

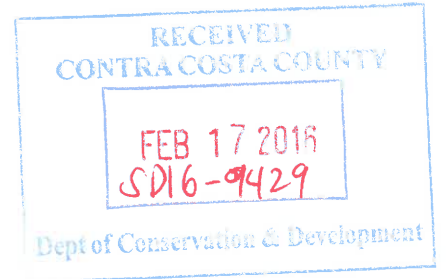
Tree Report

Date Received February 17, 2016

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Tree Survey

Gloria Terrace 9-Lot Subdivision
Lafayette, CA

APN 166-200-032 and 166-210-008

February 4, 2016



*Sustainable Solutions in the Urban
Interface Since 1980*

Certified Arborist #WE 0704 A

Introduction

I have been retained by David Langon Construction, Inc., to provide this preliminary tree survey for the proposed 9-lot subdivision pursuant to the Contra Costa County Tree Protection and Preservation Ordinance, Municipal Code, Title 8, Chapter 816-6, Ords. 94-59, 94-22 that mandates protection for any construction project that affects existing trees. Existing trees are reviewed to evaluate their health, contribution to the site and the individual affects of proposed construction.

My review of the site occurred on January 15, 2016. I have reviewed the Tentative Vesting Map by Humann Company, Inc. dated 11.16.15. Trees are individually tagged, numbered and correspond to those found in this Tree Survey and the Tentative Vesting Map provided. A reduced-size Tree Location Map is also provided at the end of this report. Tree diameters are measured at 54-inches above grade. General Tree and Root Zone Protection Guidelines are provided.

Summary

The site proposal is a moderately steep west facing parcel at the end of the road located within an existing residential environment on north, east and south sides. Surveyed trees consist predominantly of native oaks and a minority of planted non-natives in varying degrees of health, maturity and suitability to the new environment.

Eighty three (83) trees are surveyed on the site and consist of the following:

Common	Botanical	Native	Trees Inventoried
Valley oak	Quercus lobata	Yes	37
Coast Live oak	Quercus agrifolia	Yes	12
Monterey Pine	Pinus radiata	No	16
Arizona cypress	Cupressus arizonica	No	13
Miscellaneous non- natives	Defined in the Tree Survey	No	5

Initial efforts are made to locate the road and configure lots to minimize existing tree loss while considering the natural and aesthetic benefits the existing natives provide. I was also able to work with the team to identify native oaks suitable for retention that are well suited to enhancing and developing the screen between properties.

A total of sixteen (16) trees require removal to facilitate construction. Of those, thirteen (13) are native oak trees protected under the Ordinance, while those selected to remain will undergo sustainable impacts using the Tree & Root Zone Protection Guidelines enclosed.

The following pages contain my evaluation.



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Construction Impact Evaluation

Most nutrient and water absorbing roots that sustain the trees can be found in the top 6 to 12 inches of soil. Raising or lowering grades just 4 to 6 inches, or trenching and compacting soils with equipment within natural tree canopies will all affect tree health and longevity.

Construction impact ratings are intended to serve as a guideline for evaluating the long term sustainability of trees as a result of impacts. Trees are evaluated to determine the potential impact of construction relative to their location on the site plan. Tree impact ratings are estimated and limited to the plan set provided. The rating system measures to canopy edges to establish the critical root zone. Viewing canopy edges as one hundred percent of the critical root zone, proposed impacts are rated in percentages of root loss to the critical area. The more root loss that occurs to a tree, the less it will be able to survive. Tree species, age, health and vigor influence impact ratings.

High Impact

Trees in the High Impact category are considered to be at, or beyond the maximum range of root loss for that specimen. Trees in this category are unlikely to sustain the proposed impacts for the long term. A significant change in the proposed plan is required in order to retain the tree. Specific recommendations are required from the Arborist to reduce proposed impacts.

- Grade cuts, fills and/or alterations that result in root loss to 30% and greater of the critical root zone.

Moderate Impact

Trees in the Moderate Impact category are considered to be within the range of sustainable root loss for that specimen. Trees in this category undergo alterations that require specific recommendations from the Arborist to reduce proposed impacts.

- Grade cuts, fills and/or alterations that result in root loss to less than 30% of the root zone.

Low Impact

Trees in the Low Impact category are considered to be well within the acceptable range of root loss for that specimen. Trees in this category may require specific recommendations from the Arborist to reduce proposed impacts.

- Grade cuts, fills at canopy edges or beyond and/or supervised alterations within the canopy.

