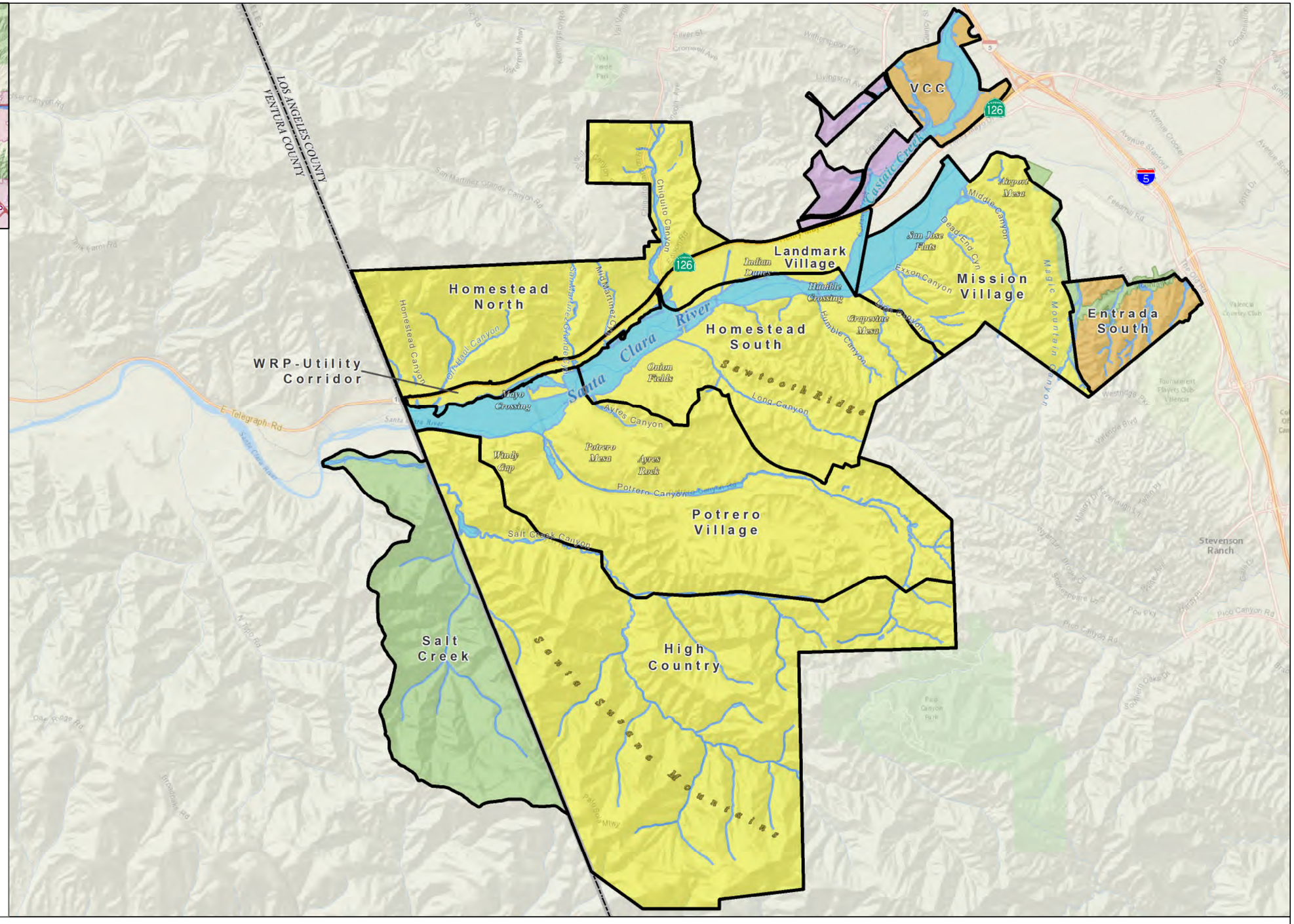
Oak Resources Management Plan for the RMDP/SCP

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ORMP Study Area Includes:

- Newhall Ranch Specific Plan (Specific Plan)
- Area in addition to Specific Plan within RMDP
- Area in addition to Specific Plan and RMDP within SCP
- VCC Planning Area within ORMP, outside Specific Plan, RMDP, SCP
- CDFW Jurisdictional
- Village Boundary



0 0.5 1 Miles

SOURCE: Bing Maps Aerial, Newhall Alternative 13 LEDPA Development Plan

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FIGURE 2
Oak Resources Management Plan (ORMP) Study Area

Oak Resources Management Plan for the RMDP/SCP

\\DUDEK-FILES\GIS\Data\Projects\373001\2014_Scopes\MAPDOC\MAPS\222_ORMP\Figure 2 ORMP Study Area.mxd- Date Saved: 5/12/2014 5:44:51 PM

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The study area includes sensitive biological areas of the Santa Clara River SMA/SEA and High Country SMA/SEA, Open Area, oak resources, and the Salt Creek area, which is a conservation area that occurs outside the Specific Plan area boundary. The protection of open space in the study area occurs within the tract map boundaries in the form of seven Spineflower Preserves, the Mariposa Lily Reserve, natural open space land use designation, and the Santa Clara River SMA/SEA. The total Open Area protected within the tract map boundaries is 3,770 acres. Outside the tract maps, open space is protected by the High Country SMA/SEA (4,167 acres) and the Salt Creek area (1,518 acres). The total Open Area protected within the study area totals 9,417 acres (Figure 3).

1.2 Supporting Documents

This ORMP includes a comprehensive summary of on-site oak tree and woodland resources along with analysis of anticipated impacts associated with the proposed projects' grading footprints. Determination of total oak tree and woodland impacts from the various projects was completed through analysis of previously collected tree inventory information. Individual oak tree inventories have been completed within the RMDP/SCP area and form the basis for individual oak tree impacts discussed in this ORMP. Additionally, oak woodland habitat mapping for the Newhall Ranch was completed and forms the basis for the oak woodland impact totals discussed in this ORMP. The following documents or data sets were evaluated during the preparation and 2023 revision of this ORMP:

- Revised Oak Tree Permit (No. 2005-00043) for the Mission Village Project (VTTM No. 061105), County of Los Angeles, January 27, 2011
- Oak Tree Permit (No. 2005-00032) for the Easterly Terminus of Magic Mountain Parkway, County of Los Angeles, September 16, 2010
- Tree impact assessment for the Homestead South development area (Hunsaker 2013)
- GIS habitat mapping data (Dudek 2013)
- *High Country and Salt Creek Oak Woodland Sampling and Tree Population Estimation* (Dudek 2007a)
- *Newhall Ranch Mitigation Feasibility Study* (Dudek 2007b).
- *Oak Tree Report Valencia Commerce Center,* VTPM 18108 (Carlsberg Associates 2021)
- *Oak Tree Report Entrada South, VTTM 53295. The Old Road and Magic Mountain Parkway* (Carlsberg Associates 2023)

1.3 Summary of Requirements

The regulatory requirements that form the basis of this ORMP are derived from three main sources, including the CLAOTO, the Newhall Ranch Specific Plan Program EIR, and the RMDP/SCP EIS/EIR, each of which are described in detail below.

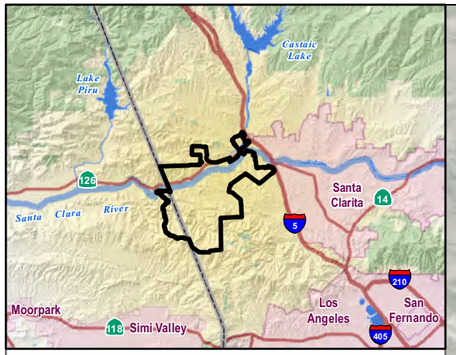
1.3.1 County of Los Angeles Requirements

The CLAOTO (Los Angeles County Code Section 22.174.010 et seq.) requires that a permittee replace oaks approved for removal at a ratio of at least 2:1 for every impacted tree:

> Required replacement oak trees shall consist exclusively of indigenous oak trees and shall be in the ratio of at least two to one. Each replacement tree shall be at least a 15-gallon size specimen and

> measure at least one inch in diameter one foot above the base. The Commission, Hearing Officer, or Director, in lieu of this requirement, may require the substitution of one larger container specimen for each oak tree to be replaced, where, in their opinion, the substitution is feasible and conditions warrant such greater substitution (Los Angeles County Code, Section 22.174.070.A.6.a).

Additionally, any oaks meeting the criteria for classification as a heritage tree (defined as "any oak tree measuring 36 inches or more in diameter or having significant historical or cultural importance to the community, notwithstanding that the tree diameter is less than 36 inches") may require replacement at a ratio of 10:1 in accordance with CLAOTO based on determination of the Los Angeles County Forester during the permitting process. Replacement trees are required to be maintained for a period of 2 years and replaced if mortality occurs within that period. The CLAOTO also identifies requirements for protection of retained trees adjacent to development activity.



- Newhall Ranch Specific Plan (Specific Plan)
- Resource Mgmt Development Plan (RMDP)
- Spineflower Conservation Plan (SCP)
- Village Boundary

Preserved Area

- Spineflower Preserve
- Mariposa Lily Reserve
- Open Area in Tract Maps
- Salt Creek Area

Special Management Areas (SMAs) and Significant Ecological Areas (SEAs)

- Santa Clara River SMA/SEA
- High Country SMA/SEA

0 0.5 1 Miles

LOS ANGELES COUNTY
VENTURA COUNTY
VCC
Landmark Village
Homestead North
Homestead South
Mission Village
Entrada South
Potrero Village
WRP-Utility Corridor
Santa Clara River SMA/SEA
Salt Creek Area
High Country SMA/SEA
Santa Clara River
Chiquito Canyon
Castaic Creek
Middle Canyon
San Jose Flats
Dead-End Canyon
Indian Dunes
Humble Crossing
Exxon Canyon
Grapevine Mesa
Airport Mesa
Magic Mountain Canyon
Homestead Canyon
Off-Haul Canyon
Mid-Martinez Canyon
Onion Fields
Sawtooth Ridge
Long Canyon
Ayres Canyon
Potrero Mesa
Ayres Rock
Windy Gap
Potrero Canyon
Salt Creek Canyon
Santa Susana Mountains

SOURCE: Bing Maps Aerial, Newhall Alternative 13 LEDPA Development Plan

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FIGURE 3
Preservation within ORMP Study Area

Oak Resources Management Plan for the RMDP/SCP

\\DUDEK-FILES\GIS\Data\Projects\j373801\2014_Scopes\MAPDOCMAPS\222_ORMP\Figure 3 Preservation within ORMP.mxd- Date Saved: 5/12/2014 6:01:20 PM

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1.3.2 Newhall Ranch Specific Plan Program EIR Requirements

Mitigation Measure SP-4.6-48 of the certified Newhall Ranch Specific Plan Program EIR (County of Los Angeles 2003) identifies oak resources as including oak trees of the sizes regulated under CLAOTO, southern California black walnut (*Juglans californica* var. *californica*), mainland cherry trees (*Prunus ilicifolia* ssp. *ilicifolia*), and mainland cherry shrubs. This mitigation measure states the following:

> Standards for the restoration and enhancement of oak resources within the High Country SMA and the Open Area include the following (oak resources include oak trees of the sizes regulated under the County Oak Tree Ordinance, southern California black walnut trees, Mainland cherry trees, and Mainland cherry shrubs):
>
> - To mitigate the impacts to oak resources that may be removed as development occurs in the Specific Plan Area, replacement trees shall be planted in conformance with the oak tree ordinance in effect at that time.
> - Oak resource species obtained from the local gene pool shall be used in restoration or enhancement.
> - Prior to recordation of construction level final subdivision maps, an oak resource replacement plan shall be prepared that provides the guidelines for the oak tree planting and/or replanting. The Plan shall be reviewed by the Los Angeles Department of Regional Planning and the County Forester and shall include the following: site selection and preparation, selection of proper species including sizes and planting densities, protection from herbivores, site maintenance, performance standards, remedial actions, and a monitoring program.
> - All plans and specifications shall follow County oak tree guidelines, as specified in the County Oak Tree Ordinance.

1.3.3 RMDP/SCP EIS/EIR Requirements

Mitigation measures in the EIS/EIR are consistent with and supplement those mitigation measures listed in the previously certified Newhall Ranch Specific Plan Program EIR (County of Los Angeles 2003). Additional requirements related to oak tree resources exist but are met through implementing the requirements and conditions of the CLAOTO and EIS/EIR. Related oak tree resource regulations include California's county oak woodland conversion mitigation provisions (California Public Resources Code, Section 21083.4), which outline mitigation programs for significant oak impacts as determined by the California Environmental Quality Act (CEQA). The Oak Woodlands Conservation Act provides several mitigation alternatives that can be implemented to mitigate significant impacts on oak woodlands. The comprehensive nature of this ORMP is intended to mitigate impacts to oak resources while maintaining consistency with all aforementioned regulations and requirements.

The following mitigation measures included in the RMDP/SCP EIS/EIR address the mitigation required for impacts to oak resources.

1.3.3.1 Mitigation Measure BIO-22

Mitigation Measure BIO-22 identifies required mitigation of impacts to oak trees and oak woodlands and states the following:

BIO-22a Newhall Land shall prepare an Oak Resource Management Plan, to be submitted for approval to CDFG and County of Los Angeles, and implemented upon approval. The Plan shall identify areas suitable for oak woodland enhancement and creation. The Plan shall distinguish between oaks to be planted in compliance with CLAOTO (BIO-22b) and the additional measures required by this EIS/EIR (BIO-2 for woodlands in jurisdictional streambeds; and BIO-22c and BIO-22d for upland areas).

The Oak Resource Management Plan shall include measures to create or enhance woodlands as follows: (1) locations and acreages of mitigation sites where woodland creation or enhancement will occur; (2) a description of proposed cover and number of native trees, shrubs, and grasses per acre to be established. This description shall be based on comparable intact woodlands in the area of impact or elsewhere within the RMDP planning area, consistent with conditions of the proposed mitigation site; (3) site preparation measures to include (as appropriate) topsoil treatment, soil decompaction, erosion control, weed grow/kill cycle, or as otherwise approved by the agencies; (4) methods for the removal of non-native plants (*e.g.*, mowing, weeding, raking, herbicide application, or burning); (5) a plant palette listing all species, including sizes, planting densities, or seeding rates, to be based on target vegetation; (6) the source of all plant propagules (*e.g.*, seed, potted nursery stock) and the quantity and species of seed or potted stock of all plants to be introduced or planted into the mitigation areas; (7) temporary irrigation, protection from herbivores, fertilizer, weeding, *etc.*; (8) a schedule and action plan to maintain and monitor the enhancement/ restoration areas to include, at minimum, qualitative annual monitoring for revegetation success and site degradation due to erosion, trespass, or animal damage for a period no less than five years total and no less than two years after removal of irrigation (if any); (9) where sites are near trails or other access points, measures such as fencing, signage, or security patrols to exclude unauthorized entry into the mitigation areas shall be implemented as needed; (10) tree protection standards to be implemented for individual trees or woodlands adjacent to development activity; (11) success criteria as stated in BIO-22b and BIO-22d; and (12) contingency measures, such as replanting, erosion control, irrigation system repair, or understory re-seeding, to be implemented if habitat improvement/restoration efforts do not meet the success criteria stated in the plan.

BIO-22b To meet the minimum mitigation criteria set forth in CLAOTO, Newhall Land will replace impacted oaks (measuring 8 inches in diameter, or greater, or with a combined diameter of 12 inches for multi-stem oaks) at a ratio of 2:1. Additionally, oaks meeting the criteria for classification as a Heritage Tree (defined by CLAOTO as “any oak tree measuring 36 inches or more in diameter”) will be replaced at a ratio of 10:1.

Whether they are planted in dedicated open space areas or developed areas, replacement oak trees planted in conformance with CLAOTO shall adhere to the following standards:

1. Replacement oak trees shall be exclusively indigenous species, shall be at least a 15-gallon size specimen, and measure at least one inch in diameter one foot above the base, unless otherwise approved by the County Forester.
2. Replacement trees shall be properly cared for and maintained for a period of two years and replaced by Newhall Land if mortality occurs within that period.
3. Replacement planting shall be conducted in phases as impacts occur. Alternatively, Newhall Land may choose to plant replacement trees in open space areas prior to realization of Project-related impacts (pre-mitigation). Any pre-mitigation shall adhere to the standards outlined herein.
4. Following completion of the two-year maintenance period, the County Forester shall provide final authorization that CLAOTO standards have been met.

BIO-22c In addition to the CLAOTO requirements (BIO-22b, above), this EIS/EIR requires replacement of oak trees at the ratios in the table below for trees lost or impacted in uplands. These trees are in addition to the CLAOTO requirement described above. These additional trees may also be incorporated into woodland habitat enhancement or creation, as described above.

Additional replacement ratios are provided in Table 1 [Table 4.5-70 in the EIS/EIR].

Table 1. Additional BIO-22c Oak Tree Replacement Ratios

Trunk Diameter*	Mitigation Ratio
8–35	0.5:1
36+	2.5:1

Note:
* Trunk diameter measured at 4.5 feet above mean natural grade. Mitigation required for single-stem oaks with a minimum 8-inch diameter and multi-stem oaks with a combined diameter of 12 inches.

BIO-22d Newhall will mitigate lost oak woodlands occurring on upland sites (i.e., outside CDFG/Corps jurisdictional stream channels) by creating or enhancing oak woodlands in the Salt Creek area and High Country SMA. At minimum, Newhall Land will mitigate woodland habitat at a 1:1 ratio through creation of new oak woodlands. As an alternative, Newhall Land may choose to enhance, improve, and manage existing degraded woodland areas at a minimum 2:1 ratio for lost woodland acreage.

For woodland enhancement or replacement, dominant species (coast live oak or valley oak) and planting densities will be based on mitigation site suitability. All plant propagules, including acorns or tree cuttings and all seed or potted nursery stock of oaks or other species, shall be collected within a five-mile radius and within 1,000 feet elevation of the restoration site.

The woodland creation or enhancement sites shall be monitored for oak tree survival and vigor and other habitat values, including species diversity and wildlife use. The replacement or enhancement sites will be considered “complete” upon meeting all of the following success criteria, or as

otherwise approved by CDFG. Any replacement oak trees planted in woodlands for conformance with CLAOTO will also be subject to CLAOTO performance criteria (BIO-22b).

1. Regardless of the date of initial woodland creation or enhancement, each site must have been without active manipulation by irrigation, planting, or re-seeding for a minimum of three years prior to evaluation for successful completion.
2. The percent cover and species richness of restored or enhanced native vegetation shall be evaluated based on target vegetation described in the woodland creation or enhancement plan.
3. Densities (numbers/acre) of surviving, healthy oak shall be within 5% of the plan target density. Cover and species richness of other native shrubs shall reach 50% of the cover and species richness described for the "target" woodland. Optimal woodland densities and acorn planting quantities, by oak woodland type, are presented in Table 2 [Table 4.5-71 in the EIS/EIR].

Table 2. Optimal Woodland Densities and Acorn Planting Quantities, by Oak Woodland Type

Woodland Type	Average Existing Woodland Density (trees per acre)	Target Density for Newhall Land (trees per acre)
Coast live oak woodland	22	50
Mixed oak woodland	19	40
Valley oak woodland	16	25

4. Non-native grass cover shall not exceed the "target" woodland non-native grass cover, and other non-native species shall not exceed 10% cover at any time. Any species listed on the California State Agricultural list (CDFA 2009) or Cal-IPC list of noxious weeds (Cal-IPC 2006, 2007) will not be present on the revegetation site at the time that project success is determined.

