

Appendix C:

Biological Resources Assessment and Preliminary Arborist Report

February 6, 2013

Rebecca Gorton
Lamphier-Gregory
1944 Embarcadero
Oakland, CA 94606

**Assessment of Potential Impacts on Biological Resources
Atherton Cartan Field Upgrade Project
Atherton, California**

Dear Rebecca:

Zander Associates is providing this assessment of potential impacts on biological resources from the Atherton Cartan Field Upgrade Project for Lamphier-Gregory to incorporate in the project DEIR. This assessment describes existing biological resources in the project area, identifies project-related impacts on those resources and outlines mitigation measures to reduce potentially significant impacts to less-than-significant levels. Information used in the preparation of this assessment was obtained from the California Department of Fish and Wildlife's California Natural Diversity Database (CNDDDB), California Native Plant Society Electronic Inventory, USDA Soil Survey for San Mateo County, U.S. Fish and Wildlife Service National Wetland Inventory, and existing biological reports for other projects in the vicinity.

ENVIRONMENTAL SETTING

The project site is located within the Town of Atherton at the western corner of El Camino Real and Alejandra Avenue. It is situated within a highly urbanized area surrounded by residential, commercial and institutional facilities. The site itself is fully developed with athletic fields and courts with associated structures and buildings used by Menlo College and Menlo School, which are located across Alejandra Avenue to the south.

The majority of the project site consists of field turf, surfaced tracks, and courts. There are planted coast redwood (*Sequoia sempervirens*) and coast live oak (*Quercus agrifolia*) trees around the perimeter and rows of redwood trees separating the tennis courts from the athletic fields. Some ruderal grassland vegetation is present in the northwestern corner, between the track field and El Camino Real, but no native habitats occur on the site. Wildlife species expected to utilize the area include animals that are adapted to urban environments; able to tolerate disturbances, typically generalists, and capable of utilizing the limited food sources available, such as garbage and horticultural plants and their fruit. These species include raccoon (*Procyon lotor*), Norway rat (*Rattus norvegicus*), Virginia opossum (*Didelphis virginiana*), and a variety of birds that are commonly found in urban areas, such as; common crow (*Corvus*

brachyrhynchos), northern mockingbird (*Mimus polyglottos*) house finch (*Carpodacus mexicanus*), dark-eyed junco (*Junco hyemalis*), western scrub jay (*Aphelocoma californica*), and Anna's hummingbird (*Calypte anna*).

The coast redwood and coast live oak trees lining the project site and around the tennis courts could provide suitable nesting habitat for raptors such as Cooper's hawk (*Accipiter cooperi*) or red-shouldered hawk (*Buteo lineatus*), which are somewhat tolerant of disturbance and human presence.

There are no wetland or riparian areas on the project site. Atherton Channel, which is adjacent to the northern boundary is concrete lined and does not support in-channel vegetation. Coast live oak and ornamental trees have been planted outside the banks, creating a relatively dense canopy but no native riparian species are present. This channel begins in Woodside, south of I-280, and exists mostly of engineered channels and underground storm drains; only small reaches in the headwaters remain as open channels.

SPECIAL STATUS SPECIES

The CNDDDB has occurrence records for several special status species within a 3-mile radius of the project site. Many of these occurrences are historical and are presumed extirpated, or are species that are restricted to specific habitats not present on the site. No occurrences are recorded on the project site. There is one species, San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) that is shown as being near the project site but the exact location information is suppressed in the CNDDDB. I contacted the Department of Fish and Wildlife to get more information about this record and was told that all of the San Francisco garter snake occurrences in the Atherton vicinity are west of I-280, in the foothills, and that the closest known location to the project site is a little over four miles to the south southwest. This information, coupled with the fact that there is no suitable aquatic habitat on or nearby the project site make it highly unlikely that San Francisco garter snake are present in the area.

The California red-legged frog (*Rana draytonii*) has been found in the upper reaches of Atherton Channel near Bear Gulch Reservoir. This is a little over two miles from the project site and in an area where the creek consists of a non-engineered open channel. It is unlikely that CRLF would disperse downstream into the concrete-lined reaches of Atherton Channel as there is no natural substrate or vegetation to provide cover or prevent desiccation (drying). Also, the channel is surrounded by development and there is little if any habitat away from the channel to which frogs would disperse. There is no suitable breeding or other aquatic habitat for CRLF on the project site. Therefore, CRLF are presumed absent from the site.

California tiger salamanders (CTS) are known to occur in San Francisquito Creek, approximately 1.5 miles south of the project site. While the project site is within the distance range that CTS will travel away from a breeding area to aestivate, there is dense urban development between the creek and the site that would prevent this migration. Additionally, there is no breeding habitat for CTS on the project site and suitable upland habitat is extremely limited. Therefore CTS are highly unlikely to be present on the site. Similarly, the western pond turtle (*Emys marmorata*) is

known to occur in San Francisquito Creek but is not likely to move far away from the channel due to the amount of surrounding development. There is no suitable habitat for western pond turtle in the concrete-lined sections of Atherton Channel adjacent to the project site and therefore they are not likely to be present in the area.

No special status plant species are expected to occur on the project site. Recorded occurrences of lost thistle (*Cirsium praeteriens*) and San Mateo thorn-mint (*Acanthomintha duttonii*) within close proximity are historical. Lost thistle is now presumed extinct and the closest San Mateo thorn-mint occurrence is presumed extirpated due to urban development. Other special status plants known to occur in the vicinity are found in habitats that are not present on the project site. The amount of development and disturbance on the site precludes the establishment of native plants, including special status species.

