Assessment of Ten (10) Protected-Size Trees At and Adjacent to 16666 Topping Way Los Gatos, California

Prepared for:
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110 E. Main Street
Los Gatos, CA 95030

Field Visit:
Walter Levison, Contract Town Arborist (CTA)
1/10/2020

Report by CTA
1/17/2020

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Table of Contents

1.0 Summary 3
2.0 Assignment & Background 11
3.0 Town of Los Gatos – What Trees are Protected? 12
4.0 Recommendations 14
5.0 Tree Protection and Maintenance Directions per Town Code 21
6.0 Tree Replacement Standards – Los Gatos Town Code 25
7.0 Author's Qualifications 27
8.0 Assumptions and Limiting Conditions 28
9.0 Certification 29
10.0 Digital Images 29
11.0 Tree Data Table 34
12.0 Appraisal Worksheet by the CTA 41
13.0 Attached: Tree Location & Protection Fence Map Mark-up by the CTA 41

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1.0 Summary

a. Matrix style overview of protected-size trees (non-exempt species, 4-inches diameter at 4.5 feet above grade). Below, the CTA (Contract Town Arborist) has outlined expected impacts to each tree, along with suggestions for adjustments to the plan set (if applicable) that will optimize tree survival over the long term.

The CTA calculated the appraised value of each tree, which can be used as a tool for determining the proper security bond amount to have the applicant post with the Town as a hedge against site plan-related tree damages (if applicable). Appraised values can also be used to determine damage fees if trees are determined during or after construction to have been damaged such that mitigation is required.

Mitigation replacement rate and size is noted for each tree in the case that removal or damage to trees occurs.

Note: Only trees within relatively close proximity of proposed work are included in this tree study (e.g. tree trunks located between approximately zero and 30 linear feet of current proposed new grading, utility trenching, excavation, haul routes, landscaping, etc. as shown on proposed plans, and trees with canopy driplines that encroach onto the subject property.

Table 1.0(a) (REFER TO THE CTA'S TREE MAP MARKUP WHEN REVIEWING THIS MATRIX)

Line Number	Tree Tag Number / Common Name	Expected Tree Disposition	Critical Root Zone (CRZ) Radius Suggested for Optimal Structural Stability	Large Protected Tree (LPT)? Tree Conservation Suitability Rating (TCS)?	Appraised Value	Suggested Changes to Applicant's Proposed Plans to Boost Tree Conservation Suitability Rating (TCS) to "Moderate" or "Good"	Replacement Rate Per Canopy Lost	Replacement Size Tree

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Line Number	Tree Tag Number / Common Name	Expected Tree Disposition	Critical Root Zone (CRZ) Radius Suggested for Optimal Structural Stability	Large Protected Tree (LPT)? Tree Conservation Suitability Rating (TCS)?	Appraised Value	Suggested Changes to Applicant's Proposed Plans to Boost Tree Conservation Suitability Rating (TCS) to "Moderate" or "Good"	Replacement Rate Per Canopy Lost	Replacement Size Tree
1	41	Shown on applicant's plans as to remain, but the proposed new driveway footprint at 1 to 2 feet offset from the trunk edge of this tree may cause severe root loss (see tree map by the CTA). Tree may end up being removed. Note possible future conflict between tree and PG&E high voltage wires overhead if tree is not removed.	7 feet	TCS rating is "Poor" if take into account the current proposed driveway footprint. However, if driveway is floated above grade using a geogrid underlayment, the TCS might be boosted to "Moderate".	$4,300	Alternative 1: Use a geogrid such as Tensar TriAx TX140, or Mirafi Miragrid, to float the entire driveway including baserock, etc. over existing soil grade, thereby lifting up finish grade of the drive, but preserving roots extended from the tree. Alternative 2: Move the proposed driveway to 7 feet offset from trunk, and build using standard methods and materials. (Alternative 3: Remove tree and charge replacement feet of $1,000.)	$250X4 = $1,000.	24" box

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2	42	Retain	6 feet	TCS is "Poor" to "Moderate" if take into account the current proposed multiple trenches that are shown routed just a few feet from trunk, and proposed new driveway base section prep is excavated below grade as would be the standard procedure.	$4,790.	TCS boosted to "Good" if all proposed impacts were to be eliminated or pushed to 6 feet (or greater) offset distance from trunk edge, including joint trench alignment, new stormwater swale alignment, new gas pipe alignment, and new driveway and driveway edging.	$250X3 = $750.	24" Box
3	43	Removal	n/a	n/a	$2,410.	n/a	$250X3 = $750.	24" Box
4	44	Retain (the CTA suggests removal due to decay at fork)	4 feet	TCS: Poor to Moderate	$830.	No plan changes required to retain tree.	$250X3 = $750.	24" Box

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5	45	Retain	4 feet	TCS: Moderate	$1,100.	No plan changes required to retain tree.	$250X3 = $750.	24" Box
6	46	Removal due to very poor condition (5% out of 100%)	4 feet	TCS: Poor (Tree is Almost Dead)	$30.	(Author suggests removal of tree). This would be a no-fee removal.	(No fee)	(No fee)
7	47	Retain	5 feet	TCS: Moderate	$1,920.	Push proposed turf grass lawn out to farther from tree so that root protection zone fencing can be erected at 10 feet or more offset from trunk during construction and landscape development. (Critical Root Zone is 5 feet, but canopy is lopsided northward, which means that protective fencing will need to be at least 10 feet out from trunk on the north side).	$250X3 = $750.	24" Box

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Line Number	Tree Tag Number / Common Name	Expected Tree Disposition	Critical Root Zone (CRZ) Radius Suggested for Optimal Structural Stability	Large Protected Tree (LPT)? Tree Conservation Suitability Rating (TCS)?	Appraised Value	Suggested Changes to Applicant's Proposed Plans to Boost Tree Conservation Suitability Rating (TCS) to "Moderate" or "Good"	Replacement Rate Per Canopy Lost	Replacement Size Tree
8	48	Retain (Neighbor tree)	12 feet	TCS: Good	$12,700.	Fence off the entire southwest corner of the 16666 Topping property per the red dashed line on the CTA's tree map attached to this report, such that no activity occurs within 20 feet of the property corner. This is a valuable, neighbor-owned oak specimen in good overall condition.	n/a	n/a
9	49	Retain (Neighbor tree)	6 feet	TCS: Moderate	$1,830.	No plan changes required to retain tree in its current condition. The existing storm drain pipe in the City's easement is large enough that it is likely blocking all lateral root growth eastward into the 16666 Topping property, which means that the tree should not be impacted by the applicant's proposed plans, as long as protective chain link fencing remains erected along the property line or east of the property line over the City "drainage easement" throughout the construction process.	$250X3 = $750.	24" Box

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10	50	Retain (Neighbor tree)	8 feet	TCS: Moderate	$3,770.	(Same as tree #49 above)	$250X4 = $1,000.	24" Box

2019-20 Town of Los Gatos In-lieu fee equivalent = $250 per each required 24" box mitigation tree planting not installed on the site.

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1.0 **(b)** Summary of tree disposition and tree issues, based on the applicant's most current grading and drainage plan sheet C2 by SMP Engineers of Los Altos, dated 12/5/2019, and the current proposed landscape plan sheet L1 by Todd Kalbfeld Landscape Design of San Jose, dated December, 2019.

1. TREE IMPACTS EXPECTED IF THE PROJECT WERE TO BE BUILT AS CURRENTLY PROPOSED BY THE APPLICANT:

1.1. **Hackberry #41 vs. Driveway**

Hackberry #41 will be severely impacted by proposed new driveway work, unless the drive were to be built as a floating system with all baserock placed over grade over a biaxial or triaxial geogrid.

Note however that the tree canopy may also interfere with vehicles moving on the driveway. The tree may need to be removed if the driveway were to be built at its current proposed footprint.

Options:

A. Remove tree #41 and build as currently proposed. This would avoid tree canopy airspace conflicts with vehicles, and avoid maintaining an "impacted" tree.

B. Relocate the driveway to 7 feet offset from trunk. Canopy of tree may still conflict with vehicle airspace, even at this distance.

C. Install a triaxial or biaxial geogrid as an underlayment to allow for driveway construction at its current proposed location, albeit with expected airspace conflicts between vehicle movement and the canopy of tree #41 which has a radius of 15 feet.

D. Relocate the entire proposed driveway and garage to the west side of the property.

1.2. **Oak #42 vs. Utilities and Driveway**

Oak #42 will be severely impacted by the assumed proposed new joint trench, new storm drain, new gas pipe line, and new driveway and driveway edging. It is not clear if one, some, or all of these impacts can be relocated or otherwise relocated to farther offset from the trunk of oak #42 to optimize root preservation.

Recommendations:

Relocate joint trench to 7 feet or more offset from trunk edge.

Relocate stormwater drainage swale cut to 7 feet or more offset from trunk edge.

Relocate gas pipe trench to 7 feet or more offset from trunk edge.

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Utilize a triaxial or biaxial geogrid pinned down over the existing soil surface as an underlayment, within 20 feet of the tree trunk, in order to bump up the driveway construction sandwich of materials such that all of the base section baserock and surface materials are placed over the geogrid and literally over existing soil grade elevation. This is called a "no dig" system, and has been used on many University-funded driveway, parking lot, and sidewalk construction projects at Stanford University, Palo Alto since 2018 per the recommendation of Walter Levison, Consulting Arborist. Use of the geogrid also allows for elimination of any "subbase over-excvation" and elimination of any "subbase recompaction".

Keep all new "driveway edging" at or above the elevation of the geogrid so that it is essentially floating over the geogrid and does not require any excavation into the oak #42 root zone below existing soil grade elevations.

1.3. **Grass Lawn/Irrigation Pipe Trenching vs. African sumac #47**

The current proposed grass lawn appears to encroach to roughly 5 feet or less from the trunk of tree #47.

Recommendation:

Push out the proposed grass lawn and any associated irrigation pipe trenching routes such that there is an offset of at least 8 to 10 feet from the tree's trunk (the tree #47 location as shown on the CTA's tree map markup is NOT accurate).

1.4. **Oak #48 on Neighbor's Property**

It is not clear why proposed landscape plan sheet L2 shows various shrub plantings for the area within the canopy dripline of neighbor oak #48. This tree has a canopy extension that encroaches to at least 12 to 15 feet east of the property corner, and the root system is likely extended into the 16666 Topping Way property by at least 40 to 50 feet radius.

Recommendation:

Erect protective fencing at least 15 to 20 feet east of the property corner, in order to optimize root preservation around this tree, and also minimize any potential conflicts with the canopy.

