SANTA MONICA URBAN FOREST MASTER PLAN

REVISED 2017

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VISION

20th Street at Georgina, looking north.

Santa Monica's coastal setting and physical beauty offer a desirable quality of life to those who live, work and visit here. Two hundred and fifty years ago the area was blanketed by grasslands and coastal sage scrub. As various cultures inhabited the land, they adjusted their lives to fit the landscape and adjusted the landscape to fit their needs, tastes, and sensibilities.

The urban forest of today is the result of the decisions by those who managed the forest before us, and is greater than the sum of individual trees outside our homes, shops and offices. It is the environment in which we work and play and through which we travel daily. It is the aesthetic setting for our schools, businesses, cultural attractions, and places of recreation and renewal. It is our ecosystem; the habitat in which we thrive. It is our shared community resource.

We owe it to ourselves and future generations to secure and enhance the benefits of a thriving urban forest in Santa Monica. We can do this only if we understand its importance and utilize new knowledge of environmental science and arboricultural technology in order to adapt nimbly to changes in the environment.

This Urban Forest Master Plan seeks to increase age and species diversity in the public tree population, augment biomass and canopy coverage citywide, enhance the character and aesthetics of our neighborhoods and achieve exemplary stewardship of the forest from all who live and work here. The Master Plan must be regarded as both a long range policy guide and a living document that will respond to changing conditions over its life. It requires a close partnership between policy makers, staff and the community.

Santa Monica has established an international reputation for enlightened environmental policies and the respectful conservation of natural resources. Adoption of this Master Plan is the next significant step in Santa Monica's continuum of sustainability policies.

EXECUTIVE SUMMARY

URBAN FOREST MASTER PLAN MISSION STATEMENT

To ensure that all benefits of a healthy urban forest are available to Santa Monica residents and visitors for generations to come, to guide the perpetuation and enhancement of public tree canopy for the entire city, and to inform the community of the importance of the urban forest and the best practices to follow to help it thrive.

The City of Santa Monica is committed to improving and enhancing its urban forest. Establishing, maintaining and enhancing a healthy urban forest is a complex and multi-layered endeavor. It affects and is affected by many factors. This document examines the context of Santa Monica's urban forest and develops guiding principles, goals, strategies and guidelines for its management to ensure its on-going improvement.

Urban Forestry, as defined by the Dictionary of Forestry, is the "art, science, and technology of managing tree and forest resources in and around community ecosystems for the physiological, sociological, economic, and aesthetic benefits trees provide society.[1]" In 2009, the American Planning Association expanded the Urban Forestry definition to include "a planned and programmatic approach to the development of the urban forest, including all elements of green infrastructure within the community, in an effort to optimize the resulting benefits in social, environmental, public health, economic and aesthetic terms, especially when resulting from a community visioning and goal-setting process.[2]"

There are two important distinctions between these definitions. Although the first definition mentions resources and ecosystems, it does not directly emphasize the environmental benefits of the urban forest. The second definition places emphasis on the "planned and programmatic approach" resulting from a community process.

This shift in definition parallels the City's shift from the Community Forest Management Plan, approved by City Council in 2000, to a long range Urban Forest Master Plan (Master Plan). This Master Plan document updates and expands upon the Community Forest Management Plan 2000 and provides a living document containing measures for cultivating a successful urban forest and recommendations for ongoing improvements.

As expressed in the Urban Forest Master Plan Mission Statement, the Master Plan will serve as a guide for perpetuating and enhancing Santa Monica's urban forest. The Master Plan establishes guiding principles and associated goals that result in specific strategies for addressing the needs of the urban forest. These strategies take into consideration environmental and urban conditions that fluctuate over time, and are flexible enough to account for future changes that will affect the trees of the urban forest, such as insects, disease, climate shifts and other factors. The Master Plan sets guidelines for periodic tree species performance evaluations and adjustments in the use of individual species. By using an adaptive management approach, new research and technologies will be incorporated into the appendices of this Master Plan as they become available. As the City and other agencies revise and refine their methods for tree care and other City documents are updated, the Master Plan will also evolve.

The Master Plan describes the City's urban forest, analyzes its condition and compares its growth to previous years. This snap shot in time provides the community and future managers of the urban forest with an historical account of the forest and a Street Tree Designations List to create neighborhood street tree environments. The analysis of the forest calculates the value of the environmental benefits it provides.

The value of these benefits justifies the need for effective urban forest management goals supported by sound arboricultural strategies. The baseline data provided will help future managers of the urban forest make informed decisions, and promote a better understanding of the environmental and aesthetic benefits provided by public trees, which will lead to increased community investment in the stewardship of its trees.

The appendices of this Master Plan establish guidelines for the care of the urban forest, lay out specific street tree designations and include a glossary with references that will be updated routinely to incorporate new maintenance practices.

ROLE OF THE URBAN FOREST TASK FORCE

Task Force meetings will be held approximately every two months. To help ensure a focused and effective advisory body during its tenure, the Task Force would advise staff in the following areas related to the urban forest:

Administrative

- Form standing committees and ad hoc committees as needed and as staff resources permit.
- The Species Selection Subcommittee shall be an ongoing standing committee concerned with tree species selections in the city's parkways, medians, parks and public improvement projects, reporting to the Task Force as a whole body.

Capital Projects

- Provide input on proposed tree planting activities in City public improvement projects.

Street Tree Species Selection

- Provide input on street tree species designation, including those adjacent to designated city landmarks and within historic districts. The latter will be accomplished in conjunction with the Landmarks Commission.

Education

- Provide input on the development of the Heritage Tree educational program.
- Encourage responsible stewardship of trees on private property.
- Provide input to staff on written materials sent to residents regarding trees.

Funding

- Advocate and support funding initiatives including grant funding opportunities.

Report Evaluation

- Evaluate biennial reports and the first seven-year report on achieving the stated environmental performance goals as specified in the Master Plan. As needed, the Task Force will advise staff on recommended changes to the Master Plan's goals and strategies, including the appeals processes, tree species designations, tree valuation, the public review process for tree removals, and tree relocations as part of City public improvement projects.

Public Liaison

- Listen to public concerns about tree related issues and convey those concerns to City staff.
- Advocate for transparency in City operations and for best practices in their interactions with outside contractors.
- Act as representatives of the Urban Forest Task Force before other appointed bodies and before the City Council on matters agreed upon by the Task Force.
- Provide input on tree planting for School District property.

Advisory Recommendations

- Hear reports and provide advisory recommendations.
- Hear reports from City Departments concerning tree aspects of ongoing projects.
- Provide input on implementation of LUCE including input zoning ordinance and development requirements related to public and/or private trees.

ROLE OF THE PUBLIC WORKS DEPARTMENT

The Public Works Department's strategic and systematic stewardship of the urban forest seeks to maximize the sustainable environmental benefits it delivers to the community while minimizing the associated risk. The Department works in close partnership with the Urban Forest Task Force in its endeavors to fulfill the vision of the Urban Forest Master Plan.

CHAPTER 1 - BACKGROUND OF THE URBAN FOREST

HISTORY OF SANTA MONICA'S URBAN FOREST

The cultural life in the area which is now Santa Monica shifted radically during the 125 years before the City was incorporated in 1886. This shift had a major effect on the land that now supports Santa Monica's urban forest.

Over many generations, the Tongva People inhabited this terrain of grassland and coastal sage scrub on the bluffs. Sycamores, cottonwood, and willow may have grown on the banks of streams, with grassland and oak woodland further inland.[3]

During the 16th century, the Spanish explored and claimed the region. The colonization of Alta California by the Spanish began in 1769. Following Mexico's independence from Spain in 1821, local land grants were made and the land was used mostly for grazing cattle and sheep.

By 1875 Colonel R. S. Baker and Nevada Senator John P. Jones owned the land that is now Santa Monica and laid out the City, numbering the north/south streets from the Pacific Ocean to 26th Street, and naming the east/west streets, from Colorado Avenue on the south to Montana Avenue on the north, after states of the Union. They sold residential lots, and by the time Santa Monica was incorporated into an 8.3 square mile city in 1886, trees were planted and the land that was once a bluff with few trees gave birth to what is now Santa Monica's emerging urban forest.[4 & 5]

The estate of Senator John P. Jones became the current Fairmont Miramar Hotel. Its fig tree still exists, over 100 years later, and is one of the City's four current designated Landmark Trees.

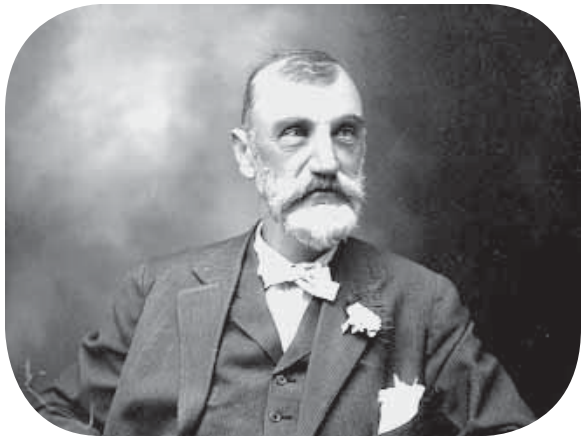
Ocean Avenue circa 1900.

From 1893-1900 other areas of the City were developed. Smaller lots were allocated with the idea of making affordable neighborhoods near the beach. With the smaller lots, less space was allocated for street trees. The choices that early developers made regarding growspace for trees continue to affect today's urban forest.

THE SANTA MONICA URBAN FOREST TIMELINE

Prior to the 16th century	1542 -1821	1874-1875	1887	1890
The Tongva People, later called the Gabrielinos, lived in villages in what is currently known as "The Westside." These hunter gatherers coexisted with the native plants.	Spanish colonizers introduced exotic plants and animals, changing the ecology of the area.	Colonel Baker and Senator Jones laid out the City of Santa Monica, establishing an infrastructure for the future urban forest.	Abbot Kinney established the nation's first forestry station in Rustic Canyon for experimentation with eucalyptus propagation.	The Santa Monica Forestry Station distributed 76,000 eucalyptus seedlings to encourage use in nurseries.

During the 1880s, experimentation with trees originating in climates similar to Santa Monica was actively pursued. Abbot Kinney, known for his development of the Venice canals, had a profound impact on Santa Monica's urban forest. He served as the Chairman of the State Forestry Board (1886-1888) and as roadmaster of Santa Monica.



Abbot Kinney, a prominent land developer in the area, was an expert on eucalyptus trees and a friend of John Muir.

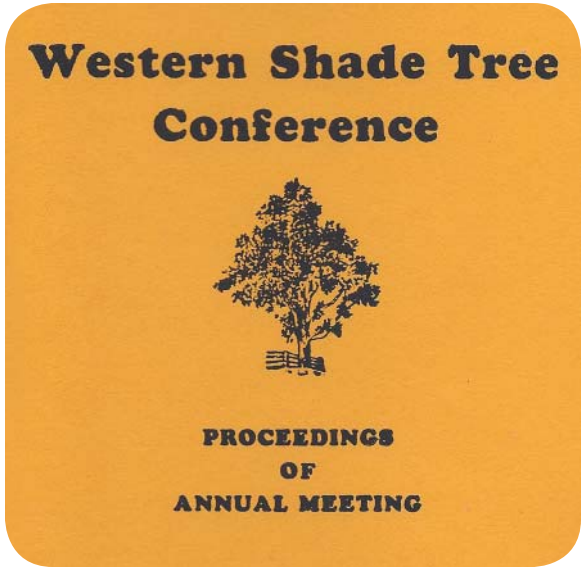
Abbot Kinney established the nation's first forestry station in Rustic Canyon in 1887 where he conducted studies on close to 100 species of eucalyptus, a very popular species at the time. He knew the work of Ellwood Cooper (of Santa Barbara) who lectured in 1875 that the planting of eucalyptus forests could mitigate wind and increase rain, and that eucalyptus was "needed for the planet's well-being". [6] Several eucalyptus species identified in Abbot Kinney's book, *Eucalyptus (*1895), exist in Santa Monica today, including E. ficifolia, E. citriodora, E. globulous and E. leucoxylon.[7]

Local nurseries were established to take advantage of the temperate climate. In 1899, a fifteen acre site in south Santa Monica was developed as a growing ground for flowers and became one of the City's best known industries.[8] In 1923, nurseryman Hugh Evans established a garden in Santa Monica and began importing plants from the South Pacific, Australia and South Africa.

One of the City's beloved parks, Palisades Park, was donated to the City as a park forever in 1892 by Senator Jones and Arcadia Bandini de Baker. In 1908, Santa Monica's Park Commissioner stipulated that his salary be spent on trees in the park. Palms are shown in a 1908 photo of the park, and in 1976 in the book *Trees of Santa Monica*, author Grace Heintz recognized that five species of palms and six species of eucalyptus dominated the park.

Santa Monica aerial photo circa 1919. Canopy trees can be seen in the upper edge of this photo.

1890 - 1900	1892	1900	1923	1944	1953
The city was plotted and a grid of tree-lined streets was created.	Senator Jones and Arcadia Bandini de Baker donated 16 acres of oceanfront land, now known as Palisades Park, to the City for use as public space forever.	Community groups and residents participated in tree planting activities.	Nurseryman Hugh Evans established his garden in Santa Monica at 501 24th Street and began importing plants.	George Hastings published *Trees of Santa Monica*, acknowledging the City's significant trees.	The City of Santa Monica began a Master Street Tree Planting Program and adopted a Tree Code to be added to the Santa Monica Municipal Code.



The Western Chapter of the International Society of Arboriculture held it first Western Shade Tree Conference in Santa Monica in 1934.

Street tree planting has been part of the City of Santa Monica since the development of its first subdivisions. In the early 1900s, JW Scott, a prominent builder, donated funds for the planting of trees on Ocean Avenue. Other tree planting efforts included the use of eucalyptus as windbreaks to protect crops.

Many of the street trees that exist today were planted during the postwar urban redevelopment of Santa Monica. In 1953, the City of Santa Monica began a Master Street Tree Planting Program and later the same year a Tree Code was adopted "to regulate the planting, maintenance, and removal of street trees in Santa Monica." The Tree Code established 27 districts in the City and a list of approved trees for planting along streets throughout Santa Monica.[9]

The majority of Santa Monica's current street trees were planted in the 1950s.

In 1956, the City of Santa Monica Master Plan included a five-year tree planting program that resulted in the planting of thousands of street trees. That program continued with a 1962 inventory of existing street trees and recommendations to develop streetscapes on streets without trees.

Since 1981, Santa Monica's comprehensive urban forestry program has been recognized each year by Tree City USA, based on standards set by the Arbor Day Foundation for cities that have a tree board or department, a tree care ordinance, an annual urban forest budget of at least $2 per capita and an annual Arbor Day event.

30 years
TREE CITY USA®

In 2011, Santa Monica celebrated its 30th consecutive year of being recognized as a Tree City USA by the Arbor Day Foundation.

1961	1962	1982	1987	1999	2000
A beautification committee initiated by the Chamber of Commerce addressed the need for street trees in the Central Business District.	Santa Monica conducted its first inventory of its trees.	Santa Monica received its first recognition as a Tree City USA by the Arbor Day Foundation.	The City's first electronic tree inventory revealed a total of 28,767 trees in Santa Monica.	The City Council adopted the Community Forest Management Plan 2000.	The Millennium Tree Planting Project added 2,000 trees to the urban forest.

In 1987, Santa Monica began keeping an electronic tree inventory to provide data on Santa Monica's trees and street segments that need replacement trees. The inventory helps to prioritize maintenance requirements and to establish a multi-year tree trimming schedule, both which help set long-term budget needs. The electronic inventory is an educational tool, providing information regarding tree species in any particular location. This inventory served as the foundation for the development of the Community Forest Management Plan 2000 which is in use as of the writing of this Master Plan. In Fiscal Year 1999-2000, the City Council commemorated the new millennium by providing funds to plant 2,000 public trees throughout the City.

In 2001, the U.S. Forest Service's Center for Urban Forest Research analyzed Santa Monica's urban forest and produced a "Benefit-Cost Analysis of Santa Monica's Municipal Forest." The report concluded that for every $1 Santa Monica spends on the care of its forest, the residents receive $1.62 in environmental benefits. The report also pointed out that "Santa Monica's urban forest is an aging forest that is in a period of transition." The analysis revealed the need for a long term plan that includes diversifying the number of species and ages of trees in the forest.

The assessment of Santa Monica's urban forest in this Master Plan is based on the 2010 inventory of the City's public trees. It provides base-line information necessary to define a plan to achieve the diversity and stability that was called for in the 2001 U.S. Forest Service analysis and it identifies best practices for tree care that will sustain a healthy urban forest.

Today's forest is the outcome of the horticultural choices by all those who have planted trees in the City, maintained them, and studied their growth and success in the past. That knowledge is now augmented with the insights and practices of those more recently charged with the responsibility and care of the forest, including staff professionals along with input from community members.

This Master Plan is developed from an understanding of the historical context of Santa Monica's urban forest, existing forest conditions, and current best management practices that will serve as guidelines for tree care. The process to develop this Master Plan will serve as a model to be refined and improved on by future generations of managers of Santa Monica's urban forest.

2001	2009	2010	2010
	The City Council appointed the Urban Forest Master Plan Task Force.	An updated public tree inventory revealed a total of 33,800 trees in Santa Monica.	The City began a study with the US Forest Service to plant 1,000 trees and monitor their carbon sequestration for the next 100 years.

TO BE CONTINUED....

A HISTORY OF LOOKING TOWARD THE FUTURE

In the 1950s, the City of Santa Monica began its citywide planting program with a focus on benefiting future generations. Below, the dramatic effects of the City's efforts from more than 50 years ago are apparent.

San Vicente Boulevard in the 1950s.

San Vicente Boulevard current day.

RELATIONSHIP TO OTHER CITY DOCUMENTS

The Urban Forest Master Plan is supported by and reinforces City policies outlined in the elements of Santa Monica's General Plan and in other planning documents that establish broad policies for the physical character of Santa Monica. There are separate elements of Santa Monica's General Plan, many of which establish policies, supporting the need for a strong urban forest program.

The City's Land Use and Circulation Element (LUCE) provides policy direction for physical development throughout the community. The LUCE addresses the need to protect and systematically expand the forest through tree planting programs on city streets, in parks and other public spaces. The LUCE highlights the community's goals for protecting neighborhood character and it recognizes the importance of the streetscape by encouraging neighborhoods to function as gathering places that feature a landscaped environment with tree-lined sidewalks. It recommends new trees for proposed residential districts through the City's urban forest program.

The Open Space Element and Parks and Recreation Master Plan also contain policies that support the long term health and expansion of the urban forest.

The urban design philosophy of the City's specific plans and the implementation of projects reflect the many policies that impact the urban forest. The Civic Center Specific Plan identifies public spaces, including tree-lined streets with landscaped parks and plazas, as key features in creating a vibrant and pedestrian-oriented urban village. The various projects to be built in and adjacent to the Civic Center include a six-acre park with groves of trees including specimen trees appropriate for this coastal climate, and the Colorado Esplanade which includes a tree lined streetscape connecting the new EXPO light rail terminus to the Santa Monica Pier and downtown.

Additionally, through its goals, objectives and policies, the Historic Preservation Element recognizes that streetscapes can establish a context for historic buildings and districts, and encourages consideration of history including the protection of historic views and landscapes in designing public improvement projects.

As elements of the General Plan are updated and specific plans and other public landscape projects are implemented, they should be guided by the principles of this Master Plan. Periodic updates of this Master Plan will ensure the progression of a continuous improvement cycle.

RELATED CITY DOCUMENTS

2010 - Land Use and Circulation Element
2010 - Historic Resources Inventory
2006 - Downtown Urban Design Plan
2006 - Sustainable City Plan
2005 - Watershed Management Plan
2005 - Civic Center Specific Plan
2002 - Historic Preservation Element
1997 - Parks and Recreation Master Plan
1997 - Open Space Element

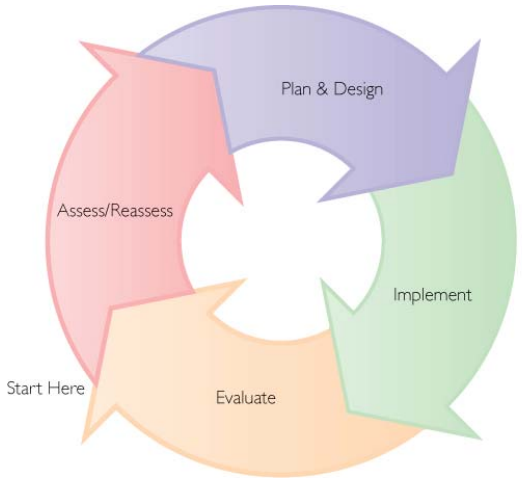


Fig. 1 - Continuous improvement cycle.

BASELINE ENVIRONMENTAL CONDITIONS

WATERSHED AND WATER QUALITY

When looking at Santa Monica's urban forest, it is important to look beyond the City limits and recognize the role that trees play within a regional context. The City is located within the Santa Monica Bay Watershed. Urban stormwater runoff is a major source of pollution entering local rivers and the Santa Monica Bay. Santa Monica's urban forest helps to reduce the amount of runoff and pollutant loading into receiving waters. The trees intercept and store rainfall on their leaves and branch surfaces, thereby reducing runoff volumes and delaying the onset of surface runoff. Urban forest canopy cover also reduces soil erosion as it diminishes the impact of rainfall on bare or landscaped surfaces.

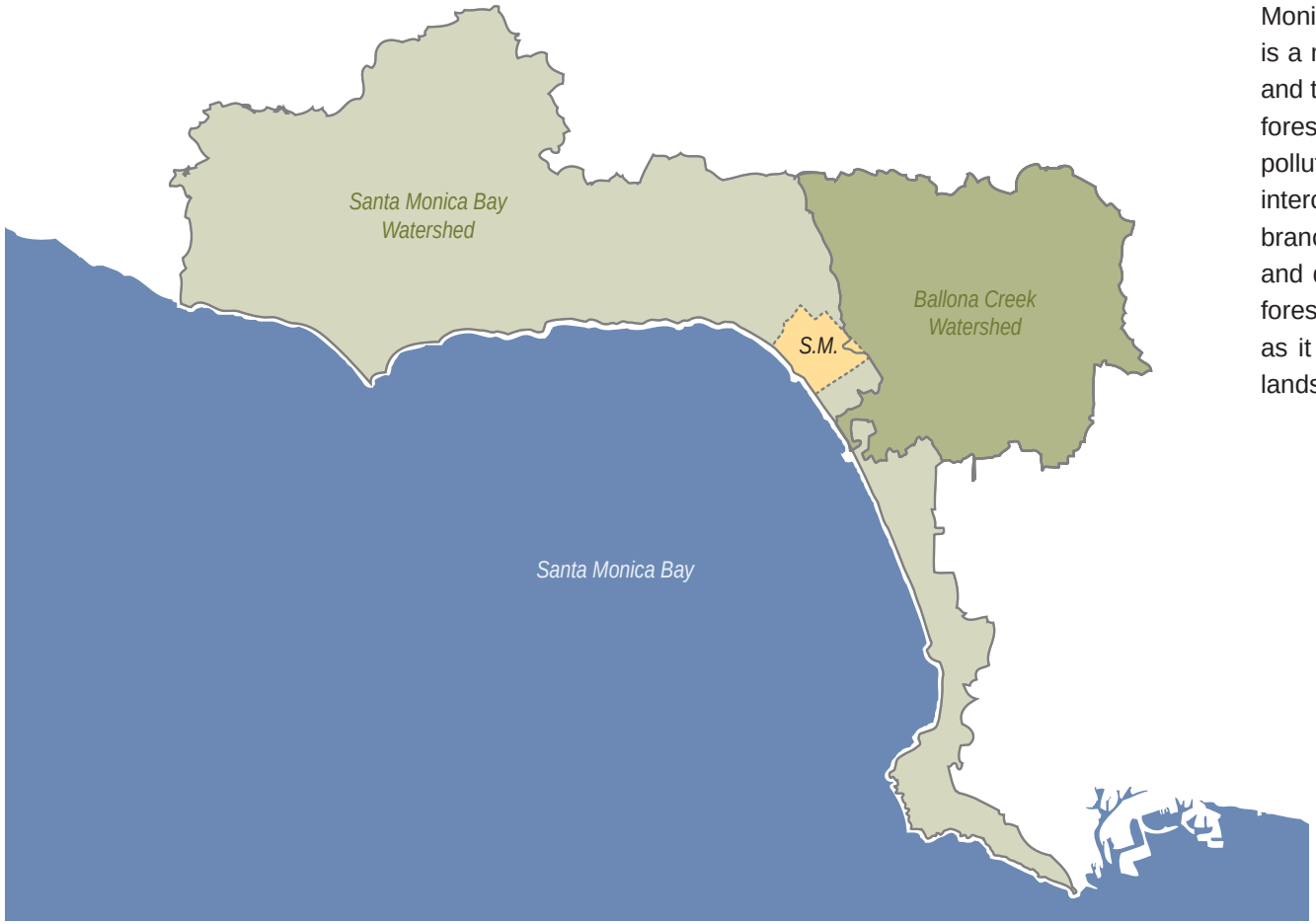


Fig 2 - Santa Monica Bay Watershed is formed by a natural divide, in this case the Santa Monica Mountains and surrounding topography, that separates one drainage area from another. A portion of the Ballona Creek Watershed is within the City of Santa Monica.

TOPOGRAPHY AND SOILS

The topography of Santa Monica is generally flat with the elevation of the City rising as it approaches its eastern boundary. The majority of Santa Monica's elevation is higher than 100 feet above sea level and is separated from Santa Monica State Beach by the Palisades bluffs. The southwest corner of the City slopes gently to sea level and allows unimpeded access to the beach. The slope is more pronounced on the northeast side of the City where homes sit high enough to have views of the ocean.

The California Department of Food and Agriculture has identified three major soil types in Santa Monica, as illustrated in Figure 3:

1 Diablo Altamont Soils
Composed of clays that overlie soft, fractured shales. These soils are well drained and have a moderate erosion potential and a high expansion potential.