The large coast redwood and coast live oak trees surrounding the project site and around the tennis courts could provide suitable nesting habitat for a variety of birds, including Cooper's hawk, other raptors, and migratory birds that tolerate disturbance and human activity. Active nests of these species are protected under the Migratory Bird Treaty Act and the California Fish and Game Code. The Migratory Bird Treaty Act (16 USC 703) prohibits the taking, hunting, killing, selling, purchasing, etc. of migratory birds, parts of migratory birds, and their eggs and nests. As used in the act, the term "take" is defined as meaning, "to pursue, hunt, capture, collect, kill or attempt to pursue, hunt, shoot, capture, collect or kill, unless the context otherwise requires." Most native bird species within the study area are covered by this act. The California Fish and Game Code (Section 3511) also provides protection for certain species as listed in the Section. Section 3503.5 of the Fish and Game Code specifically protects the nests and eggs of birds-of-prey, including Cooper's hawk.

IMPACT ASSESSMENT

The Atherton Cartan Field Upgrade project will not remove any native habitats or sensitive natural communities. No special status species are expected to occur on the project site or be associated with the reach of Atherton Channel immediately adjacent to the site. There is a potential for migratory birds and other birds protected under the California Fish and Game Code and Migratory Bird Treaty Act to nest in the coast redwood and coast live oak trees surrounding the site and around the tennis courts. Most of these trees will remain, but active nests could be affected by construction if activities are conducted during the breeding season. This potential impact can be avoided by implementing the following measures:

- Within 15 days in advance of any tree removal, or ground-disturbing activity that will commence during the breeding season (February 1 through August 31), a qualified wildlife biologist will conduct pre-construction surveys of all trees in the vicinity of the planned activity. Pre-construction surveys are not required for construction activities scheduled to occur during the non-breeding season (August 31 through January 31). Construction activities commencing during the non-breeding season and continuing into the breeding season do not require surveys (as it is assumed that any breeding birds taking up nests would be acclimated to project-related activities already under way). Nests initiated during

construction activities would be presumed to be unaffected by the activity, and a buffer zone around such nests would not be necessary. However, a nest initiated during construction cannot be moved or altered.

- If pre-construction surveys indicate that no nests of protected birds are present or that nests are inactive or potential habitat is unoccupied, no further action is required.
- If active nests of protected birds are found during the surveys, then avoidance procedures should be developed in consultation with the Department of Fish and Wildlife. Avoidance measures could include establishment of construction buffers (up to several hundred feet in the case of raptors), or seasonal avoidance. If buffers are established, a no disturbance zone should be enforced around active nests for the duration of the breeding season or until a qualified biologist determines that all young have fledged. Once the young have fledged, tree removal or construction activities within the buffer zone can resume. The size of the buffer zone should take into account baseline noise and human disturbance levels at the site, screening between the nest and the construction area, and sensitivity of the identified nesting species.

No other potential impacts on biological resources are expected to result from construction of the project.

If you have any questions regarding my assessment of project impacts on biological resources, please feel free to call me.

Sincerely,



Leslie Zander
Principal Biologist



Preliminary Arborist Report

**Cartan Field Upgrade
Menlo College
Atherton, CA**

Prepared for:
**Lamphier-Gregory
1944 Embarcadero
San Francisco, CA 94606**

Prepared by:
**HortScience, Inc.
325 Ray St.
Pleasanton, CA 94566**

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Preliminary Arborist Report Cartan Field Upgrade, Atherton

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Introduction and Overview

Lamphier-Gregory, under the direction of the Town of Atherton, is preparing the environmental analysis for redevelopment of the Cartan Field athletic facility located in Atherton, CA. Current use of the site includes two baseball fields, football field and track, six tennis courts, and limited parking. The proposed project would upgrade all existing fields and facilities and expand parking. HortScience, Inc. ("Consulting Arborist") was asked to prepare a **Preliminary Arborist Report** for the site as part of the development submittals for review by the Town of Atherton.

This report provides the following information:

1. A survey of trees within and immediately adjacent to the proposed project area.
2. A preliminary assessment of the impacts of constructing the proposed project on the trees based on the plans provided by Lamphier-Gregory.
3. Preliminary guidelines for tree preservation during the design, construction and maintenance phases of development.

Survey Methods

Trees were evaluated on December 18, 2012. The evaluation included all trees 6" in diameter and greater on the site and off-site trees with portions of their crowns overhanging the project site. The survey 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;
3. Measuring the trunk diameter at a point 54" above grade;
4. Evaluating the health and structural condition using a scale of 1 – 5:
 - 5** - A healthy, vigorous tree, reasonably free of signs and symptoms 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;
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 than can be abated with treatment. The tree will require more intense management and monitoring, and may have shorter life span than those in the 'high category.

Low: Trees 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

One hundred seventy-five (175) trees representing six (6) species were evaluated (Table 1). For all trees combined, 44% were in good condition, 53% were in fair condition, and 3% were in poor condition. Descriptions of each tree are found in the **Tree Assessment Form** and locations are shown on the **Tree Assessment Map** (see attachments).