1.3.3.2 Mitigation Measure BIO-2

In addition to Mitigation Measure BIO-22, Mitigation Measure BIO-2 from the EIS/EIR requires mitigation for oak habitats that occur within CDFW and Corps jurisdictional boundaries. The relevant portions of Mitigation Measure BIO-2 state the following:

> For permanent and temporary impacts to CDFG jurisdiction, consistent with the sub-notification, quantities of mitigation acreage required shall be calculated in accordance with the criteria below:
>
> - If suitable mitigation sites have met success criteria (BIO-6) prior to disturbance at the impact site, the mitigation sites shall replace the permanently impacted habitats in kind at a 1:1 ratio.
> - If a suitable mitigation site has not met success criteria prior to disturbance of the impact site, habitat shall be replaced in kind (tributary for tributary impacts, river for river impacts) according to the replacement ratios specified in Table 3 [Table 4.5-68 in the EIS/EIR], below. These ratios provide compensatory mitigation for temporal losses of riparian function by considering the existing functional condition of the resources to be impacted, as well as time required for different vegetation types to become established and mature.

- If a suitable mitigation site has not been initiated within two years following disturbance of the impact site, but is initiated within five years following such disturbance, the permanently impacted habitats shall be replaced in kind at a replacement ratio equal to the ratio required by Table 3 [Table 4.5-68 in the EIS/EIR], below, plus 0.5:1. (For example, if mitigation for impacts to high-quality mulefat scrub were initiated three years after disturbance, the required replacement ratio would be 2.5:1.)
- If a suitable mitigation site has not been initiated within five years following disturbance of the impact site, the permanently impacted habitats shall be replaced in kind at a replacement ratio equal to the ratio required by Table 3 [Table 4.5-68 in the EIS/EIR], below, plus 1:1. (For example, if mitigation for impacts to high-quality mulefat scrub were initiated six years after disturbance, the required replacement ratio would be 3:1.)

Table 3. CDFG[2] Jurisdictional Permanent Impacts Mitigation Ratios

Ratios Listed by Vegetation Types & Quality				
Vegetation Community	Veg Code / ID	HIGH Reach Value* (Mit. Ratio)	MEDIUM Reach Value** (Mit. Ratio)	LOW Reach Value*** (Mit. Ratio)
Southern Cottonwood–Willow Riparian Forrest	SCWRF	4:1	3:1	2:1
Southern Willow Scrub	SWS	3:1	2.5:1	2:1
Oak Woodland (Coast Live, Valley)	CLOW / VOW	3:1	2.5:1	2:1
Big Sagebrush Scrub	BSS	2.5:1	2:1	1.5:1
Mexican Elderberry Scrub	MES	2.5:1	2:1	1.5:1
Cismontane Alkaline Marsh	CAM	2.5:1	2:1	1.5:1
Coastal and Valley Fresh Water Marsh	CFWM	2:1	1.5:1	1:1
Mulefat Scrub	MFS	2:1	1.5:1	1.25:1
Arrowweed Scrub	AWS	2:1	1.5:1	1:1
California Sagebrush scrub, and CSB-dominated habitats	CSB, CSB-A, -BS, -CB, -CHP, and -PS	2:1	1.5:1	1:1
Herbaceous Wetland	HW	1.5:1	1.25:1	1:1
River Wash, emergent veg.	RW	1.5:1	1.25:1	1:1
Chaparral, Chamise Chaparral	CHP, CC	1.5:1	1.25:1	1:1
Coyote Brush Scrub	CYS	1.5:1	1.25:1	1:1
Eriodictyon Scrub	EDS	1.5:1	1.25:1	1:1
California Grass Lands	CGL	1:1	1:1	1:1
Agricultural / Disturbed / Developed	AGR / DL / DEV	1:1	1:1	1:1

Notes:

* HIGH reach value indicates a portion of the Santa Clara River or main tributary that scored above 0.79 Total Score utilizing the HARC methodology described in Section 4.2, Geomorphology and Riparian Resources, of this EIS/EIR.

[2] Table sourced from RMDP/SCP EIS/EIR; the CDFG (California Department of Fish and Game) is now known as the CDFW (California Department of Fish and Wildlife).

** MEDIUM reach value indicates a portion of the Santa Clara River or main tributary that scored between 0.4 and 0.79 Total Score utilizing the HARC methodology described in Section 4.2.
*** LOW reach value indicates a portion of the Santa Clara River or main tributary that scored below 0.4 Total Score utilizing the HARC methodology described in Section 4.2.

1.3.3.3 Mitigation Measure BIO-42

Mitigation Measure BIO-42 addresses protection of retained oak trees adjacent to development areas and states the following:

> All oaks that will not be removed that are regulated under CLAOTO with driplines within 50 feet of land clearing (including brush clearing) or areas to be graded shall be enclosed in a temporary fenced zone for the duration of the clearing or grading activities. Fencing shall extend to the root protection zone (i.e., the area at least 15 feet from the trunk or five feet beyond the drip line, whichever distance is greater). No parking or storage of equipment, solvents, or chemicals that could adversely affect the trees shall be allowed within 25 feet of the trunk at any time. Removal of the fence shall occur only after the Project arborist or qualified biologist confirms the health of preserved trees.

1.3.3.4 Mitigation Measure BIO-88

Mitigation Measure BIO-88 addresses mitigation for non-oak species, specifically California black walnut and mainland cherry trees or shrubs and states the following:

> Any southern California black walnut and mainland cherry trees or shrubs outside riparian areas greater than one inch dbh shall be replaced in the ratio of at least 2:1. Multi-trunk trees/shrub dbh shall be calculated based on combined trunk dbh. Mitigation shall be deemed complete when each replacement tree attains at least one inch in diameter one foot above the base.

2 Summary of Tree and Woodland Types

2.1 Individual Tree Species

The vast majority of the oaks in the RMDP/SCP area are coast live oak (*Quercus agrifolia*), but valley oak (*Q. lobata*), scrub oak (*Q. berberidifolia)*, interior live oak (*Q. wislizeni*), MacDonald oak (*Q.* × *MacDonaldii*) (a hybrid or evolutionary intermediate between valley oak and scrub oak), and Alvord oak (*Q.* × *alvordiana*) (a hybrid or evolutionary intermediate between blue oak (*Q. douglasii*) and Tucker's oak (*Q. john-tuckeri*)) and a hybrid between valley oak and blue oak (*Q. lobata* × *douglasii*) also occur. The oak species found on site differ from one another by one or more physical characteristics or growing-site preferences. Descriptions of these species follow. Mainland cherry and southern California black walnut are also discussed in this section due to their classification as oak resources under the Specific Plan Program EIR.

2.1.1 Coast Live Oak

Coast live oaks are endemic to California and northern Mexico and occur along the Coast, Transverse, and Peninsular ranges in California, and the Sierra de Juarez and Sierra San Pedro Martir in Mexico, from southern Mendocino County, California, south to Canada El Piquillo, Baja California (Minnich 1987; Pavlik et al. 1991; Steinberg and Howard 1992). They are found on many soil types in valleys and woodlands, and in mixed evergreen forests below about 1,500 meters (5,000 feet) amsl (Hickman 1993).

Coast live oaks are evergreens, growing to about 25 meters (80 feet) tall, and have widely ridged, furrowed, checkered dark-gray trunk bark. The leaf blades are variable in size, shape, and margin patterns, usually oblong to round with a rounded to spine-toothed tip. Leaf margins are sometimes weakly spine toothed. The upper leaf surface is dull green and usually strongly convex (Dole and Rose 1996). On the undersides, the leaves are irregularly veined, with tufts of brownish hairs where lateral veins join the midvein (Steinberg and Howard 1992); this character is generally diagnostic for coast live oak. Male and female inflorescences generally appear in early spring, while new leaves are immature. The acorn matures in one year (Dole and Rose 1996; Hickman 1993). The cup is obconic with thin scales. The nut is ovoid with a pointed tip (Hickman 1993). Coast live oaks are slow-growing, long-lived (125 to 250 years) trees, and do not mature until about age 60 to 80 years (Griffin 1977). Coast live oak is the dominant oak species on site and found throughout the ORMP study area. It is found concentrated along drainages in woodlands and scattered in more upland sites, and occurs as isolated specimens in other habitat types.

2.1.2 Valley Oak

Valley oaks are endemic to California and occur from Shasta County south through the Central Valley and lower-elevation foothills and valleys of the Sierra Nevada and Coast Ranges to Los Angeles County (Pavlik et al. 1991; Howard 1992). They are found primarily in bottomland soils on slopes, valleys, and savannas below about 1,700 meters (5,600 feet) amsl (Hickman 1993), usually on silty loam, clay loam, and sandy clay loam soils typical of floodplains and valley floors.

Valley oaks are characteristic, stately looking deciduous trees growing up to about 35 meters (115 feet) tall. They have deeply checkered, light grayish bark. The leaves are broad and lobed. The upper leaf surface is dull green with minute hairs. Catkins emerge from March to April and produce acorns during the fall (Howard 1992). The acorns

mature in 1 year (Dole and Rose 1996; Hickman 1993). The acorn cups are hemispheric with tubercled scales; the nuts are long-conic with tapered to pointed tips (Hickman 1993).

Valley oaks are long-lived trees, but many stands are apparently not regenerating at high enough rates to replace natural mortality, especially on dry sites and on grazing lands (Griggs 1990; Allen-Diaz et al. 2007). The lack of regeneration is due to poor seedling establishment, largely due to wholesale changes in woodland understory ecology, from native shrubs and herbs to non-native grasses and forbs (Pavlik et al. 1991). Valley oak occurs in relatively large numbers throughout the ORMP study area. Large numbers of valley oaks compose the valley oak woodlands in the High Country and Salt Creek portions of the ORMP study area. Valley oaks found at lower elevations are typically more scattered and occur at lower densities. Most of the valley oak trees in the lower elevations of the ORMP study area occur in the Potrero Valley, with a smaller population at the eastern edge of the study area, within the area encompassed by Homestead South, Entrada South and VCC. Oak species of hybrid origin, involving valley oak and blue oak, and hybrid origin, involving valley oak and scrub oak (MacDonald Oak) were found within the ORMP study Area. Valley oak and blue oak hybrids were found within the area encompassed by VCC. MacDonald oak description and occurrence is discussed in more detail below.

2.1.3 Scrub Oak

Scrub oaks are found throughout the outer Coast, Transverse, and Peninsular ranges, from Tehama County to northern Baja California (Pavlik et al. 1991), and are common throughout much of their range. They are generally found in well-drained soils, in chaparral or with other oak species in mixed woodlands (Allen-Diaz et al. 2007; Keeley and Davis 2007), on dry slopes between about 300 and 1,500 meters (1,000 and 5,000 feet) amsl (Hickman 1993). Scrub oaks are evergreen, growing to about 3 meters (10 feet) tall, and have smooth to chunky grayish bark. The leaf blades are variable in size and shape. The upper surfaces are generally flat or somewhat convex or wavy, and dull olive green. The lower surfaces are pale, dull gray- or yellow-green, covered by minute, closely appressed hairs (not visible without magnification) (Hickman 1993). The flowers generally appear in early spring while new leaves are immature. The acorns mature in 1 year (Dole and Rose 1996; Hickman1993). The acorn cup is hemispheric with tubercled scales; the nut is ovoid with an obtuse to acute tip (Hickman 1993). Scrub oak can be found on site in an area associated with chaparral on south- and west-facing slopes in one small pocket in the Potrero Valley.

2.1.4 Interior Live Oak

Interior live oaks are endemic to California and northern Mexico, from Siskiyou and Shasta counties south along the foothills of the Sierra Nevada and inner Coast Ranges into northern Baja California (Tirmenstein 1989). They are found on a variety of soils, including well-drained, fine-grained to cobbly or gravelly sandy loams, or skeletal soils, in interior canyons, slopes, valleys, chaparral, and mixed evergreen forests and woodlands below about 2,000 meters (6,500 feet) amsl (Hickman 1993; White and Sawyer 1994).

Where they occur on valley floors, interior live oaks may grow to about 22 meters (72 feet) tall but often occur as smaller trees or shrubs in chaparral and dense forest stands. They have checkered, furrowed, grayish bark. They are evergreens. The leaf blades are strongly variable in size, shape, and margin patterns. Their upper surfaces are smooth, shiny, and dark green, and the lower surfaces are slightly yellow-green and also smooth and shiny

(Tirmenstein 1989). This characteristic distinguishes interior live oak from other evergreen oaks, including the shrubby species, throughout the region.

Flowers and fruit begin production from March to May. The acorns mature in 2 years (Dole and Rose 1996; Hickman 1993). The hemispheric cup has thin scales, while the nut is cylindrical-ovoid to obconic (Hickman 1993). Interior live oak occurs at extremely low levels in the ORMP study area. In areas where 100% inventory was not completed, interior live oak is expected to occur as scattered individuals among coast- live oak– or valley oak–dominated woodlands.

2.1.5 MacDonald Oak

MacDonald oak is an oak species of hybrid origin, involving valley oak and scrub oak. The species occurs at elevations from sea level to nearly 2,000 feet amsl. MacDonald oak is located within the areas encompassed by Homestead Village North, Entrada South and Mission Village.

2.1.6 Alvord Oak

Alvord oak is an oak species of hybrid origin, involving blue oak and Tucker's oak (Nixon and Muller 1997). Alvord oak is a semideciduous shrub to small tree, usually less than about 10 feet tall. Its distribution is mainly the interior Coast Ranges and Tehachapi Mountains (Hickman 1993) and Liebre Mountains (Boyd 1999). The ORMP study area is evidently at or near the Alvord oak's southernmost distribution. The species is recognized by its semideciduous life history, its leaf shape, and the fine structure of the minute leaf hairs (Roberts 1995). This Fagaceae species is found on dry slopes and hills between 400 and 1,300 meters (1,300 and 4,300 feet) amsl. Catkins emerge in spring and produce acorns during the fall that mature in 1 year (Pavlik et al. 1991; Hickman 1993).

2.1.7 Mainland Cherry

Mainland cherry is a sclerophyllous, broad-leaved shrub or shrubby tree found throughout the central and southern Coast Ranges and from Napa County southward to Baja California (Hickman 1993; McMurray 1990). It is a shrub of the Rosaceae family. In southern California, it is a component of mesic chaparral below 1,600 meters (5,900 feet) amsl within foothill woodland, chaparral, and coastal scrub communities (McMurray 1990; Dole and Rose 1996). In mature chaparral communities, mainland cherry will occur as a dominant woody species in relatively moist, cool sites, such as eroded channels, arroyos, depressions, washes, and the toes and shoulders of slopes (McMurray 1990; Dole and Rose 1996). The species is able to establish as a widespread component of fire-prone environments because of vigorous resprouting. Population expansion and seedling establishment primarily occur during extended fire-free periods because seedlings can develop in gaps created by the death of shorter-lived species (McMurray 1990).

2.1.8 Southern California Black Walnut

Southern California black walnut is a low-growing, deciduous hardwood tree or large shrub endemic to southern California. Southern California black walnut is known to occur within Los Angeles, Santa Barbara, Ventura, Orange, Riverside, San Bernardino, and San Diego counties (CNPS 2007). Swanson (1976) also notes the occurrence of this species within San Luis Obispo County, inland of Cambria. Within Orange County, this species is known to occur

along the Santa Ana River and, within San Bernardino County, it occurs as far east as Yucaipa (Swanson 1976). Although southern California black walnut is fairly widespread, extant walnut-dominated woodlands and forests are limited to the Santa Clara River drainage in the vicinity of Sulphur Mountain as well as small stands in the Simi Hills and Santa Susana Mountains, the north slope of the Santa Monica Mountains, the San Jose Hills, Puente Hills, and Chino Hills (Griffin and Critchfield 1972; Quinn 1989).

Southern California black walnut is found primarily on dry south- and west-facing slopes and within canyons at elevations between 50 and 900 meters (165 and 3,000 feet) amsl (CNPS 2007; Hickman 1993; Dole and Rose 1996). It grows to 15 meters (50 feet) in height. Mature trees may have a single trunk or may be multiple-stemmed from the base due to post-fire resprouting (Quinn 1989). It inhabits chaparral and cismontane woodlands with Miocene–Pliocene shale and coastal scrub with alluvial soils (NatureServe 2007; CNPS 2007).

2.2 Woodland Types

Oak woodland within the ORMP study area consists of four different communities: coast live oak woodland, mixed oak woodland, valley oak/grass, and valley oak woodland. In addition, California walnut woodland is dominated by native walnut trees, covering about 27 acres in the High Country SMA and the Salt Creek area. Descriptions of these woodland types follow. Mainland cherry occurs as a component of chaparral, coastal scrub, or other woodland habitats and is therefore not discussed as its own woodland type.

2.2.1 Coast Live Oak Woodland

According to Holland (1986), coast live oak woodland is dominated by a single evergreen species: coast live oak. Canopy height ranges from 30 to 80 feet. The shrub layer is poorly developed, but may include toyon (*Heteromeles arbutifolia*), gooseberry (*Ribes* spp.), laurel sumac (*Malosma laurina*), or Mexican elderberry (*Sambucus mexicana*). The herb component is continuous, dominated by a variety of introduced species, such as brome grasses (*Bromus* spp.) (Holland 1986).

Within the ORMP study area, coast live oak woodland is defined as areas with 20% to 50% cover by coast live oak. Most of the coast live oak woodland on the RMDP/SCP area occurs in the southern half, generally in south-facing canyons in the High Country SMA and Salt Creek area. In accessible areas along Salt Creek, the understory of this woodland community has been impacted by historical and ongoing grazing practices and is dominated by non-native grasses, such as wild oat (*Avena fatua*), slender oat (*Avena barbata*), and bromes. Smaller patches of coast live oak woodland generally occur in south-facing canyons throughout the ORMP study area, including along the East Fork of Salt Creek and, to a lesser extent, along the Santa Clara River tributary canyons, including Ayres Canyon, Long Canyon, Humble Canyon, Lion Canyon, Exxon Canyon, and upper Chiquito Canyon, among others.

In addition to coast live oak trees, the coast live oak woodland includes occasional valley oak trees; a variety of native shrubs, such as goldenbush (*Ericameria palmeri* var. *pachylepis)*, Mexican elderberry, yerba santa (*Eriodictyon* spp.), gooseberry (*Ribes* spp.), and Great Basin sagebrush (*Artemisia tridentata*); native herbaceous species, including common owl's clover (*Castilleja exserta*), California aster (*Corethrogyne filaginifolia*), Menzies' fiddleneck (*Amsinckia menziesii*), Cucamonga manroot (*Marah macrocarpus*), elegant clarkia (*Clarkia unguiculata*), miner's lettuce (miner's lettuce *Claytonia perfoliata*), wild pea (*Lathyrus vestitus*), Parry's larkspur (*Delphinium parryi*), California mugwort (*Artemisia douglasiana*), blue fiddleneck (*Phacelia distans*), chaparral nightshade

(*Solanum xanti*), American bowlesia (*Bowlesia incana*), Pacific sanicle (*Sanicula crassicaulis*), California melic (*Melica californica*), California maidenhair (*Adiantum jordanii*), fiesta flower (*Pholistoma auritum*), California hedge parsley (*Yabea microcarpa*), poison sanicle (*Sanicula bipinnata*), California goldenrod (*Solidago californica*), California goosefoot (*Chenopodium californicum*), bluedicks (*Dichelostemma capitatum*), globe gilia (*Gilia capitata*), and chaparral gilia (*G. angelensis*); and non-native species (hedge mustard (*Sisymbrium officinale*), common sow-thistle (*Sonchus oleraceus*), goose grass (*Galium aparine*), Maltese star-thistle (*Centaurea melitensis*), redstem stork's bill (*Erodium cicutarium*), yellow sweet clover (*Melilotus officinalis*), milk thistle (*Silybum marianum*), common chickweed (*Stellaria media*), and tree tobacco (*Nicotiana glauca*)).

