CERTIFIED ARBORIST REPORT

March 19, 2019
Revised October 31, 2019

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PROJECT LOCATION:
9th Street and Vineyard
Rancho Cucamonga, CA

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Introduction

Three office/warehouse buildings totaling 236,564 square feet are proposed for parcels north of East 9th Street and west of the Cucamonga Creek Channel in the City of Rancho Cucamonga (hereafter referred to as "the city"). Required is the demolition of the existing buildings and removal of all plant material. This report addresses the "heritage trees" within the project boundaries, as well as potentially hazardous trees requiring cautious removal. The basic criteria for heritage tree designation can be generalized as any tree with a minimum diameter of 20 inches and a height of 30 feet. Specifically, the city's Development Code, Section 17.16.080 defines heritage trees as:

> "…any tree, shrub, or plant that meets at least one of the following criteria:
>
> 1. All eucalyptus windrows, or
> 2. All woody plants in excess of 30 feet in height and having a single trunk diameter of 20 inches or more *measured four and a half feet* (*4.5') from ground level (referred to herein as dbh – Diameter at Breast Height)*, or
> 3. Multi-trunks tree(s) with a total diameter of 30 inches or more measured 24 inches from ground level, or
> 4. Trees dependent upon other nearby trees for survival, or
> 5. Any other tree as may be deemed historically or culturally significant by the Planning Director for reasons considered appropriate by that office.

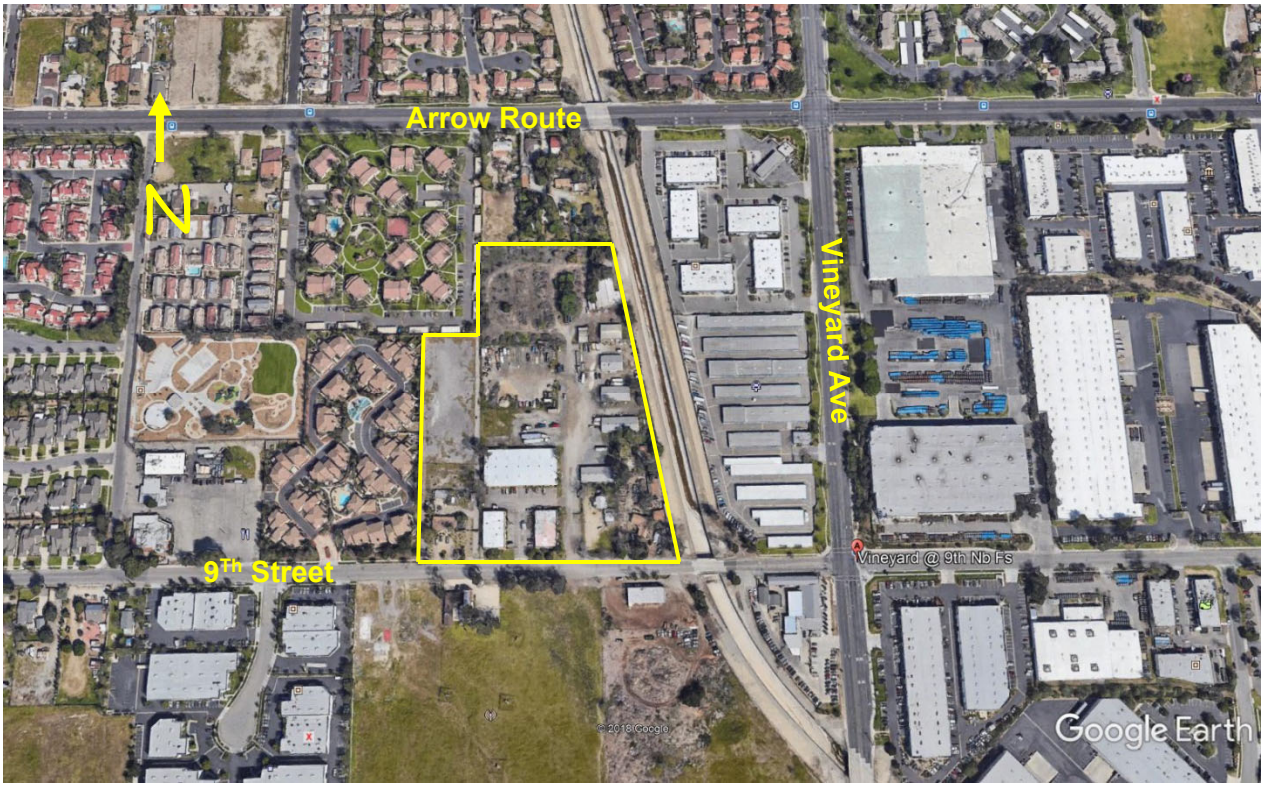
Provided are the identification and description of 15 such trees and their location within the project boundaries. Aided by a detailed site description and maps, plus longitude and latitude, users of this report should find locating trees simple. The complete site description, including location, physicality, and current use follows.