**Table 1. Tree condition & frequency of occurrence
Cartan Field, Atherton**

Common name	Scientific name	Condition			No. of trees
		Poor (1-2)	Fair (3)	Good (4-5)	
Blackwood acacia	<i>Acacia melanoxylon</i>	-	1	-	1
Lombardy poplar	<i>Populus nigra</i>	2	-	-	2
Purple leaf plum	<i>Prunus cerasifera</i>	1	-	-	1
Coast live oak	<i>Quercus agrifolia</i>	1	34	9	44
Valley oak	<i>Quercus lobata</i>	-	1	1	2
Coast redwood	<i>Sequoia sempervirens</i>	1	57	67	125
Total		5 3%	93 53%	77 44%	175 100%

Of the six species at the site, the most frequently occurring was coast redwood, with 125 trees or 71% of the population (photo 1). Trees were young to mature in development with trunk diameters ranging from 4-45". All but one tree were in fair to good condition; tree #122 was in poor condition with a stunted form, thin crown, and chlorotic needles. Trees in fair condition either had good or fair form but slightly thin and/or chlorotic crowns, or they had dense, green canopies but had poor structure. For example, many coast redwoods along El Camino Real had thin crowns and brown needles due to water stress, and trees along Alejandra Ave. had healthy canopies but had been topped for utility lines (photo 2). Trees in good condition had good structure and dense canopies with good foliage color. The majority of coast redwoods in good condition were located along the west property line and around the tennis courts.



Photo 1: Coast redwoods #58 and 59 (right and center) were in good condition with good form and dense crowns; tree #61 (left) was in fair condition with a thin crown and a bent top.



Photo 2: Coast redwoods along Alejandra Ave. had been topped for utility line clearance. They had dense crowns and good foliage color and were in fair condition.

The second most frequent species was coast live oak, with 44 trees or 25% of the population. Trees were young to mature in development with trunk diameters ranging from 6-36". Coast live oaks were concentrated along the north property line along the canal and interplanted with coast redwoods and other species that screened El Camino Real to the east. Several semi-mature coast live oaks were located along Alejandra Ave. Most coast live oaks (77%) were in fair condition with fair form and structure. Trees in good condition (20%) had good form and dense canopies (photo 3). The single coast live oak in poor condition had poor form and a severe lean with the base of the tree located outside of the tree's dripline.



Photo 3: Coast live oak #106, located near the canal along the north property line, had good form and structure and a dense canopy. It was in good condition.

The remaining four species were represented by one or two trees and included the following:

- Two (2) valley oaks, one in fair condition with suppressed form and one in good condition with good form and structure.
- Two (2) Lombardy poplars in poor condition were growing from a decayed stump.
- One (1) blackwood acacia in fair condition with codominant trunks and suppressed form.
- One (1) purple leaf plum in poor condition with multiple stems, some of which were dead.

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 presents 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. In our experience, for example, purple leaf plums and Lombardy poplars are sensitive to construction impacts, while coast redwood is tolerant of site disturbance.
- **Tree age and longevity**
Old 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.
- **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/paf/>) lists species identified as being invasive. Atherton is part of the Central West Floristic Province. Blackwood acacia is considered moderately invasive at the Cartan Field site.

Each tree was rated for suitability for preservation based upon its age, health, structural condition and ability to safely coexist within a development environment (Table 2).

We consider trees with good 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. Suitability for preservation
Cartan Field, Atherton**

High	These are trees with good health and structural stability that have the potential for longevity at the site. Sixty (60) trees had high suitability for preservation, including 55 coast redwoods, four (4) coast live oaks, and one (1) valley oak.
Moderate	Trees in this category have fair health and/or structural defects that may be abated with treatment. Trees in this category require more intense management and monitoring, and may have shorter life-spans than those in the "high" category. Ninety-nine (99) trees were of moderate suitability for preservation, including 68 coast redwoods, 29 coast live oaks, one (1) valley oak, and one (1) blackwood acacia.
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. Sixteen (16) trees were of low suitability for preservation, including 11 coast live oaks, two (2) coast redwoods, two (2) Lombardy poplars, and (1) purple leaf plum.

Preliminary Evaluation of Impacts and Recommendations for Preservation

Appropriate tree retention develops a practical match between the location and intensity of construction activities and the quality and health of trees. The **Tree Assessment** was the reference point for tree condition and quality. Potential impacts from construction were evaluated using the Preliminary Landscape Plan prepared by Lauderbaugh Associates (dated 1/4/2013).

The development proposes to reconstruct two baseball fields, the multi-use field and the surrounding track in their existing locations. Ten new tennis courts and a new aquatic center as well as storage and locker facilities will be constructed. New parking on the west edge of the property along El Camino Real will provide 168 parking stalls with access from El Camino Real and Alejandra Ave. Many existing perimeter trees will be preserved and new landscaping will buffer fields and structures as well as fill existing voids in perimeter plantings.

The plans were preliminary in nature. New fields, buildings, parking and the driveways were included on the plans, and surveyed tree locations were included for some, but not all, trees. Demolition, utility, grading, and drainage plans were not available. Potential impacts from construction were estimated for each tree given the project information available to date. When all trees have been located and plotted, finish elevations established, and the plans are finalized, impacts to trees should be re-assessed and a final determination of which trees can be preserved should be made. Two key provisions for tree protection and preservation will be to maintain adequate rooting space around mature trees and to provide regular irrigation to trees.