Tree Survey

Tree No.	Species	Size @ 54"	Health Vigor	L O T	³ Const. Impacts	Remove	² Retention Rating	Comments
401	Valley oak (<i>Quercus lobata</i>)	18	Good	A	Low Moderate		Good	Adjacent to existing drain & overhead utilities and proposed road.
402	Valley oak (<i>Quercus lobata</i>)	12	Good	A	Moderate		Good	Topped selectively/utility clearance. Adjacent to proposed road.
403	Almond (<i>Prunus dulcis</i>)	9/11	Poor	A	Low		Poor	In decline, over mature. Adjacent to proposed road.
404	Almond (<i>Prunus dulcis</i>)	6	Poor	A	None		Poor	In decline, over mature. Located beyond immediate are of proposed construction.
405	Almond (<i>Prunus dulcis</i>)	10	Poor	A	Low		Poor	In decline, over mature. Adjacent to proposed road.
405a	Siberian Elm (<i>Ulmus pumila</i>)	20	Fair	A	Low		Fair Poor	Adjacent to existing/proposed entry road. Over mature, canopy dieback observed.
405b	Siberian Elm (<i>Ulmus pumila</i>)	24	Fair	A	Low		Fair Poor	Adjacent to existing/proposed entry road. Over mature, canopy dieback observed.
405c	Live oak (<i>Quercus agrifolia</i>)	10	Good	1	Low None		Good	Located up steep slope above proposed bioswale construction.
406	Monterey pine (<i>Pinus radiata</i>)	28	Fair	A	Low Moderate		Poor	Over mature, leans west, codominant with #407. Adjacent to potential construction staging area.
407	Monterey pine (<i>Pinus radiata</i>)	27	Good	A	Low Moderate		Poor	Over mature, leans west, codominant with #406. Adjacent to potential construction staging area.
408	Valley oak (<i>Quercus lobata</i>)	10/18/1 2	Good	1	High	✓	Good	Requires removal to facilitate construction.
409	Valley oak (<i>Quercus lobata</i>)	18	Good	1	None		Good	Located up slope at south property boundary beyond the immediate area of proposed construction.
410	Valley oak (<i>Quercus lobata</i>)	8/10/7/ 13	Good	1	None		Good	Located up slope at south property boundary beyond the immediate area of proposed construction.
411	Live oak (<i>Quercus agrifolia</i>)	12/10/8/ 8	Good	2	High	✓	Good	Requires removal to facilitate grading.
412	Valley oak (<i>Quercus lobata</i>)	6	Good	2	High	✓	Good	Requires removal to facilitate grading. Suppressed structure below #411.
413	Valley oak (<i>Quercus lobata</i>)	7	Good	2	High	✓	Good	Requires removal to facilitate construction of pad. Suppressed structure from #414
414	Monterey pine (<i>Pinus radiata</i>)	13	Good	2	High	✓	Poor	Requires removal to facilitate construction of pad. Over mature.
415	Valley oak (<i>Quercus lobata</i>)	10	Good	2	High	✓	Good	Requires removal to facilitate construction of pad. Suppressed structure from #414, prostrate structure.
416	Monterey pine (<i>Pinus radiata</i>)	17	Fair	2	High	✓	Poor	Requires removal to facilitate construction of pad. Over mature.

1,2,3 See Tree Health Evaluation ⁴Adjoining Property-metal tags/tree numbers located on fence adjacent to trees

Tree Survey

Tree No.	Species	Size @ 54"	Health Vigor	L O T	³ Const. Impacts	Remove	² Retention Rating	Comments
417	Valley oak (<i>Quercus lobata</i>)	7	Good	2	High	✓	Good	Requires removal to facilitate construction of pad. Transplant candidate.
418	Monterey pine (<i>Pinus radiata</i>)	18	Fair	2	Low		Poor	Over mature. Beyond the immediate area of proposed construction.
419	Valley oak (<i>Quercus lobata</i>)	10/8	Good	2	Low		Good	Located on higher elevations beyond the immediate area of proposed construction.
420	Valley oak (<i>Quercus lobata</i>)	12/8	Fair	3	Low		Good	Located on higher elevations beyond the immediate area of proposed construction.
420a	Live oak (<i>Quercus agrifolia</i>)	8/10/7/6	Good	3	High	✓	Good	Requires removal to facilitate construction of pad.
420b	Live oak (<i>Quercus agrifolia</i>)	14	Good	A	Low		Good	Located on adjoining property. Canopy extends approximately 16 ft. into subject property adjacent to construction of Lot 3 pad.
421	Valley oak (<i>Quercus lobata</i>)	36	Fair	2	None		Good	Located on higher elevations beyond the immediate area of proposed construction. Leans moderately to north.
422	Valley oak (<i>Quercus lobata</i>)	23	Fair	3	High	✓	Good Fair	Requires removal to facilitate proposed grading. Wall configuration allows the retention of native grove trees #423-#436.
423	Valley oak (<i>Quercus lobata</i>)	13	Good	3	Moderate Low		Good	Adjacent to wall construction. In grove, suppressed structure below #425 & #426.
424	Valley oak (<i>Quercus lobata</i>)	8	Fair	3	Low		Good	In grove, suppressed structure below #423. Any alterations within the grove require review.
425	Valley oak (<i>Quercus lobata</i>)	9/16	Fair	3	None		Good	In grove, co dominant with #425. Any alterations within the grove require review.
426	Valley oak (<i>Quercus lobata</i>)	14/14/16	Fair	3	None		Good	In grove, dominant canopy of grove. Any alterations within the grove require review.
427	Valley oak (<i>Quercus lobata</i>)	8	Poor	3	None		Poor	Suppressed, in decline. Any alterations within the grove require review.
428	Valley oak (<i>Quercus lobata</i>)	16	Fair	3	None		Fair	Suppressed, in decline. Any alterations within the grove require review.
429	Valley oak (<i>Quercus lobata</i>)	20	Excellent	3	None		Good	Dominant canopy leans South. Any alterations within the grove require review.
430	Valley oak (<i>Quercus lobata</i>)	18	Fair	3	None		Fair/Poor	Suppressed structure from #429 & #428. Any alterations within the grove require review.
431	Valley oak (<i>Quercus lobata</i>)	30	Good	3	None		Good	Dominant canopy. Any alterations within the grove require review.
432	Valley oak (<i>Quercus lobata</i>)	10	Fair	3	None		Poor	Suppressed below #431. Any alterations within the grove require review.