2.2.2 Mixed Oak Woodland

The mixed oak woodland and forest alliance includes a co-dominance of coast live oak trees and valley oak trees in sufficient numbers to constitute 20% to 50% of the oak woodland cover. Within the ORMP study area, mixed oak woodland and forest is limited to the High Country SMA and Salt Creek Area, and typically occurs in patches where other oak woodland associations intergrade, such as coast live oak woodland and valley oak/grass. In areas subject to grazing, the understory of mixed oak woodland is typically dominated by non-native grasses, such as wild oat, slender oat, and bromes.

Mixed oak woodland within the ORMP study area is characterized by a co-dominance of coast live oak and valley oak canopy trees, and also supports many of the same understory species described above for coast live oak woodland, valley oak woodland, and valley oak/grass. Understory species for the mixed oak woodland include native shrubs, such as currants, Mexican elderberry, and Pacific poison oak (*Toxicodendron diversilobum*); smaller native species, including California goosefoot, climbing bedstraw (*Galium porrigens*), coast Indian paintbrush (*Castilleja affinis*), Menzies' fiddleneck, branching phacelia (*Phacelia ramosissima*), Cucamonga manroot, and bluedicks; and non-native species (milk thistle, cheeseweed (*Malva parviflora*), shortpodd mustard (*Hirschfeldia incana*), bull thistle (*Cirsium vulgare*), and horehound (*Marrubium vulgare)*).

2.2.3 Valley Oak Woodland and Valley Oak/Grass

According to Holland (1986), this vegetation community is typically manifested by valley oak trees providing a canopy over a grassy-understoried savanna. The canopy of the valley oaks rarely exceeds 30% to 40% cover (Holland 1986). On site, valley oak woodland includes a predominance of valley oaks in sufficient numbers to constitute 20% to 50% of the total cover. Valley oak/grass includes areas where valley oak composes less than 20% of the total cover. This association within the ORMP study area includes valley oaks sparsely occurring in California annual grassland.

Within the ORMP study area, valley oak woodland occurs in relatively small patches in the southern portions of the Salt Creek Area, in the High Country SMA, and along the East Fork of Salt Creek and in other smaller, scattered patches in the Windy Gap area and along the Santa Clara River north of Airport Mesa. Much larger patches of valley oak/grass occur on site in the southern portion of the Salt Creek area and High Country SMA, as well as smaller patches between the East Fork of Salt Creek and Potrero Canyon and the Magic Mountain Canyon area. Valley oak woodland and valley oak/grass appear to relate to grazing pressure, particularly in the southern portion of the Specific Plan area, where open woodland provides cattle with ideal forage and shade.

In addition to valley oak trees, valley oak woodland and valley oak/grass support native shrubs (Mexican elderberry and coyotebrush (*Baccharis pilularis*)); native herbaceous species, including miner's lettuce, California fuchsia (*Epilobium canum* ssp. *canum*), common owl's-clover, bluedicks, common lomatium (*Lomatium utriculatum*), fiesta flower, Cucamonga manroot, Menzies' fiddleneck, hollowleaf annual lupine (*Lupinus succulentus*), California goosefoot, coast Indian paintbrush, branching phacelia, common forget-me-not (*Myosotis* sp.), and common eucrypta (*Eucrypta chrysanthemifolia*) ; as well as non-native species (common chickweed, shortpod mustard, black mustard (*Brassica nigra*), common sow-thistle, bull thistle, shepherd's purse (*Capsella bursa-pastoris*), milk thistle, cheeseweed, and non-native grasses).

2.2.4 California Walnut Woodland

Holland (1986) describes California walnut woodland as having an open tree canopy dominated by California walnut (*Juglans californica*), which allows a grassy understory to develop. This association was mapped where a predominance of California walnut occurred in sufficient numbers to constitute 20% to 50% absolute cover. Within the ORMP study area, California walnut woodland occurs very locally in the southwestern corner of the RMDP/SCP area, mostly on south-facing slopes within the Salt Creek area and within the southern portion of the High Country SMA. The southern California black walnut trees in these areas are low (generally less than 20 feet tall) and exhibit multiple trunks that give the trees a shrubby character (in contrast to the tall trees often seen in bottomlands and riparian areas).

The California walnut woodland that occurs on site supports an understory of native shrubs, such as Mexican elderberry, coyotebrush, giant ryegrass, yerba santa, and poison oak; smaller native species, including cliff malacothrix (*Malacothrix saxatilis* var. *saxatilis*), pipestems (*Clematis lasiantha*), common eucrypta, bluedicks, hollowleaf annual lupine, chaparral nightshade, Cucamonga manroot, common forget-me-not, fiesta flower, Pacific sanicle, purple Chinese houses (*Collinsia heterophylla*), miner's lettuce, elegant clarkia, California melicgrass, caterpillar phacelia (*Phacelia cicutaria*), lacepod (*Thysanocarpus laciniatus*), valley clover (*Trifolium willdenovii*), and climbing bedstraw; and nonnative species (yellow sweet clover, horehound, common chickweed, cheeseweed, goosegrass, black mustard, bull thistle, and California burclover (*Medicago polymorpha*)).

3 Tree and Woodland Assessments and Inventory

The oak resource information for the RMDP/SCP area is analyzed and discussed in two forms: individual trees and woodlands. Analysis of both types of data is critical to adequately address oak resource mitigation requirements. The following sections summarize the methods used in compiling and analyzing these data sets.

3.1 Individual Oak Trees

Individual tree inventory efforts were conducted by numerous consultants for much of the RMDP/SCP area, focusing within the individual village boundaries where impacts from development were anticipated. Each tree inventory included Global Positioning System (GPS)-based mapping data identifying point locations and tree attribute information for individually mapped trees. The tree inventory data sets for all villages were compiled into a master GPS tree inventory data set, which was subsequently analyzed for this ORMP. Additionally, estimates of individual tree totals within the High Country SMA and Salt Creek area (outside the GPS tree inventory area) were made based on an analysis of aerial images, combined with field sampling and statistical analysis (Dudek 2007a).

3.1.1 Individually Mapped Oak Trees

GPS inventory area tree totals were determined by conducting spatial analysis of tree location data in relation to village boundaries in a geographic information system (GIS). Table 4 presents individually mapped tree totals by development area. Figure 4 presents the locations of individually mapped trees within the ORMP study area.

Table 4. Species Distribution for Oak Trees (Heritage Oaks in Parentheses)

Development Area	Species				
	Coast Live Oak	Valley Oak	Hybrid Oak	Scrub Oak	Total
Entrada South	2	28 (2)	21	19	**51 (2)**
Homestead North	94 (22)	1	1	0	**96 (22)**
Homestead South	1,348 (37)	2 (1)	0	11	**1,361 (38)**
Landmark Village	4 (1)	0	0	0	**4 (1)**
Magic Mountain Parkway Extension	0	10 (3)	21	1	**13 (3)**
Mission Village	482 (25)	83 (11)	31	25	**593 (36)**
Potrero Village	1,113 (93)	230 (46)	0	0	**1,343 (139)**
VCC	0	25 (1)	32	0	**28 (1)**
WRP-Utility Corridor	1	0	0	0	**1 (0)**
Total	**3,044 (178)**	**379 (64)**	**11 (0)**	**56 (0)**	**3,490 (242)**

Note:
VCC = Valencia Commerce Center; WRP = Water Reclamation Plant
[1] MacDonald Oak (Quercus x macdonaldii)
[2] *Quercus lobata x douglasii hybrid oak*

3.1.2 High Country SMA and Salt Creek Area Tree Estimates

Tree populations within the High Country SMA and Salt Creek area were estimated in 2007 (Dudek 2007a) using a statistical regression analysis. A detailed description of the statistical methods used for estimating the number of trees is provided in the *High Country and Salt Creek Oak Woodland Sampling and Tree Population Estimation* (Dudek 2007a). The results of the regression analysis revealed a significant distinction between some areas with a lower density of coast live oaks and other areas with a higher density of coast live oaks. To improve the accuracy of the estimation, coast live oak woodland was divided into lower- and higher-density stands based on the digital signature of the aerial photograph augmented with site intelligence from numerous field visits. Lower-density coast live oak woodland has an average density of approximately 12.79 oak trees per acre within the ORMP study area. Higher-density coast live oak woodland, although still considered low compared to other non-disturbed woodlands, was estimated to have 27.41 oak trees per acre. Similar distinctions of lower- and higher-density oak trees in mixed oak woodland and valley oak woodland were not apparent in this study. Therefore, stands of mixed oak woodland and valley oak woodland were not divided up by lower and higher tree density in this analysis. Accordingly, mixed oak woodland has an average density of 18.91 oak trees per acre. Valley oak woodland has an estimated density of 16.33 oak trees per acre.

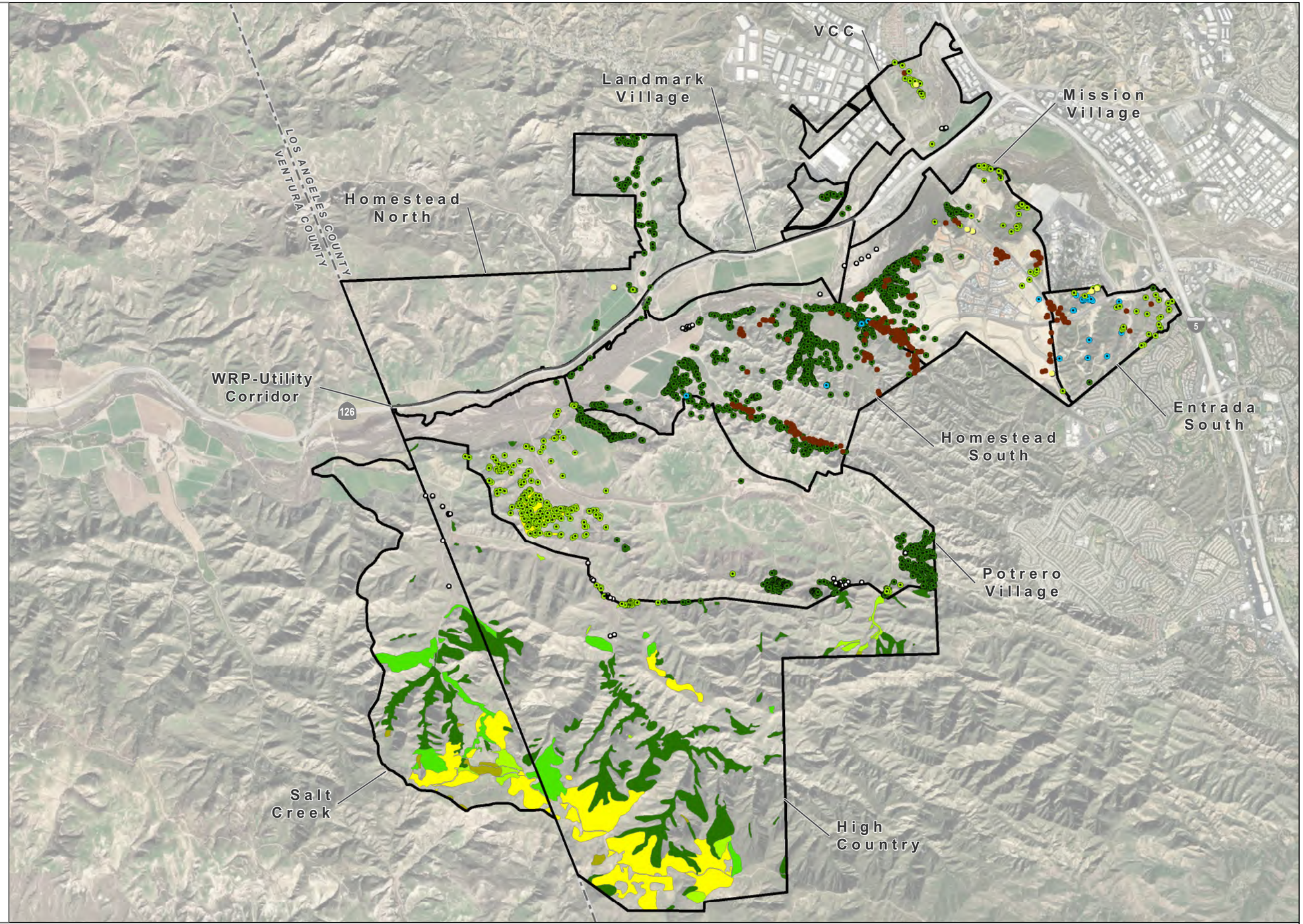
Village Boundary

Woodland

- Coast live oak woodland
- Mixed oak woodland
- Valley oak woodland
- Valley oak/grass
- California walnut woodland

Individual Trees

- Coast live oak
- Valley oak
- Scrub oak
- Hybrid oak
- Southern California black walnut
- Mainland cherry



0 2,000 4,000 Feet

SOURCE: Maxar 2/10/2022

DUDEK

FIGURE 4
Tree and Woodland Locations within ORMP Study Area

Oak Resources Management Plan for the RMDP/SCP

Z:\Projects\37380\10014_Scopes\MAPDOC\MAPS\222_ORMP\Figure 4 Tree and Woodland within ORMP.mxd- Date Saved: 9/22/2023 3:07:24 PM

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The total number of oak trees within oak woodland vegetation communities was estimated by extrapolating these calculated densities across all oak woodland vegetation communities within the ORMP study area where a GPS inventory was not conducted. Table 5 provides the quantity of oak trees using the density estimates for oak woodlands described above in combination with the aerial-photograph-derived estimate of oaks in valley oak/grass and individual oak trees mapped in non-oak vegetation communities.

Table 5. Tree Tally and Estimate for the High Country SMA and Salt Creek Area

Vegetation Community	Surveyed Acres	Censused Trees	Unsurveyed Acres	Estimated Trees	Confidence Interval (± Trees)	Total Trees
High Country SMA						
Low-density coast live oak woodland	48.33	508	91.46	1,170	32	1,678
High-density coast live oak woodland	46.41	1,269	256.39	7,028	121	8,297
Mixed oak woodland	25.36	513	48.87	924	57	1,437
Valley oak woodland	23.71	475	24.1	394	43	869
Valley oak/grass	—	1,451	0	—	—	1,451
Subtotal High Country SMA	*143.81*	*4,216*	*420.82*	*9,516*		*13,732*
Salt Creek Area						
Low-density coast live oak woodland	46.71	682	13.13	168	30	850
High-density coast live oak woodland	9.19	270	81.763	2,241	12	2,511
Mixed oak woodland	63.4	1,121	31.23	591	60	1,712
Valley oak woodland	20.98	244	2.95	48	54	292
Valley oak/grass	—	275	0	—	—	275
Subtotal Salt Creek Area	*140.28*	*2,592*	*129.07*	*3,048*	—	*5,640*
Total	**284.09**	**6,808**	**549.89**	**12,564**	**—**	**19,372**

3.1.3 Individual Tree Summary

As presented in this section, the majority of the trees throughout study area are coast live oaks. Valley oak trees are present at lower, but substantial, levels. The trees are scattered throughout the Newhall Ranch in areas consistent with the species' preferences: the coast live oaks are primarily associated with drainage bottoms, north-facing slopes, and along secondary drainages on non-north-facing slopes, while the valley oaks are strongly associated with open grassland areas on gentler slopes and valley bottoms. Most of the sites' individual trees are part of larger woodland ecosystems.

3.1.4 Oak Tree Condition

This section focuses on the physical condition of existing trees rather than on the overall long-term health and natural regeneration of woodlands, which are addressed below. During GPS inventory efforts, arborists or biologists recorded overall tree condition for each assessed tree within the GPS inventory area. The health assessments are considered resource level and note general health and structural condition as observed from ground level and externally on each tree. Trees rated as having poor health display observable declining vigor, insect infestations, and/or disease. Trees rated as having fair or good health were generally free of observable insects and disease and exhibited good vigor.

Individual trees within the GPS inventory area are predominantly in at least fair condition. The trees include typical attributes of naturalized oaks. Many of the oaks have cavities with internal wood rot, poor branch structure, excessive leaning, lopsided and sparse canopies (due to suppression from larger overstory trees), and deadwood. These attributes are not considered a detriment in a natural setting; in fact, they provide many benefits to the wildlife that inhabits the area. These same attributes are problematic in an urban area, but for the purposes of this report, the trees were rated according to their "natural setting attributes," where, if occurring at normal levels, these trees of varying decline status may be part of a typical woodland system.

Many of the oak trees have experienced damage from wildfires occurring during their life spans, with the most recent large wildfire having occurred in 2007 (Magic Fire), although smaller fires have burned the Ranch more recently, including fires in 2013 (FRAP 2014). Burned trees often have scorched undersides of scaffold branches and occasional burned trunk cavities. Most of the fire-damaged oak trees exhibit signs of recovery, as is typical of the species following fire, but may now develop large cavities, which in turn may lead to decreased vigor and increased internal wood rot, insects, and diseases over time. Additionally, long-term livestock grazing, which has been ongoing for decades, has resulted in accumulated trunk wounds, grazing damage to lower tree branches, and soil compaction beneath canopies and along highly used trails. These fire- and livestock-caused wounds have contributed to internal decay, damaged roots, and potential susceptibility to insect and disease attack, resulting in premature tree decline for some of the trees.

3.2 Woodlands

Vegetation communities for the RMDP/SCP area were mapped and digitized, creating a GIS coverage (Dudek 2013). Vegetation community and land cover classifications generally follow the *Vegetation Classification and Mapping Program List of California Vegetation Alliances* and *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* system (CDFG 2007, 2003). The vegetation map for Entrada South and VCC were updated again in May 2019 to remap any observable changes that had occurred since the previous vegetation mapping update (2015), but without changing the overall vegetation classification system. Oak woodland is defined as areas with 20% to 50% cover by oak trees. Oak/grass includes areas where oak trees compose less than 20% of the total cover. Acreage of woodland by development area is provided in Table 6. Figure 4 presents the distribution of woodland areas within the ORMP study area.

Table 6. Oak Woodland Acreage by Development Area

Development Area	Coast Live Oak Woodland	Mixed Oak Woodland	Valley Oak Woodland	Valley Oak/ Grass	Total
Entrada South[a]	0.00	0.00	0.00	1.66	**1.66**
Homestead North	8.32	0.00	0.00	0.00	**8.32**
Homestead South	85.65	0.00	0.00	0.00	**85.65**
Landmark Village	0.03	0.00	0.00	0.00	**0.03**
Mission Village	31.35	0.00	2.34	1.53	**35.22**
Potrero Village	62.52	0.00	7.90	55.01	**125.43**
VCC[a]	0.00	0.00	1.80	0.00	**1.80**
High Country SMA	450.37	73.72	35.94	303.13	**863.16**
Salt Creek Area	149.06	96.61	23.93	113.68	**383.28**
Total	**787.30**	**170.33**	**71.91**	**475.05**	**1,504.55**

Notes:VCC = Valencia Commerce Center; SMA = Special Management Area

[a] Includes all areas within the Entrada South and VCC modified projects development plans.