Redesign the proposed landscape plan to eliminate all proposed landscape irrigation pipe trenching and eliminate all proposed landscape plantings at this corner, again, in order to optimize root preservation around this tree. The CTA suggests eliminating all work within roughly 15 or 20 linear feet of the property corner.

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2. NEW LANDSCAPE AND IRRIGATION

Landscape plan sheets L1 and L2 by Kalbfeld, dated December, 2019, were reviewed for this assignment.

The plans show installation of twelve (12) 36" box size trees.

If irrigation delivery piping has to be placed within 15 feet of any existing tree, then use over-grade trenchless tubing such as ½" diameter UV-resistant flexible tubing pinned down over-grade and covered with mulch. As noted above in item 1.4, the CTA suggests eliminating all irrigation and planting within 15 or 20 feet of the oak #48 property corner area, in order to preserve oak roots in this area.

3. TREE REMOVALS / FEES OR IN-LIEU PLANTINGS COVERED 100% BY PROPOSED NEW LANDSCAPE TREE INSTALLATIONS:

Only tree #43 is shown on the applicant's plans as a removal. Fee for this removal is $750 or installation of three (3) 24" box size trees, as noted above in the summary table. However, the applicant's landscape plan shows proposed installation of 12-count 24" box size trees at the site, which reduces the removal fee to zero.

If tree #41 is removed as suggested by the CTA in order to allow for the new driveway to be installed as currently proposed, then the removal fee would be an additional $1,000 or installation of four (4) 24" box size trees as noted in the summary table above. Again, this requirement is covered by the applicant's plan to install 12-count 24" box size trees on site.

The CTA suggests removing African sumac #46 which has structurally failed, and is laying on the ground (no fee).

2.0 Assignment & Background

Walter Levison, Contract Town Arborist (CTA) was directed to tag and assess all Protected-Size (4-inch diameter and greater) trees in relatively close proximity to the proposed site plan project area, including off-site trees on neighboring properties which were expected to be negatively impacted by the applicant's planned work.

The site is an older single story residence property, on which the existing structures are all to be demolished. The CTA assessed the proposed grading and drainage plan sheet C2 dated 12/5/2019 by SMP Civil, which shows both the existing residence and proposed new residence work, utility joint trench routing, storm drain pipe trenching, gas pipe trench, driveway work, an existing 10 foot wide Town of Los Gatos drainage easement, and other items. This sheet was used to prepare the tree location and protection map markup attached to the end of this report.

The CTA also assessed the proposed landscape sheets L1 and L2 dated December 2019. There is currently no irrigation pipe trenching plan sheet available from the applicant for review.

For purposes of long term planning, the CTA assumed that any tree that rated out between 0% ("dead") and 10% overall condition ("very poor") was deemed a removal tree for safety purposes.

The site was assessed by the CTA on 1/10/2020.

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Trees were tagged by the CTA at eye level using racetrack shaped tags numbering “41” through “50”: a total of 10 trees. Trees #48, 49, and #50 are all neighbor-owned trees.

Tree data were collected and assembled by the CTA in section 11.0 of this report.

The CTA’s recommendations in section 4.0 of this report are based on published information in various standard arboriculture texts, such as the series of *Best Management Practices* (BMP) companion publication (booklets) published by International Society of Arboriculture that are periodically updated over time. The series of BMP booklets accompany the ANSI-A300 USA standards for tree care used by U.S.-based tree care companies.

Additional supporting information includes digital images archived by the CTA and included in section 10.0, and a tree map markup attached as section 12.0.

The CTA utilized a forester’s D-tape to determine tree mainstem (trunk) diameters at 4.5 feet above grade. The D-tape is a circumferential tape that converts actual trunk circumference to an averaged diameter in inches and tenths of inches.

Tree heights were determined using a digital Nikon Forestry Pro 550 hypsometer.

Tree canopy spread diameters were estimated visually or paced off. The tree canopy driplines shown as black clouding on the tree map markup are approximate only.

The tree trunk plot dot locations shown on the CTA’s tree map markup are also approximate only, and in many cases are not accurate. However, the plot dots used for trees #41 and #42 are those plotted by the project civil engineer SMP, and are therefore considered accurate.

3.0 Town of Los Gatos – What Trees are Protected?

Per the most recent (2015) iteration of the Town of Los Gatos tree ordinance (Town Code Chapter 29 – Zoning Regulations, Article 1), the following regulations apply to all trees within the Town’s jurisdiction (wordage adjusted):

1. All trees with at least a single mainstem measuring four (4) inches diameter or greater at 4.5 feet above grade are considered “**Protected Trees**” when removal relates to any development review.

2. 12 inch diameter (18 inch multistem total) trees on developed residential property not currently subject to development review.

3. 8 inch diameter (8 inch multistem total) blue oak (*Quercus douglasii*), black oak (*Quercus kellogii*), California buckeye (*Aesculus californica*), and Pacific madrone (*Arbutus menziesii*) on developed residential lots not currently subject to development review.

4. 8 inch diameter (8 inch multistem total) trees on developed residential property not currently subject to development review, on lots in the designated **Hillside Area** per the official Town map.

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5. All trees with a single mainstem or sum of multiple mainstems totaling 48 inches diameter or greater at 4.5 feet above grade are considered "**Large Protected Trees" (LPT).**

6. All oak species (*Quercus spp*.), California buckeye (*Aesculus californica*), and Pacific madrone (*Arbutus menziesii*) with one or more mainstems totaling 24 inches diameter or more at 4.5 feet above grade are considered **"Large Protected Trees" (LPT).**

7. Section 29.10.0965. Prohibitions: A **permit** is required to prune, trim, cut off, or perform any work, on a single occasion or cumulatively, over a three-year period, affecting 25% or more of any **Protected Tree** (including below ground root system).

8. Section 29.10.0965. Prohibitions: A **permit** is required to prune, trim, or cut any branch or root greater than four (4) inches in diameter of a **Large Protected Tree**.

9. Section 29.10.0965. Prohibitions: A permit is required to conduct severe pruning on any protected tree. Severe pruning is defined in section 29.10.0955 as "topping or removal of foliage or significant scaffold limbs or large diameter branches so as to cause permanent damage and/or disfigurement of a tree, and/or which does not meet specific pruning goals and objectives as set forth in the current version of the International Society of Arboriculture Best Management Practices-Tree Pruning and ANSI A300-Part 1 Tree, Shrub, and Other Woody Plant Management-Standard Practices, (Pruning)."

10. Exceptions:

    Severe Pruning Exception in Town Code section 29.10.1010(3) "…..except for pollarding of fruitless mulberry (*Morus alba*) or other species approved by the Town Arborist….".

    Protected Tree Exceptions:

    a. Edible fruit or nut bearing trees less than 18 inches diameter (multistem total or single stem), including fruiting olive trees.
    b. *Acacia melanoxylon* (blackwood acacia) less than 24 inches (multistem total or single stem)
    c. *Liriodendron tulipifera* (tulip tree) less than 24 inches (multistem total or single stem)
    d. *Ailanthus altissima* (tree of heaven) less than 24 inches (multistem total or single stem)
    e. *Eucalyptus globulus* (Tasmanian blue gum) less than 24 inches (multistem total or single stem)
    f. *Eucalyptus camaldulensis* (River red gum) less than 24 inches (multistem total or single stem)
    g. *Other eucalyptus species* (E. spp.) not noted above, less than 24 inches (multistem total or single stem)
       (REMOVAL O.K. ONLY AT HILLSIDE AREA LOCATIONS PER OFFICIAL TOWN MAP):
       www.losgatosca.gov/documentcenter/view/176
    h. All palm species *(*except *Phoenix canariensis)* less than 24 inches (multistem total or single stem)
    i. *Ligustrum lucidum* (glossy privet) less than 24 inches (multistem total or single stem)

    Note that per the exception in part 'a' above, fruiting olive trees with stems totaling less than 18 inches are considered non-protected.

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4.0 Recommendations

1. Project Arborist ("PA"):

   Initial Signoff

   It is recommended that a third party ASCA registered consulting arborist or ISA Certified Arborist with good experience with tree protection during construction be retained by the applicant, to provide pre-project verification that tree protection and maintenance measures outlined in this section of the arborist report are adhered to. Periodic (e.g. monthly) inspections and summary reporting, if required as a project condition of approval, are suggested in order to verify contractor compliance with tree protection throughout the site plan project. This person will be referred to as the project arborist ("PA"). The PA should monitor soil moisture within the root protection zones of trees being retained, using a Lincoln soil moisture probe/meter or equivalent. If required, inspection reports shall be sent to Mr. Sean Mullin, Associate Planner (smullin@losgatosca.gov). Sample wordage for a condition of approval regarding monitoring of tree protection and tree condition:

   "The required protective fencing shall remain in place until final landscaping and inspection of the project. Project arborist approval must be obtained and documented in a monthly site activity report sent to the Town. A mandatory Monthly Tree Activity Report shall be sent at least once monthly to the Town planner associated with this project (smullin@losgatosca.gov) beginning with the initial tree protection verification approval letter".

1. (Continued) PROJECT ARBORIST "PA" / SPECIAL SITE MONITORING:

   The PA shall work with the project team to directly monitor a portion of the following items such as, but not limited to the following:

   1a. Installation of a layer of biaxial or triaxial geogrid over the soil grade surface between **oak #41** and out to at least 20 linear feet from the trunk edge of oak #41 in all directions, as an underlayment for the baserock base section of the proposed new driveway.

   The PA shall verify that proposed new driveway work "edging" involves a cut down to existing soil surface grade elevation only, and does not involve any edging prep excavation for installation of the driveway edging/paver restraints.

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2. Project Team Pre-Project Adjustments, Clarifications, and Limits Suggested or Required:

2a. Hackberry #41:

Applicant's project team shall verify whether this tree is to be removed to accommodate the current proposed driveway footprint. There are potentially both root conflicts and canopy conflicts that seem to be issues related to retention of this tree, given the proposed driveway footprint.

If the tree is to be retained and protected in place, then it is suggested that the team plan to use a biaxial or triaxial geogrid underlayment placed directly at soil surface grade elevation over which the baserock base section shall be placed for driveway construction floating over the root system of tree #41. See sample image at right showing a recent 2020 project in Menlo Park on which The CTA had the owner install Tensar TriAx TX140 triaxial geogrid to avoid base section excavation and to also avoid any subbase overexcavation or subbase recompaction.

2b. Oak #42:

Geogrid: Utilize a geogrid system consisting of a triaxial or biaxial geogrid layer pinned down over existing soil grade between the trunk of the tree and 20 feet out from the trunk in all directions. Do not compact the subgrade soil beneath the geogrid. The geogrid will provide lateral load bearing capability to the driveway such that precompaction of the subbase (root zone of tree) is not necessary. Place baserock over the geogrid, and compact per standard engineering specifications. Lay surface materials over the baserock per plans. See sample image at right. Our local supply house of Reed and Graham, San Jose (contact Mr. Dan Toda at dan@rginc.com). Dan can consult on all types of projects, and will identify specific geogrid models for certain situations, depending on the amount of load-bearing capability required.

