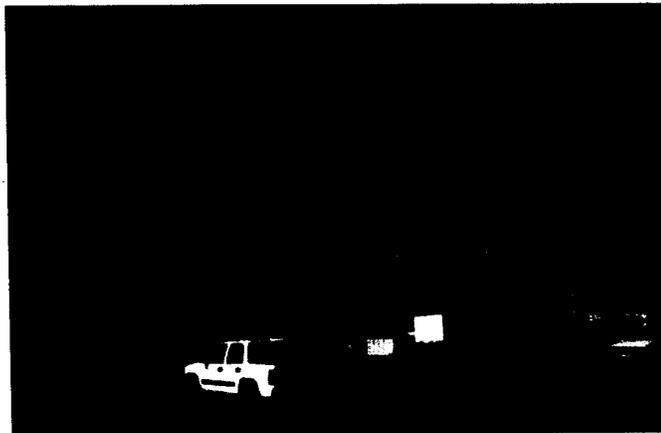


Attachment 4



TREE REPORT
Martinez Senior Apartments
310 Berrellessa Street
Martinez, CA



PREPARED FOR
Resources for Community Development
2730 Telegraph Avenue
Berkeley, CA 94705

PREPARED BY
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March 2009

**Tree Report
Martinez Senior Apartments
Martinez, CA**

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Introduction and Overview

Resources for Community Development are planning to develop the Martinez Senior Apartments project in Martinez, CA. The project would create a residential development. The site is largely undeveloped and is occupied by the Alta Fence Company. Two small houses, a garage and outbuildings were located near the corner of Buckley St. and Richardson St. HortScience, Inc. was asked to prepare a Tree Report for the site as part of the application to the City of Martinez. The report provides the following information.

1. A survey of trees within the proposed project area.
2. An evaluation of the condition of each tree.
3. An assessment of the impacts of constructing the proposed project on the trees.
4. Guidelines for tree preservation during the design and construction phases of development.

Survey Methods

Trees were surveyed on March 10, 2009. The survey included trees approximately 6" in diameter and greater, located within the proposed project area. The survey procedure consisted of the following steps:

1. Tagging each tree with an identifying number and recording its location on a map;
2. Identifying the tree as to species;
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.

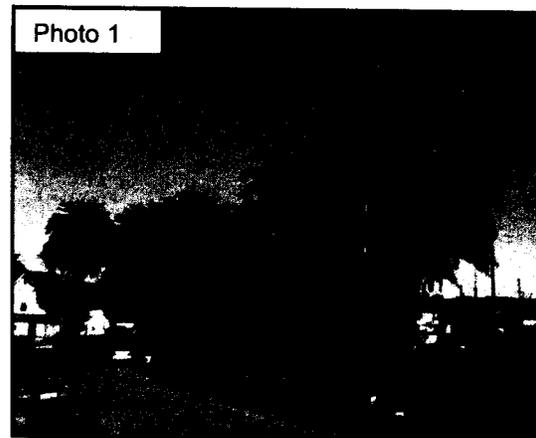
Description of Trees

Twenty-four (24) trees were evaluated, representing four (4) species (see Table 1, next page). Descriptions of each tree are found in the **Tree Survey Forms** and locations are shown on the **Tree Survey Map** (see attachments).

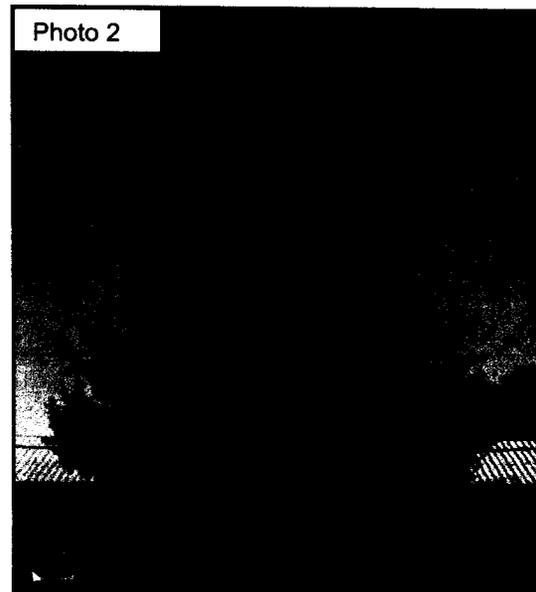
All twenty-four (24) trees met the City of Martinez's criteria for Protected Trees (6.5" diameter trunk or larger, regardless of species).