1,2,3 See Tree Health Evaluation ^AAdjoining Property-metal tags/tree numbers located on fence adjacent to trees

Tree Survey

Tree No.	Species	Size @ 54"	Health Vigor	L O T	³ Const. Impacts	Remove	² Retention Rating	Comments
433	Valley oak (<i>Quercus lobata</i>)	8	Fair/Poor	4	Low		Poor	Adjacent to proposed drainage discharge field from bioswale. In grove, suppressed structure below #431.
434	Valley oak (<i>Quercus lobata</i>)	19	Good	4	Moderate		Good	Adjacent to proposed bioswale and drainage discharge field from bioswale. In grove, dominant canopy, leans East.
435	Valley oak (<i>Quercus lobata</i>)	20	Good	4	Moderate		Good	Adjacent to proposed bioswale and wall construction. In grove suppressed, interesting, leans North.
436	Valley oak (<i>Quercus lobata</i>)	11/15/9	Good	4	Moderate		Good	Adjacent to proposed wall construction. In grove, co dominant within grove, nice.
437	Live oak (<i>Quercus agrifolia</i>)	24	Good	4	High	✓	Good	Requires removal to facilitate proposed pad. Dominant canopy.
438	Valley oak (<i>Quercus lobata</i>)	21	Good	4	Moderate		Good	Grading shown within the canopy to facilitate construction of the pad. Dominant canopy.
439	Arizona cypress (<i>Cupressus arizonica</i>)	23	Fair/Poor	4	None		Poor	Over mature. Poor suitability to future environment. Provides short-term screen between properties.
440	Arizona cypress (<i>Cupressus arizonica</i>)	24	Fair/Poor	4	None		Poor	Over mature. Poor suitability to future environment. Provides short-term screen between properties.
441	Arizona cypress (<i>Cupressus arizonica</i>)	23/15/17	Fair/Poor	4	None		Poor	Over mature. Poor suitability to future environment. Provides short-term screen between properties.
442	Monterey pine (<i>Pinus radiata</i>)	48	Poor	5	High		Poor	Adjacent to proposed road and drainage element. In decline, evidence of pitch canker, a disease that will affect other pines nearby. Poor suitability to future environment.
443	Live oak (<i>Quercus agrifolia</i>)	18	Excellent	4	High	✓	Excellent	Requires removal to facilitate road construction.
444	Live oak (<i>Quercus agrifolia</i>)	10/12	Good	4	Moderate		Good	Adjacent to proposed grading and wall construction. In grove, dominant canopy. Provides screen between properties.
445	Live oak (<i>Quercus agrifolia</i>)	8	Good	4	Moderate		Fair/Poor	Adjacent to proposed grading and wall construction. Provides screen between properties. In grove, suppressed structure below #444.
446	Live oak (<i>Quercus agrifolia</i>)	18	Good	4	Low None		Good	Adjacent to proposed grading and wall construction. Provides screen between properties. In grove, dominant canopy.
447	Live oak (<i>Quercus agrifolia</i>)	8/9/10	Good	4	High	✓	Fair	Requires removal to facilitate road construction. Dominant canopy. Included bark structure.

