HELIX Environmental Planning

Glen Ivy Senior Community

Oak Tree Mitigation Plan

November 2021 | 00821.00016.001

Prepared for:

County of Riverside
Case Number: CUP200011
CEQA Case Number: CEQ200037
County Staff Contact: Russell Brady

Prepared for:

T&B Planning
oel Morse
3200 El Camino Real, Suite 100
Irvine, CA 92602

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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ACRONYMS AND ABBREVIATIONS

AMSL	above mean sea level
Cal-IPC	California Invasive Plant Council
ClC	Cortina gravelly loamy sand
CnC	Cortina gravelly coarse sandy loam
County	Riverside County
DBH	diameter at breast height
GaC	Garretson very fine sandy loam
GdC	Garretson gravelly very fine sandy loam
GPS	Global Positioning System
HELIX	HELIX Environmental Planning, Inc.
MSHCP	Multiple Species Habitat Conservation Plan
PEP	plant establishment period
Plan	Oak Tree Mitigation Plan
Project	Glen Ivy Senior Community Project
TeG	terrace escarpments
USGS	U.S. Geological Survey

Report Date:	November 12, 2021
Title:	Oak Tree Mitigation and Monitoring Plan for the Glen Ivy Senior Community Project
Project Location:	The approximately 13.63-acre study area is located southwest of the intersection of Trilogy Parkway and Temescal Canyon Road, in the community of Glen Ivy, unincorporated Riverside County, California. The site is located within the U.S. Geological Survey (USGS) 7.5-minute Lake Matthews quadrangle map in Section 3, Township 5 South, Range 6 West.
Assessor's Parcel Numbers:	290-190-083, 290-190-084, and 290-190-027
Owner/Applicant:	Mr. Benjamin Day (Owner) Glen Ivy Properties, LLC 34145 Pacific Coast Highway, Suite 621 Dana Point, CA 92629 Mr. Joel Morse T&B Planning, Inc. 3200 El Camino Real, Ste 100 Irvine, CA 92602
Principal Investigator:	HELIX Environmental Planning, Inc. 7578 El Cajon Blvd. La Mesa, CA 91942 (619) 462-1515
Report Summary:	The approximately 13.63-acre study area includes 37 coast live oak trees of varying health. The Project proposes to impact 31 of the coast live oak trees. The Project proposes to include 65 coast live oak trees within the landscaping to mitigate for the impacts.
Report Preparers:	Amy Mattson (619) 462-1515 Robert Hogenauer (562) 537-2426 Beth Martinez (619) 462-1515
Field Personnel:	Robert Hogenauer (562) 537-2426 Dan Torres (949) 234-8770

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1.0 INTRODUCTION

This Oak Tree Mitigation Plan (Plan) presents a strategy to replace and establish coast live oak (*Quercus agrifolia*) trees as mitigation for the oak trees impacted by the Glen Ivy Senior Community Project (Project) located in the community of Glen Ivy, unincorporated Riverside County (County), California. The purpose of this Plan and planting program is to comply with the Riverside County Oak Tree Management Guidelines (County 1993).

The goal of the Plan is to establish a total of 65 native oak trees within the Project landscaping. The installed oak trees are expected to establish within a three-year maintenance period following planting.

This Plan presents a methodology and approach for planting, establishing, and maintaining oak trees at the Project site during the three-year maintenance period. With the successful implementation of this Plan, the oak trees established on-site will mitigate the loss of impacted oak trees from Project development. Nomenclature used in this report follows Oberbauer (2008) for vegetation community classifications and Baldwin et al. (2012) for plants.

2.0 PROJECT SUMMARY

2.1 PROJECT LOCATION

The Project site is located within an unincorporated portion in western Riverside County, southeast of the City of Corona (Figure 1, *Regional Location*). The site is situated southwest of the intersection of Trilogy Parkway and Temescal Canyon Road and west of Interstate 15 (Figures 2, *Aerial Vicinity* and 3, *Aerial Photograph*). The site is located within the U.S. Geological Survey (USGS) 7.5-minute Lake Matthews quadrangle map in Section 3, Township 5 South, Range 6 West. The Project site is located within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), outside of any Criteria Cell or other areas targeted for conservation.

2.2 PROJECT DESCRIPTION

The Project proposes to develop a Senior Care Facility. The facility consists of approximately 184 independent living and assisted living units, 32 Memory Care units, parking, storage, and other associated infrastructure. The Project also includes a 16,000 square foot water quality basin and an approximately 125-foot long flood wall adjacent to the southeast corner of the Project site. The basin outflow is situated on the edge of Coldwater Creek. The Project does not include fuel modification zones, as the property is surrounded by developments or existing roadways.

The outfall for the water quality basin is required to occur at an elevation of 1,080 feet above mean sea level (AMSL). Due to the numerous underground utilities already occurring within Temescal Canyon Road, the pipeline for the outfall structure is required to cross Temescal Canyon Road south of the property. Several alternatives were considered for the proposed location of the outfall structure, with the preferred location resulting in the least impacts to sensitive biological resources. The Riverside Flood Control District and the Riverside County Transportation Department have specific requirements regarding the outfall structure and associated maintenance access road that have severely limited the size and location of the facility.

2.3 ENVIRONMENTAL SETTING WITHIN THE PROJECT SITE

2.3.1 Existing Conditions

The Project site is located on a parcel historically used for spoils piles, resulting in rolling terrain and a significant amount of disturbed habitat. The majority of the trees on-site are non-native, but 28 coast live oak trees were mapped on-site during an oak tree survey conducted by HELIX Environmental Planning, Inc. (HELIX) on March 24, 2020 (HELIX 2020; Figure 4, *Impacts to Oak Trees*). An additional nine oak trees were mapped within the potential off-site impact area. The Project is bordered by a recently constructed flood control facility to the south, an RV Park to the west, a golf course and a lot proposed for construction of a church to the north, and a narrow strip of undeveloped land associated with Coldwater Creek and residential development to the east. Elevations on the study area range from approximately 1,078 feet above mean sea level (AMSL) east side of Temescal Canyon Road on the north edge of the Project, to 1,123 feet above AMSL near the eastern edge of the Project. Five soil types are mapped on the Project site, including Cortina gravelly coarse sandy loam (CnC), Garretson gravelly very fine sandy loam (GdC), Garretson very fine sandy loam (GaC), Cortina gravelly loamy sand (ClC), and terrace escarpments (TeG; Natural Resource Conservation Service 2017).

Immediately surrounding land uses include a roadway and agricultural land to the north, undeveloped land to the south, a roadway and undeveloped land to the east, and Glen Ivy RV Park and undeveloped land to the west. Coldwater Creek is located along the southeast side of the Project site.

2.4 PROJECT IMPACTS TO OAK TREES

A total of 37 oak trees subject to an Oak Tree Permit were located within the survey area (HELIX 2020). All of these were coast live oak (*Quercus agrifolia*). Based on the impacts to oak trees, as quantified in the Oak Tree Survey Report (HELIX 2020, Appendix A), 30 coast live oak trees will be removed (Table 1, *Project Impacts to Oak Trees*; Figure 4). One additional tree near the outfall structure (Tag number 44) is proposed to remain but is included in the impacts due to potential impacts occurring within the tree's dripline. A total of six oak trees would be completely avoided by the Project.

Table 1
PROJECT IMPACTS TO OAK TREES

Tag Number [1]	Number of Trunks	Height (Feet)	DBH [2] (Inches)	Health Notes	Health Rating	Proposed Mitigation (Oaks)
1	8	38	38.0	Internal decay present	C	2
2	5	40	42	Vigorous with full canopy	B	3
3	2	40	25.5	Symmetrical, but thinning	C	2
4	1	42	30.5	Tree in decline, leaning to north.	D	1
5	5	15	35.0	Dead, bark exfoliated, tree has collapsed.	F	0
6	1	30	23.5	Tree in decline, lean to north crown is thinning	D	1
7	1	47	38.0	Dead, Bark exfoliating	F	0
8	1	32	5.0	Tree in decline, tall with small canopy	D	1