2 Hanford Soils
Tend to be sandy loams and loamy sands on alluvial fans and plains. These soils are well drained and have low potential for expansion and erosion.

3 Ramona Placentia Soils
Well drained with low potential for expansion and erosion. These soils are located on terraces and alluvial fans and vary from fine sandy loam to a fine sandy clay loam. [10]

In coastal areas of low slope, street trees need to be able to withstand the sea winds and ocean influence that continuously batter them, especially when they are planted on streets perpendicular to the ocean.

City trees are planted in native soil with no additional amendments, so careful consideration of the compatibility of the tree type with the existing soil results in healthier long term tree growth.

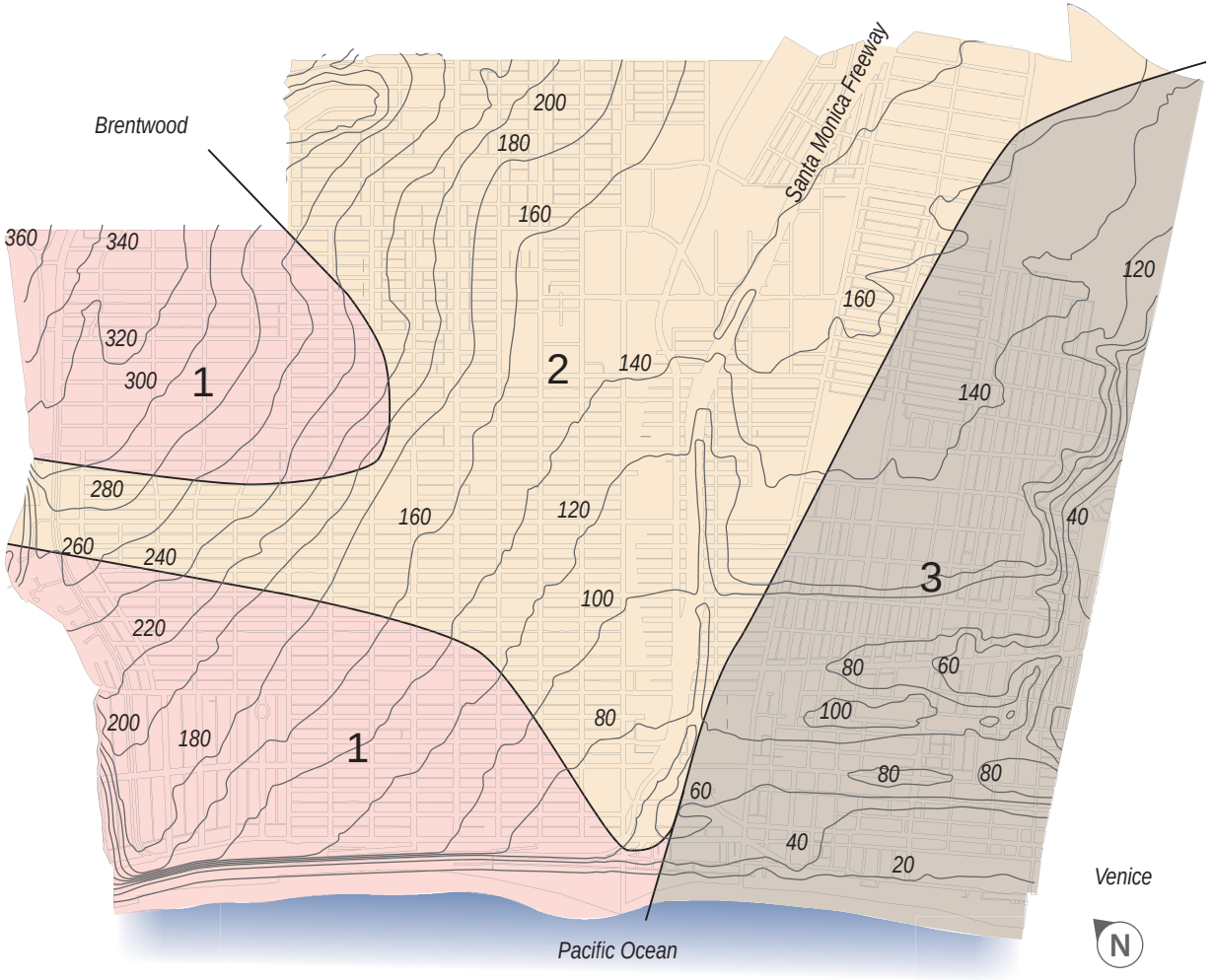


Fig 3 - The topography of Santa Monica is mostly flat, with a slope that angles down towards Ocean Avenue and towards the south. High bluffs separate the north side of the city from the beaches. Numbers show the elevations above sea level at the adjacent contour line. [11]

CLIMATE AND MICRO-CLIMATES

Santa Monica enjoys a classic Mediterranean climate with cool ocean breezes and over 300 days of sunshine a year. Because of its location on the Santa Monica Bay, morning fog is a common phenomenon in May, June and early July. The sun usually burns the fog off in the afternoon, however it sometimes remains cloudy and cool all day, even as sunny skies and warmer temperatures are found further inland. At times, the sun shines east of 20th Street, while the beach experiences coastal fog. As a general rule, the beach temperature is five to ten degrees cooler than it is inland. The highest temperatures are usually in late summer, although unseasonably warm weather can occur periodically through the winter when Santa Ana wind conditions bring the hot dry inland air to the coast.

Winter rains bring over eleven inches (11”) of rain annually with an average of two inches (2”) of rain during the months of November through March and less than one-quarter inch (1/4”) of rainfall the rest of the year. Winter storms usually approach from the northwest and pass quickly through the southland. Yearly rainfall can be unpredictable as rainy years and drought years are intermittent.

Most trees listed in the *Sunset Western Garden Book* as being suitable for coastal conditions grow well in the majority of the City. However, as seen in Figure 4, the southwestern most neighborhoods receive first ocean exposure and require trees that can withstand strong winds and salt spray.

In the northernmost and easternmost edges of Santa Monica the micro-climate transitions to a warmer zone and the City can introduce trees that require more summer heat and winter chill, including trees which exhibit showy foliage.

Fig. 4 - Micro-climates within the City are defined by the land’s topography, elevation and proximity to the ocean. Five separate micro-climates have been identified, allowing for climate appropriate species designations. This is especially useful in designating species in “tricky areas” such as the First Ocean Exposure.

ECOLOGY, PLANT AND WILDLIFE COMMUNITIES

The City of Santa Monica is unique in that it is a coastal plain nestled between the Santa Monica Mountains to the north, the Ballona Wetlands to the south and the Pacific Ocean to the west. Because of the City's proximity to the ocean and the mountains, temperate climate and well-drained soils, a wide variety of plant communities would naturally thrive within the City limits. Figure 5 shows a topographical cross-section of the City and the related ecological communities that may have grown here in the past. Marine life, mammals, birds and insects coexisted with these plant communities creating a complex network of relationships that depended on each other for survival.

Today, the City of Santa Monica is fully developed and lacks the undisturbed native habitat to support a diverse native terrestrial animal population. Due to their mobility and range of travel, birds are more abundant than other wildlife in the City[12]. Resident birds that are common to the area include the northern mockingbird (Mimus polyglottos), Anna's hummingbird (Calypte anna), house finch (Carpodacus mexicanus), and the snowy plover (Charadrius alexandrinus).[13]

The City of Santa Monica is located on the Pacific Flyway and is also host to migratory birds. Birds that migrate to and from Santa Monica include the white-crowned sparrow (Zonotrichia leucophrys), yellow-rumped warbler (Dendroica coronata), and the ruby crowned kinglet (Regulus calendula) in winter, and swallows such as the barn swallow (Hirundo rustica) and northern rough-winged swallow (Stelgidopteryx serripennis), and the hooded oriole (Icterus cucullatus) in spring and summer.[14]

Monarch butterfly (Danaus plexippus) winter roosting sites have been reported within open space and landscaped areas of the City, as the environmental conditions and the micro-climate in groves of trees suit the needs of the butterflies. Eucalyptus trees provide a nectar source and are most frequently used as wintering sites by monarchs.[15]

The continued observation of birds and insects, including the relationship of native plant material to beneficial insects and other wildlife, will ensure that the resources that supply the urban forest are used wisely. Observation of new tree introductions and their contributions to the ecology of the City should also be continued.

Understanding the balance of human, plant and wildlife associations is key to a healthy environment. The 150 miles of streets of the City constitute its largest open space making up twenty-three percent (23%) of the City's area.[16] Thoughtful selection of trees planted in environmentally friendly infrastructure can contribute to the health of the ocean by reducing urban stormwater runoff and while improving habitat for many species that can exist in the built environment.

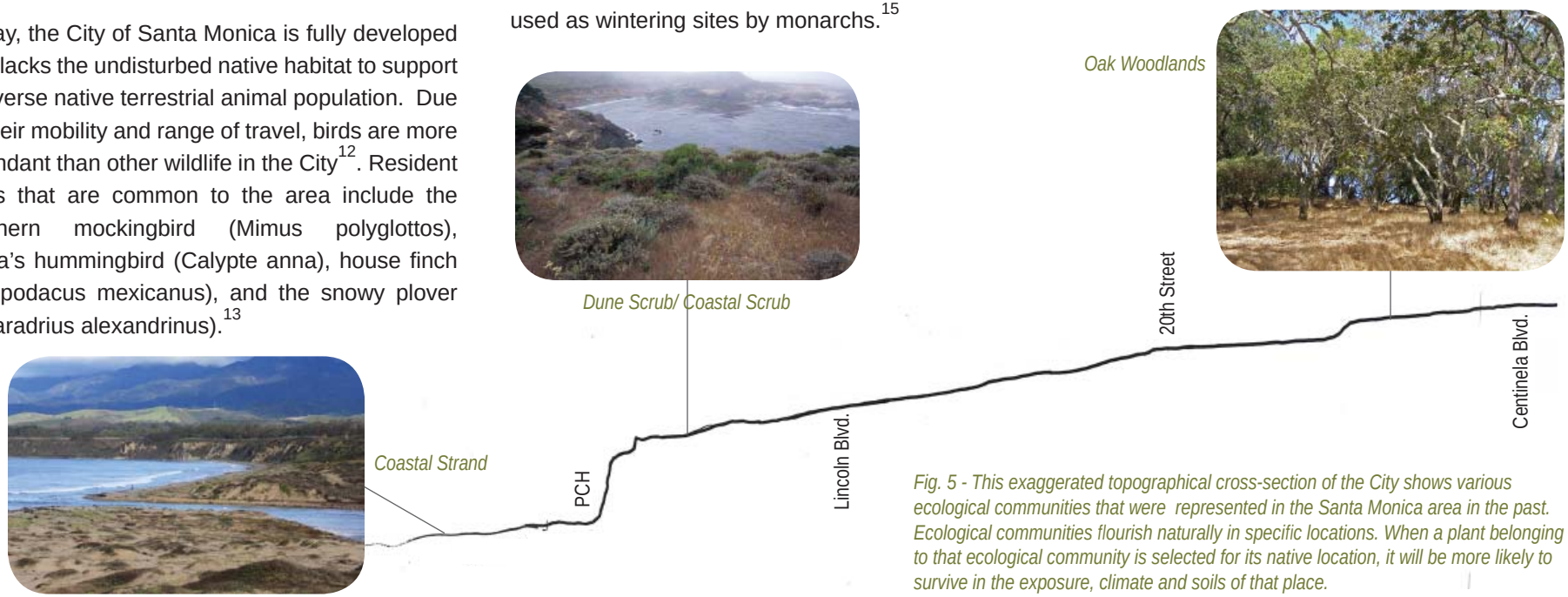


Fig. 5 - This exaggerated topographical cross-section of the City shows various ecological communities that were represented in the Santa Monica area in the past. Ecological communities flourish naturally in specific locations. When a plant belonging to that ecological community is selected for its native location, it will be more likely to survive in the exposure, climate and soils of that place.

THE SANTA MONICA FREEWAY

The Santa Monica Freeway cuts through the center of the City, creating both a literal and figurative divide between the northern and southern neighborhoods. Access to and from the neighborhoods directly adjacent to the freeway is difficult and the presence of the freeway results in elevated levels of noise and air pollution.

The freeway and its embankments are the property of Caltrans, and therefore tree planting does not fall under the purview of the City. However, a “mitigation corridor” supporting the planting of larger stature trees, faster growing trees, and using new technologies to install these trees in growspaces that would normally be too small for them will reduce the impacts of dirt and noise. The City’s Open Space Element encourages the establishment of a freeway forest. A recent example of the ability to accomplish this is the recent relocation of six large Ficus trees to the City-owned embankment just north of City Hall.

Fig. 6 - A freeway “mitigation corridor” can address the unique impacts created by urban freeways, including dirt and noise.

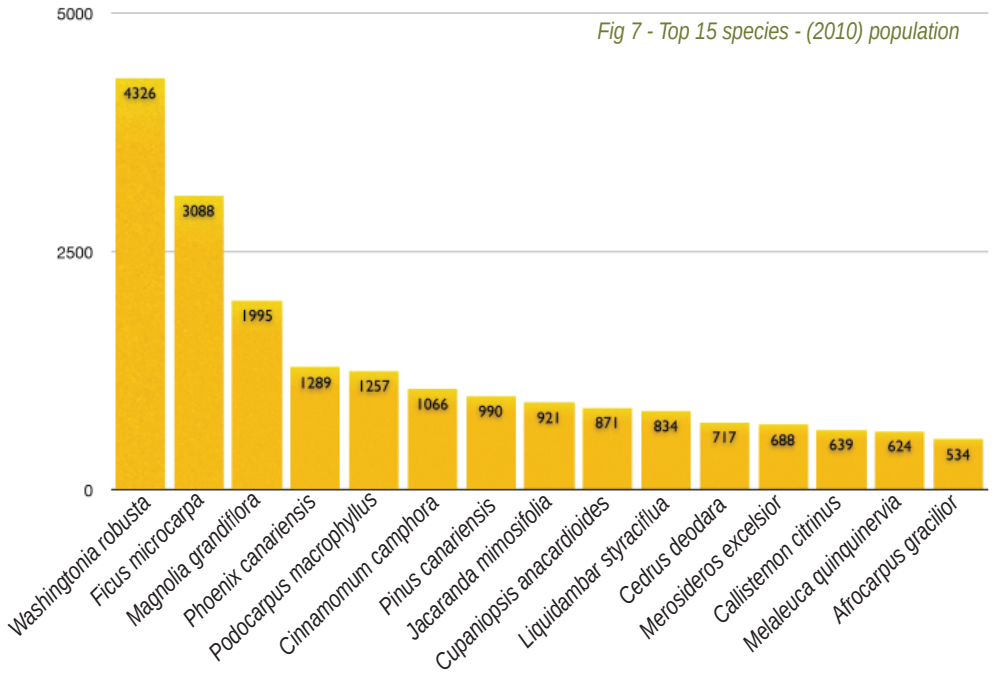
DESCRIPTION OF SANTA MONICA'S URBAN FOREST

The initial phase of this Master Plan was the preparation of an inventory of approximately 33,800 public trees in 2010. Using a Geographic Information System (GIS), the locations of trees, size of growspace, canopy spread, overall health, proximity to objects, root pruning history and other characteristics were recorded.

TOP 15 SPECIES

Data from the 2010 tree inventory indicates that Santa Monica's urban forest is comprised of over 250 different species of trees, with the majority of the forest consisting of the 15 species identified numerically in Figure 7 and graphically in Figure 8. In Figure 8, the individual colored dots represent surveyed trees and the correlating colors represent the tree species shown in the legend.

Fig 7 - Top 15 species - (2010) population



The Washingtonia robusta is currently the most common tree in the City. Planting within the coastal zone is restricted by the California Coastal Commission because of its tendency to reseed.

Washingtonia robusta (Mexican Fan Palm) is the most common species in Santa Monica's urban forest. This species lines major commercial thoroughfares like Wilshire Boulevard and is also planted throughout beach neighborhoods where it thrives under harsh coastal conditions. The palm species is long lived and can reach heights in excess of 100 feet but provides very few environmental benefits. Also, it reseeds readily, so planting this palm within the Coastal Zone is currently banned by the California Coastal Commission.

Another heavily used species is Ficus microcarpa 'Nitida' (Indian Laurel Fig). This evergreen species provides significant environmental benefits and produces year-round shade for many residential streets and the three main business districts. However, the trees drop leaves and berries and have invasive roots that tend to lift sidewalks when planted in too small of a growspace. The challenge for the City is to maximize the environmental benefits that the Ficus trees bring to the urban environment by planting them strategically and to minimize their nuisance potential by employing new technologies during the planting process which may help to control root growth in the future.

Fig 8 - Top 15 species map. This 2010 map and all other maps in this section can be viewed at full size at the Urban Forest website (http://www.santamonicatrees.com).

GROWSPACE

Growspace is defined as the ground level space that a tree is allotted to grow. As shown in Figure 9, growspaces range from small tree wells or narrow parkways to wide-open spaces. A key element in the success of a tree in an urban environment is its ability to expand its root mass to an appropriate size and dimension. Root conflicts with urban infrastructure are mostly due to trees being placed in a growspace that does not adequately accommodate that species as it matures.

During the 2010 tree inventory process, growspace was measured for each public tree. Figure 10 shows the range of current growspace and Figure 11 shows the distribution of growspace sizes throughout the City. The northern parts of the City were originally laid out with larger lots and larger parkways, which has allowed larger tree specimens to grow there.

As seen in Figure 10, a large number of the City's trees are planted in 3' and 4' growspaces. This presents a particular challenge for achieving diverse tree selection and robust canopy coverage because there are a limited number of tree species appropriate for a small growspace, which tend to be smaller statured trees.

New emerging technology in tree growth management will allow larger trees to grow in confined locations without disrupting and displacing sidewalks or streets. These specialized products will support pedestrian and traffic loads and provide uncompacted, engineered soil for large trees. The use of new technologies, planting methods and identifying areas available for infrastructure modification (e.g., widening parkways, adding curb extensions and medians when streets are redesigned) will bring much needed tree canopy to parts of the City historically lacking large trees.

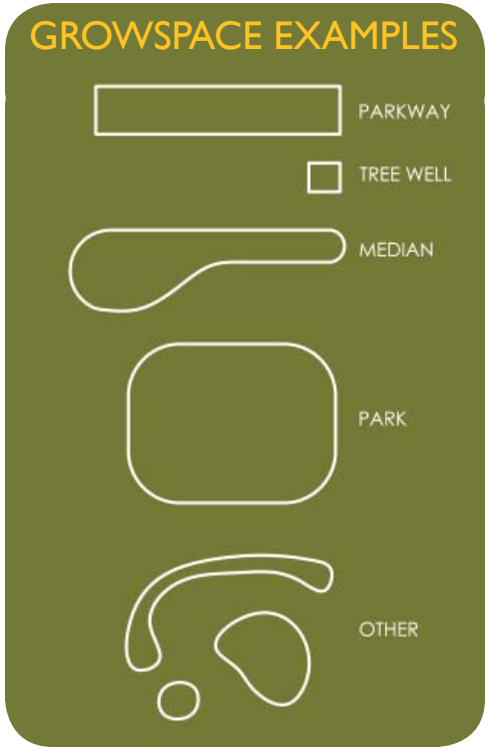


Fig 9 - Growspace examples.

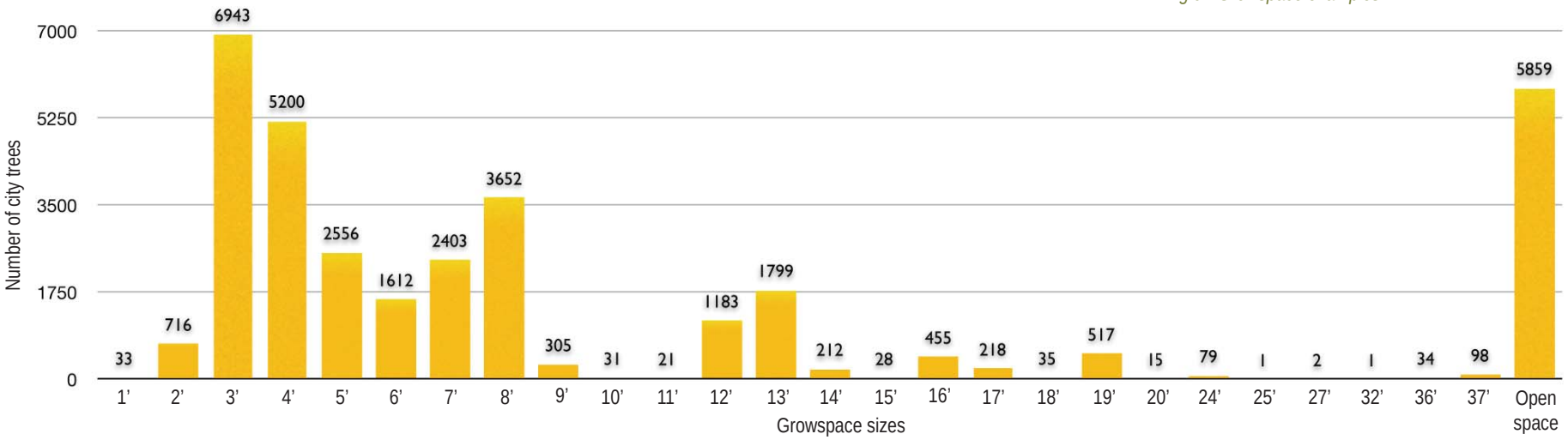


Fig 10 - Growspace inventory. The graph above shows the number of street trees planted in various growspace sizes and the number of "open space" trees. These trees are located at parks, beach, and cemeteries.

Fig 11 - Growspace sizes map. This 2010 map and all other maps in this section can be viewed at full size at the Urban Forest website (http://www.santamonicatrees.com).

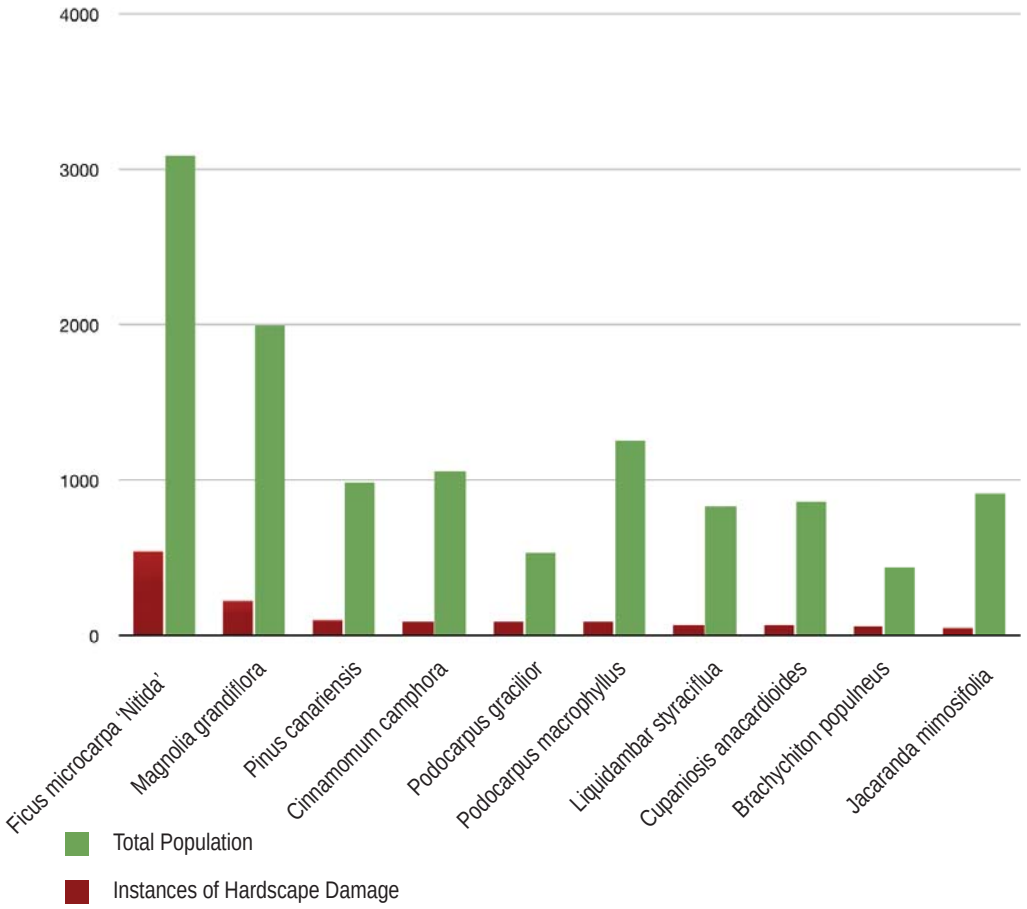
RIGHT TREE FOR THE RIGHT PLACE

"The right tree for the right place" is a term used in urban forestry for planting a species of tree that is appropriate for its location. The most important factor to consider when planting a tree is to make sure it has enough room to grow. Each tree species requires a certain amount of space to grow and thrive without causing damage to its surroundings.

While most of Santa Monica's trees are planted in a suitable location, many trees are growing in spaces that cannot accommodate their growing requirements. This usually results in damage to streets, sidewalks or utilities that ultimately increase maintenance costs.

Displaced sidewalk and driveway surfaces. When trees are planted in growspaces that are too small, their root mass will eventually outgrow the space which results in hardscape damage.

Fig 12 - Frequency of Infrastructure Damage Compared to Species Population.



Infrastructure damage was assessed as part of the 2010 tree inventory. Figure 12 above shows the species that have caused the most infrastructure damage, along with their population in the City for comparison.