The most frequently occurring species was Canary Island date palm with 14 trees (58%). Coast redwood was represented by five (5) trees (21%). The remaining two species were represented by four (4) or fewer trees. Trunk diameter ranged from 8" to 36" for single-trunked trees. All of the trees were planted exotics, although some of the Canary Island palms appeared to have naturalized in a grove. None of the species were indigenous to the site.

Canary Island date palms were generally located near the corner Richardson St. near Foster St. (photo 1). The palms were all rated in good to excellent condition. The palms varied from young to mature in development with trunk diameters from 8" to 36", and brown trunk height (trunk height without fronds) that varied from approximately 4' to 25'. The trunks of many palms were partially or completely covered by dense palm growth. Therefore the condition of these trunks could not be observed. The trunks of several palms were next to each other or less than 5' apart.



Coast redwoods were located near the intersection of Berrellessa St. and Buckley St. The trees were semi-mature in development, and tree size ranged from 11-22" in diameter. All the redwoods were in fair health. All the trees had thin crowns (photo 2). Trees #439 and 443 had included bark (a structural defect) where the trunks divided into two stems. Tree #441 was located under utility lines and had been topped.



Four (4) glossy privets and one (1) loquat were located by the two existing houses on Buckley St. Glossy privet #420 was in good condition. The remaining privets and loquat were in fair condition. These trees were characterized by multiple trunks at ground level, decay or sunscald on trunks.

Table 1. Tree condition and frequency of occurrence. Martinez Senior Apartments. Martinez CA.

Common Name	Scientific Name	Condition			No. of Trees	
		Poor	Fair	Good	Specimens	
Loquat	<i>Eriobotrya japonica</i>	--	1	--	1	1
Glossy privet	<i>Ligustrum lucidum</i>	--	3	1	4	4
Canary Island date palm	<i>Phoenix canariensis</i>	--	--	14	14	14
Coast redwood	<i>Sequoia sempervirens</i>	--	5	--	5	5
Total, all trees surveyed		0	9	15	24	
		0%	38%	62%	100%	
Total, Specimen						24

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. Glossy privet has a moderate tolerance to construction impacts. In contrast, Canary Island date palm and coast redwood are 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.

- **Species invasiveness**
Species which spread across a site and displace desired vegetation are not always appropriate for retention. This is particularly true when indigenous species are displaced. In this case none of the species surveyed are considered invasive species. However, since the Canary Island date palms have not been maintained they are reproducing and spreading on the 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 poor suitability for preservation in areas where people or property will be present. Retention of trees with moderate suitability for preservation depends upon the intensity of proposed site changes.

Table 2: Tree Suitability for Preservation

Good

These are trees with good health and structural stability that have the potential for longevity at the site. Fourteen (14) trees were rated as having good suitability for preservation, all Protected trees.

Tree No.	Species	Diameter (in.)	Protected Tree?
420	Glossy privet	8	Yes
425	Canary Island date palm	28	Yes
426	Canary Island date palm	28	Yes
427	Canary Island date palm	28	Yes
428	Canary Island date palm	28	Yes
429	Canary Island date palm	25	Yes
430	Canary Island date palm	25,12	Yes
431	Canary Island date palm	14	Yes
432	Canary Island date palm	8	Yes
433	Canary Island date palm	28	Yes
434	Canary Island date palm	20	Yes
435	Canary Island date palm	36	Yes
436	Canary Island date palm	36	Yes
437	Canary Island date palm	30	Yes

Table 2: Tree Suitability for Preservation, continued.