Tag Number [1]	Number of Trunks	Height (Feet)	DBH [2] (Inches)	Health Notes	Health Rating	Proposed Mitigation (Oaks)
9	1	30	7.5	Tree in decline, dead wood present, thin canopy	D	1
10	1	30	7.0	Trunk bent	C	2
11	1	9	16.0	Tree in decline, internal decay, tree has fallen but still has green leaves	D	1
12	2	32	16.5	Full canopy, tree has strong lean to east	C	2
13	1	30	17.5	Tree in decline, canopy thinning, strong lean to west	D	1
14	1	15	4.0	Not tagged due to swarm of bees on tree	B	3
15	1	20	7.5	Asymmetrical, strong lean	B	3
16	1	18	5.5	Insect (borer) damage present, severe lean	B	3
17	1	16	7.0	Cankerous growth present, asymmetrical, leaning to east	B	3
18	1	15	11.0	Asymmetrical, internal decay,	B	3
19	1	43	37.5	Internal decay, some limb fall, borer damage	C	2
20	2	37	30.0	Internal decay, borer damage	C	2
21	2	32	37.5	Full canopy with new growth	C	2
22	2	35	38.0	Full canopy	B	3
23	1	30	14.0	Thinning canopy, lean to west	C	2
24	3	32	32.5	Internal decay, leaning to west	C	2
25	1	22	10.0	Full canopy	B	3
26	1	39	25.5	Strong lean, shaded by adjacent trees	B	3
27	1	45	55.0	Symmetrical, full canopy	B	3
28	1	45	57.0	Some broken branches, but full crown.	B	3
40	1	30	29.0	Road side tree subject to trimming.	B	3
42	1	26	26.0	Road side storm drainage access point within canopy (root ball).	C	2

Tag Number [1]	Number of Trunks	Height (Feet)	DBH [2] (Inches)	Health Notes	Health Rating	Proposed Mitigation (Oaks)
44	1	40	34	Trunk on edge of Cold Water Creek, canopy to north limited by adjacent sycamore.	B	3

[1] Tree tag numbers 29-39, and 41 are not included in the list as they are outside the study area and impact area.

[2] DBH is the trees Diameter at Breast Height rounded to the nearest 0.5 inch: multiple trunk tree DBH was calculated by taking the square root of the total of the squares of each trunk.

2.5 MITIGATION REQUIRED

Compliance with the Riverside County Oak Tree Management Guidelines (County 1993) would ensure that the Project does not conflict with any local policies or ordinances protecting oak trees and impacts would be less than significant. Per the Project's General Biological Resource Assessment and MSHCP consistency analysis (HELIX 2021), mitigation for impacts to coast live oak trees is proposed to consist of incorporating coast live oak trees into the Project landscaping. The oak trees assessed to have an overall health rating of A or B (above average or excellent) are proposed to be mitigated at a ratio of 3:1, those given a rating of C (average with stress, damage, or disease) are proposed to be mitigated at 2:1, and those with a rating of D (poor health, tree in decline) are proposed to be mitigated at 1:1. No mitigation is proposed for the dead oak trees. This results in a minimum of 65 oak trees to be planted in the Project landscaping to mitigate the oak tree impacts (Table 2, *Oak Tree Impacts and Mitigation*).

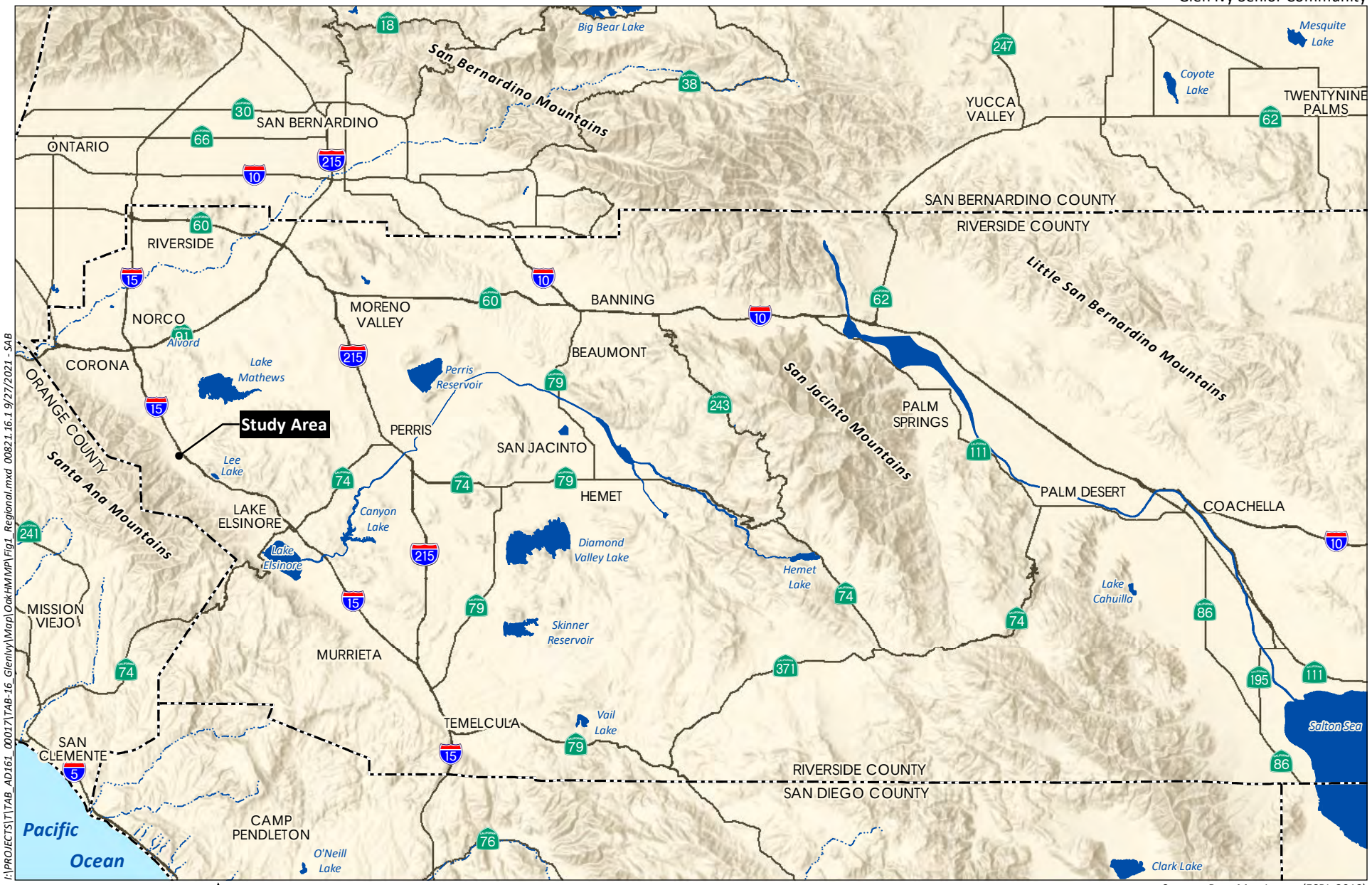
Table 2
OAK TREE MITIGATION

Tree Rating	Trees Impacted	Mitigation Ratio	Total Mitigation
A	0	3:1	0
B	13	3:1	39
C	10	2:1	20
D	6	1:1	6
F	2	0:1	0
TOTAL	**31**		**65**

To meet the replanting requirement, a variable replacement ratio depending on the health rating for 31 impacted trees is proposed in this Plan, along with a three-year maintenance/monitoring period. In total, 65 coast oak trees should be established after three years.

3.0 MITIGATION SITE DESCRIPTION

To meet the County's oak tree mitigation requirements, oak tree planting is proposed to occur within the Project footprint, by the intersection of Trilogy Parkway and Temescal Canyon Road (Figure 5*, Oak Planting Locations*). Oak trees are proposed to be incorporated into the Project landscaping. Thus, the environmental setting of the mitigation site is the same as for the Project site, described in Section 2.3. The mitigation site is considered suitable for coast live oak trees, as they currently occur on the site.



