# Appendix E Arborist Report – Bear Valley Parkway Widening Project, Escondido (December 2016)

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# ARBORIST REPORT
## Bear Valley Parkway Widening Project, Escondido

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**DECEMBER 2016**

Printed on 30% post-consumer recycled material.

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# 1 INTRODUCTION

This arborist report summarizes Dudek's field evaluation of trees within and adjacent to the proposed Bear Valley Parkway widening project (project) located in Escondido, California. Evaluated trees, including native oak trees, meeting the City of Escondido's (City's) definition of trees based on the diameter as measured at 4.5 feet above the tree's natural grade (diameter at breast height (DBH)) as required by Chapter 33 (Zoning), Article 55 (Grading and Erosion Control) of the City of Escondido's Municipal Code (Ordinance 2001-21). Oaks measuring more than 4 inches DBH and ornamental trees more than 8 inches DBH were included in the evaluation. This report includes a discussion of tree evaluation methods, a summary of findings, identification of anticipated impacts, and tree impact mitigation recommendations consistent with the City's Municipal Code (Ordinance 2001-21) and the tree removal permit process for the City. The primary focus of Dudek's field evaluation was to evaluate trees located on the project site that are considered "protected" or "mature" based on the definition in the City's Municipal Code and that would be affected by the proposed development.

Dudek staff certified by the International Society of Arboriculture (ISA) as Certified Arborists completed the field evaluations on November 22, 2016. The survey area includes 21 protected trees and 35 "mature" trees, 45 of which are directly impacted (removed or encroached) by the proposed project-related improvements. Based on the City's Municipal Code (City of Escondido 2014) and the site's conditions of approval, a minimum of 60 replacement trees would be required to mitigate project-related tree impacts.

## 1.1 Site Description

The project site is composed of two individual sites located off Bear Valley Parkway (BVP) at 661 Bear Valley Parkway near Zlatibor Ranch Road in Escondido, San Diego County, California (Figure 1, Regional Map). The first site (west site) is associated with the widening of BVP and is located on the west side of BVP between the intersection of Sunset Drive and Zlatibor Ranch Road. The second location (east site) associated with the widening of BVP and is located on the east side of BVP between Sunset Drive and the southern edge of the proposed Bear Valley Residential project site. The two locations are located on the U.S. Geological Survey 7.5-minute Escondido quadrangle map in Section 26, Township 12S, and Range 2W.

## 1.2 Project Description

The project would include frontage right-of-way dedication to complete a 51-foot-wide right-of-way from the centerline of the existing Bear Valley Parkway right-of-way. In addition, the project would include the obligation to construct frontage improvements along Bear Valley Parkway consisting of a curb, gutter, sidewalk, parkway, bike lane, and one full travel lane with

transitions that would tie into existing improvements. A portion of these frontage improvements would be located off site of the subject property (Figure 2, Vicinity Map).


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**FIGURE 1**

**Regional Map**

Bear Valley Parkway Widening Project - Arborist Report

Path: Z:\Projects\78331\MAPDOC\MAPS\TreeBVP Widening\Fig1_Regional.mxd

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Project Site

0 1,000 2,000 Feet



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SOURCE: USGS 7.5-Minute Series Escondido Quadrangle.

**FIGURE 2**

**Vicinity Map**

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Bear Valley Parkway Widening Project - Arborist Report

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# 2 METHODS

## 2.1 Individual Tree Evaluation

Consistent with Chapter 33 (Zoning), Article 55 (Grading and Erosion Control) of the City's Municipal Code (Ordinance 2001-21), this arborist report is based on information compiled through field reconnaissance and a review of appropriate site reference materials, including aerial photography, U.S. Geological Survey topographic maps, and digital ortho-quarter quadrangle data. Dudek ISA-Certified Arborists conducted a tree survey on the project site on November 22, 2016.

The City's Municipal Code protects all "mature" trees, as defined in Section 33-1502. Mature trees, according to Section 33-1502, include all native oak trees larger than 4 inches DBH and ornamental trees larger than 8 inches DBH.

All trees meeting the City's definition of "mature" or "native" located on the project site were assessed, tagged, inventoried, mapped, and plotted on a tree location exhibit (Appendix A). All inventoried trees were tagged with an aluminum tag bearing a unique identification number. Tree tags were placed on the trunk of each inventoried tree. These numbers correspond to the tree locations presented in Appendix A and the tree information matrix in Appendix B.

Concurrent with tree mapping efforts, Dudek arborists collected tree attribute data, including species, quantity of individual trunks, individual trunk diameters, overall height, canopy extent, and general health and structural conditions. Diameter measurements were collected using the standard protocol outlined by the Council of Tree and Landscape Appraisers in the Guide for Plant Appraisal (ISA 2000). Trunk diameter measurements were collected at 4.5 feet (54 inches) above the ground along the trunk axis, with one common exception. In cases where a tree's trunk was located on a slope, the 4.5-foot distance was approximated as the average of the shortest and longest sides of the trunk (i.e., the uphill side and downhill side of a tree's trunk, respectively), and the measurement was made at the circumference of the trunk at that point. Tree height measurements were ocular estimates made by experienced field arborists. Tree canopy diameters were typically estimated by pacing off the measurement based on the investigator's knowledge of his/her stride length or by visually estimating the canopy width. The tree crown diameter measurements were made along an imaginary line intersecting the tree trunk that best approximated the average canopy diameter.

Pursuant to the Guide for Plant Appraisal (ISA 2000), tree health and structure were evaluated based on five tree components: roots, trunk(s), scaffold branches, small branches, and foliage. Each component of the tree was assessed for health factors such as insect, fungal, or pathogen damage; fire damage; mechanical damage; presence of decay; presence of wilted or dead leaves;

and wound closure. Components were graded as good, fair, poor, or dead, with "good" representing no apparent problems, and "dead" representing a dying and/or dead tree. This method of tree condition rating is comprehensive and results in ratings that are useful for determining the status of trees based on common standards. Trees in natural settings have important habitat value, as evidenced by numerous cavity nesters and insects that thrive on and within oak trees, even when they are considered in poor structural or health condition. This assessment focused on tree condition relating to health and structure to analyze potential project impacts, and, where necessary, to provide recommendations for mitigating potential tree hazards such as trees with weak limb attachments, cavities and rot, or excessive lean.

Upon completion of field data collection and mapping, raw global positioning system (GPS) data was post-processed using GPS Pathfinder Office (v 5.40), and individual tree location data were compiled and updated in geographic information systems (GIS) software. The digital tree locations were linked to individual tree identification numbers and associated tree attribute data. This data set was then evaluated using ArcGIS (v. 10.1) software to determine the position of individual trees relative to the proposed project development areas. Data resulting from this analysis were used to determine individual tree impact totals.