Woodland Conditions

Most of the established and mature oak woodlands within the study area are within areas that will be preserved; however, many woodlands are exhibiting signs of stress. It is possible, and applicable to this site, to have individual trees that are in biologically fair or better condition, but to have unhealthy woodland systems. While individual trees may be thriving, the woodlands may be impaired and their longevity questionable. Overall, the trees within the study area represent aging oak woodlands with below-average age-class diversity and recruitment. These conditions are not ideal for long-term sustainability and are believed to result from grazing, extended drought, periodic yet high-intensity wildfire, and invasive plant establishment, all but eliminating recruitment of the future tree generations. Extended periods of drought during the 1990s and over the last several years have affected most oak woodlands in southern California. Drought in the presence of heavy grazing lowers the recruitment of new trees at even higher rates (Steinberg 2002).

An important measure of oak woodland health is the capacity to regenerate and develop multi-aged strata. Substantial tree recruitment—in other words, high occurrence of germinating acorns and establishment of seedlings and saplings—is an indicator of healthy, naturally regenerating woodlands. The capacity of woodlands to productively regenerate is highly dependent on the terrain, microclimate, proximity to urban areas, wildfire occurrence, livestock grazing, and non-native species establishment.

Younger oaks are susceptible to competition from fast-growing annuals, such as non-native Mediterranean grasses, which can more effectively compete for limited moisture and sunlight in the oak woodland understory. The prevalence of these grasses may also result in more frequent wildfires that damage or kill more seedlings than

would have normally occurred under a natural fire regime. The result is a decreasing regeneration rate of oaks and the resulting skewing of the oak population to older, less vigorous trees. Eventually, these less vigorous trees suffer declining productivity and the overall health of the woodland declines, as indicated by the evident lack of seedlings, saplings, and age diversity that would be characteristic of healthy, regenerating woodlands.

This understanding of oak woodland conditions on site informs the oak woodland enhancement mitigation component, as outlined in Section 5.1.

3.3 Other Native Tree Species

As discussed in Section 2, southern California black walnut and mainland cherry have been identified as oak resources requiring mitigation in accordance with the EIS/EIR. As with individual oak tree mapping, GPS surveys of individual trees were conducted within the villages in order to determine impact or preservation status. A summary of walnut and cherry tree populations is presented in Table 7. Figure 4 presents the locations of individually mapped trees within the ORMP study area.

Table 7. Species Distribution for Southern California Black Walnut and Mainland Cherry Trees

Development Area	Species		
	Southern California Black Walnut	Mainland Cherry	Total
Entrada South	0	5	**5**
Homestead South	8	234	**242**
Landmark Village	2	0	**2**
Mission Village	4	195	**199**
Potrero Village	27	0	**27**
VCC	4	1	**5**
Total	**45**	**4435**	**480**

Note: VCC = Valencia Commerce Center

4 Oak Tree and Woodland Impact Analysis

Tree and woodland impacts for the proposed projects are presented in this section and rely on data available at the time of this ORMP's preparation. Actual tree and woodland impacts may vary as efforts to reduce impacts are made throughout later stages of planning for some of the proposed projects.

4.1 Individual Trees

Impacts to individual trees are presented in this section and were determined by evaluating existing oak tree permit data (Mission Village and Magic Mountain Parkway) and previously conducted oak tree impact assessments (Homestead South), and by comparing GPS tree location data with the most current grading envelope/development area data for the RMDP/SCP area (remaining development areas) in a GIS. The assessment of individual tree impacts was conducted to determine the required mitigation under CLAOTO (including heritage and non-heritage trees) and additional mitigation under the RMDP/SCP EIS/EIR. The following sections provide greater detail regarding the impact evaluation for oaks and other tree species.

4.1.1 Oaks

4.1.1.1 Oak Tree Permit Evaluation

As noted, the oak tree permits for Mission Village and Magic Mountain Parkway were evaluated and summarized for the individual tree impact assessment conducted in support of this ORMP. The reviewed tree permits also included species and heritage tree designations, as defined in the CLAOTO. Subsequent to issuance of the oak tree permits, a re-evaluation of oak trees on the Mission Village site was conducted by Sean Brown in October 2014 (SB Horticulture 2014) to ensure oak tree impacts were properly characterized prior to impact realization, Trees were re-assessed for health and size and any oak trees that had grown into ordinance size since the original surveys were completed were added (in-growth).

4.1.1.2 Previously Conducted Assessments and Recent Updates

Previously conducted assessments of tree impacts for the Homestead South development area (Hunsaker 2013) were also evaluated and summarized. This assessment also included species and heritage tree designations, as defined in the CLAOTO. An update to oak tree inventories and re-evaluation for the modified project development plans were conducted for Entrada South (Carlsberg, 2023) and VCC (Carlsberg, 2021) with data included in Tables 4 and 8.

4.1.1.3 GIS-Based Assessments

For the remaining development areas not included in existing oak tree permits (Mission Village and Magic Mountain Parkway) or previously analyzed (Homestead South), individual tree impacts were evaluated by comparing tree locations with the most current site planning and grading information available. Specifically, all trees not located within areas identified as natural open space were expected to require removal.

Oak tree impact totals presented below are based on development plans as of the date of this ORMP and are considered conservatively calculated, assuming more impacts than may actually occur. As such, the final number of trees that are subject to removal may be further reduced as the detailed site-planning process proceeds and is defined for each area, and as on-site grading activities occur and are refined. At the site-planning stage, it may be possible, and is encouraged, to preserve as many native trees as reasonably feasible through tree protection techniques. Typically, specific circumstances allow some trees to be preserved in place within or adjacent to the development envelope through footprint revisions or mitigation such as retaining walls, tree wells, or other measures. Trees on the periphery of a project's disturbance limits are initially considered impacted for the purposes of this ORMP. However, at the later stages of a project, after focused planning occurs, some trees may become preserved trees through protection efforts implemented to minimize or avoid impacts. Mitigation for impacts may be adjusted during site-specific planning associated with the subnotification process for each individual project.

Individual oak tree impacts for the proposed projects are presented in Table 8. As shown, most of the impacts will be to coast live oak trees, with a small proportion of the trees classified as heritage oaks (36 inches or more in diameter). Figure 5 displays the locations of impacted and non-impacted individually mapped trees.

Table 8. Oak Tree Impacts by Development Area and Species (Heritage Oaks in Parentheses)

Development Area	Species				
	Coast Live Oak	Valley Oak	Hybrid Oak	Scrub Oak	Total
Entrada South	0	13	21	19	34 (0)
Homestead North	67 (17)	1	1	0	69 (17)
Homestead South	366 (19)	0	0	1	367 (19)
Landmark Village	3 (1)	0	0	0	3 (1)
Magic Mountain Parkway Extension	0	8 (3)	2	1	11 (3)
Mission Village	126 (7)	12 (1)	11	4	143 (8)
Potrero Village	48 (12)	13 (1)	0	0	61 (13)
VCC	0	24	22	0	26 (0)
WRP-Utility Corridor	1	0	0	0	1 (0)
Total	**611 (56)**	**70 (5)**	**8 (0)**	**25 (0)**	**714 (61)**

Notes: VCC = Valencia Commerce Center; WRP = Water Reclamation Plant

1 *MacDonald Oak (Quercus x macdonaldii)*

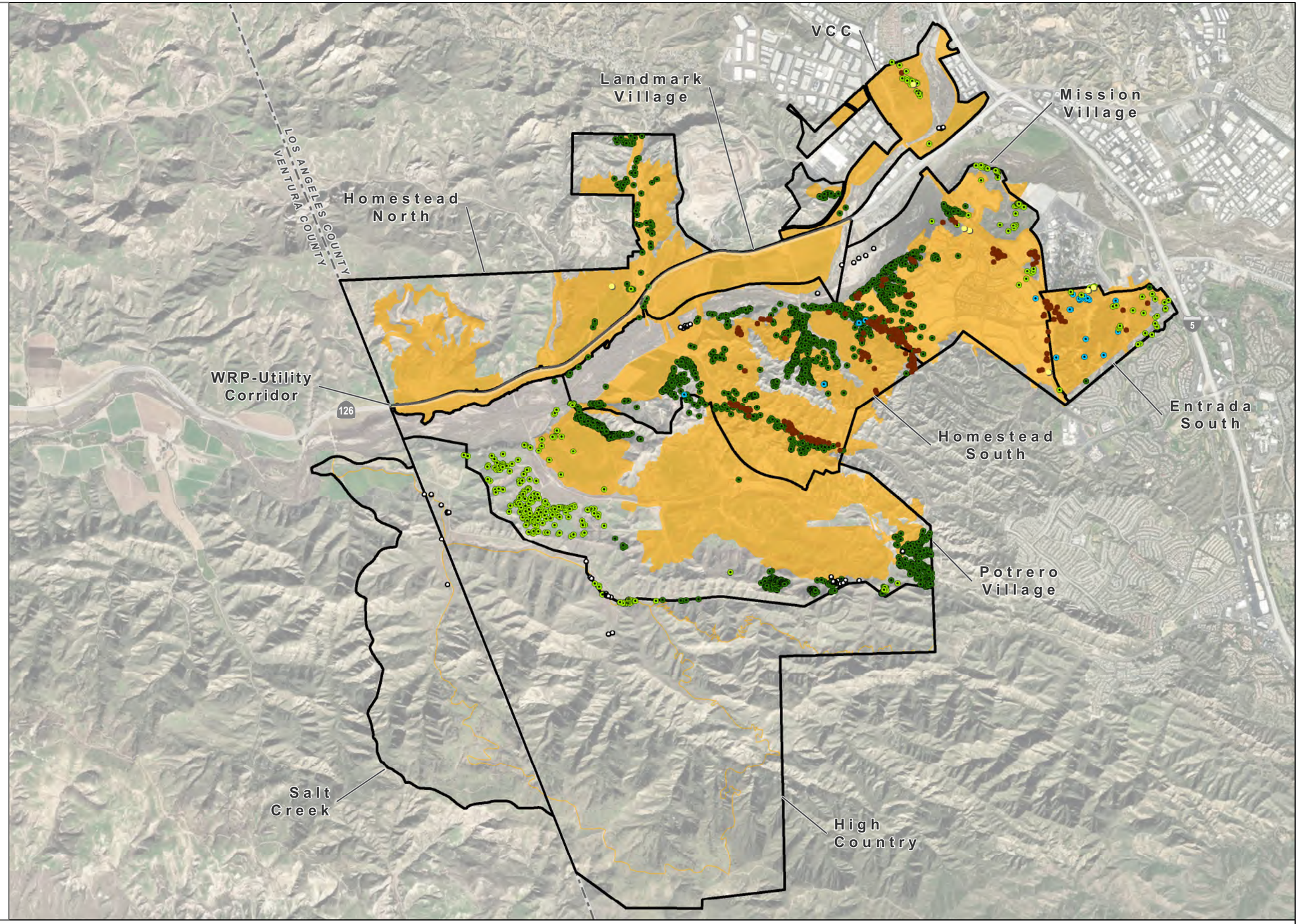
2 *Quercus lobata* x douglasii hybrid oak

Village Boundary

Development Impact Area

Individual Trees

- Coast live oak
- Valley oak
- Scrub oak
- Hybrid oak
- Southern California black walnut
- Mainland cherry



0 2,000 4,000 Feet

SOURCE: Maxar 2/10/2022

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FIGURE 5
Individual Tree Impacts within ORMP Study Area

Oak Resources Management Plan for the RMDP/SCP

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4.1.2 Other Tree Species

Impacts to non-oak species (southern California black walnut and mainland cherry) were determined by comparing GPS tree location data with the most current grading envelope data for the RMDP/SCP area in a GIS. Individual non-oak tree impacts for the proposed projects are presented in Table 9.

Table 9. Non-Oak Tree Impacts by Development Area and Species

Development Area	Species		
	Southern California Black Walnut	Mainland Cherry	Total
Entrada South	0	5	**5**
Homestead South	1	148	**149**
Mission Village	0	126	**126**
Potrero Village	6	0	**6**
VCC	0	1	**1**
Total	**7**	**280**	**287**

Note: VCC = Valencia Commerce Center

4.1.3 Potential Indirect Impacts

Potential indirect impacts to trees near proposed development include hydrologic and human-caused alterations. Indirect impacts to oak trees that result in mortality may require mitigation, as outlined in individual oak tree permits issued by the County of Los Angeles. As indirect impacts cannot be quantified at this stage of development planning, indirect impacts to oak trees will be evaluated and determined during site-specific planning associated with the subnotification process for each individual project. Oak trees that are not removed but are encroached upon within their protected zone (as defined by CLAOTO) due to site grading and development will be monitored for a period of time to be identified in the oak tree permit issued for each individual project. Oak trees that die during this monitoring period, as attributed to indirect impacts from the development, will be replaced in accordance with the oak tree permit or compensated with a monetary contribution to the County of Los Angeles Oak Forest Special Fund in accordance with CLAOTO.

4.2 Woodlands

Impacts to woodlands are presented in this section and were determined by comparing vegetation community data with the most current grading envelope/development area data for the RMDP/SCP area in a GIS. Woodland impacts were evaluated by comparing woodland vegetation community boundaries with the most currently available site planning and grading information. Specifically, all woodlands (or portions thereof) not located within areas identified as natural open space were expected to require removal and are therefore considered impacted. In addition, the impacted woodland areas were evaluated in a GIS to determine which portion (if applicable) occurred within CDFW-jurisdictional areas (jurisdictional) and which did not (upland). The resulting data allowed for calculation of impacted woodland acreage (upland and jurisdictional) by development area, and was subsequently used to determine the required mitigation identified in the RMDP/SCP EIS/EIR.

Figure 6 displays the locations of impacted and non-impacted woodlands as well as designation of upland and jurisdictional woodlands. The non-impacted woodlands within permanent open space areas occur both within the project planning areas and as relatively large assemblages of wooded areas primarily in the High Country SMA and Salt Creek area. Table 10 summarizes the impacts to upland and jurisdictional woodlands.

Table 10. Impacted Woodland Acreages

Habitat Type	Upland Area Impacted (Acres)	CDFW-Jurisdictional Area Impacted (Acres)		
		Reach Value		
		High	Medium	Low
Entrada South				
Valley oak/grass	1.66	0.00	0.06	0.00
Subtotal	*1.66*	*0.00*	*0.06*	*0.00*
Homestead North				
Coast live oak woodland	6.28	0.00	0.30	0.00
Subtotal	*6.28*	*0.00*	*0.30*	*0.00*
Homestead South				
Coast live oak woodland	30.78	0.67	0.13	0.00
Subtotal	*30.78*	*0.67*	*0.13*	*0.00*
Mission Village				
Coast live oak woodland	3.90	0.24	0.00	0.00
Subtotal	*3.90*	*0.24*	*0.00*	*0.00*
Potrero Village				
Coast live oak woodland	7.15	0.00	0.00	0.00
Valley oak woodland	0.45	0.00	0.00	0.00
Subtotal	*7.60*	*0.00*	*0.00*	*0.00*
Valencia Commerce Center				
Valley oak woodland	1.77	0.00	0.00	0.00
Subtotal	*1.77*	*0.00*	*0.00*	*0.00*
Total	**52.72**	**0.91**	**0.49**	**0.00**

Village Boundary

Development Impact Area

CDFW Jurisdictional Area

Woodland Impacts

Non-Jurisdictional Impacts

Jurisdictional Impacts

Woodland

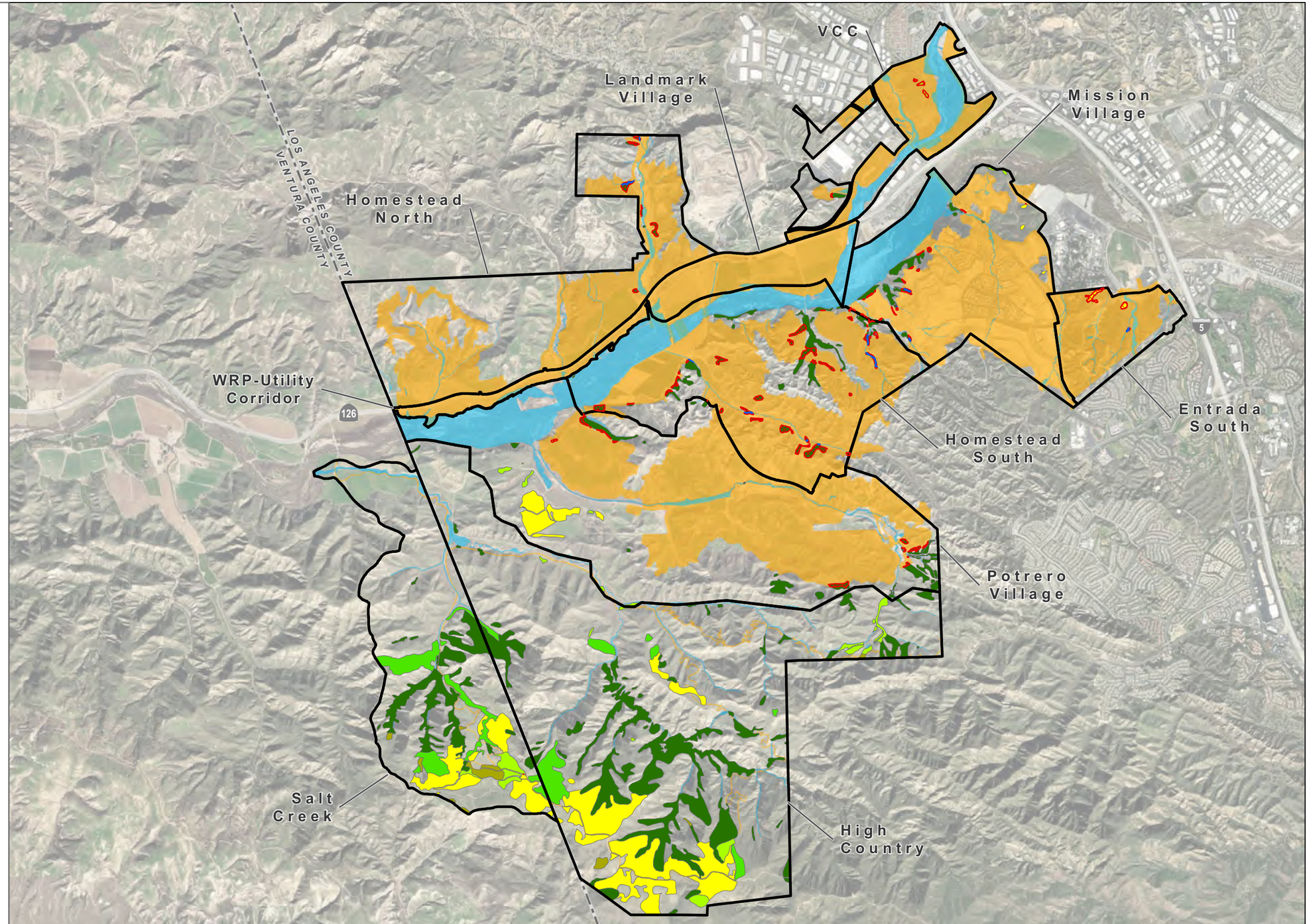
Coast live oak woodland

Mixed oak woodland

Valley oak woodland

Valley oak/grass

California walnut woodland



0 2,000 4,000 Feet

SOURCE: Maxar 2/10/2022

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FIGURE 6
Woodland Impacts within ORMP Study Area

Oak Resources Management Plan for the RMDP/SCP

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5 Mitigation Program Framework

The prior sections have analyzed direct impacts to individual trees and woodlands. The impact analysis has also examined the jurisdictional status of impacted woodlands and the general health of the woodlands on site, specifically the lack of natural long-term regeneration of the woodland systems. The latter considerations are the focus of much of the proposed mitigation program as further presented below.