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Regional Location

Figure 1

I:\PROJECTS\T\TAB_AD161_00017\TAB-16_GlenIvy\Map\OakHMMP\Fig2_AerialVicinity.mxd 00821.16.1 9/27/2021 - SAB

0 1,000 Feet

Source: Aerial (RCIT, 2019)

HELIX Environmental Planning

Aerial Vicinity

Figure 2

I:\PROJECTS\T\TAB_AD161_00017\TAB-16_GlenIvy\Map\OakHMMP\Fig3_Aerial.mxd 00821.16.1 9/27/2021 -SAB

0 150 Feet

Source: Aerial (RCIT, 2019)

HELIX Environmental Planning

Aerial Photograph

Figure 3

I:\PROJECTS\T\TAB_AD161_0001\TAB-16_GlenIvy\Map\OakHMMP\Fig4_OakImpacts.mxd 00821.16.1 9/28/2021 - SAB

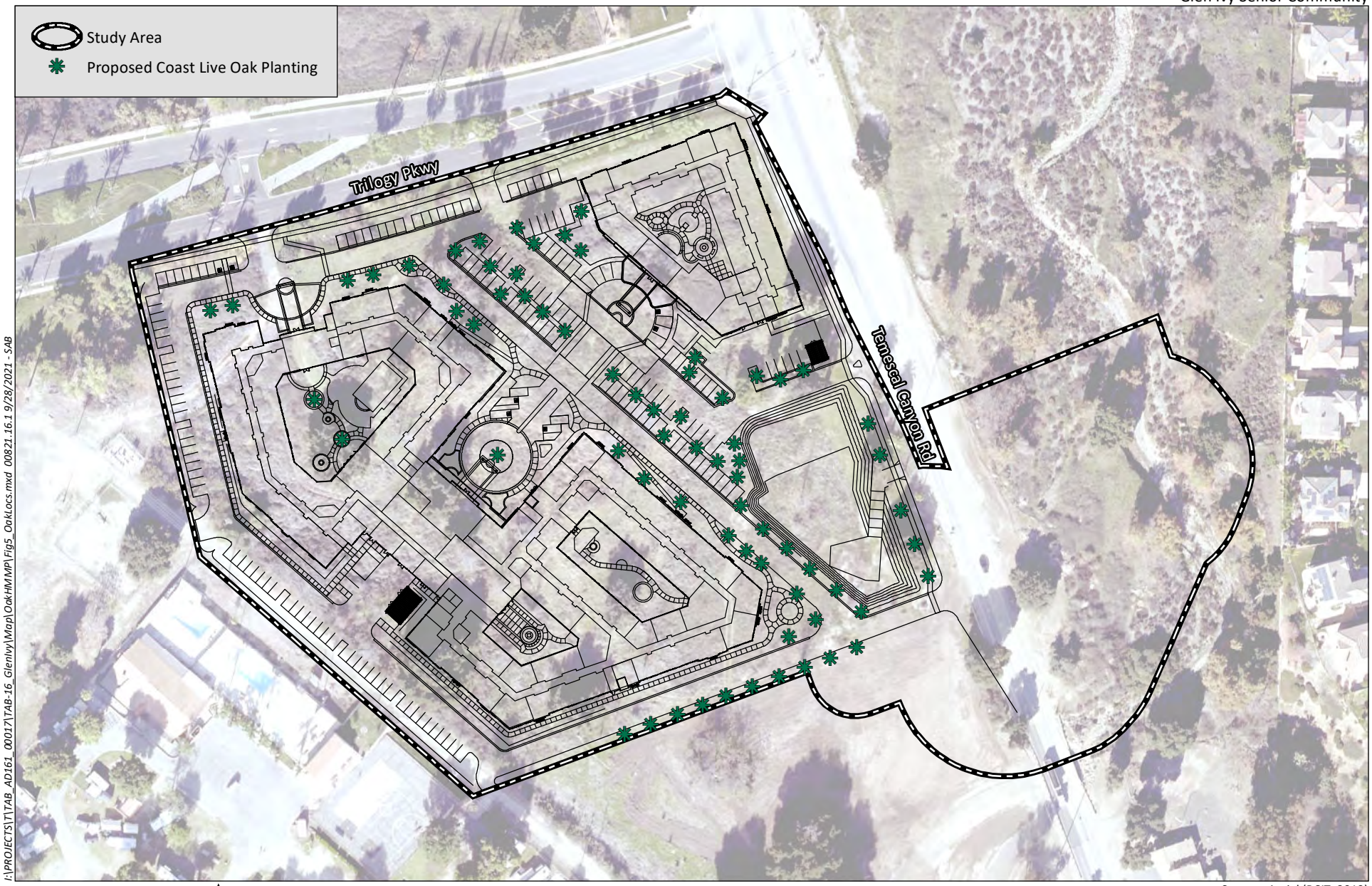
0 200 Feet

Source: Aerial (RCIT, 2016)

HELIX Environmental Planning

Impacts to Oak Trees

Figure 4



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0 150 Feet

Source: Aerial (RCIT, 2019)

HELIX Environmental Planning

Oak Planting Locations

Figure 5

4.0 MITIGATION DESIGN CONCEPT

To meet County oak tree mitigation requirements for replacement planting for impacted oak trees, this Plan recommends measures to plant 70 oak trees within the Project footprint. This would provide for the minimum replacement of 65 oak trees, along with allowing for some tree mortality within the planting area, while still meeting the final required mitigation-to-impact ratio target. Planted oak trees would be maintained and monitored for three years following installation. Maintenance and monitoring will occur within the oak tree establishment area, which is the area where oak trees are planted, extending to the drip line of the nearest non-oak tree or hardscape up to a maximum distance of 20 feet from the base of the oak tree trunk.

4.1 MITIGATION DESIGN

4.1.1 Design Details

Coast live oak planting is designed to meet the requirements of the Riverside County Oak Tree Management Guidelines (County 1993). Oak planting will occur on-site within Project landscaping. At least 31 trees (a 1:1 replacement ratio) are proposed to be installed as 24-inch box trees. The remaining oaks will be installed as five-gallon containers, 24-inch box trees, or other sizes at the landscape architect's discretion. Oaks will be artificially irrigated to aid tree establishment. They will be irrigated along with the Project landscaping and are not proposed to have a stand-alone irrigation system.

4.2 TARGET FUNCTIONS AND SERVICES

Long-term, the established oak trees are anticipated to provide food, cover, and nesting habitat for animal species. However, because trees will be a component of Project landscaping, they are not expected to provide all the functions and services of oak woodland habitat.

4.3 MITIGATION SITE SUITABILITY

Oak trees are proposed to be installed on the Project site. Because the oaks will be installed near where they were impacted, on native soils at similar slope and aspect, the trees are expected to establish successfully in this area.

5.0 PROJECT RESPONSIBILITY

5.1 PROJECT PROPONENT

The County of Riverside is the Lead Agency for this Project. Contact information is provided below.

County of Riverside
Contact: Matthew Poonamallee
Environmental Programs Division
4080 Lemon Street, 12th Floor
P.O. Box 1409, Riverside, CA 92502-1409 [(951) 955-3200]

Glen Ivy Properties, LLC will be responsible for financing the installation and three-year maintenance and monitoring of the oak tree establishment proposed in this Plan. Contact information is provided below. The financial responsibilities of Glen Ivy Properties, with respect to oak tree mitigation, will be fulfilled upon receiving County confirmation that final success criteria have been achieved.

Benjamin Day
Glen Ivy Properties, LLC
34145 Pacific Coast Highway, Suite 621
Dana Point, CA 92629

5.2 MITIGATION SITE LANDOWNER

Glen Ivy Properties, LLC. owns the land where the oak tree establishment area will be located.

5.3 RESTORATION SPECIALIST

Overall supervision of the installation, maintenance, and monitoring of the oak tree establishment effort will be the responsibility of a restoration specialist with experience in oak tree establishment. The restoration specialist and installation/maintenance contractor can be the same person/company, provided they meet the minimum qualifications.

The restoration specialist will oversee the efforts of the installation and maintenance contractor(s) during the proposed three-year plan. Specific tasks of the restoration specialist include educating all participants with regard to mitigation goals and requirements; directly overseeing planting, and other maintenance activities; and coordinating annual assessments. The restoration specialist will also prepare and submit required reports to the Project proponent(s) and County each year.

5.4 LANDSCAPE ARCHITECT

Planted oaks will be irrigated along with the Project landscaping. A licensed landscape architect may be used to prepare the necessary landscaping and irrigation plans and will provide the draft plans to the County for review and approval prior to initiating construction. The landscape architect will inspect the irrigation system and assist in other inspections (e.g., plant deliveries), as necessary. Alternatively, the Installation Contractor can sketch an irrigation plan that includes the oak trees and submit the as-built version to the County following installation.

5.5 INSTALLATION/MAINTENANCE CONTRACTOR

The installation contractor for the oak tree establishment effort will be familiar with native trees and be responsible for irrigation installation, pre-planting weed control, and planting. The restoration specialist will supervise the contractor regarding the installation of oak trees. The installation contractor will be responsible for the maintenance of the trees during a 120-day plant establishment period (PEP).

After the installation contract is completed, the Project proponent(s) will hire a maintenance contractor for the remainder of the three-year monitoring period. The maintenance contractor and the installation contractor may be the same entity. The Project proponent may change contractors at its discretion. The maintenance contractor will have prior knowledge regarding the maintenance of native trees and be familiar with native and non-native plants. The maintenance contractor will service the oak tree

plantings according to the maintenance schedule outlined in this Plan (Section 7.3, below). Service will include, but not be limited to, irrigation maintenance, trash removal, watering, and dead plant replacement. All activities conducted are to be approved by the restoration specialist. The maintenance contractor will meet the restoration specialist at the site when requested and will perform all checklist items in a timely manner as directed.

6.0 MITIGATION IMPLEMENTATION

There are five phases to the mitigation implementation: pre-installation, site preparation, installation, and a concurrent 120-day PEP and three-year maintenance and monitoring period.