The most significant impacts to trees would occur as result of grading and construction of the parking lot on the east edge of the site along El Camino Real, the drive aisle along Alejandra Ave., and the two driveways on both El Camino and Alejandra Ave. Trees along El Camino Real were showing signs of stress, and impacts to roots would increase the likelihood for tree decline and death. Plans show curbs within 5' of many trees, and excavation for curb construction would damage a significant amount of roots. Examples of impacts and mitigation recommendations follow.

- Trees #14, 15 and 16 and #89, 90 and 91 would be directly impacted by driveway entrance construction and will require removal.
- Curbs are shown within 2' of coast redwoods #9, 10, 11 and 13. Trees are unlikely to tolerate construction impacts and are recommended for removal.
- Curbs are shown within 3' of coast redwoods #4, 5 and 6. These trees may or may not tolerate impacts, and decline in condition is probable. For the time being, I recommend preserving these trees, but removal may be required if significant decline occurs after construction.
- Plans show the curb within 3' of coast redwood #65. A planting peninsula separates parking spaces between trees #64 and 65. I recommend shifting the planting peninsula two spaces to the north to minimize root damage and preserve rooting space for tree #65.

In general, coast redwoods are relatively tolerant of root damage and trees may be able to recover with adequate irrigation. Irrigation to all coast redwoods is recommended before, during and after construction to promote recovery from root loss.

Construction of a new fence along the canal on the north end of the property may impact existing coast live oaks growing along the canal. In some instances, the existing chain link fence is embedded into tree trunks. Fence demolition and removal should be done carefully to avoid damaging trunks and roots, and embedded fencing should be cut from surrounding fencing and allowed to remain within trees.

New landscaping and irrigation around mature coast live oaks may negatively impact tree health. Oaks are susceptible to oak root fungus and prefer dry soil in warm months. Use plants that thrive in a similar environment when landscaping around oak trees, and design irrigation so water stays a minimum of 7 feet from the base of native oaks.

Based on my evaluation of the plans, I recommend removal of 43 trees. Twenty-seven (27) trees would be directly impacted by development: 17 coast redwoods and one (1) coast live oak will be impacted by tennis court and track construction, and nine (9) trees will be removed to accommodate the driveways and drive aisle. Sixteen (16) trees are recommended for removal based on their poor suitability for preservation. Nineteen (19) of the trees recommended for removal had good suitability for preservation and eight (8) had moderate suitability. Table 3 (following page) identifies the trees recommended for removal and reasons for removal. Under the current design, 132 trees can be preserved. Preservation of the 132 trees is predicated on following the **Tree Preservation Guidelines** provided in the next section.

**Table 3. Trees recommended for removal.
 Cartan Field, Atherton**

Tree No.	Species	DBH	Reason for removal
9	Coast redwood	28	Drive aisle construction.
10	Coast redwood	24,21,20,15	Drive aisle construction.
11	Coast redwood	24,14,11	Drive aisle construction.
13	Coast redwood	23	Drive aisle construction.
14	Coast redwood	32	New driveway entrance.
15	Coast redwood	31	New driveway entrance.
16	Coast redwood	27,11	New driveway entrance.
41	Coast live oak	15	Poor suitability for preservation.
52	Coast live oak	12,5,3	Poor suitability for preservation.
73	Lombardy poplar	7,6	Poor suitability for preservation.
74	Coast live oak	15	Poor suitability for preservation.
77	Coast live oak	12	Poor suitability for preservation.
78	Lombardy poplar	7,7,6,5	Poor suitability for preservation.
82	Coast live oak	7	Poor suitability for preservation.
85	Coast live oak	6	Poor suitability for preservation.
86	Coast live oak	11	Poor suitability for preservation.
88	Coast redwood	19	Poor suitability for preservation.
89	Coast redwood	28	New driveway entrance.
90	Coast live oak	14	Poor suitability for preservation.
91	Coast redwood	27	New driveway entrance.
105	Coast live oak	13	Poor suitability for preservation.
106	Coast live oak	36	New track/field location.
113	Coast live oak	14	Poor suitability for preservation.
120	Coast live oak	18	Poor suitability for preservation.
122	Coast redwood	6	Poor suitability for preservation.
127	Purple leaf plum	9,7,6,6,5,5,5	Poor suitability for preservation.
149	Coast redwood	16	New tennis courts.
150	Coast redwood	17	New tennis courts.
151	Coast redwood	14	New tennis courts.
152	Coast redwood	13	New tennis courts.
153	Coast redwood	13	New tennis courts.
154	Coast redwood	17	New tennis courts.
155	Coast redwood	16	New tennis courts.
156	Coast redwood	14	New tennis courts.
157	Coast redwood	16	New tennis courts.
158	Coast redwood	15	New tennis courts.

(Continued, following page)

Table 3. Trees recommended for removal, continued.
Cartan Field, Atherton

Tree No.	Species	DBH	Reason for removal
159	Coast redwood	17	New tennis courts.
160	Coast redwood	19	New tennis courts.
161	Coast redwood	18	New tennis courts.
162	Coast redwood	19	New tennis courts.
163	Coast redwood	14	New tennis courts.
164	Coast redwood	14	New tennis courts.
165	Coast redwood	16	New tennis courts.

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.

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.

