

APPENDIX D
TREE INVENTORY REPORT

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Tree Inventory Report

**1095 Rollins Road
Burlingame, CA**

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**Tree Inventory Report
1095 Rollins Road
Burlingame, CA**

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Tree Assessment***

Tree Inventory Report

1095 Rollins Road

Burlingame, CA

Introduction and Overview

Hanover is planning to redevelop the property located at 1095 Rollins Road in Burlingame, CA. Currently the project area consists of a series of commercial building with associated landscapes, parking lots and a tennis court. HortScience | Bartlett Consulting was asked to prepare a **Tree Inventory Report** for the site as part of the application to the City of Burlingame.

This report provides the following information:

1. Assessment of the health and structural condition of the trees within the proposed project area based on a visual inspection from the ground.
2. Guidelines for tree preservation during the design, construction and maintenance phases of development.

Tree Assessment Methods

Trees were assessed on October 31, 2018. The assessment included all trees 6" and greater, located within and adjacent to the project area. Off-site trees with canopies extending over the property line were included in the assessment. The assessment procedure consisted of the following steps:

1. Identifying the tree as to species.
2. Tagging each tree with an identifying number and recording its location on a map; off-site trees were not tagged.
3. Measuring the trunk diameter at a point 54" above grade; for off-site trees diameters were estimated.
4. Evaluating the health and structural condition using a scale of 0 – 5 based on a visual inspection from the ground:
 - 5** - A healthy, vigorous tree, reasonably free of signs and symptom of disease, with good structure and form typical of the species.
 - 4** - Tree with slight decline in vigor, small amount of twig dieback, minor structural defects that could be corrected.
 - 3** - Tree with moderate vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that might be mitigated with regular care.
 - 2** - Tree in decline, epicormic growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated.
 - 1** - Tree in severe decline, dieback of scaffold branches and/or trunk; most of foliage from epicormics; extensive structural defects that cannot be abated.
 - 0** - Tree is dead.
5. Rating the suitability for preservation as "high", "moderate" or "low". Suitability for preservation considers the health, age and structural condition of the tree, and its potential to remain an asset to the site for years to come:

| | |
|------------------|---|
| High: | Trees with good health and structural stability that have the potential for longevity at the site. |
| Moderate: | Trees with somewhat declining health and/or structural defects that can be abated with treatment. The tree will require more intense management and monitoring, and may have a shorter life span than those in the "high" category. |

Low: Tree in poor health or with significant structural defects that cannot be mitigated. Tree is expected to continue to decline, regardless of treatment. The species or individual may have characteristics that are undesirable for landscapes and generally are unsuited for use areas.

Description of Trees

Ten (10) trees representing five species were evaluated (Table 1). For all species combined, trees were in fair condition (9 trees) with one tree in poor condition. Eight off-site trees were included in the assessment (#135, 136, 138-142 and 144). Descriptions of each tree are found in the **Tree Assessment**, and approximate locations are plotted on the **Tree Assessment Map** (see Exhibits).

**Table 1. Condition ratings and frequency of occurrence of trees
1095 Rollins Road, Burlingame, CA**

| Common Name | Scientific Name | Condition | | | Total |
|------------------|----------------------------------|---------------|-------------|---------------|-----------|
| | | Poor (1-2) | Fair (3) | Good (4-5) | |
| Monterey cypress | <i>Hesperocyparis macrocarpa</i> | 1 | 3 | - | 4 |
| Olive | <i>Olea europaea</i> | - | 1 | - | 1 |
| Monterey pine | <i>Pinus radiata</i> | - | 3 | - | 3 |
| Tobira | <i>Pittosporum tobira</i> | - | 1 | - | 1 |
| Chinese elm | <i>Ulmus parvifolia</i> | - | 1 | - | 1 |
| Total | | 1 | 9 | - | 10 |

Two trees were growing on-site.

- A small Pittosporum shrub/tree (#137) was in fair condition growing in the south eastern corner of the property (Photo 1).
- A small olive (#143) in fair condition was covered in ivy along Rollings Road.



Eight trees were growing off-site with canopy over-hanging the property.