6.1 FINANCIAL ASSURANCES

Glen Ivy Properties, LLC will be responsible for financing the installation and three-year maintenance and monitoring of the oak tree establishment effort.

6.2 INSTALLATION SCHEDULE

Implementation of this Plan will be concurrent with Project development. Necessary site preparation and planting should be completed as soon as possible following the completion of grading. In the event that the Project applicant is wholly or partly prevented from performing obligations under the final plans (causing temporal losses due to delays) because of unforeseeable circumstances or causes beyond reasonable control, and without the fault of negligence of the Project applicant, including but not limited to, natural disasters (e.g., earthquakes, etc.), labor disputes, sudden actions of the elements (e.g., landslide activity), or actions by federal or state agencies, or other governments, the Project applicant will be excused by such unforeseeable cause(s).

Monitoring of the mitigation effort will begin with confirming the location of the oak trees during installation and continue for three years following the completion of installation. Maintenance of the establishment area will begin following the completion of installation and also continue for three years. Annual reports will be prepared and distributed to the County.

6.3 PRE-INSTALLATION ACTIVITIES

6.3.1 Access/Staging

Access to the oak planting locations would occur through the proposed Project area. No additional native habitat would be impacted for implementation of this Plan.

6.3.2 Plant Orders

The impacted coast live oak trees will be replaced in-kind (with coast live oak), unless otherwise approved by the County. All plants installed at the site will be from nearby sources, if available. The restoration specialist must approve all container plant orders, including specific species and source locations, prior to finalizing.

6.3.3 Pre-Installation Meeting

Prior to the initiation of restoration activities, an on-site meeting will be held with the Project proponent, installation contractor, and restoration specialist. Topics that will be addressed at this meeting include, but are not limited to: (1) installation of the irrigation system; (2) timing constraints for plant installation; (3) identification of sensitive areas and a strategy for avoidance; (4) defining site access routes and restrictions; (5) locating staging areas; and (6) the overall restoration goal.

6.4 SITE PREPARATION

Oak tree planting locations will be marked prior to installation. Given that the oaks will be planted in graded areas, non-native plants are not expected to be present. However, non-native species considered to be highly invasive by the California Invasive Plant Council (Cal-IPC), exclusive of invasive annual grasses, should be removed within 20 feet of the oak planting locations within the Project area. Examples of invasive plants that occur on-site include, but are not limited to, short pod mustard (*Hirschfeldia incana*), tree-of-heaven (*Ailanthus altissima*), tree tobacco (*Nicotiana glauca*), tamarisk (*Tamarix* spp.), Mexican fan palm (*Washingtonia robusta*), and giant reed (*Arundo donax*). Additional species may be added by the restoration specialist if they may threaten the establishment or long-term survival of planted oak trees. No soil amendment is proposed for oak planting locations.

6.5 IRRIGATION

One irrigation system is proposed for the Project, which will include planted oaks and other Project landscaping. Draft conceptual landscaping plans show the irrigation system to be a water-efficient, low flow, point source system designed to provide adequate watering to support plant growth and ensure deeply rooted plant material while avoiding excess water application. Landscaping plans show the system to be programmable, allowing operation during late night and/or early morning hours, with start times and cycles. Additionally, landscaping plans show the system interfacing with a weather-based sensor that will adjust the amount of water applied to the plant material based on daily weather conditions.

6.6 OAK TREE PLANTING

6.6.1 Inspection

The restoration specialist must inspect all oak tree plantings prior to installation.

6.6.2 Container Planting Installation

Oak tree planting will begin as soon as possible following final site preparation (e.g., initial weed control) and installation of the irrigation system. Trees installed for this effort are proposed to be a mix of 24-inch box trees and five-gallon in size, and be rooted appropriately for that size container (i.e., neither root bound nor insufficiently developed), pending County authorization. Smaller sized trees often establish more quickly than larger plantings. Trees shall be installed in holes that are the same depth and diameter as the planting container. Holes may be dug with mechanical augers, provided they are dug outside the bird breeding season. Holes must be located in places where soils are at least as deep as the planting container (i.e., not in shallow soils over rock). To loosen soils and facilitate root growth, the auguring depth shall be between one and two times the depth of the container stock.

Holes will be filled with water and allowed to drain twice before planting. A basin will be constructed around each container planting. The basins shall be filled, allowed to soak in, and filled again following installation.

In total, 70 oak trees will be planted within the Project site. A minimum of 31 trees (a 1:1 replacement ratio) will be installed as 24-inch box trees. The remaining oaks will be installed as five-gallon containers, 24-inch box trees, or other sizes, as determined by the landscape architect.

6.6.3 Document Installation Conditions

Photos will be taken of oak trees during installation from at least four photographic documentation locations. Photo locations will be mapped using a Global Positioning System (GPS) unit and displayed on an aerial photograph to be included in each annual monitoring report, to facilitate re-use. These photos will be used for comparison with annual assessment photos to document the mitigation effort.

6.7 PLANT ESTABLISHMENT PERIOD

To ensure that conditions of this Plan are adhered to, all implementation activities will be monitored and recorded by the restoration specialist, who will be available on-site during oak tree planting to assist in making necessary Plan modifications so that the work may proceed. Records kept will include dates of planting and any significant problems encountered or necessary changes.

A 120-day PEP will commence upon the completed installation of all oak tree plantings in the designated establishment area. During this period, the installation contractor will conduct relatively intensive maintenance, under the direction of the restoration specialist, to help ensure successful oak tree establishment. The maintenance crew will control emerging invasive seedlings, replace dead plants, and remove any trash from the restoration site. All oak tree mortalities that occur within the 120-day PEP will be replaced, and replacement trees will be monitored closely for an additional 120-day PEP (specific to the replaced trees). The 120-day PEP is to be concurrent with the three-year monitoring period. Details of the 120-PEP will be included with the as-built report (see below) to be submitted to the County.

6.8 AS-BUILT REPORT

The restoration specialist shall submit a brief as-built letter report to the County within 30 days following the completion of the 120-day PEP. The report will include a figure of the site on an aerial photo base showing the location and size (five-gallon versus 24-inch box) of all planted trees, as well as photos taken from the designated photo stations at tree installation. The as-built letter will also note when the 120-day PEP started, ended, and when the remainder of the three-year maintenance and monitoring period is proposed to end.

7.0 MAINTENANCE PLAN

7.1 MAINTENANCE ACCESS

Following the completion of oak tree installation, all access to planting locations will be through developed areas.

7.2 MAINTENANCE ACTIVITIES

These maintenance guidelines are specifically tailored for oak tree establishment. A minimum 120-day PEP and concurrently initiated three-year maintenance program are proposed to ensure the successful establishment and persistence of the installed oaks. The maintenance program will include removal of trash, irrigation system maintenance, adjustments to irrigation application rates and schedules, and any remedial measures deemed necessary for the success of the oak tree establishment program (e.g., re-planting).

7.2.1 120-Day Establishment Period

Invasive Plant Control

Non-native species considered to be highly invasive by the Cal-IPC, exclusive of annual non-native grasses that are considered naturalized in California, shall be removed from within the oak tree establishment area. Examples of invasive plants that occur on-site include, but are not limited, to those listed in Section 6.4 of this Plan. Additional species may be added by the restoration specialist if they are deemed to be a threat to oak tree establishment or long-term survival. Maintenance personnel should be knowledgeable in distinguishing between native and non-native species; however, additional guidance will be provided, as needed, by the restoration specialist.

Irrigation

The goal is for oak tree plantings to survive, but also to establish deep roots so that they can survive annual dry seasons in the long term. During the initial 120-day PEP, irrigation will be relatively frequent to support the survival of the installed oak trees. As the oak tree mitigation is part of the landscaping, the irrigation is proposed to be permanent. This will aid in the growth and continued health of the oak trees.

Trash/Debris Removal

Any trash or synthetic debris found will be removed from the oak tree establishment area and properly disposed of at a licensed landfill.

Pest Management

Insects, vertebrate pests, and diseases will be monitored. Generally, there will be a high threshold of tolerance before control measures are considered. As required by law, specific recommendations will be made only by a licensed pest control adviser. All applicable federal and state laws and regulations will be closely followed. The restoration specialist will be consulted on any pest control matters.

Remedial Measures

The installation contractor will be responsible for the installation of the replacement plantings for any oak trees that die during the 120-day PEP. For successful completion of the 120-day PEP, any replacement oak plantings must be installed at least 30 days prior to the end of this period.

Damage to plants, irrigation systems, and other facilities occurring as a result of unusual weather or vandalism will be repaired, as directed by the restoration specialist. The cost of such repairs will be paid for as

extra work. The contractor will repair any damage caused by the contractor's inadequate maintenance or operation of irrigation facilities, as determined by the restoration specialist.