## 2.2 Scope of Work Limitations

No root crown excavations or investigations, aerial evaluations, or internal probing was performed during the tree assessment. Therefore, the presence or absence of internal decay or other hidden inferiorities in individual trees could not be confirmed. It is recommended that any large tree proposed for preservation in an area that receives human use be thoroughly inspected for internal or subterranean decay by a qualified ISA Certified Arborist before finalizing preservation plans.

# 3 OBSERVATIONS

### Individual Trees

There are 56 trees representing nine individual species located within the project tree survey area that meet the City's criteria for a "mature" or "protected" tree. As Table 1 indicates, most of the inventoried trees are native to California. Tree species found on site consist primarily of ornamental trees. Ornamental trees found on site include ash (*Fraxinus* sp.), silk oak (*Grevillea robusta*), jacaranda (*Jacaranda mimosifolia*), Chinese juniper (*Juniperus chinensis*), Canary Island date palm (*Phoenix canariensis*), Brazilian pepper (*Schinus terebinthifolius*), Queen palm (*Syagrus romanzoffiana*), and Mexican fan palm (*Washingtonia robusta*). One native tree species, coast live oak (*Quercus agrifolia*), is found on the project site. Table 1 provides a summary of the nine species mapped and evaluated within the tree survey area. The tree location exhibit in Appendix A presents the location of the individual trees mapped and assessed for the project.

Overall, the trees exhibit growth and structural conditions that are typical of their locations as both landscape and natural trees. The trees include various trunk and branch maladies, as well as varying health and structural conditions. As presented in the tree information matrix in Appendix B, most of the individually mapped trees, 82% (46 trees), exhibit fair health condition; 7% (4 trees) are in good health condition; and 11% (6 trees) are in poor health. Dead trees were not evaluated during the tree inventory. Structurally, 7% (4 trees) of the individually mapped trees are considered to exhibit good structure, 64% (36 trees) exhibit fair structure, and 29% (16 trees) exhibit poor structure. Good condition trees exhibit acceptable vigor, healthy foliage, and adequate structure, and lack any major maladies. Fair condition trees are typical, with few maladies but declining vigor. Poor condition trees exhibit declining vigor, unhealthy foliage, poor branch structure, and/or excessive lean.

**Table 1**
**Summary of Trees at Project Site**

| Scientific Name | Common Name | Number of Trees |
|---|---|---|
| *Fraxinus* sp. | ash tree | 2 |
| *Grevillea robusta* | silk oak | 1 |
| *Jacaranda mimosifolia* | jacaranda | 2 |
| *Juniperus chinensis* | Chinese juniper | 1 |
| *Phoenix canariensis* | Canary Island date palm | 1 |
| *Quercus agrifolia* | coast live oak | 42 |
| *Schinus terebinthifolius* | Brazilian pepper | 1 |
| *Syagrus romanzoffiana* | queen palm | 3 |
| *Washingtonia robusta* | Mexican fan palm | 3 |
| | **Total** | **56** |

Trees within the tree survey area vary in size and stature according to species and available growing space. The coast live oak trees on site are primarily single-stemmed, with trunk diameters ranging from 4 to 33 inches DBH. Multi-stemmed oak trees with two to six stems have diameters of up to 48 inches DBH. Single- and multi-stemmed ornamental landscape tree species have combined trunk diameters between 4 and 48 inches DBH. Tree heights vary from 10 to 45 feet. Tree canopy extents range from 10 to nearly 60 feet across. Nearly 55% of the trees on site exhibit canopy spreads that are greater than 20 feet across at their widest points.

# 4 POTENTIAL TREE IMPACTS

## 4.1 Regulatory Definitions and Requirements

The following section summarizes the relevant policies regulating tree impact and removal associated with the project.

### 4.1.1 City of Escondido

Tree protection, removal, and replacement standards are included in the City's General Plan (City of Escondido 2012) and in Chapter 33 (Zoning), Article 55 (Grading and Erosion Control) of the City's Municipal Code (Ordinance 2001-21). The Escondido General Plan recognizes oak trees and other mature trees, as defined below, as significant aesthetic and ecological resources deserving protection within the boundaries of the City. Sections 33-1502 and 33-1068 of the City's Municipal Code set forth rules and standards related to mature tree removal, protection, and replacement.

**Section 33-1502 (Definitions)**

1. A *mature tree* is any self-supporting woody perennial plant, native or ornamental, with a single well-defined stem or multiple stems supporting a crown of branches.
    a. The single stem, or one of multiple stems, of any oak tree (*Quercus* species) shall have a DBH of 4 inches or greater.
    b. All other mature trees shall have a DBH of 8 inches, or greater, for a single stem or one of the multiple stems.
2. A *protected tree* is any oak (*Quercus* species) that has a ten-inch or greater DBH, or any other tree species or individual specimen listed on the historic register, or determined to substantially contribute to the historic character of a property or structure listed on the local historic register, pursuant to Article 40 of the Escondido Zoning Code.

**Section 33-1068 (Vegetation Clearing and Protection)**

The purpose of Section 33-1068 is to establish regulations and standards for the preservation, protection, and selected removal of mature and protected trees. A vegetation removal permit is required prior to clearing, pruning, or destroying vegetation, and prior to any encroachments by construction activities that disturb the root system within the dripline[1] of mature trees. Issuance of a vegetation removal permit requires the submittal of a tree survey and a tree replacement and/or protection plan.

[1] The dripline is the area directly under the outer circumference of the tree branches. This is where the feeder roots are located that take up water and nutrients for the tree.

**Section 33-1069 (Vegetation Protection and Replacement)**

Pursuant to Section 33-1069, every feasible effort and measure to avoid damage to existing trees to remain on site must be taken by the owner and developer during clearing, grading, and construction activities. If mature trees cannot be preserved on site, they must be replaced at a minimum ratio of 1:1. Protected oak trees must be replaced at a minimum ratio of 2:1. However, the number, size, and species of replacement trees can be determined on a case-by-case basis by the City's Director of Planning and Building.

### 4.1.2 Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 requires tree removal and potentially disturbing construction activities to occur during certain months to avoid harassment of nesting birds. According to this act, no construction or other disturbing activities can occur within 500 feet of an active bird nest from January through June each year. Biological surveys are typically required to provide clearance for project initiation.

## 4.2 Impacts

Tree impacts were determined through use of GIS technology to determine the locations of trees relative to the project impact areas (limits of grading). Impacts were further determined based on Dudek arborists' experience with native and non-native trees, and the typical reactions of trees to disturbances such as soil compaction, excavation, and remedial grading. The impact analysis results presented herein were used for developing appropriate mitigation measures for the project.