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. Eight (8) trees were rated as having moderate suitability for preservation, all protected trees.

Tree No.	Species	Diameter (in.)	Protected Tree?
421	Loquat	10,7	Yes
423	Canary Island date palm	20,16,9	Yes
424	Glossy privet	6,4,4	Yes
438	Glossy privet	8,7,5,4,4	Yes
439	Coast redwood	19,19	Yes
440	Coast redwood	22	Yes
442	Coast redwood	15	Yes
443	Coast redwood	17,12	Yes

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. Two (2) trees were rated as having poor suitability for preservation, both were Protected trees.

Tree No.	Species	Diameter (in.)	Protected Tree?
422	Glossy privet	7,6,4,3,2,2	Yes
441	Coast redwood	11	Yes

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 Form** was the reference point for tree condition and quality. Potential impacts from construction were evaluated using the Preliminary Grading Plan and Utility Plan by Luk and Associates (February 20, 2009), Architectural Site Map by KTG Y Architectural & Planning (February 17, 2009), and Landscape Plan by Keller Mitchell & Co. (February 17, 2009).

The plan depicted the footprint of the proposed building pads, underground garage, driveways, sidewalks and landscaped areas. Proposed elevations for building pads and spot elevations were included. The utility details were not available for review. Existing utilities, tree locations and trunk elevations were shown.

Impacts to trees will occur in several ways. Demolition of existing site improvements such as the existing houses, outbuildings, driveways, fences and hidden features may damage both tree roots and crowns. Providing access for construction will require pruning of tree crowns. Excavation and grading to construct the proposed improvements may damage tree roots both directly through mechanical injury, and indirectly by altering soil structure, drainage, and biology.

Using these Plans potential impacts from construction were estimated for each tree. The most significant impacts to the trees would occur as a result of the demolition, grading and construction for building pads, underground garage, driveways and sidewalks. The entire site will be largely regarded. Overall, impacts from construction will be significant.

Based upon our evaluation of the Plans, I recommend the preservation of 3 trees, Canary Island date palms #428-430 (Table 3). Preservation of these trees is predicated on the impacts being within the tolerances of the trees and on the implementations of specific recommendations in the *Tree Preservation Guidelines*. If the recommendations cannot be followed selected trees may require removal.

I recommend removal of 21 trees (Table 3). Two (2) trees, (#422 and 441), are recommended for removal because of their poor suitability for preservation. The remaining nineteen (19) trees are recommended for removal due to impacts from construction.

Table 3: Recommended action for trees at Martinez Senior Apartments. Martinez CA.

Tree #	Species	Trunk Diameter (in.)	Action	Comments
420	Glossy privet	8	Remove	Located In graded area.
421	Loquat	10,7	Remove	Located in underground garage.
422	Glossy privet	7,6,4,3,2,2	Remove	Poor suitability for preservation.
423	Canary Island date palm	20,16,9	Remove	Located in underground garage.
424	Glossy privet	6,4,4	Remove	Located in underground garage.
425	Canary Island date palm	28	Remove	Located in parking stall, Richardson St. side.
426	Canary Island date palm	28	Remove	Located in parking stall, Richardson St. side.
427	Canary Island date palm	28	Remove	Located in sidewalk, Richardson St. side.
428	Canary Island date palm	28	Preserve	Located near sidewalk, Richardson St. side.
429	Canary Island date palm	25	Preserve	Located near sidewalk, Richardson St. side.
430	Canary Island date palm	25,12	Preserve	Located near sidewalk, Richardson St. side.
431	Canary Island date palm	14	Remove	Located In graded area.
432	Canary Island date palm	8	Remove	Located In graded area.
433	Canary Island date palm	28	Remove	Located in parking stall, Richardson St. side.