Timeframe

Maintenance of the restoration area will continue until all success criteria stipulated for the 120-day PEP (see Section 9.1 below) have been attained.

7.2.2 Remainder of Three-Year Maintenance Period

The three-year maintenance period will begin concurrently with the 120-day PEP. If the oak tree establishment effort does not meet all success criteria for the 120-day PEP, to the satisfaction of the restoration specialist, the three-year maintenance monitoring period shall be extended by the same number of days required to meet the 120-day PEP success criteria (see section 9.1 below). The same maintenance activities implemented during the PEP will continue for the remainder of the three-year maintenance period (see Section 7.2.1, above, for more detail).

The irrigation schedule will attempt to develop deep-root growth with evenly spaced, infrequent, deep applications of water. To obtain deep penetration of water, the irrigation system may be activated several times in one 24-hour period. Irrigation will be minimized to the extent possible following natural rainfall events. A specific irrigation schedule will take into consideration the oak trees and the remainder of the landscaping.

7.3 MAINTENANCE SCHEDULE

Maintenance will be performed as necessary to prevent re-seeding by targeted invasive plants and will likely change with varying site conditions and seasons; the schedule outlined herein (Table 3, *Maintenance Schedule for the Three-Year Oak Tree Establishment Effort*) serves only as a guideline. At a minimum, the installation contractor will conduct monthly maintenance during the 120-day PEP until all applicable success criteria have been met, and the restoration specialist recommends sign-off of this period in writing. The maintenance contractor will be responsible for all maintenance activities during the remainder of the three-year maintenance and monitoring period. Invasive plant control activities during this timeframe are expected to be required four times per year, with an emphasis on the winter and spring seasons when upland weeds are typically most abundant. The installation/maintenance contractor(s) will complete maintenance requests from the restoration specialist within 14 days of any written request or monitoring report. It should be noted that additional site inspections to check on the health of all oak plantings and to ensure that the irrigation system is operating properly will also be needed, at a frequency to be determined by the maintenance contractor.

Table 3
MAINTENANCE SCHEDULE FOR THE THREE-YEAR OAK TREE ESTABLISHMENT EFFORT*

Time Frame	Schedule
Installation Contractor	
120-day Establishment Period	Monthly
Maintenance Contractor	
Remainder of Year 1 through Year 3 November – May June – October	*4 visits per year* Three visits One visit

* This schedule is only a guideline; maintenance will be performed as necessary and as directed by the restoration specialist. **Additional visits to check on oak tree health and inspect irrigation should also be conducted.**

8.0 MONITORING PLAN

Regular monitoring and annual assessments will be carried out under the direction of the restoration specialist. This monitoring program will begin with habitat installation and continue for a minimum of three years. Monitoring of the oak tree establishment effort is divided into three main phases: (1) installation monitoring, (2) maintenance monitoring, and (3) annual technical monitoring (Table 4, *Monitoring Schedule*). Details of each phase are provided in this section of the Plan.

Table 4
MONITORING SCHEDULE

Phase	Schedule*
Installation Period	
Site preparation	Once to confirm completed weed control (can be included as one of the three visits below)
Oak planting	Three visits: (1) inspect oak trees prior to planting (2) first day of planting (3) following completed installation
120-Day Plant Establishment Period	Monthly
Remainder of three-year Restoration Period	Quarterly

* This schedule is only a guideline; monitoring will be performed as necessary, as determined by the restoration specialist.

8.1 INSTALLATION MONITORING

A restoration specialist will monitor all phases of the installation process, including site preparation (invasive plant removal) and installation of irrigation and oak plantings. The restoration specialist will inspect all oak plantings installed within the oak tree establishment area.

Following the oak tree planting, a restoration specialist will map the tree location using a GPS with sub-meter accuracy and assign each tree a unique identification code. To document the condition of each tree at the time of planting, the restoration specialist will record tree height, canopy width, diameter at breast height (DBH), and assess overall plant health using the oak tree rating system described in Table 5, *Oak Tree Rating System*), and photograph each tree. In addition, at least four overview photos will be taken of the oak tree establishment area. The restoration specialist will prepare a brief letter

report addressing the as-built condition of the trees and the overall oak tree establishment area following the completion of the 120-day PEP to be provided to the Project proponent and the County.

Table 5
OAK TREE RATING SYSTEM

Rating	Description
A – Outstanding	A healthy and vigorous tree characteristic of its species and reasonably free of any visible signs of stress, disease, or pest infestation.
B – Above Average	A healthy and vigorous tree with minor visible signs of stress, disease, or pest infestation.
C – Average	Although healthy in overall appearance there is an abnormal amount of stress or disease and/or pest infestation.
D – Below Average/Poor	This tree is characterized by exhibiting a greater degree of stress, disease and/or pest infestation than normal and appears to be in a state of rapid decline. The degree of decline may vary greatly in signs of dieback, disease and pest infestation and appears to be in an advanced state of decline.
F – Dead	This tree exhibits no signs of life whatsoever.

8.2 MAINTENANCE MONITORING

Following official PEP sign-off, to be documented in the as-built/PEP letter, the restoration specialist will monitor maintenance activities during the remainder of the three-year oak tree maintenance/monitoring period. Monitoring visits will be conducted four times per year, with an emphasis on the winter and spring growing season for upland vegetation. This monitoring schedule is the minimum; more frequent inspections may be necessary if there are problems with contractor performance or oak trees appear stressed.

Following each visit, a brief email with attached photos will be submitted to the Project proponent and maintenance contractor. The purpose of this email is to report on the general health of the oak plantings and note any maintenance needs, as well as other potential problems (soil erosion, vandalism, and pest problems).

8.3 ANNUAL TECHNICAL MONITORING

The restoration specialist will conduct an annual technical monitoring visit at the end of each year during the three-year restoration period. Technical monitoring of the oak tree establishment area will include a combination of qualitative (visual) and quantitative (based on data collection) sampling. Monitoring methods are described in more detail below.

8.3.1 Oak Tree Survivorship

Each planted tree will be located each year using an aerial photograph and/or GPS device, and survivorship/mortality will be documented, as appropriate.

8.3.2 Oak Tree Horticultural Evaluation

The condition of each tree will be recorded during each annual assessment; however, there are no success criteria associated with these parameters. The evaluation will include the following data for

each tree: tree height, canopy width, DBH, and tree health ranking. Horticultural evaluations will be performed according to Table 5.

8.3.3 Invasive Plant Cover Limit

The restoration specialist will visually estimate cover by target invasive vegetation listed in Section 6.4 of this Plan.

8.3.4 Irrigation

During the annual assessment, any issues with irrigation, or trees that seem to be stressed from a lack of water, will be documented.

8.3.5 Photo Documentation

Photos of each tree, as well as overview photos of the oak tree planting area, will be taken during each annual assessment. These photos are to be used by the restoration specialist to compare the health of each tree over the three-year monitoring period. Overview photos will be taken at the same photo locations that were established following installation and will be included in the annual report.

8.3.6 Annual Reports

An annual letter report will be prepared each year during the three-year monitoring period. Each report will include the results of the oak tree survivorship, horticultural evaluations, invasive plant cover assessment, as well as sample photos of individual trees and the overall oak tree establishment area. To visually demonstrate the progress of the restoration effort, photos taken after restoration installation will be included in each report for comparison with the respective year's annual assessment photos. In addition, each report will address any issues with irrigation and any remedial measures needed to meet final success criteria by the end of Year 3 (e.g., replacement plantings). The reports will be submitted to the Project proponent and County.

9.0 SUCCESS CRITERIA

This section provides success criteria for determining the success of the oak tree establishment effort.

9.1 120-DAY PLANT ESTABLISHMENT PERIOD

Success at the end of the 120-day PEP will be met if all planted trees are alive and there is less than two percent cover by invasive non-native vegetation within the oak establishment area. If any re-planting is conducted to achieve the survivorship target, container stock will be replaced in-kind and at the same size as the original planting. All plantings shall be in the ground for at least 30 days prior to the end of the PEP. The minimum three-year maintenance and monitoring period will begin concurrently with the 120-day PEP.

9.2 OAK TREE SURVIVORSHIP TARGET

Given the goal of establishing 65 oak trees, and initial over-planting of five trees, a loss of up to five planted oak trees is permitted. During the first two years following installation, oak tree replacements should be installed if mortality exceeds two trees. Replanting should not be conducted in Year 3 unless mortality has exceeded five trees. The annual success goal is for the loss of no more than three oak trees, and the final goal for the survival of 65 oak trees.