Most trees on this site do not meet the criteria for heritage trees and will receive little attention herein. The 15 trees that meet the criteria received blue and white flagging, a small metal tag, and are listed in Table A. Note that three of these trees meet the city's criteria due to size, but have poor structure and normally would be recommended for removal. Large trees that are dead and have targets within their fall zone are marked with red flagging tape and their locations indicated on the map. A few large trees that are alive but display structural defects require extra care for removal. Their locations are provided.

Note: Targets are people or infrastructure that can be impacted, or activities disrupted, if catastrophic failure occurs. The fall zone describes the tree's vertical height turned horizontally. Example: a 125 foot

tall tree has a horizontal fall zone radius of a 125 feet around it. This is 100% of the tree's height. This distance increases to 150% of the tree's height if the tree is dead. Poor structure refers to any structural defect that may cause failure of the tree or a portion thereof.

Site location and description – Map 1



Clearly visible are adjacent streets, the Cucamonga Creek Channel, and surrounding developments.

The site is approximately 11.73 acres of level ground located near the northwest corner of East 9th Street and Vineyard Avenue, Rancho Cucamonga, California 91730 at an altitude of 1140 feet. A large cement channel containing Cucamonga Creek, which flows south-southeast, borders the east side of the property. As Map 1 depicts, the neighborhood is a mix of residential and commercial use. Various commercial enterprises have occupied the site, including exotic woody material collection, storage and sales. Single-family residential parcels occupy the southeast and southwest corners. Large buildings, steel, or stucco, are located in the southern portion and east boundaries. Wooden buildings, occupying the northeast portion of the project, appear to be considerably older than the stucco or steel buildings. A portion of the land west of

the wooden buildings in the northeast portion of the project appears to have seen little development.

Methodology

The standards of the Level 2 Basic Assessment were used to inspect trees. This common industry standard is the primary method employed by International Society of Arboriculture (ISA) certified arborists to assess trees. The glossary contains a complete description of it. Fifteen heritage trees, listed in Table A, are identified in the field with a small metal tag, plus blue and white flagging tape. The tag indicates and identifies the tree species and dbh, which matches up with the trees Table A. Comments and recommendations regarding the removal of large trees with structural defects and targets within their fall zone are included. A hypsometer, diameter tape, soil probe, sounding mallet, and GPS were employed.

Trees species found on-site

Trees include California pepper (*Schinus molle*), eucalyptus (*Eucalyptus spp.*), live oak (*Quercus wislizeni*), avocado (*Persea americana*), Aleppo pine (*Pinus halepensis*), ash (*Fraxinus spp.*), Jacaranda (*Jacaranda mimosifolia*), Deodar (*Cedrus deodara*), and American sycamore (*Platanus occidentalis*).

Southern California Edison tree maintenance

Street trees that exist along 9th Street are poor specimens in most part due to the unwillingness of Southern California Edison (SCE) to adhere to the ANSI A300 industry pruning standards. SCE certified arborists recognize this practice as detrimental to trees, but company policy emphasizes production over quality, so their crews cut trees incorrectly, albeit vastly faster. Therefore, these trees will never be fine specimen trees owing to their growth under high-voltage lines and State regulations requiring 10 feet of clearance around them. SCE will continue to periodically damage the structure of any trees to keep their lines clear. Such damage commonly leads to decay and the loss of holding wood, which causes structural instability. Removal is recommended as is the careful selection of any tree considered for planting under high-voltage wires.

