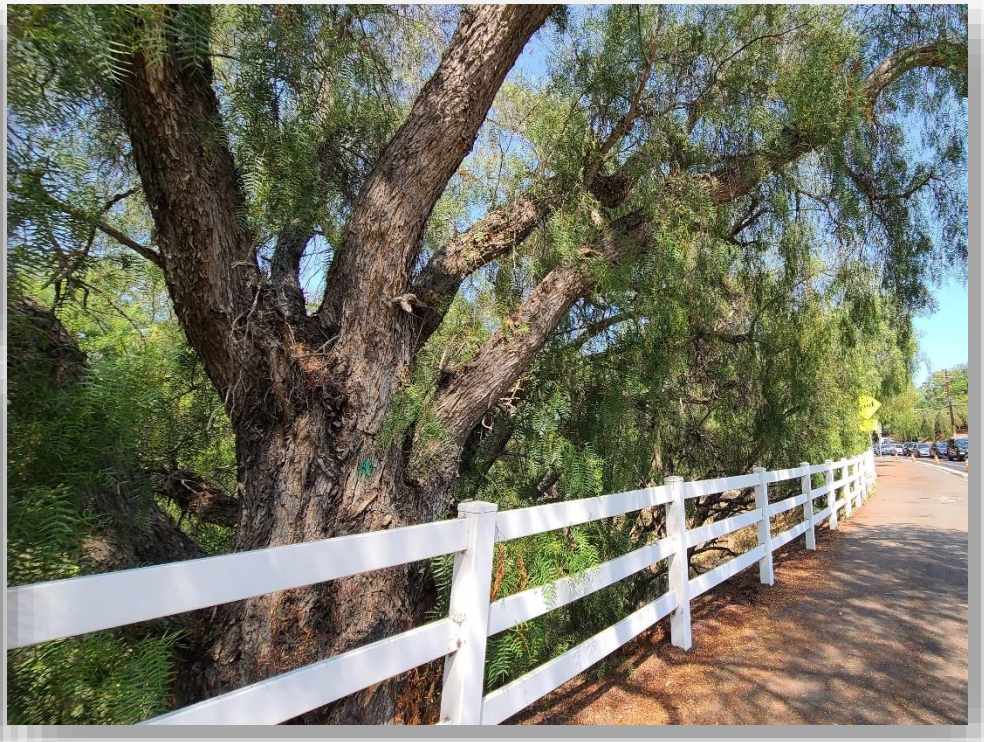
Tree Survey and Arborist Report

for the Dapplegray Project Site Portion of the PV Peninsula Water Reliability Project)
in the City of Rolling Hills Estate Within the Los Angeles County, California



Prepared for:

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Report Date: August 23, 2021

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SECTION 1: EXECUTIVE SUMMARY

This arborist survey has been performed at the request of ELMT for a proposed road widening project in the City of Rolling Hills Estates, California in Los Angeles County. The field survey associated with this report was performed on July 15th, 2021.

The subject trees were tagged with an aluminum tag containing a unique number. As part of this survey, details of each tree were recorded documenting their species, stature, health, local environment as well as conditions in which they occur. In all, 67 trees were assessed onsite involving *seven* distinct species. Within the study area, 67 trees were assessed comprised of *seven* distinct species within the project site. No trees onsite were native to California, and *three* are of an invasive type, the *blue gum (Eucalyptus globulus), Peruvian pepper (Schinus molle), and the Brazilian pepper (Schinus terebinthifolia)*.

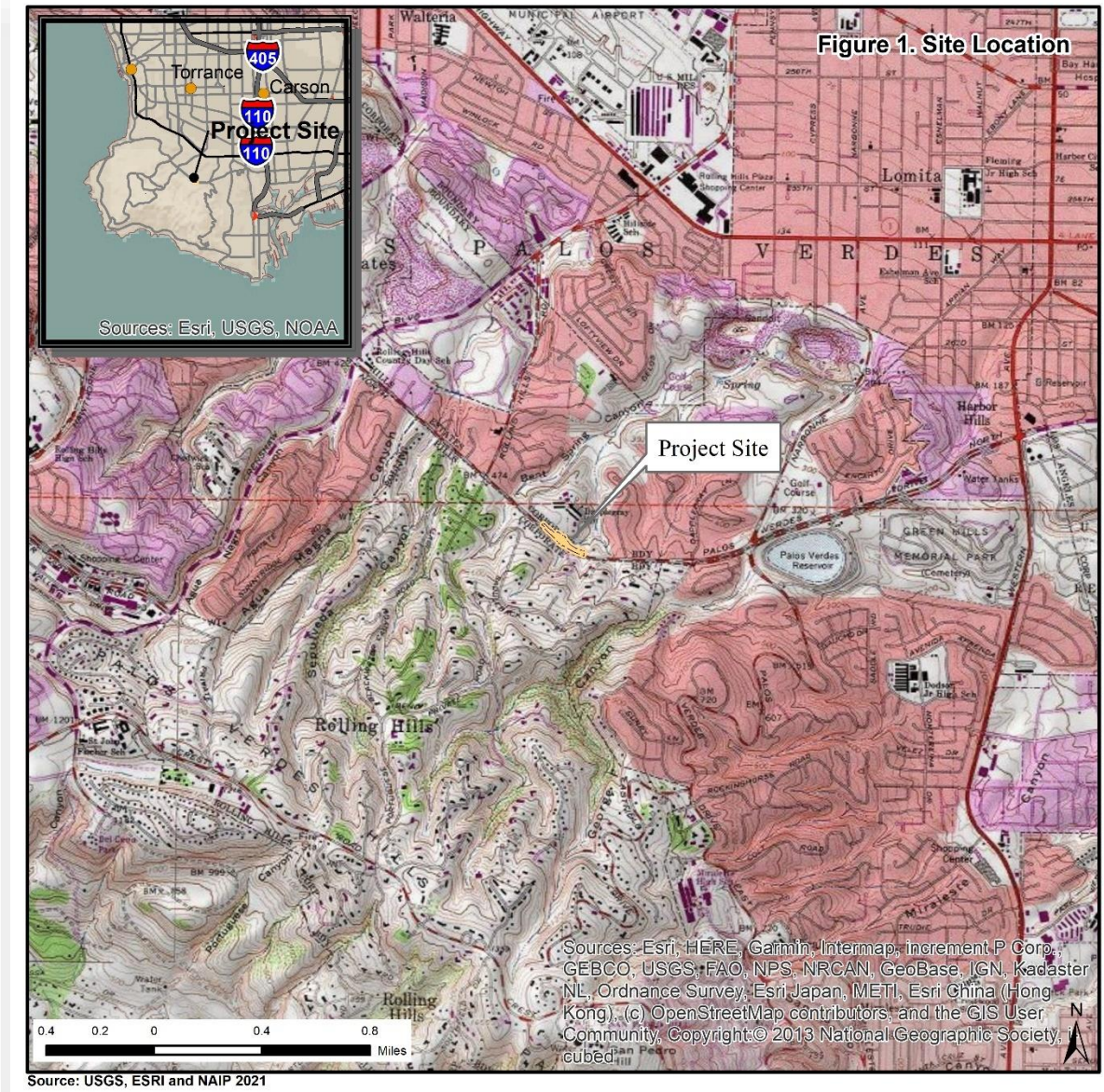
Due mostly to poor placement (volunteer sprouting) and lack of maintenance, 32 (47.8%) of the trees onsite are in poor health, lack aesthetics or structural integrity, or pose a hazard. No trees surveyed are native or qualify as having any special status.