(continued, next page)

Table 3: Recommended action for trees at Martinez Senior Apartments. Martinez CA.

Tree #	Species	Trunk Diameter (in.)	Action	Comments
434	Canary Island date palm	20	Remove	Located in parking stall, Richardson St. side.
435	Canary Island date palm	36	Remove	Located in graded area.
436	Canary Island date palm	36	Remove	Located in driveway off Richardson St.
437	Canary Island date palm	30	Remove	Located in driveway off Richardson St.
438	Glossy privet	8,7,5,4,4	Remove	Located in underground garage.
439	Coast redwood	19,19	Remove	Located in graded area.
440	Coast redwood	22	Remove	Located in driveway off Berrellessa St.
441	Coast redwood	11	Remove	Poor suitability for preservation.
442	Coast redwood	15	Remove	Located In graded area.
443	Coast redwood	17,12	Remove	Located In graded area.

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 depends on the amount of excavation and grading, care with which demolition is undertaken, and construction methods. Coordinating any construction activity inside the **TREE PROTECTION ZONE** can minimize these impacts.

The following recommendations will help reduce impacts to trees from development and maintain and improve their health and vitality through the clearing and construction phases.

Design recommendations

1. **Tree Preservation Guidelines**, prepared by the Consulting Arborist, should be included on all plans impacting trees (eg. demolition, grading, utilities and landscaping).
2. Any changes to the plans affecting the trees should be reviewed by the consulting arborist with regard to tree impacts. These include, but are not limited to, site plans, improvement plans, utility and drainage plans, grading plans, landscape and irrigation plans, and demolition. Trunk locations, trunk elevations and driplines should be included on all plans.

3. Preliminary Grading Plan: a new 7' wide sidewalk is proposed next to the trunks of trees #428-430. To preserve the trees reduce the width of the sidewalk to the minimum ADA requirements (eg. 42" or 48"). Use the smallest size possible. A second option is to meander the sidewalk behind the trees a minimum of 5' from the trunk to connect to Foster St. Design sidewalk within the dripline so that no excavation into the existing grade is required, if possible. Walkway and base material should be placed on top of existing grade, if possible. Consider the use of geotextile fabric under the walk to avoid compacting the soil. At selected locations it may be necessary to ramp the sidewalk over significant roots to reduce impacts to the trees.
4. Preliminary Grading Plan: design grading plan to minimize soil disturbance within 10' from the trunk of trees. Limit soil scarification to a depth of 12" or less within 10' from the trunk to reduce impacts to tree roots to the extent possible.
5. Landscape Plan: specify by note and symbols on the plans the following; no turf, planting or irrigation within 5' of trunk of trees #428-430. Specify on plans that all soil preparation, planting and irrigation work within 10' of the trunk shall be by hand. A tractor, trencher, rototiller or other similar power equipment shall not be permitted within 10' of the trunk.
6. Utility Plan: underground services including utilities, sub-drains, water or sewer shall be routed at least 15' beyond the **TREE PROTECTION ZONE**.
7. A **TREE PROTECTION ZONE** shall be established around each tree. No grading, scarification, compaction, excavation, construction or storage of materials shall occur within that 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 nor permanently. The limits of the **TREE PROTECTION ZONE** will be adjusted following design changes. The tree protection zones shall be defined as follows.
 - a. West: 1' behind back edge of sidewalk, but no closer then 2' west of trunk.
 - b. North, south and east: 10' on all sides.
8. Do not apply lime to the soil for compaction purposes within 50' of the dripline of trees. Lime is toxic to plant roots.
9. Any herbicides placed under paving materials must be safe for use around trees and labeled for that use.

Pre-construction treatments and recommendations

1. The construction superintendent should meet with the Consulting Arborist before beginning work to discuss work procedures and tree protection.