The mitigation program detailed in this ORMP considers the multi-layered mitigation requirements outlined in the RMDP/SCP EIS/EIR, inclusive of CLAOTO requirements, the extent of the tree and woodland impacts, and the capacity of portions of the Newhall Ranch to support tree and woodland mitigation efforts. The ORMP mitigation program is designed to mitigate impacts to oak tree and oak woodland resources by providing the following:

- Preservation of large tracts of high-density and high-quality oak woodlands
- Creation of woodlands on suitable lands to enhance habitat functions and create live-in habitat for raptors and other species
- Enhancement of impaired preserved woodlands through active tree and understory planting
- Exclusion of cattle from portions of the mitigation area, which will allow for the restoration of the natural regeneration capabilities of the woodlands
- Enhancement of existing and created wildlife-movement corridors through tree planting
- Initiation of tree planting prior to realization of tree or woodland impacts ("pre-mitigation")
- Integration of site-sensitive landscaping with plantings of native vegetation on manufactured slopes in order to enhance biodiversity and habitat functions
- Implementation of a maintenance, monitoring, and reporting program, including an adaptive management component.

This mitigation program provides a framework for mitigating the loss of trees and oak woodland resources in a manner that emphasizes (1) creating new woodlands in ecologically appropriate areas that will enhance wildlife movement and habitat functions, (2) enhancing existing degraded woodlands through tree and understory planting in order to restore and improve forest diversity and value on a long-term basis, and (3) incorporating individual trees into open space areas and the post-development landscape. Thus, the proposed ORMP's mitigation plan is designed to provide an ecologically sensitive approach that addresses the unique restoration opportunities on the Newhall Ranch.

Finally, due to the long-term nature of the project, the ORMP will be followed by subsequent review and evaluation by the County, Corps, CDFW, and Regional Water Quality Control Board through the submittal of subnotifications that demonstrate individual project compliance with the overall RMDP-SCP project. This ORMP provides the comprehensive framework for oak resources mitigation. Specific oak tree reports for the individual proposed projects (as required under CLAOTO) will include project-specific mitigation plans that will provide site-specific details for oak mitigation. Further, a specific woodland creation and/or enhancement plan will be created for each project for submittal with the subnotifications that outlines the woodland creation and/or enhancement locations, acreages, and tree quantities associated with that project. All tree reports and plans will adhere to the standards identified in this ORMP.

5.1 Mitigation for Oak Resources Impacts

Mitigation for oak tree and oak woodland resources includes two main components: (1) mitigating for individual tree impacts and (2) mitigating for oak woodland habitat impacts. The following sections present the requirements for each component.

5.1.1 Individual Tree Mitigation

Mitigation for individual tree impacts has been calculated in accordance with CLAOTO, the requirements of the RMDP/SCP EIS/EIR, and the requirements of the Newhall Ranch Specific Plan Program EIR. Based on these requirements, replacement quantities have been calculated as follows:

- Combined 2.5:1 replacement ratio for non-heritage oak trees (2:1 under CLAOTO plus 0.5:1 under the RMDP/SCP EIS/EIR requirements).
- Combined 12.5:1 replacement ratio for heritage trees (10:1 under CLAOTO plus 2.5:1 under the RMDP/SCP EIS/EIR requirements).

Additionally, mitigation for non-oak species (mainland cherry and southern California black walnut) has been calculated in accordance with Mitigation Measure BIO-88 of the RMDP/SCP EIS/EIR. Based on these requirements, replacement of impacted trees at a 2:1 ratio has been calculated.

The trees requiring planting will be utilized as a component of the woodland mitigation efforts (discussed in the next section). Where target woodland densities preclude the planting of all required trees in woodland mitigation areas, the remaining trees will be planted in the post-development landscape (e.g., restored canyon drainage systems, landscaped areas, fuel modification zones).

Table 11 presents the required mitigation tree planting totals for oak trees by development area.

Table 11. Required Oak Tree Mitigation by Development Area and Species

Development Area	Species				
	Coast Live Oak	Valley Oak	Hybrid Oak	Scrub Oak	Total
Entrada South	0	33	51	48	86
Homestead North	338	3	31	0	344
Homestead South	1,105	0	0	3	1,108
Landmark Village	18	0	0	0	18
Magic Mountain Parkway Extension	0	50	5	3	58
Mission Village	385	40	31	10	438
Potrero Village	240	43	0	0	283
VCC	0	60	52	0	65
WRP-Utility Corridor	3	0	0	0	3
Total	**2,089**	**229**	**21**	**64**	**2,403**

Note: VCC = Valencia Commerce Center; WRP = Water Reclamation Plant

[1] *MacDonald Oak* (*Quercus x macdonaldii*)

[2] *Quercus lobata* x douglasii hybrid oak

Table 12 presents the required mitigation tree planting totals for non-oak trees by development area.

Table 12. Required Non-Oak Tree Mitigation by Development Area and Species

Development Area	Species		
	Southern California Black Walnut	Mainland Cherry	Total
Entrada South	0	10	**10**
Homestead South	2	296	**298**
Mission Village	0	252	**252**
Potrero Village	12	0	**12**
VCC	0	2	**2**
Total	**14**	**560**	**574**

5.1.2 Woodland Mitigation

5.1.2.1 Upland Woodlands

Mitigation for upland oak woodland impacts has been calculated in accordance with the requirements of the RMDP/SCP EIS/EIR. As identified in the RMDP/SCP EIS/EIR, oak woodland mitigation may occur through one of two options, or a combination thereof, including (1) creation of new oak woodlands at a 1:1 ratio or (2) enhancement, improvement, and management of existing degraded woodland areas at a 2:1 ratio. For the purposes of this ORMP, these mitigation options are considered to apply to upland woodland areas only (mitigation for jurisdictional woodland impacts is presented in the following section). The required upland mitigation acreage for each option is presented in Table 13. However, this ORMP proposes a combination of both options, as identified in Section 5.2.

Table 13. Mitigation Requirements for Oak Habitat Impacts (Upland Areas)

Development Area	Habitat Enhancement or Creation Area (Acres)					
	Coast Live Oak Woodland		Valley Oak Woodland		Valley Oak/Grass	
	Creation (1:1)	Enhancement (2:1)	Creation (1:1)	Enhancement (2:1)	Creation (1:1)	Enhancement (2:1)
Entrada South	0	0	0	0	1.66	3.32
Homestead North	6.28	12.56	0	0	0	0
Homestead South	30.78	61.56	0	0	0	0
Mission Village	3.90	7.80	0	0	0	0
Potrero Village	7.15	14.30	0.45	0.90	0	0
VCC	0	0	1.77	3.54	0	0
Total	**48.11**	**96.22**	**2.22**	**4.44**	**1.66**	**3.32**

Note: VCC = Valencia Commerce Center

5.1.2.2 Jurisdictional Woodlands

Mitigation for jurisdictional oak woodlands impacts has been calculated in accordance with the requirements of the RMDP/SCP EIS/EIR. As identified in the RMDP/SCP EIS/EIR, jurisdictional oak woodland mitigation requires replacement at a ratio of 1:1 if low quality, 1.5:1 if medium quality, and 2:1 if high quality. For the purposes of this ORMP, these mitigation requirements are considered to apply to jurisdictional woodland areas only and are to consist of woodland creation. The required jurisdictional mitigation acreage is presented in Table 14. Additionally, the replacement (creation) woodland acreage identified for jurisdictional areas is intended to occur in other on-site jurisdictional areas. The selection of planting areas considered this component, as described in Section 5.2.

Table 14. Mitigation Requirements for Oak Habitat Impacts (Jurisdictional Areas)

Development Area	Habitat Creation Area (Acres)	
	Coast Live Oak Woodland	Valley Oak/Grass
Entrada South	0	0.09
Homestead North	0.45	0
Homestead South	1.54	0
Mission Village	0.48	0
Potrero Village	0	0
VCC	0	0
Total	**2.47**	**0.09**

Note: VCC = Valencia Commerce Center

5.2 Mitigation Areas

Most of the required tree and woodland mitigation will occur in protected areas, including within the High Country SMA/SEA, the Salt Creek area, the River Corridor SMA/SEA, and designated Open Areas within village boundaries. These planting locations focus on woodland creation and enhancement and are consistent with the woodland density requirements identified in Mitigation Measure BIO-22 of the RMDP/SCP EIS/EIR. The identified woodland creation/enhancement areas will accommodate most of the individual tree planting requirements identified in CLAOTO and Mitigation Measure BIO-22. However, additional tree plantings outside of these areas are also needed to meet the individual tree mitigation requirements; these plantings will occur within the post-development landscape (e.g., manufactured slopes, manufactured open space, entry monuments, fuel modification zones). The following sections present the process for determination of woodland creation and enhancement sites, identification of woodland creation/enhancement sites specific to development area impacts, identification of other additional planting areas for individual trees, and schedule requirements for implementing tree and woodland mitigation efforts.

5.2.1 Site Selection

Dudek analyzed the potential for oak mitigation within the ORMP study area through site evaluation and review of existing studies, such as the *Newhall Land Mitigation Feasibility Study* (Dudek 2007b). In general, potential woodland enhancement sites considered in this analysis were sites mapped as woodland communities (e.g., coast live oak woodland, valley oak woodland, mixed oak woodland, or valley oak/grass) that are especially sparse and could support additional oak and understory plantings. Potential woodland creation sites considered in this analysis

were disturbed areas (agricultural land, California annual grassland, or disturbed land) that could potentially support oak vegetation communities or individual oak trees and that were adjacent to existing woodland habitats. Only areas that were mapped as non-native habitats were considered for oak woodland habitat creation.

Dudek also considered soil type when identifying potential oak resource mitigation areas. Soil types most appropriate for planting oaks tend to be deep and have a high water-holding capacity for the trees to make use of during the dry season. Soil types with a high water-storage capacity that would be suitable for oaks include Metz loamy sand, Mocho loam, Yolo loam, and Zamora loam. These soils can store between 4 and 11 inches of water that can be available for the trees to draw on. Gazos clay loam is also suitable for oaks, but it tends to be shallower and only holds between 3 and 6 inches of water that would be available for the oaks to use. Alternatively, oaks may be planted in many other soil types if there is a water source nearby for the trees to use, such as a perched water table or stream. Areas with shallower soils and less water-holding capacity tend to support oaks at a lower density than deeper soils with greater water-storage capacity. Oak-dominated vegetation communities tend to occur in canyons and on north-facing slopes within the ORMP study area. Canyons and north-facing slopes tend to be more mesic (drier) than other areas due to decreased direct solar radiation.

In addition to considering soil and vegetation community types, Dudek also considered slope, aspect, vehicular access availability, water availability for irrigation, and adjacent native vegetation communities. Most of the proposed mitigation areas are easily accessible for planting, maintenance, and monitoring and were therefore prioritized for use as woodland creation or enhancement areas. Proximity to irrigation water sources was also considered in mitigation area selection. Finally, some of the areas considered suitable for woodland mitigation are also considered suitable for wetland mitigation. Woodland mitigation, particularly mitigation for impacts that occur in jurisdictional riparian or wetland locations, could be appropriately incorporated into this type of mitigation and completed in conjunction in some areas.

5.2.1.1 Woodland Creation

Degraded, non-native habitat areas (agricultural land, California annual grassland, or disturbed land) have been identified for oak woodland creation as mitigation for oak woodland habitat impacts. In these areas, oak woodland will be established through planting and seeding with appropriate woodland components. A portion of the oak woodland creation will also occur in riparian settings in Salt Creek, thereby meeting the requirements of BIO-2 from the RMDP/SCP EIS/EIR. Creation of oak woodland constitutes the most active and aggressive oak mitigation component, as it will require the conversion of a disturbed, non-native vegetation community to a native, protected oak woodland. Newly established oak woodlands will qualify for both individual oak tree replacement (per CLAOTO and the RMDP/SCP EIS/EIR) and mitigation for oak woodland impacts (per the RMDP/SCP EIS/EIR) at the appropriate ratio.

5.2.1.2 Woodland Enhancement

Preserved woodlands are considerable within preserved areas of the Newhall Ranch, as discussed in this ORMP. Within degraded oak woodlands, individual oak trees would be planted to enhance the functions of the woodland community by introducing and encouraging a multi-aged tree structure. If the understory of the oak woodland is substantially degraded and the enhancement efforts are provided as mitigation credit for oak woodland habitat impacts, then in addition to oak trees, native species (shrubs and herbs) commonly found in oak woodlands would be planted or seeded to develop multi-structured and varied canopy layers. Oak trees planted in enhanced oak woodlands will qualify for both individual oak tree replacement (per CLAOTO and the RMDP/SCP EIS/EIR) and mitigation for oak woodland impacts (per the RMDP/SCP EIS/EIR) at the appropriate ratio.

5.2.1.3 Individual Tree Planting Areas

In addition to the woodland enhancement and creation areas, Dudek also identified undisturbed locations for planting individual trees required as mitigation under CLAOTO and the RMDP/SCP EIS/EIR. Specifically, portions of Potrero Canyon were identified as suitable planting locations for individual valley oak trees and are classified as non-native grassland. These areas are adjacent to existing valley oak/grass habitats and tree planting densities would be low (less than 20 trees/acre). Valley oak trees planted in these areas will qualify for individual oak tree replacement requirements per CLAOTO and the RMDP/SCP EIS/EIR.

5.2.2 Mitigation Areas by Proposed Project Site

The location of oak resource mitigation areas has been designated in this ORMP and within the Draft Comprehensive Mitigation Implementation Plan for the Newhall Ranch – Resource Management and Development Plan and Spineflower Conservation Plan Study Area (Dudek 2014). As the timing and sequence of development of the various project sites is not currently known, mitigation locations for specific projects may be adjusted as build-out progresses. However, although the locations of oak woodland creation, oak woodland enhancement, or tree planting areas may be adjusted, the availability of acreage has been confirmed and documented in this ORMP. The areas identified for oak mitigation have been analyzed for each project site, based on that project site's mitigation requirements.

Woodland Creation/Enhancement and Individual Tree Planting Areas

Figure 7 presents the identified woodland creation/enhancement locations and individual tree planting areas, with identification numbers correlating to those included in Table 15. Table 15 summarizes the acreages of woodland creation/enhancement and oak tree planting areas identified for this ORMP. Based on the target density ratios included in Mitigation Measure BIO-22 of the RMDP/SCP EIS/EIR (coast live oak woodland (50 trees per acre), mixed oak woodland (40 trees per acre), and valley oak woodland (25 trees per acre)), the woodland creation and enhancement areas identified in this ORMP will provide enough area to mitigate woodland impacts. Specific locations for mitigation for each proposed project will be further refined in each project's subnotification package.

Table 15. Proposed Oak Woodland Creation and Enhancement Areas

Mitigation Type	Identified Area (Acres)	Total Trees Accommodated	Mitigation Area Identification Numbers
Oak Woodland Creation Areas			
Coast live oak woodland	148.23	7,411	1–27
Valley oak woodland	8.25	206	53
Oak Woodland Enhancement Areas			
Coast live oak woodland[1]	17.62	441	28–44
Oak Tree Planting Areas			
Valley oak/grass – creation	125.26	3,131	46–52

Notes:

1 Assumes half of the density available for planting (25 trees per acre).

2 Mitigation Area Number 54 is identified in the Mission Village Oak Tree Report as suitable for additional oak tree plantings. Total number of trees that can be accommodated in this area has not yet been assessed.

Table 16 summarizes the mitigation requirements by development area and tree species or woodland type.

Table 16. Mitigation Requirements Summary by Development Area

Species / Woodland Type	Oak Tree Plantings (CLAOTO)	Non-Oak Tree Plantings	Upland Woodland Creation (Acres)	Jurisdictional Woodland Creation (Acres)
Entrada South				
Valley oak	33	—	—	—
McDonald oak	5	—	—	—
Scrub oak	48	—	—	—
Mainland cherry	0	10	—	—
Valley oak/grass	—	—	1.66 (or 3.32 enhancement)	0.09
Homestead North				
Coast live oak	338	—	—	—
Valley oak	3	—	—	—
McDonald oak	3	—	—	—
Coast live oak woodland	—	—	6.28 (or 12.56 enhancement)	0.45
Homestead South				
Coast live oak	1,105	—	—	—
Scrub oak	3	—	—	—
Southern California black walnut	0	2	—	—
Mainland cherry	0	296	—	—
Coast live oak woodland	—	—	30.78 (or 61.56 enhancement)	1.54
Landmark Village				
Coast live oak	18	—	—	—
Magic Mountain Parkway Extension				
Valley oak	50	—	—	—
MacDonald oak	5	—	—	—
Scrub oak	3	—	—	—
Mission Village				
Coast live oak	385	—	—	—
Valley oak	40	—	—	—
MacDonald oak	3	—	—	—
Scrub oak	10	—	—	—
Mainland cherry	—	252	—	—
Coast live oak woodland	—	—	3.90 (or 7.80 enhancement)	0.48

Table 16. Mitigation Requirements Summary by Development Area

Species / Woodland Type	Oak Tree Plantings (CLAOTO)	Non-Oak Tree Plantings	Upland Woodland Creation (Acres)	Jurisdictional Woodland Creation (Acres)
Potrero Village				
Coast live oak	240	—	—	—
Valley oak	43	—	—	—
Southern California black walnut	—	12	—	—
Coast live oak woodland	—	—	7.15 (or 14.30 enhancement)	0.00
Valley oak woodland	—	—	0.45 (or 0.90 enhancement)	0.00
VCC				
Valley oak	60	—	—	—
Valley – blue oak hybrid	5	—	—	—
Mainland cherry	—	2	—	—
Valley oak woodland	—	—	1.77 (or 3.54 enhancement)	0.00
WRP-Utility Corridor				
Coast live oak	3	—	—	—
Totals				
Coast live oak	2,089	—	—	—
Valley oak	229	—	—	—
Scrub oak	64	—	—	—
McDonald oak	16	—	—	—
Valley – blue oak hybrid	5	—	—	—
Mainland cherry	—	560	—	—
Southern California black walnut	—	14	—	—
Coast live oak woodland	—	—	48.11 (or 96.22 for enhancement)	2.47
Valley oak woodland	—	—	2.22 (or 4.44 for enhancement)	0.00
Valley oak/grass	—	—	1.66 (or 3.32) enhancement)	0.09