- Three Monterey pines (#135, 136 and 138) were growing in the southwestern corner of the property. They had trunk diameters of 22, 22 and 26" respectively and were in fair condition.
- Four Monterey cypresses (#139-142) were growing along the southern boundary. They were mature in development with at least one trunk 18" or greater in diameter. They were in fair condition except for #140 which had a thinner crown than the others (Photo 2).
- Chinese elm #144 was semi-mature and growing near the eastern property boundary.

Photo 1 – Tobira #137 was a short shrub-like tree.

Burlingame protects all trees 15" and greater in diameter (Municipal Code Section 11.06). Based on this definition, seven trees included in the report are considered *Protected*. These trees cannot be removed without a permit.



Photo 2 – Monterey cypresses #142-140 (left to right) were growing along the southern property boundary.

Suitability for Preservation

Before evaluating the impacts that will occur during development, it is important to consider the quality of the tree resource itself, and the potential for individual trees to function well over an extended length of time. Trees that are preserved on development sites must be carefully selected to make sure that they may survive development impacts, adapt to a new environment and perform well in the landscape.

Our goal is to identify trees that have the potential for long-term health, structural stability and longevity. For trees growing in open fields, away from areas where people and property are present, structural defects and/or poor health present a low risk of damage or injury if they fail. However, we must be concerned about safety in use areas. Therefore, where development encroaches into existing plantings, we must consider their structural stability as well as their potential to grow and thrive in a new environment. Where development will not occur, the normal life cycles of decline, structural failure and death should be allowed to continue.

Evaluation of suitability for preservation considers several factors:

- **Tree health**
Healthy, vigorous trees are better able to tolerate impacts such as root injury, demolition of existing structures, changes in soil grade and moisture, and soil compaction than are non-vigorous trees.
- **Structural integrity**
Trees with significant amounts of wood decay and other structural defects that cannot be corrected are likely to fail. Such trees should not be preserved in areas where damage to people or property is likely.

- **Species response**

There is a wide variation in the response of individual species to construction impacts and changes in the environment. For instance, olives are more tolerant of root pruning than Monterey pines.

- **Tree age and longevity**

Mature trees, while having significant emotional and aesthetic appeal, have limited physiological capacity to adjust to an altered environment. Young trees are better able to generate new tissue and respond to change.

- **Species invasiveness**

Species that spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. The California Invasive Plant Inventory Database <http://www.cal-ipc.org/plants/inventory/> lists species identified as being invasive. Burlingame is part of the Central West Floristic Province. Olive are listed as limited invasiveness.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (see **Tree Assessment** in Exhibits, and Table 2). We consider trees with “high” suitability for preservation to be the best candidates for preservation. We do not recommend retention of trees with “low” suitability for preservation in areas where people or property will be present. Retention of trees with “moderate” suitability for preservation depends upon the intensity of proposed site changes.

**Table 2. Tree suitability for preservation
1095 Rollins Road, Burlingame, CA**

| | |
|-----------------|--|
| High | These are trees with good health and structural stability that have the potential for longevity at the site. No trees had “high” suitability for preservation. |
| Moderate | Trees in this category have fair health and/or structural defects that may be abated with treatment. These trees require more intense management and monitoring, and may have shorter life-spans than those in the “high” category. Seven trees had “moderate” suitability for preservation. |
| Low | Trees in this category are in poor health or have significant defects in structure that cannot be abated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess either characteristics that are undesirable in landscape settings or be unsuited for use areas. Three trees had “low” suitability for preservation. |

Tree Preservation Guidelines

The goal of tree preservation is not merely tree survival during development but maintenance of tree health and beauty for many years. Trees retained on sites that are either subject to extensive injury during construction or are inadequately maintained become a liability rather than an asset. The response of individual trees will depend on the amount of excavation and grading, the care with which demolition is undertaken, and the construction methods. Coordinating any construction activity inside the **TREE PROTECTION ZONE** can minimize these impacts.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing, grading and construction phases. Specific recommendations for tree protection will be prepared when project plans are available.

