

**Council Meeting: June 10, 2008****SUBJECT: Municipal Code 13.16 CITY TREES Policy Review – Sustainability of Large Trees Species, Update of Official Street Tree List and Review of Tree Replacement Policy - Study Issue****REPORT IN BRIEF**

This issue originated from citizen input at the Study Issue workshop in November 2006, and was supported by Council to study the use of genetically large tree species as street trees. Council also added the review of the “Official Street Tree List,” and review of the tree replacement policy. This Study Issue combines those three issues related to the policies surrounding street trees in Sunnyvale. (Attachment A – Study Issue DPW 03C)

This report provides details on the issues involved in maintaining large species trees in an urban environment, including the benefits of the trees, and the trade-offs that are necessary to have large trees in confined planting conditions. There is also discussion on the current list of approved trees used for new/replacement plantings, and what policy is followed when deciding on the replacement of a street tree(s). Reference is also made to a grant application to the California Department of Forestry and Fire Protection authorized by Council for development of an in depth Urban Forestry Management Plan (UFMP) (RTC 08-069).

Staff is recommending support for the continued specification of large species trees as City street trees, including the necessary specifications of right-of-way, planting area, and building set-back to provide for the continued use of large species, with the understanding that certain conditions of some zoning applications may restrict the use of large species trees, in which case an appropriate species may be specified for such special application; and, that no changes be made in the Official Street Tree List, at this time; and, that no other tree species be added to the approved tree removal list.

BACKGROUND

Sunnyvale has been recognized as a “Tree City USA” by the National Arbor Day Foundation for twenty years. Sunnyvale attained this title by actively working to promote, support, and follow certain criteria relating to the presence of an “urban forest” in our city environment. The City has historically taken a strong stand on the value and benefits of a tree program, including taking all responsibility for pruning and maintaining street trees, making repairs to

private sewer laterals that are affected by city tree roots, and absorbing all costs and doing all the work to repair curbs and sidewalks damaged by the growth patterns of the City's trees.

Street trees are all trees located in the public right-of-way (ROW). They may have been planted by City staff, or planted by private property owners. All trees in the ROW are a legal liability to the City, unless the adjacent property owner signs a written document holding the city harmless (13.16.080. c2). Property owners are required to get a permit (13.16.060) to plant a tree in the public ROW. The Superintendent of Trees and Landscaping is the enforcing authority on the maintenance, planting and removal of trees on streets and other property in the public ROW (13.16.050)

At the Study Issue Workshop in November 2006, citizen input provided to Council raised issues about sidewalks adjacent to street trees, alternative maintenance options and the topic of large species of trees being used for street trees, and the exclusion of smaller tree species. At the meeting, Council directed staff to study the sustainability of genetically large tree species as street trees in the public right-of-way, the conditions under which a smaller species tree might be appropriate, and also study the use of rubber sidewalks as a mitigation measure to street tree roots displacing sidewalk sections in the City's right-of-way (which has been dealt with under a separate action and is currently being evaluated with a pilot project involving 10 locations in the City). Council also requested that the street tree replacement policy be reviewed in light of the Liquidambar replacement policy approved by Council in 2005 (RTC-316), including review of the Official Street Tree List.

EXISTING POLICY

The city street trees are governed under:

- *Municipal Code 13.16 - CITY TREES.*
 - 13.16.020. – *New city trees* – Requires a minimum number of street trees to be planted on new and existing developments.
 - 13.16.040. – *Official tree list* – Requires the superintendent to maintain and periodically review the list of official street trees.
 - 13.16.080. – *Removal of damaged trees* – Lists conditions for removal of street trees. Section 13.16.080 b3 – requires removed tree to be replaced.

Private property trees currently have municipal oversight as outlined in:

- *Municipal Code 19.38.70d - LANDSCAPING, IRRIGATION AND USEABLE OPEN SPACE* - Minimum parking lot landscaping requirement and
- *Municipal Code 19.94 - TREE PRESERVATION.*

Section 2.5 – Community Design Sub-Element identifies desirable Roadside features, which include:

- Goal 2.5B - Create an attractive street environment which will compliment private and public properties and be comfortable for residents and visitors.
- Policy 2.5B.1 - Maintain and provide attractive landscaping in the public right-of-way to identify the different types of roadways and districts, make motorists more comfortable and improve the enjoyment of residential neighborhoods.
- Action Statement 2.5B.1j. - Continue to plant and maintain street trees along the public right-of-way and identify areas which require replanting or replacement trees.

DISCUSSION

Sustainability of Large Trees

Out of a total inventory of approximately 36,800 street trees, a large majority, 82% or 30,300 trees, are considered “large” trees at maturity. The large tree, full canopy, street section is generally the model for an urban street. Some situations do not lend themselves to this model, but in most cases this is the long-term goal.

The benefits of trees are numerous. Scientific research has demonstrated environmental/ecological as well as social/psychological benefits. Many benefits have quantifiable values. Some of the identified benefits are:

- Lowered urban air temperatures – Concrete and asphalt streets and parking lots are known to raise air temperatures by three (3) to seven (7) degrees. Shaded streets have a lower ambient temperature, and can reduce energy bills by 15-35%.
- Storm water runoff reduction – Trees absorb the first 30% of most precipitation where open soil allows for water infiltration.
- Pedestrian safety – Traffic calming influence. Delineation of pedestrian areas versus vehicular. Protective physical barriers.
- Improved air quality – Trees absorb carbon dioxide (CO₂), produce oxygen, trap particulates and reduce impacts from exhaust gases. Trees in street proximity absorb nine (9) times more pollutants than more distant trees. Cooler streets decreases the production of ozone from car exhaust.
- Other benefits include: overall aesthetics, screening of necessary street features (utility poles, boxes, lights, etc.), protection from ultraviolet rays, added value to homes and businesses, improved health, planting strips, longer pavement life, reduced road rage, perception of decreased travel time, improved serenity, provide a feeling of connection to nature.

The value of these benefits grow with increased tree canopy cover. The use of street tree species that are genetically large at maturity is desirable to attain the maximum benefits described above.