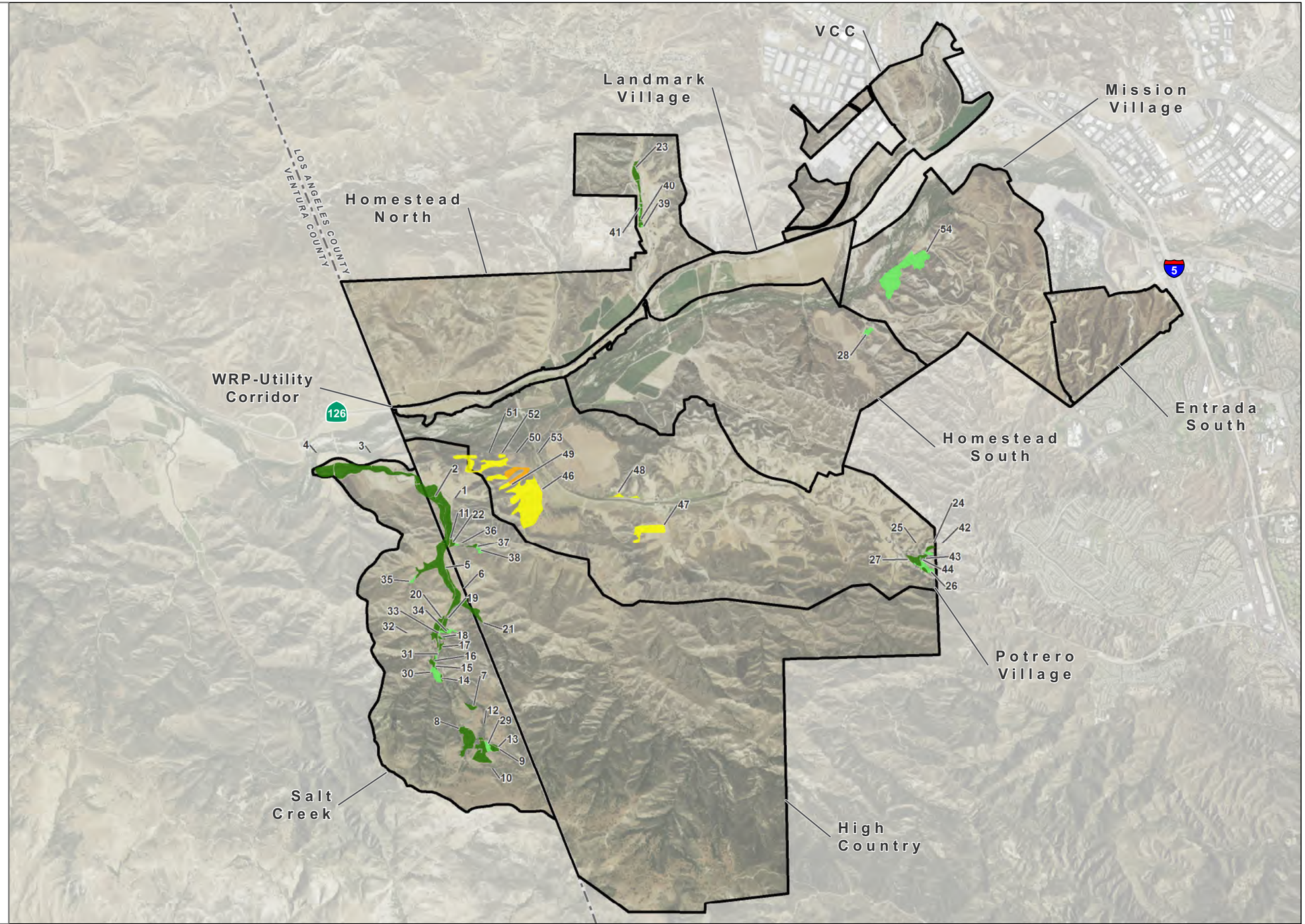
Notes: Green-shaded rows present individual tree mitigation requirements while blue-shaded rows present woodland mitigation requirements.
VCC = Valencia Commerce Center; WRP = Water Reclamation Plant

As identified in Table 15, sufficient area has been identified to accommodate all necessary woodland mitigation and CLAOTO tree plantings. Specifically, 148.23 acres of coast live oak woodland creation area has been identified, well above the 50.58 acres necessary (upland plus jurisdictional), as presented in Table 16. A total of 8.25 acres of valley oak woodland creation area has been identified, exceeding the 2.22 acres necessary, and a total of 125.26 acres of valley oak/grass creation area has been identified, well above the 1.75 acres necessary. Additionally, 18.13 acres of coast live oak woodland enhancement area has been identified.

Village Boundary

Proposed Oak Woodland Creation and Enhancement

- Coast live oak woodland Creation Area
- Valley oak woodland Creation Area
- Coast live oak woodland Enhancement Area
- Oak Tree Planting Area/Valley oak grassland Creation Area



0 2,000 4,000 Feet

SOURCE: ESRI ArcGIS Online World Imagery Basemap

DUDEK

FIGURE 7
Woodland Creation/Enhancement and Individual Tree Planting Areas

Oak Resources Management Plan for the RMDP/SCP

\\DUDEK-FILES\GIS\Data\Projects\j3738\01\2014_Scopes\MAPDOC\MAPS\j222_ORMP\Figure 7 Woodland Mitigation.mxd: Date Saved: 11/24/2015 11:34:14 AM

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Sufficient area has also been identified to accommodate required tree plantings. Specifically, the required coast live oak plantings (2,089 trees) would require 41.78 acres of creation area at the target density of 50 trees per acre, and 148.23 acres have been identified. For valley oak, 229 tree plantings would require 9.16 acres of valley oak woodland creation area at the target density of 25 trees per acre, or 11.45 acres of valley oak/grass creation area at a density of 20 trees per acre; 8.25 acres and 125.26 acres of available planting area have been identified, respectively. Required mitigation for hybrid oak (21 trees) and scrub oak (64 trees) could also be accommodated within woodland creation areas or planted in additional tree planting areas (identified in Section 5.3). Finally, the required non-oak tree plantings (14 southern California black walnut and 560 mainland cherry) could be added as a component to woodland creation or enhancement areas or planted in additional tree planting areas.

5.3 Additional Planting Areas for Individual Trees

In addition to the tree planting locations identified for woodland creation and enhancement, planting of individual oak trees of any species may occur in the post-development landscape in order to meet the CLAOTO and RMDP/SCP EIS/EIR requirements. Mitigation to comply with these requirements will occur wherever oak trees are planted. As noted, Newhall Land may elect to plant individual oak trees outside woodland areas, including in the optional areas specified in this section. Specific locations for tree planting for each proposed project will be further refined in each project's subnotification package.

5.3.1 Fuel Modification Zone Tree Planting

Oak trees may be planted within fuel modification zones within the project footprint. Slopes targeted for tree planting should be north- and east-facing slopes, with priority given to slopes that are contiguous with existing and preserved natural woodland areas. Oak trees planted in these areas would count toward individual tree mitigation totals required under CLAOTO and the RMDP/SCP EIS/EIR for impacts to individual oak trees.

5.3.2 Landscape Tree Plantings

Oak trees may be planted within the community open space areas as landscaping components. These trees would likely be larger-sized trees that would provide aesthetic benefits and would receive more maintenance than trees in woodland creation/enhancement areas. Some of these trees may be relocated from project impact areas or other Newhall Land property in the area. These trees would provide a landscaping theme that is in harmony with the considerable preserved woodlands in the surrounding open space. Oak trees planted in these areas would count toward individual tree mitigation totals required under CLAOTO and the RMDP/SCP EIS/EIR for impacts to individual oak trees.

5.3.3 Restored Canyon Drainage Systems

Several canyon drainage systems will be modified, reconstructed, or stabilized, including Chiquito Canyon, Lion Canyon, Long Canyon, Potrero Canyon, San Martinez Grande Canyon. Riparian and wetland enhancement and restoration is proposed for these systems, which will include oak tree plantings as components of the native communities to be established. The restoration of these canyons will primarily consist of mitigation for impacts to jurisdictional waters, wetlands, and riparian habitat, and is addressed separately in mitigation plans for these

resources. However, planting oak trees within these restored habitats would qualify as tree replacement in accordance with CLAOTO and RMDP/SCP EIS/EIR requirements as well as mitigation for oak woodland impacts in jurisdictional streambeds.

5.4 Mitigation Schedule

The specific implementation schedule for the various components of the oak mitigation program is not known at this stage of project planning. However, the general implementation framework is provided herein, as well as the projected timing of the project build-out.

Mitigation trees must be planted within 1 year of the permitted oak tree removals in accordance with CLAOTO. The initial oak mitigation may include pre-mitigation within portions of the High Country SMA, Salt Creek area, and other preserved portions of the RMDP/SCP area before impacts to oak trees and woodlands within the proposed development areas occur. The intent of pre-mitigation oak tree planting is to satisfy mitigation requirements for impacts to individual oak trees as described in CLAOTO, but planting in degraded woodlands or non-native habitat areas (creation) may occur and successful plantings would also be counted as a component of the RMDP/SCP oak woodland acreage mitigation requirements. Trees that are smaller than the 15-gallon and 1-inch diameter at breast height (dbh; approximately 4.5 feet above mean natural grade) size required by CLAOTO could be planted and monitored until they reach the required size, thereby reducing costs of plant materials and promoting naturally rooting trees, which may enhance long-term survival. The Los Angeles County Forester must approve the pre-mitigation concept prior to implementation. Monitoring, mapping, and reporting will also be critical components to the pre-mitigation oak planting efforts to successfully document and quantify viable mitigation plantings. Successfully established and County-verified oak tree plantings under this program will be counted toward the required mitigation totals as impacts are realized.

In general, mitigation will occur first in open space areas not subject to project-related impacts, and second in temporary impact areas associated with specific projects. Thus, mitigation for habitat impacts per the RMDP/SCP EIS/EIR would generally be provided first. Additional oak trees will be planted in temporary impact areas, Open Areas, parks, fuel modification zones, and appropriate streetscape areas to satisfy any remaining CLAOTO requirements.

The actual sequence of the build-out schedule is not established. However, the current status of tentative maps provides an indication of the potential sequence of projects. Within the Specific Plan area, five tentative maps will be submitted over a period of time: Landmark Village (currently approved), Mission Village (currently approved), Homestead Village South (in process), Homestead Village North (to be submitted in future), and Potrero Village (to be submitted in future). In addition, tentative maps will be submitted for Entrada South (in process) and VCC (in process). Numerous infrastructure components may be proposed as part of tentative map submittals or as individual projects. Likewise, the tentative map areas may be subdivided into phases and submitted separately.

6 Planting Plan

This ORMP provides for planting oak trees, enhancing degraded oak woodlands, and establishing new oak woodlands. The planting recommendations presented in this document rely on proven methods to provide for a high likelihood of tree establishment, adaptation to the planting site, and continued growth into subsequent age classes. This section also provides details of the site preparation, planting methods, plant palettes, and source requirements.

6.1 Oak Tree Source Requirements and Size

In accordance with RMDP/SCP EIS/EIR Mitigation Measure BIO-22d, all plant materials and plant propagules (seed, nursery stock, cuttings) used for oak woodland enhancement or replacement shall be collected within a 5-mile radius and within 1,000 feet elevation of the restoration site. This requirement also supersedes the CLAOTO requirements for utilizing indigenous oak trees from Los Angeles or Ventura counties and will be the standard for this ORMP. Accordingly, site-specific collections will be necessary to develop the resources needed for tree planting. A seed collection and plant propagation program will be developed to orchestrate seed collection and nursery propagation to meet these parameters so that plant materials and plant propagules are available for the specific planting sites in accordance with these guidelines.

In addition to the source requirements, it is recommended that the following criteria for individual tree condition be met prior to planting:

- Trees shall be healthy, sound, vigorous, and free from disease, insects, or pests
- Trees shall not be root bound or exhibit girdling roots
- Trees shall be natural form
- Trees shall not have been topped.

The size of oak trees will vary, from young seedlings in tree pots to larger box specimens. For planting within natural open space, the oak tree sizes will vary between tree pots and 15-gallon size. Planting in natural open space will also use unpotted acorns. Larger specimen trees may be used within developed areas where there is a desire for quicker establishment for development of tree structure.

For more remote oak woodland creation or enhancement sites, there will be a higher reliance on smaller oak trees and acorns. Planting acorns and seedlings in the natural areas on the property can be a simple, economical, and successful way of establishing healthy trees. Direct seeding of acorns is often discouraged because growers expect poor germination rates and a high loss of planted seeds to rodents. These problems are minimized with careful selection and storage of seed, sowing multiple seeds in the same planting hole and thinning later, and the use of tree protection to protect the seed and growing seedling in the ground from herbivory.

6.2 Oak Tree Planting Densities and Quantities

Planting densities naturally vary depending on site conditions (e.g., slope, aspect, soil type, water availability). However, on average, a target tree density has been established for each oak woodland type, as presented in Table 17 (adapted from Table 4.5-71 from the RMDP/SCP EIS/EIR). As required by the RMDP/SCP EIS/EIR, tree

densities of surviving, healthy oak trees shall be within 5% of ORMP target density, by woodland type. Cover and species richness of other native shrubs shall reach 50% of the cover and species richness described for the target woodland. For valley oak/grass, a target tree density of 20 trees per acre is assumed.

The plant palettes provided herein for woodlands include container planted shrubs to facilitate development of a shrub layer, and a seed mix to introduce native herbs and grasses. The plant palettes for woodlands provide for an understory shrub cover of 50%, with the assumption that the remainder of the understory cover would be composed of herbs. In contrast, the plant palette for valley oak/grass contains only seed consisting of native herbs and grasses.

Table 17. Target Woodland Tree Densities by Oak Woodland Type

Woodland Type	Average Existing Woodland Density (Trees per Acre)	Target Density for Newhall Land (Trees per Acre)
Coast live oak woodland	22	50
Mixed oak woodland	19	40
Valley oak woodland	16	25

As several oak species will be impacted, mitigation totals must also represent an appropriate species distribution. With the exception of MacDonald oak, impacted oak trees will be replaced in kind. Valley oak trees will be planted to compensate for this hybrid variety.

In order to account for tree mortality of plantings over the 2-year monitoring period, a greater number (approximately 5%) of oak trees will be planted than is required (Table 18). Should mortality rates or actual tree impact totals exceed the totals used in determining the mitigation quantities presented in this ORMP, additional planting efforts will be implemented using the guidelines discussed herein.

Table 18. Oak Tree Plantings by Species

Species	Trees Impacted	Trees Required	Total with Additional 5%
Coast live oak	611	2,089	2,194
Valley oak	70	229	241
Scrub oak	25	64	68
Hybrid oak*	8	21	23
Total	**714**	**2,403**	**2,526**

Note:
* the hybrid varieties, MacDonald oak and valley oak-blue oak hybrid, will be replaced with Valley oak

6.3 Identified Oak Tree Capacity

The planting totals in Table 18 are based on estimated impact numbers multiplied by the required replacement ratios, adjusted to account for mortality. The maximum tree capacities presented in Table 15 are derived strictly from available acreages within the planting areas multiplied by optimal tree densities, by species. As indicated by Table 15, the available tree planting capacity exceeds the recommended tree planting totals presented in Table 18.

6.4 Site Preparation

Site preparation activities for oak woodland creation areas may include minor surface contouring, soil decompaction, soil amending, weed/debris removal, irrigation system installation, and grow-and-kill weed control treatments. For individual tree planting sites, site preparation may not be necessary if planting areas are within developed areas, or minimal in natural areas where some minor weed/debris removal may be necessary.

6.4.1 Soil Decompaction and Surface Contouring

In areas where the land surface has been degraded or modified, soil decompaction and minor surface contouring may be recommended to alleviate compaction and return the surface to natural contours. Such instances include soil berms that may impede natural surface drainage; old, unused road cuts; erosion scars; or unused cattle watering ponds. Soil decompaction shall consist of cross-ripping to a depth of at least 12 inches.

6.4.2 Soil Amendments

Agricultural-suitability soil tests should be performed and analyzed before restoration is undertaken in any area to ensure that the soil chemistry is not a limiting factor for the growth of oak trees or other understory plant material. The test results may help verify that the soil is suitable and will help determine what soil amendments and/or fertilizers may be required, if any, for restoration to be successful in the allotted time frame.

If the soils are disturbed, soil amendments are more likely to be necessary to promote healthy plant establishment, such as in the developed areas where mass grading will occur. Natural areas are unlikely to need soil amendments, with the exception of some minor nutrient augmentation to initiate early plant establishment. Soil amendments should be incorporated into the topsoil or into the backfill for plant materials.

6.4.3 Weed/Debris Removal

Weeds and debris shall be removed from restoration areas and planting sites prior to seed application or planting. If the entire site is to be restored or enhanced, then the surface shall be cleared of any weeds or debris to allow seed contact with the soil. In areas where individual tree or understory shrub planting will occur, weed and debris removal is only necessary within a 3-foot radius of each planting hole.

6.4.4 Irrigation System Installation

A temporary irrigation system may be installed to provide supplemental irrigation to the native seed and container plants to help foster plant establishment within the oak woodland restoration areas. The irrigation system will only be used until the plants are established such that they can survive on their own from seasonal rainfall. The irrigation system will be installed as an aboveground system, so that irrigation equipment may be abandoned and removed once the system has been decommissioned. The irrigation system will use a water source located as close to the site as possible. All on-site irrigation will consist of polyvinyl chloride (PVC) pipe staked on grade at approximately 10 feet on-center and at all corners. An overhead system would be used for oak woodland restoration areas where establishing the understory is a component of the restoration. In other areas, a drip or bubbler irrigation system

may be used to deep water the individual tree plantings until they become established. Check valves will be installed to eliminate low-head drainage where necessary.

6.4.5 Initial Weed Control

Prior to the installation of native seed and container plants in oak woodland restoration areas, a grow-and-kill weed eradication treatment will be conducted by activating the irrigation system over an approximately 2- to 4-week period to encourage non-native seedling germination. If the restoration areas do not have an overhead irrigation system, a grow-and-kill treatment should be conducted after the onset of rains encourage weed seed germination. When weeds have begun to grow, a foliar application of an appropriate systemic herbicide will be applied to kill the weeds. This procedure may be conducted multiple times to reduce the weed seed bank prior to planting.

6.5 Plant and Seed Installation

After site preparation activities are complete, plants will be installed. Container plants will include all species from the planting palettes for the target community.

Location. Dudek recommends a non-uniform or non-grid-type planting layout for all natural open space planting areas included in this ORMP. Specifically, planting locations within the planting areas should mimic natural oak and savanna distributions, with tree clusters and openings scattered randomly throughout the planting areas. Individual planting locations should be flagged in the field by a qualified forester, arborist, or restoration biologist prior to tree planting efforts, using the density and location information included in this ORMP.

Depth. The planting pit shall be excavated to a minimum of twice the diameter of the root ball, and to a depth adequate to allow the root ball to rest on firm soil. The sides and bottom of the planting pit shall be scarified prior to installation of the tree. The depth of the planting pit should be checked so that the top of the root ball extends 1 to 2 inches above grade. This allows for settling of the tree over time, and prevents the root ball from resting below grade where it is susceptible to moisture, fungal pathogens, and other soil organisms.

Container and roots. Remove the tree from the container and trim the root ball according to the following criteria: Locate any thick circling roots and either straighten them or cut them cleanly. Make three to four vertical cuts 0.5 inch deep around the root ball in order to thin the roots. Spread the bottom roots out, as necessary.

Tree placement and backfilling. Place the tree in the pit, making sure planting depth is appropriate. The native soil should be backfilled into the planting pit. If the timing is appropriate for the collection and sowing of acorns, one acorn, gathered from local sources and of the same species as the planted tree, shall be added to each pit and buried to a depth of 1.5 to 2 inches below the final backfill grade (McCreary 2001). A 4-inch-high by 24-inch-diameter soil watering basin should be placed around each oak tree at planting. The trees should be thoroughly watered immediately following planting.

Timing. Trees should be planted in the fall of each year, soon after the first fall rains have moistened the soil. Preferably, containerized trees should be planted by mid-December (McCreary 2001).

6.6 Planting Plan

The planting plan will vary for each restoration area depending on site-specific conditions related to hydrology and soils. More detailed planting plans will be defined in each site-specific mitigation plan to be submitted with each construction subnotification package. Representative plant palettes are shown in Tables 19–22. Planting will follow site preparation activities.

The plant palettes have been designed to represent the composition of species that occur within the oak-dominated vegetation communities and to create additional appropriate native vegetation communities through a formulated composition of container stock and seed mix. The species included are important components of the revegetation program, and occur as components of existing oak woodlands and valley oak/grass habitats on site. Site-specific adjustments (e.g., seeding rates, species composition) to these generalized planting palettes may be made as deemed appropriate by a qualified forester, arborist, or restoration biologist.