Canopy conflicts: In addition to the use of a geogrid, it is further suggested that the team push the proposed driveway footprint to 10 or 15 feet offset from trunk, both to avoid root loss to the oak, and to avoid a conflict between driveway users and the very low hanging canopy. Pruning to clear the driveway airspace may in itself have a significant to severe negative impact on the tree. The extent of horizontal and vertical airspace clearance pruning depends on the final layout of the driveway in relation to the tree.

Joint trench: Project team shall verify whether a joint trench is to be cut within the canopy dripline of oak #42. If a joint trench is required, then relocate the entire trench to a distance of at least 7 feet or more from trunk edge, or use directional bore technology to install all utilities using a "trenchless" bore machine.

Gas pipe: Team shall verify whether a gas pipe is to be upgraded within the canopy dripline of oak #42. If gas service is to be upgraded, then relocate the entire gas trench to a distance of at least 7 feet or more from trunk edge, or use a directional bore machine to install the gas pipe as "trenchless".

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Earthen swale stormwater drainage: The proposed stormwater swale is currently shown to be cut at roughly 1 or 2 feet offset from the trunk of this oak. It is suggested that this swale be relocated to at least 7 feet offset from the trunk edge of the oak, or eliminated altogether from this area of the property.

2c. Protective Tree Fencing:

Project team shall verify that chain link root protection zone fencing will be erected per the CTA's red dashed lines on the tree map markup attached to this report.

2e. Additional "Suggested Removals" in Addition to Tree #43:

As noted above, **tree #41** may need to be removed, if the proposed driveway is built as currently shown on the applicant's plan sheets.

Tree #44 is in poor overall condition and exhibits advanced decay at the fork. This tree is suggested to be considered for additional removal.

Tree #46 has an overall condition rating of 5% which is considered "dead", due to its structural failure. It is currently laid horizontally on the ground. The CTA suggests that this tree be removed (no fee required).

There will not be any fees incurred as a result of removals, even if trees #41, 43, 44, and 46 are all removed, since the canopy replacement fees for all of these trees total $2,500 or installation of ten (10) 24" box trees on site. Since the project is already proposing to install twelve (12) 36" box size trees, the current proposed landscape plan will exceed the Town's canopy replacement requirement in terms of new on-site mitigation plantings.

2f. Landscape Shrubs for Near Oak #48 / Eliminate:

The applicant's current proposed landscape plans dated December 2019 show new shrubs to be installed near the southwest corner of the site. The CTA suggests eliminating all proposed irrigation pipe trenching and all landscape plant installations for the area between the southwest corner of the site and out to roughly 15 or 20 feet from that corner, in order to preserve and protect lateral woody and fine roots growing out from the valuable neighbor-owned coast live oak #48 which is valued at $12,700.

The CTA suggests that this entire corner be fenced off at approximately 20 feet radius out from the southwest property corner.

2e. Irrigation Piping (not reviewed by the CTA as of the date of writing):

Keep all new rigid PVC irrigation piping offset at least 15 feet from the trunk edges of all trees being retained at 16666 Topping Way and being retained on the adjoining neighbor properties. If this distance cannot be achieved, then utilize a "no dig" type system of UV-resistant piping that can be laid directly over-grade, and covered with mulch, such that the piping is at zero inches cut depth below existing tree root zone soil grade.

The irrigation piping shall be kept at least 15 feet offset from the southwest corner of the 16666 Topping Way site, in order to preserve approximately 15 to 20 feet of radial root zone extended into the Topping Way site from neighbor-owned oak #48: a native tree specimen in good overall condition valued at $12,700.

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3. Pruning & Tree Maintenance:

3a. ISA Certified Arborist:

Retain the services of an **ISA Certified Arborist** to perform pruning work on trees requiring clearance pruning or other tree maintenance.

All pruning work on trees at this project will need to be performed directly by an ISA Certified Arborist, or under full-time on-site direct supervision of an ISA Certified Arborist.

All pruning shall conform to the most current iteration (2017) of ANSI-A300 *tree, shrub, and other woody plant maintenance / pruning* and the Best Management Practices companion pamphlet to the ANSI-A300 pruning standards, published by International Society of Arboriculture.

3b. Pruning of **oak #42**:

Do not prune more than 25% of the live canopy of oak #42. If possible, limit all pruning to branches measuring 1 inch diameter or less, when clearing vertical and horizontal airspace for the proposed new driveway.

4. New Irrigation Piping and Landscape Plantings:

4a. Review:

Provide an irrigation plan sheet to Town Staff for review. Per item #2e above in this recommendations section, all new irrigation hard PVC pipe trenching shall be offset at least 15 feet from the trunk edge of any tree being retained both on and off site.

For areas within 15 feet of a tree being retained, use only over-grade “trenchless” systems such as flexible ½” diameter tubing that is UV-resistant and rated for installations on-grade, in order to avoid trenching which would otherwise destroy root systems of trees being retained.

If possible, eliminate all new proposed plantings within 15 to 20 feet of the southwest corner of the property, in order to avoid causing unnecessary damage to the root system of oak #48 which likely extends at least 40 to 50 feet radius through the 16666 Topping Way site.

The proposed grass lawn area may also need to be reduced in extent in order to avoid causing damage to African sumac tree #47. The suggested optimal offset is 10 feet radius from trunk. Current proposed turf lawn appears to encroach to roughly 4 to 6 feet from trunk edge (not verified as of the date of writing).

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5. Trunk Buffer Wrap Type III Protection:

   Prior to demolition commencement, install trunk buffers around all trees being retained on-site:

   Wrap **one (1) entire roll of orange plastic snow fencing around the trunk of each single tree**, between grade and 6 to 8 feet above grade to create a padding of at least 1 to 2 inches thickness around each tree trunk. Stand 2x4 wood boards upright, side by side, around the entire circumference of the orange plastic wraps. Affix using duct tape (do not use wires or ropes). See spec image above right showing the wooden boards correctly mounted against one entire roll of orange snow fencing, such that the wood does not actually touch the trunk at all.

6. Chain Link Fencing Type I and/or Type II Root Protection Zone (RPZ):

   Prior to demolition commencement, erect chain link fencing panels set on moveable concrete block footings (see sample image below right). Wire the fence panels to iron layout stakes pounded 24 inches into the ground at the ends of each fence panel to keep the fence route stabilized and in its correct position. Do not wire the fence panels to the trunks of the trees. These panels are available commonly for rent or purchase.

   Alternative Fencing / Tube Posts and Rolled Chain Link: Using a professional grade post bounder, pound 7-foot long 2-inch diameter iron tube posts 24-inches into the ground, at 6 to 10-foot spacing maximum on-center, and hang steel chain link fencing material minimum 5-feet height on the tube posts. These materials are available for purchase at many retail and wholesale construction supply houses such as Home Depot, Lowe's, Grainger's, White Cap, Harbor Freight, etc.

   Pre-construction fence routes for trees being retained within 30 feet of new work:

   See the CTA's red dashed lines indicating chain link fence routing, on the attached tree map markup. Tree fencing around many of the site trees and neighbor trees is considered "not finalized", given that:

   - **Hackberry #41 may need to be removed to allow for construction of the current proposed driveway.**
   - **Oak #42 should be fenced at least 7 feet radius offset from the trunk edge, but current proposed utilities and driveway work all encroach to closer than this offset distance.**
   - **African sumac #44 and #46 both probably need to be removed due to health and/or structural issues discussed elsewhere in this report.**

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- **Neighbor oak #48 requires at least 15 to 20 radial feet of protective fencing, but the current proposed landscape plan shows shrub installations for within this area.**

- **Neighbor trees #49 and #50 are fenced at the property line, but should be fenced 5 to 10 feet east of the property line in order to better protect the canopy wood from above-ground damages.**

This fencing must be erected prior to any heavy machinery traffic or construction material arrival on site.

The protective fencing must not be temporarily moved during construction. No materials, tools, excavated soil, liquids, substances, etc. are to be placed or dumped, even temporarily, inside the root protection zone or "RPZ".

No storage, staging, work, or other activities will be allowed inside the RPZ except with PA monitoring.

7. Signage: The RPZ fencing shall have one sign affixed with UV-stabilized zip ties to the chain link at eye level for every 15 linear feet of fencing, minimum 8"X11" size each, plastic laminated or printed with waterproof ink on waterproof paper, with wordage that includes the Town Code section that refers to tree fence protection requirements (wordage can be adjusted):

TREE PROTECTION ZONE FENCE
ZONA DE PROTECCION PARA ARBOLES

-NO ENTRE SIN PERMISO-
-LLAME EL ARBOLISTA-

REMOVAL OF THIS FENCE IS
SUBJECT TO PENALTY ACCORDING TO
LOS GATOS TOWN CODE 29.10.1025

PROJECT ARBORIST:
TELEFONO CELL: EMAIL:

Note: Walter Levison, Contract Town Arborist is an independent consultant working for Town of Los Gatos Planning Division Staff, and is **not** the "PROJECT ARBORIST".

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8. Water Spray:

Spray off foliage of all trees **within 20 feet of construction** activity using a very high power garden hose or a pressure washer system set on low pressure to wash both the upper and lower surfaces of foliage. This helps keep the gas portals (stomata) unclogged for better gas exchange which is crucial for normal tree function.

Spray should be applied approximately **once-monthly,** or when ambient airborne dust concentration is unusually high.

9. Tree Removal Permitting / Removal of Protected-Size Trees / Mitigation:

It is suggested that the Town permit the removal of tree #43 per the applicant's plan sheets.

It is further suggested that the Town permit the removal of possibly trees #41, 44, and #46. Tree #41 appears to be in conflict with the current proposed driveway plan, and will likely require removal unless the driveway and garage are flipped to the opposite side of the property. Trees #44 and #46 have health and/or structural issues.

Note that the applicant's installation of twelve (12) 36" box size trees per the current proposed landscape plan sheet L-1 is equivalent to a landscape credit of greater than the canopy replacement fees that would be due to the Town for removal of trees #41, 43, 44, and #46.

New Plantings / Spec Install:

Ideally, **two (2) high flow type adjustable bubblers each emitting 2 gallons per minute (2GPM)** are set over the rootball of each single tree planting, and each tree is installed with two (2) wooden planting stakes (not the shipping stake), with a set of figure-8 Cinch Ties ™ affixed per the standard spec image below right.