However, there are also costs and issues which must be addressed and, in some cases, mitigated. Maintenance costs are shared by the City and the resident, depending upon the nature of the maintenance work involved:

- Structural pruning for health and safety – Professional pruning is required to keep the trees structural sound, provided by the City.
- Trees require water – In California’s Mediterranean climate, most street tree species require more water than nature provides. Supplemental water is typically required during the dry periods of the year. The adjacent property owner usually provides this.
- Leaf and litter removal – With trees canopying over streets and sidewalks, tree litter produced must be removed. Owners or residents are responsible for cleaning leaves and related litter from their property, while the City operates street sweepers on a monthly basis to collect what is in the street. Owners/residents may also use the green waste collection services provided through the City’s Solid Waste program to dispose of leaf and litter debris that has been collected and properly bagged.
- Pest and disease management – Most street tree pest problems are nuisance factors to people. Most tree pests are not lethal to the tree but do burden the tree’s biological resources. Sunnyvale no longer provides street tree pest control services. Municipal Codes section 13.16.060b requires a person to get a permit to perform maintenance on a street tree. With a permit a person can treat a street tree for pests at their expense.
- Sidewalk and curb damage – The roots of large trees can damage adjacent structures, such as sidewalks, curbs and driveways. The City has a policy of making repairs to related concrete damage.
- Sanitary sewer root intrusion – Roots from mature trees tend to find any weak places in near-by sewer lines, as they seek water for nourishment. The City has a policy of clearing laterals, repairing root damage and even replacing laterals if the problem is caused by City street tree roots.
- Other infrastructure conflicts – With close proximity to streets, street trees must share the same space in the public right-of-way as the other infrastructure elements, i.e. overhead utilities, street lights, fire hydrants, and underground utilities. The City generally handles these conflicts within the right-of-way.

The biggest challenge for large species trees is room. Providing enough room at the base for trunks and roots requires ample setbacks from structures. Having enough free space overhead to allow for the full leaf canopy to develop without restriction requires locating trees relative to street lights, utility poles and service lines to buildings. Room at the base is affected by available right-of-way space, how many sides are constrained (between street and sidewalk or behind sidewalk), and whether special provision is made for the trees.

Sunnyvale has two basic sidewalk right-of-way (ROW) configurations, parkway strip and monolithic (see Attachment B – ROW Sidewalk Configurations). The most common residential streets include about 11 feet on each side for sidewalk and open space. For parkway strip configuration, this open space is between the sidewalk and the curb. The most typical parkway strip is five feet six inches wide, but it can vary from as little as twelve inches to as much as ten feet. For monolithic configurations, the sidewalk and curb are adjacent. The remaining open space is behind the sidewalk and contiguous to the front property line. For monolithic configurations, the open land area runs from the building setbacks down to the sidewalk edge. Narrower streets typically have narrower off-street ROW space. The parkway widths on these narrower streets can be as small as eighteen inches.

Some communities have allowed a portion of the street to be dedicated to tree planting. This scenario has shown to have a positive traffic calming effect. Planting islands protect parked cars and trees themselves give the perception of a narrower street in that they are closer to the drive lane. A disadvantage is a decrease in space for on-street parking and difficulties in sweeping streets.

Limited ROW space can be a problem for large tree species serving as street trees. Five and six foot wide parkway strips put ROW trees two and half to three feet away from public concrete, sidewalk or curb and gutter. To minimize the effect of roots on curbs and sidewalk, current practice is the use of plastic root barriers installed at planting. For older, mature trees the Concrete Maintenance program staff employs the use of selective root pruning and installation of steel plates that confine the radial expansion of significant roots that must remain intact to physically support the tree.

Large street trees are sustainable if appropriately chosen, placed, installed and maintained. With careful species selection, proper planting and maintenance, large street trees can have long lives and provide all the benefits referenced. Where appropriate modifications can be made to the ROW spaces or the sidewalk paving materials, concrete pavers or rubber sidewalk panels can be used. Off right-of-way street tree planting on private property is also an option in selected locations. Sunnyvale has several trees on private property that are dedicated as city street trees.

Official Street Tree List

Municipal Code 13.16.040 - Official Tree List - establishes an Official Street Tree List that is maintained and periodically updated as needed. The current list (Attachment C – Official Street Tree List 2008) includes 31 different species approved for planting, and is utilized by city staff when planting a new street tree, as well as for replacement trees where appropriate. It is not intended to be a list of all species currently growing in the right-of-way. That list is the “Tree Inventory.”

Municipal Code 13.16.040 provides that no tree shall be planted in the right-of-way (ROW) unless it is on the Official Street Tree List or approved by the Superintendent of Trees and Landscaping for a species not on the list. Taken out of context this section may suggest that any species on the list may be planted in the right-of-way where a resident wants one. However, the City is the planting authority because we are responsible for the maintenance of trees in the right-of-way. The plan for planting from the Official Street Tree List includes a list of species which are approved as street trees. Uniformity of species for a block, or for several blocks, adds to a community feeling for a neighborhood.

The street tree inventory is kept in an electronic database, TreeKeeper™. It contains 204 different tree species listed as street trees in the public ROW. (Attachment D – Street Tree Inventory Species Listing). This large number of species is the result of unrestricted planting that took place when Sunnyvale was young. In 1986, the initial tree inventory was taken. All plant species in the public ROW horticulturally identified as trees were counted as street trees. There are many trees that are one or two of a kind that were planted by adjacent property owners in the ROW prior to the 1986 inventory. While the odd trees are not mandated to be removed, when they are replaced they are replaced by trees from the Official Street Tree List.

Occasionally a tree not on the list, or not approved for the location, will be found planted in the ROW, usually put there by the adjacent property owner. This is most common on monolithic sidewalk sites where front yards extend down to the sidewalk. When property owners are questioned about the tree planting they assumed that their property went down to the sidewalk and they were just planting a tree on their property. Depending on what is planted, the City can have the property owner remove such a tree or relocate it into their property in a different location. If the tree is a species on the Official Street Tree List, or is otherwise considered to meet the basic criteria for appropriate street tree species, acceptable to the application and location where it has been planted, and is too large to transplant off the ROW, the superintendent can allow the tree to remain and become part of the City street tree inventory.

Thirty types of species make up 80% of the street tree inventory. The three most numerous species make up 31% of the inventory, *Magnolia grandiflora* –

Southern Magnolia (12.7%), *Liquidambar styraciflua* – American Sweet Gum (9.7%) and *Pistacia chinensis* – Chinese Pistache (7.9%).

Municipal Code 13.16 – City Trees states that it is to be periodically reviewed. Comparison of the Official Street Tree List and the inventory can suggest the need to make adjustments about what tree species should remain on the list, or whether some change should be made.

Of all of the trees listed in TreeKeeper™, many species are no longer being actively planted in new locations, i.e. Southern Magnolia, American Sweet Gum and Chinese Pistache. Good urban forestry management utilizes species diversification. The rule of thumb is that no one species or variety should exceed five percent of the total street tree population. In Sunnyvale, this urban forestry standard is exceeded by the top three most numerous species. Magnolia and Liquidambar are no longer on the ‘Official Street Tree List’. Chinese Pistache is still on the list and is used as a replacement tree on streets currently planted with Pistache. Pistache is also a good drought tolerant species and is used in some special sites where water for irrigation is limited or unavailable.

