

BRENNAN REPORT

TREE PRESERVATION REPORT


Konrad Residence Subdivision

2450 Lunada Lane

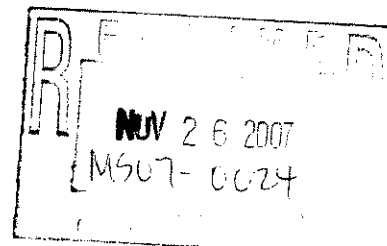
Alamo, California



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Tree Survey

Introduction and Overview

Mr. and Mrs. Konrad are planning to subdivide their residential property, located at 2450 Lunada Lane, in Alamo, an unincorporated portion of Contra Costa County, California. Ed Brennan, Consulting Arborist, was asked to prepare a Tree Preservation Report for the site for review by Contra Costa County.

This report provides the following information:

1. A survey of trees within the proposed project area.
2. An evaluation of each tree's suitability for preservation.
3. An evaluation of the impacts of proposed development on the trees.
4. An appraisal of the monetary value of each tree.
5. Guidelines for tree preservation during the design and construction phases of development.

Survey Methods

Trees were surveyed on July 12, 2007. The survey included trees six (6) inches and greater in diameter. 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 "good", "moderate" or "poor". 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.

Good: 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 'good' category.

Poor: 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

Twenty-nine (29) trees were evaluated. Descriptions of each tree are found in the **Tree Survey** and locations are plotted on the **Tree Survey Map** (see Attachments). A summary is provided in Table 1.

Seven (7) species were included in the surveyed trees. One of these, valley oak, is native to the area and may be indigenous the site.

Valley oak was the most commonly occurring species, with nine (9) trees. Six (6) of these were in fair condition, due to their having been pruned to clear overhead utility lines that run along the east border of the property where it meets the Iron Horse Trail. The other three (3) valley oaks were in good condition. Two (2) were growing on the adjacent property to the north, and were included because their crowns encroached on the Konrad property (#20 & 21).

Catalina cherry was the second most commonly occurring species with seven (7) trees. These are small stature trees that grow just inside the fence that runs along Lunada Lane. All were in fair condition.

The five (5) London planes grew in a row along the front-yard patio of the home. These were mature trees and all were in good condition.

There were also three (3) coast redwoods and two (2) incense cedars growing along the north border, two (2) mature manna gums, and a single Siberian elm.

Table 1: Condition ratings and frequency of occurrence of trees.

Common Name	Scientific Name	Condition Rating			No. of Trees
		Poor (1-2)	Fair (3)	Good (4-5)	
Incense cedar	<i>Calocedrus decurrens</i>	--	2	--	2
Manna gum	<i>Eucalyptus viminalis</i>	--	--	2	2
London plane	<i>Platanus x acerifolia</i>	--	--	5	5
Catalina cherry	<i>Prunus lyonii</i>	--	7	--	7
Valley oak	<i>Quercus lobata</i>	--	6	3	9
Coast redwood	<i>Sequoia sempervirens</i>	--	1	2	3
Siberian elm	<i>Ulmus pumilla</i>	--	1	--	1
Total		0 0%	17 59%	12 41%	29 100%

Protected Trees

Contra Costa County's Tree Protection and Preservation Ordinance (Article 816-6) defines **Protected Trees** as any tree of various native species (including valley oak) with a trunk diameter of 6.5 inches or greater. All nine (9) valley oaks met the criteria to be Protected Trees (Table 2, page 3). None of the other trees met the criteria.

Table 2: Protected Trees

Tree No.	Species	Trunk diameter (inches)
17	Valley oak	10
20	Valley oak	28
21	Valley oak	24
22	Valley oak	46
23	Valley oak	10
24	Valley oak	9
25	Valley oak	19
26	Valley oak	10

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.

My 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, incense cedar is sensitive to construction impacts, while coast redwood is more 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.

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 3).

I 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 3: Tree Suitability for Preservation

Good	These are trees with good health and structural stability that have the potential for longevity at the site. Ten (10) trees were rated as having good suitability for preservation. These included five (5) London planes, three (3) valley oaks, and two (2) coast redwoods. The three (3) valley oaks are Protected Trees.
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 "good" category. Nineteen (19) trees were rated as having moderate suitability for preservation. These included seven (7) Catalina cherries, six (6) valley oaks, two (2) incense cedars, two (2) manna gums, and one (1) each of coast redwood and Siberian elm. The six (6) valley oaks are Protected Trees.
Poor	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. No (0) trees were rated as having poor suitability for preservation.