Impacts to trees can be classified as either direct or indirect. Direct impacts to trees related to site improvements are typically the result of physical injuries or changes caused by construction machinery. Direct impacts include tree removal, root damage, soil excavation and compaction, grade changes, loss of canopy, and trunk wounds, among others. Indirect impacts to trees are the result of changes to the site that may cause tree decline, even when the tree is not directly injured. Indirect impacts include alterations to stream flow rates, diversion of groundwater flow, introduction of exotic plant species, and alterations to disturbance regimes. Wider-scale alterations to the area near trees and specific changes that occur around the trees are important considerations.

In general, there is a great deal of variation in tolerance to construction impacts among tree species, ages, and conditions. It is important to know how a certain tree, based on its species, age, and condition, will respond to different types of disturbance. The trees in the proposed project area are of varying ages and conditions. Mature specimens are typically more sensitive to root disturbance and grade changes. In general, healthy trees will respond better to changes in their growing environment. Trees of poor health or stressed conditions may not be vigorous enough to cope with direct or indirect impacts from construction activities.

Impacts totals presented herein are based on conceptual disturbance limits and development plans as of the date of this Arborist Report. As such, the actual number of trees that are subject to direct and indirect impacts may change as the detailed site planning process proceeds.

### 4.2.1 Project Direct Tree Impacts

For the purposes of this report, direct impacts are those associated with tree removal or encroachment within the dripline. Tree removal is expected to be required when the trunk is located inside or within 2 feet of the proposed limits of grading. Encroachment is expected when soil and roots are disturbed within the tree protected zone (canopy drip line plus 5 feet or 15 feet from trunk, whichever is greater). Table 2 summarizes the total number of trees by species that are expected to be subject to direct construction-related impacts. It should be noted that none of the newly inventoried trees located in area 2 (south of the project site) will be impacted by the proposed project. Locations of impacted trees, by impact type, are presented on the map in Appendix C. Measures to minimize the extent of impact to preserved trees are provided in Appendix D.

**Table 2**
**Summary of All Direct Tree Impacts – Bear Valley Parkway Widening, Escondido**

| Scientific Name | Common Name | Removal | Encroachment |
|---|---|---|---|
| *Fraxinus* sp. | ash tree | 2 | 0 |
| *Grevillea robusta* | silk oak | 1 | 0 |
| *Jacaranda mimosifolia* | jacaranda | 2 | 0 |
| *Juniperus chinensis* | Chinese juniper | 1 | 0 |
| *Phoenix canariensis* | Canary Island date palm | 1 | 0 |
| *Quercus agrifolia* | coast live oak | 28 (14)* | 3 (1)* |
| *Schinus terebinthifolius* | Brazilian pepper | 1 | 0 |
| *Syagrus romanzoffiana* | queen palm | 3 | 0 |
| *Washingtonia robusta* | Mexican fan palm | 3 | 0 |
| **Totals** | | **42 (14)*** | **3 (1)*** |

**Note:**
* Number in parenthesis represents the quantity of removals that meet the City's criteria of a "protected tree" and is included in the totals.

#### Tree Impact Summary

Based on proposed project development plans, it is estimated that 42 (75%) mature and protected trees will require removal, 3 (5%) will experience encroachment into the tree protected zone, 8 (15%) will be indirectly impacted, and 3 (5%) will be preserved in place with no direct impacts. Of the 42 trees identified for removal, 14 meet the criteria for classification as a protected tree, as defined by the City. Of the three encroached-upon trees, one meets the size criteria to be classified as a protected tree.

### 4.2.2 Indirect Tree Impacts

Indirect impacts to trees are the result of changes to the site that may cause tree decline, even when the tree is not directly injured. Site-wide changes affecting trees include diverting runoff and stormwater, creating retention and detention ponds, relocating streams or making improvements to streams, lowering or raising water tables, altering the capacity for soil moisture recharge, removing vegetation, and damming underground water flow (Matheny and Clark 1998). For the purposes of this report, indirect tree impacts are expected for trees within 25 feet of the project's limits of grading and not subject to removal or encroachment. Trees located in fuel modification zones are also typically considered indirectly impacted; however, no trees are located in proposed fuel modification zones that would not be otherwise impacted (removal or encroachment).

Other potential indirect impacts may include firewood harvesting, vandalism, and deliberate or accidental wildfire ignition in oak-willow woodland drainage areas. These potential indirect impacts are not typically considered significant and can be minimized by implementing woodland management and protection measures, including educational material provided to homeowners and long-term management of oak-willow-dominated habitat on the site. For this project, the educational materials along with on-going management and maintenance that will be provided to this biological area are considered adequate to reduce the potential indirect impacts to less than significant.

In total, eight coast live oak trees will be indirectly impacted by the project. Of the eight trees, three are considered protected by the City. None of the ornamental trees are anticipated to be indirectly impacted by the proposed project. Should any of the indirectly impacted trees fail within 5 years of project completion, they should be replaced in accordance with City requirements. Locations of impacted trees, by impact type, are presented on the map in Appendix C.

# 5 MITIGATION

Section 33-1069 of the City's Municipal Code identifies tree replacement standards for projects affecting mature and/or protected trees. Minimum mitigation planting requirements for removal and encroachment on 30 mature trees (1:1 replacement ratio) and 15 protected trees (2:1 replacement ratio) is 60 trees (46 coast live oaks and 14 other suitable native or ornamental species).

## 5.1 Proposed Mitigation Program

The proposed mitigation program was designed to provide mitigation for direct impacts to 30 mature trees and 15 protected trees associated with the proposed project. The goal of the proposed mitigation program is to offset tree impacts through a sustainable, customized plan that will enhance BVP and is suitable for the site. To meet the City's mitigation planting requirements for the removal and encroachment of trees, Dudek recommends planting 60 24-inch box native and ornamental trees species along BVP following completion of the proposed project. Tree species recommended for individual mitigation include coast live oak, western redbud (*Cercis occidentalis*), Desert Museum palo verde (*Parkinsonia* "Desert Museum"), flowering pear (*Pyrus calleryana* "Chanticleer"), and New Zealand Christmas tree (*Metrosideros excelsa*). Use of a variety of species will result in a more robust tree population that is less susceptible to pests and disease that typically are host-species specific.

## 5.2 Mitigation Details

As indicated in Table 3, the total number of plantings required to meet the intent of the City's tree protection and replacement requirements is 60 trees. Therefore, the mitigation program proposes that a minimum of 60 trees (including coast live oak and other suitable native or ornamental species) are planted in areas along BVP, as presented in Appendix E. Table 4 provides recommended replacement species and totals for the 45 individually impacted trees. The 60 landscape trees provide mitigation for the 45 individual tree impacts from the site at a ratio of 1:1 for mature trees and 2:1 for protected trees. The proposed mitigation ratio meets the minimum required City replacement ratio for the removal of 30 mature trees and 15 protected trees. Table 4 provides a list of species that are not invasive, are acceptable by fire agencies, and that are anticipated to perform well along BVP.