Note how the tree stakes are cut to just above the elevation of the Cinch-Ties to avoid abrasion between the stakes and the limbs and trunk during wind movement.

A watering berm consisting of site soil is formed around the outside edge of the rootball to force irrigation water to pool up directly over the rootball, as seen in the image at right and below right on page 21 of this report.

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RIGHT: Proper installation of a new 24" box size tree with dual high flow type 2 gallon-per-minute flood bubblers seen inside a steeply sloped watering berm built using site soil. The berm is built up directly over the rootball edge, which forces irrigation water directly downward into the rootball via gravity.

10. Temporary Irrigation During Construction (If Any):

    Volume per week: **TBD.**

    Application locations: **TBD.**

    Application methods: **TBD.**

    See image at right showing a 100-foot long soaker hose setup with wood chip mulch around a large coast redwood specimen being retained during construction on a Walter Levison project. Palo Alto, California.

    Other over-grade temporary irrigation techniques can be used, including a tow-behind water tank/spray apparatus, water truck, garden hose, high flow type bubblers, etc.

5.0 Tree Protection and Maintenance Directions per Town Code

The following is excerpted directly from the 2015 iteration of the Town of Los Gatos tree ordinance sections which provide specific tree protection directions and limitations on root pruning and above-ground pruning:

Sec. 29.10.1000. New property development.

(a) A tree survey shall be conducted prior to submittal of any development application proposing the removal of or impact to one or more protected trees. The development application shall include a Tree Survey Plan and Tree Preservation Report based on this survey. The tree survey inventory numbers shall correspond to a numbered metal tag placed on each tree on site during the tree survey. The tree survey plan shall be prepared by a certified or consulting arborist, and shall include the following information:

(1) Location of all existing trees on the property as described in section 29.10.0995;

(2) Identify all trees that could potentially be affected by the project (directly or indirectly- immediately or in long term), such as upslope grading or compaction outside of the dripline;

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(3) Notation of all trees classified as protected trees;

(4) In addition, for trees four (4) inches in diameter or larger, the plan shall specify the precise location of the trunk and crown spread, and the species, size (diameter, height, crown spread) and condition of the tree.

(b) The tree survey plan shall be reviewed by the Town's consulting arborist who shall, after making a field visit to the property, indicate in writing or as shown on approved plans, which trees are recommended for preservation (based on a retention rating of high/moderate/low) using, as a minimum, the Standards of Review set forth in section 29.10.0990. This plan shall be made part of the staff report to the Town reviewing body upon its consideration of the application for new property development;

(c) When development impacts are within the dripline of or will affect any protected tree, the applicant shall provide a tree preservation report prepared by a certified or consulting arborist. The report, based on the findings of the tree survey plan and other relevant information, shall be used to determine the health and structure of existing trees, the effects of the proposed development and vegetation removal upon the trees, recommendations for specific precautions necessary for their preservation during all phases of development (demolition, grading, during construction, landscaping); and shall also indicate which trees are proposed for removal. The tree preservation report shall stipulate a required tree protection zone (TPZ) for trees to be retained, including street trees, protected trees and trees whose canopies are hanging over the project site from adjacent properties. The TPZ shall be fenced as specified in section 29.10.1005:

(1) The final approved tree preservation report shall be included in the building permit set of development plans and printed on a sheet titled: Tree Preservation Instructions (Sheet T-1). Sheet T-1 shall be referenced on all relevant sheets (civil, demolition, utility, landscape, irrigation) where tree impacts from improvements may be shown to occur;

(2) The Town reviewing body through its site and design plan review shall endeavor to protect all trees recommended for preservation by the Town's consulting arborist. The Town reviewing body may determine if any of the trees recommended for preservation should be removed, if based upon the evidence submitted the reviewing body determines that due to special site grading or other unusual characteristics associated with the property, the preservation of the tree(s) would significantly preclude feasible development of the property as described in section 29.10.0990;

(3) Approval of final site or landscape plans by the appropriate Town reviewing body shall comply with the following requirements and conditions of approval:

a. The applicant shall, within ninety (90) days of final approval or prior to issuance of a grading or building permit, whichever occurs first, secure an appraisal of the condition and value of all trees included in the tree report affected by the development that are required to remain within the development using the Tree Value Standard methodology as set forth in this Chapter. The appraisal of each tree shall recognize the location of the tree in the proposed development. The appraisal shall be performed in accordance with the current edition of the Guide for Plant Appraisal published by the Council of Tree and Landscape Appraisers (CTLA) and the Species and Group Classification Guide published by the Western Chapter of the International Society of Arboriculture. The appraisal shall be performed at the applicant's expense, and the appraisal shall be subject to the Director's approval.

b. The site or landscape plans shall indicate which trees are to be removed. However, the plans do not constitute approval to remove a tree until a separate permit is granted. The property owner or applicant shall obtain a protected tree removal permit, as outlined in section 29.10.0980, for each tree to be removed to satisfy the purpose of this division.

(d) Prior to acceptance of proposed development or subdivision improvements, the developer shall submit to the Director a final tree preservation report prepared by a certified or consulting arborist. This report shall consider all trees that were to remain within the development. The report shall note the trees' health in relation to the initially reported condition of the trees and shall note any changes in the trees' numbers or physical conditions. The

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applicant will then be responsible for the loss of any tree not previously approved for removal. For protected trees, which were removed, the developer shall pay a penalty in the amount of the appraised value of such tree in addition to replacement requirements contained in section 29.10.0985 of this Code. The applicant shall remain responsible for the health and survival of all trees within the development for a period of five (5) years following acceptance of the public improvements of the development or certificate of occupancy.

(e) Prior to issuance of any demolition, grading or building permit, the applicant or contractor shall submit to the Building Department a written statement and photographs verifying that the required tree protection fence is installed around street trees and protected trees in accordance with the tree preservation report.

(f) If required by the Director and conditioned as part of a discretionary approval, a security guarantee shall be provided to the Town. Prior to the issuance of any permit allowing construction to begin, the applicant shall post cash, bond or other security satisfactory to the Director, in the penal sum of five thousand dollars ($5,000.00) for each tree required to be preserved, or twenty-five thousand dollars ($25,000.00), whichever is less. The cash, bond or other security shall be retained for a period of one (1) year following acceptance of the public improvements for the development and shall be forfeited in an amount equal to five thousand dollars ($5,000.00) per tree as a civil penalty in the event that a tree or trees required to be preserved are removed, destroyed or severely damaged.

(g) An applicant with a proposed development which requires underground utilities shall avoid the installation of said utilities within the dripline of existing trees whenever possible. In the event that this is unavoidable, all trenching shall be done using directional boring, air-spade excavation or by hand, taking extreme caution to avoid damage to the root structure. Work within the dripline of existing trees shall be supervised at all times by a certified or consulting arborist.

(h) It shall be a violation of this division for any property owner or agent of the owner to fail to comply with any development approval condition concerning preservation, protection, and maintenance of any protected tree.

(Ord. No. 2114, §§ I, II, 8-4-03)

Sec. 29.10.1005. Protection of trees during construction.

(a) Protective tree fencing shall specify the following:

(1) Size and materials. Six (6) foot high chain link fencing, mounted on two-inch diameter galvanized iron posts, shall be driven into the ground to a depth of at least two (2) feet at no more than 10-foot spacing. For paving area that will not be demolished and when stipulated in a tree preservation plan, posts may be supported by a concrete base.

(2) Area type to be fenced. Type I: Enclosure with chain link fencing of either the entire dripline area or at the tree protection zone (TPZ), when specified by a certified or consulting arborist. Type II: Enclosure for street trees located in a planter strip: chain link fence around the entire planter strip to the outer branches. Type III: Protection for a tree located in a small planter cutout only (such as downtown): orange plastic fencing shall be wrapped around the trunk from the ground to the first branch with 2-inch wooden boards bound securely on the outside. Caution shall be used to avoid damaging any bark or branches.

(3) Duration of Type I, II, III fencing. Fencing shall be erected before demolition, grading or construction permits are issued and remain in place until the work is completed. Contractor shall first obtain the approval of the project arborist on record prior to removing a tree protection fence.

(4) Warning sign. Each tree fence shall have prominently displayed an 8.5 x 11-inch sign stating: "Warning—Tree Protection Zone-this fence shall not be removed and is subject to penalty according to Town Code 29.10.1025".

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(b) All persons, shall comply with the following precautions:

(1) Prior to the commencement of construction, install the fence at the dripline, or tree protection zone (TPZ) when specified in an approved arborist report, around any tree and/or vegetation to be retained which could be affected by the construction and prohibit any storage of construction materials or other materials, equipment cleaning, or parking of vehicles within the TPZ. The dripline shall not be altered in any way so as to increase the encroachment of the construction.

(2) Prohibit all construction activities within the TPZ, including but not limited to: excavation, grading, drainage and leveling within the dripline of the tree unless approved by the Director.

(3) Prohibit disposal or depositing of oil, gasoline, chemicals or other harmful materials within the dripline of or in drainage channels, swales or areas that may lead to the dripline of a protected tree.

(4) Prohibit the attachment of wires, signs or ropes to any protected tree.

(5) Design utility services and irrigation lines to be located outside of the dripline when feasible.

(6) Retain the services of a certified or consulting arborist who shall serve as the project arborist for periodic monitoring of the project site and the health of those trees to be preserved. The project arborist shall be present whenever activities occur which may pose a potential threat to the health of the trees to be preserved and shall document all site visits.

(7) The Director and project arborist shall be notified of any damage that occurs to a protected tree during construction so that proper treatment may be administered.

(Ord. No. 2114, §§ I, II, 8-4-03)

Sec. 29.10.1010. Pruning and maintenance.

All pruning shall be in accordance with the current version of the International Society of Arboriculture Best Management Practices—Tree Pruning and ANSI A300-Part 1 Tree, Shrub and Other Woody Plant Management—Standard Practices, (Pruning) and any special conditions as determined by the Director. For developments, which require a tree preservation report, a certified or consulting arborist shall be in reasonable charge of all activities involving protected trees, including pruning, cabling and any other work if specified.

(1) Any public utility installing or maintaining any overhead wires or underground pipes or conduits in the vicinity of a protected tree shall obtain permission from the Director before performing any work, including pruning, which may cause injury to a protected tree. (e.g. cable TV/fiber optic trenching, gas, water, sewer trench, etc.).

(2) Pruning for clearance of utility lines and energized conductors shall be performed in compliance with the current version of the American National Standards Institute (ANSI) A300 (Part 1)- Pruning, Section 5.9 Utility Pruning. Using spikes or gaffs when pruning, except where no other alternative is available, is prohibited.