[2,3] See Tree Health Evaluation ^AAdjoining Property-metal tags/tree numbers located on fence adjacent to trees

Tree Survey

Tree No.	Species	Size @ 54"	Health Vigor	L O T	³ Const. Impacts	Remove	² Retention Rating	Comments
448	Arizona cypress (<i>Cupressus arizonica</i>)	10/10/9	Fair	6	None		Poor	Structure at risk of failure. Provides short-term screen between properties.
449	Arizona cypress (<i>Cupressus arizonica</i>)	7/12/9/8	Fair	6	None		Poor	Structure at risk of failure. Provides short-term screen between properties.
450	Valley oak (<i>Quercus lobata</i>)	9	Good	6	Low		Good	Grading is proposed to lower pad elevations to maintain neighbor views while also retaining the tree. Suppressed structure below #451.
451	Valley oak (<i>Quercus lobata</i>)	20	Good	6	Moderate Low		Good	Grading is proposed to lower pad elevations to maintain neighbor views while also retaining the tree. Dominant canopy.
452	Valley oak (<i>Quercus lobata</i>)	16/20	Good/ Excellent	6	Moderate Low		Excellent	Grading is proposed to lower pad elevations to maintain neighbor views while also retaining the tree. Dominant canopy.
453	Valley oak (<i>Quercus lobata</i>)	24	Good/ Excellent	6	High	✓	Excellent	Requires removal to facilitate bioswale construction. Relocating or reconfiguring the bioswale may allow retention of this specimen quality tree. Dominant canopy.
454	Valley oak (<i>Quercus lobata</i>)	16	Good	7	None		Excellent	Located on lower elevations beyond proposed construction. Dominant canopy.
455	Valley oak (<i>Quercus lobata</i>)	49	Good	7	Low		Good	Proposed DS connection at canopy edges to south. Dominant canopy, cavity in primary structure.
456	Live oak (<i>Quercus agrifolia</i>)	7/10/12	Good	7	None		Good	Located on lower elevations beyond proposed construction. Dominant canopy.
457	Valley oak (<i>Quercus lobata</i>)	10/25	Good	7	None		Good	Located on lower elevations beyond proposed construction. Dominant canopy.
458	Monterey pine (<i>Pinus radiata</i>)	28	Fair/Poor	7	None		Poor	Located on lower elevations beyond proposed construction. Over mature, interdependent structure with #459 & #460.
459	Monterey pine (<i>Pinus radiata</i>)	34	Fair/Poor	7	None		Poor	Located on lower elevations beyond proposed construction. Over mature, interdependent structure with #459 & #460.
460	Monterey pine (<i>Pinus radiata</i>)	32	Fair/Poor	7	None		Poor	Located on lower elevations beyond proposed construction. Over mature, interdependent structure with #459 & #460.
461	Valley oak (<i>Quercus lobata</i>)	17	Good	A	None		Good	Located on adjoining property. Canopy affected by competition from #460.
462	Live oak (<i>Quercus agrifolia</i>)	18	Good/ Excellent	8	Low		Excellent	Drainage proposed on higher elevations beyond the canopy alters natural drainage away from tree. Dominant canopy.
463	Monterey pine (<i>Pinus radiata</i>)	36	Dead	8	None		Dead	Evidence of pine pitch canker, borers. Removal eliminates risks of pest and disease proliferation.

^{1,2,3} See Tree Health Evaluation ⁴Adjoining Property

Tree Survey

Tree No.	Species	Size @ 54"	Health Vigor	L O T	³ Const. Impacts	Remove	² Retention Rating	Comments
464	Arizona cypress (<i>Cupressus arizonica</i>)	24/10/9/ 11	Fair	8	Low		Poor	Adjacent to proposed drainage and 10ft easement. Mature, stressed and not suited to future environment.
465	Arizona cypress (<i>Cupressus arizonica</i>)	13	Fair	8	Low		Poor	Adjacent to proposed drainage and 10ft easement. In grove, structural failures in main stem. Mature, stressed and not suited to future environment.
466	Arizona cypress (<i>Cupressus arizonica</i>)	13	Fair	9	Low none		Poor	Adjacent to proposed drainage and 10ft easement. In grove, leans North severely, prone to failure. Mature, stressed and not suited to future environment.
467	Arizona cypress (<i>Cupressus arizonica</i>)	24	Fair	9	Low		Poor	Adjacent to proposed drainage and 10ft easement. Dominant tree within grove. Not suited to future environment.
468	Arizona cypress (<i>Cupressus arizonica</i>)	12	Poor	9	Low None		Poor	Adjacent to proposed drainage and 10ft easement. In grove, in decline. Not suited to future environment.
469	Monterey pine (<i>Pinus radiata</i>)	42	Good	9	Moderate Low		Fair/Poor	Adjacent to proposed grading for the pad. Mature, stressed and not suited to future environment.
470	Monterey pine (<i>Pinus radiata</i>)	18	Fair	9	None		Poor	Mature, stressed and not suited to future environment.
471	Monterey pine (<i>Pinus radiata</i>)	20	Fair	9	None		Poor	Located on higher elevations above proposed road. Leans East. Mature, stressed and not suited to future environment.
472	Monterey pine (<i>Pinus radiata</i>)	20	Dead	9	None		Dead	Dead. Located on higher elevations above proposed road.
473	Monterey pine (<i>Pinus radiata</i>)	20	Poor	9	None		Poor	In decline, evidence of pine pitch canker. Removal eliminates risks of pest and disease proliferation.
474	Monterey pine (<i>Pinus radiata</i>)	32	Poor	9	Moderate		Poor	Adjacent to proposed grading for the pad. Leans severely to South, past branch failures observed. Risks of structural failure are moderately high.
475	Valley oak (<i>Quercus lobata</i>)	15	Excellent	9	High	▼	Excellent	Requires removal to facilitate construction of the proposed road.
476	Arizona cypress (<i>Cupressus arizonica</i>)	18/18/1 0	Poor	9	None		Poor	Mature, not suited to future environment.
477	Arizona cypress (<i>Cupressus arizonica</i>)	10	Good	9	High	▼	Poor	Requires removal to facilitate construction of drainage. Mature, not suited to future environment.
478	Arizona cypress (<i>Cupressus arizonica</i>)	12	Good	9	Moderate Low		Poor	Adjacent to proposed drainage and 10ft easement. Mature, not suited to future environment.