2. Fence trees #428-430 as a group to completely enclose the **TREE PROTECTION ZONE** prior to demolition, grubbing or grading. Fences shall be 6 ft. chain link fence on posts driven into the ground. Fences are to remain until all grading, construction and landscaping is completed. We suggest placing weather proof signs on the fencing that read "**TREE PROTECTION ZONE KEEP OUT**" (eg. one sign every 50-75' for trees fenced as a group, and one sign for each of the four compass points for single trees).
3. Prune trees to remove dead frond, and to provide clearance for demolition and construction. Date palms are susceptible to Fusarium wilt and other diseases that can be spread during pruning. Fusarium wilt is always fatal and there are no arboricultural treatments. Therefore certain protocols should be followed to reduce the possibility of transmitting the diseases. All pruning shall be done by a State of California Licensed Tree Contractor (C61/D49). All pruning shall be done by Certified Arborist or Certified Tree Worker in accordance with the Best Management Practices for Pruning (International Society of Arboriculture, 2002) and adhere to the most recent editions of the American National Standard for Tree Care Operations (Z133.1) and Pruning (A300). The pruning objectives are as follows.
 - a. Remove only dead fronds (ie. skirt or petticoat), fronds that are 50% chlorotic (yellow) and inflorescences. **Do not remove green fronds.**
 - b. Remove old leaf bases. Do not cut into trunk tissue. Allow several inches of leaf base to remain and extend from the trunk to form the pineapple. Maintain a pineapple about 4' in height to help support the fronds and crown above. The pineapple shall be shaped to create a uniform appearance.
 - c. The arborist shall use an aerial bucket truck to ascend the palm. Palms shall not be climbed with spur.
 - d. A hand saw or reciprocating saw shall be used for pruning. Sterilize saws and plastic scabbards before and after use on each tree to reduce the chance of spreading Fusarium wilt and other diseases. **A chain saw shall not be used because it cannot be adequately sterilized.**
 - e. To sterilize saws and plastic scabbards brush them free of wood dust then submerge in alcohol, chlorine bleach or pine sol (diluted 50:50 with water) for at least 10 minutes.
4. Apply a 4"-deep layer of wood chip mulch (gorilla hair mulch is not acceptable) within the **TREE PROTECTION ZONE** of trees. Keep mulch 2-3' from the trunk

Recommendations for tree protection during construction

1. No grading, excavation, construction or storage of materials shall occur within the **TREE PROTECTION ZONE** unless approved and monitored by the Consulting Arborist. No underground services including utilities, sub-drains, water, sewer or irrigation shall be placed in the **TREE PROTECTION ZONE** unless approved and monitored by the Consulting Arborist. Spoil from trench, footing, utility or other excavation shall not be placed within the **TREE PROTECTION ZONE**, either temporarily or permanently. Any modifications must be approved and monitored by the Consulting Arborist.

2. All grading and demolition within the dripline of trees shall be done using the smallest equipment possible. The Consulting Arborist will identify where hand grading will be required. The equipment shall operate perpendicular to the tree and operate from outside the **TREE PROTECTION ZONE**. Motorized compaction equipment shall not be used within the **TREE PROTECTION ZONE**.
3. Prior to excavation for the grading or construction trees may require root pruning outside the **TREE PROTECTION ZONE** by cutting all roots cleanly to the depth of construction. Roots will be exposed by either: pulling soil away from the tree with a small back hoe; digging by hand; using an air spade; or water evacuation. The Consulting Arborist should monitor the excavation and root pruning. Roots shall be pruned clean at the edge of excavation with hand pruners or a sharp shovel. The Consulting Arborist will identify in the field where root pruning is to occur, if required.
4. Prior to demolition of the fence and other improvements the trunks all trees must be protected to keep equipment and debris from damaging the trunks. Protect the trees with either straw wattle or bales of hay. Wrap wattle around the trunk or stack bales of hay from ground to a height of 8'. The Consulting Arborist will identify in the field if any adjustments to the location or height of tree protection is required depending on construction activity.
5. 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.
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 Martinez Senior Apartments site will experience the physical environment different from that pre-development. Tree health and structural stability should be monitored. Occasional pruning, fertilization, mulch, pest management, replanting and irrigation may be required. Also, monitoring tree health and structural stability after construction must be made a priority. As trees age, the likelihood of failure of branches or entire trees increases. Thus it is recommended that the property owner have the trees inspected annually for hazard potential.