(3) No person shall prune, trim, cut off, or perform any work, on a single occasion or cumulatively, over a three-year period, affecting twenty-five percent or more of the crown of any protected tree without first obtaining a permit pursuant to this division except for pollarding of fruitless mulberry trees (*Morus alba)* or other species approved by the Town Arborist. Applications for a pruning permit shall include photographs indicating where pruning is proposed.

(4) No person shall remove any Heritage tree or large protected tree branch or root through pruning or other method greater than four (4) inches in diameter (12.5" in circumference) without first obtaining a permit pursuant to this division.

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(Ord. No. 2114, §§ I, II, 8-4-03)

6.0 Tree Replacement Standards – Los Gatos Town Code

(Excerpted from Town Code 29.10.0985 and 29.10.0987)

(1) Two (2) or more replacement trees, of a species and size designated by the Director, shall be planted on the subject private property. Table 3-1 The Tree Canopy—Replacement Standard shall be used as a basis for this requirement. The person requesting the permit shall pay the cost of purchasing and planting the replacement trees.

(2) If a tree or trees cannot be reasonably planted on the subject property, an in-lieu payment in an amount set forth by the Town Council by resolution shall be paid to the Town Tree Replacement Fund to:

a. Add or replace trees on public property in the vicinity of the subject property; or

b. Add or replace trees or landscaping on other Town property; or

c. Support the Town's urban forestry management program. (Ord. No. 2114, §§ I, II, 8-4-03)

Table 3-1 - Tree Canopy - Replacement Standard

Canopy Size of Removed Tree [1]	**(Staff is using 24" box size as the Replacement Standard for SFR Projects as of 2016) [2,4]**	**Single Family Residential Replacement[3,4]**
10 feet or less	Two 24 inch box trees	Two 15 gallon trees
More than 10 feet to 25 feet	Three 24 inch box trees	Three 15 gallon trees
More than 25 feet to 40 feet	Four 24 inch box trees; or Two 36 inch box trees	Four 15 gallon trees
More than 40 feet to 55 feet	Six 24 inch box trees; or Three 36 inch box trees	Not Available

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Greater than 55 feet	Ten 24 inch box trees; or Five 36 inch box trees	Not Available

Notes

[1]To measure an asymmetrical canopy of a tree, the widest measurement shall be used to determine canopy size.

[2]Often, it is not possible to replace a single large, older tree with an equivalent tree(s). In this case, the tree may be replaced with a combination of both the Tree Canopy Replacement Standard and in-lieu payment in an amount set forth by Town Council resolution paid to the Town Tree Replacement Fund.

[3]Single Family Residential Replacement Option is available for developed single family residential lots under 10,000 square feet that are not subject to the Town's Hillside Development Standards and Guidelines. All 15-gallon trees must be planted on-site. Any in-lieu fees for single family residential shall be based on 24" box tree rates as adopted by Town Council.

[4]Replacement Trees shall be approved by the Town Arborist and shall be of a species suited to the available planting location, proximity to structures, overhead clearances, soil type, compatibility with surrounding canopy and other relevant factors. Replacement with native species shall be strongly encouraged. Replacement requirements in the Hillsides shall comply with the Hillside Development Standards and Guidelines Appendix A and Section 29.10.0987 Special Provisions--Hillsides.

Sec. 29.10.0987. Special Provisions—Hillsides

The Town of Los Gatos recognizes its hillsides as an important natural resource and sensitive habitat which is also a key component of the Town's identity, character and charm. In order to maintain and encourage restoration of the hillside environment to its natural state, the Town has established the following special provisions for tree removal and replacement in the hillsides:

(1) All protected trees located 30 or more feet from the primary residence that are removed shall be replaced with native trees listed in *Appendix A Recommended Native Trees for Hillside Areas of the Town of Los Gatos Hillside Development Standards and Guidelines* (HDS&G).

(2) All protected trees located within 30 feet of the primary residence that are removed shall be replaced as follows:

(a) If the removed tree is a native tree listed in Appendix A of the HDS&G, it shall only be replaced with a native tree listed in Appendix A of the HDS&G.

(b) If the removed tree is not listed in Appendix A, it may be replaced with a tree listed in Appendix A, or replaced with another species of tree as approved by the Director.

(c) Replacement trees listed in Appendix A may be planted anywhere on the property.

(d) Replacement trees not listed in Appendix A may only be planted within 30 feet of the primary residence.

(3) Replacement requirements shall comply with the requirements in Table 3-1 Tree Canopy Replacement Standard of this Code.

(4) Property owners should be encouraged to retain dead or declining trees where they do not pose a safety or fire hazard, in order to foster wildlife

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habitat and the natural renewal of the hillside environment.

7.0 Author's Qualifications

- Continued education through The American Society of Consulting Arborists, The International Society of Arboriculture (Western Chapter), and various governmental and non-governmental entities.

- Contract Town Arborist, Town of Los Gatos, California
  Community Development Department / Planning Division
  2015-present

- Tree Risk Assessment Qualified (ISA TRAQ Course Graduate, Palo Alto, California)

- Millbrae Community Preservation Commission (Tree Board)
  2001-2006

- ASCA Registered Consulting Arborist #401

- ASCA Arboriculture Consulting Academy graduate, class of 2000

- Associate Consulting Arborist
  Barrie D. Coate and Associates
  4/99-8/99

- Contract City Arborist, City of Belmont, California
  Planning and Community Development Department
  5/99-present

- ISA Certified Arborist #WE-3172A

- Peace Corps Soil and Water Conservation Extension Agent
  Chiangmai Province, Thailand 1991-1993

- B.A. Environmental Studies/Soil and Water Resources
  UC Santa Cruz, Santa Cruz, California 1990

  UCSC Chancellor's Award, 1990

  (My full curriculum vitae is available upon request)

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8.0 Assumptions and Limiting Conditions

Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownership to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised and evaluated as through free and clean, under responsible ownership and competent management.

It is assumed that any property is not in violation of any applicable codes, ordinance, statutes, or other government regulations.

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the accuracy of information provided by others.

The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

Unless required by law otherwise, the possession of this report or a copy thereof does not imply right of publication or use for any other purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.

Unless required by law otherwise, neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the prior expressed conclusions, identity of the consultant/appraiser, or any reference to any professional society or institute or to any initiated designation conferred upon the consultant/appraiser as stated in his qualifications.

This report and any values expressed herein represent the opinion of the consultant/appraiser, and the consultant's/appraiser's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.

Sketches, drawings, and photographs in this report, being intended for visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise. The reproduction of any information generated by engineers, architects, or other consultants on any sketches, drawings, or photographs is for the express purpose of coordination and ease of reference only. Inclusion of said information on any drawings or other documents does not constitute a representation by Walter Levison to the sufficiency or accuracy of said information.

Unless expressed otherwise:
a. information contained in this report covers only those items that were examined and reflects the conditions of those items at the time of inspection; and
b. the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

Loss or alteration of any part of this report invalidates the entire report.

Arborist Disclosure Statement:

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. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Tree are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborist cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

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

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate the trees.

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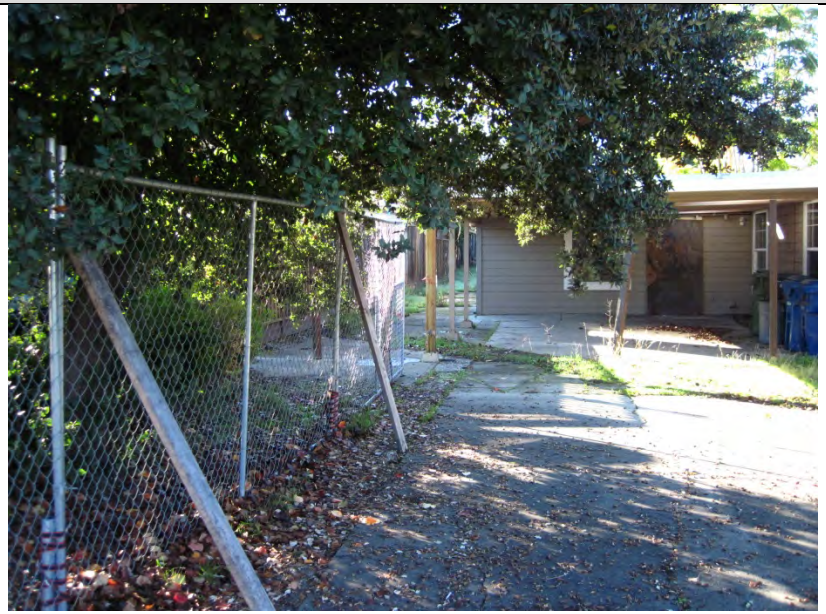
9.0 Certification

I hereby certify that all the statements of fact in this report are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Signature of Consultant

10.0 Digital Images

Below: Digital Images by the CTA archived 1/10/2020.

Tag #	Image	Tag #	Image
41		42	 The oak canopy actually extends 18 feet west of trunk, hanging down to roughly 4 feet above grade, which means that the driveway as currently proposed is not viable unless the canopy were to be severely pruned.

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42		42	
43		44	

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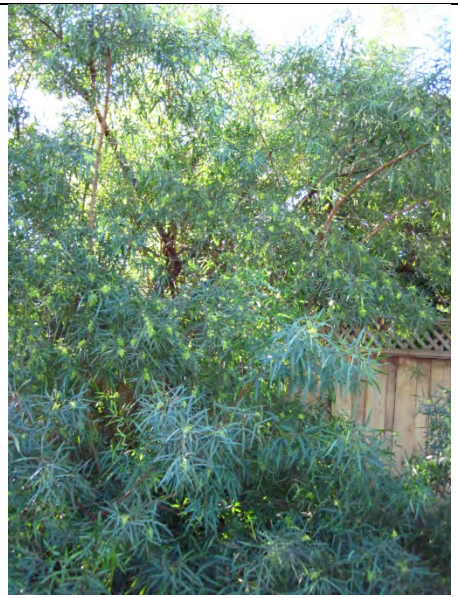
44	 Closeup of decay at fork.	45	
46	 Tree has failed structurally. Suggest remove from landscape.	47	