While the “five percent rule” is not an absolute, it is based on good, protective principles. If there are too many of one species in an area, and a disease of that type of tree enters the City, the damage can be controlled by the limitation of that variety. At the same time, having more than a few of one type of tree is, a binding feature, connecting a neighborhood or different parts of a City by a common element. Uncontrolled planting of any species or variety, native or non-native, adaptable to local conditions or not, can result in a hodgepodge of mismatched trees, with no order or connection. This has been observed to be counterproductive in contributing to a feeling of a connected neighborhood.

Also contributing to species selection are site conditions and site maintenance. These factors greatly affect which species might be the designated street tree for a particular block segment. Some species will not perform well at a particular property. The availability of water to the tree has a large impact. Drought tolerant species generally cannot tolerate well-irrigated sites, and will succumb to soil-borne water mold diseases. Conversely, tree species that require routine summer irrigation will not do well in dry conditions. The dry condition is most prevalent in parkway configured ROW where no irrigation is provided in the parkway strip. If an adjacent property owner does not water the parkway strip during the summer dry season, a tree species requiring supplemental summer watering will not perform well. Therefore, for most streets, there is a primary signature street tree species and an alternate species for the street. The trees along any single street may be a blend of two species depending on individual site conditions. Both the designated signature tree and the alternate tree species have similar statures, i.e. height, spread, evergreen or deciduous. The *Magnolia grandiflora* – Southern Magnolia, and

the *Liquidambar styraciflua* – American Sweet Gum, are both sensitive to drought conditions and are replaced by a different species from the Official Street Tree List as they die or are removed for any other reason.

Proper use of the Official Street Tree List, in conjunction with the Tree Inventory, can maintain the appearance of a street, or to guide the eventual change-over from one species to another over a period of years.

Street Tree Replacement Policy

In August 2005 in response to RTC 05-228 – *Liquidambar Nuisance Fruit Problem Study Issue*, Council approved the removal of mature, otherwise healthy Liquidambar street trees due to the hard spherical cones “fruit balls” they produce. In addition, Council directed staff to review other tree species that may be similar candidates for removal, based upon conditions similar to those that have resulted in the problems with Liquidambars. In either case, any tree removed was proposed to be replaced by a tree from the approved species list, as may be directed by the superintendent overseeing the tree program to be appropriate for the street or neighborhood affected.

Tree replacement is an important component of urban forestry management. The decision to replace a tree is not one to be taken lightly. Trees take many years to reach a size where they materially effect the environment. Therefore, tree removal needs to be clearly defined. Trees should not be removed for reasons inconsistent with good urban forestry management policy. Issues such as size limitation, litter control, and infrastructure conflict should not be sufficient reason for mature tree removal. Alternatives should be considered at the initial planting of a tree, such as the location of structures and facilities, and should be a part of any decision regarding premature removal or replacement of a street tree. Where utilities need to be relocated, or concrete to be reconstructed, such a solution is final once completed. Other forms of mitigation can support the coexistence of trees with infrastructure. On the other hand, removing a mature tree and beginning anew with a sapling will impact a location for decades.

Aesthetics should not be a reason for street tree removal, due to the subjectivity of any aesthetic type decision. Street trees thought by one property owner to be incompatible with their private property landscape, or house style, might be thought of as an asset by another owner. The appearance of a location can be viewed quite differently by persons depending upon their situation at the time.

There are legitimate reasons for tree removal. The primary one is hazard. If a tree is in a condition that has a high risk of failure with a direct threat to bodily injury or property damage, then it should be removed. When a tree presents a high potential of failure due to disease, physical damage, poor natural branch structure or strength it should be removed and replaced.

Currently staff arborists carefully evaluate street trees considered candidates for removal. If a tree is an immediate threat to life and property or is in serious, irrecoverable decline it is scheduled for removal. The severity of the hazard presented by the tree will set its removal priority. Where possible, trees with defects or causing infrastructure damage are managed to mitigate the problem. If reasonable mitigation measures cannot be implemented the tree becomes a candidate for removal and replacement.

The 2005 decision by Council authorizing the removal and replacement of Liquidambar street trees by private property owners, and, in some cases, by City forces (RTC 05-316), was based upon several pertinent factors. The key complaint by members of the public concerning the Liquidambar trees is its production of hard spherical fruit balls that can cause slips and falls to pedestrians and cyclists. However, not all Liquidambar trees produce the fruit balls. Only the varieties known to produce the fruit balls are approved for removal. Another factor in allowing removal of a single species like this is that there are so many Liquidambars in the street tree inventory (9.8% of the street tree inventory are Liquidambars). Reduction of the number of Liquidambars is desirable from a species diversification standpoint, keeping in line with the general rule of limiting any one variety or species to no more than five percent of the tree inventory. A maximum of 200 Liquidambar trees can be removed and replaced per year per the Council's action. At the rate of 200 Liquidambar trees per year being removed, the number can be reduced to approximately 1,840 trees (5%) within 9 years, and all Liquidambars could be removed within about 18 years. At the same time, there is a single cultivated variety (cultivar) of Liquidambar that does not develop fruit balls. This variety, *Liquidambar styraciflua* 'Rotundiloba', Liquidambar Rotundiloba has all the desirable characteristics that Liquidambar is noted for, and therefore, though not on the Official Street Tree List, it is allowed as a replacement tree for the species, if so desired by the City or property owner. To date only one Liquidambar tree has been replaced with the Rotundiloba variety, just north of City Hall. This variety was not well known when all the Liquidambar trees were initially planted, and the seed balls generally do not show up for the first 14 or 15 years of a Liquidambar's life. With almost 10% of the tree inventory consisting of Liquidambar, even the Rotundiloba variety is not encouraged for new tree locations. However, in locations where the property owners want to keep the Liquidambars on their street, but want to avoid the seed balls, the replacement by the Rotundiloba variety will serve that purpose. This would be especially true once the Liquidambar numbers are in the range of 5% of the total inventory.

Another consideration in urban forestry management is age diversification. In a natural, healthy forest trees vary in age. A single species will have a range of ages represented, from young saplings through declining over-mature trees. In a forest setting when a tree is lost to old age there is little change to the whole stand. Urban trees planted in a similar time frame within a neighborhood tend

to go through growing and declining stages collectively. This leads to tree losses that can denude a street or neighborhood that was planted over a short period of time. Preventive removal, sometimes involving taking selected healthy, mature trees and removing and replanting them, can be used to provide a better age diversity. Such an approach is challenging to develop and difficult to administer in an acceptable fashion. In most situations, removal of an otherwise healthy tree to be replaced by a young sapling can be hard to explain for simple tree population age diversity.