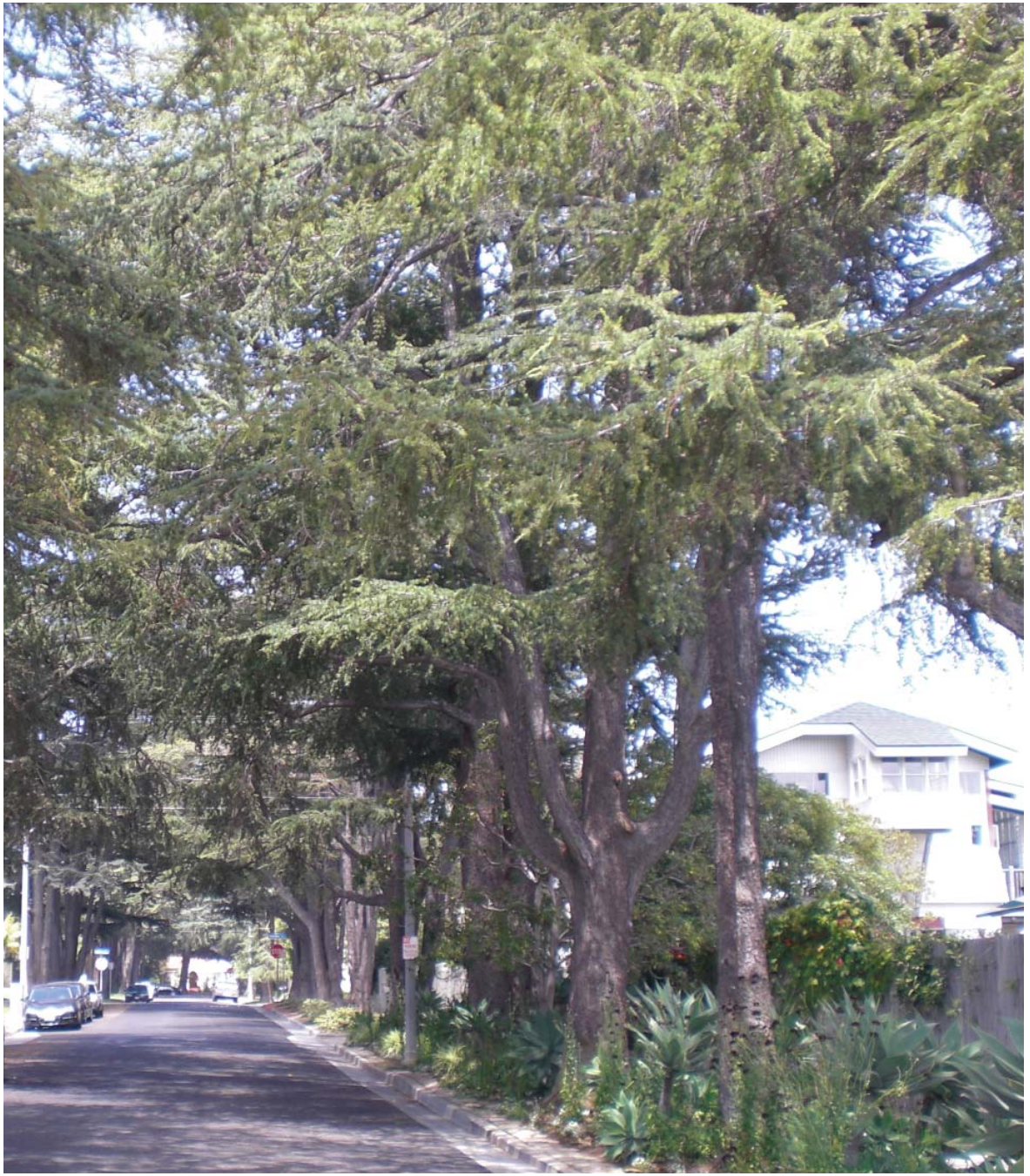
The individual colored dots shown in Figure 13 represent each tree surveyed. The correlating red or green color on the map represent whether or not a particular tree is in a suitable site or if there is or will be, a potential need for future hardscape repair.

Fig 13 - Right tree for the right place map. This 2010 map and all other maps in this section can be viewed at full size at the Urban Forest website (http://www.santamonicatrees.com).

CANOPY COVERAGE

Tree canopy provides shade and oxygen, which cools the City's streets as well as homes and buildings. These contributions also create improved conditions for pedestrians. A full and healthy urban forest canopy can be an effective and efficient means of reducing pollution, the heat island effect and the need for air-conditioning.

The benefits have always been tangible but with new analysis software they are now quantifiable. During preparation of the City's 2010 tree inventory, the canopy spread of each public tree was measured. Figure 14 on the next page shows individual colored dots representing each tree surveyed. The correlating colors represent the range of canopy coverage shown in the key.



Cedars on Brentwood Terrace. Mature trees shade homes and cars, reducing the need for air-conditioning. They also reduce the heat island effect from roofs and asphalt and shade parked cars.

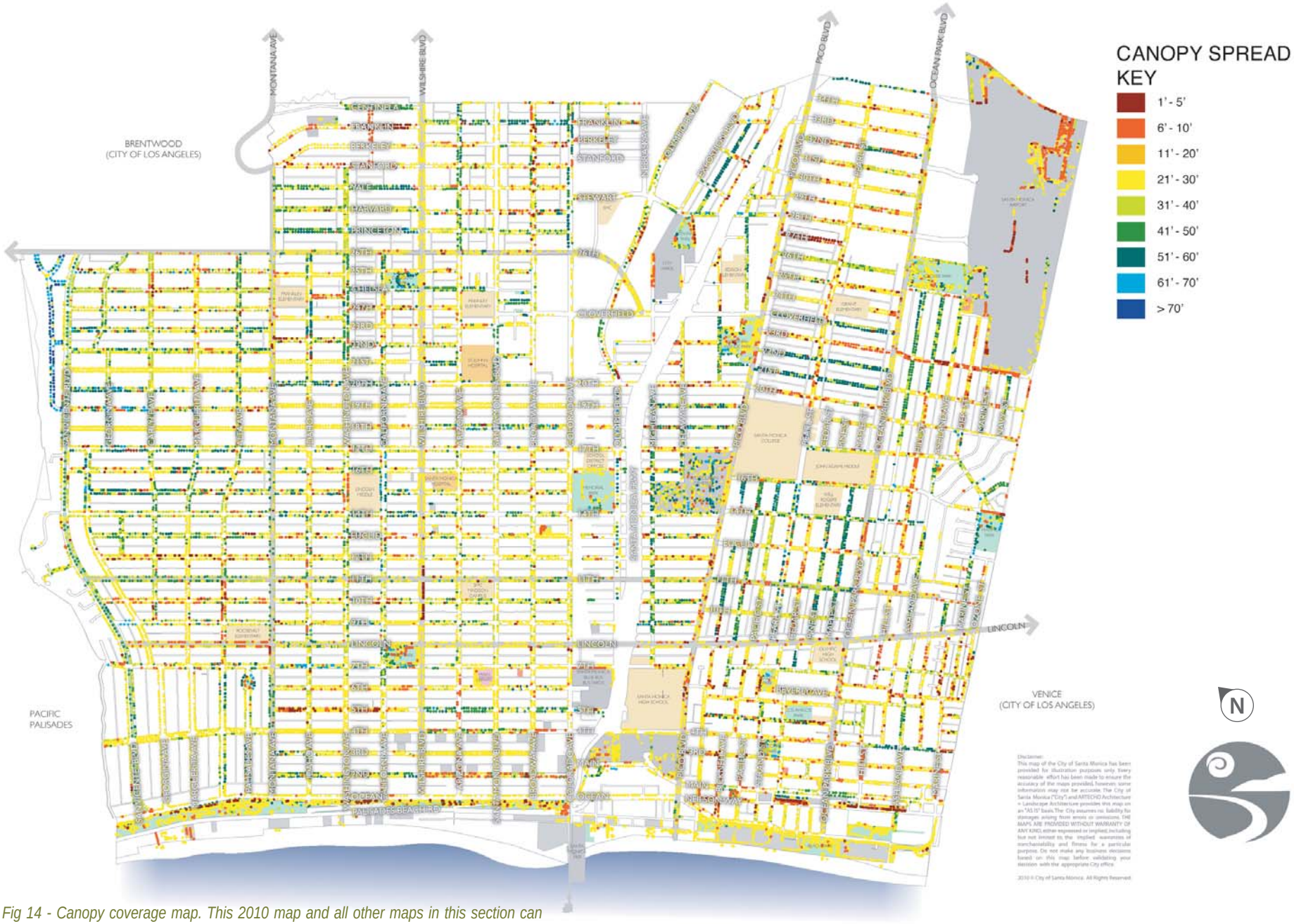


Fig 14 - Canopy coverage map. This 2010 map and all other maps in this section can be viewed at full size at the Urban Forest website (http://www.santamonicatrees.com).

ENVIRONMENTAL BENEFITS OF THE URBAN FOREST

Santa Monica's 2010 tree inventory establishes baseline data for a complete analysis of its street tree population by using new software developed by the U.S. Forest Service called iTree. The analysis provides a dollar value indication of the environmental benefits provided by each tree. An analysis of the City's publicly owned trees and the proposed species that will eventually be in the top 15 shows how the individual species provide cumulative benefits to the community.

While iTree analysis provides information on the environmental performance of the entire forest, analyzing individual species provides detailed information on the performance of individual species. Figures 15 and 16 show the environmental benefits of the existing top 15 species and the environmental benefits of the proposed top 15 species.

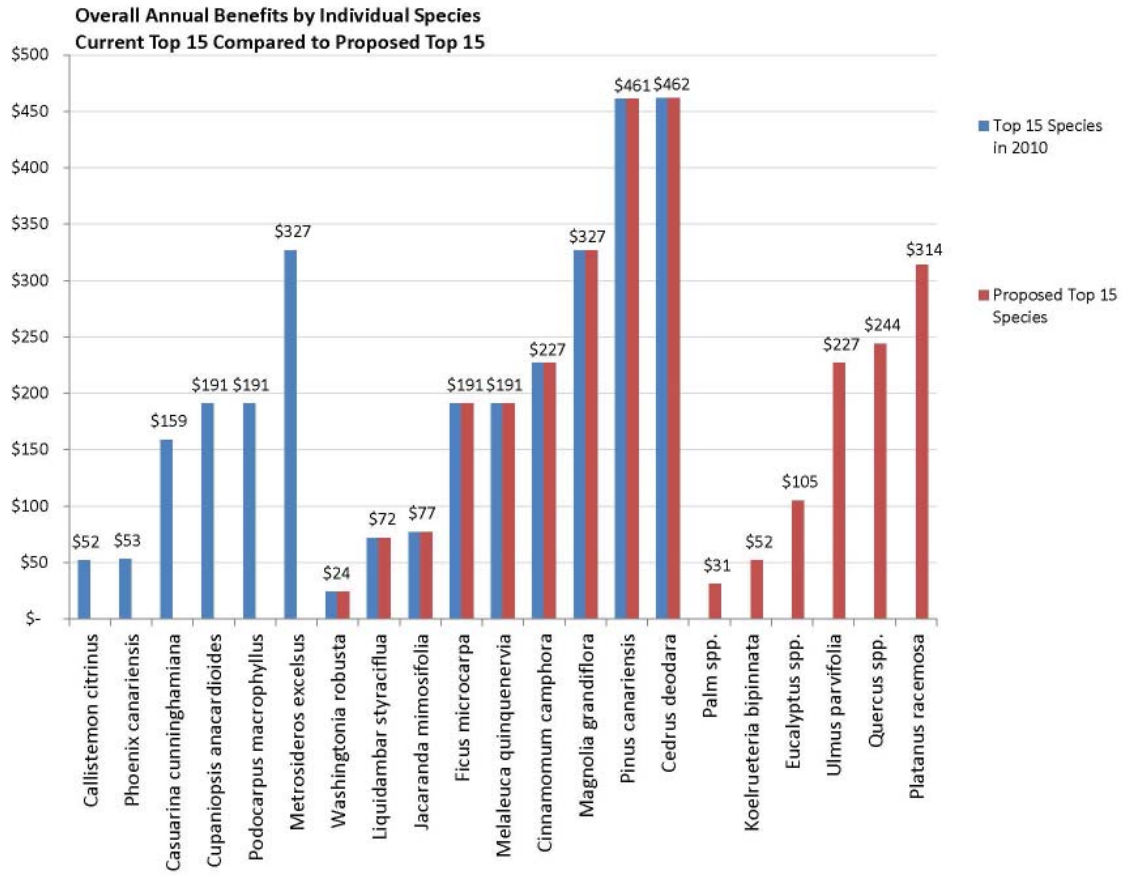
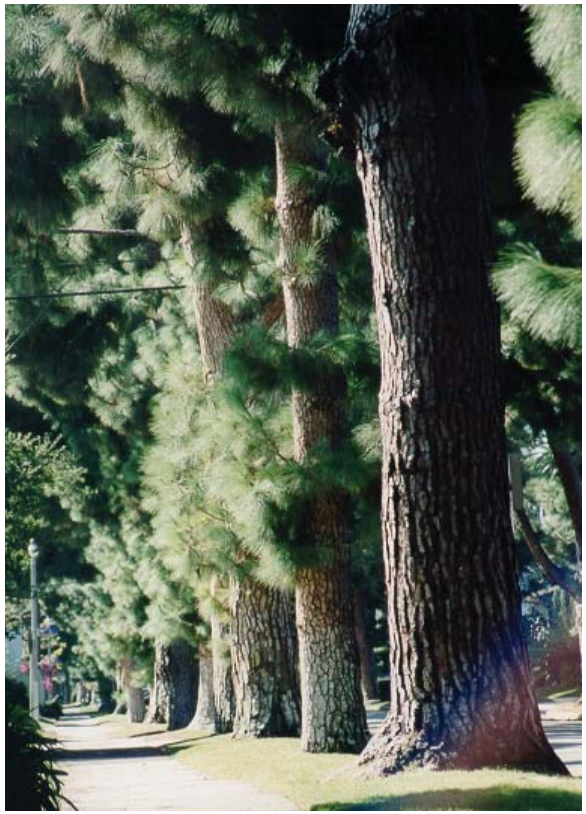


Figure 15 - Overall Annual Benefits by Individual Species. The table above measures the overall annual benefits from trees in regards to stormwater retention, property value increase, energy savings, air quality improvement and carbon sequestration.

The Pinus canariensis (Canary Island Pine) shown in the photo above ranks as one of the highest overall performing trees in Santa Monica's urban forest. Large canopy trees like these alter their environment by reducing reflected heat from asphalt which in turn cools the street. This cooling effect reduces water consumption for irrigating front yard landscapes.

Carbon sequestration is the process where carbon dioxide (CO_2) is absorbed out of the atmosphere by trees through photosynthesis. The carbon is stored in tree trunks, branches, foliage and roots. Urban forests can act as a carbon sink when there are enough trees to store more carbon than is released over time. The Pinus canariensis (Canary Island Pine) seen in the photo below absorbs as much carbon as the Cedrus deodara, however it ranks higher in the tree population making it an important contributor to the environment.



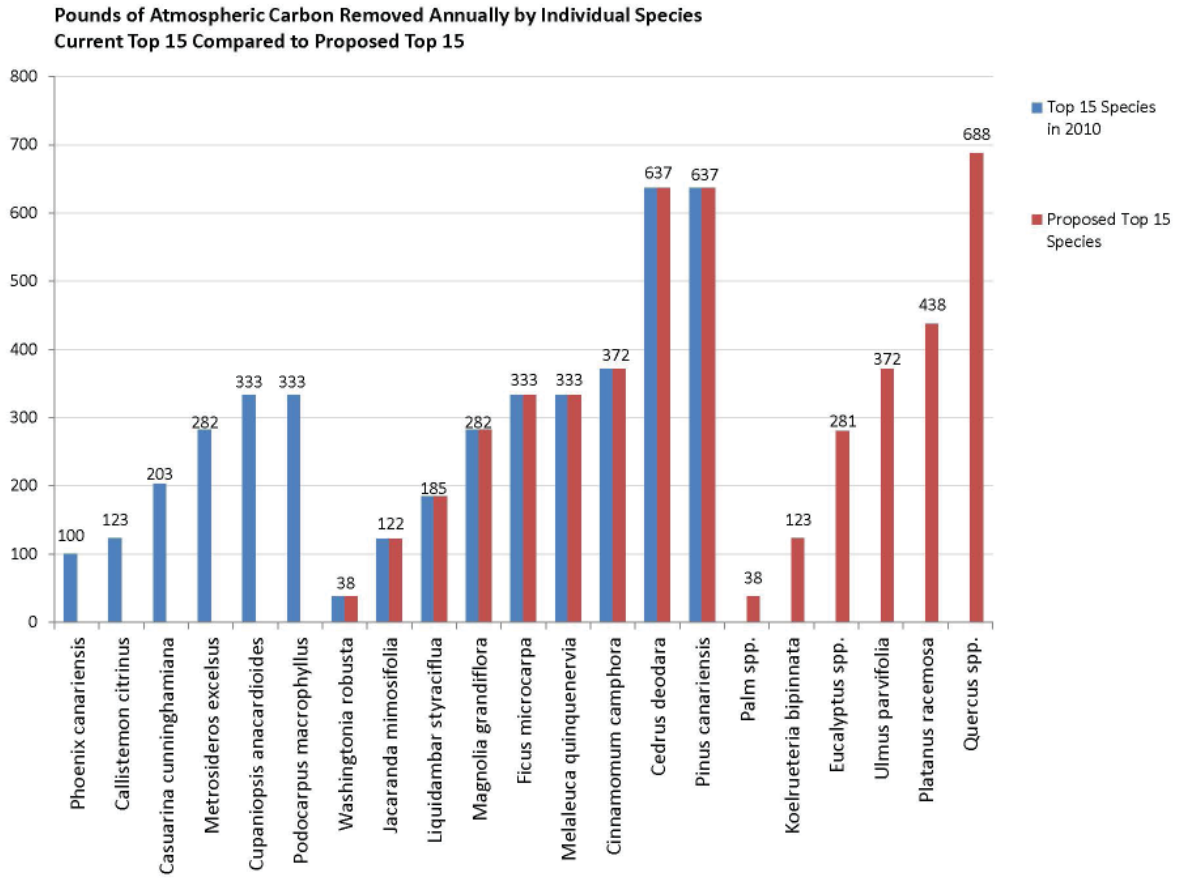


Fig 16 - Pounds of Atmospheric Carbon Removed Annually by Individual Species. Trees in Santa Monica reduce atmospheric CO_2 by directly sequestering CO_2 in their woody and foliar biomass. The energy needs of homes and commercial buildings for heating and air conditioning are reduced, which in turn reduces emissions associated with generating electricity. Of the top 15 species, the best performing trees are the large conifers and broadleaf evergreen trees.

Large evergreen trees like the Pinus canariensis (shown at left) and the Cedrus deodara sequester more carbon than other top 15 species.

The Liquidambar styraciflua (Liquidambar) is the highest ranking deciduous tree of the top 15 species in 2011 to reduce annual energy consumption.

Trees modify climate conditions and temperatures and conserve building energy use. The shade from tree canopies cools an area and reduces the amount of heat absorbed and stored by buildings. Evapotranspiration converts liquid water to water vapor which cools air that would otherwise result in heated air from the sun.

Tree canopies slow cold winter winds thereby reducing the amount of heat loss from a home, especially where conductivity is high such as through windows or skylights. Deciduous trees play an important role in the winter when they drop their leaves and allow the sun's radiant energy to warm the surrounding area. The Liquidambar styraciflua (Liquidambar) is the highest ranking deciduous tree of the top 15 species in 2011 to reduce annual energy consumption.

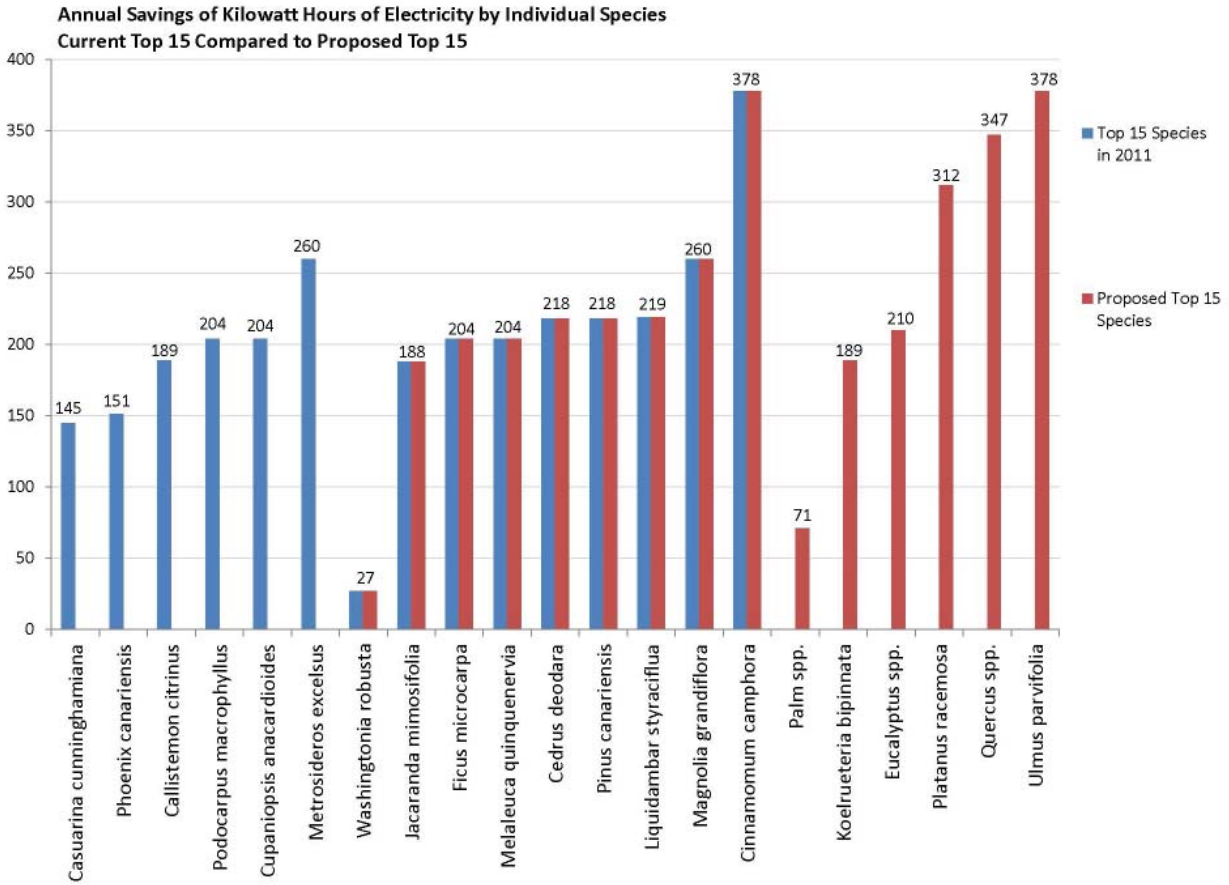


Fig 17 - Annual Savings of Kilowatt Hours of Electricity by Individual Species. The chart above shows how existing tree species will eventually no longer be among the top 15 species in the City's urban forest.

A mature Cinnamomum camphora (Camphor), like the one shown in the photo below, can retain over 8,000 gallons of rainfall a year and reduce energy consumption by as much as 378 kilowatt hours, as shown in Figure 17.

A mature Cinnamomum camphora (Camphor) saves 378 kilowatt hours per year.

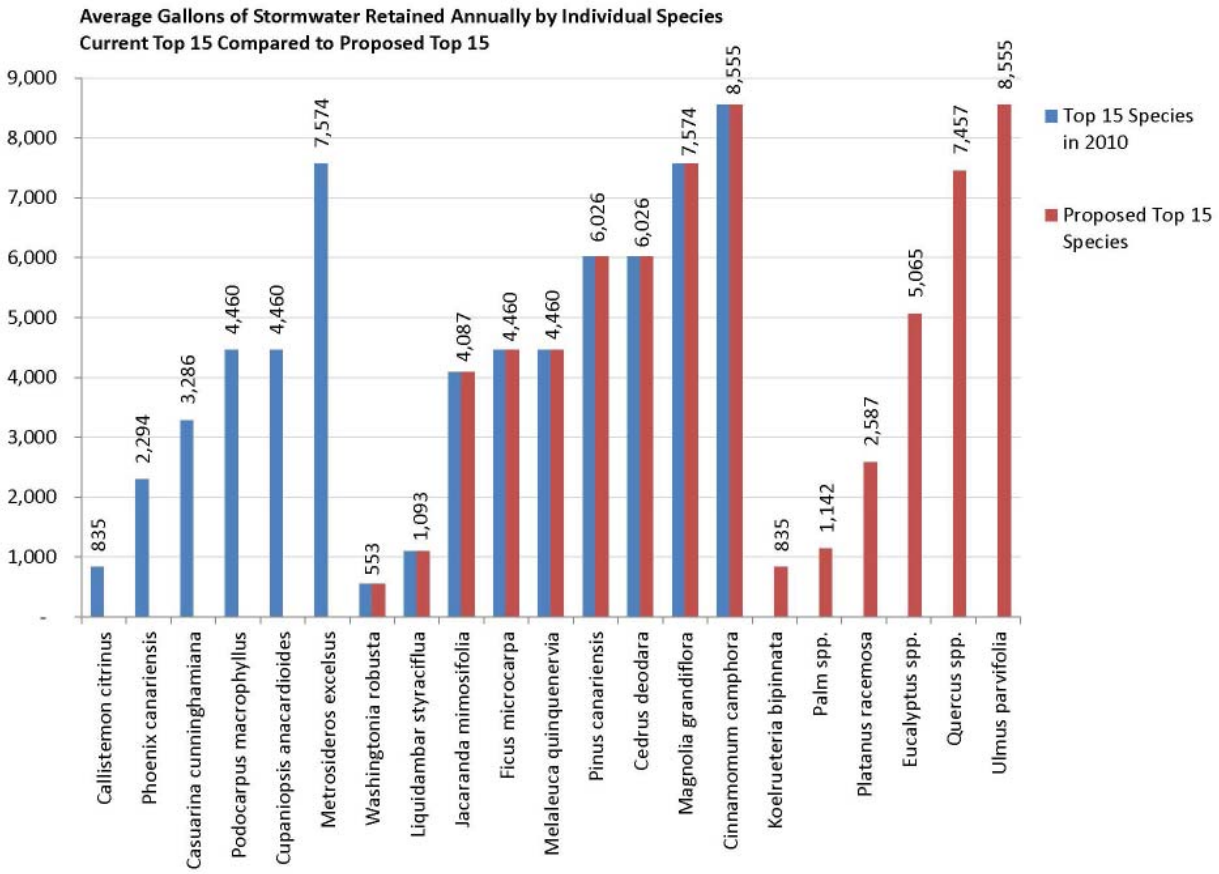


Fig 18 - Average Gallons of Stormwater Retained Annually by Individual Species. Urban stormwater runoff significantly impacts the Santa Monica Bay, and the urban forest plays an important role in reducing the amount of pollutants entering the Bay. Urban trees intercept and store rainfall on their leaves and branches thereby reducing the volume of stormwater and urban water runoff.