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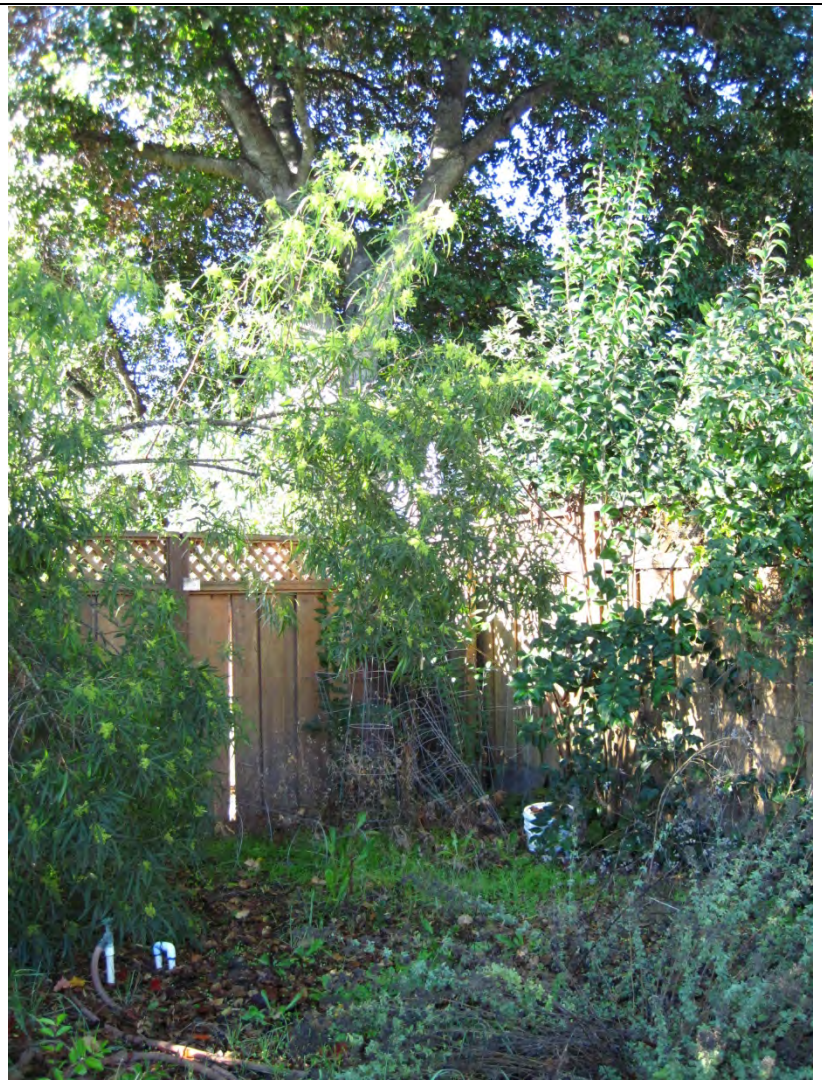
48	 Southwest corner of the site should probably be left alone to preserve the oak roots of tree #48 which likely extend at least 40 of 50 feet into the 16666 Topping Way property.	48	Upper elevations of neighbor owned oak #48. The tree's root system likely extends at least 40 to 50 feet radius into the 16666 Topping Way property, which means we need to eliminate all activity in the southwest corner of the site and fence it off using chain link panels set at 20 feet out from the corner.

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Left: Neighbor tree (hackberry?) #49. Right: Neighbor tree (hackberry?) #50.
The fence is set at the property line. The tree's root system is likely blocked from extending eastward due to the presence of an existing very large diameter concrete storm drain pipe (Town-owned) below the area along the fence (just in front of the fence line). The CTA assumes that nobody can touch the existing pipe.

It appears that the 16666 Topping owners already pruned back these two neighbor trees to clear the property line. It is not known whether this action was performed with the expressed permission of the tree owners, or not. The images show that the two trees are now lopsided westward as a result of the pruning work.

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11.0 Tree Data Table

NOTE 1: Fruit and nut trees measuring less than 18" diameter (total of all mainstems), including fruiting olive trees, both on the site and on adjacent neighbor properties are excluded from the CTA's tree studies as "exemption trees" per the Town tree ordinance.

NOTE 2: Tree conservation suitability ratings (CSR) are now based on the 2016 version of *Best Management Practices: Managing Trees During Construction, 2nd Edition,* published by the International Society of Arboriculture. These ratings are linked to tree health, desirability, distance between tree trunk edges and construction impacts such as root cuts and graded fill soil as shown on the applicant's current-proposed set of plan sheets, species' tolerance to construction impacts, etc. See the worksheet at the end of this data table for the full breakdown of TCS rating determinations and definitions.

Tree Tag Number	Genus & Species	Common Name	Trunk1 Diameter	Trunk2 Diameter	Trunk3 Diameter	Sum of All Trunk Diameters	Height & Canopy Spread (Ft.)	Health & Structural Rating (100% Each)	Overall Condition Rating (0 to 100%)	(R)emove Tree	(S)ave Tree	Tree Conservation Suitability Ratings (TCS)	Lopsided Canopy (note direction)	Trunk Lean (note direction)	Girdling Roots	Root Flares Buried in Fill Soil	Pests and Disease Presence, and Other Notes	SUGGESTED ROOT PROTECTION FENCE RADIUS (Ft.)	MAINTENANCE AND PROTECTION CODES
41	*Celtis sp.*	Hackberry species (not verified)	13.6	-	-	13.6	30/30	70/70	70% Good	?	?	Poor					Good trunk taper and good twig density. PG&E has not yet topped this tree	TBD	TB, RPZ, P if retain

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Tree Tag Number	Genus & Species	Common Name	Trunk1 Diameter	Trunk2 Diameter	Trunk3 Diameter	Sum of All Trunk Diameters	Height & Canopy Spread (Ft.)	Health & Structural Rating (100% Each)	Overall Condition Rating (0 to 100%)	(R)emove Tree	(S)ave Tree	Tree Conservation Suitability Ratings (TCS)	Lopsided Canopy (note direction)	Trunk Lean (note direction)	Girdling Roots	Root Flares Buried in Fill Soil	Pests and Disease Presence, and Other Notes	SUGGESTED ROOT PROTECTION FENCE RADIUS (Ft.)	MAINTENANCE AND PROTECTION CODES
42	*Quercus ilex*	Holly oak	11.2	-	-	11.2	27/25	85/80	80% Good		X	Poor to Mod	W	W			Tree canopy and tree root zone are both in conflict with proposed utilities and proposed driveway	TBD	TB and RPZ. Realign or eliminate trenching for utilities. Push proposed driveway farther west, and use geogrid to build baserock up over-grade as a floating no dig type system. Canopy clearance may be a significant problem. Prune to clear?
43	*Genus species*	Unknown tree species	9	7	7	Total 35	32/25	55/25	35% Poor	X		n/a					Tree exhibits multiple forks between 0 and 2 feet elev with bark inclusions (bad).	n/a	(Tree to be removed per applicant's plan)

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Tree Tag Number	Genus & Species	Common Name	Trunk1 Diameter	Trunk2 Diameter	Trunk3 Diameter	Sum of All Trunk Diameters	Height & Canopy Spread (Ft.)	Health & Structural Rating (100% Each)	Overall Condition Rating (0 to 100%)	(R)emove Tree	(S)ave Tree	Tree Conservation Suitability Ratings (TCS)	Lopsided Canopy (note direction)	Trunk Lean (note direction)	Girdling Roots	Root Flares Buried in Fill Soil	Pests and Disease Presence, and Other Notes	SUGGESTED ROOT PROTECTION FENCE RADIUS (Ft.)	MAINTENANCE AND PROTECTION CODES
44	*Rhus lancea*	African sumac	7.1	-	-	7.1	18/20	70/20	30% Poor		X	Poor to Mod					Mainstem decay 3 feet to 5 feet elev at fork (see photo)	5+ feet offset	RPZ fence if tree is retained.
45	*Rhus lancea*	African sumac	6.0	-	-	6.0	17/16	80/60	70% Good		X	Mod						5+ feet offset	RPZ fence.
46	*Rhus lancea*	African sumac	6.8	-	-	6.8	16/13	10/0	5% "Dead"	X		Poor			Yes		Tree's failed structure is literally on ground due to presence of girdling roots.	n/a	CTA suggests removal of this failed tree.
47	*Rhus lancea*	African sumac	7.5	4.0	-	Total 11.5	18/12	75/60	66% Good		X	Mod	N					10 to 15 feet offset radius	RPZ 10 to 15 feet offset from trunk (may require redesign of proposed grass lawn)

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Tree Tag Number	Genus & Species	Common Name	Trunk1 Diameter	Trunk2 Diameter	Trunk3 Diameter	Sum of All Trunk Diameters	Height & Canopy Spread (Ft.)	Health & Structural Rating (100% Each)	Overall Condition Rating (0 to 100%)	(R)emove Tree	(S)ave Tree	Tree Conservation Suitability Ratings (TCS)	Lopsided Canopy (note direction)	Trunk Lean (note direction)	Girdling Roots	Root Flares Buried in Fill Soil	Pests and Disease Presence, and Other Notes	SUGGESTED ROOT PROTECTION FENCE RADIUS (Ft.)	MAINTENANCE AND PROTECTION CODES
48	*Quercus agrifolia* *NEIGHBOR TREE*	Coast live oak	Est. 24	-	-	Est. 24	40/40	80/70	74% Good		X	Good					Bark inclusion fork at 15 feet (bad). Canopy radius 18 feet, extending +/- 12 to 15 feet into the 16666 Topping airspace.	Erect fence at 15 to 20 feet out from the south-west property corner	RPZ, and adjust the landscape plan to avoid planting and avoid cutting irrigation piping within roughly 15 to 20 feet of the property corner.
49	*Celtis sp. (not verified)* *NEIGHBOR TREE*	Hackberry species (not verified)	9.8	-	-	9.8	30/20	80/60	70% Good		X	Mod	X				Canopy lopsided due to pruning of the east side by 16666 Topping. Root system impeded by presence of Town's very large diameter drainage pipe that runs along the 10 foot easement.	Ideally: 10 to 15 feet offset radius. Note that the (e) fence is set over the property line, which is too close to the trunk.	RPZ

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Tree Tag Number	Genus & Species	Common Name	Trunk1 Diameter	Trunk2 Diameter	Trunk3 Diameter	Sum of All Trunk Diameters	Height & Canopy Spread (Ft.)	Health & Structural Rating (100% Each)	Overall Condition Rating (0 to 100%)	(R)emove Tree	(S)ave Tree	Tree Conservation Suitability Ratings (TCS)	Lopsided Canopy (note direction)	Trunk Lean (note direction)	Girdling Roots	Root Flares Buried in Fill Soil	Pests and Disease Presence, and Other Notes	SUGGESTED ROOT PROTECTION FENCE RADIUS (Ft.)	MAINTENANCE AND PROTECTION CODES
50	*Celtis sp. (not verified)* *NEIGHBOR TREE*	Hackberry species (not verified)	10	9	7	Total of six (6) stems: 45	30/35	80/70	75% Good		X	Mod	X				(Same as tree #49 above)	(Same as #49 above)	RPZ

Overall Tree Condition Ratings / Breakdown of Numeric Ranges (New, Per *Guide for Plant Appraisal, 10th Edition*):

00 - 05% = Dead
06 - 20% = Very Poor
21 – 40% = Poor
41 – 60% = Fair
61 – 80% = Good
81 – 100% = Exceptional

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Tree Conservation Suitability (TCS) Ratings[1]

A tree's suitability for conservation is determined based on its health, structure, age, species and disturbance tolerances, proximity to cutting and filling, proximity to construction or demolition, and potential longevity using a scale of good, fair, or poor (Fite, K, and Smiley, E. T., 2016). The following list defines the rating scale:

TPS Ratings	Range of values	
Good	**80-100**	Trees with good health, good structural stability and good expected longevity after construction.
Moderate	**60-79**	Trees with fair health and/or structural defects that may be mitigated through treatment. These trees require more intense management and monitoring, before, during, and after construction, and may have shorter life expectancy after development.
Poor	**<59**	Trees are expected to decline during or after construction regardless of management. The species or individual may possess characteristics that are incompatible or undesirable in landscape settings or unsuited for the intended use of the site.