HortScience, Inc.



Michael D. Santos
Certified Arborist, WE #3877
Registered Consulting Arborist #430

HortScience Tree Survey



Resources for Community
Development
Martinez Senior Apartments
Martinez, CA
March 2009

TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
420	Glossy privet	8	4	Good	Full crown; small twig dieback.
421	Loquat	10,7	3	Moderate	Cavity in trunk; sunscald in 7" stem.
422	Glossy privet	7,6,4,3,2,2	3	Poor	Trunks stem from base; decay in trunk.
423	Canary Island date palm	20,16,9	4	Moderate	Tight clump; 4' of brown trunk.
424	Glossy privet	6,4,4	3	Moderate	Trunks stem from base; crown flat on northeast.
425	Canary Island date palm	28	5	Good	25' of brown trunk; 4' from #426; trunk partially covered by dense palm growth.
426	Canary Island date palm	28	5	Good	15' of brown trunk; 4' from #425; trunk partially covered by dense palm growth.
427	Canary Island date palm	28	5	Good	25' of brown trunk; 1.5' from #428; trunk partially covered by palm growth.
428	Canary Island date palm	28	5	Good	Trunk bows at base; 25' of brown trunk; 1.5' from #427; trunk partially covered by palm growth.
429	Canary Island date palm	25	5	Good	Trunk leans northeast; 25' of brown trunk; 5' from #428; trunk partially covered by palm growth.
430	Canary Island date palm	25,12	5	Good	Trunks stem from base; 25' of brown trunk; 4' from #429; trunk partially covered by palm growth.
431	Canary Island date palm	14	5	Good	5' of brown trunk.
432	Canary Island date palm	8	5	Good	4' of brown trunk.
433	Canary Island date palm	28	5	Good	Untagged; 25' of brown trunk; trunk covered by dense palm growth.

HortScience Tree Survey



HORT SCIENCE

Resources for Community
Development
Martinez Senior Apartments
Martinez, CA
March 2009

TREE No.	SPECIES	SIZE DIAMETER (in inches)	CONDITION 1=POOR 5=EXCELLENT	SUITABILITY FOR PRESERVATION	COMMENTS
434	Canary Island date palm	20	5	Good	Untagged; 4' of brown trunk; trunk covered by dense palm growth.
435	Canary Island date palm	36	5	Good	Untagged; 15' of brown trunk next to #436; trunk covered by dense palm growth.
436	Canary Island date palm	36	5	Good	25' of brown trunk; next to #435; trunk covered by dense palm growth.
437	Canary Island date palm	30	5	Good	9' of brown trunk; trunk covered by dense palm growth.
438	Glossy privet	8,7,5,4,4	3	Moderate	Trunks stem from base; trunk engulfed in ivy.
439	Coast redwood	19, 19	3	Moderate	Codominant trunks at 2' with included bark; thin crown.
440	Coast redwood	22	3	Moderate	Thin crown; good form.
441	Coast redwood	11	3	Poor	Topped at 13'; under utility lines.
442	Coast redwood	15	3	Moderate	Near utility lines; raised sidewalk; good form.
443	Coast redwood	17,12	3	Moderate	Codominant trunks at 1' with included bark; thin crown; raised sidewalk.