COMMUNITY VIEWS OF THE URBAN FOREST

Community outreach for the Urban Forest Master Plan was done in two stages. The first stage occurred in 2010 before any proposed street tree designations were made, and consisted of online and mailed-in surveys as well as resident input at community workshops. This first stage was used to understand the general feelings from the residents toward the current urban forest and to help them describe the qualities and characteristics that they liked and disliked in potential new tree species.

Survey results identified environmental benefits, aesthetics and neighborhood character as very important qualities of Santa Monica's urban forest. When it came to tree characteristics within the urban forest, large canopy, evergreen and flowering trees were preferred by residents. When asked specifically about the importance of street trees, environmental benefits and aesthetics were very important as well as shade and neighborhood character.

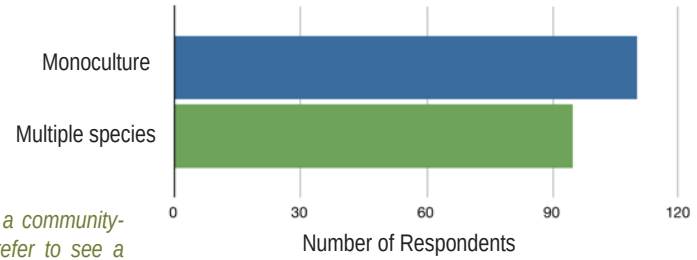


Fig 19 - Residents were asked via a community-wide mailer whether they would prefer to see a monoculture or multiple species planted on their street. A majority of people who responded to the survey said they would prefer a monoculture.

Broad-leaved Evergreen Monoculture. - This was the most popular choice at each community workshop. Participants liked the form, environmental benefits, and year round foliage of the broad-leaved evergreen monoculture.

Broad-leaved Evergreen & Deciduous. - Close behind the broad-leaved evergreen monoculture, the combination of broad-leaved evergreen and deciduous trees was second-most popular because of its seasonal variation.

Narrow-leaved Evergreen & Deciduous. - Another combination offering seasonal variation as well as foliage contrast is the narrow-leaved evergreen and deciduous combination. This was the third most popular planting profile.

Fig 20 - At the 2010 community workshops, the participants were asked to indicate their preference for tree patterns from a group of over 25 possibilities.

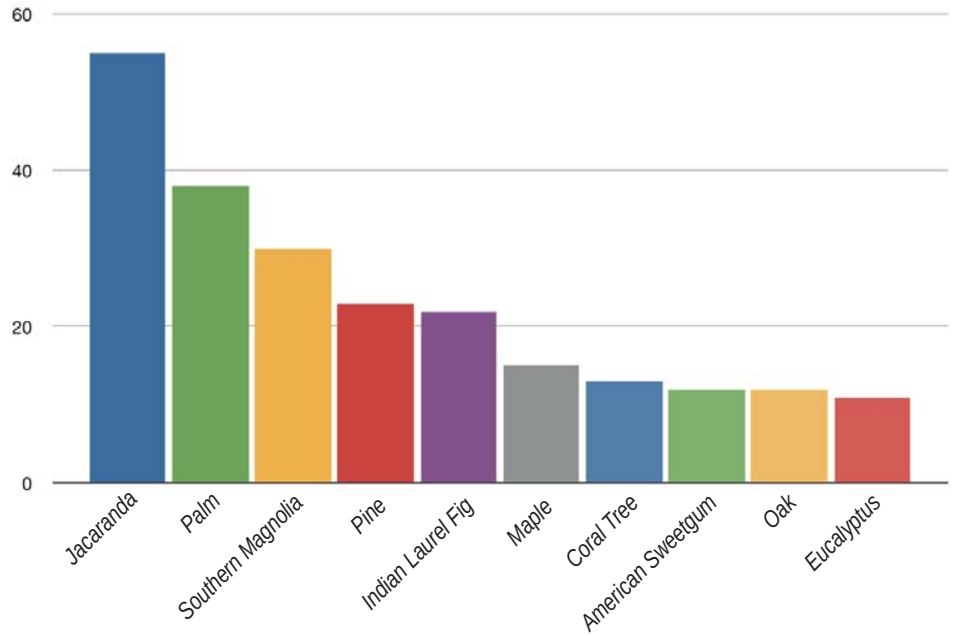


Fig 21 - Survey respondents were asked what their favorite street tree was.

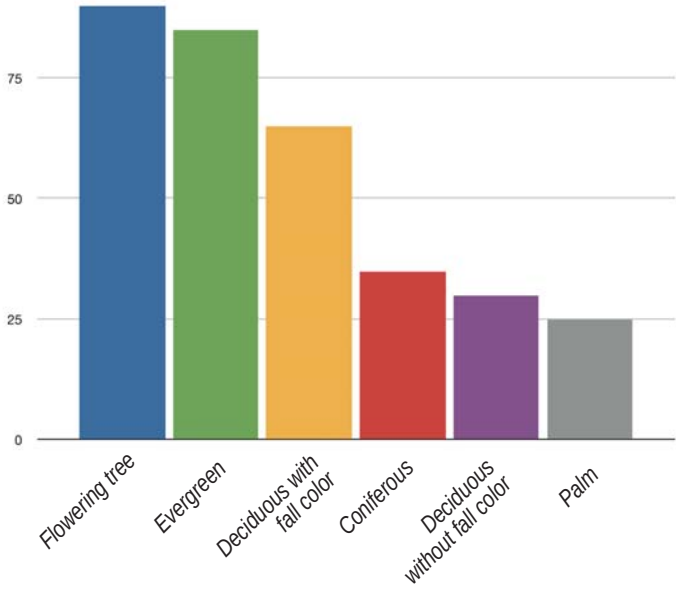


Fig 22 - Survey respondents were asked specifically what type of tree they would like to have in front of their house. Flowering trees (like the jacaranda and magnolia), evergreens and deciduous trees with fall color got high marks. In contrast, conifers, deciduous trees without fall color, and palms were preferred by fewer residents.

Fig 23 - Survey participants were asked how important the following tree benefits are to them.

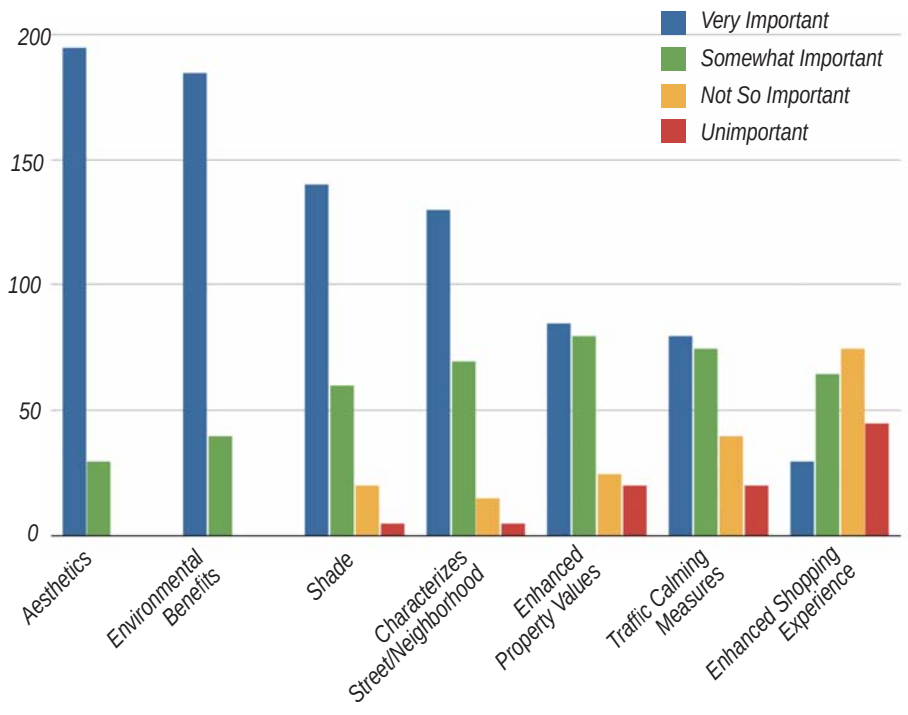


Fig 24 - Survey participants were asked what they liked about trees on their block.

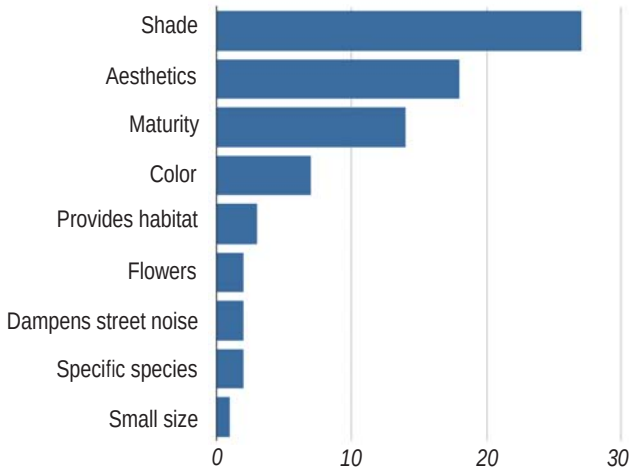
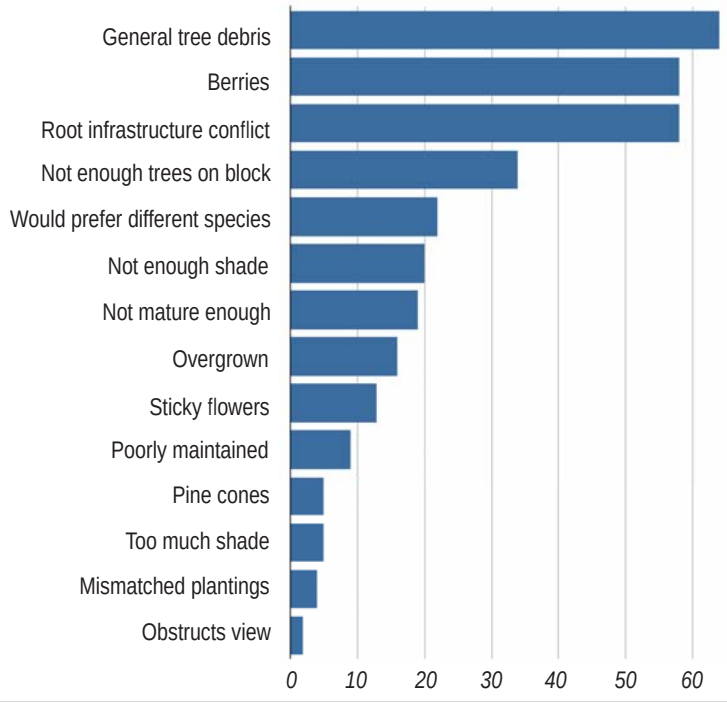


Fig 25 - Survey participants were asked what they disliked about trees on their block.



Figs 23-25 - Qualitative questions helped to weigh potential benefits and drawbacks of trees when the Master Plan process moved into specific street tree designations.

Figure 23 shows which potential tree benefits the respondents of Santa Monica value most. Survey respondents were asked to weigh positive and negative tree aspects. All potential trees have good and bad qualities, so it was important for the City to know if certain benefits were more important than others to residents (Figure 24), and whether they could live with some drawbacks more easily than others (Figure 25).

COMMON COMMUNITY CONCERNS

- Aesthetics
- Sustainability
- Water Conservation
- Promoting Organized Diversity
- Utilizing Native Species
- Enhancing a Walkable City
- Enhancing Public Transportation Stops
- Expanding Growspace & Parkways
- Size of Newly Planted Trees
- Pruning/Maintenance
- Fruit Trees/Public Orchards
- Creating an Urban Forest Advisory Body
- Public Outreach and Communication

Community input ranged from broad ideas to specific policies, which are expressed in the Master Plan. During the community workshops, residents were asked to share additional concerns they felt had not been brought up in the surveys. The topics that workshop participants brought up most often are listed above as common community concerns.

All data collected from the surveys and workshops was brought back to the Urban Forest Master Plan Task Force's Species Selection Subcommittee to aid in their decision making concerning the proposed species selection for each street segment in the City.

FAVORITE TREE LINED STREETS OF SANTA MONICA: THE COMMUNITY PARTICULARLY LIKED THESE STREETS BECAUSE OF THE TREES

Coral trees on San Vicente Boulevard.

Pines and Palms on Ocean Avenue.

Ficus on 4th Street.

Magnolias on 11th Street.

Moreton Bay Figs on La Mesa Drive.

Ficus on Montana Avenue.

The second stage of community outreach.

The second stage of community outreach occurred in 2011 after preliminary street tree designations were proposed. To ensure effective outreach, every Santa Monica household received a postcard directing them to the urban forest website, where the name and photo of all proposed street tree designations were listed and broken down into 394 street segments. Hard copies were also available upon request at the public libraries. Residents were then invited to comment via the internet or telephone about the individual tree designations, and to attend two community meetings scheduled to gather more feedback from the community.

Community interest in the designated trees was very high. The City staff received over 800 comments, positive and negative, and over 100 people attended the two community meetings to personally voice their desires and concerns.

After the community feedback period, the Species Selection Subcommittee met again to make revisions to the recommendations list based on the comments that the City received. Community feedback resulted in changes to 69 street segments. After the Urban Forest Master Plan Task Force discussion on October 5, 2011, changes were made to the proposed list in response to public input.

FOOTNOTES

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2. Schwab, James C., ed. Planning the Urban Forest: Ecology, Economy, and Community Development (Chicago, Il: American Planning Association, 2009), p. 3.
3. McCawley, William. The First Angelinos-The Gabrielino Indians of Los Angeles (Banning, CA: Malki Museum Press, 1996), p. 268.
4. PCR Services Corporation for the City of Santa Monica. City of Santa Monica Historic Preservation Element (Santa Monica, CA, 2002), p. 10-11.
5. Basten, Fred E. An Illustrated Guide to the Legendary Trees of Santa Monica Bay (Santa Monica, CA: Graphics Press, 1980), introduction.
6. Santos, Robert L. The Eucalyptus of California (Denair, CA: Alley-Cass Publications, 1997), p. 5.
7. Kinney, Abbot. Eucalyptus (Los Angeles, CA: B. R. Baumgardt & Co., 1995), p. 35-36, 80, 89-90, 109.
8. Ingersoll, Luther A. Ingersoll's Century History, Santa Monica Bay Cities (Luther A. Ingersoll, Los Angeles, CA, 1908) p. 254.
9. PCR Services Corporation for the City of Santa Monica. "Supplemental Information Memorandum", Jan 11, 2008.
10. City of Santa Monica Planning and Community Development Department. Land Use and Circulation Element Environmental Impact Report, Volume I: Draft EIR (Santa Monica, CA 2010), p. 4.5-2.
11. City of Santa Monica Planning and Community Development Department, Land Use and Circulation Element Environmental Impact Report, Volume I: Draft EIR (Santa Monica, CA 2010), p. 4.5-1.
12. City of Santa Monica Planning and Community Development Department, Land Use and Circulation Element Environmental Impact Report, Volume I: Draft EIR (Santa Monica, CA 2010), p. 4.3-3.
13. Cooper, Daniel S. (President, Cooper Ecological Monitoring, Inc., Formerly with Audubon California) Email correspondence October 20, 2011.
14. Cooper, Daniel S. (President, Cooper Ecological Monitoring, Inc., Formerly with Audubon California) Email correspondence October 20, 2011.
15. City of Santa Monica Planning and Community Development Department, Land Use and Circulation Element Environmental Impact Report Volume I: Draft EIR (Santa Monica, CA 2010), p. 4.3-10-11.
16. Roma Design Group for City of Santa Monica, Open Space Element (City of Santa Monica 1997), p. 19.

CHAPTER 2 - GUIDING PRINCIPLES

GUIDING PRINCIPLES

DEVELOPING POLICY AND STANDARDS FROM THE GUIDING PRINCIPLES

The vision for the urban forest is refined in Chapter 2 through Guiding Principles, Goals and Strategies. Standards and criteria appear in the appendices and serve as management tools to implement specific goals and strategies.

In order to construct policy that is in line with the Urban Forest Master Plan's Guiding Principles, corresponding goals were developed. The written goals express a desired result and establish a purpose but are not necessarily quantifiable and measurable. Goals provide opportunities for continuous improvement and flexibility in the future. Strategies identified from each goal are more specific and measurable and can be used to evaluate the implementation of goals in this Master Plan at any point in time. As the urban forest continues to evolve, new strategies that develop will be incorporated as part of this living Master Plan.

THE URBAN FOREST MASTER PLAN TASK FORCE CREATED GUIDING PRINCIPLES FOR THE 2011 MASTER PLAN TO ESTABLISH ITS OVERALL VISION. GROUPED TOGETHER, THESE PRINCIPLES PROVIDE THE FRAMEWORK FOR THE GOALS AND STRATEGIES OF THE MASTER PLAN.

THE URBAN FOREST AND ITS ENVIRONMENT

The urban forest heightens the quality of the City's environment.

UNDERSTANDING THE URBAN FOREST

Public awareness of the benefits that an urban forest provides is crucial to its vitality.

ECONOMICS OF THE URBAN FOREST

The urban forest needs equitable budget levels consistent with its value to the City.

COLLABORATING ON THE MANAGEMENT OF THE URBAN FOREST

Collaboration between and communication with the community and all City departments whose work affects the urban forest is critical.

SUSTAINABLE MANAGEMENT OF THE URBAN FOREST

The urban forest will thrive through persistent attention to its management.

ENHANCING AND PRESERVING THE URBAN FOREST

The future of the forest begins now. With conscientious foresight, it can evolve into an even greater treasure.

GUIDING PRINCIPLE → GOAL

1. THE URBAN FOREST AND ITS ENVIRONMENT

The Urban Forest is a living element of the City that contributes to the quality of life and surrounding environment. The City's public trees, found throughout the various neighborhoods and parks, offset the impact of the built environment and provide residents and visitors healthy and pleasant places for recreation and social interaction while providing habitat for urban wildlife. A healthy and functioning urban forest is a hallmark of a world class sustainable city.

To enhance the understanding of the ecosystem services provided by the City's urban forest. These services encompass stormwater management, mitigation of the urban heat island effect, reduction of air pollution, erosion control, storage and sequestration of carbon, and the provision of human and wildlife habitat. To assess and report on the progress regarding the sustainability and environmental benefits gained from the urban forest.

SUSTAINABLE FOREST MANAGEMENT

"A dynamic and evolving concept, aims to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations." - United Nations Forum on Forests

STRATEGIES

1.REPORTING ON THE STRATEGIC MANAGEMENT OF THE URBAN FOREST

The Public Landscape Division will adjust the methodology for establishing periodic evaluations of publicly owned trees to assess progress in achieving environmental performance goals. Based on records kept by the Public Landscape Division, the following reports will be submitted annually to the Urban Forest Task Force and with the City's biennial budget on the publicly owned urban forest:

- Number of trees in the urban forest
- Number of trees planted annually
- Number of trees pruned annually
- Number of trees removed annually
- Number of young tree care visits
- Number of tree emergencies
- Number of tree-related Government Outreach requests

2. REPORTING ON PERFORMANCE AND SUSTAINABILITY OF THE URBAN FOREST

The Public Landscape Division will adjust the methodology for establishing additional periodic evaluations to assess progress in achieving a sustainable and highly functioning urban forest. Each time the opportunity presents itself, the City will work with the US Forest Service to conduct a benefit-cost analysis of the urban forest. Also, the Urban Forest Task Force will continually evaluate the effectiveness of the goals and strategies of the Master Plan including the Street Tree Designations List, the effectiveness of the public tree removal appeals process and the effectiveness of the public review process for tree relocations and removals in City public improvement projects. The Public Landscape Division will prepare and make available to the community the following reports in an effort to measure and record sustainability metrics and environmental benefits of the urban forest:

- Urban Tree Canopy (UTC) percentage across differing land-uses. UTC will be reassessed every ten years.
- Ecosystem services provided by the urban forest including energy savings, reduction of stormwater runoff, air quality improvements, aesthetic benefits and carbon sequestration. Quantified ecosystem services will be reassessed every five years.
- Young tree mortality to understand the success rate of new plantings. Young tree mortality rates will be assessed every five years.
- Street tree stocking level to determine the proportion of existing street trees to the total number of potential street trees. Street tree stocking will be reported on annually.
- Species diversity will be reported on annually.
- Net tree gain or loss will be reported on annually.
- Ratio of deciduous to evergreen trees, native to exotic species, and medium to low water demand trees will be reported on annually.

3. PUBLIC ADVISORY BODY

The Urban Forest Task Force will continually evaluate the implementation and effectiveness of the Urban Forest Master Plan.

GUIDING PRINCIPLE → GOAL

2. UNDERSTANDING THE URBAN FOREST

The public will become better aware of the urban forest if there is a general understanding of its value and the benefits it provides. To that end, an ongoing public education process appropriately tailored to different age levels is essential.

To ensure that residents, business owners and merchants are aware of the benefits trees offer the community and that residents, property owners, architects, engineers, planners, developers, and landscape and tree contractors are familiar with current industry standards and Best Management Practices (BMPs) for tree planting and tree care. To also ensure that residents are included as stakeholders in decision making.

STRATEGIES

1. PUBLIC EDUCATION

The City will develop an effective marketing campaign to raise awareness of the urban forest within a wide audience. Educational efforts will be targeted, informative and proactive. The City will do the following as part of this campaign:

- Conduct periodic public workshops on tree care.
- Provide residents with information that is specific to the newly planted street trees adjacent to their homes and their care.
- Provide public information on current industry standards and BMPs for tree management and the City's Municipal Code governing public trees.
- Include information regarding current industry standards and BMPs for tree preservation in City publications related to private development that impact the urban forest.
- Develop tree care programming for CityTV and other current media outlets.
- Strategically utilize social media in disseminating information about the urban forest and its care.
- Make the street tree inventory available online through the City's Open Data Portal.
- Initiate a periodic Seascape column focused on the urban forest and topics relating to tree care and benefits from trees.
- Biennially evaluate outreach method efficacy and adjust methods as necessary.
- Create educational programs about the urban forest for youth.

2. OUTREACH TO RESIDENTS AND BUSINESSES IN SANTA MONICA

The City will make a targeted effort to educate residents, landscape contractors, tree care contractors, landscape architects, architects, developers, and real estate agents who work in Santa Monica on the City's urban forest policies, and the penalties for not adhering to them. The public education program will clarify the responsibilities of the City and adjacent residents and merchants on the care of newly planted street trees.

3. HERITAGE TREES

- The Heritage Tree program will be implemented and overseen by the Public Landscape Division with input from the Urban Forest Task Force. The program will define the process for the nomination and designation of public trees. It will also define the means by which they will be recognized and used to raise community awareness about their exceptional characteristics and contributions to Santa Monica's urban environment. This designation will not include regulatory restrictions and will not be governed by the Landmarks Ordinance but will emphasize educating the community through creative educational outreach strategies. The definition of, and the criteria for a public Heritage Tree may include but is not limited to:
- Trees that represent specimens that are particularly rare in the Los Angeles basin and are of considerable size and age.
- Trees that possess unique characteristics or special significance.
- Trees that are of a significant size and/or make a significant and outstanding aesthetic impact on the setting and are exceptional specimens in good condition and health.
- Trees that give special significance to a historic building or district because of their age.

4. COMMUNITY TREE PLANTING

The City will continue to celebrate Arbor Day each year and provide the opportunity for community participation in tree plantings. Involvement in such activities will cause members of the community to gain an appreciation for the urban forest of tomorrow and take an active role in creating the forest's green legacy. In addition, the City will integrate community awareness activities into City events as appropriate. The Public Landscape Division will coordinate these activities.

5. OTHER AGENCIES

The City will promote cooperative relationships with the Santa Monica-Malibu Unified School District, Santa Monica College and other agencies located in Santa Monica to promote urban forest awareness and the contribution it makes to the community. In addition, the City will share tree planting opportunities with these institutions that will include educational programs for youth.

GUIDING PRINCIPLE → GOAL

3. ECONOMICS OF THE URBAN FOREST

To achieve sufficient financial resources to enhance and preserve the urban forest, and to raise awareness of its economic importance.

The urban forest is a capital asset of the City valued at well over $155 million. Furthermore, according to a 2015 assessment by the United States Forest Service, it annually delivers $5.1 million of ecosystem services. It is the only element of the City's infrastructure that actually increases in value as it ages.

The value of each tree was calculated based on the 2016 tree inventory data, the total number of trees, average size, replacement value and an average rating value for species, condition, and location. These average numbers were entered into a formula to give the average tree value. The number was then multiplied by the total number of trees inventoried and gives an estimated value of the forest.

A healthy and aesthetically pleasing urban forest enhances tourism, business and property values. Stable City funding levels should be provided to sustain the maintenance and development of this important community asset. Contingent upon available funding, the City's budget should ensure consistent maintenance and annual renewal of the forest. Supplemental fundraising efforts could also be intensified to complement the City's efforts. Management of the urban forest should be fiscally responsible to maximize the benefits of this City asset while taking into account its sustainability.

