ARBOR RESOURCES
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AN ARBORIST REVIEW OF THE PROPOSED ALVES RESTAURANT (APPLE CAFETERIA) 20625 ALVES DRIVE CUPERTINO, CALIFORNIA

Submitted to:

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EXHIBIT

1.0 INTRODUCTION

The City of Cupertino Community Development Department has retained me to prepare this report in connection with the proposed Alves Restaurant (also referred to as "Apple Cafeteria") at **20625 Alves Drive**, which is at the northeast corner of Bandley Drive and Alves Drive, Cupertino. Specific tasks performed are as follows:

- Visit the site on 2/14/12.
- Identify each tree located within or immediately adjacent to the proposed work area.
- Measure and note the trees' trunk diameters at 54 inches above grade. In numerous instances, the actual diameters differ to some extent from what is reported in the submittal documents (some are larger and some smaller), but for the intent and purpose of utilizing diameters towards a replacement calculation, on average, they appear reasonably accurate.
- Evaluate each tree's health and structural integrity, and assign an overall condition rating (e.g. good, fair, poor or dead); see Section 3.0 of this report.
- Identify whether any of the trees are regulated by City Code.
- Review [1] the plan set, dated 1/25/12, provided on the City's ftp site, and [2] the report by Walter Levison, dated 12/19/11.
- Utilize tree numbers and locations presented on the submittal documents.
- Show the tree numbers and location on a copy of the *Topographic Survey*, dated January 2012, presented in Exhibit A.
- For on-site identification purposes, I utilized tags affixed (by others) to the trees' trunks.
- Review potential tree impacts, and provide appropriate measures to mitigate or avoid those impacts.
- Prepare a written report containing the aforementioned information, and submit via email as a PDF document.

2.0 TREE COUNT AND COMPOSITION

Forty-four (44) trees of 12 various types are immediately adjacent to the proposed work area. They are sequentially numbered as **601 thru 644**, their names, assigned numbers, counts and percentages are presented in the table below. Their locations and assigned numbers can be viewed in the report by Mr. Levison.

NAME	TREE NUMBER(S)	COUNT	% OF TOTAL
eucalyptus	601, 608, 610, 636-644	12	27%
pine	602-604, 606, 607, 609, 614, 617, 618, 620	10	23%
camphor	605, 611, 612	3	7%
Mexican fan palm	613, 623, 626	3	7%
flowering cherry	615, 622, 625	3	7%
deodar cedar	616	1	2%
weeping blue atlas cedar	619	1	2%
Japanese maple	621	1	2%
maidenhair tree	624	1	2%
coast redwood	627-629	3	7%
white alder	630-633	4	9%
glossy privet	634, 635	2	5%
	Total	**44**	**100%**

The **locations and assigned numbers** can be viewed on the map in **Exhibit A** (copy of the *Topographic Survey*, dated January 2012).

Seventeen (17) of the trees have trunks situated on **neighboring properties**; they include **#610, 627-633 and 636-644**. **Tree #610**'s trunk is located on the eastern neighboring property, whereas the trunks of **trees #627-633 and 636-644** are situated on the northern neighboring property.

Please note that the project plans available for my review **do not identify** any of the **17 trees** on the **northern neighboring property**. Their locations and numbers can be viewed on the map in Exhibit A, but are not shown on the project plans and **should be added**.

3.0 REGULATED TREES

Tree #601 is a large eucalyptus situated within the public right-of-way and considered a **street tree**. It is regulated by Chapter 14.12 of the City Code.

The following additional **40 trees** can be considered **protected trees** pursuant to Section 14.18.035 of the City Code: **#601-609, 611-633 and 636-644**.

The other three trees (**#610, 634 and 635**) are considered **volunteers**,[1] and do not qualify as "protected trees" per definitions within Section 14.18.035 of the City Code.

Pursuant to Appendix B, and in conjunction with Section 14.18.035 of Ordinance No. 07-2003, **tree #616** is defined as a "**specimen tree**" due to being a deodar cedar with a reported single trunk diameter of ten inches.

[1] "Volunteer" trees originate by natural causes versus being planted by a person.

4.0 TREE CONDITIONS

Each tree has been assigned an overall condition rating based on their health condition and structural integrity; these ratings include **good, fair, poor or dead**. A description of these ratings and assigned trees are presented below.

Good: Applies to **trees #613, 614, 619, 621, 623, 624 and 626-629** (ten in total).