9.3 OAK TREE HORTICULTURAL EVALUATION

In addition to survivorship counts, horticultural evaluations will be performed for each planted tree, according to Table 5; however, there are no success criteria associated with these parameters.

9.4 INVASIVE PLANT COVER LIMIT

To help provide a healthy habitat for the planted oak trees, an annual invasive cover limit of two percent should be met within the limits of the identified tree establishment area, for all three years of the oak tree establishment effort (Table 6, *Oak tree Mitigation Criteria*). Target invasive vegetation is listed in Section 6.4 of this Plan, and additional species may be added to this list by the restoration specialist if they determine that these species pose a threat to the establishment or long-term survival of oak trees installed in the oak tree establishment area. Cover from invasive plants should not exceed two percent in any year.

Table 6
OAK TREE MITIGATION SUCCESS CRITERIA

Criteria	90 day PEP	Years 1	Year 2	Year 3
Survivorship	70 trees	68 trees	66 trees	65 trees
Invasive Plant Cover Maximum	2 percent	2 percent	2 percent	2 percent

9.5 IRRIGATION

Given that oak trees will be located within the Project landscaping, irrigation is anticipated to continue during the three-year maintenance and monitoring period and beyond.

10.0 COMPLETION OF MITIGATION

10.1 NOTIFICATION OF COMPLETION

The Project proponent will notify and coordinate with the County to seek concurrence that the final performance standards (Table 6) have been met through the submittal of the final monitoring report. The final report will include an analysis of quantitative sampling data that will illustrate that the final performance standards have been met.

10.2 RIVERSIDE COUNTY CONFIRMATION

If the restoration effort meets all success standards (Table 6) at the end of the three-year monitoring period or sooner, the restoration will be considered a success; if not, then contingency measures, as outlined in Section 11.0 of this report, would be implemented. Final sign-off and formal release of any restoration-associated bonds posted with the County must be obtained in writing.

11.0 CONTINGENCY MEASURES

This section describes the contingency measures that might be invoked in the event that all, or a portion of the oak restoration effort, does not meet performance standards at the end of the three-year maintenance and monitoring program.

11.1 INITIATING PROCEDURES

If the yearly performance standards for survivorship and invasive cover are not met, the Project proponent will work with the restoration specialist and the contractor to implement additional measures to help ensure the success of the restoration effort. If final performance standards of oak tree survivorship and invasive plant cover are not met, and the County does not accept the restoration as being complete, the maintenance and monitoring program will be extended for one year at a time until the standards are met. Specific remedial measures (approved by the County) will be used during any such extension. This process will continue until survivorship and invasive cover Year 3 standards are attained or until the County determines that other mitigation measures are appropriate. Should the mitigation effort meet all goals prior to the end of the three-year monitoring period, the County, at its discretion, may terminate the monitoring effort. If requested, a site visit may be conducted with the County to verify site conditions.

In the event that wildfire, flood, or other force results in major damage to the site, before the submittal of the documentation stating that the required three-year monitoring period and final performance standards of survivorship and invasive plant cover are met, and the damage from the event resulted in the site not meeting performance standards, then the Project proponent would be required to take the necessary contingency measures to fulfill their mitigation obligations, unless the County, at their discretion, agree to sign-off without those remedial measures being taken.

11.2 FUNDING MECHANISM/BONDING

The Project proponent is responsible for covering all costs associated with planning, implementation, and monitoring of contingency measures needed if the site fails to meet its stated performance criteria.

12.0 LIST OF PREPARERS

The following individuals contributed to the fieldwork and/or preparation of this report:

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Beth Martinez	M.S., Environmental Studies, California State University Fullerton, 2002 B.A., Philosophy, University of California Irvine, 1992
Amy Mattson*	M.S., Marine Biology, Scripps Institution of Oceanography, 1999 B.S., Biology, Marine Biology Concentration, University of California Los Angeles, 1994
Dan Torres	B.S., Ecology and Natural Resources, Rutgers University, New Brunswick, New Jersey, 2013

* Primary author(s)

13.0 REFERENCES

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. The Jepson manual: Vascular plants of California. 2nd ed. University of California Press, Berkeley.

California Invasive Plant Council (Cal-IPC). California invasive plant inventory database. Available at: http://www.cal-ipc.org/paf/.

County of Riverside. 1993. Riverside County Oak Tree Management Guidelines. Available at: https://planning.rctlma.org/Portals/14/devproc/guidelines/oak_trees/oak_trees.html. March 2.

HELIX Environmental Planning, Inc. (HELIX) 2021. General Biological Resource Assessment and Western Riverside County Multiple Species Habitat Conservation Plan Consistency Analysis. September 10.

2020. Updated 2020 Oak Tree Survey Letter Report of Findings for the Glen Ivy Senior Community Project. November 19.

Oberbauer, T., Kelly, M., and Buegge, J. 2008. Vegetation communities of San Diego County. Based on "Preliminary Descriptions of the Terrestrial Natural Communities of California", R.F. Holland, 1986. 73 pp.

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Appendix A

2020 Oak Tree Survey

HELIX Environmental Planning, Inc.
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November 19, 2020 TAB-16

Joel Morse, Principal
T&B Planning
17542 East 17th Street, Ste 100
Tustin, CA 92780

Subject: Updated 2020 Oak Tree Survey Letter Report of Findings for the Glen Ivy Senior Community Project

Dear Joel:

On behalf of T&B Planning, HELIX Environmental Planning, Inc. (HELIX) has prepared this oak tree survey report to document the results of a 2020 oak tree survey for the Glen Ivy Senior Community Project (project) located in the community of Glen Ivy, in unincorporated Riverside County (County), California. The 11.29-acre project study area is comprised of two Assessor Parcel Numbers (290-190-083 and 290-190-084).

This report summarizes the methods, results, and recommendations based on a review of existing information and the oak tree survey conducted by HELIX on March 24, 2020. The survey was conducted in accordance with County of Riverside Guidelines (County 1993). The Riverside County Oak Tree Management Guidelines, Ordinance No. 559 (County 1993) requires mapping of all trees of the genus Quercus, including coast live oak (*Quercus agrifolia*), canyon live oak *(Quercus chrysolepis),* Engelman oak (*Quercus engelmannii),* California black oak (*Quercus kelloggii),* Oracle oak (*Quercus morehus),* and interior live oak (*Q. wislizenii)*. Scrub oak (*Quercus berberidifolia*) is not classified as a tree and it is not subject to the County Oak Tree Management Guidelines. Individual trees shall not be subject to the County Oak Tree Management Guidelines unless their trunks are larger than two inches with a diameter at breast height (DBH) for a single trunk, or the sum of the diameters of multiple trunks at breast height.

INTRODUCTION

Project Location

The project site is located within an unincorporated portion in the western portion of Riverside County, southeast of the City of Corona (Figure 1, *Regional Location*). The site is situated southwest of the intersection of Trilogy Parkway and Temescal Canyon Road and west of Interstate (I-) 15 (Figures 2, *Aerial Vicinity* and 3, *Oak Tree Locations*). The project site is located within the boundaries of the

Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), outside of any Criteria Cell or other areas targeted for conservation.

Project Description

The proposed project is a senior housing development and associated infrastructure. Specific project impacts are not included in the details of this report.

METHODS

HELIX biologists Dan Torres and Rob Hogenauer completed an oak tree survey on March 24, 2020. Mr. Hogenauer returned on October 29, 2020 to survey the off-site portion of the potential impact area. The survey included mapping all oak trees in the study area with a diameter breast height (DBH) of two inches or larger. Data collected on the oak trees including the DBH, number of trunks, approximate height, canopy appearance, and general health of each tree (Attachment A). The location of each oak tree was mapped using submeter accurate global positional system and plotted on an aerial photograph (Figure 3). The biologists collected the data for each tree and placed an aluminum tag on the north side of each tree. The canopy of each tree was measured in the four cardinal directions (north, south, east, and west) and details regarding the fullness of the canopy and aesthetic value of the tree were analyzed. Each tree was gently tapped with a hammer to determine if the tree had internal decay. Each tree was inspected for evidence of damage or infestation from tree borer beetles and other infections. The height of each tree was estimated and recorded with the other data.

RESULTS

The onsite project area was determined to include 28 oak trees (oaks 1-28) with a DBH of two inches or larger. Nine additional trees (oaks 40-48) were mapped in the potential off-site impact area. All oak trees (onsite and off-site) in the project study area are coast live oak. The DBH of the oak trees ranges from 4 inches to 57 inches (Table 1, *Oak Tree Inventory*). Two of the trees mapped are dead and nine of the trees are in a state of decline or have damage evident. The canopy of the trees on-site ranges from a full symmetrical well-balanced canopy to asymmetrical trees with limited aesthetic value (Attachment A).