The City of Rolling Hills Estates Municipal Code outlines provisions and guidelines for tree removal, installation, preservation, and maintenance within the City. All trees that are intended for removal as part of a project require a removal permit and must be approved by the Planning Director. The Director must approve final mitigation involving replacement tree species and size as well.

SECTION 2: BACKGROUND

2.1 - Project Location and Description

The site is an approximate 1,000 linear foot stretch of Palos Verdes Drive North immediately south of Dapplegray Elementary School in the City of Rolling Hills Estate; it is 3.5 miles southwest of FWY 110 and Highway 1 (Pacific Coast Highway) in the City of Rolling Hills Estates in the County of Los Angeles (see Figure 1 below). The proposed project includes the improvement of Palos Verdes Drive North south of Dapplegray Elementary School that includes the widening of the street and the installation of utilities beneath it.



2.2 - Site and Vicinity Characteristics

The elevation of the project area ranges from 440 to 500 feet above mean sea level. For the vicinity, the Sunset Zone is 22, and the USDA Hardiness Zone includes both 10a and 10b. As indicated in Table 1 below, one distinct soil series occurs within the site boundary. This soil series is described by the Natural Resource Conservation Service as alluvium, derived from granite (see Table 1 below).

Table 1. Soils on Site

Map Unit Symbol	Map Unit Name	Acres	Percent
1273	1273—Dapplegray-Urban land-Lunada complex, 20 to 55 percent slopes **Setting** • *Landform:* Hillslopes • *Landform position (two-dimensional):* Backslope • *Landform position (three-dimensional):* Side slope, tread, riser • *Parent material:* Human-transported material consisting mostly of colluvium and/or residuum weathered from calcareous shale **Typical profile** • *^A - 0 to 4 inches:* loam • *^Cu1 - 4 to 22 inches:* loam • *^Cu2 - 22 to 79 inches:* clay loam **Properties and qualities** • *Slope:* 15 to 35 percent • *Drainage class:* Well drained • *Depth to water table:* More than 80 inches	2.3	100.0%
Totals for Area of Interest*		**2.3**	**100.0%**

The site includes a major roadway, a center median, and adjacent setbacks containing vegetation. The vegetation communities onsite include non-native, ornamental trees and bushes as the project area is completely landscaped (see Plate 1 below).

2.3 - Assignment and Scope of Survey

The task assigned to Golden State Land & Tree Assessment (GSL&T) was to conduct a tree survey and health assessment of all trees within the project area as defined in Section 2.1 above. Tree inclusion was based on a tree's potential to have its root crown and/or canopy present within the project boundary. The survey was performed to identify the different tree species found within the project boundary, assess their health, and provide insight as to which trees may be retained as part of the planned improvement. A health assessment was performed cataloging the health and stature parameters of each tree onsite. This included, but was not limited to; recording total diameter at breast height (DBH), canopy spread, tree height, apparent disease/decay, other signs of potential hazard, and pest damage. A potential risk assessment was also

conducted keeping public safety in mind. All documentation in this report is in compliance with standards and requirements published by the International Society of Arboriculture (ISA). This report includes recommendations and mitigation measures meant to satisfy all applicable ordinances and permit guidelines.

2.4 - Survey Method and Health Assessment

Prior to the field survey, the City of Rolling Hills Estates' website was accessed to review specific tree protection guidelines. An aerial photograph was used as a visual guide during the assessment. A handheld Global Positioning System (GPS) device and GPS-enabled smartphone with digitized project boundaries (.kmz file) were used to identify the location of each subject tree. The crown-width was estimated by pacing, and the height of each subject tree was visually estimated using a tangent height gauge. These data were recorded on field sheets, and associated aluminum numeric tags were affixed to trees on the north side at BH for later reference. Aerial views were captured using a DJI Mavic Air 2 controlled by a DJI Fly smartphone app.

Tree status (relative condition, stature, and health) was conducted by ISA arborist/biologist, George Wirtes from ground level with the aid of binoculars. Canopy spread was assessed by pacing. To estimate wood integrity, a rubber mallet was occasionally used to assess possible decay within the tree stem and flare. As indicated earlier, no invasive procedures were performed. Visual characteristics were recorded on field sheets, and twig/leaf samples as well as digital photographs were taken as needed to assure accurate identification. Overall health and general appearance of each tree was numerically rated (Health/General Appearance Rating - 1-Good, 2-Fair, 3-Poor, 4-Decline/dead) based on the aforementioned conditions. The local environment was also assessed in relation to the tree species and conditions of its location (Local Environment Rating - 1-Good, 2-Fair, 3-Poor, 4-Inappropriate). For this rating, the species was considered in relation to the environment. Other conditions were also considered such as fence lines, utilities, competing canopies, grade cuts/slope, etc.

The position of the subject trees was recorded using a GPS whose data was exported into GIS for periodic illustration over aerial photographs. In many cases, trees were not accessible due to their location behind an equestrian fence or on a steep grade. In these cases, no metal tag was affixed and the tree was given an identity number starting with NT (no tag). This situation mostly presented itself south of Palos Verdes Drive, in the vicinity of the intersection or just east of it near the adjacent southern ravine (eastern tributary of Bent Spring Canyon).

2.5 - Hazard Risk Assessment

The International Society of Arboriculture (ISA) recommends a Hazard Assessment to be included with arborist reports. Such an assessment is an important component of any report and is critical if trees are to be located near public areas such as parks, walkways, residences, and buildings. This tree assessment includes a *Level 2 Basic Risk Assessment* as defined by ISA Best Management Practices. This type of assessment is limited to evaluating trees and obvious signs of defects such as:

- Dead or broken structures

- Cracks
- Weakly attached branches and co-dominant stems
- Missing or decayed wood
- Unusual tree architecture or distribution
- Obvious loss of root support

A risk rating is assigned to each tree based on its defects, aesthetics, apparent health, location and the nearby targets (people or property). As defined by ISA the ratings are defined below:

1. *Low* - Low-risk category applies when consequences are negligible, and likelihood is unlikely, or consequences are minor, and likelihood is somewhat likely.

2. *Moderate* - Moderate risk situations are those for which consequences are minor and likelihood is very likely or likely or likelihood is somewhat likely, and the consequences are significant or severe.

3. *High* - High-risk situations are those for which consequences are significant and likelihood is very likely or likely or Consequences are severe, and likelihood is likely.

4. *Extreme* - The extreme risk category applies in situations in which failure is imminent and there is a high likelihood of impacting the target and the consequence of the failure is severe. The tree risk assessor should recommend that mitigation measures be taken as soon as possible.