1,2,3 See Tree Health Evaluation ⁴Adjoining Property-metal tags/tree numbers located on fence adjacent to trees

Tree & Root Zone Protection Guidelines

A. Tree Evaluation & the Affects of Construction

General Tree & Root Zone Protection Guidelines are provided as a guideline to mitigate the impacts to trees that will occur as a result of development. Most nutrient and water absorbing roots that sustain the trees can be found in the top 6 to 12 inches of soil. Raising or lowering grades just 4 to 6 inches, or trenching and compacting soils with equipment within natural tree canopies will all affect tree health and longevity.

B. Any tree to be retained within the construction envelope will require special considerations during planning and throughout the construction process. A good working relationship between the Arborist and contractor and a clear understanding of contractor issues relative to arboricultural issues is essential to avoid any debilitating tree damage. The Arborist shall be on site for each phase where alterations occur within the canopy of trees selected to remain.

Summary of six key construction phases to navigate with the Project Arborist:

- 1) **Pre-construction:** Review the site with the Arborist prior to alterations to identify specific site limitations such as vehicle access and material handling and equipment storage. Review methods needed to retain valuable trees. Discuss protective tree fencing.
- 2) **Protective tree fencing:** Prior to any alterations, proper fence placement is key to limiting damages to trees selected to remain. Identify protective tree fencing locations with marking paint on ground. Review site limitations and discuss non-invasive alternatives.
- 3) **Grading:** Raising or lowering grades is the single most destructive process to trees. There is no substitute for understanding sustainable limits and employing effective solutions.
- 4) **Trenching:** Severing roots can destabilize tree structure and result in rapid decline. Review proper techniques and guidelines prior to any trenching.
- 5) **Construction:** Requirements for space, access and storage places high demands near trees. Soil becomes compacted under material or equipment weight below unprotected tree canopies resulting in root suffocation and long-term tree decline. Periodic review of the site is needed to assess tree health and review protective measures.
- 6) **Landscaping:** Any requirement for landscape plantings proposed within the canopy of existing trees shall require review. Trenching for irrigation, hardscape construction and the installation of incompatible plants can be just as traumatic to tree health as any of the above can be.

1. Root Zone Protection Prior to, and During Construction

- 1.1 Prior to any approved activity, assign a confined, dedicated area for material and equipment storage away from the established tree canopies and the immediate project area.
- 1.2 Prior to any grading or construction install chain-link fencing or approved equal at canopy edges to establish the critical root zone for all trees to be retained on the subject and adjoining properties.
- 1.3 Fencing shall be a minimum of 6-feet high with steel posts on 8-10-foot centers driven directly into the ground.
- 1.4 Any approved construction inside protected tree canopies shall route fencing accordingly and return to canopy edges (see Section 5-Access Guidelines).
- 1.5 Apply a 4 to 6 inch layer of mulch to the root zone of trees directly affected by construction.
- 1.6 All protective fencing shall remain in place throughout the construction process.
- 1.7 Trees may require supplemental irrigation as determined by the Project Arborist prior to, during and after construction. Water connections must be made available exclusively for impacted trees.
- 1.8 Any necessary grading or trenching shall avoid routes inside, through or between protected tree canopies. Unavoidable paths inside tree canopies shall adhere to Hand Trenching Guidelines, section 4.
- 1.9 Grading, trenching or any approved alterations within protected tree canopies shall be monitored by the Project Arborist.