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 Survey** was the reference point for tree condition and quality. Potential impacts from construction were evaluated using the Tentative Map, prepared by Terra Firma, Antioch.

Potential impacts from construction were estimated for each tree. The most significant impacts to the trees would occur as a result of the grading and construction of an access driveway on the north side of the property. Additional impacts would be from the construction of drainage swales and a storm drain.

My analysis of the project plan indicates that it would allow 14 trees to be preserved (Table 4). Eight of these are Protected Trees (valley oaks #20-27). Preservation of these trees is predicated on establishing a **Tree Protection Zone** and other preservation activities described in the Tree Preservation Guidelines that follow.

Implementation of the proposed project plan would require the removal of the remaining 15 trees. Of these, 13 are located along the north side of the property where the driveway is planned. Two, the manna gums, are in the center of the lot and would likely be within a building envelope. One (1) of the trees requiring removal, the valley oak (#17), is a Protected Tree.

Tree Appraisals

The trees were appraised using the trunk formula method found in the Guide for Plant Appraisal, 9th edition (Champaign IL:2000, International Society of Arboriculture). A regional companion publication, Species Classification and Group Assignment (2004, Western Chapter-International Society of Arboriculture), was also used. The value of landscape trees and plants is based upon four factors: size, species, condition, and location. Size is measured as trunk diameter, at 54" above grade. The species factor considers the adaptability and appropriateness of the plant in the region. Condition reflects the health and structural integrity of the individual tree. The location factor considers the site, placement, and contribution of the tree in the surrounding landscape.

Applying the above-described method to the 29 trees surveyed on the 2450 Lunada Lane site yielded an aggregate total value of \$183,000.00. Values for individual trees are shown in Table 4.

Table 4: Action recommendation and appraisal

Tree No.	Species	Trunk diameter	Protected ?	Action	Appraised Value
1	Catalina cherry	5	No	Remove-impacted by driveway	\$450
2	Catalina cherry	6	No	Remove-impacted by driveway	\$600
3	Catalina cherry	6	No	Remove-impacted by driveway	\$600
4	Catalina cherry	6,5,4	No	Remove-impacted by driveway	\$1,200
5	Catalina cherry	6,5	No	Remove-impacted by driveway	\$950
6	Catalina cherry	6,5	No	Remove-impacted by driveway	\$950
7	Catalina cherry	7,4	No	Remove-impacted by driveway	\$1,000
8	Incense cedar	23	No	Remove-impacted by driveway	\$4,650
9	London plane	27	No	Remove-impacted by driveway	\$6,450
10	London plane	28	No	Preserve	\$7,000
11	London plane	17,11	No	Preserve	\$3,650
12	London plane	16,13	No	Preserve	\$3,800
13	London plane	32	No	Preserve	\$9,000
14	Coast redwood	20,14	No	Remove-impacted by driveway	\$5,900
15	Coast redwood	22	No	Remove-impacted by driveway	\$4,800
16	Coast redwood	22	No	Remove-impacted by driveway	\$3,450
17	Valley oak	10	Yes	Remove-impacted by driveway	\$2,000
18	Incense cedar	22	No	Preserve	\$4,300
19	Siberian elm	18	No	Preserve	\$400
20	Valley oak	28	Yes	Preserve	\$21,000
21	Valley oak	24	Yes	Preserve	\$15,450
22	Valley oak	46	Yes	Preserve	\$56,550
23	Valley oak	10	Yes	Preserve	\$2,000
24	Valley oak	9	Yes	Preserve	\$1,600
25	Valley oak	19	Yes	Preserve	\$6,950
26	Valley oak	10	Yes	Preserve	\$2,000
27	Valley oak	11	Yes	Preserve	\$2,350
28	Manna gum	41	No	Remove-within probable building pad	\$8,850
29	Manna gum	31	No	Remove-within probable building pad	\$5,100

Tree Preservation Guidelines

Certain trees may be designated for preservation based on their suitability for preservation and location relative to the development plan. Once those decisions have been made, 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.

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.