Design recommendations

1. Establish vertical and horizontal elevations of all trees identified for preservation and plot trees on all plans. Forward these to the Consulting Arborist to review impacts to trees.
2. Any changes to the plans affecting the trees shall be reviewed by the Consulting Arborist with regard to tree impacts. These include, but are not limited to, demolition plans, utility and drainage plans, grading plans, and landscape and irrigation plans.
3. ***Tree Preservation Guidelines***, prepared by the Consulting Arborist, should be included on all plans.
4. Design parking area and drive aisle to minimize impacts to tree roots. Where possible, shift planting peninsulas to be adjacent to mature trees to increase rooting area and minimize root loss.
5. A **TREE PROTECTION ZONE** shall be established around each tree to be preserved. For design purposes the **TREE PROTECTION ZONE** shall extend to the tree's dripline or, where hardscape encroaches on the **TREE PROTECTION ZONE**, to the edge of proposed hardscape location.
6. Significant vertical elevation changes (anything greater than 4") within the **TREE PROTECTION ZONE** can be damaging to trees. To minimize root damage, consider alternative construction methods for installing hardscape such as suspended slab, reduced curb, etc.
7. No trenching, excavation, construction or storage of materials shall occur within the **TREE PROTECTION ZONE**. No underground services including utilities, sub-drains, water or sewer shall be placed in the **TREE PROTECTION ZONE**. Spoil from trench, footing, utility or other excavation shall not be placed within the **TREE PROTECTION ZONE**, either temporarily or permanently.

8. Irrigation systems must be designed so that no trenching will occur within the **TREE PROTECTION ZONE**.
9. Any herbicides placed under paving materials must be safe for use around trees and be labeled for that use.
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. Do not apply lime to soil for construction purposed within 50' of the driplines of trees. Lime is toxic to tree roots.

Pre-construction treatments and recommendations

1. The construction superintendent shall meet with the Consulting Arborist retained for construction monitoring before any work begins, including demolition, to discuss work procedures and tree protection.
2. Fence all trees to be retained to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6' high chain link, mounted to steel posts firmly driven into the ground or on stanchions fastened securely with rebar staples 12" deep, as required by the Town of Atherton. Fences are to remain until all grading and construction is completed.
3. Irrigate coast redwoods identified for preservation along El Camino Real and Alejandra Ave. before, during, and after construction to promote root regeneration and minimize decline in tree condition. The goal of irrigation is to wet the top 24"-36" of soil within the **TREE PROTECTION ZONE**, allowing it to dry in between irrigations. Irrigate trees every two to three weeks until the rainy season begins.
4. Trees identified for preservation may require pruning to provide construction clearance. All pruning shall be completed by a Certified Arborist or Tree Worker and adhere to the latest edition of the ANSI Z133 and A300 standards as well as the *Best Management Practices -- Tree Pruning* published by the International Society of Arboriculture.
5. Trees to be removed shall be felled so they fall away from the **TREE PROTECTION ZONE** and avoid pulling and breaking roots of trees to remain. If roots are entwined, the Consulting Arborist may first require severing the major woody root mass before extracting the trees or grinding the stump below ground.
6. Any work within the **TREE PROTECTION ZONE** shall use the smallest equipment possible and operate from outside the **TREE PROTECTION ZONE**. The Consulting Arborist should monitor all operations expected to encounter roots within the **TREE PROTECTION ZONE**.
7. Prior to excavation for underground foundations/footings/walls, trees may require root pruning outside the **TREE PROTECTION ZONE** by cutting all roots cleanly to the depth of the excavation. Roots shall be cut by manually digging a trench and cutting exposed roots with a sharp saw or other approved root pruning equipment. The Consulting Arborist will identify where root pruning is required and monitor all root pruning activities.

Recommendations for tree protection during construction

1. Prior to beginning work, the contractors working in the vicinity of trees to be preserved are should meet with the Consulting Arborist at the site to review all work procedures, access routes, storage areas, and tree protection measures.
2. No grading, construction, demolition or other work shall occur within the **TREE PROTECTION ZONE**. Any modifications must be approved and monitored by the Consulting Arborist.
3. Demolition, grading and construction near mature trees shall be done carefully to avoid tearing tree roots in the process. Removal of soil around roots in the **TREE PROTECTION ZONE** should be performed by hand. Roots that extend into proposed development should be pruned clean and square at undamaged tissue.
4. If injury should occur to any tree during construction, it should be evaluated as soon as possible by the Consulting Arborist so that appropriate treatments can be applied.
5. Fences are to remain until all site work has been completed. Fences may not be relocated or removed without prior review and approval by the Consulting Arborist.
6. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.
7. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.

Maintenance of impacted trees

Trees preserved at the Cartan Field site will experience 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. As trees age, the likelihood of branches or entire trees failing will increase. Therefore, annual inspection for hazard potential is recommended.

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

HortScience, Inc.