Map 2


Tree 1
Tree 3
Tree 2
4
5
6
7
Dense thicket.
Four large dead eucalyptus trees. All have targets.
Trees 9, 10, 11
Tree 15: Large with basal decay.
9
10
11
Tree 8
Poor specimens. All have been topped.
E 9th St

Map 3

Notes:

Trees 4, 5, 6 and 7 indicated on Map 1 are in a dense area marked with yellow flagging. Trees 5 and 6 are particularly fine specimens, while Trees 4 and 7 are large enough, but are poor specimens. Located in the residential lots in the southwest and southeast corners, Trees 12, 13, and 14 all qualify as heritage trees, but are not marked on March 11th when they were observed but access to them was limited. However, all three are easy to locate according to their relative location in the landscape and with their provided longitude and latitude.

Table A

As indicated below, with few exceptions, tree health is good for most the trees on this site. Data collection occurred on February 25 and March 11, 2019. The trees below are shown on Map 2 and Map 3.

Table A - Heritage Trees							
Tree No.	Species	dbh	Height	Health	Lat	Long	Notes
1	Ca pepper	41.4”	~55’	Good	34º 05’ 87.2”	-117 º 36’ 76.8”	Far northeast corner
2	Eucalyptus	56.4” 41.3”	~60’	Good	34º 05’ 88.2”	-117 º 36’ 79.5”	Two stems
3	Avocado	20.3”	~33’	Good	34º 05’ 89.0”	-117 º 36’ 81.2”	
4	Ash	~33”	~20’	Good	34º 05’ 88.0”	-117 º 36’ 81.7”	Fallen tree – remove, not marked
5	Live oak	34.4”	~36’	Good	34º 05’ 87.2”	-117 º 36’ 76.8”	Three stems
6	Ash	26.1”	~32’	Good	34º 05’ 86.6”	-117 º 36’ 81.7”	
7	Ash	52.2”	~30’	Good	34º 05’ 86.5”	-117 º 36’ 81.6”	Poor specimen - remove
8	Aleppo pine	33.4”	~55’	Good	34º 05’ 83.7”	-117 º 36’ 81.0”	
9	Eucalyptus	22.6”	~53’	Good	34º 05’ 87.2”	-117 º 36’ 76.8”	
10	Eucalyptus	20.4”	~66’	Good	34º 05’ 88.2”	-117 º 36’ 79.5”	
11	Eucalyptus	21.1”	~51’	Good	34º 05’ 87.2”	-117 º 36’ 76.8”	
12	Jacaranda	~26”	~50’	Good	34º 05’ 54.6”	-117 º 36’ 55.0”	No access to measure or mark
13	Deodar	~29”	~60’	Good	34º 05’ 87.2”	-117 º 36’ 76.8”	No access to measure or mark
14	Deodar	~27”	~65’	Good	34º 05’ 88.2”	-117 º 36’ 79.5”	No access to measure or mark
15	Sycamore	~21”	~40’	Fair	34º 05’ 49.1”	-117 º 36’ 47.6”	Basal decay - remove

Observations

A family-owned and operated business of collecting, storing and selling exotic woods occupied the northernmost parcel for decades. Scattered around this portion of the property are piles of incense cedar (*Calocedrus decurrens*) root balls and grape (*Vitis spp.)* roots. Harvested Manzanita plants, cut into long limbs, were stored in and around wooden buildings during my initial visit on February 25, 2019. The family rented out the southern section to various businesses. No soil contamination or grade changes are evident. Vehicular use caused localized soil compaction.

A yellow oval around trees 4, 5, 6, and 7 on Map 2 and referred to as a Dense Thicket is marked with yellow flagging tape tied to woody material around the perimeter. At the north end of this dense cluster is Tree 4, an ash tree that suffered root failure and fell over years ago. Its diameter is difficult to measure, but exceeds 20 inches. The tree is a very poor specimen and in any site development scenario, removal would be recommended. Of all the trees in this thicket, only two are fine specimens (Trees 5 and 6) and meet the criteria for heritage trees.