It is impossible to maintain a tree free of risk. A tree is considered hazardous when it has a structural defect that predisposes it to failure, and it is located near a target.

- A target is person or property that may sustain potential injury or property damage if a tree or a portion of a tree fails.

- Target areas include sidewalks, walkways, roads, vehicles, structures, playgrounds, or any other area where people are likely to gather.

- Structurally sound and healthy trees may also be hazardous if they interfere with utilities, roadways, walkways, and sidewalks, or if they obstruct motorist vision.

- Common hazards include dead and diseased trees, dead branches including bark, stubs from topping cuts, broken branches (hangers), multiple leaders, tight-angled crotches, and an unbalanced crown. Evaluation of risk is as follows: 1-Good, 2-Fair, 3-Poses risk, and 4-Hazardous.

2.6 - Local Tree Regulation (Rolling Hills Estates Municipal Code (RHEMC)

The City's Municipal Code (Code) addresses the maintenance and protection of trees within the City. No indication was found within the Code of any particular tree species afforded protection by the City. Significant portions within the Municipal Code are provided below.

2.6.1 - Preparation of approved types list (RHEMC 12.20.020)

The superintendent shall prepare for approval by the council the list containing the types and varieties of trees for planting along streets and in public areas within the city.

2.6.2 - New and replacement trees—Types designated (RHEMC 12.20.040)

All new and replacement trees shall be confined to shade and ornamental trees from the current list and shall include all such new and replacement plantings in public areas, streets, planting easements and planting strips.

2.6.3 - Injury of prohibited (RHEMC 12.20.070)

No person shall remove, trim, prune or cut any street tree except as provided herein. No person shall injure or destroy any tree planted or maintained by the city, by any means including, but not limited to the following:

- By constructing a concrete, asphalt, brick or gravel sidewalk or otherwise filling up the ground area around any such tree so as to shut off its air, light or water from its roots;
- By piling building material and equipment, or other substance and materials around any such tree so as to cause injury thereto;
- By pouring any deleterious matter on or around any tree or on the surrounding ground, lawn or sidewalk;
- By posting any sign, poster or notice on any such tree, tree stake or guard, or by fastening guide wires, cables, ropes, nails, screws or other devices to any tree, tree stake or guard;
- By causing or encouraging any fire near or around any such tree.

2.7 - Limitations and Exceptions of Assessment

This survey was conducted in a manner that draws upon past education, acquired knowledge, training, experience, and research. It was conducted to the greatest extent feasible, and although the information gathered reduces risk of tree failure/decline, it does not fully remove it.

During the survey performed on July 15th, 2021, not all trees were accessible for close examination; this was due to factors that include obstruction (equestrian fencing, heavy brush/understory) and steep inclines that compromised safety. Despite these obstacles, every attempt was made to view the specimen trees to the greatest extent feasible in order to determine each tree's health and viability to remain as part of the project. Obviously, 100% of these trees were not observable and presents a limit to the degree of assessment that could be made.

No diagnostic testing was performed during this assessment. This survey associated with this Arborist Report included no soil sampling, root excavation, trunk coring/drilling or any other invasive procedure. The determinations of damage due to pest infestation and decay were made solely on outward appearance and inspection of the tree structures. Not all tree defects may be visible from the ground. Epiphytic growth can also obscure defects on the stem and in the canopy of a tree.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms subject to attack by disease, insects, fungi and other forces of nature. Many aspects of tree health and environmental conditions are often not detectable (internal decay, poor root anchoring, etc.). Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time.

The statements made in this report do not take into account the effects of climate/wind extremes, vandalism, or accident (whether physical, chemical, or fire). In addition, this area is known to have periodic, high velocity Santa Ana winds from transient high-pressure ridges. Golden State Land & Tree Assessment cannot, therefore, accept any liability in connection with these factors, or where prescribed work is not carried out in a correct and professional manner in accordance with current ISA good practice. The authority of this report ceases at any stated time limit within it, after one year from the date of the survey (if none stated), when any site conditions change, or after pruning (or other activity) not specified in this report.

The goal of this survey is to recommend measures to limit risk exposure while enhancing the beauty and health of each tree onsite. Clients may choose to accept or disregard the recommendations contained within this report, or seek additional advice. ***To live near trees is to accept some degree of risk. The only way to eliminate all risk is to remove all trees onsite***.

SECTION 3: SUBJECT TREES AND OBSERVATIONS

During the site survey, specific measurements and parameters of all trees onsite were recorded on tree assessment worksheets; these data have been transferred into the table in Appendix A at the end of this document.

3.1 - Species Assessment

During the survey, tree assessments were conducted according to general ISA and City requirements; GPS waypoints were recorded, as were specific details of each tree. The tree species represented onsite are described in detail below, and a comprehensive table is provided in Appendix A of this report. In general, the species onsite were appropriate for the location. However, Peruvian peppers are known to have invasive properties; this feature has resulted in many instances of competing canopies due to volunteer sprouting within the site. A species profile is provided below for each species observed along with their count.

Common Name ***Botanical Name***	**Species Profile**	**Qty.**
Afghan pine *Pinus eldarica*	This species is drought resistant. It is native to Armenia, Azerbaijan, Georgia, Northern Iran and Northern Iraq and thrives in hot dry climates and poor soils. Its growth habit is erect or spreading and requires ample growing space. It has a conical Shape with evergreen foliage. Height: 30 - 80 feet. Width: 15 - 25 feet. Growth Rate: 36 Inches per Season. Longevity 50 to 150 years. Exposure Full Sun to Partial Shade. It tolerates moist to Dry Soil. Its branch Strength Rated as Medium Strong and its root Damage Potential Rated as Moderate. It is susceptible to Aphids.	1
blue gum ** *Eucalyptus globulus*	This species has a compact and Erect or Spreading growth habit and requires ample growing space. It has an oval or Rounded Shape with evergreen foliage. Height: 40 - 70 feet. Width: 20 - 30 feet. Growth Rate: 36+ Inches per Season. Longevity 50-to-150-year Exposure Full Sun to Partial Shade. It tolerates moist to dry soil and is drought tolerant. It tolerates clay, loam or sand texture. Susceptible to beetle borers and thrip, oak root rot, phytophthora and root rot. Its branch strength rated as medium and its root damage potential rated as moderate.	2
Brazilian pepper tree ** *Schinus terebinthifolia*	This species Requires a moderate amount of water. Cal-IPC (California Invasive Plant Council) classifies the invasiveness of this plant as limited. It is native to South America and grows erect or spreading with a low umbrella shape canopy. It has evergreen foliage. Height: 15 - 30 feet. Width: 15 - 30 feet. Growth Rate: 24 Inches per Season. Longevity 50 to 150 years. It prefers full sun to partial shade. It prefers moist to dry clay, loam or sand textured soil. Its branch strength is rated as medium weak and its root damage potential is rated as moderate.	1
Italian stone pine *Pinus pinea*	This species native to Mediterranean Region. It is a broad, flat-topped tree with age and needs ample room. It is a source for pine nuts. Its growth habit is erect or spreading and requires ample growing space. Its form is conical, rounded or umbrella shape with evergreen foliage. Height: 40 - 80 feet. Width: 40 - 60 feet. Growth Rate: 24 to 36 Inches per Season. Longevity 50 to 150 years. Exposure Full Sun to Partial Shade. Moist to Dry Soil. Drought tolerant.	9