STRATEGIES

1. CITY FUNDING

As part of the City's ongoing budget process and contingent upon available funding, the City will approve adequate capital and operating funds to ensure a healthy and diverse urban forest. The funds will be sufficient to accomplish the following:

- Provide for adequate annual maintenance of publicly owned trees dependent upon species, age, class and location.
- Support street tree planting in order to fill all vacancies within a five-year period while replacing those trees removed to achieve a 100% stocking level. Once achieved, planting will be sustained at the rate necessary to maintain a 100% stocking of street trees.
- Provide for park tree planting at a level that will maintain or enhance an appropriate percentage of Urban Tree Canopy (UTC) in City parks.
- Support the use of qualified independent consultants as needed.
- Provide ongoing marketing support to ensure there is widespread awareness and education about the urban forest and its care.

2. EXTERNAL FUNDING

The City will make all efforts to identify and obtain external sources of funding to support the goals and strategies of the Master Plan, including the following:

- Grants from county, state, and federal sources to extend tree planting and infrastructure improvements.
- The City's Give Santa Monica program, providing opportunities for members of the public to make donations for the planting and care of new public trees.
- Fundraising by interested residents or non-profit groups to supplement City funds.

4. COLLABORATING ON URBAN FOREST MANAGEMENT

GUIDING PRINCIPLE → GOAL

4. COLLABORATING ON URBAN FOREST MANAGEMENT

The urban forest may be impacted by multiple factors, including both public and private work activities, on any given day. There must be a collaborative process in place where urban forest staff communicate effectively with other city departments, private contractors, developers, property owners, local businesses and utility providers on proposed work that may impact publicly owned trees. The collaborative process should aim to preserve and enhance the urban forest, rather than diminish its value, during development and maintenance activities.

When development plans for private projects are reviewed by the City, special attention must be provided to existing public trees impacted by the proposed project and the potential for adding new public trees. A collaborative process must be in place to protect and preserve existing trees that are to be retained, and to support the planting of new trees where appropriate.

On large private development projects, the process should include opportunities for community input during the design phase. To further support these efforts, architects, developers and real estate companies should receive clear guidelines stating the City's requirements in regard to trees and tree care. The Urban Forest Master Plan will act as a centralized reference.

Maintain an inter-departmental process to review all development plans, to ensure appropriate public tree preservation, identification and exploitation of new planting opportunities and optimum tree care in compliance with current industry standards. Additionally, to ensure that City staff and contractors impacting public trees are familiar with and are following current industry standards and Best Management Practices (BMPs) in the selection, planting, and maintenance of public trees.

STRATEGIES

1. INTERNAL COLLABORATION

The Public Landscape Division will involve the staff of the Planning and Community Development and Public Works Departments in implementing the policies of the Urban Forest Master Plan. Ongoing interdepartmental communication will ensure a heightened focus on actions that preserve and enhance the urban forest. City departments will receive the following support from the Public Landscape Division:

- Plan review and the provision of technical advice on both public and private development projects.
- Training on current industry standards and BMPs for other city departments as deemed appropriate.
- Provision and regular updating of clear guidelines, specifications and details for all types of tree care.
- Sharing of tree pruning and tree planting schedules in an effort to coordinate routine maintenance projects between departments and prevent conflicting schedules.

2. COORDINATION WITH PRIVATE ENTITIES

The City will include requirements for the development of adequate parkway infrastructure and the planting of public trees as part of private development by implementing the following:

- Inclusion of the Public Landscape Division staff in the interdepartmental Pre-Submittal Review process for all public and private development projects.
- Inclusion of the Public Landscape Division staff in interdepartmental planning for projects seeking development agreements to ensure that “green streets” and enhanced parkway tree planting and soil volume enhancements are considered for inclusion as a public benefit.
- Working with the Architectural Review Board to ensure that development projects under its purview do not negatively impact public trees, through collaboration with the Public Landscape Division.
- Exploration on the feasibility of the Public Landscape Division staff to review tree care contractor bid documents in advance of building permit issuance for consistency with current industry standards and BMPs for tree care.

3. PARKWAY MANAGEMENT GUIDELINES

The management and design of parkways have a significant impact on a high proportion of the City’s urban forest. Santa Monica has voluntary guidelines to educate residents regarding planting and maintaining the parkway that include information on climate-appropriate plant materials, irrigation, mulch, grading, access and visibility. The correct management of the parkway, coupled with the appropriate selection of plants with similar requirements will positively contribute to the health of street trees. The City will review these guidelines periodically to ensure they support the urban forest and will make the guidelines part of the education and marketing efforts. The Parkway Landscaping Guidelines are outlined in the appendices.

4. COMMUNITY AND NEIGHBORHOOD COLLABORATION

In addition to the Public Landscape Division working collaboratively with the Urban Forest Task Force, presentations will also be regularly made to neighborhood groups on urban forest management and challenges. Tree species selected for planting on street segments or within parks within these neighborhoods will be detailed and discussed.

5. SCHOOL DISTRICT COLLABORATION

The Public Landscape Division may initiate tree planting activities in the schools for Arbor Day. Additional educational activities may be conducted at other times throughout the year to promote the benefits of trees. By involving youth and the general public in Arbor Day activities and other community events, they will gain an appreciation for the urban forest.

5. SUSTAINABLE MANAGEMENT OF THE URBAN FOREST

GUIDING PRINCIPLE → GOAL

5. SUSTAINABLE MANAGEMENT OF THE URBAN FOREST

The urban forest includes all public trees, and this important resource should be protected and sustainably managed for both present and future generations. Urban forest sustainable management includes:

- Data management and analysis of relevant urban forest metrics
- Research-based decision making
- Adherence to current industry standards for tree care, tree planting and tree preservation
- Strict criteria for the removal of public trees
- Appropriate industry recognized tree valuation to provide for necessary mitigation planting to maintain UTC after public tree removal or loss through an accident or vandalism

To sustainably manage the City's publicly owned urban forest in a fiscally responsible manner and to maximize its potential in delivering ecosystem services to the community.

STRATEGIES

1. LEGALLY PROTECT PUBLIC TREES

The Santa Monica Tree Code (7.40) protects trees on public property within the city. The Tree Code states the public's obligation to obtain a permit to plant, remove or maintain any public tree; outlines intentional damage to public trees; and enforces protection of public trees throughout construction activity. Any person(s) who violate any provision of the Tree Code shall be subject to criminal penalty, civil action, and/or other remedies or penalties by law.

The City will encourage the reporting of illegal tree work and vandalism through public outreach, education and local media. The Public Landscape Division will actively pursue enforcement of the Tree Code as necessary to protect the urban forest.

2. STRICTLY ADHERE TO CURRENT INDUSTRY STANDARDS AND BEST MANAGEMENT PRACTICES (BMPs) FOR TREE MANAGEMENT

The Public Landscape Division is responsible for the management of the City's publicly owned urban forest. Current industry standards and BMPs will be referenced and specified in contracts, planning documents, permits and any other documentation pertaining to public trees. These industry standards and BMPs include, but are not limited to:

- American National Standards Institute (ANSI) A300 - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices
- ANSI Z60.1 - American Standard for Nursery Stock
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300

3. TREE INVENTORY

The Public Landscape Division will maintain a comprehensive GIS-based inventory of all public trees in the City's urban forest. Data on public trees will be made available through the City's Open Access Portal. The tree inventory will be continually updated with tree work records. These work records will include prunings, removals and plantings. A comprehensive field survey and update of the database will be performed every seven years if deemed necessary to keep the data accurate.

4. ANNUAL URBAN FOREST PRUNING & PLANTING PROGRAM

Each fiscal year the Public Landscape Division will publish an urban forest work plan detailing the tree pruning and planting schedule for the next 12 months. Additionally, the work plan will be presented to the Urban Forest Task Force for review during the first meeting of the fiscal year.

The urban forest tree pruning program cyclically inspects and prunes trees based on species, location and maintenance requirements. The Public Landscape Division will inspect those trees scheduled for pruning during the current year and take appropriate steps to:

- Manage and enhance the tree resource
- Mitigate infrastructure conflicts
- Responsibly manage risk

Street tree planting will be prioritized based on three key factors:

- Urban forest tree population dynamics
- Environmental need
- Human need

5. RISK MANAGEMENT PROGRAM

Every public tree in the City is inspected once a year as part of a Tree Risk Management Program implemented in July 2015. Two assessors with ISA Tree Risk Assessors (TRAQ) qualifications identify tree work and generate work orders. The City's Tree Risk Management Program will follow the guidelines and protocols presented by current industry standards and BMPs including:

- American National Standards Institute (ANSI) A300 Part 9: - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300 (Part 9)

Further information on the City's tree protection during construction

STRATEGIES

requirements are provided in the appendices.

6. MANDATORY TREE PROTECTION DURING CONSTRUCTION

All public trees will be protected and preserved when impacted by construction activities. This is necessary because the movement of building materials onto construction sites, the use of heavy building equipment, grading and/or trenching for underground utilities can cause irreparable physical damage to any adjacent public trees, both above and below ground, and their associated soil resource. The City mandates that, during the demolition or construction phase of a development project, a Tree Protection Zone (TPZ) is established around all public trees prior to the commencement of such activities. The management of public trees impacted by construction or demolition will follow current industry standards and BMPs including:

- American National Standards Institute (ANSI) A300 Part 5: - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices (Management of Trees and Shrubs During Site Planning, Site Development, and Construction)
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300 (Part 5)

7. PUBLIC TREE REMOVAL, COMMUNITY NOTIFICATION AND APPEALS

The City of Santa Monica's Municipal Tree Code (Chapter 7.40) defines that the Director of Public Works has the duty to oversee public tree removals. The City's public trees will only be removed if they meet any of the following criteria:

- Tree is dead
- Tree is dying and the severe decline cannot be reasonably reversed
- Tree presents an unreasonable structural failure risk that cannot be reasonably mitigated
- Tree is in an unavoidable conflict with a construction project that cannot be mitigated through design and restitution planting can be performed to mitigate its loss based on the City's tree valuation protocol

Except in emergency situations involving imminent tree failure with potential for harm to life and property, the City will publicize a notice of intended public tree removals at least ten (10) working days in advance of the removal date by:

- Attaching a notice to the actual tree to be removed
- Publishing a notice online detailing the public trees listed for removal
- Distributing a notice to the Public Landscape Division's urban forest contact list

The notice will include the reason for the intended removal and provide community members with an opportunity to provide comment or ask questions of Public Landscape Division staff. Additionally, the decision to remove a public tree can be appealed to the Urban Forest Task Force. The same appeal process also applies when a request to remove a public tree has been denied by the Public Landscape Division. The Urban Forest Task Force will hear the appeal at the next available bi-monthly Task Force meeting. Based on the hearing and with input from City staff, the Urban Forest Task Force will make a recommendation on the tree to the Director of Public Works, who will then communicate their decision in writing to the appellant within 30 days.

Public trees removed in compliance with the removal criteria with a diameter of five inches (5") or less, at a height of four feet and six inches (4'6") from ground level, will be exempt from the noticing requirement detailed above.

Further information on the City's tree removal criteria and the tree removal appeal process is outlined in the appendices.

8. TREE VALUATION PROTOCOL

Tree valuation is a vital component of sustainable urban forest management as it ensures the UTC is not negatively impacted by healthy tree loss. If a healthy public tree is removed or destroyed, its loss will be accounted for by sufficient levels of replacement tree planting. Often, a replacement tree of a similar size as the one removed or destroyed cannot be planted as it would be impractical and/or cost prohibitive. As a result, the Council of Tree & Landscape Appraisers have suggested a number of recognized methodologies for valuing trees. Their Trunk Formula Method calculates the number of standard sized new trees needed to replace a larger tree. As part of the valuation process, the methodology takes into account:

- Tree size
- Tree species
- Tree condition
- Tree location

The methodology is therefore comprehensive and detailed in determining the number of replacement trees required to mitigate the UTC loss of a larger tree. Additional information on how the City of Santa Monica uses this tree valuation methodology is available in the appendices.

9. PROTECTION OF URBAN WILDLIFE

The protection of urban wildlife is critical and required through the Migratory Bird Treaty Act and the Endangered Species Act. Urban forest management operations will be performed in a manner to avoid disturbing urban wildlife. City and contractor staff will be trained in inspecting for and protecting urban wildlife prior to performing tree work. Trees containing urban wildlife will not be scheduled for work until the end of the breeding/nesting season or such time as the work will not disturb urban wildlife. The only exception to this is when public safety is threatened; in such cases, local subject experts will be consulted to assist in minimizing the impact to urban wildlife.

10. NEW TECHNOLOGIES, RESEARCH AND DATA ANALYTICS

The Public Landscape Division will keep abreast of current research and implement new technologies where practical for the tree care industry that can benefit the urban forest. Administrative data on urban forest metrics will be regularly reviewed to improve understanding of the function and health of the urban forest and its interaction with the community. Strategic planning, operations and budgeting will use data to inform and drive the decision-making process.

11. PUBLIC TREES AND CITY PUBLIC PROJECTS

The City will incorporate existing healthy trees in the design of City public improvement projects, wherever consistent with the project's design objectives and after a community design process where proposed tree relocations and removals are identified. The City Planning Department, Architecture Services Division, Civil Engineering Division, and other applicable City operations that affect the wellbeing of trees, will work in consultation with the Urban Forester to formulate initial recommendations.

Where tree removal is included as part of the proposed design, the City will consider relocation of trees with good survival prospects. If relocation is not feasible, replacement mitigation tree planting in accordance with the City's tree valuation protocol will be built into the project scope to offset the UTC loss. In addition to design illustrations, a proposed Tree Relocation and Removal Plan (the Plan) will be presented at project community design workshops and the information made available to the general public through the use of communication strategies such as project websites, project e-blasts, and press releases to the local media and via the Urban Forest email distribution lists. The proposed Plan will be included in the project design submittals to the required advisory and regulatory review bodies and will also be included in project staff reports and design presentations to the City Council at the appropriate stages of the project. The Plan will clearly state the trees to be impacted and the reasons for the proposed removals or relocations. If, during the design process, there are proposed changes to the Plan as the overall design evolves and becomes more specific, including resident input, these changes will be clearly noted in a revised Plan for review by the public and the other review bodies. The final tree relocation, tree removal and replacement

STRATEGIES

planting plan will be approved by the City Council as part of the project's final project design and is not subject to the tree removal appeal process outlined in the appendices.

Additional information on the City's tree valuation protocol can found in the appendices.

12. LANDMARKS AND HISTORIC DISTRICTS

In the case of street tree designations adjacent to currently designated landmarks or within currently designated historic districts, City staff will consult with the Species Selection Subcommittee of the Urban Forest Task Force for their recommendations. Staff may also confer with the Landmarks Commission in an advisory capacity to address contextual issues prior to selecting replacement species.

The Director of Public Works will review and must approve any modifications to species specified in the Urban Forest Master Plan's street tree designations due to landmarked properties or designated historic districts.

13. UPDATING THE APPENDICES OF THE URBAN FOREST MASTER PLAN

The first two chapters of the Urban Forest Master Plan define the urban forest and the City's strategic goals for managing this important resource. The Master Plan's appendices detail urban forest operational procedures, street and park tree species designations and protocols to achieve these strategic goals. The flexibility to modify these procedures, designations and protocols, due to environmental change, operational challenges or new research, is essential in maintaining an optimal and sustainable urban forest program. Therefore, the content of the appendices may be modified by City staff if approved by the Urban Forest Task Force after review at a public meeting. However, updating of the Master Plan's first two chapters will require approval by City Council.

GUIDING PRINCIPLE → GOAL

6. ENHANCING AND PRESERVING THE URBAN FOREST

The urban forest is in a constant state of change. This Master Plan considers the life cycle of the urban forest and recognizes that it is a dynamic, natural system. This Master Plan will retain flexibility for addressing the inevitable growth and decline of the City's trees. The enhancement of the urban forest and its sustainability enables the City to enjoy a highly functioning, healthy and low risk urban forest that provides a myriad of ecosystem services and benefits to the community.

Optimizing and enhancing the City's total urban forest biomass is also of primary importance in achieving the City's sustainability goals. The Master Plan promotes creating a maximally functional urban forest, by increasing both current total canopy coverage and total biomass. Canopy coverage in Santa Monica neighborhoods varies greatly, depending on parkway size. The strategies of this plan ensure the maximum feasible urban forest biomass on every street, given the specific conditions and limitations of each site, and recommends increasing parkway size where feasible to improve canopy equity in the City.

Trees should be a primary consideration in the City's planning process. Future development in the City should require adequate space for public trees that will produce the desired canopy coverage. When urban forest enhancement is in conflict with other goals, tree loss should be balanced with appropriate levels of replacement planting in the locality based on the City's tree valuation protocol. This will minimize the impact of tree loss in a neighborhood and thus mitigate UTC loss. Factors that should be considered in planning development include: the site, economic constraints, how existing and replacement species fit into the streetscape and the neighborhood character, the life span and condition of existing trees, their historic context and related environmental benefits.

Species diversity is vital in achieving overall urban forest health and adds resilience to the urban landscape. The Master Plan will strategically plan to increase species diversity so that the urban forest is not unduly affected should one or more individual species suffer due to pathogens or environmental stress.

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To enhance the urban forest by expanding canopy coverage and species diversity throughout the City.

STRATEGIES

1. INCREASE URBAN TREE CANOPY

The City of Santa Monica's UTC was estimated as being 15% in 2001. An updated UTC assessment will be completed in 2017. The Public Landscape Division will endeavor to increase UTC by 5% in 10 years over parkland and over City streets.

The street tree stocking level was estimated to be 96% in 2001 but has now dropped to roughly 93% in 2016. This is most likely due to an aging urban forest, historically insufficient tree planting and the impact of environmental stress such as drought and disease. Therefore, the Public Landscape Division will strive to fully stock 100% of the potential locations for street trees through escalating tree planting efforts and improved preservation of existing trees.

2. SPECIES DIVERSITY

In the City's urban forest, no genus will exceed ten percent (10%) and no species will exceed five percent (5%) of the total public tree population. When considering individual parks, no genus will exceed 40% and no species will exceed 20%. Overall, this species diversity will be achieved through the strategic planning of new tree planting both on City streets and in parks. Healthy trees will not be removed to facilitate the introduction of new species. They will be planted as existing public trees reach the end of their useful life expectancy and require replacement.

3. SPECIES SELECTION AND DROUGHT RESILIENCE

Planting the right tree in the right place is essential to the success of the urban forest and its sustainability. Species will be selected for planting based on the following factors:

- Size of the growing space including the width of the parkway and presence of adjacent buildings or infrastructure
- The volume of available soil
- The presence of utilities, both overhead and below ground
- Community safety including traffic visibility

Furthermore, one of the ways the City will build environmental resilience to drought is through careful species selection. At least 75% of the species selected for the 2017 Street Tree Designations list require low water, and drought resilient/low water use species have been selected where possible. At least one low water use species will be assigned to each street segment across the City. Additionally, species with known environmental concerns, pathogen issues or that are invasive to natural areas will not be selected for planting.

The street tree species selected for individual blocks is available for review in the appendices.

4. IMPLEMENTATION OF AND UPDATING THE STREET TREE SPECIES DESIGNATION LIST

The City will implement and adhere to the street tree designations contained in the Urban Forest Master Plan appendices. The City will evaluate the species designations list every five years in conjunction with assessing the success of newly introduced species. Significant updates to the species designations will be made in conjunction with the Species Subcommittee of the Urban Forest Task Force and impacted neighborhood groups.

5. PLANTING PRIORITIZATION

Planting of public trees will be prioritized based on numerous factors including urban forest metrics as well as environmental and human need. These factors include:

- Tree age diversity and planting space availability (planting vacancies)
- Population density and average age
- Proximity to schools and early learning centers
- The urban heat island effect
- Transport corridors and their associated air pollution

STRATEGIES

6. NEW SPECIES INTRODUCTIONS

To ensure the urban forest diversity goal fosters a resilient and healthy functioning urban arboretum, it is recognized as important to trial new species introductions. The City will plant new species in parks, or other appropriate locations; upon observance of successful establishment over time the new species will be considered for street tree species designation.

7. MODIFICATION OF INFRASTRUCTURE TO ACCOMMODATE LARGER CANOPY TREES

In addition to planting trees in existing parkways, the City will continue to identify opportunities to increase canopy coverage in the following ways:

- Incorporating landscaped medians and/or increasing the width of existing parkways where feasible
- Exploring new techniques designed for greater soil volume as an opportunity to increase the balance of canopy coverage throughout the City
- In street redesign projects, maximizing parkways and tree wells to enhance the street tree growspace
- Making provisions for larger street tree growspaces in private development projects in conjuction with implementation of the City's Land Use and Circulation Element (LUCE), and through the zoning code, developing standards to provide for the inclusion of more trees in better growspaces with greater canopy potential on private properties

8. LARGER TREES

The City's policy is to plant a 24" box tree of the designated species. The City will establish procedures for residents to have larger specimens of the designated tree when planting occurs in front of the resident's house. The resident can opt to make up the cost difference between the installed cost of a standard tree and the installed cost of a larger tree, and the City will plant the larger tree.

9. TREE SUPPLY

To the extent feasible, the Public Landscape Division will ensure new tree stock planted into Santa Monica's public urban forest meets current industry standards, specifically ANSI Z60.1. Only trees of the highest quality should be planted. This will be achieved by staff selection and approval of new tree stock.

10. SOIL RESOURCE

Urban trees require access to sufficient quality soil to support high-level growth and function. Soil must be able to provide adequate water and nutrients and improve a tree's resilience to drought and pathogen attack. Therefore, the Public Landscape Division will establish recommendations to protect the soil resource during construction projects. The increased use of air tools to decompact soil and the application of organic mulch within the root zones of trees will be promoted.

Additional information on the City's tree planting recommendations and protection of trees during construction can found in the appendices.

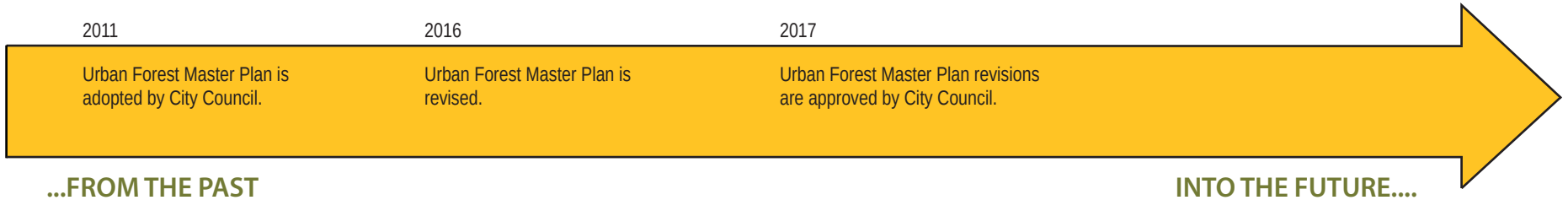
10. IRRIGATION

Adequate water is essential to healthy tree growth; however, it is recognized that potable water is a valuable and limited resource in Santa Monica. To preserve the urban forest, the City will use water-efficient irrigation technology. The greater use of stormwater capture and recycled water distribution will be encouraged coupled with increased public education on the importance of watering during young tree establishment and supporting drought-stressed trees.

THE FUTURE OF THE URBAN FOREST

The future of Santa Monica's urban forest can be assured and its benefits realized by future generations if City policy makers, staff and the community are responsible stewards. An urban forest is a dynamic natural system. The careful tracking of its sustainability metrics, as detailed in this Master Plan, will provide guidance on its health and function. Periodic updates to the goals, strategies and standards in this Master Plan are inevitable to meet the needs of the community, transcend the effects of future climate change and incorporate improvements in strategic tree management. City staff will work in partnership with the Urban Forest Task Force and the community as a whole to maximize the benefits delivered by the urban forest while managing risk and remaining fiscally responsible.

LONG RANGE URBAN FOREST TIMELINE



CHAPTER 3 - APPENDICES

3.1 CITY TREE INVENTORY

The City tree inventory includes, but is not limited to, all publicly owned trees on street right-of-way (ROW), parks, City facilities and open spaces such as medians, beaches and the City part of the bluff below Palisades Park.

A Global Positioning System (GPS) tree inventory will be maintained with a continuously updated database using the City's standardized addressing system for all streets, parks and open space areas. The inventory data shall be formatted into an ESRI ArcView/ArcGIS compatible shapefile for interaction with the City's Information System.

The tree inventory will be capable of showing the location of all existing tree sites and vacancies on the City's existing Geographic Information Systems (GIS) base maps for streets, parcels, addresses, ROW and hardscapes, etc.

The tree inventory will be maintained by regular updating during urban forest operations. The data shall be compatible with the latest version of ArcGIS. Minimum accuracy shall not be more than three feet (3').The data will be in a format suitable for use in i-Tree.

Tree information to be collected includes, but may not be limited to:

- Species
- Diameter at Breast Height (DBH)
- Height
- Crown spread
- Tree Condition
- Work history

3.2 TREE SPECIES, NURSERY STOCK SELECTION AND PLANTING

SELECTING SPECIES

Santa Monica's street tree species are identified by street segment within the Urban Forest Master Plan. These species designations must be followed unless otherwise authorized by the Director of Public Works and after review by the Urban Forest Task Force. Species for other areas of public space must be reviewed and approved by the Public Landscape Division.

SELECTING NURSERY STOCK

Container material is the most common type of nursery stock in California and is applicable for use in Santa Monica.

Types of Nursery Stock

- Container
- Balled and Burlap
- Bare Root

Selecting Quality Container Nursery Stock

Trees should meet the following minimum standards. Trees that do not meet these requirements will be rejected. The City of Santa Monica retains the right to inspect the root mass from a sample tree of each species. The planting contractor is to make any extra provisions necessary to notify nurseries of this requirement.

Tree planting specifications for selection of quality tree stock shall be as follows:

- All trees shall be true to type or botanical name as ordered or shown on planting plans or contract orders.
- All trees shall have a single, relatively straight trunk with a good taper and branch distribution vertically, laterally and radially with a live crown ratio (distance from bottom of canopy to tree top) of at least sixty percent (60%). All branches in the canopy should be less than two-thirds (2/3) of the trunk diameter and free of included bark. The trunk and main branches shall be free of damaged areas, conks, bleeding, signs of insects or disease, and wounds (except for properly made pruning cuts).
- All trees shall be healthy, have a form typical for the species or cultivar, be well-rooted and pruned as appropriate for the species.
- All trees shall have sufficient trunk diameter and taper so that they can remain vertical without the support of a nursery stake.
- All trees shall have a strong central leader (best as possible in cases of decurrent species) that stands straight without support of a nursery stake.