Except for the special case of the Liquidambar with its hard, spherical fruit balls, there are no other good criteria in place for removing mature street trees. Individual trees may be removed if they are found to be hazardous. Otherwise, staff feels the policy of maintaining what we have and limiting tree removals and replacements is a good plan. Although there are many tree species in the Sunnyvale street tree population that develop fruit that are a nuisance and require effort to clean up on sidewalks, driveways and streets, that alone should not be a reason for their removal.

Several other cities in the South Bay have received recognition as a “Tree City, USA.” All have varying sizes of tree related staff. San Jose has recently decided that they will put all tree work responsibility on adjacent property owners, and will eliminate all tree maintenance staff and contracts. Sunnyvale is the only City with a general sewer lateral repair policy intended to support the City street trees and minimize sewer related complaints. Most nearby cities that aggressively support City street trees pay all costs related to sidewalk repair due to damage from street tree roots. The primary exception is, again, the City of San Jose. San Jose has put all responsibility for sidewalk repair on the private property owner adjacent to any defect.

Urban Forestry Management Plan

At its March 4, 2008 meeting Council authorized staff to apply for an Urban Forestry Management Grant from the California State Department of Forestry and Fire Protection (CSDFFP) to develop a unifying urban forestry policy. The proposed Urban Forestry Management Plan (UFMP) is intended to bring together all the different pieces involved in the management of all trees in Sunnyvale. It will include street trees, private property trees, and public trees in parks and golf courses, medians, sound walls etc. The UFMP scope, as prescribed by the CSDFFP, should be a document that would be consistent with the scope of a General Plan Sub-element. The proposed UFMP would allow for more discussions, descriptions and guidelines than is typically provided in the Municipal Code. The UFMP would recommend goals, policies and action statements to provide the community a clearer understanding of the importance and function of trees in Sunnyvale.

The UFMP will include any recommendations that come from this current study session as initial input. From there, the UFMP, conceptually, will comprise several sections including the benefits of trees, value of trees environmentally, socially and economically, elements of tree care and management, cost of tree care, public and private, and the overall goals of the urban forest in Sunnyvale. CAL FIRE – Urban Forestry has included in the grant application guidelines a model of an urban and community forestry management plan. The grant requires that the UFMP be developed and implemented by March of 2010. While the UFMP is not specifically a part of this study issue, it is worth pointing out that the work is proposed and will be a project for the next two years to get deeper into the issues of trees in the City, including many of the issues of this study issue. Preparation of the UFMP will also require coordination, input and possible action of other divisions and departments. The Landscaping program, the Parks division of Parks and Recreation, and the golf courses will be involved in developing appropriate policies and actions relative to the UFMP. In addition, the involvement of public volunteers, and public meetings, will be required to elicit public input on the issues of public trees, and their role in the UFMP.

FISCAL IMPACT

There is no immediate fiscal impact of this study issue. Standards which will be supported or developed based upon any approved recommendations could require specific actions by developers or property owners in the future. The creation of standards is part of normal staff activity, and is therefore not identified as a fiscal impact.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, in the Council Chambers lobby, in the Office of the City Clerk, at the Library, Senior Center, Community Center, and Department of Public Safety; posting the agenda and report on the City's Web site; and making the report available at the Library and the Office of the City Clerk.

A press release was published on June 12, 2007 announcing two community outreach meetings held at the Community Center, one on June 28, 2007 and one on July 19, 2007. A total of about fifty citizens attended both meetings. An article regarding the meeting was published in the Sun in the July 11, 2007 edition.

ALTERNATIVES

1. Support the continued specification of large species trees, in most cases, as City street trees, and the necessary specifications of right-of-way, planting area, and building set-back to provide for the continued use of large species, with the understanding that certain conditions of some zoning applications may restrict the use of large species trees, in which case an appropriate species may be specified for such special application; and, that no changes be made to the Official Street Tree List at this time; and, that no other tree species be added to the approved tree removal list.
2. Change the emphasis of street tree selection to provide for greater use of smaller species trees where right-of-way and building set-backs are limited and in denser, multifamily developments.
3. Direct staff to further investigate specific areas of interest of Council and return with a follow-up recommendation.

RECOMMENDATION

Staff recommends Alternative 1: Support the continued specification of large species trees, in most cases, as City street trees, and the necessary specifications of right-of-way, planting area, and building set-back to provide for the continued use of large species, with the understanding that certain conditions of some zoning applications may restrict the use of large species trees, in which case an appropriate species may be specified for such special application; and, that no changes be made to the Official Street Tree List at this time; and, that no other tree species be added to the approved tree removal list.

This recommendation is based upon the desirability of having large species trees planted and maintained in an urban environment due to the many benefits detailed in the report. There are some situations where other factors take precedence over the desire for large trees, and therefore the exception is provided for such acknowledged applications. However, the emphasis of the alternative recommended is that large species trees are preferable, and conditions should be considered in order to accommodate such desirable species where possible in the City. The Official Street Tree List has enough species to provide variety, while emphasizing trees that are easily adapted to the conditions encountered in an urban street tree environment. The List also is not so limited as to encourage too many of any one species to be planted, due to concerns of disease which can impact an over use of any one species. None of the approved, or previously approved species planted in Sunnyvale are dangerous or likely to become dangerous to an extent that their removal needs to be encouraged. This would not limit the ability of staff to remove individual trees that become dangerous through disease, damage, or other condition. All of these details should be further considered as part of the development of the Urban Forestry Management Plan.

Reviewed by:

Marvin Rose, Director, Public Works
Prepared by: Leonard Dunn, Urban Landscape Supervisor,
and James G. Craig, P.E., Superintendent of Field Services

Approved by:

Amy Chan
City Manager

Attachments

- A. DPW 03C - Proposed Study Issue Report
- B. Right-of-Way Configurations
- C. Official Street Tree List 2008
- D. Street Tree Inventory Species Listing

Proposed Continuing Council Study Issue

Number DPW 03C
Status Pending
Calendar Year 2008
Title Municipal Code 13.16 CITY TREES Policy Review - Sustainability of Large Tree Species, Update of Official Street Tree List and Review of Tree Replacement Policy. (DPW-15 merged into this issue.)
Lead Department Public Works
Element or SubElement Community Design

1. What are the key elements of the issue?

A resident addressed Council on the use of genetically large tree species for city street trees. The concern of the resident was the loss of large tree species with the use of genetically small species as street tree replacements. The request by the resident was to study the current street tree species listing and consider a change to the street tree management policy to specifically limit or exclude the use of the small trees species such as *Lagerstroemia indica* - Crepe Myrtle and encourage the use of large trees species as street trees.