	Loam or Sand Texture. Susceptible to Aphids, Phytophthora, Root Rot and Pitch Canker. Branch Strength Rated as Weak to Medium Weak. Root Damage Potential Rated as Moderate.	
lemon-scented gum *Corymbia citriodora*	This species is smog tolerant. Bark can be a litter problem. Its habit is erect or spreading and requires ample growing space. It has evergreen foliage. Height: 80 - 160 feet. Width: 50 - 100 feet. Growth rate: 36 or more inches per season. Longevity 50 to wet to dry soil. 150 years. This species is susceptible to beetle borers and thrip, oak root rot, phytophthora and root rot. Branch strength rated as medium and root damage potential rated is moderate.	11
Peruvian pepper ** *Schinus molle*	This species tolerates saline soil and smog. Susceptible to Texas root rot, especially in desert. Cal-IPC (California Invasive Plant Council) classifies the invasiveness of this plant as limited. It is native to Northern South America and has Evergreen foliage. Height: 25 - 50 feet. Width: 25 - 40 feet. Growth Rate: 36 Inches per Season. Longevity 50 to 150 years. This species tolerates full sun and it prefers partial shade and moist to dry soil. It is drought tolerant and can be planted in clay, loam or sand textured soils. Susceptible to aphids, psyllid, scales and thrip, phytophthora, root rot, sooty mold and verticillium. Its branch strength is rated as medium weak and root damage potential is rated as high.	39
Shamel ash *Fraxinus uhdei*	This species is resistant to oak root fungus. Susceptible to Texas root rot and is used widely in Southern California. It is native to Mexico, and had a growth habit that is erect or spreading and requires ample growing space. Oval Shape. Has Evergreen to Partly Deciduous foliage. Height: 80 feet. Width: 60 feet. Growth Rate: 36 or More Inches per Season. Longevity 50 to 150 years. It tolerates exposure full sun to partial shade and moist to dry soil. It tolerates clay, loam or sand texture. Susceptible to aphids, scales and white fly, fusarium, root rot, sooty mold and verticillium. Its branch strength is rated as medium weak and root damage potential is rated as high.	4
** Cal-IPC (California Invasive Plant Council) invasive tree species		

Source: UFEI 2021

3.2 - Observations

In all, 67 trees consisting of *seven* distinct species were assessed (see Figure 2 below). The Peruvian pepper represented 58.2% of the species present followed by the lemon scented gum (16.4%) and Italian stone pine (13.4%). The age of the trees onsite ranged from mature to senescent and the health from rigorous to dead. Because of aggressive volunteer sprouting, neglect and poor maintenance, 32 (47.8%) of the trees onsite must be removed due to potential for failure, poor form and aesthetics, declining health or damage.

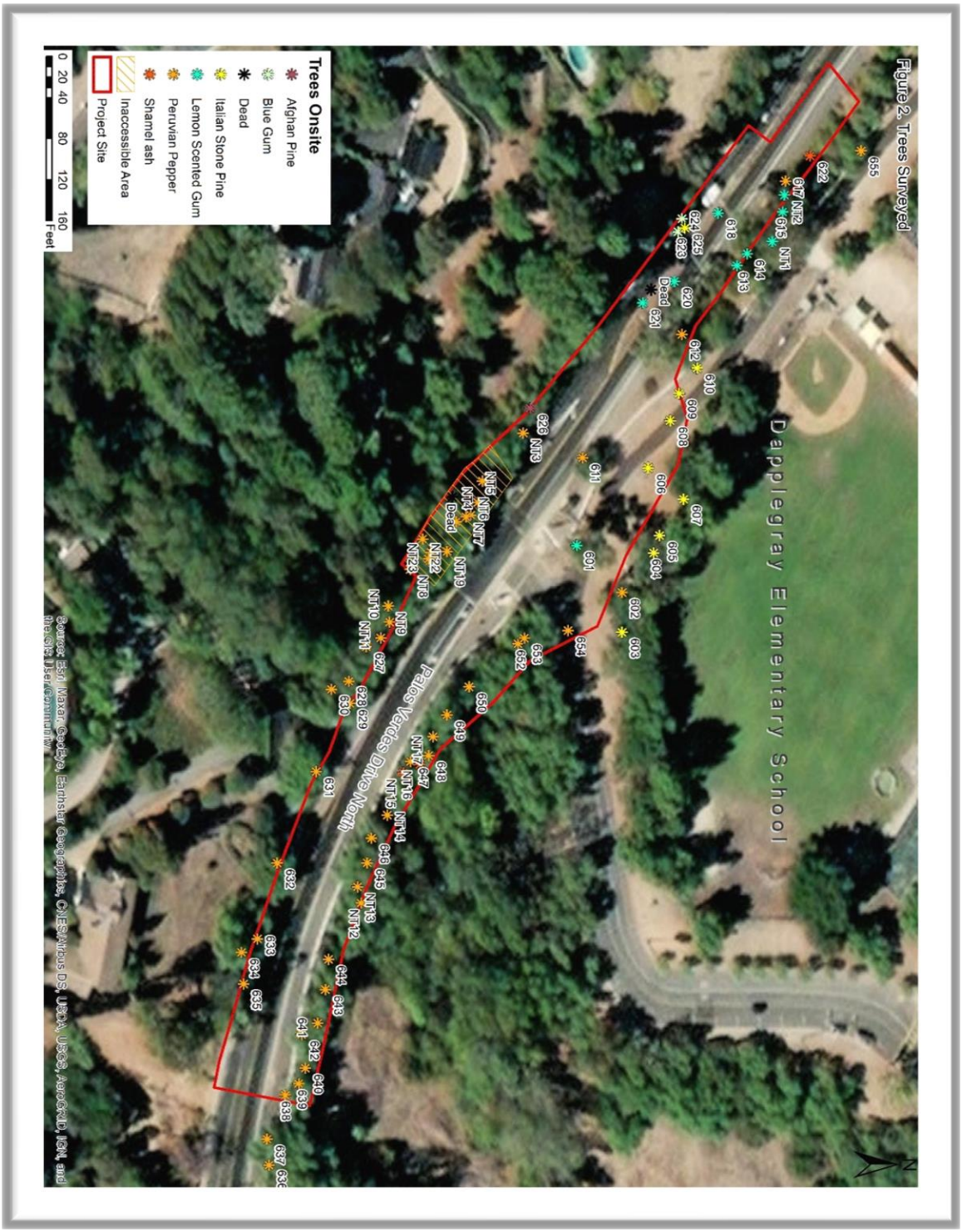


Figure 2. Trees Surveyed
Trees Onsite
Afghan Pine
Blue Gum
Dead
Italian Stone Pine
Lemon Scented Gum
Peruvian Pepper
Shamel ash
Inaccessible Area
Project Site
0 20 40 80 120 160
Feet
Dapplegray Elementary School
Palos Verdes Drive North
N
Source: Esri, Maxar, Geo Eye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

3.2.1 - Noted Concerns

Plate 1. This a view of a co-dominant stem with poor crotch strength (#605).