- The root ball of all trees shall be moist throughout and the crown shall show no sign of moisture stress.
- Trees shall be size appropriate respective to the ratio between caliper and container size. Resource: *American Standard For Nursery Stock ANSI Z60.1-2014*
- The tree shall be well rooted in the soil mix. The trunk flare (topmost root in the root ball emerges from the trunk) should be visible at the soil surface of the root ball or exposed respectively at time of planting.
- When the container is removed, the root ball shall remain intact. When the tree is moved by the trunk, the trunk and root system shall move as one.
- All trees shall comply with federal and state laws requiring inspection for plant diseases and pest infestations.
- No tree shall be accepted that has been severely topped, headed back or lion tailed.
- No tree shall be accepted with co-dominant stems or excessive weak branch attachments that cannot be correctively pruned without jeopardizing the natural form of the species.
- No tree shall be accepted that is root bound, shows evidence of girdling or kinking roots, or has roots protruding above the soil (a.k.a. “knees”).
- No tree shall be accepted that has roots greater than one-fifth (1/5) the size of the trunk diameter growing out of the bottom of the container.

Contract Growing:

Contract growing is usually utilized where trees and plant material needed for projects, parks or curbside plantings are not readily available in the nursery by either quantity or quality metrics. Tree species that may be difficult to obtain in the nursery trade can be purchased as smaller sized plants and grown on contract by an experienced nursery with proper planning and scheduling. The City of Santa Monica makes a concerted effort to secure quality trees and plant material through contract growing where needed. Trees produced for a contract growing project shall meet the tree planting specifications listed under “Selecting Quality Container Nursery Stock.”

PLANTING TREES

Percolation and Soil Fertility

Prior to planting, the following procedures shall be followed:

- Test the soil for percolation to determine if it drains properly. If it does not drain at least ½ inch per hour, then recommendations should be made to improve drainage, if feasible.
- Check the soil fertility and structure. If the soil is compacted, then it should be physically cultivated and have organic material added. If soil fertility issues are suspected, soil should be tested and approved by the Public Landscape Division. If soil remediation measures are required, these shall also be reviewed and approved by the Public Landscape Division. All recommendations shall be implemented prior to planting trees.

Sites for New Street Trees

Typically, street trees will be planted where there is an existing vacancy that is unoccupied, as a replacement tree, or if there is a break in the established street tree pattern that should be filled. All locations must be approved prior to planting by the Public Landscape Division.

Street Tree Spacing

The following guidelines shall be followed when planting new street trees.
The standard street tree spacing is as follows:

- 20'-35' on center (pending species & site conditions)
- ~30' from the corner property line (where applicable pending traffic lights and patterns)
- ~35' from stop signs (where applicable pending parkway width)
- ~10' from edge of driveway approaches
- ~10' from light poles
- ~5' from utility meter boxes (pending species)

Street trees will not be approved for planting under the following conditions:

- The tree would interfere with the growth of other trees in the area.
- The vacant tree well site is overshadowed by other trees nearby creating an unsuitable growing condition for the proposed new tree.
- Direct conflict with below ground utilities & associated meters.
- The tree could block views of oncoming traffic.
- The tree species for proposed planting does not adhere to the Street Tree Designations List appendix of the Urban Forest Master Plan.

Size of Street Trees

The size of trees being planted shall be specified by the Public Landscape Division. The minimum planting size is a 24" box. A 15-gallon tree may also be used pending site conditions or if a 24" box is not available.

Tree Planting Requests

The City of Santa Monica is currently following a scheduled five-year Street Tree Planting Priority Model. However, property owners may request a new parkway tree via the Santa Monica Works system at any time. If approved, the Public Landscape Division will cover the cost of a 24" box tree at the current contract rate. Property owners may be permitted to pay the difference for a larger tree by coordinating with Public Landscape Division staff. Tree size upgrade rates may be found on the Urban Forestry website or requested via the SM Works Government Outreach Request System.

If the City of Santa Monica is unable to plant a new tree upon request, property owners may apply for a planting permit issued by the Public Works Department. If a permit is obtained, the tree must be inspected and approved by the Public Landscape Division.

The newly installed tree will then be incorporated into the Santa Monica public tree inventory and will be maintained by the Public Landscape Division.

Planting Procedures

Trees will be planted in accordance with the following industry standards:

- American National Standards Institute (ANSI) A300 - American National Standard for Tree Care Operations – Tree Shrub, and Other Woody Plant Management – Standard Practices Part 6: Planting and Transplanting (2012)
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300 Part 6: Tree Planting

In addition, the following is required:

- DigAlert is mandatory to detect all underground utilities prior to any digging. All planting locations within the public right-of-way shall be verified for underground conflicts.
- When obtaining a tree from a nursery, handle it with care. Carry the tree by its container or root ball while making sure the trunk is stable. Cover canopy with burlap if transporting in an open air vehicle.
- After removing the tree from the container, mitigate any stem girdling, circling or injured roots with a clean, sharp pruning tool.
- Backfill with native soil removed from the planting hole or as directed by Public Landscape Division staff following a soil analysis or an inspection of site conditions.
- Eliminate all air pockets while backfilling the planting pit by watering the soil as it is put into the hole. Do not compact the backfill by tamping it down.
- Build a temporary water retention berm 6”-12” outside the root ball four to six inches (4” to 6”) high to allow for establishment watering. Immediately after planting the tree, water it thoroughly by filling the water retention once, allowing the water to percolate through and refill basin a second time.
- The soil around the new tree shall be kept moist, but not saturated, by watering at least once a week during the cooler winter months and twice a week during the hot summer months.
- Linear root barriers are not required but may be installed parallel to the curb at the sidewalk/tree well interface upon approval by the Public Landscape Division. Barriers shall be placed as instructed by Urban Forestry staff with the top of the barriers kept at finish grade.

3.3 TREE PRUNING

PRUNING GENERAL

Santa Monica's Tree Code and City Public Works Permits

The City's Municipal Tree Code 7.40.110 requires that a City Public Works permit is obtained before pruning, cutting, trimming or interfering with a publically owned tree. A City permit for tree work can be obtained through the Public Works Permit Center at City Hall.

The tree work companies working under contract for the City are exempt from this requirement.

Tree Pruning Industry Guidelines

All tree pruning must be performed in accordance with *ANSI A300 (Part 1)- Tree, Shrubs and Other Woody Plant Maintenance – Standard Practices, Pruning (2017)* and the associated *Best Management Practices Tree Pruning (2008)* from the International Society of Arboriculture (ISA). The majority of pruning performed on public trees is to reduce the risk of failure or provide clearance. Pruning timing, objectives and specifications will be directed by Urban Forest staff in the Public Landscape Division (PLD).

All staff, either City or under contract, must follow and comply with the ANSI Z133 (2017) safety standard for practicing tree care. The same is expected for tree care companies working on public trees under a City permit.

The following general pruning guidelines shall be followed:

- Public tree pruning for street trees and park trees will follow the established Urban Forest Tree Pruning Program. Additional pruning is sometimes required upon request but only after an inspection by PLD staff.
- Trees will be inspected by PLD staff prior to pruning work commencement and it may be decided that no work is needed at that time.
- Species, age, tree health and past pruning history will be considered prior to pruning. Excessive pruning, based on industry guidelines, that might negatively impact tree health or increase future risk will not be undertaken or permitted.
- Pruning cut size and number of pruning cuts per tree will be kept as low as possible. The clustering of pruning cuts, in relation to each other, will also be minimized.
- Certain species will be pruned at a specific time of year to minimize trees from insect and disease infestation.
- Trees will not be crown reduced or pollarded immediately after leaf out in the spring.
- Tree species, size, age and placement will always be considered.
- Wildlife shall not be disturbed, if possible, by pruning operations. Bees shall be relocated if practical and if pruning cannot be delayed.

- Promoting and preserving urban tree canopy (UTC) because of its desirable environmental benefits, including storm water catchment, will be considered prior to pruning.
- Excessive pruning to maintain view corridors will not be considered.
- Climbing spikes shall only be used on trees that are slated for removal.

Resident Notification of Tree Work

Residents may be notified by a door hanger of any pruning or maintenance project affecting a City tree located in front of their home at least one (1) business day prior to the beginning of work. Emergency tree work that is required to protect public safety will not be notified due to the time sensitive nature of such work.

Santa Monica's Urban Forest Pruning Program

Santa Monica's public trees are pruned in varying cycles depending on their species and their location. The City inspects trees and prunes them on cycles ranging from one to five years. Trees that require pruning more regularly are those with faster growth habits, palm species, younger trees and those in areas of higher occupancy.

Maps of the City's Urban Tree Pruning Program are available online so residents can review when their street or park is next scheduled to be evaluated for pruning.

PRUNING SYSTEMS OVERVIEW

All City tree pruning must be performed in accordance with *ANSI A300 (Part 1) – Tree, Shrubs and Other Woody Plant Maintenance – Standard Practices, Pruning (2017)* and the associated *Best Management Practices Tree Pruning (2008)* from the International Society of Arboriculture (ISA).

Reasons to prune a tree include, but are not limited to:

- Reduce risk by mitigating or removing identified structural concerns
- Promote tree health and good branch structure, particularly in younger trees
- Clearance pruning for infrastructure, vehicles, bicycles and public transportation.(crown raise)
- Removal of dead and dying branches from palm, broadleaf or conifer trees (crown clean)
- Restoration of canopy and form after improper pruning, storm damage or limb failure (crown restoration)
- Reduce, limit or maintain the physical size of a tree
- Improve structural integrity by reducing end-weight on heavy branches or mechanical stresses on weakened parts of a tree (crown reduction)

- Clearance pruning for overhead utility lines (mainly performed by contractors of the utility)

The traditional practice known as 'topping' is not acceptable. Additionally, removing excessive live foliage (palms included) or 'lions tailing' a tree by over thinning just the central canopy are considered to be unacceptable practices. No more than 25% live growth can be removed from a healthy or young tree per year. This percentage may be reduced for mature or over mature trees, slower growing species or those exhibiting visual signs of stress, or increased at the discretion of the Urban Forester, on all pruning modalities.

Trees with known pathogens that can be spread with pruning tools shall be pruned using additional caution. The following measures shall be followed when working on City trees:

- Avoid pruning on windy days in order to reduce the transmission of spores
- Sterilize tools in between cuts on diseased trees that can be transmitted on pruning tools. Acceptable sterilization methods include fifty percent (50%) bleach solution for ten (10) minutes or handheld butane torch heating for fifteen (15) seconds per side.

Wood that is infected with a pest or disease shall be handled and disposed of in a manner that minimizes the possibility of transmission to healthy plants, and is in compliance with USDA and local agency laws. This may include:

- Leaving debris on site when feasible
- Using covered containers if it is necessary to transport greenwaste
- Chipping wood known to be infested with wood boring insects

PRUNING MODALITIES

Palm Pruning

Palms shall be pruned using the following measures to avoid disease and decay:

- Only dead fronds shall be removed. Fronds shall only be pruned to horizontal (180 degrees) and not above.
- Chainsaws shall not be used on any palm species susceptible to pathogens that can be spread by chainsaw use.
- Sterilized handsaws, not chainsaws, shall be used to prune all palms of the Phoenix genus.
- Trunk balls shall only be shaped by hand/spade to avoid creating large wounds. Chainsaws shall never be used to shape trunk balls.
- Trunks may not be skinned unless directed by PLD staff.

Clearance Pruning

Clearance pruning is a common pruning modality used to maintain Santa Monica's public trees. Clearance pruning consists of selective shortening or removal of limbs to provide clearance for bicycles, pedestrians, and vehicles. Selected branches may be subordinated by shortening them so that they can be removed at a later stage. Only those branches that must be removed to achieve the required height clearance standard shall be pruned. Pruning cuts shall be taken to the nearest lateral found above the set minimum height standard.

All street trees shall be maintained to the height specifications established below:

- Sidewalk and park pathways shall have limbs and branches raised to a minimum of eight feet (8') above finish grade in the right of way (not necessarily in the parkway). Limbs may be retained below this minimum elevation as long as they do not interfere with pedestrian or vehicle traffic and conform to the natural shape of the species.
- Residential streets shall have branches and limbs raised gradually from eight feet (8') at the curb to fourteen feet six inches (14' 6") over travel lanes. The branch structure should create an arch over the street when completed.
- Arterial streets shall have branches and limbs raised to fourteen feet six inches (14' 6") at the curb. Major arterial streets may have a higher maximum over central traffic lanes for existing mature canopy-forming limbs.
- Visibility clearance for streetlights or signage shall be achieved by removing selected limbs. Only those branches that need to be removed to attain visibility clearance shall be pruned.

Crown Cleaning Pruning to Promote Health

Along with crown clearance pruning, crown cleaning pruning is commonly used in Santa Monica to maintain City trees. This pruning treatment consists of the removal of dead, dying, crossed or hanging branches. Crowded or weakly attached branches are also removed during this process.

Crossing limbs that have been present in the canopy for many years may not be removed as the tree may have structurally adapted to them.

Crown Reduction to Reduce Risk or Maintain Size

Crown reduction is the selective removal of branches to reduce the height or spread of a tree. The work is accomplished using carefully placed reduction cuts and not heading cuts that result in stubbed limbs. Crown reduction may be used to reduce end-weight on over extended branches, help mitigate mechanical stress on weakened trees, provide clearance from buildings or utility lines and reduce or maintain a tree's size. As with other pruning modalities, no more that 25% live foliage should be removed from healthy trees. This percentage might be reduced considerably for older trees or those under stress and exhibiting low vigor.

<u>Public trees will require careful evaluation by PLD Urban Forest staff prior to this pruning modality being recommended.</u>

Crown Thinning to Reduce Density

Branches should have even distribution of foliage along their lengths for a well-formed, tapered structure and even weight distribution throughout the tree. Thinning is utilizing conservative pruning techniques to minimize the necessary amount of foliage removed. It is generally used to reduce the density of a tree canopy by anywhere from ten percent (10%) to twenty-five percent (25%) dependent on species, age and vigor. Crown thinning aims to increase air movement through the crown and increased light penetration through the canopy. It must be performed carefully, leaving interior foliage and concentrating on the outer two-thirds of the canopy. An even distribution of foliage shall be maintained throughout the canopy. Removal of all sucker growth may not be necessary.

Crown thinning can be damaging to tree health if performed too regularly or if too much live growth is removed. This pruning modality is not commonly used in maintaining the City's mature public trees.

Crown Restoration Pruning to Preserve Damage Trees

Restoration pruning is remedial pruning for a tree that has been topped, vandalized, over pruned or suffered storm damage. Restoration pruning shall involve several pruning treatments over a period of many years to promote the natural regeneration of a new structurally safe canopy.

Pruning after significant damage first requires an evaluation by PLD staff to determine the best course of action. Trees suitable for crown restoration pruning are free from cracks or structural roots and need to have sufficient vigor to recover from the process. Heading cuts, or cuts that leave a stub, may be necessary to preserve canopy after damage.

Pollarding

Pollarding is an intensive pruning system that involves repeatedly pruning the sprouts of a plant back to the same point of origin. This creates a dense foliage that originates from swollen 'knobs'. This practice is used to control tree height. It is usually only successful within certain warm climates and on certain species of tree. Santa Monica has very few pollarded trees. The sycamores outside City Hall are the best examples in the City.

Structural Pruning of Young Trees

Properly pruned young trees can grow to have strong structure and greater longevity. They are also more cost-effective to maintain because they will require less corrective pruning as they mature.

Cultivating the branching structure is an ongoing process during the first three to seven (3-7) years for most tree species.

The following measures shall be used for cultivating the branching structure of young trees:

- Prune newly planted trees to one central leader by shortening competing stems. All branches and stems should be shorter than the central leader after pruning.
- Retain and shorten temporary lower branches.
- Select the lowest branch that will become the first permanent branch. These branches should have a wide angle of attachment and be smaller in diameter than the trunk.
- Shorten branches that are below the permanent crown.
- Space main branches along the central stem.
- Reduce co-dominant stems and branches back to lateral branches.

Utility Clearance Pruning

Utility line clearance is regulated by the California Public Utilities Commission and standards are based on the type of hardware affixed to the lines. Regulations include General Order 95 Rule 35: Tree Pruning. More information can be found by contacting the local utility company.

The following guidelines are designed to maintain required clearance of City trees from high voltage distribution and transmission lines with a minimum of re-sprouting and fewer pruning cycles. These guidelines are based on the biological response of trees to pruning techniques and should only be used when combined with safe work practices.

- Tree growth adjacent to utility lines shall be managed with lateral or directional pruning. Directional pruning removes a branch from the trunk or large lateral branch growing away from the conductor.
- Stubs and heading cuts are not acceptable.
- All trees should be examined for hazards prior to line clearance work.
- Whenever possible, trees should be allowed to attain a normal height, with the crown developing away from high voltage conductors to develop a V-shaped canopy structure.
- Line-clearance tree workers shall be trained to work around high voltage conductors. The United States Occupational Safety and Health Act (OSHA) and the American National Standards Institute (ANSI) have established minimum distances to be maintained by tree workers from electrical conductors. All line-clearance work involving City trees shall adhere to these standards as well as the utility pruning standards established by the International Society of Arboriculture (ISA) and the Utility Arborists Association (UAA).

Frequently, City or City contract crews must complete a tree pruning after the utility company has cleared it away from the lines, especially with new pole installations.

WILDLIFE PROTECTION

These protection policies are designed to minimize and avoid impacts from tree maintenance activities on nesting birds and other wildlife. Wildlife is protected through California Fish and Game Code 3503 and 3513, the Migratory Bird Treaty Act - US Code, Title 16 703 and US Code of Federal Regulations, Title 50 21.27.

Wildlife Avoidance/Migratory Bird Treaty Compliance

The Migratory Bird Treaty Act, the Endangered Species Act and local laws protect birds and wildlife located in trees. Trees can be inspected by an arborist that is a Certified Wildlife Protector. To minimize conflicts with nests, trees should be inspected carefully for nests and cavities using binoculars prior to pruning.

The recommended criteria shall apply to tree pruning or removal activities to protect wildlife:

- As feasible, trees should be scheduled for removal during non-breeding/non-nesting season.
- Trees scheduled for pruning or removal during the breeding/nesting seasons shall be visually inspected at ground-level.
- If wildlife is located in the tree, the tree shall not be pruned and the Urban Forester shall be notified.
- In wooded areas (the bluffs below Palisades Park) wildlife habitats are sometimes created and shall remain undisturbed.

SAFETY STANDARDS

All work performed on public trees shall be performed in accordance with the latest issue of the ANSI Z133.1 Safety Requirements.

If the flow of traffic is to be disrupted on streets and highways, workers shall establish a safe work zone with proper traffic control measures following the current California Manual on Uniform Traffic Control Devices (MUTCD) and the Work Area Traffic Control Handbook (WATCH) from the American Public Works Association (APWA).

THE CITY OF SANTA MONICA'S GUIDE TO: PLANNING & PROTECTION OF PUBLIC TREES DURING CONSTRUCTION PROJECTS

South-East Corner of Michigan Ave & 16th st

City of Santa Monica – Public Works Department – Public Landscape Division
1601 14th St – Santa Monica, CA 90401 – (310) 458 – 8974

Tree Protection & Why it is Necessary:

Santa Monica's urban forest is a highly valued resource and a cornerstone of sustainable communities. Larger trees provide significantly greater environmental benefits to the community than smaller ones.

New construction can cause irreparable damage to trees if not designed and executed correctly. The movement of building materials onto construction sites, the use of heavy building equipment, grading, and/or trenching for underground utilities all have the potential to physically damage trees. Damage can occur to tree parts both above and below ground including their associated soil resource. Therefore, the protection and preservation of City trees must be an essential element within any new construction project from design throughout the completion of construction.

The City's plan check process allows for Santa Monica's Public Landscape Division staff to review and comment on how a proposed construction project may affect existing public trees during the design phase. Santa Monica's Urban Forestry staff will specify plans that require specific tree related notes be included on plans to prevent any unreasonable negative impacts to City trees.

City of Santa Monica's Tree Code & Related Industry Standards

Public trees are protected from injury by Santa Monica City's Municipal Tree Code (7.40.160). The City of Santa Monica therefore mandates that during any demolition or construction activity an appropriate Tree Protection Zone (TPZ) fence is established around City trees. The tree protection fence and the continued management of public trees impacted by construction or demolition must follow current industry specifications, standards and Best Management Practices including:

- American National Standards Institute (ANSI) A300 Part 5: - American National Standard for Tree Care Operations – Tree Shrub, and Other Woody Plant Management – Standard Practices (Management of Trees and Shrubs During Site Planning, Site Development, and Construction)
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300 (Part 5)

I – The Design Phase and Preparing for Plan Check:

The design phase is very important when planning for a new project. Projects can vary in form such as largescale developments, new construction, major alterations, tenant improvements, ADU's etc. Santa Monica City owned trees shall be considered part of the existing infrastructure similar to subsurface utilities & associated meters, utility/light poles, fire hydrants, gas lines, water and sewer lines. However, it is important to recognize that a tree is a dynamic and living organism requiring special care and consideration.

The checklist below are items that must be considered and accounted for when planning a project adjacent to existing City trees:

- For designated Landmarks, the entire parcel may be designated. If so, all existing trees are included in the Landmark designation, and require protection.
- How many existing City-owned trees are onsite requiring preservation?
- How many existing trees might need to be relocated (transplanted)? Has this been agreed upon with Santa Monica Urban Forestry? Please see 1a below.
- Are any existing trees being proposed for removal? Has this been agreed upon with Santa Monica Urban Forestry? Please see 1b below.
- Where are the opportunities to plant new trees?
- How does the existing tree canopy impact the proposed project profile?
    - Are there awnings, balconies, or other structures protruding from the building that may interfere with a curbside City tree?
- Will a sidewalk bridge/pedestrian tunnel be installed?
- Is there excavation & shoring for subterranean parking or basement?
    - Is there an overcut needed?
- Is there a storm water retention basin to be installed and where?
- Does the sidewalk and/or curb require removal and replacement?
    - Will an existing driveway be relocated or decommissioned & replaced with parkway or new sidewalk?
        - Please note that driveways should be positioned at least ten-feet (10') from nearest edge of existing trees.
- What is the parkway length and width?
- Is there street furniture including but not limited to bus stops and shelters, mailboxes, signs, bicycle racks, fire hydrants or any other obstructions on the sidewalk being moved or installed that might impact City trees?
- Are there manholes, storm drains, catch basins, or valve boxes being moved or installed that might impact City trees?

Furthermore, when designing a new project, it should be determined how a structure will be built. The construction of the project and how contractors access the site should not impact existing City trees.

1a - Proposed Tree Relocations:

In the design phase, if a tree up to five inches (5") in diameter (measured 4 ½ ft above the trunk flare) is proposed for relocation (transplanting) please contact the Public Landscape Division in writing. It is unlikely that trees exceeding this size will be approved for transplanting unless the tree is a palm species. Santa Monica Urban Forestry staff will review a submitted arborist report and assess palms for transplant if brown trunk height (BTH) is over 35 ft.

Santa Monica Urban Forestry staff will require concise details, including any supplemental plans, to explain why a tree needs to be relocated. Please note that trees should be relocated to a more favorable location onsite where possible. If approved by Santa Monica Urban Forestry, boxing trees and having them maintained offsite by a reputable tree company until re-installation near the end of construction may be an option at developer's cost.

Onsite Jacaranda relocation as part of Reed Park landscape improvement & exercise area retrofit.

Santa Monica Urban Forestry requires that transplanting work complies fully with ANSI A300 Part 5 and the associated ISA Best Management Practices (BMP). If transplanting is approved by Santa Monica Urban Forestry, a scheduled field meeting with a reputable tree/landscape contractor will need to be coordinated by the applicant. At this meeting the final details, including maintenance, will be agreed upon and added to plans. Parkway trees can be challenging to transplant and may require the removal of adjacent sidewalk to achieve the best root ball per industry standards (10"-12" of root mass per diameter inch of tree) or as determined by Santa Monica Urban Forestry staff in the field.

Trees and palms, including the adjacent soil, shall be sufficiently watered in the days prior to transplanting. They must also be regularly watered afterwards, preferably by automatic irrigation, to ensure successful establishment. If Santa Monica Urban Forestry staff assess that a tree or palm is unsuccessful within 12 months of transplanting, often due to a lack of sufficient aftercare, the developer will be responsible for replacing the tree or palm with an equivalent sized tree or palm at no cost to the City of Santa Monica.

1b - Proposed Removals:

It is recommended that the design phase of a project explore all options to avoid removal of a Santa Monica City tree. If there is an unavoidable conflict with construction and a City tree cannot be preserved, please submit a Public Tree Removal Appeal Application and explain why a tree will need to be removed with concise details and any supplemental plans.

Santa Monica's Urban Forest Master Plan has strict criteria on when a City tree is authorized for removal. Trees in Santa Monica are usually only removed when they are dead, dying or pose an unreasonable risk as determined by Santa Monica Urban Forestry staff. Tree removal for new construction is often not permitted and may require lengthy review processes involving the City of Santa Monica's Urban Forest Task Force. Ultimately, the Director of Public Works approves all Santa Monica tree removals. If approved, restitution shall be provided to the City to offset the loss of the tree.

Please note Santa Monica City trees up to 5" diameter may be transplanted safely to another location (see section 1a "Proposed Tree Relocations).

Restitution resolved, posted and removed for Fire & vehicular access at the "Pen Factory" remodel 2701 Olympic blvd.