Councilmember Moylan reported being approached by Sunnyvale private property owners regarding the removal and replacement of mature street trees other than Liquidambar at their expense. At the Council meeting of August 9, 2005, Council approved the removal and replacement of mature *Liquidambar styraciflua* street trees by private property owners.

Councilmember Moylan requested that the existing official street tree listing be reviewed as well as review the existing policy relating to the removal and replacement by private property owners of the street tree species, *Liquidambar styraciflua* - American Sweetgum with the possibility of expanding the list of species as candidates for removal by private property owners.

The issue of street tree inventory management is not clearly stated in the municipal code (13.16 - City Trees). This study issue will explore revisions to the current municipal code. Also the study issue will explore the creation of a separate written city tree (Urban Forestry) management plan document which would give specific policy direction on the maintenance of the street tree inventory.

2. Current Status:

Two public meetings were held on this study issue. One meeting occurred on June 28, 2007 and the other on July 19, 2007. Both meetings were held at the Community Center. The meeting was intended to provide information to the public. Approximately fifty residents attended. Input was taken from the public.

Most of the information for the RTC has been gathered. The RTC is about 60% complete as of 11/1/07.

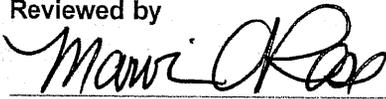
3. Estimated consultant hours for completion of the study issue

Managers	Role	Manager	Hours
	Lead	Dunn, Leonard	

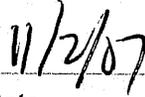
		Mgr CY1:	60	Mgr CY2:	0
		Staff CY1:	30	Staff CY2:	0
Support	Craig, Jim	Mgr CY1:	20	Mgr CY2:	0
		Staff CY1:	20	Staff CY2:	0
Interdep	Boco, Robert	Mgr CY1:	10	Mgr CY2:	0
		Staff CY1:	0	Staff CY2:	0
Interdep	Ryan, Trudi	Mgr CY1:	5	Mgr CY2:	0
		Staff CY1:	10	Staff CY2:	0