2. Pruning Prior to Construction

- 2.1 Any pruning and clearance work directly related to construction will occur under Project Arborist direction prior to construction.
- 2.3 All pruning shall be completed by approved Certified Arborists familiar with the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A-300) and Best Management Practices for Pruning published the International Society of Arboriculture.
- 2.4 Additional pruning to manage tree structure, shape, and balance and remove deadwood throughout the trees will reduce insect and disease problems and serve as an indicator to monitor ongoing tree health.

3. Landscape Construction

- 3.1 Planting shall remain no closer than 4-feet from the tree trunk of non-native trees. Planting adjacent to native trees shall maintain a distance of 10-feet from the trunk and no more than one-third of the tree canopy. Plants shall be 1 to 5 gallon in size, drought tolerant, and suited to the conditions in which native plants thrive.
- 3.2 Rototilling, soil disturbance or import soil shall not be introduced within the canopy of existing trees.
- 3.3 All irrigation supply lines, drainage and electrical conduits for lighting shall observe Hand Trenching Guidelines.

4. Hand Trenching Guidelines—Utilities, Drainage, Conduits.

- 4.1 The process of hand trenching shall be used to minimize trauma to protected trees inside the tree canopy. Excavation is performed by hand and careful equipment operation under the direction of the Project Arborist.
- 4.2 Hand trenching leaves roots 2-inches and larger undisturbed. Soil is removed from under and around tree roots to form the necessary trench.
- 4.3 Roots larger than 2-inches may only be removed with the approval of the Project Arborist.
- 4.4 Roots less than 2 inches must be pruned with loppers or hand saw.

5. Access Guidelines—Equipment, Pedestrian & Material Handling

- 5.1 All alternative routes shall be explored to avoid access inside the natural tree canopy or Critical Root Zone. Access inside the Critical Root Zone shall adhere to the following procedures under the direction of the Project Arborist:
- 5.2 To create an access corridor, apply a 6-inch layer of wood chips or mulch by hand without equipment access on the soil surface over the selected access route.
- 5.3 Distribute $\frac{3}{4}$ thick or greater Plywood over wood chips to laterally disperse heavy equipment weights and reduce soil compaction.
- 5.4 Maintain the access corridor with protective fencing on each side of the path as long as it is required to access this area of the project.
- 5.5 Preferred/approved alternative root zone protection applications include Geoweb products. A cellular confinement system that laterally disperses vertical weights throughout the applied area.
- 5.6 Trees in close proximity to construction activity inside the tree canopy shall apply straw wattles directly to the trunk. Wattles shall be attached around the tree from ground level to 5-feet above grade for protection of direct contact from equipment or materials. All applications shall be non-invasive and deconstructed by hand following project completion.

6. Arborist's Supplemental Reports

- 6.1 Post grading and construction to include a summary of existing tree health and supplemental recommendations as necessary.
- 6.2 12-24 months following construction provide a summary of existing tree health and supplemental recommendations as necessary.

Tree Health Evaluation

Several factors are involved in the evaluation process. Healthy, vigorous trees are better able to tolerate impacts such as root injury, soil compaction and changes in soil moisture than are trees that are in poor condition prior to impact. The tree Health & Vigor ratings below provide an initial guideline for evaluating tree health. Trees with a Health & Vigor Rating of *excellent* or *good* will be more likely to survive development trauma than those with *fair* or *poor*.

¹Health & Vigor Rating:

Excellent	A healthy, vigorous tree relatively free of signs and symptoms of disease.
Good	Tree with normal shoot elongation, interior dead wood, manageable twig dieback, and/or pest problems. Tree structure may influence considerations.
Fair	Tree with moderate amounts of twig and branch dieback, thinning canopy, reduced vigor, wounds that are slow to recover, with 65 to 80% of the canopy alive. May have poor branch structure and/or suppressed canopy. May have conditions that are manageable to improve tree health.
Poor	Tree with dieback of large limbs, large wounds with little callus growth, visible decay, and 30 to 60% of the canopy alive. Tree may also have dieback and decay in primary in scaffold limbs and/or trunk structure. May have large cavities and be structurally unsound beyond any reasonable management.

Retention Rating---Factors Considered in the Evaluation of Trees Suitable for Retention

1. Tree Location, Structure and Competition

The location of the tree is considered with respect to the future environment. Site development increases the frequency of use thereby increasing the concern for structural deficiencies or trees in decline that might become a liability. Trunks and limbs are visually examined to evaluate structural defects and decay that could lead to breakage, or failure.

2. Species Tolerance

Trees respond to environmental changes according to individual genetic ability. For example, Coast live oaks are more capable of withstanding development trauma than Valley oaks similar in size condition and relative construction impacts. Considerations also include age and longevity

3. Contribution

Contribution refers to the evaluation of individual, and/or grove characteristics to the site, neighborhood and benefits to the public. Factors also weigh the above Health/Vigor assessments and both function and aesthetic:

Functional considerations may include species, age and longevity, structure, stability and risks, benefits that include shade, screening and/or sun protection, wildlife habitat or ecological considerations, and the effects of competition.