**Table 3**
**Landscape Tree Replacement Calculation**

| Trees Impacted | | | | |
|---|---|---|---|---|
| *Tree Type* | *Grading Related* | *Replacement Ratio* | *Replacement Species* | *Total Number Replacement Trees* |
| *Fraxinus* spp. | 2 | 1:1 | Ornamental | 2 |
| *Grevillea robusta* | 1 | 1:1 | Ornamental | 1 |

**Table 3**
**Landscape Tree Replacement Calculation**

| Trees Impacted | | | | |
|---|---|---|---|---|
| *Tree Type* | *Grading Related* | *Replacement Ratio* | *Replacement Species* | *Total Number Replacement Trees* |
| *Jacaranda mimosifolia* | 2 | 1:1 | Ornamental | 2 |
| *Juniperus chinensis* | 1 | 1:1 | Ornamental | 1 |
| *Phoenix canariensis* | 1 | 1:1 | Ornamental | 1 |
| *Quercus agrifolia* | 31 (15) | 1:1 and 2:1 | *Quercus agrifolia* | 46 |
| *Schinus terebinthifolius* | 1 | 1:1 | Ornamental | 1 |
| *Syagrus romanzoffiana* | 3 | 1:1 | Ornamental | 3 |
| *Washingtonia robusta* | 3 | 1:1 | Ornamental | 3 |
| **Minimum City-required mitigation tree plantings** | | | | **60** |

**Table 4**
**Recommended Landscape Planting Quantities**

| Trees Impacted | | | |
|---|---|---|---|
| *Tree Type* | *Common Name* | *Size* | *Replacement Quantity* |
| *Parkinsonia* (Desert Museum) | Desert Museum palo verde | 24-inch box | 3 |
| *Cercis occidentalis* | western redbud | 24-inch box | 4 |
| *Metrosideros excelsa* | New Zealand Christmas tree | 24-inch box | 4 |
| *Pyrus calleryana* (Chanticleer) | flowering pear | 24-inch box | 3 |
| *Quercus agrifolia* | coast live oak | 24-inch box | 46 |
| **Minimum proposed landscape plantings** | | | **60** |

## 5.3 Mitigation Discussion

The total number of mitigation trees proposed (60 trees) for anticipated tree impacts is considered appropriate, and meets the minimum City-required replacement ratio for the removal of 30 mature trees and 16 protected trees. However, should additional trees require removal to accommodate the proposed project, it is recommended that they be replaced in accordance with the City's tree removal mitigation requirement of 1:1 for mature trees and 2:1 for protected trees.

### Tree Relocation

Relocation of impacted trees was analyzed during the tree assessment, and a single tree is considered a candidate. However, tree relocation is not a requirement of the City. As the landscape plan is finalized, if the individual candidate tree can be relocated, it will be evaluated further. Tree relocation is a stressful process for native oaks, and unless they are superior specimens, it is preferable to purchase large, nursery-grown trees as a replacement.

## 5.4 Tree Removal Permit

Consistent with Section 33-1068 of the City's Municipal Code (City of Escondido 2014), a vegetation removal permit is required prior to clearing, pruning, or destroying vegetation, and prior to any encroachments by construction activities that disturb the root system within the dripline of mature trees.

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# 6 CONCLUSIONS

Dudek inventoried and evaluated 56 mature and protected trees within the Bear Valley Parkway widening project site. A total of 45 trees would be impacted by the proposed project. Tree impacts associated with the project would be mitigated through replacement tree planting, as defined in the City's General Plan and in Chapter 33 (Zoning), Article 55 (Grading and Erosion Control) of the City's Municipal Code (Ordinance 2001-21) and in the Conditions of Approval for Sub 13-0003, Sub 13-0010, Sub 13-0011, and Tract 889. In total, 60 trees should be planted to mitigate for project-related impacts. Planting locations, types, and maintenance must be consistent with the Conditions of Approval for Sub 13-0003, Sub 13-0010, Sub 13-0011, and Tract 889. The recommended tree mitigation/replacement meets the minimum requirements of the City's Tree Protection Ordinance (City of Escondido 2014).

**Arborist's Statement**

This report provides conclusions and recommendations based on an examination of the trees and surrounding site by ISA-Certified Arborists. Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees.

No root crown excavations or investigations or internal probing was performed during the tree assessments. Therefore, the presence or absence of internal decay or other hidden inferiorities in individual trees could not be confirmed. It is recommended that any large tree proposed for preservation in an area that receives human use be thoroughly inspected for internal or subterranean decay by a qualified arborist before finalizing preservation plans.

Arborists cannot detect every condition that could possibly lead to the failure of a tree. Trees are living organisms that fail in ways not fully understood. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances or for a specified period. There are no guarantees that a tree's condition will not change over a short or long period due to weather or cultural or environmental conditions. Trees can be managed but not controlled.

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# 7 REFERENCES

City of Escondido. 2012. *City of Escondido General Plan*. May 2012. http://www.escondido.org/general-plan.aspx.

City of Escondido. 2014. Escondido Municipal Code. http://www.qcode.us/codes/escondido/.

ISA (International Society of Arboriculture). 2000. *Guide for Plant Appraisal* (9th Edition).

Matheny and Clark. 1998. *Trees and Development: A Technical Guide to Preservation of Trees During Land Development*. ISBN: 1-881956-20-2. Champaign, Illinois: International Society of Arboriculture. www.isa-arbor.com 183.