Design recommendations

1. Note trees that would be beneficial to the future landscape and plan construction to avoid these trees.
2. The plans affecting the trees should be reviewed by the Consulting Arborist with regard to tree impacts. These include, but are not limited to, site plans, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition plans.
3. Plot accurate locations of all trees to be preserved on all project plans. Identify the **TREE PROTECTION ZONE** for each tree. Focus on preserving trees that have high suitability for preservation, especially street trees.
4. Plan for tree preservation by designing adequate space around trees to be preserved. This is the **TREE PROTECTION ZONE**. No grading, excavation, construction or storage of materials should occur within that zone. Route underground services including utilities, sub-drains, water or sewer around the **TREE PROTECTION ZONE**. For design purposes, the **TREE PROTECTION ZONE** is the trees dripline.
5. Consider the vertical clearance requirements near trees during design. Avoid designs that would require pruning more than 20% of a tree's canopy.
6. Irrigation systems must be designed so that no trenching severs roots larger than 1" in diameter will occur within the **TREE PROTECTION ZONE**.
7. **Tree Preservation Guidelines** prepared by the Consulting Arborist, which include specifications for tree protection during demolition and construction, should be included on all plans.
8. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.
9. Do not lime the subsoil within 50' of any tree. Lime is toxic to tree roots.
10. As trees withdraw water from the soil, expansive soils may shrink within the root area. Therefore, foundations, footings and pavements on expansive soils near trees should be designed to withstand differential displacement.
11. Ensure adequate but not excessive water is supplied to trees; in most cases occasional irrigation will be required. Avoid directing runoff toward trees.

Maintenance of impacted trees

Our procedures included assessing trees for observable defects in structure. This is not to say that trees without significant defects will not fail. Failure of apparently defect-free trees does occur, especially during storm events. Wind forces, for example, can exceed the strength of defect-free wood causing branches and trunks to break. Wind forces coupled with rain can saturate soils, reducing their ability to hold roots, and blow over defect-free trees. Although we

cannot predict all failures, identifying those trees with observable defects is a critical component of enhancing public safety.

Furthermore, trees change over time. Our inspections represent the condition of the tree at the time of inspection. As trees age, the likelihood of failure of branches or entire trees increases. Annual tree inspections are recommended to identify changes to tree health and structure. In addition, trees should be inspected after storms of unusual severity to evaluate damage and structural changes. Initiating these inspections is the responsibility of the client and/or tree owner.

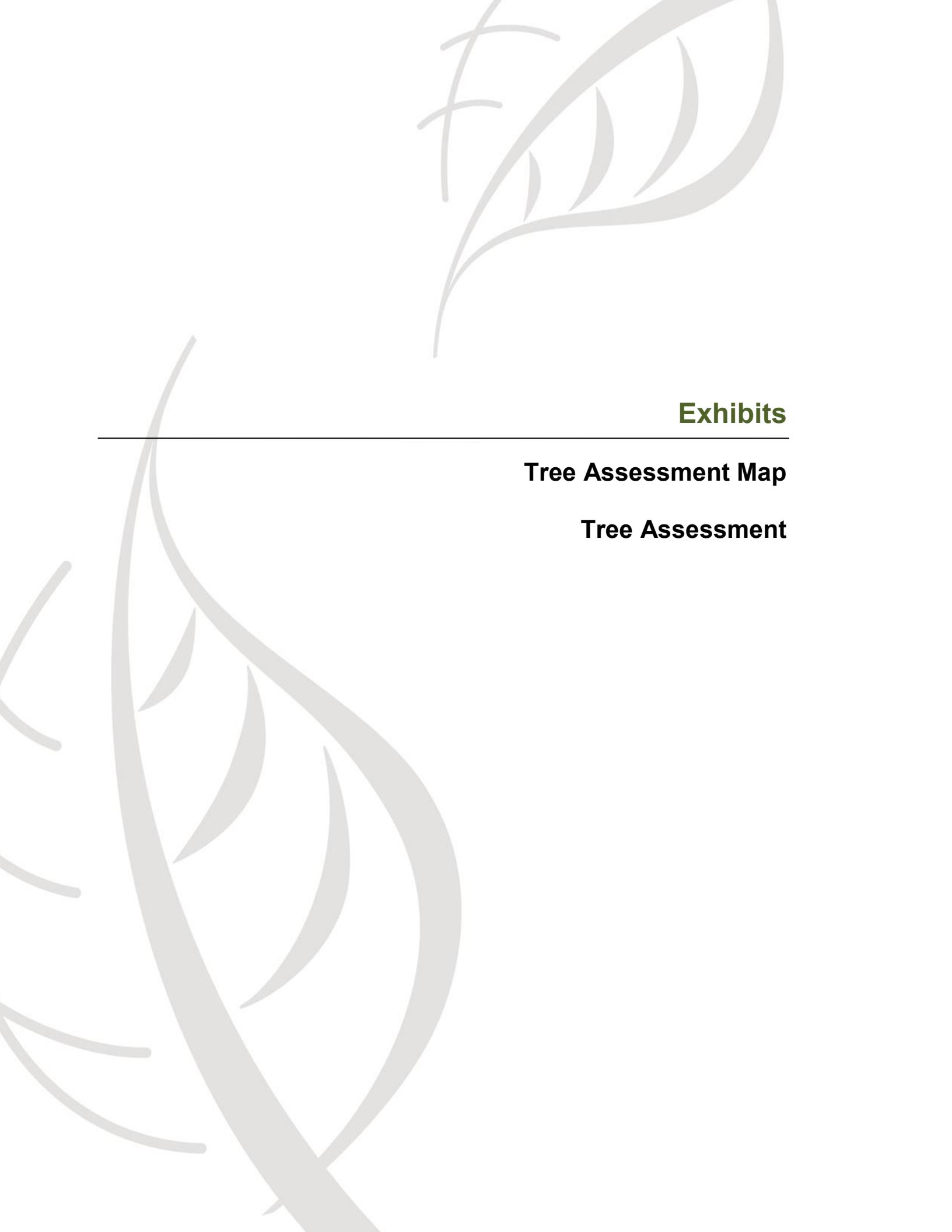
Preserved trees will experience a physical environment different from that pre-development. As a result, tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. In addition, provisions for monitoring both tree health and structural stability following construction must be made a priority.