Table 1
Oak Tree Inventory Data

Tag Number	Number of Trunks	Height (Feet)	DBH [1] (inches)	Health Notes
1	8	38	38.0	Internal decay present
2	5	40	42	Vigorous with full canopy
3	2	40	25.5	Symmetrical, but thinning
4	1	42	30.5	Tree in decline, leaning to north.
5	5	15	35.0	Dead, bark exfoliated, tree has collapsed.
6	1	30	23.5	Tree in decline, lean to north crown is thinning
7	1	47	38.0	Dead, Bark exfoliating
8	1	32	5.0	Tree in decline, tall with small canopy
9	1	30	7.5	Tree in decline, dead wood present, thin canopy
10	1	30	7.0	Trunk bent

Table 1 (cont.)
Oak Tree Inventory Data

Tag Number	Number of Trunks	Height (Feet)	DBH [1] (inches)	Health Notes
11	1	9	16.0	Tree in decline, internal decay, tree has fallen but still has green leaves
12	2	32	16.5	Full canopy, tree has strong lean to east
13	1	30	17.5	Tree in decline, canopy thinning, strong lean to west
14	1	15	4.0	Not tagged due to swarm of bees on tree
15	1	20	7.5	Asymmetrical, strong lean
16	1	18	5.5	Insect (borer) damage present, severe lean
17	1	16	7.0	Cankerous growth present, asymmetrical, leaning to east
18	1	15	11.0	Asymmetrical, internal decay,
19	1	43	37.5	Internal decay, some limb fall, borer damage
20	2	37	30.0	Internal decay, borer damage
21	2	32	37.5	Full canopy with new growth
22	2	35	38.0	Full canopy
23	1	30	14.0	Thinning canopy, lean to west
24	3	32	32.5	Internal decay, leaning to west
25	1	22	10.0	Full canopy
26	1	39	25.5	Strong lean, shaded by adjacent trees
27	1	45	55.0	Symmetrical, full canopy
28	1	45	57.0	Some broken branches, but full crown.
40	1	30	29.0	Road side tree subject to trimming.
41	1	32	23.0	Road side tree subject to trimming. Bark damage from apparent vehicle collision.
42	1	26	26.0	Road side storm drainage access point within canopy (root ball).
43	3	28	38.7	Road side tree limiting west side canopy.
44	1	40	34	Truck on edge of Cold Water Creek, canopy to north limited by adjacent sycamore.
45	2	18	5	Tree crowded with mixed clump of other trees.
46	1	17	4	Tree crowded with mixed clump of other trees.
47	1	20	9	Tree crowded with mixed clump of other trees.
48	1	19	10	Tree crowded with mixed clump of other trees.

[1] DBH is the trees Diameter at Breast Height rounded to the nearest 0.5 inch: multiple trunk tree DBH was calculated by taking the square root of the total of the squares of each trunk.

Dead trees were included in the inventory as these can be used by cavity nesting birds and as hunting perches for raptors. Of the two dead trees on-site, one has collapsed (Tree 5) and does not provide habitat for cavity nesting specie, while the other dead tree (Tree 7) has potential to be used by cavity nesting species or as a hunting perch.

TRANSPLANTING

Mr. Hogenauer conducted research regarding the viability of transplanting large oak trees. Research indicates that transplanting of oak trees with a height of eight feet or more is not recommended. Oak trees have the best success rate when they have a height of five feet or less when transplanted. Oak trees tend to develop a tap root to seek out moisture in the soil and for the first few years of growth the lateral root development remains minimal (SF Gate 2020). The tap root can be severed on trees that are eight feet or less in height without serious harm to the tree (SF Gate 2020).

When trees are transplanted the larger tree exhibits little above ground growth for years following transplanting, while smaller trees show significant above ground growth in the same time period (Watson 2005). This was attributed to the root growth occurring at the same rate in both the larger and the smaller trees, and the larger trees requiring more time to regrow the full root structure. The Watson study was not specific to oak trees, but rather included data from red maple (*Acer rubrum*), red oak (*Quercus rubra*), and other tree species. The study indicates that transplanting a tree of 10 inch DBH takes 13 years to restore its original root volume while a tree with a four inch DBH would require only five years.

Research specific to coast live oak in southern California indicates that long term survival rate is less than 40 percent (Dagit and Downer). The Dagit and Downer year study indicates that transplanting coast live oak trees is expensive and has a low success rate. Additionally, the County of Riverside oak tree guidelines state that relocation of oak trees does not constitute mitigation and is considered the same as removal.

CONCLUSION

The trees on-site appear to be of natural origin. The County Oak Tree Management Guideline prefers avoidance of impacts to oak trees, if possible. Per the County guideline, an oak tree is considered impacted if the project results in ground disturbance within the drip line of the tree, or if the branches of the tree require trimming as part of the project design. Based on previous experience with the County Guidelines, a mitigation ratio of at least 2:1 is anticipated to be required for impacts to naturally occurring living oak trees. The specific mitigation for impacts to oak tree is subject to a discussion with the County.

CLOSING

We appreciate the opportunity to provide you with this oak tree survey report. Should you have any questions or require additional information, please do not hesitate to me at (562)537-2426 or Beth Martinez at (619) 462-1515.

Sincerely,

Rob Hogenauer
Senior Scientist

Enclosures: Figure 1. Regional Location
Figure 2. Aerial Vicinity
Figure 3. Oak Tree Locations

Attachment A. Oak Tree Inventory Data

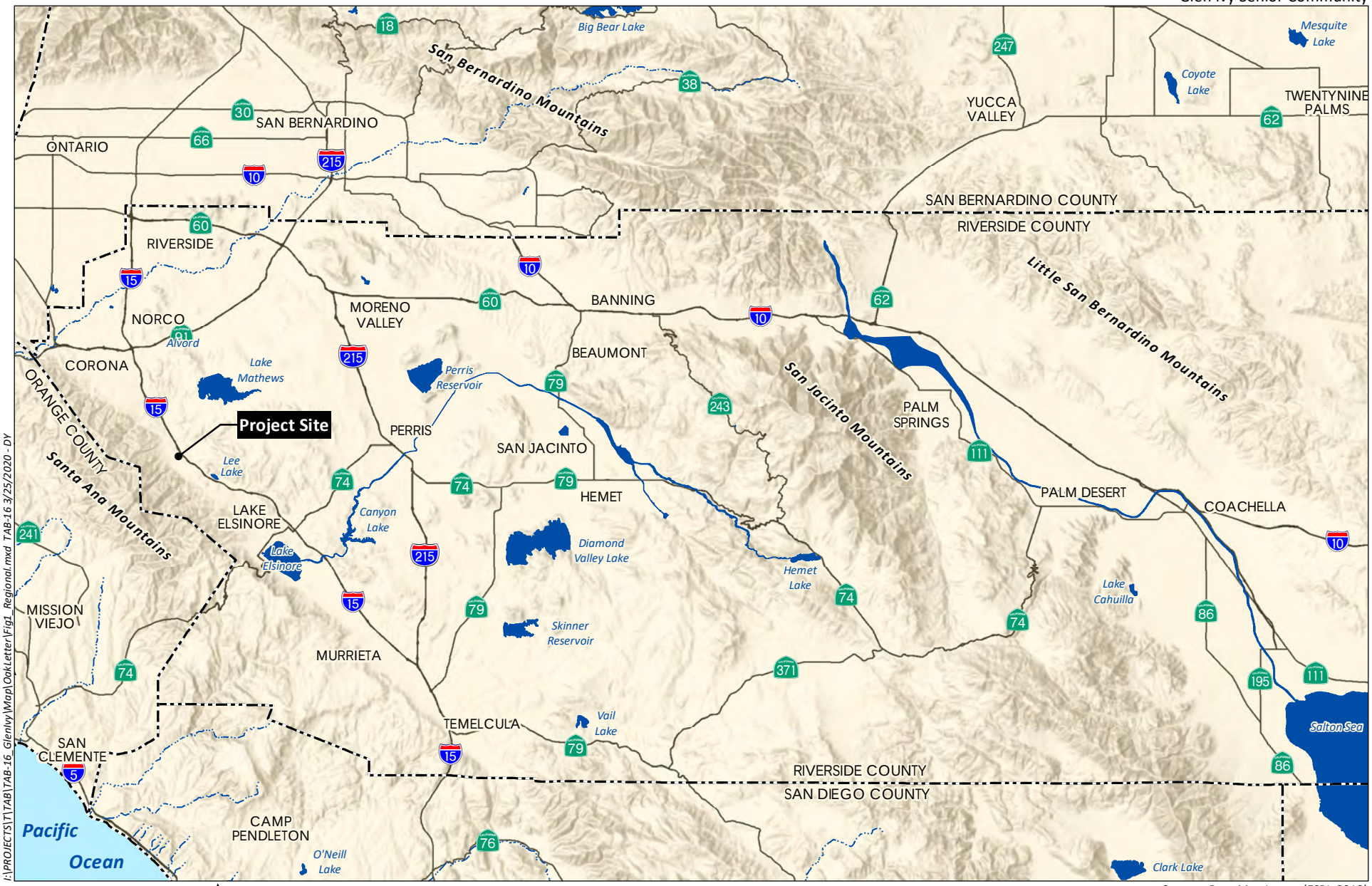
REFERENCES

County of Riverside. 1993. Riverside County Oak Tree Management Guidelines. Available at: https://planning.rctlma.org/Portals/14/devproc/guidelines/oak_trees/oak_trees.html. March 2.