TCS Ratings Worksheet Factors (Total Possible: 100 Points)

Health (1-15)
Root Cut/Fill Distance from Trunk (1-15)
Structure Defects (1-15)
Construction Tolerance of the tree species (1-15)
Age relative to typical species lifespan (1-10)
Location of construction activity (1-10)
Soil quality/characteristics (1-10)
Species desirability (1-10)

[1] Derived from Fite and Smiley, 2016. *Best Management Practices: Managing Trees During Construction, 2nd Edition*. International Society of Arboriculture.

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Tree Maintenance and Protection Codes Used in Data Table:

RPZ: Root protection zone fence, chain link, with 2" diameter iron posts driven 24" into the ground, 6 to 8 feet on center max. spacing. Alternative material: chain link fence panels set over concrete block-type footings, with the fence panels wired to steel pins pounded 24 inches into the ground at both ends of each panel.

RB: Root buffer consisting of wood chip mulch lain over existing soil as a 12 inch thick layer, overlain with 1 inch or greater plywood strapped together with metal plates. This root buffer or soil buffer should be placed over the entire width of the construction corridor between tree trunks and construction.

RP: Root pruning. Prune woody roots measuring greater than or equal to 1 inch diameter by carefully back-digging into the soil around each root using small hand tools until an area is reached where the root is undamaged. Cleanly cut through the root at right angle to the root growth direction, using professional grade pruning equipment and/or a Sawzall with wood pruning blade. Backfill around the cut root immediately (same day), and thoroughly irrigate the area to saturate the uppermost 24 inches of the soil profile.

BDRP: Back-dig root pruning: Hand-dig around the broken root, digging horizontally into the open soil root zone until a clean, unbroken, unshattered section of the root is visible. Proceed as per ‘root pruning’.

RCX: Root crown excavation. Retain an experienced ISA-Certified arborist to perform careful hand-digging using small trowels or other dull digging tools to uncover currently-buried buttress root flares. Digging shall occur between trunk edge and at least two (2) feet horizontal from trunk edge. The final soil elevation will be at a level such that the tree’s buttress roots visibly flare out from the vertical trunk.

TB: Trunk buffer consists of 20-40 wraps of orange plastic snow fencing to create a 2 inch thick buffer over the lowest 8 feet of tree trunk (usually takes at least an entire roll of orange fencing per each tree). Lay 2X4 wood boards vertically, side by side, around the entire circumference of the trunk. Secure buffer using duct tape (not wires).

F: Fertilization with slow-release Greenbelt 22-14-14 tree formula, as a soil injection application using a fertilizer injection gun. This brand and formulation is commonly used by reputable tree care companies in the Bay Area. Apply at label rate and injection hole spacing.

M: 4-inch thick layer of chipper truck type natural wood chips (example source: Lyngso Garden Supply, self pick-up). Do not use bark chips or shredded redwood bark.

W: Irrigate using various methods to be determined through discussion with General Contractor. Irrigation frequency and duration to be determined through discussion and/or per directions in this report. Native oak species typically require 1x/month irrigation, while other tree species tend to prefer 2x/month or 4x/month moderate to heavy irrigation during construction.

P: Pruning per specifications noted elsewhere. All pruning must be performed only under direct site supervision of an ISA Certified Arborist, or performed directly by an ISA Certified Arborist, and shall conform to all current ANSI A300 standards.

MON: A Project Arborist must be present to monitor specific work as noted for each tree.

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12.0 Appraisal Worksheet by the CTA

This appraisal worksheet was prepared using the 10th edition of the Guide for Plant Appraisal, 2nd Printing (2019). The dollar values of each survey tree derived from these calculations are useful in helping determine the monetary fines for construction team violations of the Town of Los Gatos tree ordinance, and for other Town Staff purposes. For instance, if a tree is found by an ISA Certified Arborist (e.g. the Project Arborist, or the Contract Town Arborist) to be "50% damaged" in terms of below and/or above-ground losses to structure and/or health (vigor), the fine assessed on the construction team might be calculated as 50% of the tree's appraised dollar value.

13.0 Attached: Tree Location & Protection Fence Map Mark-up by the CTA

The CTA marked up the applicant's grading and drainage plan sheet C2 dated 12/5/2019 by SMP Civil of Los Altos, California. This markup is attached to the end of this report as a PDF markup using Adobe Pro, and the markups by the CTA may not be visible unless the viewer opens the document using Adobe Pro or Adobe CS.

The CTA added the following items to this sheet for reference purposes:

a. Tree tag numbers are noted in black numeric oversized type.

b. Tree plot dots are enlarged for clarity. The locations of most of the plot dots are considered not-accurate (rough approximate only). However, tree plot dots for trees #41 and #42 are the project engineer's plot dots, which are therefore accurate.

c. Canopy driplines are noted to approximate scale, using black clouding.

d. Red dashed lines indicate chain link fencing tree root protection zones (RPZ) suggested by the CTA. The fencing is currently shown as staying offset from most of the applicant's proposed site work. However, the actual ideal fence locations may in some cases be farther than shown on the tree map. This is the case with oak #42, where the proposed driveway footprint encroaches to within the Critical Root Zone (CRZ) of the tree. Oak #42 is also problematic in that the various applicant-proposed utility trenches are shown as encroaching to within the RPZ fence enclosure.

e. Magenta highlighting indicates the applicant's proposed utility trenches.

f. Yellow and green highlighting indicates some (but not all of) the applicant's proposed hardscape, buildings, playground, and grass lawn.

g. Aquamarine highlighting shows the existing Town drainage pipe that exists below grade along the west edge of the 10 foot wide drainage easement. This pipe is assumed to be retained as-is, with its associated existing concrete hardscape overlay.

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CONSULTING ARBORIST

Valuation Appraisal Worksheet Based on *Guide for Plant Appraisal, 10th Edition* (2018)
"Functional Replacement Method / Trunk Formula Technique"
1/17/2020
16666 Topping Way, Los Gatos, CA

								Depreciation Factors					Line 9		Line 10	Line 11	
Tree Tag #	**Name (Initials)**	**WCISA Speces Group Classification Booklet Page**	**Health (Weighted 0.15)**	**Structure (Weighted 0.70)**	**Form (Weighted 0.15)**	**Overall Condition Rating (OCR) "Weighted Method"**	**Diameter Inches at 4.5 ft. Above Grade**	**Functional Limitations**	**External Limitations**	**WCISA Species Group Number**	**Trunk Square Inches for Replacement-Size Specimen of This Species**	**Average SF Bay Area Cost of 24 Inch Box Tree (2019)**	**(UTC) Unit Tree Cost per Sq Inch (M Divided by L)**	**Trunk Area (TA) ((dia. x dia.) x 0.785)**	**Basic Functional Replacement Cost (BFRC) = (OxN)**	**Depreciated Functional Replacement Cost (DFRC) = PxGxIxJ**	**Rounded-off Appraised Values**
41	Csp.	8	0.7	0.7	0.8	72%	13.6	70%	90%	3	3.8	$250.00	$65.79	145.19	$ 9,552	$ 4,303	**$4,300**
42	Qi	31	0.85	0.8	0.8	81%	11.2	60%	90%	2	2.24	$250.00	$111.61	98.47	$ 10,990	$ 4,792	**$4,790**
43	Unkn	-----	0.55	0.25	0.6	35%	**Adjusted trunk area per multistem cross-sectional areas summed**	60%	90%	3	3.8	$250.00	$65.79	195.00	$ 12,829	$ 2,407	**$2,410**
44	Rl	32	0.7	0.2	0.7	35%	7.1	60%	90%	2	2.24	$250.00	$111.61	39.57	$ 4,417	$ 835	**$830**
45	Rl	32	0.8	0.6	0.7	65%	6	60%	90%	2	2.24	$250.00	$111.61	28.26	$ 3,154	$ 1,099	**$1,100**
46	Rl	32	0.1	0	0	2%	6.8	60%	90%	2	2.24	$250.00	$111.61	36.30	$ 4,051	$ 33	**$30**

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"Functional Replacement Method / Trunk Formula Technique"
1/17/2020
16666 Topping Way, Los Gatos, CA

								Depreciation Factors					Line 9		Line 10	Line 11	
Tree Tag #	Name (Initials)	WCISA Speces Group Classification Booklet Page	Health (Weighted 0.15)	Structure (Weighted 0.70)	Form (Weighted 0.15)	Overall Condition Rating (OCR) "Weighted Method"	Diameter Inches at 4.5 ft. Above Grade	Functional Limitations	External Limitations	WCISA Species Group Number	Trunk Square Inches for Replacement-Size Specimen of This Species	Average SF Bay Area Cost of 24 Inch Box Tree (2019)	(UTC) Unit Tree Cost per Sq Inch (M Divided by L)	Trunk Area (TA) ((dia. x dia.) x 0.785)	Basic Functional Replacement Cost (BFRC) = (OxN)	Depreciated Functional Replacement Cost (DFRC) = PxGxIxJ	Rounded-off Appraised Values
47	Rl	32	0.75	0.6	0.7	64%	**Adjusted trunk area per multistem cross-sectional areas summed**	60%	90%	2	2.24	$250.00	$111.61	50.00	$ 5,580	$ 1,921	**$1,920**
48	Qa	30	0.8	0.7	0.8	73%	24	65%	90%	3	3.8	$250.00	$65.79	452.16	$ 29,747	$ 12,704	**$12,700**
49	Csp.	8	0.8	0.6	0.8	66%	9.8	80%	70%	3	3.8	$250.00	$65.79	75.39	$ 4,960	$ 1,833	**$1,830**
50	Csp.	8	0.8	0.7	0.8	73%	**Adjusted trunk area per multistem cross-sectional areas summed.** **The CTA reduced the actual sum by 50% for reasonable-ness**	80%	70%	3	3.8	$250.00	$65.79	140.00	$ 9,211	$ 3,765	**$3,770**