These trees appear viable and in generally good health, and seemingly have stable structures.

Fair: Applies to **trees #602, 604, 606, 610-612, 616-618, 620, 622, 625, 630-632, 636-638, 640-642 and 644** (twenty-two in total).

These trees appear in reasonably viable condition, although have weakened health or structures. They can potentially contribute to the site, but do require regular and more frequent care compared to those appearing in good condition.

Poor: Applies to **trees #601, 603, 605, 607-609, 615, 633-635 and 639** (eleven in total).

These trees are declining in health and have weak structures.

Dead: Applies to **tree #643** (one in total).

This dead tree is a small (six-inch diameter) eucalyptus located on the northern neighboring property.

5.0 POTENTIAL TREE IMPACTS

The proposed *Tree Disposition Plan* (Sheet 6.0) identifies **removal** of the following **25 trees**: **#601-609, 611-618, 620, 622-626, 634 and 635** (these account for all but two trees located on or in front of the project site). In my opinion, based on the trees' species, size and/or condition, their loss will be insignificant, and the proposed development offers the opportunity to establish an improved and superior tree landscape to the site and neighborhood.

Of the proposed removals, **tree #601** is a **street tree** (eucalyptus) and **#616** a **specimen tree**. **Tree #601** is a large eucalyptus with a highly asymmetrical canopy, has a weak attachment formed between its two central leaders, and contains a large wound from where a previous leader broke in the past. **Tree #616** is a deodar cedar with a sparse canopy.

Trees #619 and 621, both ornamentals, are two on-site trees being **relocated**. **Tree #619** is a weeping blue atlas cedar with a unique structure, and **#621** is a Japanese maple in overall good condition.

The trees located on the northern neighboring property include **#627-633 and 636-644**. The group containing **#627 thru 633** are located along the western half of the site, are relatively young, and are setback sufficiently from the subject property to not warrant concern of impacts. The other group, **#636-644**, are situated along the eastern half of the site. Of these, t**ree #643** is **dead** and should be removed regardless of the proposed project. The others, which include **#636-642 and 644**, would be **severely impacted** from excavation for the proposed **bio-retention area** that spans along the entire northern boundary.

Due to the severity of impacts, if the plans were implemented as proposed, I recommend **trees #636-642 and 644** are scheduled for removal with replacements. In doing, it is my opinion that their loss would be insignificant due to their species (all ironbark eucalyptus) and being in only fair or poor condition.

If **trees #636-642 and 644** are to remain and be protected with a reasonable assurance of survival and stability, the project design should **omit the bio-retention area** in the following locations: the eastern section of **existing planter area** that aligns the northern property line from a point **15 feet west** of **tree #636**'s trunk, continues **east** to the **northeast property corner**, then continues **south** along the eastern boundary to a distance of **15 feet** from **tree #644**'s trunk. Where within this area, all **grading** (fill, cut, excavation for the garage, overexcavation, subexcavation, and for forming and pouring a new curb/gutter); **trenching** (all irrigation lines, wiring, valve boxes, lighting, electrical, utilities, etc.); **compaction**; and **tilling** must be avoided.

Also, for the **walkway** proposed between **trees #641 and 642** (closer to 641 than 642), the section **within the existing planter** should require a maximum vertical soil cut of four inches (including for base material, edging and forms); require no direct compaction of soil subgrade (foot tamping is acceptable); and confine any overcut and fill to 12 inches from the walkway edge. Please note that **Tensar® Biaxial Geogrid** (*www.tensarcorp.com*) can help achieve these specifications.

Additional **recommendations** to mitigate or avoid potential impacts are presented in **Section 7.0** of this report, and they (along with ones in this section) should be carefully followed and incorporated into the project plans.

6.0 TREE REPLACEMENTS AND RELOCATION

The minimum amount of new trees and sizes to mitigate removals should conform to **Table A, Section 14.18.185** of the City Code, and additional trees may also be recommended where appropriate and available planting space allows.

By applying Table A, Section 14.18.185 of the City Code, a varying combination of replacement options can be installed to mitigate the loss of "protected trees." One option is for a total of **39 trees of 24-inch box size** to be installed, and an alternative option is for **23 trees of 24-inch box size** and **eight trees of 36-inch box size** to be installed.

If **trees #636-644** are to also be removed, the amount of 24-inch box size replacements specified above would increase by **16** (for a total of 55). An alternative is for the amount of 24-inch boxes to increase by **12**, but to also install **two additional 36-inch box** size trees.