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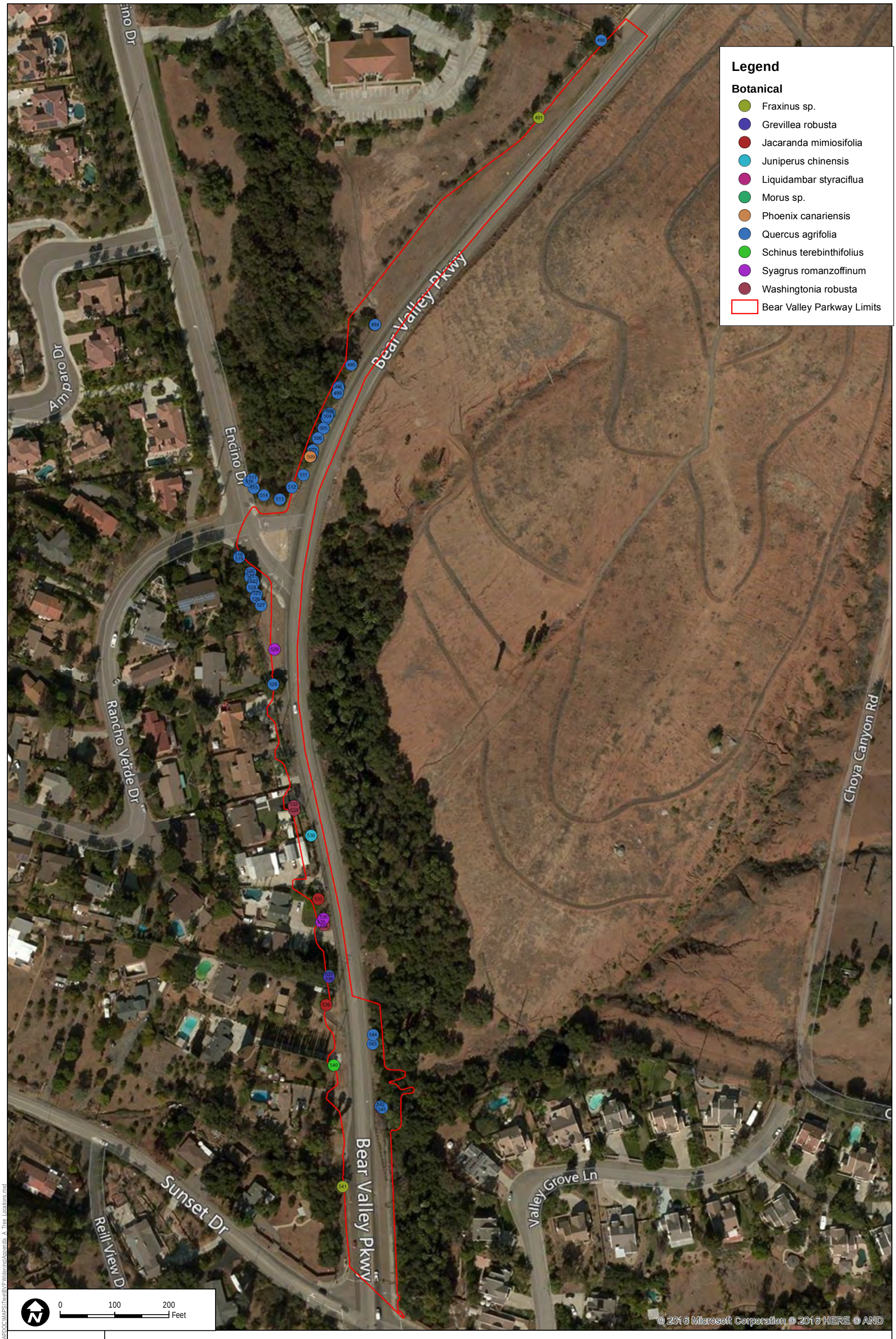
# APPENDIX A

*Tree Locations Exhibit*

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SOURCE: World Imagery, SANGIS

**Appendix A**

## Tree Locations

Bear Valley Parkway Widening Project - Arborist Report

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# APPENDIX B

*Tree Information Matrix*

| Appendix B - Tree Information Matrices | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tree No. | Botanical Name | Common Name | Stems | D.B.H (in.)* | Individual Stem Diameter (in.) | | | | | | Height (ft.) | Canopy (ft.) | Health | Structure | Protection Status | Tree Disposition | Mitigation Requirement (No. of trees) | Notes | X | Y |
| | | | | | D1 | D2 | D3 | D4 | D5 | D6 | | | | | | | | | | |
| 490 | *Quercus agrifolia* | Coast live oak | 1 | 30.0 | 30 | | | | | | 30 | 40 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | 25ft from canopy out to street | 6314356.188 | 1981057.803 |
| 491 | *Fraxinus* sp. | Ash tree | 1 | 8.0 | 8 | | | | | | 30 | 20 | Poor | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6314241.617 | 1980914.709 |
| 492 | *Quercus agrifolia* | Coast live oak | 1 | 8.0 | 8 | | | | | | 20 | 15 | Poor | Poor | Mature | Remove - Bear Valley Parkway | 1 | | 6313941.136 | 1980535.33 |
| 493 | *Quercus agrifolia* | Coast live oak | 1 | 10.0 | 10 | | | | | | 25 | 20 | Poor | Poor | Protected | Remove - Bear Valley Parkway | 2 | | 6313940.799 | 1980534.598 |
| 494 | *Quercus agrifolia* | Coast live oak | 1 | 10 | 10 | | | | | | 25 | 20 | Poor | Poor | Protected | Remove - Bear Valley Parkway | 2 | | 6313941.251 | 1980535.267 |
| 495 | *Quercus agrifolia* | Coast live oak | 1 | 28 | 28 | | | | | | 30 | 40 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | 20ft canopy trunk to street | 6313897.722 | 1980460.991 |
| 496 | *Quercus agrifolia* | Coast live oak | 1 | 14 | 14 | | | | | | 25 | 15 | Fair | Poor | Protected | Remove - Bear Valley Parkway | 2 | | 6313875.322 | 1980421.668 |
| 497 | *Quercus agrifolia* | Coast live oak | 1 | 4 | 4 | | | | | | 20 | 10 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313875.048 | 1980420.714 |
| 498 | *Quercus agrifolia* | Coast live oak | 1 | 21 | 21 | | | | | | 40 | 35 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | 25ft canopy trunk to road | 6313874.558 | 1980418.538 |
| 499 | *Quercus agrifolia* | Coast live oak | 1 | 5 | 5 | | | | | | 20 | 10 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313872.876 | 1980409.568 |
| 500 | *Quercus agrifolia* | Coast live oak | 1 | 10 | 10 | | | | | | 25 | 15 | Fair | Poor | Protected | Remove - Bear Valley Parkway | 2 | | 6313858.088 | 1980372.94 |
| 501 | *Quercus agrifolia* | Coast live oak | 3 | 16.8 | 10 | 10 | 9 | 0 | 0 | 0 | 35 | 25 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | | 6313855.706 | 1980370.735 |
| 502 | *Quercus agrifolia* | Coast live oak | 1 | 6.0 | 6 | 0 | 0 | 0 | 0 | 0 | 15 | 10 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313852.233 | 1980362.636 |
| 503 | *Quercus agrifolia* | Coast live oak | 1 | 5.0 | 5 | 0 | 0 | 0 | 0 | 0 | 20 | 10 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313852.872 | 1980363.541 |
| 504 | *Quercus agrifolia* | Coast live oak | 1 | 8.0 | 8 | 0 | 0 | 0 | 0 | 0 | 25 | 15 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313854.579 | 1980367.438 |
| 505 | *Quercus agrifolia* | Coast live oak | 1 | 10.0 | 10 | 0 | 0 | 0 | 0 | 0 | 30 | 20 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | | 6313846.544 | 1980345.612 |
| 506 | *Quercus agrifolia* | Coast live oak | 2 | 9.2 | 7 | 6 | 0 | 0 | 0 | 0 | 30 | 20 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313836.508 | 1980327.494 |