Table 19. Southern Coast Live Oak Riparian Forest Plant Palette

Seed Mix			
Scientific Name	Common Name	Minimum Percent Live Seed	Rate (Pounds/Acre)
Ambrosia psilostachya	western ragweed	4.5	2
Amsinckia intermedia	common fiddleneck	49	1
Artemisia californica	California sagebrush	7.5	2
Artemisia douglasiana	mugwort	5	1
Artemisia dracunculus	tarragon	3	1
Artemisia tridentata	big sagebrush	6.5	1
Bromus carinatus	California brome	76	6
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple chinese houses	88.2	1
Eriogonum fasciculatum	California buckwheat	6.5	10
Eriogonum gracile	slender buckwheat	0.75	1
Isocoma menziesii var. *vernonioides*	Menzies' goldenbush	15	3
Lasthenia californica	California goldfields	30	0.5
Leymus triticoides	creeping wildrye	76	3
Mimulus aurantiacus puniceus	sticky monkeyflower	1.2	2
Nassella cernua	nodding needlegrass	40	3
Nemophila menziesii	baby blue-eyes	83.3	1
Phacelia cicutaria	caterpillar phacelia	47.5	1
		Total pounds/acre	**40.0**

Table 19. Southern Coast Live Oak Riparian Forest Plant Palette

Container Plants				
Scientific Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Quantity per Acre**
Heteromeles arbutifolia	toyon	1 gallon	12	24
Juglans californica	black walnut	Varies*	20	5
Leymus condensatus	giant rye grass	1 gallon	6	61
Prunus ilicifolia	mainland cherry	Varies	12	9
Quercus agrifolia	Coast live oak	Varies	20	50
Rhus ovata	sugar bush	1 gallon	12	15
Rhus trilobata	squaw bush	1 gallon	6	97
Ribes californicum	California gooseberry	1 gallon	6	36
Ribes indecorum	white-flowered currant	1 gallon	6	36
Rosa californica	California rose	1 gallon	6	61
Sambucus mexicana	Mexican elderberry	Varies	12	15
			Total plants/acre	**409**

Note:

* Pot sizes for black walnut, mainland cherry, oaks, and elderberry will vary, and may include deep pots, tree pots, 5-gallon, and 15 gallon sizes.

Table 20. Coast Live Oak Woodland Plant Palette

Seed Mix			
Scientific Name	**Common Name**	**Minimum Percent Live Seed**	**Rate (Pounds/ Acre)**
Amsinckia intermedia	common fiddleneck	25	1
Artemisia californica	California sagebrush	7.5	2
Baccharis pilularis	coyotebrush	0.8	1
Brickellia californica	California brickelbush	2	2
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple Chinese houses	88.2	1
Elymus glaucus	blue wildrye	72	3
Eriogonum fasciculatum	California buckwheat	6.5	8
Eschscholzia californica	California poppy	73.5	1
Hazardia squarrosa	sawtooth goldenbush	2	4
Isocoma menziesii var. *vernonioides*	Menzies' goldenbush	15	1
Lasthenia californica	California goldfields	30	0.5
Lessingia filaginifolia	sand aster	0.08	4
Melica imperfecta	coast melicgrass	54	2
Mimulus aurantiacus pubescens	hairy bush monkeyflower	1.2	2

Table 20. Coast Live Oak Woodland Plant Palette

Seed Mix			
Scientific Name	Common Name	Minimum Percent Live Seed	Rate (Pounds/ Acre)
Nemophila menziesii	baby blue-eyes	83.3	1
Phacelia cicutaria	caterpillar phacelia	80	1
Salvia leucophylla	purple sage	49	2
		Total pounds/acre	40.0

Container Plants				
Scientific Name	Common Name	Size	Spacing (Feet on Center)	Quantity per Acre
Heteromeles arbutifolia	toyon	1 gallon	12	30
Juglans californica	black walnut	Varies	20	9
Leymus condensatus	giant rye grass	1 gallon	6	121
Quercus agrifolia	Coast live oak	Varies	12	50
Quercus lobata	valley oak	Varies	20	25
Rhus ovata	sugar bush	1 gallon	12	15
Rhus trilobata	squaw bush	1 gallon	6	97
Ribes californicum	California gooseberry	1 gallon	6	36
Sambucus mexicana	Mexican elderberry	1 gallon	6	36
Umbellularia californica	California bay laurel	1 gallon	6	36
			Total plants/acre	456

Table 21. Valley Oak Savanna Seed Mix

Seed Mix			
Scientific Name	Common Name	Minimum Percent Live Seed	Rate (Pounds/ Acre)
Amsinckia intermedia	common fiddleneck	25	2
Bromus carinatus	California brome	60	6
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple Chinese houses	88.2	2
Elymus glaucus	blue wildrye	72	4
Eschscholzia californica	California poppy	73.5	2
Lasthenia californica	California goldfields	30	0.5
Lessingia filaginifolia	sand aster	0.08	5
Melica imperfecta	coast melicgrass	54	2
Nemophila menziesii	baby blue-eyes	83.3	2
Phacelia cicutaria	caterpillar phacelia	80	1
Poa secunda	pine bluegrass	32	1
Stipa lepida	foothill needlegrass	54	4

Table 22. Valley Oak Woodland Plant Palette

Seed Mix			
Scientific Name	**Common Name**	**Minimum Percent Live Seed**	**Rate (Pounds/Acre)**
Amsinckia intermedia	common fiddleneck	25	1
Bromus carinatus	California brome	60	6
Clarkia purpurea	winecup clarkia	80	0.5
Collinsia heterophylla	purple Chinese houses	88.2	1
Elymus glaucus	blue wildrye	72	3
Eschscholzia californica	California poppy	73.5	1
Hazardia squarrosa	sawtooth goldenbush	2	4
Isocoma menziesii var. *vernonioides*	Menzies' goldenbush	15	1
Lasthenia californica	California goldfields	30	0.5
Lessingia filaginifolia	sand aster	0.08	4
Melica imperfecta	coast melicgrass	54	2
Mimulus aurantiacus pubescens	hairy bush monkeyflower	1.2	2
Nemophila menziesii	baby blue-eyes	83.3	1
Phacelia cicutaria	caterpillar phacelia	80	1
Poa secunda	pine bluegrass	32	1
Stipa lepida	foothill needlegrass	54	4
		Total pounds/acre	**33.0**

Container Plants				
Scientific Name	**Common Name**	**Size**	**Spacing (Feet on Center)**	**Quantity per Acre**
Heteromeles arbutifolia	toyon	1 gallon	12	24
Juglans californica	black walnut	Varies	20	5
Leymus condensatus	giant rye grass	1 gallon	6	121
Quercus lobata	valley oak	Varies	30	25
Rhus ovata	sugar bush	1 gallon	12	30
Rhus trilobata	squaw bush	1 gallon	6	121
Sambucus mexicana	Mexican elderberry	1 gallon	6	85
			Total plants/acre	**412**

6.7 Tree Tagging and Mapping

Following tree planting, the location of each individual mitigation tree in individual tree planting areas or within woodland creation or enhancement areas, will be mapped in the field with GPS and its location marked on a site map. Data collected for each mapped tree will include species, tree planting size, planting area, and planting date. Each tree will be assigned an identifying number that will be written on an "Aluma-boss" or other suitable marking

tag attached to each tree in a visible location. Because the trees are small, tree tags shall be fastened to a tree limb, not the trunk, using wire or plastic ties. Tree tags should not be nailed into any part of the tree. Marking tags will be removed prior to termination of the appropriate monitoring period. All tree locations shall be kept in a spatial database, and tree numbers will be entered into a database to track data for each tree.

6.8 Fencing and Protection

Fencing and other protective measures are recommended to protect oaks from animal damage and may be critical in the overall survival of oak trees and success of restoration efforts. Damage associated with cattle and deer grazing is the primary concern addressed in this ORMP. Several options exist for oak seedling protection:

- **Vaca cages.** These cages are circular structures, each approximately 1.5 feet in diameter and 4 feet in height, created from 12-gauge wire fencing with 2- by 4-inch mesh. The cages are secured to the ground with a T-bar post with 14-gauge wire fastened to the top, middle, and bottom of the cage. These cages are effective against deer and cattle.
- **Cattle exclusion fencing.** If cattle are present, fencing around each planting area following the completion of planting efforts is intended to prevent access into the planting area by cattle and to minimize the potential for trampling or browsing of newly planted oaks and the irrigation system. Cattle exclusion fencing should be no less than 4 feet high, installed at the edge of planting areas. Fencing materials will consist of four-strand, four-point barbed wire, self-anchoring super stockman's braces, leg braces, stress posts, and earth anchors as necessary for the terrain. Cattle exclusion fencing alone is not effective against deer browsing. If deer browsing becomes problematic, then one of the other tree protection methods shall be used.
- **Tree shelters.** Tree shelters (e.g., Tubex) are plastic, translucent protectors that fit over seedlings. Four-foot shelters are recommended and should be attached to the manufacturer-provided stakes with wire, leaving the top of the post several inches below the lip of the shelter. Shelters have also proven to stimulate aboveground growth, limit foliage exposure to herbicides, and make it easier to locate field plantings (McCreary 2001). Shelters should be left in place for at least 3 years after the trees have emerged from the tops.

All fencing, cages, or shelters should be maintained in place until trees reach the end of the 5-year monitoring period, or until otherwise noted by the project monitor.

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7 Maintenance Plan

Maintenance of the oak woodland restoration sites is required for a period of no less than 5 years total and no less than 2 years after removal of irrigation (if any). If trees are planted that are smaller than the required minimum size required by CLAOTO, then the 5-year maintenance period begins once the planted trees reach the required minimum size. During the maintenance period, maintenance measures will be provided to ensure that the oak trees become successfully established and are ultimately able to survive in natural conditions beyond the completion of the maintenance period.

7.1 General Habitat and Tree Maintenance Guidelines

7.1.1 Pest Management

Pest management will employ an integrated pest management approach for pest control measures, as described in the Integrated Pest Management Plan (IPM) developed for the Plan area (Dudek, 2019). Alternative methods to pesticides will be encouraged wherever feasible. Insects, disease, and other pests may require control measures if they pose a significant threat to plant health and vigor during the 5-year maintenance period. The landscape maintenance contractor shall consult with the biological monitor to determine whether control measures are warranted. The landscape maintenance contractor shall follow all applicable laws, regulations, label directions, and safety precautions when performing pest control activities.

7.1.2 Weed Control

Weeds are expected to be the primary pest problem in the mitigation areas during the first few years. Weeds shall be controlled so they do not prevent the establishment of the native species or invade adjacent areas. Weeds shall be controlled prior to setting seed. A combination of physical removal and appropriate herbicide treatments shall be used to control the non-native/invasive plant species. Properly timed, repeat herbicide applications will likely be required to effectively control these species. Weed control shall follow the integrated pest management approach described in the IPM.

Weeds and non-native grasses shall be controlled during the entire maintenance period so they are not a competitive threat to establishment of the desired native species. According to Condition 4 of Mitigation Measure BIO-22d, non-native grass cover shall not exceed the target woodland non-native grass cover, and other non-native species shall not exceed 10% cover at any time. Any non-native species listed on the California State Agricultural noxious weed list (3 CCR 4500) or the California Invasive Plant Council (Cal-IPC) list of high- or moderate-rated species (Cal-IPC 2014) will not be present on the revegetation site at the time that project success is determined. Weed control efforts shall occur at a level that will keep the woodland restoration projects in conformance with these weed control goals.

Weeds and other plants will be removed within a 3-foot radius around each oak tree to minimize competition for water, nutrients, and light. Mulch in the watering basins will be replaced as needed to maintain a mulch layer around all trees and to help conserve water loss.

7.1.3 Irrigation System

If an irrigation system is established, it shall be checked regularly to ensure proper operation and adequate coverage of the restoration areas. Problems with the system shall be repaired immediately to reduce potential plant mortality. The frequency and duration of irrigation applications shall be adjusted seasonally by the maintenance contractor in coordination with the biological monitor to meet habitat needs. The intent of the irrigation program is to maximize healthy growth and maintain good vigor, while ultimately allowing the trees to transition to surviving in the natural site conditions. The irrigation system will be kept off to the maximum extent possible during the winter rainy season.

The irrigation system will be used as necessary during the first few years of the long-term maintenance and monitoring period, and will be terminated at least 3 years prior to the completion of the maintenance program. Watering on site will gradually be decreased prior to the irrigation system being abandoned to allow the plants to become acclimated to the site's natural hydrology.

7.1.4 Trash and Debris Removal

All trash and unnaturally occurring debris shall be removed by the maintenance contractor during each maintenance visit. Deadwood and leaf litter will be left in place to replenish soil nutrients and organic matter.

7.1.5 Tree Protection and Fencing and Signage Maintenance

Tree protection and fencing and signage maintenance shall be conducted as needed to protect the restoration areas. Significant damage from cattle to early restoration sites can occur in a short time. Exclusionary fencing maintenance and tree protection are critical to ensure the successful establishment of the oak woodland restoration areas.

7.1.6 Tree Care

In the oak woodland restoration areas, pruning will generally not be needed or permitted on the mitigation oak trees. Suckers may be removed and some minor pruning may be recommended by the biological monitor to provide for good branch structure and to repair any deficiencies in the trees or other damage that may occur. The oak trees will generally not be pruned to remove lower-growing branches or train the trees to a "standard" street tree form; instead, they will be encouraged to take on a natural form. Safety pruning to remove growth-impeding access along sidewalks, maintenance access roads, and/or streets may be permitted based on the recommendations of the biological monitor. Oak trees planted per CLAOTO requirements in the development areas may be pruned and trained as necessary.

Fertilization will generally not be necessary, particularly for the oak trees planted in natural open space areas. The restoration ecologist may recommend supplemental applications of fertilizer or other soil amendments during the maintenance and monitoring period if deemed necessary for healthy plant establishment. If the biological monitor recommends supplemental fertilizer applications, they will be applied during the fall through early spring months to correspond with the natural growth cycle of the trees.

7.2 Maintenance Schedule

Maintenance of restoration areas shall be conducted as needed to ensure success. Although the frequency of maintenance visits may be highly variable depending on conditions, the general guideline for maintenance is to provide maintenance visits monthly during the first year and quarterly thereafter. For individual oak trees, maintenance shall occur as needed, but a minimum of twice per year.

The schedule for maintenance will be flexible to allow for more visits during periods when greater maintenance needs are present and fewer maintenance visits during periods when maintenance needs are minimal. For instance, maintenance visits may be conducted monthly during the spring when weeds are actively growing and setting seed, but only every several months in the summer/fall when weeds are controlled or dead.

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8 Monitoring Plan

8.1 Monitoring Principles

The following sections present guidelines for the monitoring of planted oaks and oak woodland restoration (creation and enhancement) areas. A detailed monitoring program will be established for each development area associated with the RMDP/SCP EIS/EIR and will be outlined in the submitted subnotifications, which will demonstrate individual project compliance with the criteria included in this ORMP. In addition to monitoring the tree planting and woodland restoration areas, the program will also include monitoring of retained oak trees where project-related grading or other site disturbance occurs within the encroachment zone (as identified in CLAOTO and encompassing the area within the dripline of an oak tree and extending therefrom to a point at least 5 feet outside the dripline, or 15 feet from the trunks of a tree, whichever distance is greater). Tree protection measures for retained trees adjacent to development activity will be included in the oak tree permits issued by the County for each development area.

The monitoring program for planted oaks and oak woodland restoration areas includes the following basic components:

- Performance standards
- Data collection standards
- Digital and on-site locations of data points / monitoring stations
- Monitoring schedule
- Observations
- Adaptive management
- Recommendations.

Monitoring efforts discussed in this section address individual oak tree establishment (per CLAOTO) and woodland enhancement/creation areas (per the RMDP/SCP EIS/EIR). Individual trees planted in woodland enhancement/ creation areas will be counted both toward fulfilling CLAOTO requirements and as a component of the woodland mitigation required under the RMDP/SCP EIS/EIR, and will therefore be monitored with this understanding in mind.

Finally, for the purposes of this ORMP, a monitor is assumed to be a qualified arborist, forester, biologist, or oak restoration specialist with specific oak mitigation or restoration experience. The monitor will coordinate all monitoring efforts, including those for individual tree plantings, oak woodland restoration areas, and retained tree health adjacent to construction activities. Monitoring of new plantings will continue until the required 5-year period ends.

8.2 Monitoring and Reporting Schedule

Monitoring will occur from planting through the establishment/maintenance period and will be of higher frequency during planting and for the 120 days following planting. The monitor should be on site to document tree and shrub planting, seeding, and irrigation installation and provide direction during the planting process. The monitor should also visit the site periodically each year throughout the establishment/maintenance period to track the progress of mitigation efforts. A consistent monitor should be employed over the course of the program to better implement the adaptive management process should tree decline or mortality occur at unusual levels.

8.2.1 Individual Trees

Monitoring of mitigation oaks shall be conducted for a minimum of 2 years after planting if the trees are 15-gallon size and 1 inch in diameter as measured 1 foot above the base (per CLAOTO), or for 2 years once they reach this minimum size. Additionally, if mitigation oak trees die during the 2-year monitoring period, they shall be replaced and monitored for 2 years, starting from the point when they meet the minimum CLAOTO size requirement. This monitoring schedule applies to all planted trees, including individual tree plantings and those within woodland creation or enhancement areas, for credit toward CLAOTO mitigation requirements. Monitoring should focus on tree health, mortality rates and causes, presence of pests or diseases, competition levels from non-native species, and other factors that may affect tree establishment or growth.

For tree planting areas, the monitor will perform monthly monitoring during the first 4 months, quarterly monitoring during the remainder of year 1, and then biannual site visits during year 2. Quarterly monitoring reports will be submitted to Newhall Land and will address the following:

- Tree survival/mortality totals
- General field observations related to tree health and survivability
- Recommended maintenance (as needed) to be completed by Newhall Land ranch management staff.

Annual reports will be required for submittal to the County of Los Angeles Fire Department and will include discussions of tree health and mortality, adaptation success of trees on the project site, cultural practices affecting tree health, and overall success of tree establishment on site. The annual County of Los Angeles Fire Department report shall also document individual tree quantities reaching minimum size requirements, so that the 2-year monitoring period can commence. Annual reports should be completed prior to the end of the calendar year.

8.2.2 Woodlands

In addition to the monitoring required to satisfy CLAOTO requirements, monitoring of woodland creation or enhancement areas shall be conducted according to the criteria identified in Mitigation Measure BIO-22; specifically, for a period of no less than 5 years total and no less than 2 years after removal of irrigation (if any). It is possible that trees planted within woodland creation or enhancement areas could meet the 2-year CLAOTO monitoring and establishment criteria prior to the woodland criteria being met. In such cases, CLAOTO tree planting credit shall be documented and the woodlands shall continue to be monitored for any time remaining (between 3 and 5 years).

For woodland creation and enhancement areas, the monitor will perform monthly monitoring during the first 4 months, quarterly monitoring during the remainder of year 1, and then biannual site visits during years 2–5. Annual quantitative monitoring shall be conducted in the spring or early summer to document the status of the habitat development. Annual quantitative monitoring should be conducted at the same time of year each year to increase the strength of the year-to-year comparative analysis.

Monthly and quarterly monitoring reports (year 1) will be submitted to Newhall Land and will address the following:

- Tree survival/mortality totals

- General field observations related to tree health and survivability
- Recommended maintenance (as needed) to be completed by Newhall Land ranch management staff.

Annual reports will be required for submittal to the CDFW and will include discussions of tree health and mortality, adaptation success of trees on the project site, cultural practices affecting tree health, and overall success of mitigation efforts toward meeting performance standards. Annual reports should be completed prior to the end of the calendar year.