The proposed **landscape plans** identify the installation of **87 trees of 24-inch box size** and **two trees of 36-inch box size** (there are three additional "tree ferns" of 36-inch box size proposed, but I do not consider them for mitigating removals). Per the counts presented in prior paragraphs, the amount of proposed new trees satisfies and exceeds the replacement standards of the City Code.

Based on the amount of new trees to be installed, I recommend the process adheres to **item 9f** of Mr. Levison's report (page 11) for the purpose of optimizing and promoting the future performance, health, longevity and stability of each tree. An additional measure that can be implemented to achieve these benefits, while extending the longevity of surrounding hardscape, is to utilize an alternative base course material within ten feet from each trunk; one such material is **CU-Structural Soil®** (*www.amereq.com/pages/2/index.htm*) and another **Silva Cells** (*www.deeproot.com*).

The new trees should be **installed**, including necessary **irrigation**, by an experienced state-licensed landscape contractor or a professional tree company, and performed to professional industry standards. All irrigation should be on an automatic timer separate from that for shrubs and plants. If tree staking is required, they should be double-staked (no cross-brace) with rubber tree ties or equivalent, and the stakes cut below the first main lateral branch; for a low-branching tree, the stakes should be established in a manner that avoids damaging the trunk(s) and branches. All irrigation should be in the form of a bubbler-type system placed on the surface of the root ball (and not at the trunk).

For trees to be **relocated**, the company employed to perform the work should consider measures for pre-, during and post-transplant care; root ball sizes (i.e. distances from all directions from the tree's trunk); methodology of relocation (e.g. box versus a spade); location where trees are to be stored (if applicable); schedule for monitoring after transplant; and the amounts, methodology and schedule for supplemental watering (current and future). The tree's future location should be suitable for allowing lateral root growth and promoting its natural canopy form; in doing so, grading would need to be avoided beneath the canopies.

7.0 TREE PROTECTION MEASURES

Recommendations presented in this section are based on my review of plans provided, and are intended to serve as guidelines for mitigating or avoiding impacts to retained trees before, during and after construction. They are subject to revision upon reviewing any additional or revised plans, and I should be consulted in the event any measure cannot be feasibly implemented.

1. **Recommendations** presented in **Sections 5.0 and 6.0** of this report, as well as **recommendations #1, 7, 8 and 9** from **Mr. Levison's report** (dated 12/19/11) should be followed and considered part of this section.

2. The trunks of **all inventoried trees**, including the 17 on the northern neighboring property, must be added to at last **Sheets 4.0 and 6.0**. On **Sheet 6.0**, I also recommend that tree **information** presented on the **topographic survey** is shown (diameter, elevation and circle representing trunk); **tree numbers** are identified (and in a larger font than is currently shown); the **tree identified as #617** immediately northeast of tree #616 is changed to read is actual number **#612**; and **#615 and 616** are reversed.

3. A **note** instructing the contractor(s) to refer to this report, as well as Mr. Levison's report (dated 12/19/11) for tree protection measures should be added to all site-related plans (civil, architectural and landscape).

4. All **site-related plans** should be updated to show the trunks of all inventoried trees.

5. For this project, the **Tree Protection Zone (hereinafter "TPZ")** should be the area that is within an existing planter area beneath a tree's canopy. The TPZ is where all grading, overexcavation, soil scraping, trenching and compaction shall be avoided **except where otherwise approved**.

6. All **utilities and services** (e.g. storm drain, electrical, water, sewer, fiber optic, gas, etc.) should be routed beyond TPZs. In the event this is not feasible, the location and proximity to a tree's trunk would dictate which of the following installation methods can offer sufficient mitigation: mechanically excavating, hand-digging, a pneumatic air device (such as an Air-Spade®), or directional boring. For directional-boring, the ground above any tunnel must remain undisturbed, and access pits and any infrastructure (e.g. splice boxes, meters and vaults) established beyond TPZs.