To the east and just south of trees 4, 5, 6, and 7, along the eastern boundary near Cucamonga Creek, are four dead eucalyptus trees. These are shown on Map 2 surround by an oval. These dead trees have stucco buildings as targets.

The northernmost boundary has a variety of woody plant material growing quite densely, apparently serving as a security, visual and sound barrier. None qualify for protection under Rancho Cucamonga's Heritage Tree ordinance.

Recommendations

- Tree Protection Zones

Should any tree, heritage or otherwise, be selected for preservation, consider the following: When construction projects, driving vehicles, significant changes in land use around trees, and soil grade changes are planned, a Tree Protection Zone (TPZ) should be established and all personnel required to adhere closely to the TPZ requirements. People occupying and using the site after construction work is completed need to

adhere to these tree-saving practices. Damage to the root system or bole (trunk), done knowingly or not, typically results in undue stress, which can lead to structural and health issues. These issues can eventually lead to safety threats to people, property, and activities, plus a reduction in property value.

- Difficult removals

Some trees recommended for removal have targets to avoid. These targets are infrastructure such as buildings, fences, or both. Examples are the four eucalyptus trees along the east boundary, as well as Tree 15, a sycamore with decay. Similar to other removals near targets, careful removal to avoid damaging infrastructure is recommended. Removing buildings first may simplify such removals. Conversely, removing trees first may simplify building demolition and removal.

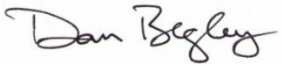
- Stumps

Leaving a tall stump of any tree targeted for removal whose location is over or near a planned foundation should be considered in order to facilitate excavation for the foundation. Leaving a stump high, perhaps 6 feet, will allow an excavator to use it as a lever to help rend the root ball from the soil. Cutting them low to the ground will dramatically increase the effort necessary for stump removal. Consult the excavation contractor for their preferences.

- Existing debris and recycling

As mentioned earlier, a significant amount of woody material is strewn across the ground of the northernmost parcel. The buildings in this parcel are similarly loaded with woody material. California state law requires the reduction of material sent to landfills. Advise any contractors handling such removals, demolition, clean-up, or disposal of any city ordinances or State laws regarding disposal and recycling, and that a San Bernardino County inspector will likely visit the site to ensure compliance.

Dan Begley



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About Dan Begley

ISA certified Arborist WE10427A
Qualified Tree Risk Assessor (TRAQ)
Certified Treecare Safety Professional (CTSP)

- Arborist for 15 years.
- Founded Mountain Tree Service, Inc. in 2002.
- Over 4,000 tree projects completed in 16 years.
- Defensible space specialist - SBCFD trained in Wildland-Urban Interface fire behavior.
- V.P. Mountain Rim Fire Safe Council
- Consultant, frequent speaker, advisor, researcher, always a teacher

Counted amongst Dan' clients are:

- Arrowhead Lake Association (defensible space, tree health, hazardous removals, risk mitigation),
- CalTrans (sight-distance and right-of-way),
- USFS (risk mitigation, tree health),
- Lake Arrowhead Community Services District (tree protection plans during construction),
- Construction and property management companies (needs vary),
- 5 Home Owner Associations (maintenance, risk mitigation, insurance compliance), and
- Currently studying advanced decay detection and tree valuation

ISA certification is a rigorous process and requires continuing education to maintain, and Dan exceeds those requirements continuously. With his knowledge and experience, he is a good fit serving as V.P. on the Mountain Rim Fire Safe Council. His company has completed over 900 defensible space projects, many projects required strict adherence to the California Forest Practice Rules concerning winter operations, sensitive habitats and archeological sites.

Dan is asked to speak annually to several groups, including HOAs, ALA board members, middle schools, Chambers of Commerce, Association of Building Contractors, Rotary International, and insurance professionals.

Dan's volunteer work spans several organizations. Running Springs, his hometown, recognized his service to the mountain communities with Citizen of the Year.

Glossary

ANSI A300: This is the tree industry pruning standards. Adherence is necessary if trees are to be maintained properly.

Bifurcated stem: This refers to a bole that has split (or forked) into two leaders. The two leaders are not always the same size. See co-dominant below.