Deanne Ecklund
ISA Certified Arborist #WE-9067A

Attachments: **Tree Assessment Form**
Tree Assessment Map

Tree Assessment

Lamphier-Gregory
Menlo College Cartan Field
Menlo Park, California
December 2012



TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
1	Coast redwood	9,6,6	3	Moderate	Multiple attachments at base; thin crown; topped.
2	Coast redwood	23	3	Moderate	Topped; dense canopy.
3	Coast redwood	21	3	Moderate	Topped; slightly thin crown.
4	Coast redwood	43	3	Moderate	Codominant trunks at 4'; tolled; brown tips.
5	Coast redwood	33,15	3	Moderate	Codominant trunks at base; trunk wound; topped.
6	Coast redwood	31,27	3	Moderate	Codominant trunks at base; topped; trunk wound on larger stem; dense crown.
7	Coast redwood	19,15	3	Moderate	Codominant trunks at base; topped; brown tips; crowded by oak.
8	Coast redwood	13,12	3	Moderate	Codominant trunks at base; topped; thin crown; crowded by oaks.
9	Coast redwood	28	3	Moderate	Topped; minor brown tips.
10	Coast redwood	24,21,20,15	3	Moderate	Multiple attachments at base; topped; slightly thin crown.
11	Coast redwood	24,14,11	3	Moderate	Multiple attachments at base; trunk wound; topped; tag #331.
12	Coast live oak	17	3	Moderate	Codominant trunks at 9'; leans south over street; growing into fence.
13	Coast redwood	23	3	Moderate	Topped; slightly thin crown.
14	Coast redwood	32	3	Moderate	Topped; dense crown; tag #333.
15	Coast redwood	31	3	Moderate	Topped; dense crown; tag #334.
16	Coast redwood	27,11	3	Moderate	Codominant trunks at base; topped.
17	Coast redwood	37	3	Moderate	Topped; dense crown.
18	Coast redwood	18	3	Moderate	Topped; brown tips; tag #338.
19	Coast redwood	35	3	Moderate	Topped; dense crown; tag #339.
20	Coast redwood	29	3	Moderate	Topped; dense crown; tag #340.
21	Coast redwood	27	3	Moderate	Topped; slightly thin crown.
22	Coast redwood	24	3	Moderate	Topped; dense crown.
23	Coast redwood	41	3	Moderate	Topped; dense crown.
24	Coast redwood	21	3	Moderate	Topped; slightly thin crown; tag #344.
25	Coast redwood	31	3	Moderate	Topped; enlarged basal flare; slightly thin crown.
26	Coast redwood	25	3	Moderate	Topped; dense crown.
27	Coast redwood	32	3	Moderate	Topped; brown needles; tag #347.

Tree Assessment

Lamphier-Gregory
Menlo College Cartan Field
Menlo Park, California
December 2012



TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
28	Coast redwood	45	3	Moderate	Topped; dense crown; tag #348.
29	Coast redwood	29	3	Moderate	Topped; dense crown; tag #349.
30	Coast redwood	30	3	Moderate	Topped; dense crown; enlarged basal flare; tag #350.
31	Coast redwood	38	3	Moderate	Topped; dense crown; basal wound; tag #351.
32	Coast redwood	28	3	Moderate	Topped; slightly thin crown; some dieback; tag #352.
33	Coast redwood	35	3	Moderate	Topped; dense crown; some dieback; tag #353.
34	Coast redwood	24	3	Moderate	Topped; dense crown; near asphalt driveway; tag #354.
35	Coast redwood	29	3	Moderate	Topped; dense crown; near asphalt driveway; tag #355.
36	Coast live oak	15	3	Moderate	Codominant trunks at 13'; topped; leans southwest; slightly thin crown.
37	Coast live oak	17	3	Moderate	Codominant trunks at 12'; topped; thin crown.
38	Coast live oak	16	3	Moderate	Codominant trunks at 10'; leans southwest over street; thin crown.
39	Coast live oak	15,13	3	Moderate	Codominant trunks at 3'; thin crown; crowded.
40	Coast live oak	21	4	High	Multiple attachments at 14'; topped; twig dieback.
41	Coast live oak	15	3	Low	Codominant trunks at 6' with included bark; leans southwest; topped.
42	Coast live oak	24	3	Moderate	Codominant trunks at 7'; leans northwest toward pl.; crowded by #43.
43	Coast redwood	27,22,17,16	3	Moderate	Multiple attachments at base; mechanical trunk wound; topped.
44	Coast redwood	14	3	Moderate	Nice form; brown tips.
45	Coast redwood	28,8	4	High	Codominant trunks at base; slightly thin crown.
46	Coast redwood	24	3	High	Thin crown; dieback.
47	Coast redwood	38	3	Moderate	Slightly thin crown; brown leaves.
48	Coast redwood	20	3	Moderate	Thinning crown; brown tips.
49	Coast redwood	25	5	High	Nice form; healthy crown.
50	Coast redwood	28	5	High	Nice form; healthy dense crown.
51	Coast redwood	16	3	Moderate	Thin crown; ivy up to top.
52	Coast live oak	12,5,3	3	Low	Significant lean south away from #53; stump sprout.
53	Coast redwood	35	3	Moderate	Thin crown; nice form.
54	Coast redwood	12	3	Moderate	Small tree; thin crown; brown tips.