Calculating Tree Restitution:

The provision of restitution to replace the value of a removed tree is a vital component of a sustainable urban forest. It helps ensure that Santa Monica's urban tree canopy is not negatively impacted by the removal of healthy trees for development. When a City tree is removed for a new construction project, its loss is mitigated by sufficient levels of replacement tree planting. Often, a replacement tree of similar size as the one removed cannot be planted as it could be impractical and cost prohibitive. As a result, the Council of Tree & Landscape Appraisers (CTLA) have suggested industry recognized methodologies for valuing trees. Their Trunk Formula Method calculates the number of standard sized new trees needed to replace a larger tree.

As part of the valuation process, the methodology factors:

- Tree size (diameter measured 4 ½ ft above trunk flare)
- Tree species
- Tree health condition
- Tree location

The CTLA's Trunk Formula Method is therefore comprehensive and detailed in determining the number of replacement trees required to mitigate the loss of a larger tree. Additional information on how the City of Santa Monica uses this tree valuation methodology is available on request.

The CTLA Trunk Formula Method is unsuitable for palms. Therefore, palms are measured in brown trunk height (BTH) and require "in kind" replacement. For example, if a palm tree is 50 ft tall, five 10 ft BTH palms or two 25 ft BTH palms would be an equivalent replacement.

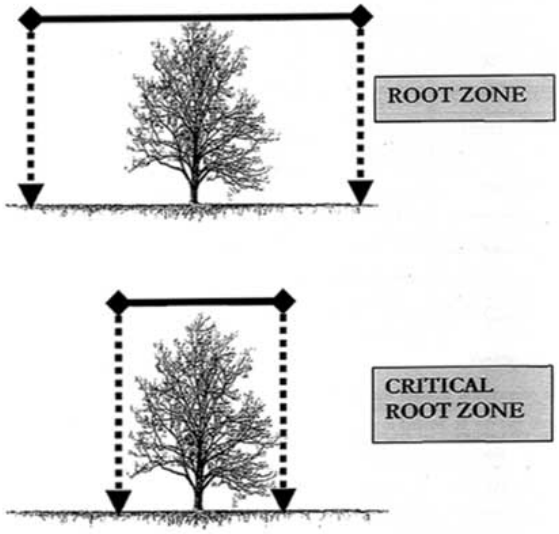
The calculated number of replacement trees or palms is converted into a dollar value using Santa Monica's current planting contract rates including the cost of 18 month tree aftercare & guarantee period. This value, plus Santa Monica contractor's removal cost, will be invoiced as the restitution required by the applicant to provide to the City of Santa Monica.

Approved removals will be posted for 14 calendar days to notify the public as part of Santa Monica's tree removal processes.

II - The Tree Protection Plan:
Critical Root Zone (CRZ) & Tree Protection Zone (TPZ):

During the plan check phase, calculating the critical root zone (CRZ) will help a developer better understand a project's potential impact on existing City trees.

Illustration 2-1: Root zone vs. Critical root zone (CRZ)
From: Urban Forest Management Plan.



landscapeonline.com

To accurately determine the critical root zone of a tree, use a diameter tape to measure its trunk diameter at 4 ½ feet above the trunk flare. That number is then multiplied by 1.5 and the results expressed in feet. For example, if a tree has a trunk diameter of 24 inches, then the critical root zone has a radial distance of 36 feet out from the trunk, or a total diameter of 72 feet.

Construction equipment can injure tree parts above & below ground by compacting soil, breaking branches, severing roots, tearing tree bark, and wounding the trunk. These injuries are permanent and, if extensive, can be fatal to the tree. Mitigation options may be available and will require a meeting with Santa Monica Urban Forestry & a third party arborist at the cost of the developer prior to final signoff.

The City of Santa Monica mandates that a Tree Protection Zone (TPZ) is established around all public trees prior to the commencement of any demolition or construction phases of a project. The TPZ protects a tree's CRZ and its associated soil resource, from damage caused by construction activities within the public right of way or as determined in plan check.

TPZ fencing must enclose the parkway to protect street trees during construction. The location of the fence must be shown on the plans. Three to four inches of mulch should be applied to the entire area of the TPZ to improve the growing

environment for tree roots. Soil or mulch must not be piled against the trunk of the tree.
Mulch generally consists of shredded leaves, bark, pine straw, peat moss, wood chips or composted green waste. Weeds and overgrown grass are to be maintained throughout the life of the project.

At times, the tree protection fence cannot be installed at the outermost edge of the CRZ. Public Landscape Division staff should be contacted with any tree protection fence installation questions.

The management of public trees impacted by construction or demolition follows current industry standards and best management practices including:

- American National Standards Institute (ANSI) A300 Part 5: American National Standard for Tree Care Operations – Tree Shrub, and Other Woody Plant Management – Standard Practices (Management of Trees and Shrubs During Site Planning, Site Development, and Construction)
- International Society of Arboriculture (ISA) Best Management Practice Companion Publications to ANSI A300 (Part 5)

633 21st St with Tree Protection Fence installed below:

IIa - The Tree Protection Plan:
Labeling Public Trees, CRZs and TPZs on Submitted Plans

A tree protection plan is required with submission of plans. The tree protection plan can also be layered onto the site and demo plans by labeling the following:

- Existing curbside public trees
- Location of construction access
- Existing utilities to remain or change
    - Electrical above or below ground
    - Water and sewer
    - Gas
    - Fiber optic
- Gutter and bio-retention overflow units
- Existing driveway to remain or be relocated onsite
- Sidewalk removal and installation
- Proposed awnings, balconies, business signs/displays
- Sidewalk bridges (posts or footings of sidewalk bridges should not be placed in the tree well or on any surface roots)
- Any other proposed changes that could impact a City tree

Plans must portray the public tree characteristics listed below:

- Exact location of each tree trunk on City right of way
    - At times neighboring trees within 25 ft of the property line may require protection including those adjacent to alleys
- Tree species
- Trunk diameter (expressed in inches) at 4.5ft from trunk flare
- Actual tree canopy size, labeled to scale, reflecting the 'drip-line'
- Boundary of the proposed TPZ fence labeled to scale
- Photo of each public tree to be preserved (while in leaf, and preferably not from Google street view)

IIb - The Tree Protection Plan:
Projects & Plan Sheets that Require Reference note to Tree Protection Guidelines

Project activities occur in stages and are reflected on different sheets in a set of plans. Certain activities can impact preserved onsite trees and should be displayed accordingly. City maintained trees should be included on any plans where trees could be impacted.

Tenant improvement permits are usually localized within a building and cause minimal impact to curbside trees or the neighboring area. Pending the impact of the project, most tenant Improvement (T.I.) permit applications will be acceptable if the following items are labeled on the site plan:

- Curbside City trees
- Tree Protection Guidelines (See pages 19-21)
- Construction access (If construction access or scale of job impacts City trees, more information may be requested)

Additional Dwelling Unit & Structure Re-model permits are usually localized within or at the rear of a structure and cause minimal impact to curbside trees or the neighboring area. Pending the impact of the project, most Additional Dwelling Unit & Structure Re-model permit applications will be acceptable if the following items are labeled on the site plan:

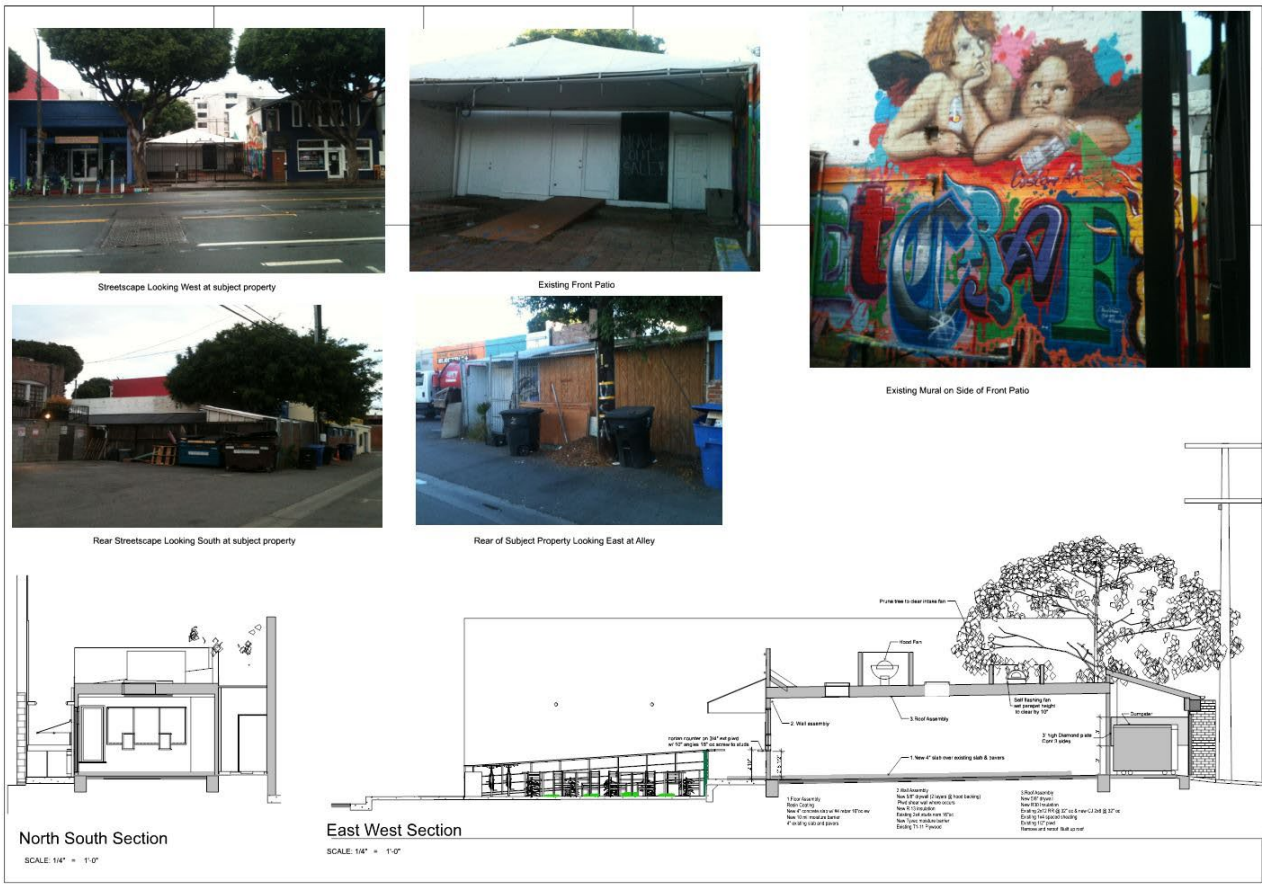
- Curbside City trees
- Tree Protection Guidelines (See pages 19-21)
- Construction access (If construction access or scale of job impacts City trees, more information may be requested)

Plans on which Santa Monica's Tree Protection Guidelines (See pages 19-21) should be referenced include but are not limited to:

- Demolition and staging (trailers, equipment, vehicles etc.)
- Excavation, foundation, & shoring
- Grading & drainage
- Site plan
- Elevation plan
- Proposed landscape plans

A set of elevation sheets will help to identify how a City tree can be impacted by the façade of a proposed project. 3 examples below reflect different project scopes respectively:

Restaurant update:



New home:

Structure Remodel:

IIc - The Tree Protection Plan:
Excavation & Utilities within the CRZ:

The design phase of a project is the best time to consider tree root presence and growth. Any excavation within the CRZ can have a negative impact on sections of street tree roots adjacent to a project if not planned and mitigated accordingly. All excavation within the CRZ shall be done with the use of an air spade or by hand, which helps to avoid unnecessary damage to roots that should be preserved. This in turn helps prolong a tree's life and ensure its stability after construction has been completed.

The amount of damage a tree can suffer from root loss depends, in part, on species, season, percentage of root loss and how close to the tree the cut is made relative to the tree trunk. The drip line can be used as a guide during excavation as staying outside the drip line will lessen impact to a City tree and maximize root preservation. Exploratory trenching using pneumatic tools like an air spade exposes roots that can be approved for removal or preservation for proposed new driveways, excavation & shoring, stormwater retention units, and property boundary walls.

Excavation occurs on different scales at different times of a project and the combination can be detrimental to a tree. For example, a combination of property-side excavation for a new developed unit, a trench dug for relocating or installing new underground utility lines, and a new driveway within the TPZ can lead a tree to the end of its life. Project managers must be mindful of the aggregate effect of construction/demolition work and are encouraged to use City staff as a resource for reviewing plans in order to minimize impact to City trees.

In cases where proposed utility lines conflict with existing tree roots, trenchless methods are preferred to best preserve the most roots possible. Trenchless technologies are also generally safer both for the construction workers and the public.

Fibrous and structural roots should be thought of as the two major components to a tree's health. The important fibrous roots of street trees are found mostly in the upper 6 to 12 inches of the soil for water absorption while the structural roots of a mature tree contribute to stability. Both can extend far beyond the edge of the canopy.

Any root that is two inches or greater in diameter is to be reviewed and approved for cutting or removal by Urban Forest staff.

500 Broadway:
Collaboration with applicant & 3rd party arborists opening an exploratory trench to review and mitigate conflicting roots for steel-beam installation prior to excavation & shoring. GC waters trees monthly & provides plant health care treatments for sustained tree health during demo and construction.

Trees were methodically pruned for property line clearance & tower crane installation of 8-story structure to be developed to the property line.

IId – Construction Access, Driveways & Sidewalks:

Once the Critical Root Zone has been established, a better understanding can be gained of how the proposed design can fit into the project site. Equally as important is how to access the site, both during the construction phase and once the project is completed. It is always best to utilize an existing driveway for construction access and as the permanent driveway to minimize impact on existing street trees. The existing concrete prevents soil compaction and preserves soil structure.

Occasionally there are circumstances that require access to the construction site in conflict with the proposed TPZ. A steel plate may be utilized to bridge over the parkway for access. Steel plates should rest on concrete and serve as a bridge or be set on six inches of mulch to prevent soil compaction within the Critical Root Zone of the tree.

Plan accordingly, consider the project scope and label plans accordingly. Determine if the special access within the TPZ will be temporary or for the duration of the project. Make a note for the Project Manager to contact the Urban Forest staff in the Public Landscape Division one week in advance of the special access preparation.

Driveways:

The project design should always be based upon the assumption that a city owned tree will not be permitted for removal. On projects where a new driveway or driveway expansion is proposed, it is important to remember the Critical Root Zone of existing trees. Keep in mind that the trunk of an existing street tree as well as its root system will increase in size. To avoid any plan check delay due to potential conflict between a driveway approach and the roots of an existing curbside City-owned tree, please contact Public.Landscape@santamonica.gov to review your proposed plans with Santa Monica Urban Forestry staff.

Concrete Removal and Installation:

Sidewalk or driveway repairs can be conducted with minimal impact to the tree if done correctly. The impact of that work normally could lead to significant decline or tree death within a short period of time if the Critical Root Zone and individual roots are not properly preserved.

Removal of hardscape materials with the use of mechanical equipment is acceptable. However, to avoid damaging the surface roots, the broken-up material must be carefully removed manually.

Contact Santa Monica Urban Forest staff at Public.Landscape@santamonica.gov or 310-458-8974 prior to concrete removal to schedule an onsite inspection.

Tree Protection Deficiency and Mitigation:

Pending the extent of construction damage or deficiency in proper preservation of trees during construction, the developer or applicant seeking sign off may be required to hire an ISA certified arborist or ASCA consulting arborist to meet with Santa Monica Urban Forestry staff. Discussion will occur regarding what reports and corrective work are required to save or replace the tree(s) in question and successfully close out the project. Any mitigation and/or corrective work is to be completed by the applicant and may require a Public Works permit.

Summary:

Trees are dynamic living pieces of our infrastructure that contribute to our society on many levels. The many years of resources invested in urban forest planning, labor, irrigation, maintenance & resident support returns a long-lived green community. Invest time and critical thinking when designing new construction projects & developments. Page 17 represents a combination of planning, onsite critical thinking and collaboration with 3rd party arborists and the development community. Two hotels were constructed on the North side of the 5th Street & Colorado Ave intersection while also preserving most onsite trees.

To prevent this in advance please review additional references below:

Best Management Practices: Managing Trees During Construction
ISBN:978-1-881956-67-9

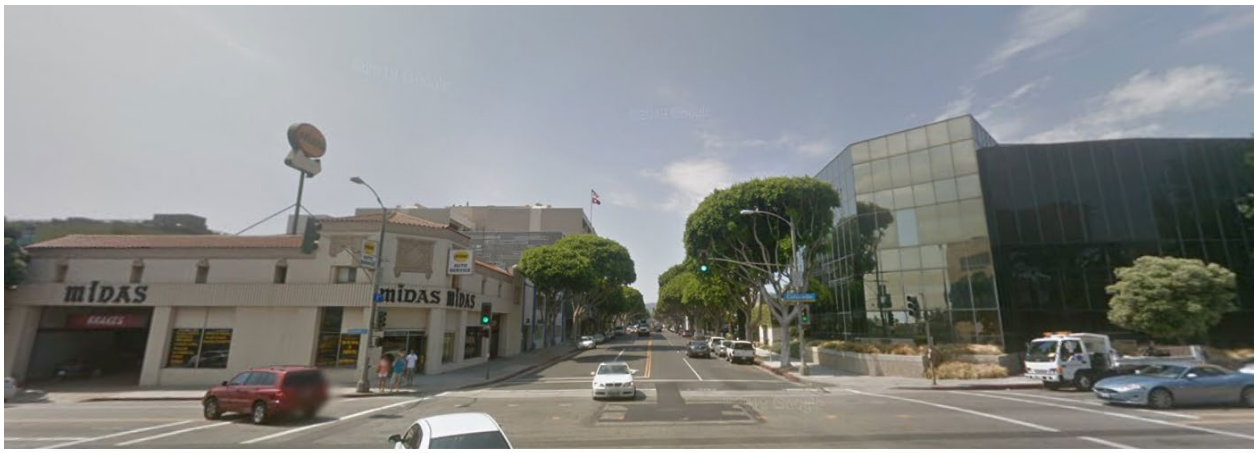
Best Management Practices: Tree Planting 2nd edition
ISBN:975-1-881956-84-6

ANSI A300 Part 6 2012

British Standard Institute. (1989). BS 4043:1989 Recommendations for Transplanting root-balled trees. London: British Standards Institute.
ISBN: 0-580-17144-2

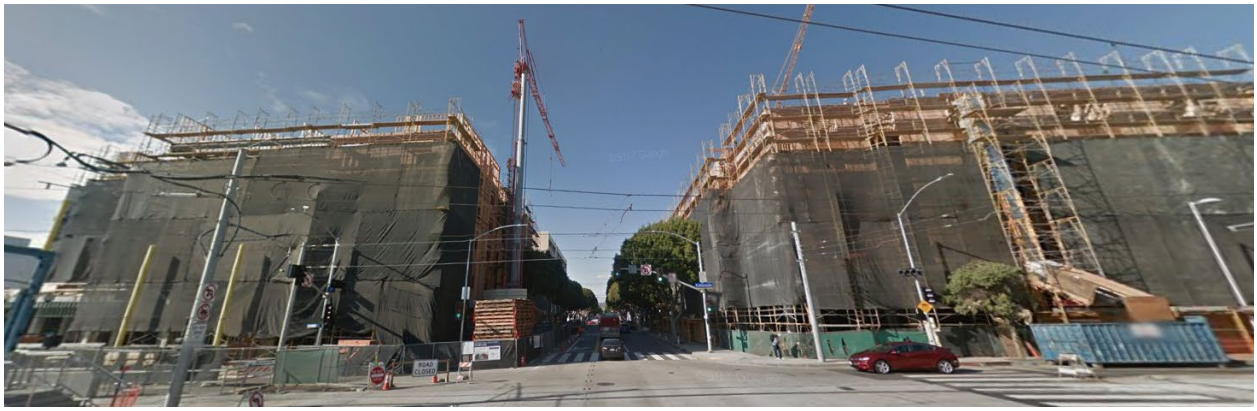
British Standard Institute. (2005). BS 5837:2005 Trees in relation to construction - Recommendations. London: British Standards Institute.
ISBN: 0-580-46418-0

2012

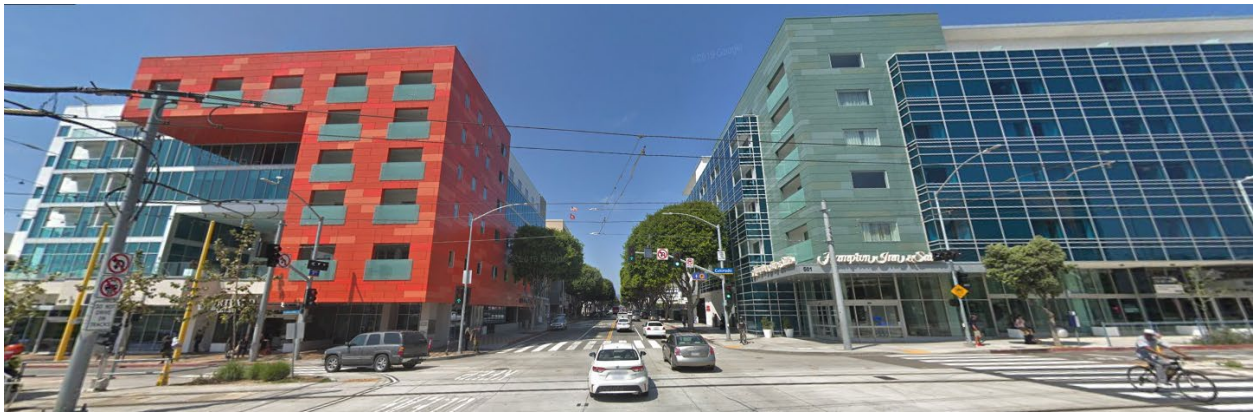


2015

2016



2019



Final signoff

All the planning and tree preservation during development has been ongoing. Once you are no longer receiving material deliveries and conducting final touches, the tree protection fences can come down. If any questions, please follow-up with Santa Monica Urban Forestry staff at Public.Landscape@santamonica.gov.

All the efforts can easily be lost on the final approaches toward final signoff during landscape retrofit and/or during scheduled sidewalk replacement. Plant healthcare treatments may be required pending site conditions and tree health status post construction. Concrete under the dripline should be removed either by hand or carefully with equipment while not operating or staging equipment under the dripline. Touch base with your Publics Works Inspector respective to compaction and base within the dripline. New parkway or tree well locations & dimensions should be confirmed with Santa Monica Urban Forest Staff in advance prior to setting forms.

Removal of any existing turf or existing landscape should be done by hand within the dripline to minimize impact to any tree roots. There should be no machine compaction within the critical root zone. Keep in mind fibrous tree roots can be impacted during turf layer removal or DG preparation. Artificial turf shall not be installed under the dripline. New landscape planning and installation is not to interfere with existing tree roots or other tree parts. Tree roots are not to be severed for new landscape installation. Consider mulch around the tree trunk area and utilize smaller plant material to minimize tree root impact. Relocate larger container material away from any discovered roots. Tree trunk flares should be exposed and not buried by any material. Tree canopies will not be thinned to accommodate for prescribed planting within the dripline. Drip irrigation should be enough to successfully water tree(s) pending species requirements and site conditions.

Standard Tree Protection Guidelines:

1. Applicant/contractor is defined as any parties involved in the planning, demolition, and construction of any work on the proposed project including subcontractors. It is the project manager's responsibility to contact the Public Landscape Division at 310-458-8974 or Public.Landscape@santamonica.gov about any work that may impact existing trees a minimum of one week in advance.
2. Trees within the jurisdiction of the City of Santa Monica are public assets. They may not be removed for any reason and are to be protected from injury or damage during all phases of demolition and construction. The applicant/contractor shall be responsible for the protection and preservation of all existing trees that are located completely or partially within but not limited to the contract limit line. Adjacent trees within proximity to the project may require protection. If construction is occurring via the alley, trees at the alley entrances may require protection.
3. If a healthy public tree is removed or destroyed, its loss will be accounted for by sufficient levels of replacement tree planting. Often, a replacement tree of a similar size as the one removed or destroyed cannot be planted as it would be impractical and/or cost prohibitive. As a result, the City of Santa Monica uses the Council of Tree & Landscape Appraisers methodologies for valuing trees. Unpermitted removals, accidental damage to trees that ultimately leads to the removal of trees and neglect to preserve trees that ultimately leads to the removal of trees within the jurisdiction of the City of Santa Monica will be valued and billed to the applicant. Signoff will be frozen until resolved. The contractor shall be assessed restitution for trees that are injured, irreparably damaged, destroyed or removed without authorization.
4. Any damage to existing trees during construction shall be the responsibility of the applicant/contractor. The applicant shall mitigate any damage at their expense to the satisfaction of the Public Landscape Division. Final signoff will not be approved until mitigation is resolved.
5. Approved tree removals are to be posted for public review and removed immediately after the review period provided there is no appeal. The applicant/contractor is responsible for confirming there is no appeal prior to the approved removal. Removal cost is included in approved removals.
6. Schedule an appointment with Public Landscape Division staff at 310-458-8974 to review any tree parts in conflict with construction. Pruning for construction clearance shall only be done by Public Landscape Division staff approval.
7. All public trees being preserved are to receive water per the City of Santa Monica guidelines for watering trees during a drought. Water shall not be pooled around the tree at any time.