| Appendix B - Tree Information Matrices | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tree No. | Botanical Name | Common Name | Stems | D.B.H (in.)* | Individual Stem Diameter (in.) | | | | | | Height (ft.) | Canopy (ft.) | Health | Structure | Protection Status | Tree Disposition | Mitigation Requirement (No. of trees) | Notes | X | Y |
| | | | | | D1 | D2 | D3 | D4 | D5 | D6 | | | | | | | | | | |
| 507 | *Quercus agrifolia* | Coast live oak | 2 | 9.2 | 7 | 6 | 0 | 0 | 0 | 0 | 25 | 20 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313827.303 | 1980305.748 |
| 508 | *Quercus agrifolia* | Coast live oak | 1 | 6.0 | 6 | 0 | 0 | 0 | 0 | 0 | 25 | 10 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313826.397 | 1980298.762 |
| 509 | *Quercus agrifolia* | Coast live oak | 2 | 17.7 | 12 | 13 | 0 | 0 | 0 | 0 | 30 | 30 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | 20ft canopy from trunk to road | 6313823.51 | 1980293.344 |
| 510 | *Phoenix canariensis* | Canary island date palm | 1 | 48.4 | 38 | 30 | 0 | 0 | 0 | 0 | 45 | 30 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313822.308 | 1980294.145 |
| 511 | *Quercus agrifolia* | Coast live oak | 2 | 22.7 | 15 | 17 | 0 | 0 | 0 | 0 | 45 | 35 | Poor | Fair | Protected | Remove - Bear Valley Parkway | 2 | | 6313810.013 | 1980259.612 |
| 512 | *Quercus agrifolia* | Coast live oak | 2 | 8.9 | 4 | 8 | 0 | 0 | 0 | 0 | 25 | 20 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313789.065 | 1980237.323 |
| 513 | *Quercus agrifolia* | Coast live oak | 4 | 15.6 | 8 | 9 | 7 | 7 | 0 | 0 | 25 | 20 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | | 6313766.877 | 1980215.82 |
| 514 | *Quercus agrifolia* | Coast live oak | 2 | 21.2 | 15 | 15 | 0 | 0 | 0 | 0 | 30 | 35 | Fair | Fair | Protected | Encroachment - Bear Valley Parkway | 2 | | 6313737.704 | 1980222.359 |
| 515 | *Quercus agrifolia* | Coast live oak | 2 | 14.2 | 9 | 11 | 0 | 0 | 0 | 0 | 20 | 15 | Poor | Fair | Protected | Preservation | N/A | | 6313719.251 | 1980235.998 |
| 516 | *Quercus agrifolia* | Coast live oak | 1 | 11.0 | 11 | 0 | 0 | 0 | 0 | 0 | 30 | 20 | Fair | Poor | Protected | Preservation | N/A | | 6313709.844 | 1980247.646 |
| 517 | *Quercus agrifolia* | Coast live oak | 2 | 17.7 | 12 | 13 | 0 | 0 | 0 | 0 | 30 | 25 | Fair | Fair | Protected | Preservation | N/A | | 6313716.226 | 1980251.904 |
| 518 | *Quercus agrifolia* | Coast live oak | 1 | 7.0 | 7 | 0 | 0 | 0 | 0 | 0 | 15 | 10 | Fair | Fair | Mature | Encroachment - Bear Valley Parkway | 1 | | 6313691.593 | 1980109.89 |
| 519 | *Quercus agrifolia* | Coast live oak | 1 | 7.0 | 7 | 0 | 0 | 0 | 0 | 0 | 15 | 10 | Fair | Fair | Mature | Encroachment - Bear Valley Parkway | 1 | | 6313691.791 | 1980108.802 |
| 520 | *Quercus agrifolia* | Coast live oak | 5 | 38.8 | 24 | 19 | 18 | 10 | 12 | 0 | 35 | 50 | Fair | Poor | Protected | Indirect - BVP | N/A | | 6313712.939 | 1980080.048 |
| 521 | *Quercus agrifolia* | Coast live oak | 1 | 4.0 | 4 | 0 | 0 | 0 | 0 | 0 | 15 | 10 | Fair | Poor | Mature | Indirect - BVP | N/A | | 6313712.426 | 1980071.601 |
| 522 | *Quercus agrifolia* | Coast live oak | 1 | 4.0 | 4 | 0 | 0 | 0 | 0 | 0 | 15 | 10 | Fair | Poor | Mature | Indirect - BVP | N/A | | 6313718.659 | 1980065.075 |
| 523 | *Quercus agrifolia* | Coast live oak | 1 | 7.0 | 7 | 0 | 0 | 0 | 0 | 0 | 20 | 10 | Fair | Poor | Mature | Indirect - BVP | N/A | | 6313718.969 | 1980061.204 |
| 524 | *Quercus agrifolia* | Coast live oak | 3 | 12.0 | 3 | 6 | 10 | 0 | 0 | 0 | 25 | 20 | Fair | Fair | Protected | Indirect - BVP | N/A | | 6313715.981 | 1980053.29 |
| 525 | *Quercus agrifolia* | Coast live oak | 1 | 4.0 | 4 | 0 | 0 | 0 | 0 | 0 | 15 | 20 | Fair | Fair | Mature | Indirect - BVP | N/A | | 6313724.503 | 1980040.185 |
| 526 | *Quercus agrifolia* | Coast live oak | 2 | 5.7 | 4 | 4 | 0 | 0 | 0 | 0 | 20 | 20 | Fair | Fair | Mature | Indirect - BVP | N/A | | 6313723.083 | 1980035.273 |
| 527 | *Quercus agrifolia* | Coast live oak | 2 | 12.8 | 10 | 8 | 0 | 0 | 0 | 0 | 20 | 25 | Fair | Fair | Protected | Indirect - BVP | N/A | | 6313732.294 | 1980021.018 |