Total Hours CY1: 155
Total Hours CY2: 0

Reviewed by

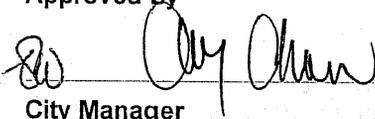


Department Director

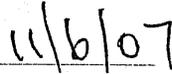


Date

Approved by

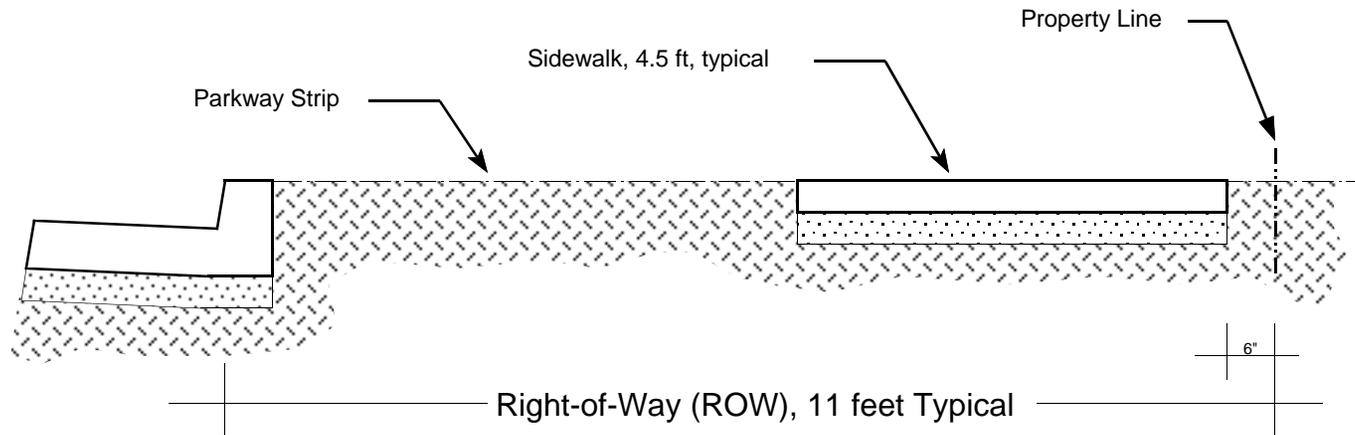


City Manager

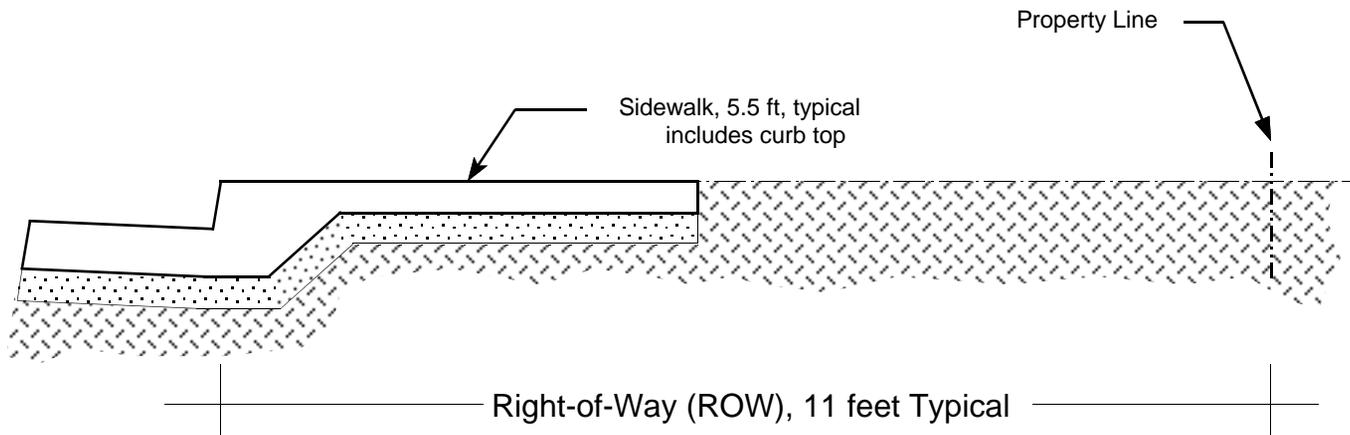


Date

City of Sunnyvale Public Works Department



RIGHT-OF-WAY, Parkway Strip Condition



RIGHT-OF-WAY, Monolithic Condition

City of Sunnyvale

Official Street Tree List 2008

	Botanical Name	Common Name	e-Evergreen	Tolerances				Minimum
			d-Deciduous	Drought	Lawn	Alkaline	Wind	PWS
	Deciduous							
1	<i>x Chitalpa tashkentensis</i>	Chitalpa	d	y	n	?	?	5
2	<i>Fagus sylvatica</i> 'Atropunicea'	Copper Beech,	d	n	y	?	?	5
3	<i>Fraxinus velutina</i> 'Rio Grande'	Fan-Tex Ash,	d	y	n	y	y	5
4	<i>Betula nigra</i> 'Heritage'	Heritage Birch	d	y	n	y	n	3
5	<i>Acer rubrum</i>	Red Maple,	d	n	y	n	n	3
6	<i>Quercus shumardii</i>	Shumard Red Oak	d	n	y	n	n	5
7	<i>Quercus lobata</i>	Valley Oak,	d	y	n	y	y	5
8	<i>Cercis occidentalis</i>	Western Redbud,	d	y	n	y	y	3
9	<i>Ginkgo biloba</i> 'Autumn Gold'	Autumn Gold Ginkgo	d	n	y	n	n	10
10	<i>Fraxinus americana</i> 'Autumn Purple'	Autumn Purple Ash	d	n	y	y	y	5
11	<i>Pistacia chinensis</i>	Chinese Pistache	d	y	n	ok	y	5
12	<i>Sapium sebiferum</i>	Chinese Tallow Tree	d	y	n	?	y	5
13	<i>Lagerstromia x fauria</i> 'Muskegee'	Crape Myrtle "Lavender"	d	n	y	y	y	3
14	<i>Lagerstromia x fauria</i> 'Tuscarora'	Crape Myrtle "Red"	d	n	y	y	y	3
15	<i>Lagerstroemia x fauria</i> 'Natchez'	Crape Myrtle "White"	d	n	y	y	y	3
16	<i>Celtus australis</i>	European Hackberry	d	y	y	y	y	5
17	<i>Carpinus betulus</i> 'Frasigiata'	European Pyramidal Hornbeam	d	y	y	y	y	2
18	<i>Platanus acerifolia</i> 'Yarwood'	London Plane, "Yarwood"	d	y	y	y	y	5
19	<i>Pyrus calleryana</i> 'Chanticleer'	Ornamental Pear	d	n	y	y	y	3
20	<i>Prunus cerasifera</i> 'Krauter Vesuvius'	Purple-Leaf Plum	d	n	y	y	n	3

Official Street Tree List 2008

	Botanical Name	Common Name	e-Evergreen	Tolerances				Minimum
			d-Deciduous	Drought	Lawn	Alkaline	Wind	PWS
	Evergreen							
21	<i>Quercus suber</i>	Cork Oak,	e	y	n	y	y	5
22	<i>Quercus virginiana</i>	Southern Live Oak	e	n	y	y	y	5
23	<i>Cinnamomum camphora</i>	Camphor Tree	e	n	y	n	y	5
24	<i>Sequoia sempervirens</i>	Coast Redwood	e	n	y	n	y	10
25	<i>Cedrus deodara</i>	Deodar Cedar	e	y	y	y	y	10
26	<i>Cupressus sempervirens</i>	Italian Cypress	e	y	n	y	y	2
27	<i>Photinia x fraseri</i>	Red Leaf Photinia	e	y	y	n	y	2
28	<i>Pinus canariensis</i>	Canary Island Pine	e	y	y	y	y	10
29	<i>Podcarpus gracilior</i>	Fern Pine	e	y	y	y	y	5
30	<i>Laurus nobilis</i>	Sweet Bay, Grecian Laurel	e	y	n	y	y	3
31	<i>Tristaniopsis laurina</i>	Water Gum, Tristania	e	y	n	n	y	3

Tree Frequency Report

	<i>Count</i>	<i>Percentage(%)</i>	
Magnolia grandiflora (SOUTHERN MAGNOLIA)	4697	12.74%	
Liquidambar styraciflua (SWEETGUM)	3801	10.31%	
Pistacia chinensis (CHINESE PISTACHE)	2916	7.91%	11,414 Number of Trees in top 3 species
Ginkgo biloba (MAIDENHAIR TREE)	1529	4.15%	30.9% Percent of inventory in top 3 species
Quercus ilex (HOLLY OAK)	1426	3.87%	
Sequoia sempervirens (COAST REDWOOD)	1020	2.77%	
Platanus acerifolia (LONDON PLANE)	975	2.64%	
Ceratonia siliqua (CAROB)	913	2.48%	
Liriodendron tulipifera (TULIP TREE)	832	2.26%	
Tristania laurina (TRISTANIA LAURINA)	822	2.23%	
Prunus cerasifera (PURPLE-LEAF PLUM)	773	2.10%	
Pyrus calleryana (ORNAMENTAL PEAR)	696	1.89%	
Cinnamomum camphora (CAMPHOR TREE)	683	1.85%	
Celtis sinensis (CHINESE HACKBERRY)	635	1.72%	
Fraxinus uhdei (SHAMEL ASH)	607	1.65%	
Podocarpus gracilior (FERN PINE)	596	1.62%	
Lagerstroemia x fauria (CRAPE MYRTLE/NATCHEZ)	579	1.57%	
Geijera parviflora (AUSTRALIAN WILLOW)	576	1.56%	
Pinus canariensis (CANARY ISLAND PINE)	557	1.51%	
Fraxinus oxycarpa (RAYWOOD ASH)	516	1.40%	
Lagerstromia x fauria(red) (RED CREPE MYRTLE)	497	1.35%	
Photinia fraseri (PHOTINIA)	494	1.34%	
Ligustrum lucidum (GLOSSY PRIVET)	492	1.33%	
Cupressus sempervirens (ITALIAN CYPRESS)	449	1.22%	
Quercus suber (CORK OAK)	442	1.20%	
Zelkova serrata (SAWTOOTH ZELKOVA)	428	1.16%	
Rhus lancea (AFRICAN SUMAC)	422	1.14%	
Celtis australis (EUROPEAN HACKBERRY)	415	1.13%	
Eucalyptus globulus (BLUE GUM)	413	1.12%	
Fraxinus velutina (MODESTO ASH)	348	0.94%	29549 Number of Trees in top 30 species
Fraxinus v. 'Rio Grande' (FAN TEX ASH)	322	0.87%	80.1% Percent of inventory in top 30 species
Quercus shumardi (SHUMARDI OAK)	320	0.87%	
Ulmus parvifolia (CHINESE ELM)	310	0.84%	
Betula pendula (WHITE BIRCH)	271	0.73%	