Bole: The main trunk of a tree.

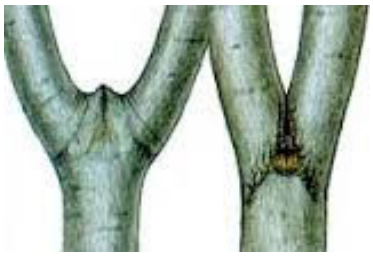
Cambium: The cambium cell layer is the growing part of the trunk. It annually produces new bark and new wood in response to hormones that pass down through the phloem with food from the leaves.

Canker: A persistent lesion formed by the death of bark and cambium due to colonization by fungi or bacteria.

CODIT: Stands for "compartmentalization of decay in trees." This is a natural defense against internal decay. Some trees perform this well and are decay resistant, while others do not.

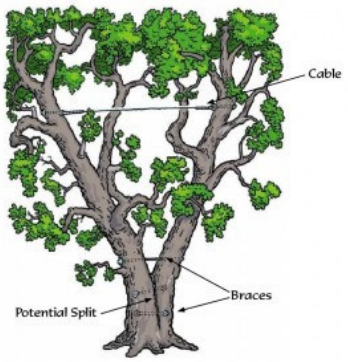
Critical root zone (CRZ): This describes the two major components that constitute a root system: the buttress roots which anchor the tree to the soil and small feeder roots which absorb water and nutrients to promote tree health and growth.

Co-dominant stems: A tree sometimes grows two or more main boles, also sometimes referred to as leaders or stems. When they are of equal or close to equal size in diameter, they are referred to as being co-dominant. If the crotch where they join at the base has formed an open "U" shape, the union is fairly strong. Trees with this may benefit from subordination pruning. If the crotch has formed an acute "V" shape, the union is weak. <u>This can lead to a significant structural issue. See included bark</u>.



Fairly Strong Weak

Cabling and bracing: Cables and brace rods are supplemental structural supports intended to reduce the risk of failure of weak branches and stems. Cables are generally connected to bolts installed in the upper canopies of trees. Braces are threaded rods installed where appropriate to help mitigate failure, and is most often used where included bark is a significant structural threat. Cabled trees should be inspected annually. See included bark.



Cation Exchange Rate (CER): This describes the ability or inability of a soil to hold and exchange negatively charged cations, which attracts organic material. This is difficult to alter significantly. Sand has no capacity to exchange cations because it has no electrical charge. Therefore, sandy soils must rely heavily on large quantities of surface organic matter to maintain nutrients in the topsoil. This means sandy soils, which have a very low CER, can be improved by adding organic matter, but fertilizer rinses out easily with rainfall.

Dieback: A common symptom or name of disease, especially of woody plants, characterized by progressive death of twigs, branches, shoots, or roots, starting at the tips caused by many fungi and a few bacteria, stem- or root-boring insects, mechanical damage, paving over roots, winter injury from cold or deicing salts, and a deficiency or excess of moisture or an essential element may cause dieback, directly or indirectly.

Diameter at Breast Height (dbh): This is one of the ways arborists use to measure a tree's size. It refers to the tree's diameter measured 4½ feet above grade.

Dog-leg: This refers to a sharp bend in a stem.

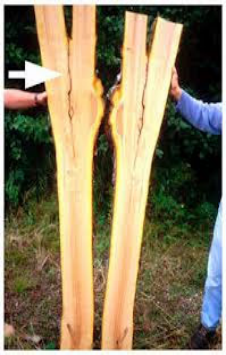
Epicormic: These are small sprouts or branches that grow in response to environment stress. Particularly susceptible are black oaks, but not all tree species will trigger this response.

Gall: A gall is a growth of plant tissue that starts with an organism's (insects, mites, fungi) chemical and/or mechanical stimulus, which increases the plant's production of plant growth hormones.

Heading Back: This is reducing the length of a branch or height of a tree. Knowledgeable tree experts will use a method similar to this called “drop-crotching” or “tip reduction.”

Heartwood: This is the **inner xylem** or the center of the tree’s structure that provides strength. It is often seen as a dark portion in cross section.