Tree Assessment

Lamphier-Gregory
Menlo College Cartan Field
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TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
55	Coast live oak	15,13,6	3	Moderate	Multiple attachments at base and codominant trunks at 6'; leans west away from #56.
56	Coast redwood	10	3	Moderate	No tag; thin crown; brown tips.
57	Coast redwood	14,9	3	Moderate	Codominant trunks at base; narrow form; slightly thin crown.
58	Coast redwood	25,16	4	High	Codominant trunks at base; dense crown.
59	Coast redwood	22,8	4	High	Codominant trunks at base; dense crown; brown tips.
60	Valley oak	10	3	Moderate	Suppressed form; nice tree.
61	Coast redwood	17,14	3	Moderate	Codominant trunks at base; thin crown; bent top.
62	Coast live oak	11	3	Moderate	Multiple attachments at 5'; thin crown; suppressed.
63	Coast redwood	15,7	3	Moderate	Codominant trunks at base; thin crown; brown tips.
64	Coast redwood	16,12,7	3	Moderate	Multiple attachments at base; slightly thin crown.
65	Coast redwood	25	4	Moderate	Nice form; dense crown; brown tips.
66	Coast live oak	20	3	Moderate	Leans over ECR away from #68.
67	Coast redwood	40	4	Moderate	Nice form; slightly thin crown.
68	Coast redwood	26	4	Moderate	Nice form; slightly thin crown.
69	Coast redwood	19,10,9	3	Moderate	Multiple attachments at base; thin crown.
70	Coast redwood	20	3	Moderate	Thin crown; brown tips.
71	Coast redwood	17,15,7,5	3	Moderate	Multiple attachments at base; thin crown; brown tips.
72	Coast redwood	22,15	3	Moderate	Codominant trunks at base; thin crown; brown tips.
73	Lombardy poplar	7,6	2	Low	Sprouts from decayed stump.
74	Coast live oak	15	3	Low	Codominant trunks at 6; trunk bends west away from #75.
75	Coast redwood	18	3	Moderate	Thin crown.
76	Coast redwood	20,17,5	4	Moderate	Multiple attachments at base; slightly thin crown.
77	Coast live oak	12	3	Low	Trunk bows west.
78	Lombardy poplar	7,7,6,5	2	Low	Sprouts from decayed stump.
79	Coast live oak	5,5	3	Moderate	Codominant trunks at base.
80	Blackwood acacia	14,9	3	Moderate	Codominant trunks at base; suppressed form; top bows south.
81	Coast redwood	18,16	4	Moderate	Codominant trunks at base; slightly thin crown.

Tree Assessment

Lamphier-Gregory
Menlo College Cartan Field
Menlo Park, California
December 2012



TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
82	Coast live oak	7	3	Low	Suppressed form; growing into fence.
83	Coast live oak	29	3	Moderate	Multiple attachments at 8'; heavy lateral limb; slightly thin crown.
84	Coast redwood	17,17,16	3	Moderate	Multiple attachments at base; dense crown.
85	Coast live oak	6	2	Low	Poor form; bows over street; base outside of dripline.
86	Coast live oak	11	3	Low	Codominant trunks at 15'; high crown.
87	Coast redwood	20,15	4	Moderate	Codominant trunks at base; dense crown.
88	Coast redwood	19	3	Low	Thin crown; dieback; top bent.
89	Coast redwood	28	4	High	Nice form; slightly thin crown.
90	Coast live oak	14	3	Low	Codominant trunks at 6'; growing into fence; suppressed form over street.
91	Coast redwood	27	4	Moderate	Nice form; slightly thin crown; brown tips
92	Coast redwood	32,18	4	Moderate	Codominant trunks at base; dense crown.
93	Coast redwood	19,18,11	3	Moderate	Multiple attachments at base; thin crown; brown tips.
94	Coast redwood	28	3	Moderate	Thin crown; brown tips.
95	Coast redwood	15	3	Moderate	Thin crown; brown tips.
96	Coast live oak	8	3	Moderate	Slight lean north; thin crown.
97	Coast redwood	17,15	4	Moderate	Codominant trunks at base; brown tips; tops bent.
98	Coast live oak	17,13	4	Moderate	Offsite; codominant trunks at 1'; dense crown; overhangs site 18'.
99	Coast live oak	14,6	4	Moderate	Offsite; crowded form; dense crown.
100	Coast live oak	10	3	Moderate	Offsite; narrow form; crowded.
101	Coast live oak	16	3	Moderate	Offsite; asymmetrical form; heavy lateral limb.
102	Valley oak	45	5	High	Offsite; overhangs site 30'; nice form.
103	Coast live oak	8	3	Moderate	Offsite; base outside of dripline; overhangs site 18'.
104	Coast live oak	15	3	Moderate	Offsite; codominant trunks at 8'; base outside of dripline; overhangs site 20'.
105	Coast live oak	13	3	Low	Offsite; codominant trunks at 10'; base outside of dripline; overhangs site
106	Coast live oak	36	4	High	Codominant trunks at 7'; no basal flare; nice form.
107	Coast live oak	30	4	High	Offsite; codominant trunks at 10'; nice form.
108	Coast live oak	14	3	Moderate	Offsite; codominant trunks at 6'; crowded form; tag on fence.
109	Coast live oak	20	3	Moderate	Offsite; codominant trunks at 6'; leans south; overhangs site 25'.