Design recommendations

1. A **TREE PROTECTION ZONE** shall be established around each tree. No grading, excavation, construction or storage of materials shall occur within that zone. When trunks are accurately located and development plans refined, the Consulting Arborist will identify specific **TREE PROTECTION ZONES** for each tree.
2. No underground services including utilities, sub-drains, water or sewer shall be placed in the **TREE PROTECTION ZONE**.
3. **Tree Preservation Notes**, prepared by the Consulting Arborist, should be included on all plans.

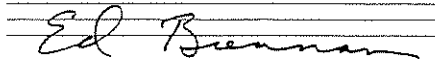
Pre-construction treatments and recommendations

1. The construction superintendent shall meet with the Consulting Arborist before beginning work 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 ft. chain link or equivalent as approved by Consulting Arborist. Fences are to remain until all grading and construction is completed.
3. Prune trees to remove dead branches and mitigate structural defects. Pruning specifications shall be written by the Consulting Arborist.

Recommendations for tree protection during construction

1. 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.
2. Any root pruning required for construction purposes shall receive the prior approval of, and be supervised by, the Consulting Arborist. Trenching for the installation of the storm drain within the dripline areas of trees #21 and 22 is likely to encounter roots larger than 3" in diameter. These roots should be carefully exposed and retained if possible.
3. 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.
4. No excess soil, chemicals, debris, equipment or other materials shall be dumped or stored within the **TREE PROTECTION ZONE**.

5. Any additional tree pruning needed for clearance during construction must be performed by a Certified Arborist and not by construction personnel.