Included bark: This frequently develops with co-dominant stems with acute angle unions. The stems grow against each other until the bark ultimately disappears from view and forms “bark inclusion” (see arrows in photos) as the stems gain diameter. The stems push extremely hard against each other and become more prone to failure. This can be a very serious structural issue and lead to catastrophic failure as shown above.



Ladder fuels: These are branches 4 inches in diameter or smaller and has any portion within 6 feet of the ground. Low intensity ground fires can reach these branches and allow the fire to “climb” into the upper canopy. Fire safety requires these to be removed.

Level 1- Limited Assessment: Developed by the International Society of Arboriculture (ISA), the Level 1 assessment is a visual assessment from a specified perspective of an individual tree or a population of trees near specified targets to identify obvious defects or specified conditions. A limited visual assessment typically focuses on identifying trees with an imminent and/or probable likelihood of failure. Level 1 assessments do not always meet the criteria for a “Risk Assessment” if they do not include analysis and evaluation of individual trees. Limited visual assessments are the fastest but least thorough means of assessment and are intended primarily for large populations of trees.

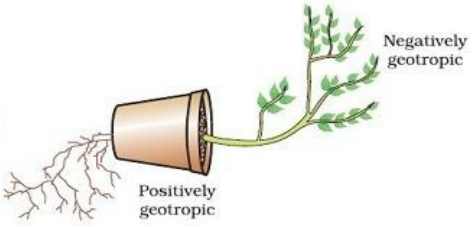
Level 2 - Basic Assessment: : Developed by the International Society of Arboriculture (ISA), the Level 2 or basic assessment is a detailed visual inspection of a tree and surrounding site, and a synthesis of the information collected. It requires that a tree risk assessor walk completely around the tree—looking at the site, buttress roots, trunk, and branches. A basic assessment may include the use of simple tools to gain additional information about the tree or defects.

Level 3 - Advance Assessment: : Developed by the International Society of Arboriculture (ISA), a Level 3 Advanced Assessment can be an aerial assessment or quantitative decay detection, health evaluation, wind load assessment, and static load assessment. It often requires a traind climbr to access the upper canopy. Given the more advanced tools and methodologies employed, this service is often offered at a premium to the customer and typically reserved for heritage, high-risk or high-value trees.

Lop and Scatter: Refers to the dispersal of woody material to limit ground flame height and duration. Material is cut between two and two-and-one-half feet, and then distributed evenly across the forest floor. Avoid piling slash and distribution under trees. Refer to the California Forest Practice Rules as written by CalFire.

Modified Shaded Fuel Break: Describes the potential fuel modification plan developed by CalFire to create realistic defensible space for areas threatened by wildland fires and which The San Bernardino County Hazardous Fuels Abatement Ordinance is based. The results in better tree health as competition is reduced.

Negative geotropism: If a tree or plant is leaning, it will attempt to straighten itself vertically in a process called negative geotropism.



Positive geotropism: This refers to how roots will grow downward following gravity.

Nutrient cycling: As plants shed leaves, needles, and branches or die and fall over, they create a layer or organic material which begins to decompose. This adds nutrients into the soil which feeds plants. Nutrient cycling refers this beneficial process.

Phloem: The inner bark, or “phloem,” is the pipeline through which food (sap) is passed from leaves or needles to the rest of the tree. This sap is stored in a several wood rings in what many people call the “sapwood”

Phototropism: This occurs when plants alter their growth habit to grow toward light.

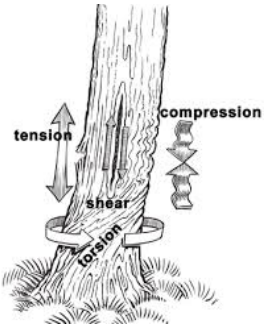
Pistol butt: This is a curved bottom of a tree. Common to steep slopes where the soil moves downhill as the tree grows. Also caused by wind.

Rams Horn: Inwardly growing wound wood grows 0ver the inner wood to cover a wound. If the inner wood is gone, it curves inward trying to locate the wood.

Root flare: The *root flare* is the portion of the *tree* where the trunk widens at the base as it transitions to the *root* system. A good flare often lends tremendous strength but is not on all tree species.