Aesthetic considerations may include species importance, rarity or uniqueness, natural or exotic, visual interest including seasonal and structural features, appearance and placement in the environment.

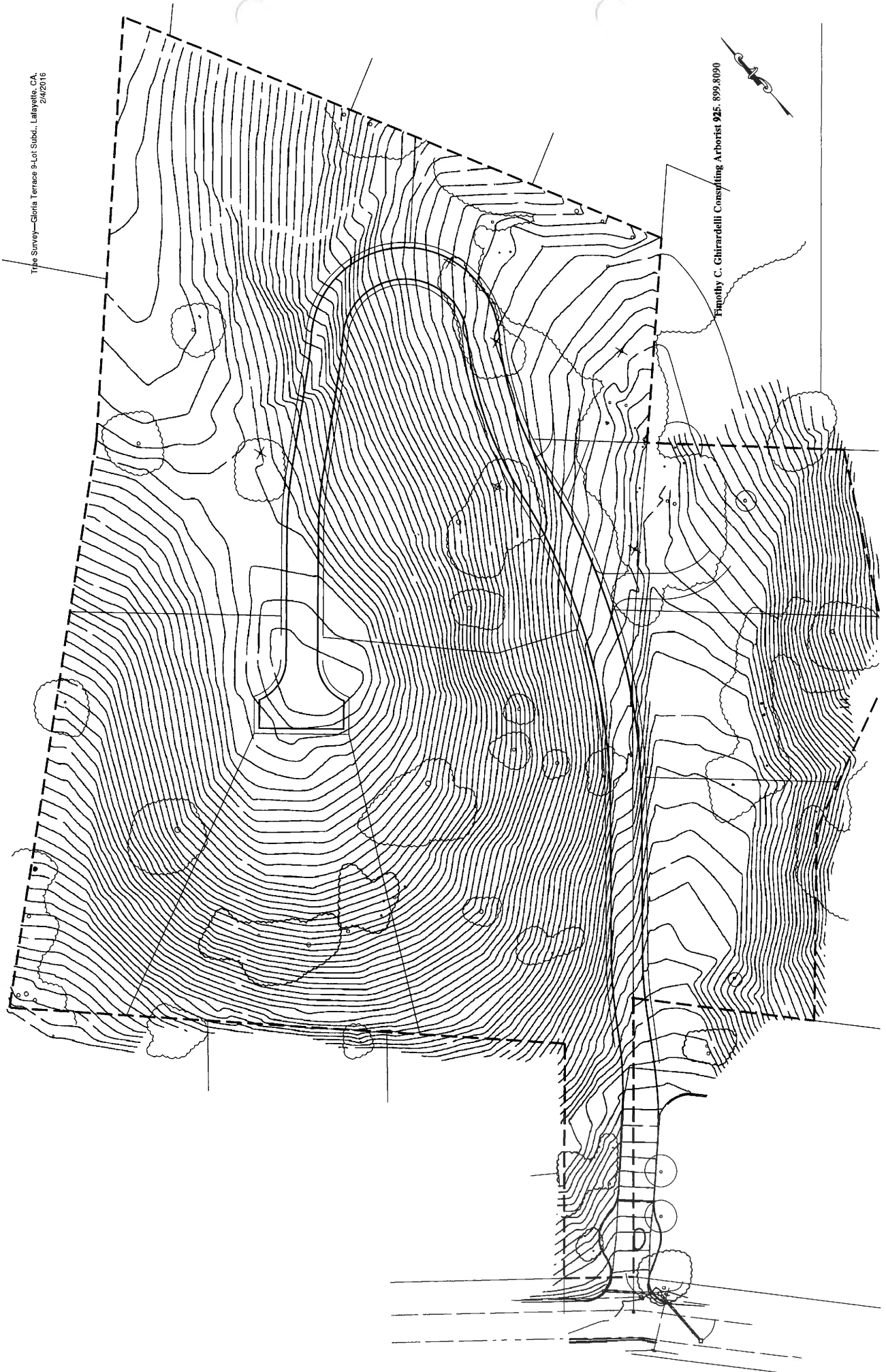
²Retention Rating

Excellent	Ideal specimen both functionally and aesthetically with good health and longevity.
Good	Tree suited to retention for the long term. Individual characteristics are weighed. Any health or structural concerns are manageable with reasonable care.
Fair	Tree may have age, health, and/or structural concerns that may, or may not be manageable. Aesthetics are likely to be affected or affect other more valuable trees. Removal may benefit others.
Poor	Tree is likely to be in decline and/or have non-manageable structural concerns. Removal is likely to benefit others.