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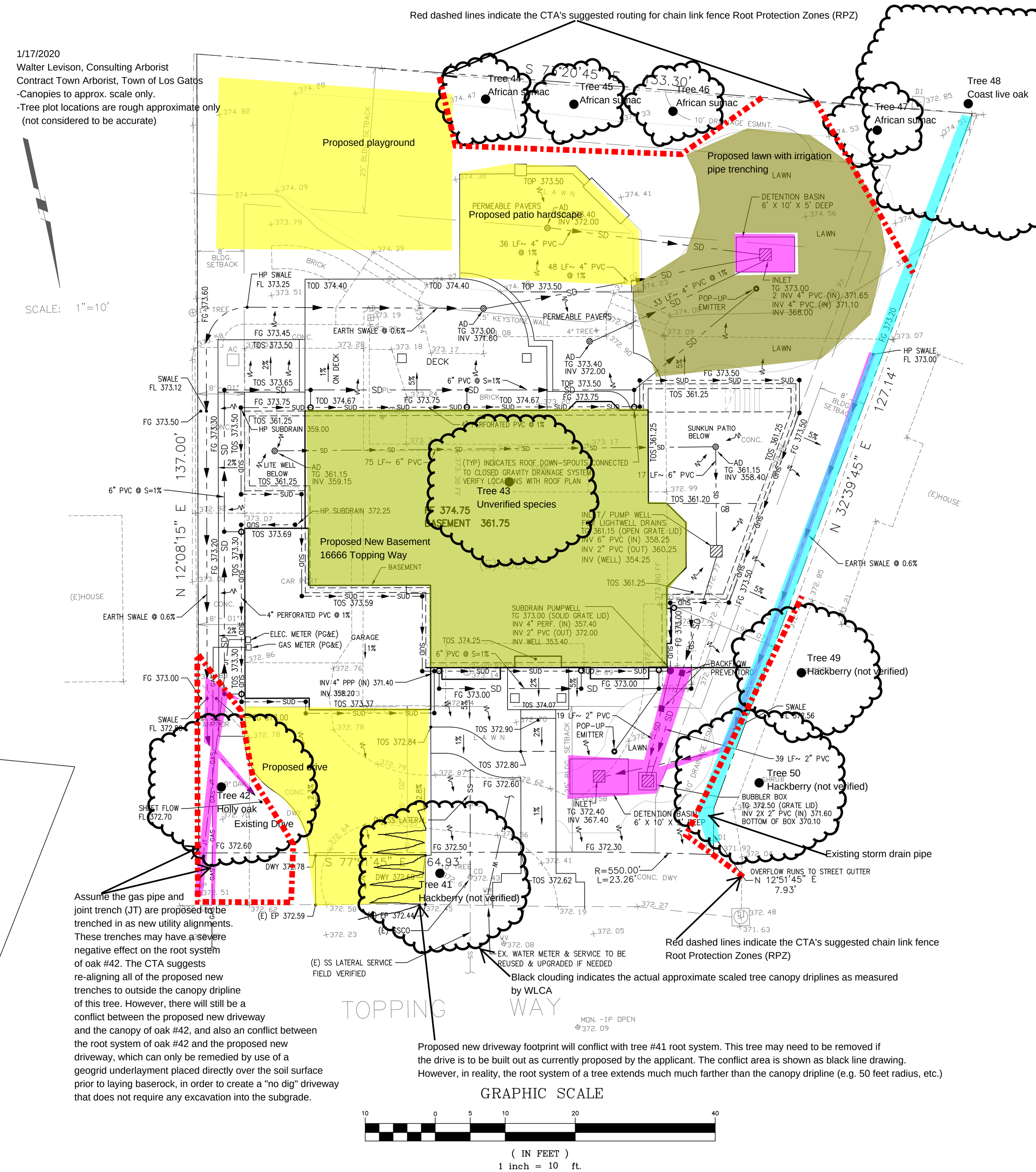
Valuation Appraisal Worksheet Based on *Guide for Plant Appraisal, 10th Edition* (2018)
"Functional Replacement Method / Trunk Formula Technique"
1/17/2020
16666 Topping Way, Los Gatos, CA

								Depreciation Factors					Line 9		Line 10	Line 11	
Tree Tag #	Name (Initials)	WCISA Speces Group Classification Booklet Page	Health (Weighted 0.15)	Structure (Weighted 0.70)	Form (Weighted 0.15)	Overall Condition Rating (OCR) "Weighted Method"	Diameter Inches at 4.5 ft. Above Grade	Functional Limitations	External Limitations	WCISA Species Group Number	Trunk Square Inches for Replacement-Size Specimen of This Species	Average SF Bay Area Cost of 24 Inch Box Tree (2019)	(UTC) Unit Tree Cost per Sq Inch (M Divided by L)	Trunk Area (TA) ((dia. x dia.) x 0.785)	Basic Functional Replacement Cost (BFRC) = (OxN)	Depreciated Functional Replacement Cost (DFRC) = PxGxIxJ	Rounded-off Appraised Values
Notes: (NEWLY REVISED) Overall condition rating range per the new 10th edition of *Guide for Plant Appraisal* (2018): **Excellent: 81-100%** **Good: 61-80%** **Fair: 41-60%** **Poor: 21-40%** **Very Poor: 6-20%** **Dead: 0-5%**																**Total Appraised Value of All Study Trees**	**$33,680**

1/17/2020
Walter Levison, Consulting Arborist
Contract Town Arborist, Town of Los Gatos
-Canopies to approx. scale only.
-Tree plot locations are rough approximate only
(not considered to be accurate)

Red dashed lines indicate the CTA's suggested routing for chain link fence Root Protection Zones (RPZ)



Assume the gas pipe and joint trench (JT) are proposed to be trenched in as new utility alignments. These trenches may have a severe negative effect on the root system of oak #42. The CTA suggests re-aligning all of the proposed new trenches to outside the canopy dripline of this tree. However, there will still be a conflict between the proposed new driveway and the canopy of oak #42, and also an conflict between the root system of oak #42 and the proposed new driveway, which can only be remedied by use of a geogrid underlayment placed directly over the soil surface prior to laying baserock, in order to create a "no dig" driveway that does not require any excavation into the subgrade.

Proposed new driveway footprint will conflict with tree #41 root system. This tree may need to be removed if the drive is to be built out as currently proposed by the applicant. The conflict area is shown as black line drawing. However, in reality, the root system of a tree extends much much farther than the canopy dripline (e.g. 50 feet radius, etc.)

1/16/2020
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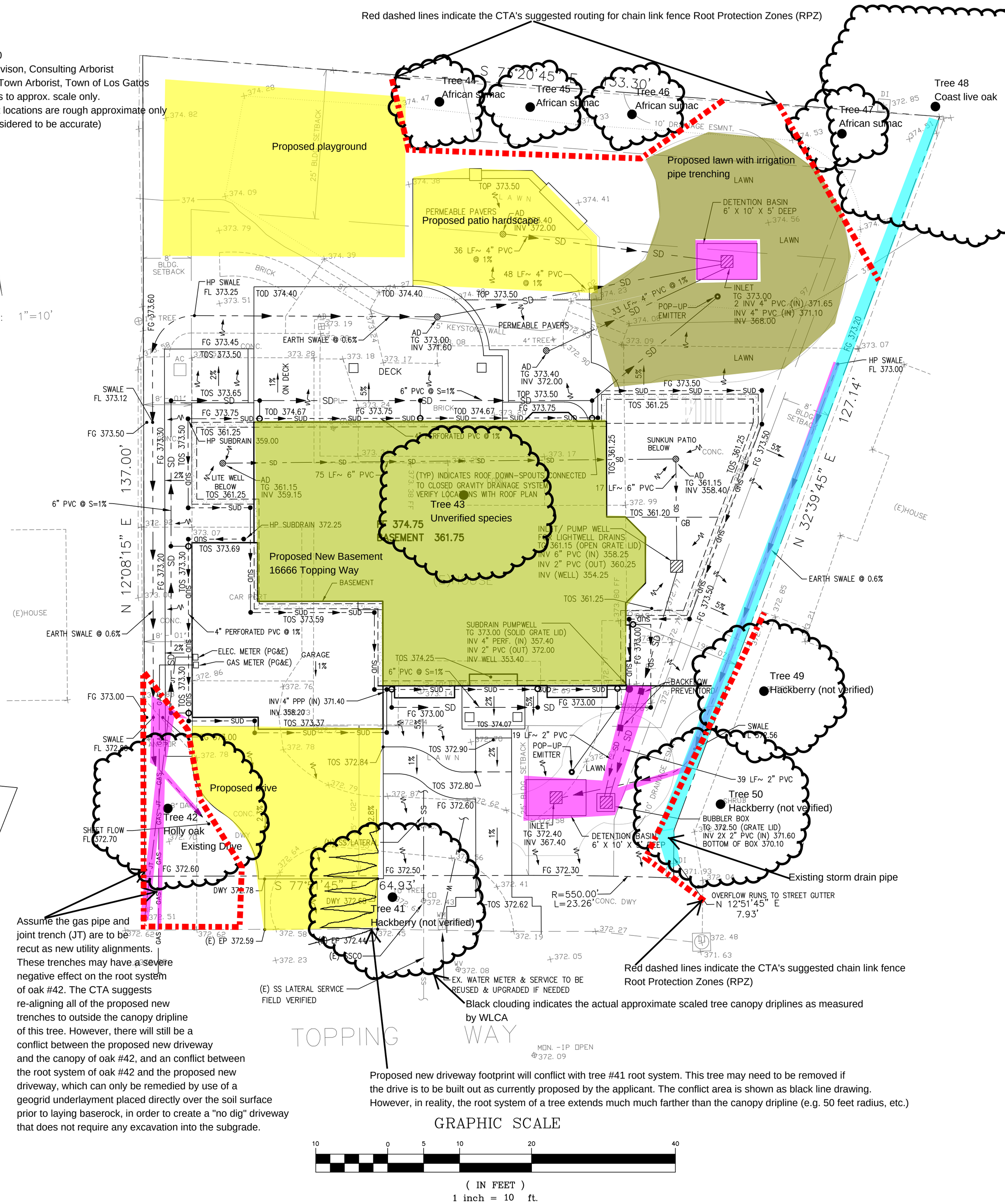
-Canopies to approx. scale only.
-Tree plot locations are rough approximate only
(not considered to be accurate)

SCALE: 1"=10'