| Appendix B - Tree Information Matrices | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tree No. | Botanical Name | Common Name | Stems | D.B.H (in.)* | Individual Stem Diameter (in.) | | | | | | Height (ft.) | Canopy (ft.) | Health | Structure | Protection Status | Tree Disposition | Mitigation Requirement (No. of trees) | Notes | X | Y |
| | | | | | D1 | D2 | D3 | D4 | D5 | D6 | | | | | | | | | | |
| 528 | *Quercus agrifolia* | Coast live oak | 1 | 33.0 | 33 | 0 | 0 | 0 | 0 | 0 | 35 | 30 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | canopy about 18ft from trunk to road | 6313754.588 | 1979874.624 |
| 529 | *Syagrus romanzoffinum* | Queen palm | 1 | 8.0 | 8 | 0 | 0 | 0 | 0 | 0 | 20 | 15 | Good | Good | Mature | Remove - Bear Valley Parkway | 1 | | 6313757.171 | 1979939.609 |
| 530 | *Juniperus chinensis* | Chinese juniper | 2 | 11.7 | 10 | 6 | 0 | 0 | 0 | 0 | 25 | 15 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313823.974 | 1979596.884 |
| 531 | *Washingtonia robusta* | Mexican fan palm | 1 | 14.0 | 14 | 0 | 0 | 0 | 0 | 0 | 30 | 10 | Good | Good | Mature | Remove - Bear Valley Parkway | 1 | | 6313793.057 | 1979644.578 |
| 532 | *Washingtonia robusta* | Mexican fan palm | 1 | 14.0 | 14 | 0 | 0 | 0 | 0 | 0 | 30 | 10 | Good | Good | Mature | Remove - Bear Valley Parkway | 1 | | 6313792.026 | 1979652.431 |
| 533 | *Jacaranda mimiosifolia* | Jacaranda | 1 | 10.0 | 10 | 0 | 0 | 0 | 0 | 0 | 40 | 30 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313836.891 | 1979481.289 |
| 534 | *Washingtonia robusta* | Mexican fan palm | 1 | 15.0 | 15 | 0 | 0 | 0 | 0 | 0 | 40 | 15 | Good | Good | Mature | Remove - Bear Valley Parkway | 1 | | 6313847.494 | 1979433.26 |
| 535 | *Syagrus romanzoffinum* | Queen palm | 1 | 9.0 | 9 | 0 | 0 | 0 | 0 | 0 | 20 | 15 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313843.172 | 1979439.447 |
| 536 | *Syagrus romanzoffinum* | Queen palm | 1 | 8.0 | 8 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313846.678 | 1979445.464 |
| 537 | *Quercus agrifolia* | Coast live oak | 1 | 26.0 | 26 | 0 | 0 | 0 | 0 | 0 | 45 | 35 | Fair | Fair | Protected | Remove - Bear Valley Parkway | 2 | | 6313856.815 | 1979340.071 |
| 538 | *Grevillea robusta* | Silk oak | 1 | 32.0 | 32 | 0 | 0 | 0 | 0 | 0 | 30 | 30 | Fair | Poor | Mature | Remove - Bear Valley Parkway | 1 | | 6313857.337 | 1979337.475 |
| 539 | *Jacaranda mimiosifolia* | Jacaranda | 1 | 11.0 | 11 | 0 | 0 | 0 | 0 | 0 | 40 | 25 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313851.708 | 1979286.652 |
| 540 | *Schinus terebinthifolius* | Brazillian pepper | 1 | 10.0 | 10 | 0 | 0 | 0 | 0 | 0 | 30 | 25 | Fair | Poor | Mature | Remove - Bear Valley Parkway | 1 | | 6313865.619 | 1979176.554 |
| 541 | *Fraxinus* sp. | Ash tree | 1 | 16.0 | 16 | 0 | 0 | 0 | 0 | 0 | 45 | 30 | Fair | Fair | Mature | Remove - Bear Valley Parkway | 1 | | 6313882.012 | 1978953.301 |
| 542 | *Quercus agrifolia* | Coast live oak | 3 | 5.2 | 3 | 3 | 3 | 0 | 0 | 0 | 15 | 10 | Fair | Poor | Mature | Remove - Bear Valley Parkway | 1 | | 6313951.611 | 1979100.584 |
| 543 | *Quercus agrifolia* | Coast live oak | 5 | 5.5 | 3 | 3 | 2 | 2 | 2 | 0 | 15 | 10 | Fair | Poor | Mature | Remove - Bear Valley Parkway | 1 | | 6313937.017 | 1979214.984 |
| 544 | *Quercus agrifolia* | Coast live oak | 6 | 2.4 | 1 | 1 | 1 | 1 | 1 | 1 | 15 | 10 | Fair | Poor | Mature | Remove - Bear Valley Parkway | 1 | | 6313937.462 | 1979231.683 |

| Appendix B - Tree Information Matrices | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tree No. | Botanical Name | Common Name | Stems | D.B.H (in.)* | Individual Stem Diameter (in.) | | | | | | Height (ft.) | Canopy (ft.) | Health | Structure | Protection Status | Tree Disposition | Mitigation Requirement (No. of trees) | Notes | X | Y |
| | | | | | D1 | D2 | D3 | D4 | D5 | D6 | | | | | | | | | | |
| 545 | *Quercus agrifolia* | Coast live oak | 4 | 3.9 | 2 | 3 | 1 | 1 | 0 | 0 | 15 | 10 | Fair | Poor | Mature | Remove - Bear Valley Parkway | 1 | | 6313954.229 | 1979098.198 |

# APPENDIX C

*Tree Impacts*


DUDEK

SOURCE: World Imagery, SANGIS

**Appendix C**

**Tree Impacts**

7833

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Bear Valley Parkway Widening Project - Arborist Report

Path: Z:\Projects\7833\11\MAPDOC\MAPS\Tree\BVP-Widening\Appendix_C_Tree_Locations.mxd

# APPENDIX D

*Tree Protection Measures*

*The following sections are included as general guidelines for tree protection from construction impacts. The measures presented should be monitored by arborists and enforced by contractors and developers for maximum benefit to the trees.*

## Tree Protection Measures Prior to Construction

Prior to any grading activity, preserved trees that fall within 500 feet of construction activity shall be protected by fencing and signage. All contractors shall be made aware of the tree protection measures.

Fencing: A 4-foot high, orange-webbing, polypropylene barricade fence with tree protection signs shall be erected around all trees (or tree groups) to be preserved. The protective fence should be installed ten feet beyond the dripline of the tree. This will delineate the tree protection area and prevent unwanted activity in and around the trees in order to reduce soil compaction in the root zones of the trees and other damage from heavy equipment. The fence webbing shall be secured to 6-foot, heavy gauge t-bar line posts, pounded in the ground a minimum of 18-inches and spaced 8-feet on-center. Fence webbing will be attached to t-bar posts with minimum 14-gage wire fastened to the top, middle and bottom of each post. Tree protection signs should be attached to every fourth post. The contractor shall maintain the fence to keep it upright, taut, and aligned at all times. Fencing shall be removed only after all construction activities are complete.