Plate 2. This is a view of internal deadwood within an unclosed branch cut (#611).

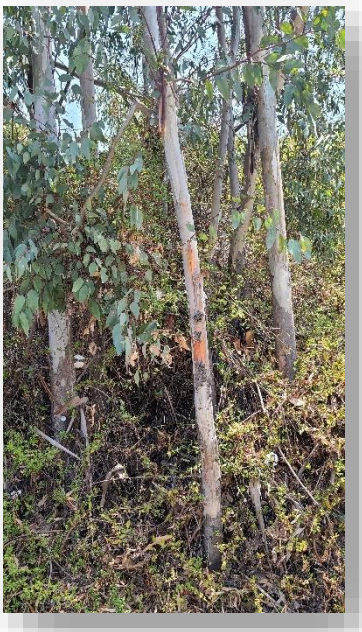


Plate 3. This is a view of a dense tree stand with competing canopies (#615).

Plate 4. This is a view of a fallen stem that continues to sprout (#617).

Plate 5. This is a view of a poorly trimmed tree in which limbs were topped and excess canopy had been removed (#618).

Plate 6. This is a view of decay noted within the lower stem and flare of a tree compromising structural integrity (#620).

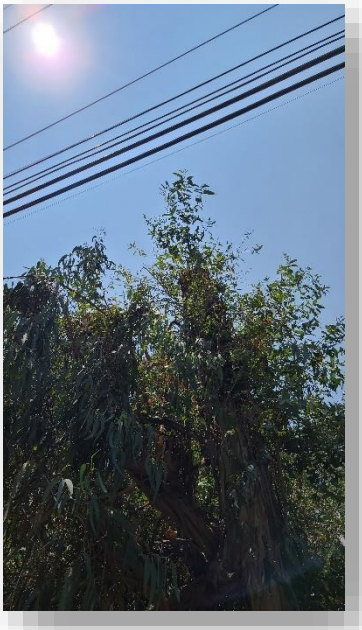


Plate 7. This is a view of a topped tree trimmed to allow for overhead wires, but contributing to water sprouting (#624).

Plate 8. This is a view of a poorly devoped canopy an stem of a tree (#NT3).

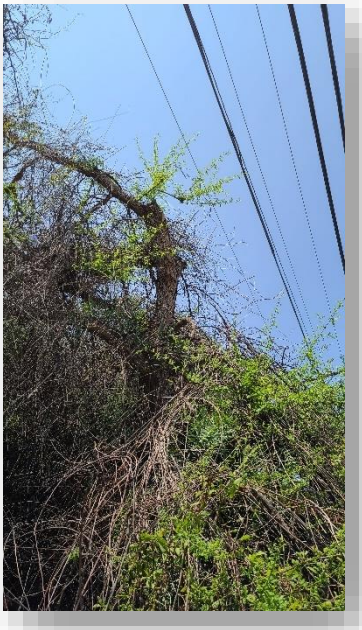


Plate 9. This is a view of a tree that has been severely trimmed to allow for overhead utilities (#NT4).

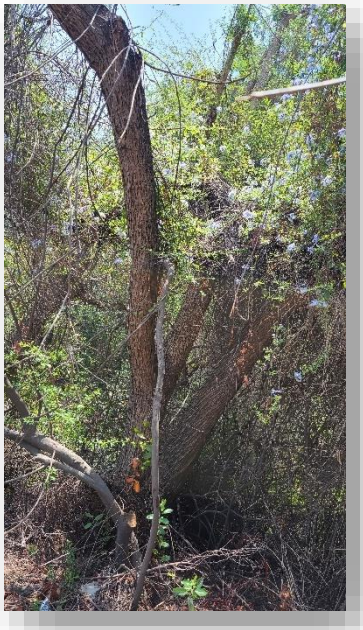


Plate 10. This is a view of a poorly developed canopy (#NT6).

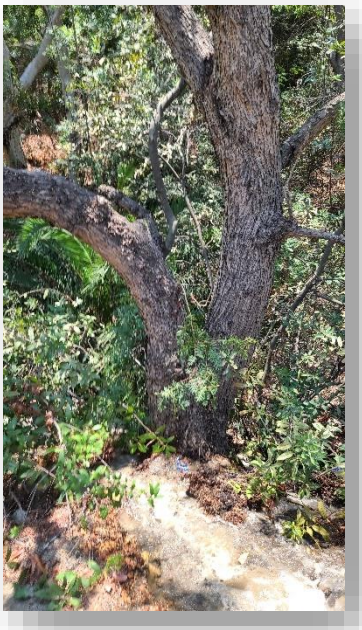


Plate 11. This is a view of a cement base that had been added atop the root crown of a tree following an erosional event due to a ruptured water pipe beneath the street (#NT6).

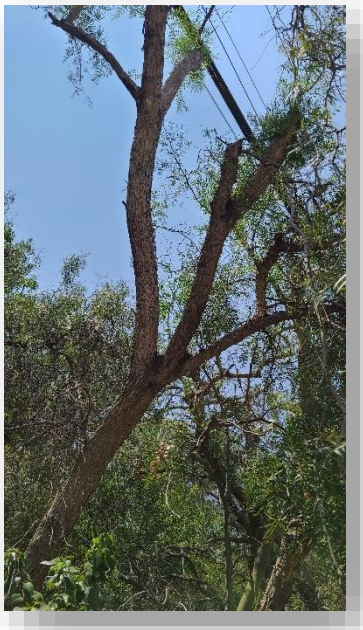


Plate 12. This is a view of utilities running close to branches and foliage within the crown of a tree (#NT10).

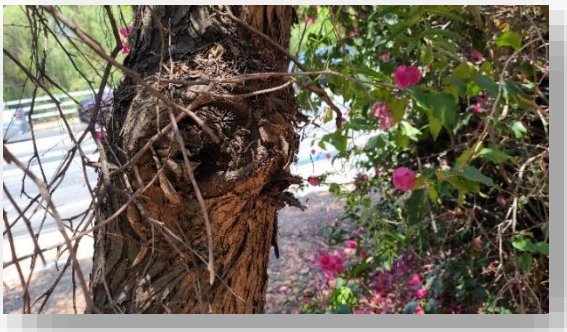


Plate 13. This is a view of a decayed wood within an unclosed branch cut (#629).

Plate 14. This is a view of a large cavity within the stem of a tree (#639).

Plate 15. This is a view of a palm growing beneath the canopy of a tree (#643).

Plate 16. This is a view of a compromised flare of a tree due to an adjacent walkway (#651).