Tree Assessment

Lamphier-Gregory
Menlo College Cartan Field
Menlo Park, California
December 2012



TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
110	Coast live oak	22,20,20,17	3	Moderate	Offsite; Multiple attachments at 3'; trunk wounds on south stem; heavy lateral limb; overhangs site 25'.
111	Coast live oak	19,15	4	Moderate	Offsite; codominant trunks at 3'; upright form; overhangs site 18'.
112	Coast live oak	21,16,8	3	Moderate	Offsite; multiple attachments at base; overhangs site 25'.
113	Coast live oak	14	3	Low	Offsite; codominant trunks at 9'; base outside of dripline; overhangs site 22'.
114	Coast live oak	28	4	High	Offsite; multiple attachments at 8'; trunk wounds; overhangs site 25'.
115	Coast live oak	17	3	Moderate	Offsite; codominant trunks at 9'; asymmetrical over site; stake engulfed in trunk.
116	Coast live oak	13	3	Moderate	Offsite; curve in trunk; asymmetrical form west.
117	Coast live oak	19	4	Moderate	Multiple attachments at 12'; upright form; slight lean west.
118	Coast live oak	19	3	Moderate	Codominant trunks at 6'; leans south; asymmetrical form.
119	Coast live oak	14	3	Moderate	Codominant trunks at 5'; minor dieback.
120	Coast live oak	18	3	Low	Codominant trunks at 4'; severe lean southeast; base outside of dripline; dieback.
121	Coast live oak	21	4	Moderate	Bend in trunk; nice form; dense crown.
122	Coast redwood	6	2	Low	Stunted; thin crown; chlorotic.
123	Coast redwood	8	4	High	Good young tree; slightly thin crown.
124	Coast redwood	9	5	High	Good young tree.
125	Coast redwood	9	4	Moderate	Nice form; trunk wound.
126	Coast redwood	9	4	High	Good young tree; slightly thin crown.
127	Purple leaf plum	9,7,6,6,5,5,5	2	Low	Multiple attachments at 1'; dead stems.
128	Coast redwood	9	4	High	Good young tree; slightly thin crown.
129	Coast redwood	4	4	High	Good young tree; crowded.
130	Coast redwood	4	4	High	Good young tree; crowded.
131	Coast redwood	4	4	High	Good young tree; crowded.
132	Coast redwood	4	4	High	Good young tree; crowded.
133	Coast redwood	4	4	High	Good young tree; crowded.
134	Coast redwood	4	4	High	Good young tree; crowded.

Tree Assessment

Lamphier-Gregory
Menlo College Cartan Field
Menlo Park, California
December 2012



TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
135	Coast redwood	10	5	High	Good young tree.
136	Coast redwood	9	4	Moderate	Codominant trunks at 12'; thin crown.
137	Coast redwood	5	4	High	Good young tree; crowded.
138	Coast redwood	12	5	High	Good young tree.
139	Coast redwood	11	5	High	Good young tree.
140	Coast redwood	7	5	High	Good young tree.
141	Coast redwood	7	5	High	Good young tree.
142	Coast redwood	11	5	High	Good young tree.
143	Coast redwood	12	5	High	Good young tree.
144	Coast redwood	9	4	High	Good young tree; slightly thin crown.
145	Coast redwood	10	4	High	Good young tree; slightly thin crown.
146	Coast redwood	10	4	Moderate	Nice form; gap in canopy.
147	Coast redwood	11	4	Moderate	Nice form; slightly thin crown; crowded by offsite Monterey pine.
148	Coast redwood	11	4	High	Good young tree; slightly thin crown.
149	Coast redwood	16	5	High	Nice form; dense crown.
150	Coast redwood	17	5	High	Nice form; dense crown.
151	Coast redwood	14	5	High	Nice form; dense crown.
152	Coast redwood	13	5	High	Nice form; dense crown.
153	Coast redwood	13	5	High	Nice form; dense crown.
154	Coast redwood	17	5	High	Nice form; dense crown.
155	Coast redwood	16	5	High	Nice form; dense crown; pruned for flagpole clearance.
156	Coast redwood	14	5	High	Nice form; dense crown.
157	Coast redwood	16	5	High	Nice form; dense crown.
158	Coast redwood	15	5	High	Nice form; dense crown.
159	Coast redwood	17	5	High	Nice form; dense crown.
160	Coast redwood	19	5	High	Nice form; dense crown.
161	Coast redwood	18	5	High	Nice form; dense crown.
162	Coast redwood	19	5	High	Nice form; dense crown.

Tree Assessment

Lamphier-Gregory
Menlo College Cartan Field
Menlo Park, California
December 2012



TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
163	Coast redwood	14	5	High	Nice form; dense crown.
164	Coast redwood	14	5	High	Nice form; dense crown.
165	Coast redwood	16	5	High	Nice form; dense crown.
166	Coast redwood	17	5	High	Nice form; dense crown; sheared on path side.
167	Coast redwood	19	5	High	Nice form; dense crown; sheared on path side.
168	Coast redwood	18	5	High	Nice form; dense crown; sheared on path side.
169	Coast redwood	17	5	High	Nice form; dense crown; sheared on path side.
170	Coast redwood	16	5	High	Nice form; dense crown; sheared on path side.
171	Coast redwood	15	5	High	Nice form; dense crown; sheared on path side.
172	Coast redwood	15	5	High	Nice form; dense crown; sheared on path side.
173	Coast redwood	14	5	High	Nice form; dense crown; sheared on path side.
174	Coast redwood	14	5	High	Nice form; dense crown; sheared on path side.
175	Coast redwood	15	5	High	Nice form; dense crown; sheared on path side.

Tree Assessment Map

Menlo College
Cartan Field
Atherton, CA

Prepared for:
Lamphier-Gregory
Oakland, CA

December 2012

No Scale

Notes:

Aerial image provided by:
Aerial Photomapping Services
Clovis, CA

Numbered tree locations and driplines
are approximate.



325 Ray Street
Pleasanton, CA 94566
Phone 925.484.0211
Fax 925.484.0596
www.hortscience.com