Dagit, Rosi and Downer, A. James. 1997. Status of Transplanted Coast Live Oaks (Quercus agrifolia) in Southern California. USDA Forest Service Gen. Tech. Rep. PSW-GTR-160

SF GATE. 2020. Digging a Live Oak Tree. Available at: https://homeguides.sfgate.com/digging-live-oak-tree-64043.html. Accessed March 31.

Watson, W. Todd. 2005. Influence of Tree Size on Transplant Establishment and Growth. Hort Technology. January-March.



0 10 Miles

Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1

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0 1,000 Feet

Source: Aerial (RCIT, 2016)

HELIX Environmental Planning

Aerial Vicinity

Figure 2

I:\PROJECTS\T\TAB\TAB-16_GlenIvy\Map\OakLetter\Fig3_OakLocs.mxd TAB-16 11/10/2020 -DY

0 200 Feet

Source: Aerial (RCIT, 2016)

HELIX Environmental Planning

Oak Tree Locations

Figure 3

Attachment A
March 2020 Oak Tree Survey Raw Data

Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
1	38.16	11.7, 12.1, 18.2, 11.3, 11.6, 7.3, 13, 18.9	38	25	26	27	11	C- not symmetrical due to shading by adjacent tree, tree is large and spreading	C- some crown thinning	C	Internal decay present- fruiting bodies on old pruning wounds; oak galls present	None.
2	41.98	20, 19.8, 18.7, 13.4, 21	40	29	21	31	34	B- wide, spreading branches reach ground, fairly symmetrical	B- tree appears vigorous and full	B	None evident.	None.
3	25.48	15, 20.6	40	18	20	20	21	C- fairly symmetrical, dieback subtracts from aesthetics	C- crown is thinning	C	None evident.	None.

Attachment A
March 2020 Oak Tree Survey Raw Data

Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf color, abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
4	30.50	30.5	42	30	15	24	30	C- slight lean north, thinning crown subtracts from aesthetics	D- severe crown thinning	D- tree is in decline	None evident.	Old mechanical damage on trunk, wooden planks are nailed to trunk.
5	34.87	15.4, 9, 13, 13, 27	15	30	30	30	30	F- dead	F- dead	F- dead	None evident.	Tree is dead, bark is mostly exfoliated, tree has collapsed.
6	23.40	23.4	30	24	17	16	20	C- slight lean north, tree is somewhat symmetric	D- crown is thinning, epicormic sprouting is present	D- tree is in decline	None evident.	Two trunks are growing into each other at DBH, DBH measured at 2.5 feet.

Attachment A
March 2020 Oak Tree Survey Raw Data

Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf color, abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
7	38.00	38	47	33	40	24	26	F- dead	F- dead	F- dead	None evident.	Bark is exfoliating, DBH measured at 3.5 feet below trunk bulge.
8	4.90	4.9	32	2	5	12	10	D- tree is tall and skinny, small canopy extent, not symmetric	D- lots of dieback present	D- tree is in decline	None evident.	None.
9	7.50	7.5	30	2	20	10	2	D- tree is leaning E, canopy is very thin	D- lots of deadwood present	D- tree is in decline	None evident.	None.
10	6.90	6.9	30	5	2	15	3	D- small canopy extent, trunk is bent several times, not symmetric	C	C	None evident.	Very limited canopy extent.
11	16.00	16	9	4	20	3	2	D- very poor aesthetic value	D	D- tree is in decline	Internal decay present- fruiting bodies on trunk	Tree has fallen, still has green leaves.

Attachment A
March 2020 Oak Tree Survey Raw Data

Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf color, abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
12	16.28	9.8, 13	32	20	20	18	8	D- strong lean E	B- lots of new growth, canopy full	C	None evident.	None.
13	17.40	17.4	30	20	16	19	18	D- strong lean W	D- canopy is thinning	D- tree is in decline	None evident.	None.
14	4.20	4.2	15	6	6	6	6	B	B	B- tree appears healthy	None evident.	Tree not tagged- swarm of bees were resting in the tree. Trunk splits at DBH- measured at 4 feet.
15	7.60	7.6	20	2	17	12	2	D- severe lean, not symmetric	B	B	None evident.	None.
16	5.40	5.4	18	12	15	10	2	D- severe lean, not symmetric	B	B	Cankerous growth and borer holes present.	None.
17	7.20	7.2	16	10	15	8	2	D- poor aesthetics, not symmetric, leaning E	B	B	Some cankerous growth present.	None.

Attachment A
March 2020 Oak Tree Survey Raw Data

Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf color, abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
18	10.90	10.9	15	14	13	4	8	C- tree not symmetric, slight lean NE	B	B- tree appears healthy	None evident.	None.
19	37.40	37.4	43	32	21	24	30	B- large tree with good trunk, growing in the open	B- minor amount of deadwood	C- internal decay in main trunk	Some insect borer holes present	None.
20	30.20	25.3, 16.5	37	18	18	24	22	C- tree has slight lean W	B- canopy is full	C- some internal decay present in area of limb fall	Some insect borer holes present, 2 trunks with an acute angel of attachment.	
21	37.64	25.8, 27.4	32	22	22	30	32	B- tree is large and open, standalone tree	B- canopy is full, lots of new growth	C	Some internal decay in a large branch.	Old tag 3132
22	38.06	30.4, 22.9	35	28	30	24	30	B- large, fairly symmetrical	B- full canopy, lots of growth	B- appears healthy	None evident.	None.
23	14.00	14	30	3	10	16	15	C- strong lean W	C- some crown thinning present	C	None evident.	None.

Attachment A
March 2020 Oak Tree Survey Raw Data

Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf color, abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
24	32.40	23.3, 18.1, 13.4	32	18	18	28	28	C- tree is somewhat symmetric, leaning W	C- some canopy thinning/die back	C	Some internal decay present.	None.
25	10.00	10	22	12	12	12	10	B- tree is fairly symmetrical, full canopy	B- crown is full	B	None evident.	Tree has old branches and tree waste at the base.
26	25.30	25.3	39	16	32	6	2	D- tree has a strong lean E	B- crown is full	B	None evident.	Tree is being shaded by adjacent larger tree
27	54.80	54.8	45	41	34	42	46	A- tree is symmetric and well-balanced	B- lots of new growth, vigorous	B	None evident.	None.
28	57.10	57.1	45	30	24	25	28	B- some broken branches	B- crown is full	B	None evident.	DBH measured at 2.5 feet, 3 trunks arise at DBH.

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Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf color, abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
40	29	29	30	25	27	26	16	B-mostly symmetric	C-low branch trimming	B		Road side tree, regular trimming
41	23	23	32	16	12	14	13	C-irregular symmetry	C-bark damage, crown thinning	C		Damage possible due to vehicle collision
42	26	26	26	21	12	16	18	C-asymmetrical, irregular shape	C-crown thinning	C		Road side location, storm drain access with canopy
43	38.7	23 21 23	28	21	16	26	24	B-mostly symmetrical	B	B		Road side location limits west side growth
44	34	34	40	15	32	28	22	B-shaded by sycamore on north side	B	B		Rooted on upper side of creek bank

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Number	DBH calculated (inches)	DBH	Height_(ft)	Canopy (Feet from trunk)				Aesthetics (symmetry, broken branches, etc.)	Vigor (new tip growth, leaf color, abnormal bark, deadwood, crown thinning)	Health (based on archetype tree of the same species)	Diseases/ Pests	Notes
				N	E	S	W					
45	5	3 4	18	8	6	4	3	C	B	C		Growth limited by crowding of adjacent trees
46	4	4	17	5	5	3	6	C -limited canopy	B	C		Growth limited by crowding of adjacent trees
47	9	9	20	6	4	5	4	C -limited canopy	B	C		Growth limited by crowding of adjacent trees
48	10	10	19	6	4	8	4	C -limited canopy	B	C		Growth limited by crowding of adjacent trees