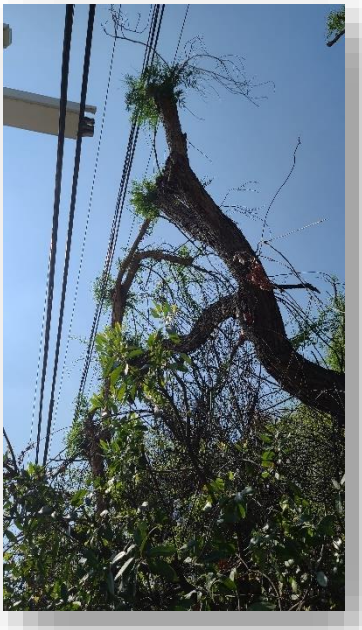


Plate 17. This is a view of a topped tree that has resulted in water sprouting (#NT18).

Plate 18. This is a view of a tree canopy currently contacting utilities posing a potentially hazardous condition (#NT22).

3.2.2 - Summary of Observations

In general, the trees in the median of Palos Verdes Drive were over-pruned where an excessive amount of the canopy had been removed and branches where topped. Along the southern margin of the street, many of the Peruvian pepper trees had been topped as well, in order to maintain a level of safety given the overhead utilities present. Despite this effort, there were canopies observed in contact with overhead lines. As noted in section 2.7 above, many of the trees within this area were not directly accessible and had to be observed using binoculars from various views. Due to the significant congestion of the trees within this area beneath the utilities, competing canopies in many cases, resulted in poorly formed tree structures increasing the risk of potential failure.

SECTION 4: DISCUSSION AND RECOMMENDATIONS

4.1 - Conclusion

Trees were assessed based on their presence (including canopy and root crown) within the project boundary (survey area) as shown in Figure 2 above. Within the survey area, 67 trees were assessed comprised of *seven* distinct species within the project site. No trees onsite were native to California, and *three* are of an invasive type, the *blue gum (Eucalyptus globulus), Peruvian pepper (Schinus molle), and the Brazilian pepper (Schinus terebinthifolia)* according to Cal-IPC (California Invasive Plant Council). No trees onsite have any special designations *as found within the City's Code*. If consistent with the site plan, 35 of the 67 trees (52.2%) are in fair to good health and may be preserved.

4.2 - Discussion

As indicated, many of the trees onsite are in fair to poor condition due to congestive volunteer sprouting as well as other factors (maintenance and care). In addition, a significant number of trees within the survey area had been topped, either to allow for overhead utilities or to remove excessive canopy growth. In addition, many trees onsite were dead or present a potential hazard to people and property given their structural integrity and proximity to utility lines. Of the trees present onsite, *32* (*47.8*%) should be considered for removal due to poor form, health, aesthetics or increased liability for failure. Finally, Peruvian pepper trees can grow into a large specimen and are not typically utility line friendly.

4.3 - Recommendations

4.3.1 - Non-status Tree Replacement

Removal of living, native and non-native trees may result a biological impact. Recommended mitigation for non-status living trees removal is replanting in accordance with the City's Municipal Code as provided in Section 2.6 above and detailed within the City's website. Removal of any trees must be preceded by authorization from the City's Planning Department.

4.3.2 - Trees Preserved

If it is decided to preserve any trees onsite, an ongoing maintenance and monitoring plan is strongly recommended; this is to ensure public safety and minimize liability due to potential tree failure. Strategic pruning compliant with ISA standards must be performed to subordinate non-primary, codominant stems, and canopy deadwood should be removed. In addition, many trees were inappropriately pruned (topped, excessively pruned). It is also recommended that companies contracted to perform tree work be vetted and trained to assure work is performed according to ISA standards and in compliance with City regulation.

4.3.3 - Migratory Bird Treaty Act

Pursuant to the Migratory Bird Treaty Act (MBTA) and CDFG Code, removal of any trees, shrubs, or any other potential nesting habitat should be conducted outside the avian nesting season. The nesting season

generally extends from early February through August, but can vary slightly from year to year based upon seasonal weather conditions.

4.3.4 - Tree Protection during Construction

Building/grading near trees requires that they are healthy at the start of the project for the stand to recover well. Some older trees have little tolerance for root damage or other stress factors. Younger, more vital trees are more tolerant of changes in their surroundings. However, each change in soil compaction, irrigation, under plantings, and other condition takes some of an older tree's strength and vigor and further diminishes its health.

1. The main stresses and risks of construction are:
    - Soil compaction
    - Lack of water or changes in the site hydrology
    - Change of grade in the root zone
    - Physical damage to tree roots and structure
    - Dumping of potentially toxic construction wastes
    - Lack of pest control and other care
    - Dust
    - Human error
2. Mature trees take a long time to heal from, or respond to, injury. It could take 10 years for some trees to make a visible improvement in health after construction impacts occur. On the other hand, it could take 10 years for a tree to visibly start declining after cutting roots, compacting the soil, or raising the grade.
3. Dripline fencing must be placed a minimum of 1 foot in radius from the tree per 1 inch of diameter at breast height (for example, 6-inch trunk = 6 feet protection radius/12 feet diameter). In addition, dripline fencing must be erected so that it is visible and structurally sound enough to deter construction equipment, foot traffic, and the storing of equipment under tree canopies.
4. Raising or lowering the grade in the root zone of trees can be fatal or ruin the health of trees for years to come. Grade change and soil compaction force out the oxygen and literally press the life out of the soil. A retaining wall can be used to minimize the amount of the root zone that is affected, but it is essential that the footing is not continuous. Gravel and aeration pipes should be placed inside the retaining wall before the fill is placed. Consult with a qualified civil engineer for proper design calculations.
5. Trenching within the protection zone must be avoided wherever possible. Most of the roots are in the top 1 to 2 feet of soil, and trenching can sever a large percentage of roots.
6. Oil from construction equipment, cement, concrete washout, acid washes, paint, and solvents are toxic to tree roots. Signs should be posted on the fencing around trees notifying contractors of the fines for dumping. Portable latrines that are washed out with strong detergents can damage the

fine roots of the trees. Portable latrines should not be placed near trees, nor where frequent and regular foot traffic to them will compact the soil below the trees.

7. Construction creates large amounts of dust, and the oaks and any other trees to be preserved will need to be kept clean. Dust reduces photosynthesis on all trees. Strict dust control measures must be implemented during construction to minimize this impact, and an occasional rinsing with a solution of water and insecticidal soap will help control pests.

SECTION 5: QUALIFICATIONS OF ARBORIST

Mr. Wirtes is a Certified Arborist (CH-08084) with the International Society of Arboriculture (ISA) and a Registered Consulting Arborist (#738) with the American Society of Consulting Arborists. Mr. Wirtes was ISA certified in November of 2005 and has conducted numerous tree assessments for residential properties that involve oak and other tree species. Most notably, Mr. Wirtes has created an oak regeneration plan for a 2.3-acre project site in Ventura County as mitigation within a specific plan development as well as a Joshua tree preservation plan in the City of Palmdale, CA. He has performed numerous tree surveys is Riverside, San Bernardino, and Los Angeles Counties on sites with as many as 400 trees. Mr. Wirtes' education includes a Bachelor of Science in Biology and a Master of Science in Environmental Science from California State University at Fullerton.