Tree Survey Map

Martinez Senior Apartments
Martinez, CA

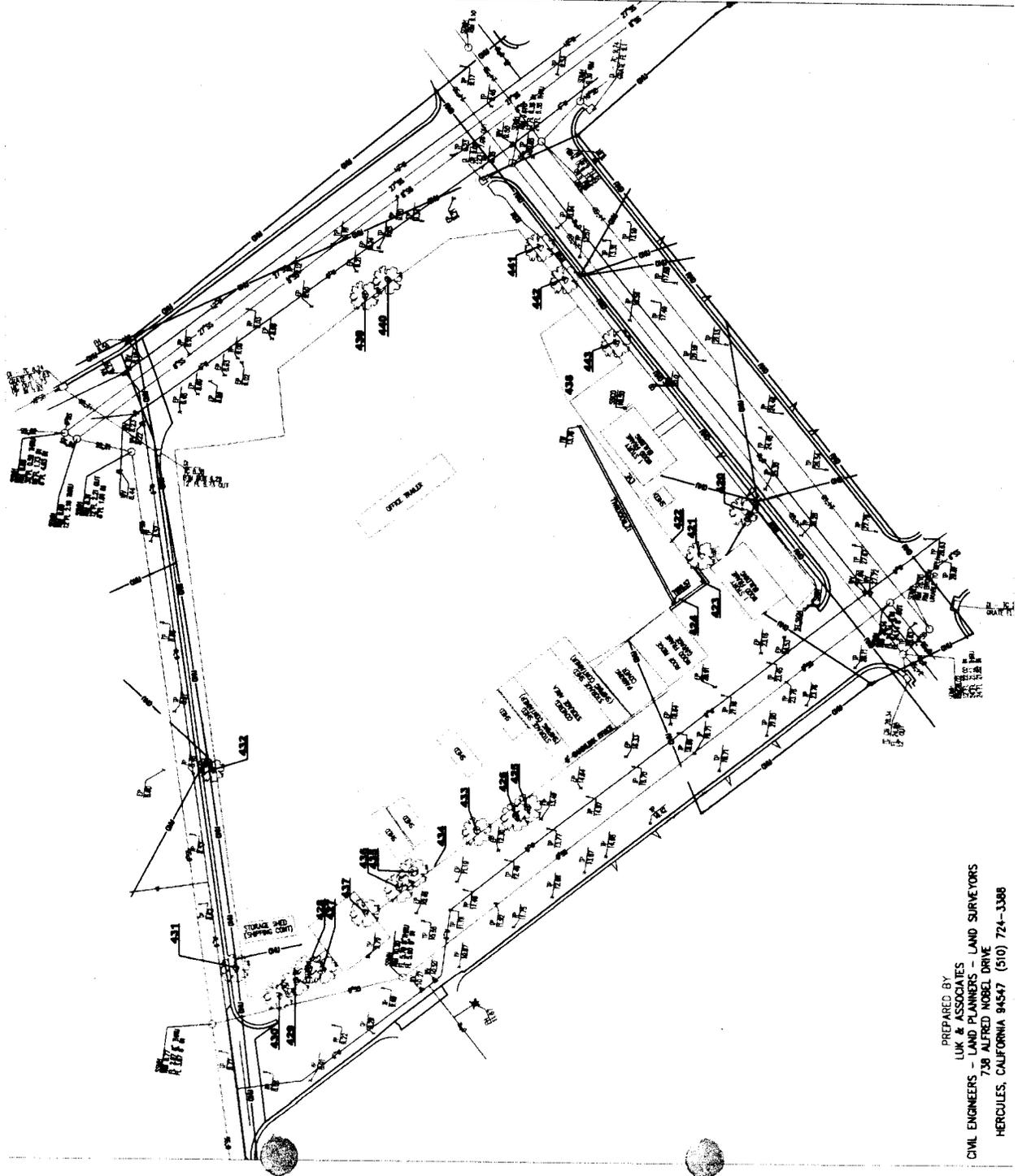
Prepared for:
Resources for Community
Development
Berkeley, CA

March 2009



No Scale

Notes:
Diplines and numbered tree
locations are approximate.



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