Stem or leader: Terms that describe a significant branch, often referred to as a main leader or main stem.

Shear crack: A shear crack may appear when the opposite forces of compression and tension are sufficiently strong to cause the wood to split as they slide past each other. This can be caused by leaning tees or branches heavily laden with snow. Torsional forces caused by asymmetrical canopies exposed to strong winds also cause shear cracks.



Soil compaction: The soil generally found in the San Bernardino Mountains has a density of 1.3 grams per cubic centimeter. The native trees have evolved in this soil and increases of density cause problems for roots. These problems may kill trees, but much time passes between soil compaction and tree mortality, causing many people guilty of soil compaction to believe their activities did not contribute to tree death.

Subordination Pruning: An advanced structural pruning practice intended to reduce a branch's growth rate in order for the host it grows from to outgrow it to become dominant and strengthen their union. ANSI A300 Part 1: "Structural pruning shall consist of selective pruning to improve tree and branch architecture primarily on young- and medium-aged trees."

Targets: These are things that could be damaged if a tree or branch fails. Infrastructure and areas where people pass through or congregate are targets.

Target Zone: Identifies where the targets are in relation to the tree or tree part: within the tree's drip line, within 1 x the tree's height, or within 1½ the tree's height.

Tree Protection Zone (TPZ): A temporary fenced off area around trees established to avoid tree injury during construction. The primary objective is to protect delicate root systems. All construction workers should know that nothing inside this area is to be raked, cut, stored, or otherwise disturbed. A landscape protection contract signed by the builder and all contractors will help ensure compliance.

Tree Vigor Index (TVI): This is an expression of tree health, not unlike an immune system. A high TVI is good, while a low TVI indicates stress and susceptibility to pests and pathogens. TVI is greatly influenced by site factors.

Occupancy Rate or Occupancy Tendency: refers to how often people pass through the fall zone of a tree. Rare, occasional, frequent, and constant are levels referred to. **Occupancy Rate:** an estimated amount of time targets (people and/or property) are within the target zone. Often referred to as: 1. Rare—the target zone is not commonly used by people or other mobile/movable targets. 2. Occasional—the target zone is occupied by people or other targets infrequently or irregularly. 3. Frequent—the target zone is occupied for a large portion of the day or week. 4. Constant—a target is present at nearly all times, 24 hours a day, 7 days a week.

Xylem: The wood that forms the structure and provides support of a tree. The (sometimes darker) *inner xylem* is often referred to as the "heartwood," and the *outer xylem* is often referred to as the "sapwood." The cambium and phloem layers are between the xylem and the bark.

Cabling and bracing: Cables and brace rods are supplemental structural supports intended to reduce the risk of failure of weak branches and stems. Cables are generally attached to bolts installed in the canopy of trees. Braces are threaded rods installed where appropriate to help mitigate failure, and is most often used where included bark is a significant structural threat. Cabled trees should be inspected annually.

DISCLAIMER

Arborists are tree specialists who use their education, knowledge, training, experience, and research to examine trees and woodlands. Arborists recommend measures to enhance the beauty and health of trees and forests, while attempting to reduce the risk of living near them. Clients may choose to accept or disregard the recommendations of the arborist or seek additional advice.

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. There are some inherent risks with trees that cannot be predicted with any degree of certainty, even by a skilled and experienced arborist. Arborists cannot predict acts of nature including, without limitation, storms of sufficient strength, which can cause even a healthy tree to fail. Any entity that develops land and builds structures with a tree in the vicinity should be aware and inform future residents of the risks of living with trees and this arborist's disclaimer.

Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medical care, cannot be guaranteed. In addition, construction activities are hazardous to trees and cause many short and long-term injuries, which can cause trees to die or topple either in the short term or over many years or decades.

Treatment, pruning, and removal of trees may involve considerations beyond the scope of the arborist's services, such as property boundaries, property ownership, disputes between neighbors, and other issues. Consulting arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist by the client. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Neither the author nor Mountain Tree Service, Inc., or Arrowhead Arbor Care has assumed any responsibility for liability associated with the tree(s) on or adjacent to this project site, their future demise and/or any damage, which may result from them. To live near trees is to accept some degree of risk.