If you have any questions about my observations or recommendations, please contact me.

HortScience | Bartlett Consulting



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Exhibits

Tree Assessment Map

Tree Assessment

Tree Assessment Map

1095 Rollins Road
Burlingame, CA

Prepared for:
Hanover

November 2018

Notes:

1. Tree locations are approximate.
2. Aerial image provided by ESRI.

Legend

 Trees



75

Feet



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



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Tree Assessment

1095 Rollins Road
Burlingame, CA
November 2018



| Tree No. | Species | Trunk | Protected | Condition | Suitability for | Comments |
|----------|------------------|-------------------|-----------|-----------------------|-----------------|--|
| | | Diameter (in.) | Tree? | 1=poor 5=excellent | Preservation | |
| 135 | Monterey pine | 22 | Yes | 3 | Moderate | Off-site; tagged on fence; codominant trunks arise from 3'; wide attachment; southern trunk turns vertical at 15 feet. |
| 136 | Monterey pine | 22 | Yes | 3 | Moderate | Off-site; tagged on fence; heavily suppressed; thin. |
| 137 | Tobira | 5,4,3 | No | 3 | Moderate | Multiple trunks arise from base; growing as a shrub. |
| 138 | Monterey pine | 26 | Yes | 3 | Low | Off-site; tagged on fence; overhangs site by 20'; thin; straight upright trunk. |
| 139 | Monterey cypress | 22,14 | Yes | 3 | Moderate | Off-site; codominant trunks arise from 1'; full crown. |
| 140 | Monterey cypress | 21 | Yes | 2 | Low | Off-site; minimal overhang; topped at 20'; thin. |
| 141 | Monterey cypress | 18,12 | Yes | 3 | Low | Off-site; minimal overhang; topped at 20'; full crown |
| 142 | Monterey cypress | 18,16 | Yes | 3 | Moderate | Off-site; minimal overhang; codominant trunks arise from 5'; topped at 20'; full crown; roots lifting asphalt. |
| 143 | Olive | 5,5 | No | 3 | Moderate | Codominant trunks arise from base; base, trunk and crown engulfed in ivy; healthy growth. |
| 144 | Chinese elm | 14 | No | 3 | Moderate | Off-site; tagged on fence; minimal overhang; healthy crown; |