Quercus agrifolia (LIVE OAK)	262	0.71%	
Acer rubrum (RED MAPLE)	234	0.63%	
Cedrus deodara (DEODAR CEDAR)	227	0.62%	
Pinus radiata (MONTEREY PINE)	224	0.61%	
Quercus coccinea (SCARLET OAK)	210	0.57%	
Melaleuca linariifolia (FLAX-LEAF PAPERBARK)	200	0.54%	
Prunus blireiana (FLOWERING PLUM)	193	0.52%	
Laurus nobilis (SWEET-BAY)	173	0.47%	
Quercus virginiana (SOUTHERN LIVE OAK)	163	0.44%	
Callistemon citrinus (BOTTLEBRUSH)	157	0.43%	
Olea europaea (OLIVE)	154	0.42%	
Pyrus kawakamii (EVERGREEN PEAR)	144	0.39%	
Robinia pseudoacacia (IDAHO LOCUST)	143	0.39%	
Sapium sebiferum (CHINESE TALLOWTREE)	138	0.37%	
Maytenus boaria (MAYTEN TREE)	137	0.37%	
Carpinus betulus fastigiata (PYRAMIDAL EUROPEAN H)	134	0.36%	
Casuarina equisetifolia (HORSETAIL TREE)	128	0.35%	
Casuarina cunninghamiana (RIVER SHE-OAK)	127	0.34%	
Lagerstroemia indica (CRAPE MYRTLE)	121	0.33%	
Lagerstromia x fauria(lavend (LAVENDER CRAPE MYRTLE)	14	0.31%	
Prunus serrulata (FLOWERING CHERRY)	108	0.29%	34263 Number of Trees over 100 each in inventory
Quercus lobata (VALLEY OAK)	93	0.25%	92.9% Percent of inventory over 100 each in inventory
Pinus thunbergiana (JAPANESE BLACK PINE)	91	0.25%	
Juniperus chinensis Torulosa (HOLLYWOOD JUNIPER)	79	0.21%	
Pinus pinea (ITALIAN STONE PINE)	79	0.21%	
Schinus molle (CALIFORNIA PEPPER)	78	0.21%	
Fraxinus velutia(Rio Grande) (RIO GRANDE ASH)	76	0.21%	
Nerium oleander (OLEANDER)	69	0.19%	
Yucca gloriosa (SPANISH DAGGER)	69	0.19%	
Eucalyptus parvifolia (SMALL-LEAVED GUM)	68	0.18%	
Fraxinus american (AUTUMN PURPLE ASH)	68	0.18%	
Alnus rhombifolia (WHITE ALDER)	67	0.18%	
Washingtonia robusta (MEXICAN FAN PALM)	64	0.17%	
Eucalyptus polyanthemos (SILVER DOLLAR GUM)	58	0.16%	
Quercus wislizenii (INTERIOR LIVE OAK)	55	0.15%	
Eucalyptus sideroxylon (RED IRONBARK)	54	0.15%	
Pinus halepensis (ALEPPO PINE)	51	0.14%	

Acer saccharinum (SILVER MAPLE)	47	0.13%
Crataegus laevigata (HAWTHORN)	47	0.13%
Acacia melanoxylon (BLACK ACACIA)	46	0.12%
Prunus amygdalus (ALMOND)	44	0.12%
Prunus persica (PEACH)	43	0.12%
Betula nigra (HERITAGE BIRCH)	41	0.11%
Gleditsia triacanthos (HONEY LOCUST)	40	0.11%
Cordyline australis (DRACAENA)	38	0.10%
Acer palmatum (JAPANESE MAPLE)	35	0.09%
Albizia julibrissin (MIMOSA)	35	0.09%
Prunus domestica (PLUM)	35	0.09%
Fraxinus pennsylvanica (GREEN ASH)	34	0.09%
Myoporum laetum (MYOPORUM)	34	0.09%
Callistemon viminalis (WEEPING BOTTLE BRUSH)	32	0.09%
Eriobotrya deflexa (BRONZE LOQUAT)	31	0.08%
Schinus terebinthifolius (BRAZILIAN PEPPER)	29	0.08%
Phoenix canariensis (CANARY ISLAND DATE P)	28	0.08%
Juglans regia (ENGLISH WALNUT)	27	0.07%
Prunus armeniaca (APRICOT)	27	0.07%
Eriobotrya japonica (EDIBLE LOQUAT)	25	0.07%
Trachycarpus fortunei (WINDMILL PALM)	25	0.07%
Alnus cordata (ITALIAN ALDER)	24	0.07%
FRAXINUS pennsylvanica(Urban (URBANITE ASH)	23	0.06%
Cupressus macrocarpa (MONTEREY CYPRESS)	21	0.06%
Malus sylvestris (APPLE)	21	0.06%
Prunus lyonii (CATALINA CHERRY)	21	0.06%
Quercus kelloggii (CALIFORNIA BLACK OAK)	19	0.05%
Thuja occidentalis (AMERICAN ARBORVITAE)	19	0.05%
Eucalyptus lansdowneana (CRIMSON MALLEE BOX)	18	0.05%
Prunus caroliniana (CAROLINA LAUREL CHER)	18	0.05%
Tillia cordata (LINDEN)	18	0.05%
Cercis occidentalis (REDBUD)	17	0.05%
Eucalyptus cladocalyx (SUGAR GUM)	17	0.05%
Juglans hindsii (CALIFORNIA BLACK WAL)	17	0.05%
Morus alba (WHITE MULBERRY)	17	0.05%
Pittosporum eugenioides (PITTOSPORUM EUGENIOI)	17	0.05%
Populus nigra 'Italica' (LOMBARDY POPLAR)	17	0.05%