8.3 Monitoring Methods

8.3.1 Individual Trees

As identified in Section 6.7, individual trees will be mapped and tagged. At each monitoring visit, the monitor will inspect the trees for general health and vigor, noting any remedial maintenance issues that may be needed to address inadequacies in plant growth and development. The landscape maintenance contractor and owner will be given directions for any maintenance requirements following each monitoring visit.

Each tree will be measured for overall height and canopy spread and given a vigor assessment score. The trees will be given a vigor assessment score ranging from 0 to 4, with a 0 score given to a dead tree and 4 given to a healthy, vigorously growing tree with good color and no observable problems. A score of 1 will be given to trees in poor, declining condition, with noticeable leaf dieback or sparse, declining foliage. A score of 2 will be given to trees that are generally healthy, but show minimal growth and may exhibit some stress, pest, or non-fatal disease problems. A score of 3 will be given to trees of good health and vigor with minimal pest or non-fatal disease problems. A score of 4 will be given to trees of excellent health and vigor with no pest or non-fatal disease problems and showing vigorous new growth. Pest or disease problems will be described as part of the overall tree assessment, as will any vandalism or other problems observed.

8.3.2 Woodlands

The monitor will be responsible for monitoring establishment of woodland creation and enhancement areas. Monitoring oak woodlands habitat restoration, in contrast to monitoring individual oak trees, will include monitoring the establishment of the herb and shrub layer as well as the planted oak trees. The standards for the development of oak woodland habitat will be based on natural oak woodland habitat at reference sites.

An evaluation of native vegetation coverage, weed presence, and site progress will be collected during monitoring visits to be used in the annual monitoring report. Qualitative monitoring will be conducted to assess native plant vigor and development, seedling recruitment from native seed application and natural sources, soil moisture content, presence/absence of plant pests or diseases, erosion and/or drainage conditions on site, presence/ absence of non-native or invasive plant species, trash or debris accumulation, and wildlife presence/absence. All qualitative monitoring visits to the restoration areas will be documented with a monitoring report. Any project deficiencies will be noted in the monitoring report, with accompanying recommendations for maintenance or remedial actions.

In addition to qualitative monitoring, quantitative data will be collected annually to document restoration progress. Approximately one point-intercept transect will be placed for each 2 acres of habitat restoration. The beginning and endpoints of transects will be demarcated with a metal T-post and labeled for annual monitoring. Transects will be 50 meters (165 feet) long, with a species richness belt extending 2.5 meters (8 feet) out from each side of the transect line (total 5-meter (16-foot) width). At each 0.5-meter (1.6-foot) point along the transect, data will be recorded for plant species (if intercepted) or ground conditions (e.g., bare ground, rock, detritus). Transect data will be analyzed to determine percent native vegetative cover (by species), percent weed cover, percent invasive species cover, and species richness. Transect data will be analyzed annually and summarized in monitoring reports in the context of project goals and success criteria. Recommendations for maintenance efforts will be based on these site observations and will be summarized in each year-end monitoring report.

8.4 Performance Standards

Performance standards are a basic element of a restoration monitoring program. Performance standards are the thresholds for determining whether the project can be considered successful. The oak tree plantings in mitigation areas of the Newhall Land property shall be monitored for growth and survival, as these two factors typically provide the basis for determining the success of oak tree mitigation. In addition to monitoring oak tree growth and survival, oak woodlands creation and enhancement areas will be monitored to assess habitat development relative to project goals and requirements. The following standards will guide the success of the mitigation efforts.

8.4.1 Individual Trees

The success of mitigation for individual oak tree impacts shall be judged against the requirements from CLAOTO, the RMDP/SCP EIS/EIR, and specific project oak tree permits issued by the County. The overarching goal of this mitigation program is to increase the number of trees growing within planting areas and created/enhanced woodlands through planting, protection, and enhancement of natural recruitment to compensate for oak tree impacts associated with the implementation of the proposed projects identified in the EIS/EIR.

If oak trees are planted at the minimum size as required by CLAOTO (15-gallon and 1-inch diameter 1 foot above the base) or larger, they must survive for a period of at least 2 years. Any planted oak seedlings used for mitigation that are less than the minimum size required by CLAOTO must survive for a period of at least 2 years after they have reached the minimum size (1-inch diameter 1 foot above the base). Free-form trees with multiple stems are permissible and the combined diameter of the two largest stems of such trees shall measure a minimum of 1-inch diameter 1 foot above the base to be considered to meet the minimum size criteria.

A greater number of oak trees may be planted to allow for some mortality over the course of the 2-year establishment and maintenance period. Oak trees that die during this period do not need to be replaced if an adequate number of live oak trees remain to meet the mitigation requirements. With planned maintenance and monitoring, tree survival is expected to be good. However, some tree mortality is expected. This ORMP recommends that at least 5% more than the required number of trees be planted to allow for up to 5% mortality. If the quantity of surviving oak trees falls below the required quantity, dead trees shall be replaced and monitored for an additional 2 years (once minimum size is attained) to ensure that the required quantity of surviving oak trees is reached.

Finally, utilization of natural oak recruitment within enhanced woodland areas is recommended. Where applicable, protection and monitoring of naturally occurring seedlings should occur as long as the seedlings meet the project goals and requirements. These trees will count toward required tree planting totals. This approach requires pre-approval from the County Forester.

8.4.2 Woodlands

The performance standards for oak woodlands creation or enhancement have been developed from the requirements identified in RMDP/SCP EIS/EIR Mitigation Measure BIO-22. The woodland creation or enhancement sites shall be monitored for oak tree survival and vigor and other habitat values, including species diversity and wildlife use. The general performance standards include the following:

1. Regardless of the date of initial woodland creation or enhancement, each site must have been without active manipulation by irrigation, planting, or re-seeding for a minimum of 3 years prior to evaluation for successful completion.
2. The percent cover and species richness of restored or enhanced native vegetation shall be evaluated based on target vegetation described in the woodland creation or enhancement plan.
3. Densities (numbers/acre) of surviving, healthy oak trees shall be within 5% of the plan target density. Cover and species richness of other native shrubs shall reach 50% of the cover and species richness described for the target woodland.
4. Non-native grass cover shall not exceed the target woodland non-native grass cover, and other non-native species shall not exceed 10% cover at any time. Any non-native species listed on the California State Agricultural noxious weed list (3 CCR 4500) or the California Invasive Plant Council (Cal-IPC) list of high- or moderate-rated species (Cal-IPC 2014) will not be present on the revegetation site at the time that project success is determined.

Table 23 summarizes the oak woodland creation and enhancement area performance standards for a 5-year period, which assumes 2 years of active maintenance and 3 years without maintenance. This time scale may be adjusted depending on the extent of active maintenance.

Table 23. Summary of Performance Standards for Oak Woodland Creation and Enhancement Sites

Criteria	Year 1	Year 2	Year 3	Year 4	Year 5
Percent native cover[1]	20%	35%	50%	65%	80%
Maximum non-native grass cover	Less than reference site	Less than reference site	Less than reference site	Less than reference site	Less than reference site
Maximum weed cover (non-grass)	<10%	<10%	<10%	<10%	<10%
Cal-IPC moderate- and high-rated species and CDFA noxious weed list species[2]	0%	0%	0%	0%	0%
Species richness[1]	10%	20%	30%	40%	50%

Table 23. Summary of Performance Standards for Oak Woodland Creation and Enhancement Sites

Criteria	Year 1	Year 2	Year 3	Year 4	Year 5
Oak tree density	Within 5% of target density for type	Within 5% of target density for type	Within 5% of target density for type	Within 5% of target density for type	Within 5% of target density for type

Notes: Cal-IPC = California Invasive Plant Council; CDFA = California Department of Food and Agriculture

1 Percent native cover and species richness performance standards are measured relative to reference sites for target woodland.

2 This requirement is exclusive on non-native grass cover, which has a separate performance standard.

8.5 Adaptive Management Program

Tracking and documenting the success rates of varying planting and management techniques will be a primary focus of the adaptive management/monitoring program. Through the adaptive management process, less-successful methods can be identified and discontinued as methods to be implemented in the overall mitigation effort. The adaptive management process will enable corrective management actions to be implemented when problems or issues arise. The most critical stage for the adaptive management process will be during the initial 1–2 years of the monitoring program. During these periods, it is anticipated that establishment failures will occur, but they will be contained and corrected based on site-specific knowledge.

Oak woodland creation/enhancement and tree planting success is largely contingent on availability of precipitation, in the absence of supplemental irrigation. Drought years will very negatively impact the success of acorn germination and tree survival in locations not receiving supplemental irrigation. Dudek does not recommend planting trees larger than seedling size in non-maintained areas where there will be no irrigation. Even small, 1-gallon oaks will require some supplemental irrigation for an extended period following planting to optimize growing conditions, especially during drought conditions.

The adaptive management program will also be an important component of tree planting in woodland creation/enhancement areas. The adaptive management process will include the use of varying techniques and tree sizes on a small scale and documentation of success and failures through diligent monitoring. Corrective actions can be directed for future creation/enhancement area plantings such that methods resulting in the highest level of success become the standard for future oak plantings in these areas.

If the performance standards are not being met, measures may be necessary to correct tree establishment or growth issues. For example, as site-specific establishment and growth preferences are determined, or as technologies and scientific understanding advance, modifications can be made to help achieve the goals and reach performance standards. As a baseline for planting, principles from *Regenerating Rangeland Oaks in California* (McCreary 2001) will be used, as they represent repeatable standards that have proven effective in varying planting locations.

8.6 Preserved Tree and Woodland Monitoring

Preserved trees within or adjacent to active construction areas are sometimes damaged by incidental and unanticipated events, most notably via encroachment into a tree's Protected Zone. Monitoring of these tree

resources effectively reduces the number of incidental occurrences of tree damage. Also, CLAOTO requires that any trees adjacent to construction that die as a result of encroachment damage shall be replaced per the requirements for removed trees. Consequently, similar to the monitoring program for CLAOTO tree plantings, the preserved trees and woodlands subject to encroachment will be monitored for a period of 2 years following the completion of site disturbance activity for each proposed project area.

The monitor will be responsible for monitoring oaks within and adjacent to the projects' areas of ground disturbance as well as monitoring water runoff and soil moisture levels near preserved trees and woodlands. The monitor will specifically address the following:

- The monitor will determine the general state of plant health, specifically looking for signs and symptoms of disease and/or injury, growth, and regeneration of the oak resources.
- Where construction practices or revised plans encroach on preserved trees or woodlands, the monitor will determine the actions necessary to mitigate encroachment activities.
- Where necessary, the monitor will track non-native plant proliferation. A specialist may be recommended for control or treatments.

8.7 Documentation

A key component to the success of the oak woodland mitigation program for the Newhall Land property will be database creation and management to allow for tracking of tree and woodland creation/enhancement area conditions and tree quantities. All data, including individual tree planting data and locations (in individual tree planting areas or creation/enhancement areas), monitoring activities, failures, lost trees, maintenance activities, pest issues, successful adaptive management techniques, and other pertinent information, shall be stored in a master database that is designed on a GIS-friendly platform. Spatial data shall be collected by GPS or through careful hand mapping and digitization but must be a component of the overall data management program.

This database will serve as the overall documentation and tracking device used to manage mitigation efforts, track project success, and quantify mitigation totals to satisfy CLAOTO and CDFW requirements. The following information should be recorded for each individual mitigation oak tree planted for conformance with CLAOTO requirements and updated during each monitoring visit:

- Tree tag number
- Species
- Planting date
- Planting area
- Monitoring visit dates
- Notes (indicating general health condition and other notable attributes)
- Date reaching minimum County size requirements
- Annual reporting dates following achievement of minimum size (Years 1 to 2)
- Final establishment date (end of Year 2)
- Project allocation (i.e., which development project mitigation credit is applied toward).

The following information should be recorded for each woodland creation/enhancement area and updated during each monitoring visit:

- Creation/enhancement area identification number
- Percent native cover
- Maximum non-native grass cover
- Maximum weed cover (non-grass)
- Cal-IPC moderate- and high-rated species and CDFA Noxious Weed list species present
- Species richness
- Oak tree density (trees per acre)
- Area establishment/final planting date
- Monitoring visit dates
- Notes (other notable site observations)
- Annual reporting dates during maintenance period (Years 1 to 2)
- Annual reporting dates during non-maintenance period (Years 3 to 5)
- Final establishment date (end of Year 5)
- Project allocation (i.e., which development project mitigation credit is applied toward).

The following information should be recorded for each preserved tree and woodland and updated during each monitoring visit:

- Tree tag number/woodland area
- Project area
- Species
- Monitoring visit dates
- Notes (indicating general health condition and other notable attributes)
- Management recommendations for promoting tree health/survivability.

8.8 Reporting

On an annual basis, the monitor will provide a complete summary of results of the monitoring activities completed in the prior year. The report will summarize the successes, failures, and observations of the previous year. In addition, the annual status report will outline a course of action for the coming monitoring year. The monitoring reports shall include the following information:

1. A diagram showing the exact number and locations of all mitigation trees planted and describing their health, planting dates, any mortality or replanting, and mitigation time frames relating to permit compliance
2. A list of names, titles, and companies of all persons who prepared the content of the annual report and participated in maintenance and monitoring activities
3. A copy of the resource agency permits, any special conditions, and any subsequent letters of modification

4. Prints of representative monitoring photographs from fixed viewpoints
5. Data summaries in tabular format
6. Summary of project performance relative to standards.

Annual monitoring reports shall be submitted to Newhall Land, CDFW, and the County Forester. Annual reports should be completed prior to the end of the calendar year.

8.9 Mitigation Program Completion

This ORMP provides for mitigation opportunities for multiple projects that will be built out over several years. Consequently, the mitigation program will have multiple stages of mitigation completion. Two main levels of mitigation completion will occur during ORMP implementation: (1) individual project mitigation completion (e.g., specific village impacts) and (2) overall EIS/EIR oak mitigation completion (combined EIS/EIR impacts). Additionally, completion of mitigation will be evaluated for two separate components, including (1) tree planting mitigation completion (per CLAOTO as outlined in the EIS/EIR) and (2) oak woodland restoration completion (per the EIS/EIR).

8.9.1 Individual Project Mitigation Completion

Individual project mitigation completion will be based on achievement of success criteria. Upon submitting the annual report for the final year of each individual mitigation project, Newhall Land will notify the County and CDFW of the degree to which final success criteria have been met and will request acceptance of the site, as appropriate. Completion of mitigation at individual sites will be supported by appropriate quantitative measures as described in the performance standards. Following receipt of the notification of completion, the regulating agencies may visit the site to confirm the completion of the mitigation effort and may issue formal letters of success upon acceptance. Removal of the irrigation system (if any), temporary fencing, and signage would occur prior to final sign-off. For woodland creation/enhancement areas, it is expected that multiple sign-off letters will be issued, one from the County stating that CLAOTO oak requirements have been met and one from the CDFW stating that woodland creation/enhancement standards have been met.

8.9.2 Overall ORMP Mitigation Program Completion

When all performance standards have been met for all projects included in the RMDP/SCP EIS/EIR, a final ORMP mitigation report will be prepared for submittal to the County and CDFW. The final ORMP mitigation report will summarize the successful mitigation efforts by development area, and will serve as a final ORMP project record.

8.10 Contingency Measures

In the event that the monitor determines that performance criteria are not on course for goal achievement for each individual project, steps to correct the failure will be implemented. The first consideration is for dead or dying trees to be replaced. Acorns, seedlings, or small-container oak trees will be planted, monitored, and maintained until the success criteria are achieved. As identified in this ORMP, it is advisable to overplant to allow for mortality, thereby potentially eliminating the need for replacement planting.

In the event of potential catastrophic destructive processes or agents, the monitor will recommend remedial actions. These actions may include the following:

- Increased monitoring efforts
- Focused insect control
- Weed control
- Tree pruning
- Tree removal
- Development of supplemental irrigation
- Soils enhancement
- Supplemental planting of acorns or oak seedlings.

9 Long-Term Management Plan

All mitigation oak trees planted as a condition of oak tree permits shall be protected in perpetuity by CLAOTO once they have survived the required 2-year maintenance period. Likewise, all mitigation for oak woodlands shall be protected and managed in perpetuity upon successful completion of the mitigation program. Provisions for conservation, public access, and long-term resource stewardship were incorporated as part of the Newhall Ranch Specific Plan approvals granted by the County in 2003, and RMDP approvals by the CDFG in 2010. The conservation mechanism includes a combination of conservation easements and deed restrictions.

Long-term management will be conducted in accordance with the RMDP. A qualified land manager shall provide management of the oak tree and oak woodlands mitigation as a component of the overall land management plan.

9.1 Management and Maintenance Responsibilities

Following successful completion of the ORMP mitigation program, the mitigation areas will be managed by an environmental land management entity/organization (Land Manager), such as the Center for Natural Lands Management, or an approved alternative, as agreed to by Newhall Land and the appropriate agencies.

9.2 Management Actions

Management actions shall be performed at the direction of the Land Manager. Management actions shall include invasive species control, removing accumulated trash, and repairing broken or damaged fences, gates, locks, signage, and other open space-related items as may be deemed necessary by the Land Manager.

9.3 Long-Term Monitoring

The long-term monitoring methodology for the mitigation areas will focus on the persistence of appropriate functions and values provided by the mitigation program by conducting regular qualitative monitoring visits. Specifically, the items addressed during monitoring visits shall include an evaluation of natural recruitment, presence/absence of plant pests or diseases, erosion and/or drainage conditions on site, presence/absence of non-native or invasive plant species, trash or debris accumulation, wildlife presence/absence, and project fencing/signage.

9.4 Reporting

Annual management reports shall be prepared documenting the status of the open space areas including jurisdictional areas in accordance with the RMDP. Long-term management and reporting may be phased. The annual report will be comprehensive in addressing all the managed areas by Land Manager. The annual report will contain a description of the management actions, monitoring, and adaptive management activities conducted in each of the management areas during the calendar year.

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Appendix A
Representative Site Photographs



Photo 1. View of coast live oaks in drainage (foreground) and on north-facing slope (background) in Homestead South. Drainage oak densities are much higher than in slope areas.



Photo 2. View of understory in riparian-type coast live oak woodland. Note general lack of seedling- and sapling-sized trees.



Photo 3. View of coast live oak woodland with lack of understory plants and no seedling- or sapling-sized oak trees.



Photo 4. View of jurisdictional coast live oak woodland. Understory includes primarily non-native grasses, which outcompete seedlings and result in low tree recruitment.



Photo 5. View of coast live oak with a large trunk diameter. This tree occurs as an individual tree and shows signs of livestock use beneath the canopy.



Photo 6. View of steep hillsides in Homestead South area dotted with coast live oak trees. In the foreground, smaller-statured coast live oak trees are located along a drainage where they take advantage of higher soil-moisture availability.



Photo 7. View of High Country SMA drainage with semi-mature coast live oaks and evidence of wildfire damage.



Photo 8. View of mixed oak woodland featuring coast live oak, valley oak, and walnut woodland on a relatively steep slope in the High Country SMA.



Photo 9. View of steep slopes in the High Country SMA. Coast live oaks are at the bottom of the canyon, advantageously located where higher soil moisture is available.



Photo 10. View of hillside with higher-density mixed oak woodland and chaparral on the far slope and non-native grasses on the near slope and beneath the oak canopy.



Photo 11. View of the High Country SMA valley with scattered valley oaks among coast live oak. Grazing occurs throughout this area and limits tree recruitment.



Photo 12. View of the same valley pictured in Photograph 11, with cattle at bottom (red arrow).



Photo 13. View of valley oak/grass on a gentle slope in the High Country SMA.



Photo 14. Well-grazed valley oak/grass located in the High Country SMA.

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