Ed Brennan
Certified Arborist WE-0105A
Registered Consulting Arborist #373

Tree Survey Map

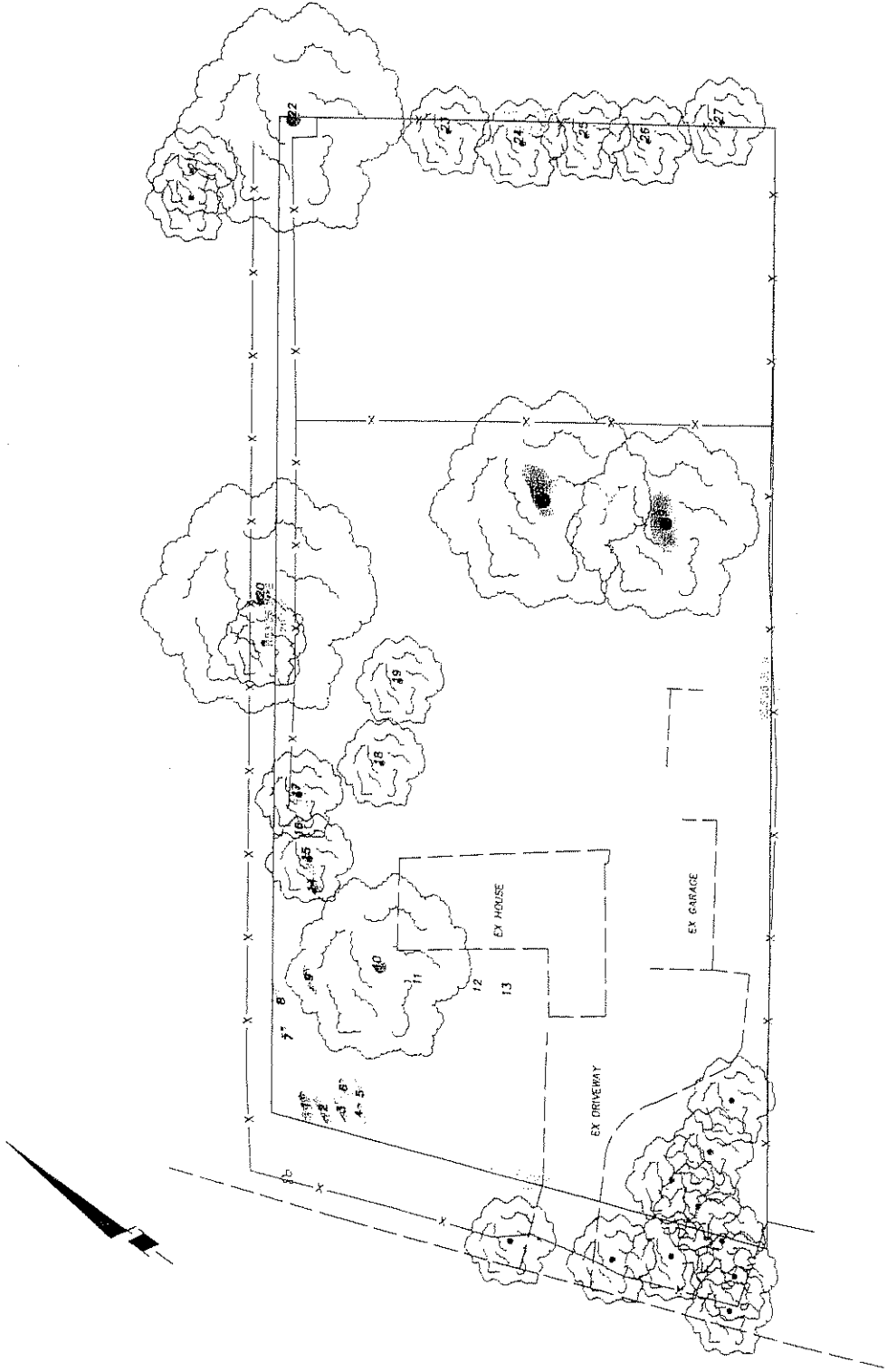
2450 Lunada Lane
Alamo, California

prepared for
K. B. Consulting

prepared by
Ed Brennan,
Consulting Arborist

base map provided by
Terra Firma
Antioch, California

September, 2007





Ed Brennan
Consulting Arborist

KB Consulting
Konrad Residence
Contra Costa County, California
July 2007

Tree Survey

TREE SPECIES No.	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	PROTECTED TREE?	COMMENTS	
1	Catalina cherry	5	3	Moderate	No	Upright form.
2	Catalina cherry	6	3	Moderate	No	Leaning trunk.
3	Catalina cherry	6	3	Moderate	No	Leaning trunk.
4	Catalina cherry	6,5,4	3	Moderate	No	Multi-stemmed.
5	Catalina cherry	6,5	3	Moderate	No	Leaning trunks.
6	Catalina cherry	6,5	3	Moderate	No	Trunks attach at 4'.
7	Catalina cherry	7,4	3	Moderate	No	Trunks attach at base.
8	Incense cedar	23	3	Moderate	No	Trunk divides at 25'.
9	London plane	27	4	Good	No	Trunk divides at 10'.
10	London plane	28	4	Good	No	3 main stems.
11	London plane	17,11	4	Good	No	3 main stems.
12	London plane	16,13	4	Good	No	Trunks attach at 4'.
13	London plane	32	4	Good	No	Trunks attach at 6'.
14	Coast redwood	20,14	4	Good	No	Trunks attach at 4'.
15	Coast redwood	22	4	Good	No	Single trunk, high crown.
16	Coast redwood	22	3	Moderate	No	Branch dieback, poor lcolor.
17	Valley oak	10	3	Moderate	Yes	Crook in trunk.
18	Incense cedar	22	3	Moderate	No	Crown bare on NE side.
19	Siberian elm	18	3	Moderate	No	Several branch failures.
20	Valley oak	28	4	Good	Yes	Trunk 5' north of fence, encroaches 30'.
21	Valley oak	24	4	Good	Yes	Trunk 15' north of fence, encroaches 25'.
22	Valley oak	46	4	Good	Yes	Leaning trunk, pruned to clear utility lines.
23	Valley oak	10	3	Moderate	Yes	Pruned to clear utility lines.



KB Consulting
Konrad Residence
Contra Costa County, California
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Tree Survey

TREE SPECIES No.	TRUNK DIAMETER (inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	PROTECTED TREE?	COMMENTS
24 Valley oak	9	3	Moderate	Yes	Trunk wounds, pruned to clear utility lines.
25 Valley oak	19	3	Moderate	Yes	Pruned to clear utility lines.
26 Valley oak	10	3	Moderate	Yes	Pruned to clear utility lines.
27 Valley oak	11	3	Moderate	Yes	Pruned to clear utility lines.
28 Manna gum	41	4	Moderate	No	Trunk divides at 18'.
29 Manna gum	31	4	Moderate	No	Good form and health.