Calocedrus decurrens (INCENSE CEDAR)	16	0.04%
Cedrus atlantica (ATLAS CEDAR)	16	0.04%
Ulmus pumila (SIBERIAN ELM)	15	0.04%
Washingtonia filifera (CALIFORNIA FAN PALM)	15	0.04%
Fagus sylvatica "Atropunicea (COPPER BEECH)	14	0.04%
Persea americana (AVOCADO)	14	0.04%
Arecastrum romanzoffianum (QUEEN PALM)	12	0.03%
Grevillea robusta (SILK OAK)	12	0.03%
Magnolia x. soulangiana (SAUCER MAGNOLIA)	12	0.03%
Chamaerops humilis (MEDITERRANEAN FAN PA)	11	0.03%
Citrus limon (LEMON)	11	0.03%
Eucalyptus viminalis (MANNA GUM)	11	0.03%
Jacaranda mimosifolia (JACARANDA)	10	0.03%
Juniperus californica (CALIFORNIA JUNIPER)	9	0.02%
Melaleuca nesophila (MELALEUCA)	9	0.02%
Picea pungens (COLORADO BLUE SPRUCE)	9	0.02%
Aesculus carnea (RED HORSE-CHESTNUT)	8	0.02%
Pittosporum undulatum (VICTORIAN BOX)	8	0.02%
Podocarpus macrophyllus (YEW PINE)	8	0.02%
Quercus franetto (FOREST GREEN OAK)	8	0.02%
Ilex altaclarensis Wilsonii (WILSON HOLLY)	7	0.02%
Acer platanoides (NORWAY MAPLE)	6	0.02%
Acer pseudoplatanus atropurp (SYCAMORE MAPLE)	6	0.02%
Citrus sinensis (ORANGE)	6	0.02%
Eucalyptus spp. (EUCALYPTUS SPECIES)	6	0.02%
Heteromeles arbutifolia (TOYON)	6	0.02%
Pinus edulis (PINON PINE)	6	0.02%
Rhamnus alaternus (ITALIAN BUCKTHORN)	6	0.02%
Acer negundo (BOX ELDER)	5	0.01%
Betula platyphylla japonica (JAPANESE WHITE BIRCH)	5	0.01%
Cupaniopsis anacardioides (CARROTWOOD)	5	0.01%
Dodonaea viscosa (HOPSEED)	5	0.01%
Eucalyptus nicholii (WILLOW-LEAVED PEPPER)	5	0.01%
Malus spp. (CRABAPPLE)	5	0.01%
Pseudotsuga menziesii (DOUGLAS FIR)	5	0.01%
Sequoiadendron giganteum (GIANT SEQUOIA)	5	0.01%
Solanum rantonnetii (NIGHTSHADE)	5	0.01%

Tristania conferta (BRISBANE BOX)	5	0.01%
Alnus oregona (RED ALDER)	4	0.01%
Aralia papyrifera (RICE PAPER PLANT)	4	0.01%
Casuarina stricta (BEEFWOOD)	4	0.01%
Eucalyptus cinerea (SILVER DOLLAR TREE)	4	0.01%
Eucalyptus ficifolia (RED FLOWERING GUM)	4	0.01%
Eugenia paniculata (BRUSH CHERRY)	4	0.01%
Ficus carica (FIG)	4	0.01%
Quercus palustris (PIN OAK)	4	0.01%
Viburnum japonicum (VIBURNUM)	4	0.01%
Xylosma congestum (XYLOSMA)	4	0.01%
Aesculus hippocastanum (HORSE CHESTNUT)	3	0.01%
Ailanthus altissima (TREE OF HEAVEN)	3	0.01%
Cupressocyparis leylandii (LEYLAND CYPRESS)	3	0.01%
Diospyros kaki (PERSIMMON)	3	0.01%
Erythrina caffra (CORAL TREE SPECIES)	3	0.01%
Koelreuteria paniculata (FLAME TREE)	3	0.01%
Platanus racemosa (WESTERN SYCAMORE)	3	0.01%
Populus canadensis (CAROLINA POPLAR)	3	0.01%
Quercus spp. (OAK SPECIES)	3	0.01%
Quillaja saponaria (SOAPBARK TREE)	3	0.01%
Acacia baileyana (BAILEY ACACIA)	2	0.01%
Acer x freemanii (AUTUMN BLAZE MAPLE)	2	0.01%
Arbutus unedo (STRAWBERRY TREE)	2	0.01%
Castanea sativa (SPANISH CHESTNUT)	2	0.01%
Catalpa speciosa (WESTERN CATALPA)	2	0.01%
Chorisia speciosa (SILK-FLOSS TREE)	2	0.01%
Erythea armata (MEXICAN BLUE PALM)	2	0.01%
Eucalyptus robusta (SWAMP MAHOGONY)	2	0.01%
Hibiscus rosa-sinensis (HIBISCUS)	2	0.01%
Juniperus chinensis (JUNIPER)	2	0.01%
Koelreuteria bipinnata (GOLDENRAIN TREE)	2	0.01%
Lagunaria patersonii (PRIMROSE TREE)	2	0.01%
Lyonothamnus floribundus asp (FERN-LEAF CATALINA I)	2	0.01%
Melaleuca quinquenervia (CAJEPUT TREE)	2	0.01%
Persea borbonia (MADEIRA-BAY FIG)	2	0.01%
Picea engelmannii (ENGELMAN SPRUCE)	2	0.01%

Sophora japonica (JAPANESE PAGODA TREE)	2	0.01%
Acer buergeranum (TRIDENT MAPLE)	1	0.003%
Acer japonicum (FULL MOON MAPLE)	1	0.003%
Acer macrophyllum (BIGLEAF MAPLE)	1	0.003%
Araucaria araucana (MONKEY PUZZLE TREE)	1	0.003%
Araucaria bidwillii (BUNGA-BUNGA TREE)	1	0.003%
Butia capitata (PINDO PALM)	1	0.003%
Casimiroa edulis (WHITE SAPOTE)	1	0.003%
Citrus X paradisi (GRAPEFRUIT)	1	0.003%
Cornus spp. (DOGWOOD)	1	0.003%
Eucalyptus lehmannii (BUSHY YATE)	1	0.003%
Eucalyptus leucoxylon (WHITE IRONBARK)	1	0.003%
Feijoa sellowiana (PINEAPPLE GUAVA)	1	0.003%
Juniperus scopulorum (COLORADO JUNIPER)	1	0.003%
Leptospermum spp. (TEA TREE)	1	0.003%
Mahonia lomariifolia (OREGON GRAPE)	1	0.003%
Melaleuca ericifolia (HEATH MELALEUCA)	1	0.003%
Pinus coulteri (COULTER PINE)	1	0.003%
Punica granatum (POMEGRANATE)	1	0.003%
Salix spp. (WILLOW)	1	0.003%
Ulmus campestris (ENGLISH ELM)	1	0.003%

36880

5.5 yrs Pruning Cycle per year

Percent Pruned Inventory

18.18% 6705 **36880** As of 2/3/06

18.18% 6454 35497 Plan for FY '06-'07

Stump (STUMP)	74	1.82%	74
Vacant site (Large) (Vacant Planting Site)	361	8.89%	361
Vacant site (Medium) (Vacant Planting Site)	2589	63.74%	2589
Vacant site (Small) (Vacant Planting Site)	1038	25.55%	1038
	4062		

251 1383 difference