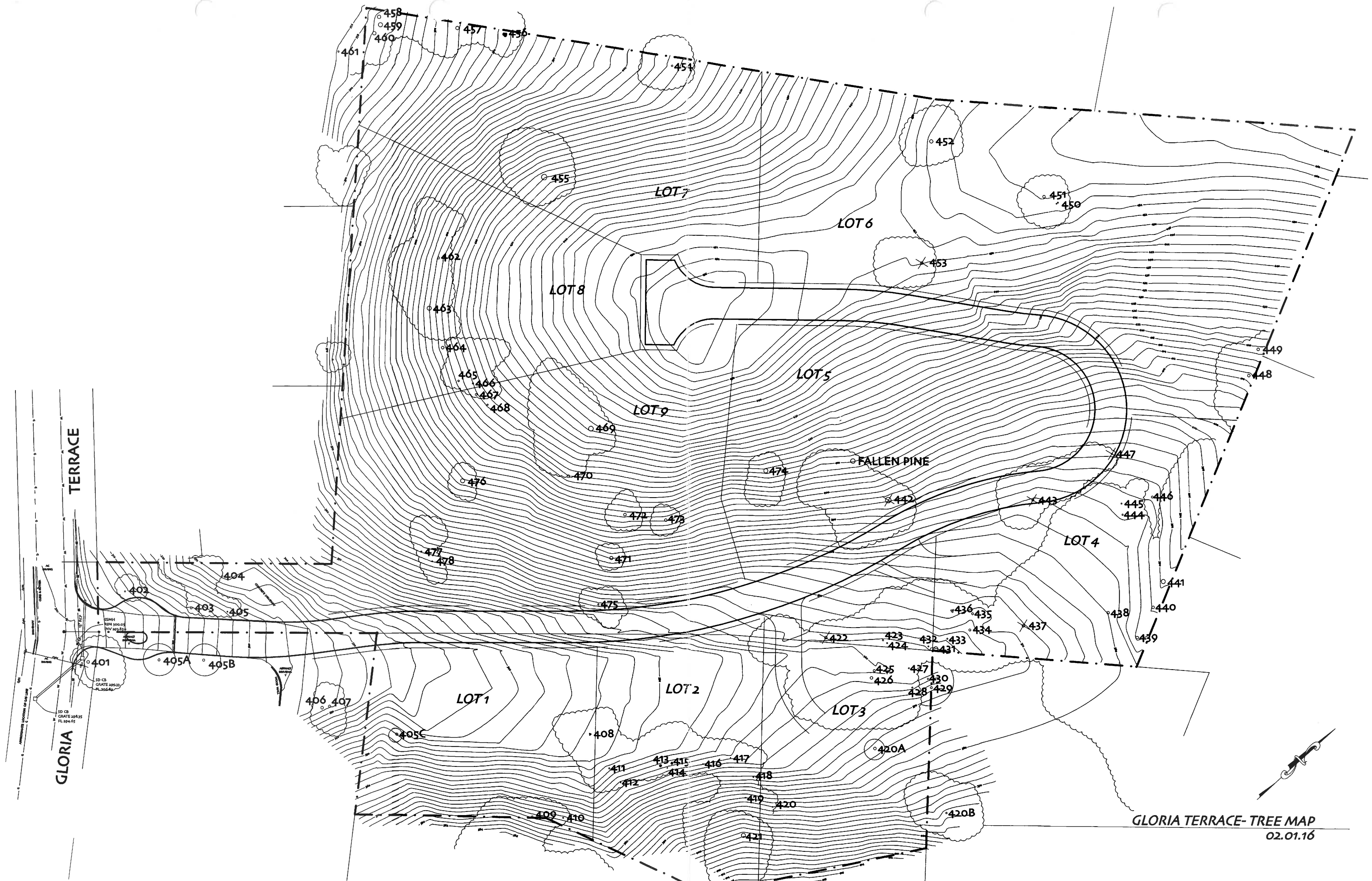
³Proposed Construction Impacts

High Impact:	Impacts that are at, or beyond the maximum range of root loss. Significant changes in the proposed plan are required in order to retain the tree. Specific recommendations are required from the Arborist to reduce proposed impacts.
Moderate Impact:	Impacts considered to be within the range of sustainable root loss. Specific recommendations are required from the Arborist to reduce proposed impacts.
Low Impact:	Minor impacts well within the sustainable range of root loss. Arborist supervised alterations within the tree canopy are required.

Tree Survey—Gloria Terrace 9-Lot Subd., Lafayette, CA,
2/4/2016



Faigthy C. Ghirardelli Consulting Arborist 925. 899.8090



Gloria Terrace

Gloria Terrace

Gloria Terrace- Tree Map
02.01.16