I certify that the details stated herein this report are true and accurate:

George J Wirtes

George Wirtes, MS, RCA 738
ISA Certified Arborist, CH-08084

SECTION 6: REFERENCES

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Appendix A - Tree Species Observed

Note - This tree survey and the details recorded below are meant to characterize the trees within the property. The assessment is not exhaustive, but is a balance between the competing forces of in-depth description and cost effectiveness. The goal was to accumulate enough data to make a judgment as to what role, if any, the existing trees may have in the proposed project.

Tree Tag #	Species[1]	DBH (inches)							Height (feet)	Canopy Width (feet)				Canopy Width (feet) (North on top)	Gen App	Env	Risk	Conclusion
		1st Trunk	2nd Trunk	3rd Trunk	4th Trunk	5th Trunk	6th Trunk	Total		N	E	S	W					
601	Lemon Scented Gum	15						15	50	20	8	20	18	20 / 18 / 8 / 20	2	2	2	Prune
Some upper canopy dead wood, Good Vigor																		
602	Peruvian Pepper	12						12	16	4	6	12	6	4 / 6 / 6 / 12	2-3	3	2-3	Remove
Competing canopy, Poor aesthetics, Decay mid-stem, on slope																		
603	Italian Stone Pine	34						34	40	15	30	24	22	15 / 22 / 30 / 24	2	2	2-3	Prune
On slope, well-trimmed, Some upper canopy dead wood, good vigor and form																		
604	Italian Stone Pine	54						54	40	28	24	15	30	28 / 30 / 24 / 15	2-3	3	2-3	Prune
Topped, Good vigor, On slope, Poor aesthetics																		
605	Italian Stone Pine	14	12					26	55	18	16	20	19	18 / 19 / 16 / 20	3	3	3	Remove
Co-dominant stem, Poor crotch, good form and vigor, Increased liability																		
606	Italian Stone Pine	18						18	55	15	20	14	10	15 / 10 / 20 / 14	2-3	2-3	3	Remove
Crowded canopy, Sweep lean, Eroded roots on fence																		
607	Italian Stone Pine	30						30	35	25	16	24	22	25 / 22 / 16 / 24	2-3	2-3	2-3	Prune
Good form and vigor, On slope																		
608	Italian Stone Pine	20						20	60	14	10	25	8	14 / 8 / 10 / 25	2	2	2-3	Prune
At fence line, uneven canopy																		
609	Italian Stone Pine	16						16	28	0	10	18	14	0 / 14 / 10 / 18	3	3-4	3	Remove
Crowded canopy, Poor form, Decreased liability																		
610	Italian Stone Pine	36						36	32	35	16	30	34	35 / 34 / 16 / 30	2	2-3	2-3	Prune
Good form and vigor, Some crowded canopy																		
611	Peruvian Pepper	13						13	27	14	10	16	10	14 / 10 / 10 / 16	2	2	2	Prune
Good form and vigor																		
612	Peruvian Pepper	16						16	38	22	12	12	20	22 / 20 / 12	2	2	2-3	Prune
Good form and vigor, Branch scar																		

														12				
613	Lemon Scented Gum	9						9	35	8	6	8	8	8	2	2	2	Prune
Young, Good vigor and form														8 6 8				
614	Lemon Scented Gum	4						4	22	6	6	6	6	6	2	2	2	Prune
Young, good vigor and form														6 6 6				
NT 1	Lemon Scented Gum	7						7	33	8	10	12	0	8	2	2	2	Prune
Move North 8'														0 10 12				
615	Lemon Scented Gum	7	6	6	6	4	4	33	36	5	5	5	5	5	1-2	3	2	Remove
Sprouter-complex, competing canopy, poor prognosis														5 5 5				
616	Lemon Scented Gum	30	9	6				45	80	20	30	28	32	20	2	2-3	3	Prune
Herbivores, Good form and vigor, Structured root sprouters, GPS move 6', Assess liability if preserving														32 30 28				
NT2	Lemon Scented Gum	4						4	37	6	8	5	3	6	2	3	2	Remove
Competing canopy														3 8 5				
617	Peruvian Pepper	9	9	10	8			36	28	16	34	14	20	16	3-4	3	3	Remove
Stem laying on slope, Topped, Poor aesthetics														20 34 14				
618	Lemon Scented Gum	12						12	38	4	6	5	4	4	2	2-3	2-3	Prune
Over trimmed														4 6 5				
619	Lemon Scented Gum	12						12	38	4	5	4	5	4	2	3	2-3	Prune
Over trimmed														5 5 4				
620	Lemon Scented Gum	13						13	28	8	11	10	6	8	3	2-3	2-3	Remove
Over trimmed, large area of decay at flare and lower stem														6 11 10				
621	Lemon Scented Gum	17						17	38	10	6	10	8	10	2	2-3	2-3	Prune
Over trimmed														8 6 10				
622	Shamel Ash	4.5	4.5	4.5	4.5			18	15	10	11	10	12	10	3	3	2-3	Remove

Topped, Multi-stem, Poor form, In utility line														12	11	10			
623	Blue Gum	8						8	12	16	5	0	6	6	16	5	0	3	3-4	3	Remove
Poor growth and form, Poor aesthetics, In utility line																			
624	Blue Gum	11						11	16	10	15	4	4	4	10	15	4	3	3	3	Remove
Topped, Poor aesthetics, In utility line																			
625	Italian Stone Pine	11						11	15	16	10	8	15	15	16	10	8	2-3	2-3	2-3	Prune
Good form and vigor, Topped, In utility line																			
626	Afghan Pine	11						11	16	0	23	0	0	0	0	23	0	3-4	3-4	3	Remove
Poor stature, Laying on slope, Danger near power pole																			
NT3	Peruvian Pepper	10	8					18	12	16	10	18	16	16	16	10	18	2-3	2-3	3	Remove
Topped, Poor aesthetics																			
NT4	Peruvian Pepper	15						15	22	6	12	16	12	12	6	12	16	3	3	3	Remove
Beneath utility lines, Inappropriate for location, Poor form																			
NT5	Peruvian Pepper	14						14	20	8	14	18	16	16	8	14	18	3	3	3	Remove
Beneath utility lines, Inappropriate for location, Poor form																			
NT6	Peruvian Pepper	15	16					31	18	10	10	16	18	18	10	10	16	3	3	3	Remove
Beneath utility lines, Inappropriate for location, Poor form, eroded base from utility water spill																			
NT7	Peruvian Pepper	18						18	34	10	16	12	10	10	10	16	12	2-3	3	2-3	Prune
Inappropriate location, Trim to save, Strategic prune																			
NT8	Peruvian Pepper	22	16	7				45	40	10	16	12	18	18	10	16	12	2-3	2-3	4	Remove
Erosion at North footing, good form and vigor																			
NT9	Peruvian Pepper	11	10	9				30	40	18	24	12	16	16	18	24	12	2-3	2-3	3	Prune
On slope, good form and vigor																			
NT10	Peruvian Pepper	10						10	24	8	6	12	14	14	8	6	12	3	3	3	Remove
Poor form, Decay at mid-stem																			
NT11	Peruvian Pepper	8						8	16	10	0	10	8	8	10	0	10	3	3	3	Remove
Lean, Crowded canopy																			
627	Peruvian Pepper	14	8	8				30	19	10	6	10	8	8	10	6	10	2-3	3	3	Remove
Decay, Dead stem, Sprouter, Topped due to utility lines																			