7. The proposed **landscape design** should conform to the following additional guidelines:
    a. Plant material installed beneath the canopies of all other trees should also be at least 24 inches from their trunks.
    b. Spray irrigation should not be applied within 12 to 24 inches from the trunks of existing, new or relocated trees.
    c. Irrigation and lighting (including wiring and controllers) installed within a TPZ shall be in a radial direction to a tree's trunk. If this is not possible, the lines should be laid on grade, or installed using a pneumatic air device (such as an Air-Spade®) to avoid unnecessary root damage. Any Netafim tubing used should be placed on grade, and header lines installed as discussed above.
    d. Valve boxes should be established beyond TPZs.
    e. New fencing should be placed no closer than two feet from a tree's trunk.
    f. Ground cover beneath canopies should be comprised of a three- to four-inch layer of coarse wood chips or other high-quality mulch (gorilla hair, bark or rock, stone, gravel, black plastic or other synthetic ground cover should be avoided). Mulch should not be placed against the trees' trunks.
    g. Tilling, ripping, compaction and fine grading within planter areas beneath canopies should be avoided.
    h. Bender board or other edging material proposed beneath the canopies should be established on top of existing soil grade (such as by using vertical stakes).

8. The **erosion control** design should consider that any straw wattle or fiber rolls installed within a TPZ require a maximum vertical soil cut of two inches for their embedment, and not be placed against tree trunks.

9. The **staging area(s) and routes of access** must be established beyond TPZs.

10. Unless otherwise approved, all construction activities must be **conducted beyond TPZs**, to include, but not limited to, the following: demolition, grading, subexcavation, stripping of topsoil, trenching, equipment cleaning, stockpiling or dumping materials, and equipment/vehicle operation and parking.

11. **Great care** must be taken during demolition of the **existing hardscape** to avoid excavating into roots and existing grade within planter areas beneath tree canopies.

12. The routes of any **irrigation or utility line** within or ten feet from a tree's canopy should be **reviewed** with the City and/or project arborist **before** digging occurs.

13. **Spoils** created during digging shall not be piled or spread on unpaved ground within a TPZ. If essential, spoils can be temporarily piled on plywood or a tarp.

14. **Tree trunks** shall not be used as winch supports for moving or lifting heavy loads.

15. Any approved **digging or trenching** within a TPZ shall be **manually performed** without heavy equipment or tractors operating on unpaved ground beneath canopies.

16. **Removal** of vegetation or plants within a TPZ must be manually performed versus excavated. Additionally, **stumps** within a TPZ shall be ground versus excavated.

17. Great care must be taken by **equipment operators** to position their equipment to avoid the trees' trunks and branches. Where a conflict exists, the project arborist should be advised to provide a feasible solution.

18. The **disposal** of harmful products (such as cement, paint, chemicals, oil and gasoline) is prohibited beneath canopies or anywhere on site that allows drainage beneath or near TPZs. **Herbicides** should not be used with a TPZ; where used on site, they should be labeled for safe use near trees.

19. **Tree protection fencing** should remain in place throughout construction, and can be removed once construction is complete and authorized during a final inspection.

8.0 ASSUMPTIONS AND LIMITING CONDITIONS

- All information presented herein covers only those trees that were examined, at the areas viewed, and reflects those trees' conditions at the time of my observations.
- My observations were performed visually from the ground, and did not involve probing, coring, dissecting or excavating. I cannot, in any way, assume responsibility for any defects that were not observed, or could only have been discovered by performing the mentioned services in the specific area(s) where a defect was located.
- The assignment pertains solely to trees listed in Exhibit A. I hold no opinion towards other trees on or surrounding the project area.
- I cannot provide a guarantee or warranty, expressed or implied, that deficiencies or problems of any trees or property in question may not arise in the future.
- No assurance can be offered that if all my recommendations and precautionary measures (verbal or in writing) are accepted and followed, that the desired results may be achieved.
- All information provided to me is assumed to be correct. I cannot guarantee or be responsible for the accuracy of information provided by others.
- I assume no responsibility for the means and methods used by any person or company implementing the recommendations presented in this report.
- The information provided herein represents my opinion. Accordingly, my fee is in no way contingent upon the reporting of a specified finding, conclusion or value.
- This report is proprietary to me and may not be copied or reproduced in whole or part without prior written consent. It has been prepared for the sole and exclusive use of the parties to who submitted for the purpose of contracting services provided by David L. Babby.
- If any part of this report or copy thereof be lost or altered, the entire evaluation shall be invalid.

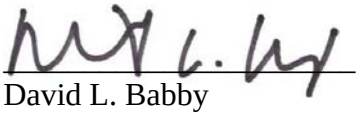
Prepared By:  Date: March 9, 2012

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EXHIBIT A:

SITE MAP

(tree numbers shown on a copy of the *Topographic Survey*)

20625 ALVES DRIVE

Cupertino, California