Pre-Construction Meeting: A pre-construction meeting shall be held between all contractors (including grading, tree removal/pruning, builders, etc.) and the arborist. The arborist will instruct the contractors on tree protection practices and answer any questions. All equipment operators and spotters, assistants, or those directing operators from the ground, shall provide written acknowledgement of their receiving tree protection training. This training shall include information on the location and marking of protected trees, the necessity of preventing damage, and the discussion of work practices that will accomplish such.

## Protection and Maintenance During Construction

Once construction activities have begun the following measures shall be adhered to:

Equipment Operation and Storage: Avoid heavy equipment operation around the trees. Operating heavy machinery around the root zones of trees will increase soil compaction, which decreases soil aeration and subsequently reduces water penetration in the soil. All heavy equipment and vehicles should, at minimum, stay out of the fenced tree protection zone, unless where specifically approved in writing and under the supervision of a Certified Arborist.

Storage and Disposal: Do not store or discard any supply or material, including paint, lumber, concrete overflow, etc. within the protection zone. Remove all foreign debris within the protection zone; it is important to leave the duff, mulch, chips, and leaves around the retained trees for water retention and nutrients. Avoid draining or leakage of equipment fluids near retained trees. Fluids such as: gasoline, diesel, oils, hydraulics, brake and transmission fluids, paint, paint thinners, and glycol (anti-freeze) should be disposed of properly. Keep equipment parked at least 50 feet away from retained trees to avoid the possibility of leakage of equipment fluids into the soil. The effect of toxic equipment fluids on the retained trees could lead to decline and death.

Grade Changes: Grade changes, including adding fill, are not permitted within the tree protection zone, without special written authorization and under supervision by a Certified Arborist. Lowering

the grade within this area will necessitate cutting main support and feeder roots, jeopardizing the health and structural integrity of the tree(s). Adding soil, even temporarily, on top of the existing grade will compact the soil further, and decrease both water and air availability to the trees' roots.

Moving Construction Materials: Care will be taken when moving equipment or supplies near the trees, especially overhead. Avoid damaging the tree(s) when transporting or moving construction materials and working around the tree (even outside of the fenced tree protection zone). Above ground tree parts that could be damaged (e.g., low limbs, trunks) should be flagged with red ribbon. If contact with the tree crown is unavoidable, prune the conflicting branch(es) using ISA standards.

Root Pruning: Except where specifically approved in writing, all trenching shall be outside of the fenced protection zone. Roots primarily extend in a horizontal direction forming a support base to the tree similar to the base of a wineglass. Where trenching is necessary in areas that contain tree roots, prune the roots using a Dosko root pruner or equivalent. All cuts should be clean and sharp, to minimize ripping, tearing, and fracturing of the root system. The trench should be made no deeper than necessary.

Irrigation: Trees that have been substantially root pruned (30% or more of their root zone) will require irrigation for the first twelve months. The first irrigation should be within 48 hours of root pruning. They should be deep watered every two to four weeks during the summer and once a month during the winter (adjust accordingly with rainfall). One irrigation cycle should thoroughly soak the root zones of the trees to a depth of 3 feet. The soil should dry out between watering; avoid keeping a consistently wet soil. Designate one person to be responsible for irrigating (deep watering) the trees. Check soil moisture with a soil probe before irrigating. Irrigation is best accomplished by installing a temporary above ground micro-spray system that will distribute water slowly (to avoid runoff) and evenly throughout the fenced protection zone ***but never soaking the area located within 6- feet of the tree trunk, especially during warmer months***.

Pruning: Do not prune any of the trees until all construction is completed. This will help protect the tree canopies from damage. All pruning shall be completed under the direction of an ISA Certified Arborist and using ISA guidelines. Only dead wood shall be removed from tree canopies.

Washing: During construction in summer and autumn months, wash foliage of trees adjacent to the construction sites with a strong water stream every two weeks in early hours before 10:00 a.m. to control mite and insect populations.

Inspection: An ISA Certified Arborist shall inspect the impacted preserved trees on a monthly basis during construction. A report comparing tree health and condition to the original, pre-construction baseline shall be submitted following each inspection. Photographs of representative trees are to be included in the report on a minimum annual basis.

## Maintenance After Construction

Once construction is complete the fencing may be removed and the following measures performed to sustain and enhance the vigor of the preserved trees.

Mulch: Provide a 4-inch mulch layer under the canopy of trees. Mulch should include clean, organic mulch that will provide long-term soil conditioning, soil moisture retention, and soil temperature control.

Pruning: The trees will not require regular pruning. Pruning should *only* be done to maintain clearance and remove broken, dead or diseased branches. Pruning shall only take place following a

recommendation by an ISA Certified Arborist and performed under the supervision of an ISA Certified Arborist. No more than 15% of the canopy shall be removed at any one time. All pruning shall conform to International Society of Arboriculture standards.

Watering: The natural trees that are not disturbed should not require regular irrigation, other than the twelve months following substantial root pruning. However, soil probing will be necessary to accurately monitor moisture levels. Especially in years with low winter rainfall, supplemental irrigation for the trees that sustained root pruning and any newly planted trees may be necessary. The trees should be irrigated *only* during the winter and spring months.

Watering Adjacent Plant Material: All plants near the trees shall be compatible with water requirements of said trees. The surrounding plants should be watered infrequently with deep soaks and allowed to dry out in-between, rather than frequent light irrigation. The soil shall not be allowed to become saturated or stay continually wet. Irrigation spray shall not hit the trunk of any tree. A 60-inch dry-zone shall be maintained around all tree trunks. An above ground micro-spray irrigation system is recommended over typical underground pop-up sprays.

Washing: Periodic washing of the foliage is recommended during construction but no more than once every two weeks. Washing should include the upper and lower leaf surfaces and the tree bark. This should continue beyond the construction period at a less frequent rate with a high-powered hose only in the early morning hours. Washing will help control dirt/dust buildup that can lead to mite and insect infestations.

Spraying: If the trees are maintained in a healthy state, regular spraying for insect or disease control should not be necessary. If a problem does develop, an ISA Certified Arborist should be consulted; the trees may require application of insecticides to prevent the intrusion of bark-boring beetles and other invading pests. All chemical spraying should be performed by a licensed applicator under the direction of a licensed pest control advisor.

Inspection: All trees that were impacted during construction within the tree protection zone should be monitored by an ISA Certified Arborist for the first five years after construction completion. The Arborist shall submit an annual report, photograph each tree and compare tree health and condition to the original, pre-construction baseline.

# APPENDIX E

*Potential Planting Locations*


DUDEK

SOURCE: World Imagery, SANGIS

**Appendix E**

**Potential Planting Locations**

7833

2016

Bear Valley Parkway Widening Project - Arborist Report

Path: Z:\Projects\7833\11\MAPDOC\MAPS\Tree\BVP Widening\Appendix_E_Tree_Locations.mxd