628	Peruvian Pepper	36						36	28	4	16	18	18	4	3	2-3	3-4	Remove
Decay in stem, Senescent														18 16 18				
629	Peruvian Pepper	10	11					21	18	8	12	12	8	8	3	3	3	Remove
Co-dominant stem, In decline, Decay mid-stem														8 12 12				
630	Peruvian Pepper	17	24					41	24	16	20	20	11	16	2-3	2-3	3	Remove
Upper canopy dead wood, Decline, Senescent, Increased dead wood in stem														11 20 20				
631	Peruvian Pepper	37						37	23	14	22	20	26	14	2-3	2-3	2-3	Remove
Internal decay, Poor vigor and form, Topped, Poor prognosis														26 22 20				
632	Peruvian Pepper	28						28	20	10	26	18	32	10	2-3	2-3	2-3	Prune
Trimmed for utilities, good vigor, Topped														32 26 18				
633	Peruvian Pepper	34						34	26	15	10	28	30	15	2-3	2-3	2-3	Prune
Near utility poles, Some upper canopy dead wood														30 10 28				
634	Peruvian Pepper	12						12	22	15	12	18	2	15	3	3	3	Remove
Near utility lines, In decline														2 12 18				
635	Peruvian Pepper	10						10	16	15	9	12	8	15	2-3	2-3	4	Prune
Leaning against lines, Dent on root crown, Trim immediately														8 9 12				
636	Peruvian Pepper	6	8					14	24	10	20	20	8	10	2	2	2	Prune
Co-dominant stem, good form and vigor														8 20 20				
637	Peruvian Pepper	57						57	48	28	32	26	20	28	2-3	2-3	2-3	Prune
Senescent, Good form and vigor, Trim for safety														20 32 26				
638	Peruvian Pepper	10						10	32	12	10	18	12	12	2	2	2	Prune
Good form and vigor														12 10 18				
639	Peruvian Pepper	11	9					20	22	18	6	17	24	18	2-3	2-3	2-3	Prune
Good form and vigor, Some internal dead wood														24 6 17				
640	Peruvian Pepper	8	7					15	14	15	10	15	8	15	2-3	3	3	Prune
Co-dominant stem, Trim for safety														8 10 15				
641	Peruvian Pepper	8	4					12	22	0	14	16	8	0	2	2-3	2-3	Prune
Crowded canopy, Off-balance canopy														8 14 16				
642	Peruvian Pepper	16						16	22	14	16	10	8	14	2-3	2-3	2-3	Prune
Good form and vigor														8 16				

														10				
643	Peruvian Pepper	20						20	30	12	14	18	20	12	2-3	2-3	2-3	Prune
Mexican Fan Palm at base, good form														20 14 18				
644	Peruvian Pepper	40	8					48	32	19	18	16	22	19	2-3	2-3	2-3	Prune
Good form and vigor														22 18 16				
NT12	Peruvian Pepper	8	12	10				30	21	5	12	18	6	5	3	3	3	Remove
Lean due to crowded canopy, Decline, May be able to save, Prognosis														6 12 18				
NT13	Peruvian Pepper	32						32	48	18	30	28	10	18	3	3	3	Remove
Failed branch, internal decay														10 30 28				
645	Peruvian Pepper							34	36	26	24	22	18	26	2-3	2-3	2-3	Prune
Path partially covering root crown														18 24 22				
646	Peruvian Pepper							16.5	36	18	10	22	24	18	2-3	3	3	Remove
Large areas of decay at mid-stem														24 10 22				
NT14	Shamel Ash	4	4	3.5	3			14.5	36	16	12	18	12	16	2-3	3	2-3	Prune
Good vigor, subordinate secondary stem														12 12 18				
NT15	Shamel Ash	4	3	3				10	25	6	6	4	4	6	2	3	2	Remove
Competing canopy, poor location, growing in understory														4 6 4				
NT16	Shamel Ash	4.5						4.5	21	6	8	7	4	6	2	3	2	Remove
Competing canopy, poor location, growing in understory														4 8 7				
647	Peruvian Pepper	42						42	40	20	30	32	32	20	2-3	3	2-3	Remove
On slope, upper canopy deadwood														32 30 32				
NT17	Brazilian Pepper	7						7	48	6	6	8	6	6	3	3	2	Remove
Rooted under Peruvian pepper, poor form														6 6 8				
648	Peruvian Pepper	34	8					42	50	20	23	25	19	20	2-3	3	2-3	Prune
Growing in understory, poor form, rooted lateral branch														19 23 25				
649	Peruvian Pepper	32						32	50	16	0	28	23	16	2-3	2-3	2-3	Prune
Large specimen, some upper canopy deadwood, senescent														23 0 28				
650	Peruvian Pepper	34						34	50	18	18	21	30	18	2-3	2-3	2-3	Prune
Large specimen, senescent														30 18 21				
651	Peruvian Pepper	26	44	18				88	42	30	40	30	40	30	2-3	3	3	Remove

Large specimen, good vigor, compromised flare due to walkway, increased liability															40 30 40				
652	Peruvian Pepper	14						14	36	2	18	10	20		20 2 10 18	2-3	2-3	3-4	Remove
Lean, off-set canopy, Uplifted root crown																			
653	Peruvian Pepper	13						13	28	6	5	18	23		23 6 18 5	2-3	2-3	2-3	Prune
Internal deadwood, good form and vigor																			
654	Peruvian Pepper	17						17	32	10	0	25	21		21 10 25 0	2-3	3	2-3	Remove
Offset canopy, competing canopy, poor footing at path																			
655	Peruvian Pepper	12						12	22	5	10	20	18		18 5 20 10	2-3	3	2-3	Prune
Offset canopy																			
NT18	Peruvian Pepper	15	16					31	23	9	18	6	6		6 9 6 18	3	3	3	Remove
Topped due to utility lines, co-dominant stems, poor canopy development																			
NT19	Peruvian Pepper	4	10	11				25	23	6	8	10	15		15 6 10 8	3	3	3	Remove
Co-dominant stems, poor form and canopy development, utility line interference, stem decay																			
NT20	Peruvian Pepper	4						4	10	3	4	1	3		3 3 1 4	2-3	3	3	Remove
Co-dominant stems, poor form and canopy development, utility line interference, mid-stem decay																			
NT21	Peruvian Pepper	4	5					9	23	0	3	4	2		2 0 4 3	2-3	3	2-3	Remove
Co-dominant stems, poor form and canopy development, utility line interference, stem decay																			
NT22	Peruvian Pepper	18	6					24	28	8	20	15	10		10 8 15 20	3	3	3	Remove
Large specimen, in decline,																			
NT23	Peruvian Pepper	15						15	30	10	8	10	18		18 10 10 8	3	3	3	Remove
Poor canopy development, topped due to utility line, decay noted																			