8. Prior to the release of a demo or construction permit, the tree protection fence shall be made with six foot (6 ft) high chain link with fence posts in the ground. Tree wells may be marked to be expanded by applicant to best install tree protection fence prior to demo or proposed work. The fence is to be maintained throughout the entire duration of the project and is not to be removed without written permission from the Public Landscape Division. Contact Public Landscape Division staff at 310-458-8974 or Public.Landscape@santamonica.gov if there are any questions about determining the precise requirements of the tree protection fence. "Tree Protection Zone" signs can be picked up at 1601 14th St in Santa Monica.
9. Metal tree grates, cobblestones or other debris in the parkway are to be removed prior to tree protection fence installation.
   Apply three to four inches of mulch to the entire area inside the tree protection fence over the soil surface to reduce soil compaction, improve aeration, enhance moisture retention and reduce temperature extremes. Mulch generally consists of shredded leaves, bark, pine straw, peat moss and/or wood chips. Weeds and overgrown grass are to be mowed and/or removed prior to mulch installation and maintained throughout the project.
10. At no time shall any vehicles, equipment, supplies, materials, fill, or soil be allowed/stockpiled in the Tree Protection Zone.
11. In the case of tree protection deficiency, as identified by the Public Landscape Division, immediate remedy at the cost of the applicant/contractor is to be completed within the timeframe issued by the Public Landscape Division. Failure to correct the deficiency within the designated timeframe may result in a delayed final sign-off, stop work order, summons and/or fines.
12. Take note that the critical root zone may encroach on private property. This should be reviewed with the Public Landscape Division staff to minimize impact on existing tree roots during excavation.
13. The minimum distance between an open trench and any tree shall be between six inches (6") and one foot (1') for every inch of trunk diameter measured at four and a half feet (4 ½') above existing grade, depending on the species of tree. Minimum clearance shall be ten feet (10') from either the trunk of the tree or the dripline (whichever is greater).
14. Should it be necessary to trench within the dripline of a tree all trenches shall be done carefully with an air spade or by hand. If at any time twenty-five percent (25%) of the area within the critical root zone is being separated from the tree by a trench, then the line shall be either relocated or trenchless methods are to be used. No roots larger than two inches (2") shall be cut unless approved by urban forestry staff. All smaller roots that require cutting shall be cut with clean, sterile pruning tools. Cuts shall be made flush with the side of the trench.
15. The excavation area within the tree protection zone shall be backfilled immediately. Roots shall be kept moist by wrapping them with burlap and white plastic and checked a minimum of two times a day. Burlap shall be inspected

once in the morning and again in the afternoon. If directed, soaker hoses shall be installed to facilitate properly moist conditions.

16. If roots are to be exposed for a period greater than forty-eight (48) hours, the exposed area shall be covered with at least six (6) inches of mulch and maintained moist during the course of construction until the area can be properly backfilled. Periodic photos must be provided to Santa Monica Urban Forestry staff by the contractor or contracted certified arborist.
17. No runoff or spillage of noxious materials while mixing, placing or storing construction material shall occur within the tree protection zone. No ponding, eroding or excessive wetting caused by dewatering or equipment cleaning operations shall occur within the tree protection zone or critical root zone.
18. In the event root pruning is required to accommodate grade changes or the installation of hardscape features the root pruning procedures can be recommended by a consulting arborist but shall be directed by Santa Monica Urban Forestry staff.
19. Concrete should be left intact throughout the demolition and construction process to prevent further soil compaction on existing tree roots. Other work may be specified by Santa Monica Urban Forestry staff to be completed within a prescribed timeframe if required upon inspection.
20. Removal of hardscape and/or excavation within the TPZ shall be done manually. To best protect tree roots, the applicant shall exercise extreme care in removing concrete or asphalt within the dripline of existing trees. Pavement should be lifted rather than dragged. Any excavation within the dripline, on site as indicated shall be broken with pneumatic tools and removed by hand in the presence of the Santa Monica Urban Forestry staff or the contracted certified arborist with associated photos and report submitted to Santa Monica Urban Forestry staff. Applicant shall schedule appointments with Santa Monica Urban Forestry staff at least one week in advance.
21. If any vehicles are to pass over unpaved ground in conflict with the tree protection zone, the pathway will be covered with at least six (6) inches of course mulch/wood chips and covered with ¾ inch exterior plywood, ½ inch steel plates, ground protection mats or combination thereof, to abate soil compaction and root damage caused by heavy equipment. The plywood and/or steel plates shall be installed doubled up in a half lap configuration and staked or secured to prevent shifting. Such coverings shall be maintained during the course of construction and removed by hand or as specified by the contracted certified arborist or Santa Monica Urban Forestry staff. Associated photos shall be reported accordingly.
22. Fertilizer application to encourage root growth after the completion of all exterior work on the building prior to the parkway landscape phase is to occur. This could be granular or soil drench application. Your arborist can contact Santa Monica Urban Forestry staff for best direction.

3.5 PARKWAY LANDSCAPING GUIDELINES

Parkways, the area between the outside edge of the sidewalk and the inside edge of the curb (if any), are a component of the public right-of-way. The following guidelines are recommended for the design, installation and maintenance of landscapes in parkways in the City of Santa Monica. These recommendations are consistent with the City's Landscape Standards, Zoning Ordinance and Public Works Tree Code found in the Santa Monica Municipal Code (SMMC).

Parkway landscaping may present several challenges. There are issues of personal safety, vehicle safety, resource conservation, and efficient access for pedestrians and vehicles. Adjacent property owners are required to maintain parkways in good order according to the Santa Monica Municipal Code and other City policies, except the street trees, which are maintained by the City. The City is also responsible for all activities that impact the public right-of-way such as overhead or underground utilities, street trees, street lighting, bus stops and parking meters. The City may request for due reason, the removal of pedestrian obstructions, traffic dangers, as well as landscaping or irrigation that damages street trees, degrades roads and curbs or impedes storm drainage systems or access to fire hydrants.

The private property owner (and not the City) is responsible for the installation, maintenance and grooming of the parkway including all walkable surfaces and all landscaping. This includes keeping areas free of weeds, dead foliage and spent flowers, and maintaining walkable surfaces level without any differences in elevation sufficient to be a nuisance or a hazard to pedestrians. Maintenance may include keeping the interface between the sidewalk and parkway level to minimize risk of trip hazards and minor adjustment to the irrigation system as required to maintain plant & tree health. These maintenance activities would not require a permit. Street tree pruning, planting, and removal, however, is an activity that requires a Public Works Permit as per the City's Tree Code (7.40.110)

These guidelines apply to all parkways of the City of Santa Monica where any kind of retrofitting, modifications, or improvement of landscaping and/or irrigation takes place. Such landscape work should not impact existing City tree health when removing turf or other landscape features in preparation for such retrofit, modification, or improvement. This includes installation of new plant material with similar water requirements for optimal irrigation frequency and continued parkway health. All landscaping in a parkway must conform to state and local laws regarding the parkway. Modifications to the parkway must not violate any of these laws.

SANTA MONICA MUNICIPAL CODE (SMMC) SECTIONS RELATED TO LANDSCAPING IN THE PARKWAY:

Parkway landscaping must not create visual obstructions for pedestrians or drivers of vehicles. Plants within five (5') feet of a driveway or apron cannot exceed two (2') feet in height when fully mature. *See SMMC Section 9.04.10.02.090.*

The City prohibits the installation of stone, cement or any other substance that is deemed to impede the free access of water or air to the roots of any street tree or otherwise harm the health of the tree. Attaching wire, rope, swings, or any other object to any public tree is prohibited.

Planting or permitting to grow any vine or planting that would interfere with the growth or maintenance of any public tree is similarly prohibited. Banners, signs, playground equipment, benches, statuary, or water features should not be installed in the parkway. *See SMMC 7.40 for details*.

The City is committed to planting street trees in all viable parkway locations. Therefore, parkway landscaping must not impede or obstruct the installation or maintenance of new or existing street trees. The Public Landscape Division should be informed if parkway landscaping is proposed that may prevent the future planting of street trees, Property owners may be required to modify landscaping that obstructs street tree planting.

SMMC 8.108 Subpart B Green Building Ordinance's "Water-Efficient Landscape and Irrigation Standards" prohibits plant material, including lawn, within two (2') feet of the tree trunk. Plants that surround the trunk flare rob newly planted trees of nutrients and moisture and for mature trees can also create conditions for crown rot. This two (2') foot buffer also prevents trunk injury from lawn care equipment. Remove, by hand, any weeds that appear in the buffer zone to prevent further damage from weed removal equipment. Similarly, it is prohibited to place mulch within six (6") inches of the base of a tree. This includes decorative rock and gravel. Mounding any mulch upon the trunk of a tree may create vectors for pests and disease.

Irrigation systems in parkways must be designed and constructed in a manner to that will eliminate all overspray and surface runoff onto any impermeable surface, public or private, under any condition regardless of wind conditions. New irrigation systems that use standard sprinklers are not allowed in parkways. Existing systems with spray irrigation heads may be retrofitted with acceptable low flow rotary nozzles or drip irrigation. *See SMMC 7.16.020 c3 & 7.10.040 a1and SMMC 8.108 Subpart B.*

PARKWAY LANDSCAPE GUIDELINE CONSIDERATIONS:

Mulching and Grading

In general, the best strategy for cultivating healthy street trees is to remove competition from other plants and eliminate unnatural conditions that harm the tree roots which extend from the trunk out to the canopy edge. The area under of the canopy of the tree should have little to no plant material in it at all. Instead this area should be covered in organic wood chip mulch only. There are many benefits to this including water savings during the summer months, prevention of soil crusting and irrigation run-off, protection of the feeder roots that grow just under the soil surface, slow decomposition of mulch into organic fertilizer and maintaining a clean, finished look. As mulch encourages healthy root growth and enhances soil condition, this increases a tree's resistance to drought conditions. Use 3-4 inches of wood chips depending on the shape and grade of the parkway.

Rock or gravel in place of mulch as well as artificial turf or other plastic/rubber mulches are strongly discouraged. These products create problems for street cleaning, sidewalk repair, root pruning and they also tend to increase the heat in the area of the soil where most of the tree roots occupy. If using decomposed granite (DG), please use a hand tamper if working within the critical root zone and minimize the use of

stabilizer or binding products that impede the flow of water to the tree roots. The proper installation of decomposed granite also requires the removal of several inches of soil, which in many cases would result in harm to the street tree root structure so care should be taken that DG is installed only in areas (ideally at or outside tree dripline) that minimize root disturbance. Clearing of any material within the critical root zone should be carefully done by hand preserving the existing root system.

Parkway hardscape materials should be maintained in good repair and on grade flush with the adjacent sidewalk and/or curb to minimize slipping and tripping hazards. Materials such as mulch or decomposed granite should be maintained so that materials are kept off the adjacent street, sidewalks, walkways, and driveways. Mulch, decomposed granite, or other materials should be replenished as required to maintain a finished grade that is in plane with the adjacent curb or sidewalk. Bear in mind that sometimes the root structure of the tree makes an even grading infeasible.

Access

On wider parkways and where feasible, a step-out strip (a uniform, firm walking surface from the curb edge inward) for passengers to enter and exit vehicles parked at the curb may be installed. Step-out strips should be at least 18 inches in width and at least 36" long and line up with the existing adjacent parking spaces. Step out strips may extend the full length of the parkway. Step-out strips are not recommended adjacent to red curbs or where roots of existing street trees conflict with construction of a step-out strip, making the required dimensions impossible or impractical. Similarly, where feasible, the landscape design of a parkway may include an access way for the purpose of pedestrian access to vehicles parked at the curb. Locate access ways as far from the trunk of the tree as possible. If included, access ways should be at least three feet in width and at most five feet in width, and provide a firm, uniform walking surface in all weather conditions from the curb to the sidewalk. The irregular root systems found above the soil surface in some parkways are crucial to tree stability but often provide limited areas for step-out strips or access ways with the required dimensions. Step-out strips or access ways should be constructed of permeable paving or groundcover plant material. Pavers should be set in compacted sand, topsoil, or decomposed granite.

Plants

In Santa Monica, reducing the use of lawns or turf grass reduces water use and reduces greenhouse gases generated by gas powered lawn care equipment. However, removing turf from under a tree will be a major change in a tree's growing environment, as will the reduction or elimination of existing irrigation. Trees that have been growing in an irrigated turf setting have become accustomed to the consistent moisture that is in the top 4" – 6"of the topsoil, which is also where a majority of fibrous trees roots will be growing. As a result, starving the lawn of water prior to removing the turf can actually impose a negative effect on certain tree species. It is also imperative to replace the turf with wood chip mulch so the tree roots are not exposed to undo harm. It is also recommended that some irrigation or water is still provided to City trees for

at least the first two years after the turf has been removed. The City's 'How to Help Urban Trees Survive a Drought' is a valuable resource for learning more on this vitally important topic.

Plant material should only be installed outside of the tree canopy and should not present a danger to public egress. For example, plants with sharp, pointy protrusions such as needles or thorns, should not be planted (i.e. agave, cactus, bougainvillea, roses). Vines such as ivy and other plant material that may present a tripping hazard should not be planted. Plants should not exceed three (3') feet in height. Plants should not form a continuous hedge, screen or solid raised mass at maturity. Low growing California native and/or Mediterranean plants requiring little or no irrigation are preferred. Parkway plant materials adjacent to paved surfaces should not obstruct or infringe upon sidewalk areas, driveways, walkways, or curb areas.

Irrigation

When installing an irrigation system, it is important not to damage the roots of any existing street trees. In some cases, the roots of a street tree may occupy all or a large portion of the parkway making installation of an irrigation system impractical. Permanently installed irrigation of plant material in parkways is not required. Drip irrigation or hand-watering is preferred where irrigation is needed. Irrigation for shrubs, groundcover and turf nearby should be designed to prevent the irrigation water from wetting the trunk of the tree. It should also apply water so that both the rootball of the tree and the surrounding soil receive water. Irrigation should not be placed directly on the base of a tree.

Watering needs of a street tree vary based on the size and age of the tree. In some cases, a dedicated irrigation system is not necessary. Younger trees require supplemental irrigation for the first 3-5 years then occasional watering thereafter pending species. See the City's 'How to Help Urban Trees Survive a Drought' for guidelines of watering street trees.

Parkway irrigation systems including existing spray heads, drip lines, risers, and lateral lines should be maintained in good condition, free of leaks and operating at peak efficiency. Frequency should be adjusted to accommodate existing tree requirements.

HOW TO HELP URBAN TREES SURVIVE A DROUGHT

URBAN TREE CARE

City of
Santa Monica®

City of Santa Monica
Public Works Department
Public Landscape Division
Urban Forest
(310) 458-8974
public.landscape@santamonica.gov
www.santamonicatrees.com

INTRODUCTION

The City of Santa Monica has over 33,000 street and park trees. A 2015 research study by the U.S. Forest Service calculated these trees annually deliver $5.1 million dollars worth of benefits to the community by cleaning the air, increasing property value, and reducing energy use among others.

Trees are an essential element of the City and need assistance during a drought. The two most important influences on an urban tree are the availability of adequate water and nutrients. A lack of water can cause high levels of stress and increased susceptibility to disease and is one of the primary causes of death.

It is always important to conserve water, but even more so during a drought. However, when we reduce watering our landscapes to save water, it is very important to ensure that associated trees continue to receive water as it:

- Cools the tree through transpiration and transports nutrients from the soil throughout the tree
- Supports healthy growth
- Helps defend the tree from pests and disease

Yet, too much water can be wasteful and harm trees. This guide shares recommendations based on science, research and industry best practices to help you determine the right amount of water for trees and provides information on how you can help trees survive a drought. By using this information, arranged in the four steps below, you will help Santa Monica conserve water and have healthy trees long into the future.

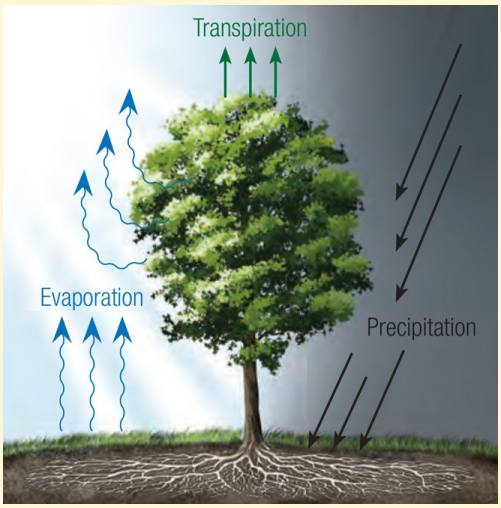


Photo credit: Arbor Day Foundation

Four Steps To Help Urban Trees Survive A Drought

Step 1: Identify Drought Symptoms

Step 2: Improve Drought Tolerance

Step 3: Water if Needed

Step 4: Monitor and Adjust to Save Water

Step 1: Identify Drought Symptoms

Signs of Drought Stress

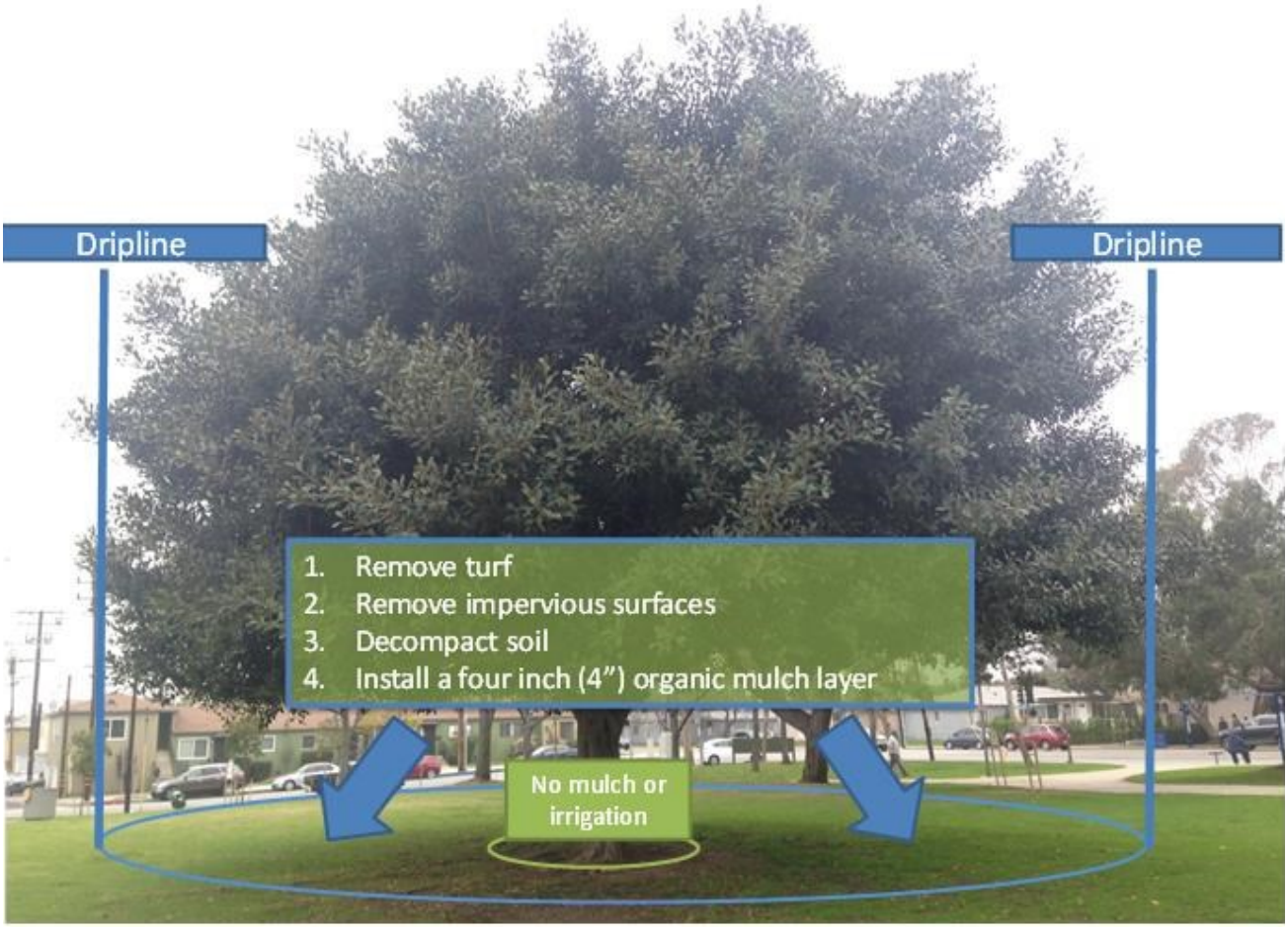
- Wilting of leaves and shoots (photo 1)
- Fewer deep green leaves (photos 2 & 3)
- Smaller than normal leaves (photos 2 & 3)
- Early leaf drop and thinning canopy (photos 2 & 3)
- Browning of leaf edges (all photos)

Photo 1: The young Catalina Ironwood tree above shows drought stress with wilting and browning foliage.

Photo 2: The Magnolia tree above has a thin canopy with smaller than usual and browning leaves.

Photo 3: Shown above is the same tree in June 2011 (left) and again in August 2014 (right). The apparent removal of irrigation has had a negative impact on this tree over a three year period.

Step 2: Improve Drought Tolerance



Steps to Improve a Tree's Drought Tolerance

1. Remove turf (lawn/grass) under the dripline, the area below a tree canopy extending to the outer edge. Turf competes for soil moisture. For tips on turf removal, you can refer to page 86 of the Santa Monica Urban Forest Master Plan (www.santamonicatrees.com).
2. If possible, remove impervious surfaces (not allowing fluid to pass through), such as concrete or artificial turf, under the dripline because they impair the movement of water, nutrients, and air into the soil.
3. Decompact the soil within the dripline using a garden fork (left photo). This adds holes that create air circulation within the soil. Tree care professionals can also do this with an air tool or auger.
4. Install four inches of organic mulch, such as wood chips, grass clippings or straw, under the dripline. Organic mulch improves root growth and soil condition, reduces weeds, and reduces the need for water by conserving moisture. Organic mulch can be obtained for free or for a low cost through local resources (do an internet search for your area) or purchased from tree care companies or retailers.

DO NOT….

- **Cut or damage tree roots.**
- **Install an impervious surface, such as concrete or artificial turf, directly under the tree's canopy.**
- **Remove or turn off turf irrigation that is also watering a tree. Slowly reduce the amount of irrigation, or replace it with other watering methods (see next page).**

Step 3: Water if Needed - Watering Tools

Recommended Watering Tools to Conserve Water

This guide categorizes watering by young trees (five years old and younger) and mature trees (older than five years), which you will find on the next pages. The tools below can be used to water both types of trees in ways that use water smartly. However, we recommend that a raised mound, also know as a swale, or water bags be used to water young trees. The next page illustrates this further.

Frequent but short watering will only provide moisture to the top few inches of soil. Therefore, **longer and less frequent watering is more beneficial to trees because the moisture can penetrate to the depth of 18 to 24 inches,** which is often described as deep watering, beneath as much of the dripline as possible. How to measure soil moisture depth is described on page 8.

- **A soaker hose (right photo)**, available at home improvement stores, coiled several times in a spiral within the tree's dripline. The hose or tubing can be covered using mulch.
- **Tree water bags (photos below)**, also available at home improvement stores or internet retailers, generally hold 20 gallons of water and slowly water a tree over a period of hours.

Example: How to water a tree's dripline with a soaker hose. Similar to the dripline illustration on page 4, the soaker hose is coiled in the dripline area of this young tree. Water is delivered to the tree's roots by the coil and not applied directly to the tree trunk base. It is normal for the water to spread and cover the entire area as it percolates deep into the soil.

- **A drip irrigation system** installed in compliance with the City's **"**Water-Efficient Landscape and Irrigation Standards.**"**
- **Water by hand using a garden hose with a shower head attachment**. A shower head attachment for a hose helps conserve water by reducing surface runoff. With this method, you would preferably spread water equally throughout the area under the dripline. To calculate the time needed to water a tree sufficiently with a hose and shower head attachment, measure the time it takes to fill a bucket with water in this manner. For example, if it takes two minutes to fill a five gallon bucket, it will take four minutes to provide 10 gallons of water, and eight minutes to deliver 20 gallons of water.

Photo 1: Young trees being watered using a soil swale. The swale is approximately equal to the dripline of the tree.

Photo 2: Young trees being watered using a mulch swale. The swale is approximately equal to the dripline of the tree.

Photo 3: A 20 gallon tree water bag.

Step 3: Water if Needed-Young Trees

Helping Young Trees During a Drought

Young trees are those that have been planted within the last five years. They are particularly dependent on water for a couple of reasons. First, they often have compromised root systems that need to develop. And prior to planting, they live in a tree nursery and receive regular and highly monitored irrigation. They must become slowly accustomed to not receiving this type of watering as they grow and adapt to an urban environment.

How Much Water & How Often?

The amount of water and watering frequency needed for young trees is outlined in the table below.

Recommended Watering Frequencies and Amounts for Young Trees	
April to October (Warmer Months)	**November to March (Cooler Months)**
Weekly	**Twice a Month**
10-20 Gallons	**10-20 Gallons**

How to Water a Young Tree

The key to watering a young tree is to let the water slowly soak into the soil around the tree. There are two recommended methods to do this if irrigation is not already installed. One is to create a raised mound, or swale, around the tree by creating a berm.

- The berm could be of soil (photo 1) or organic mulch (photo 2). The swale's berm should be about three inches high and be as wide as the dripline.
- Fill the swale with water. After it has all drained into the soil, fill the swale again and allow it to drain once more.

The second recommended way to water a young tree is to install a tree water bag as shown in photo 3.

Step 3: Water if Needed-Mature Trees

Helping Mature Trees During a Drought

Mature trees need more water than young trees as they have a higher leaf surface area and a larger root system. They are often able to find the water they require, but during a drought, supplemental watering may be required. Use the signs of drought stress to determine this. Urban Forest staff can help with public trees (those in parks and parkways/along streets) by submitting a request through the City's Government Outreach (GO) Customer Service Center.

How Much Water Does a Mature Tree Need?

A general rule is to provide 10 gallons of water, preferably spread equally throughout the area under the dripline, per inch of trunk diameter. The trunk diameter should be measured at four and a half feet from ground level as shown in the photographs to the right. This tree has a trunk diameter of nine inches and therefore needs about 90 gallons at each watering. **It is recommended that 160 gallons is the maximum amount of water provided to a tree, even if its trunk diameter exceeds 16 inches, to avoid wasting water**. Palm trees would be excluded from this rule because their trunk diameter is not related to their size. If a palm tree shows drought stress, it is recommended that those less than 20 feet high are provided 20 gallons of water and those taller are provided 50 gallons per the watering frequencies below.

To water larger trees, you can refill the same water bag until the desired amount of water is reached or connect multiple water bags. If the trees are too large for water bags, try attaching them to multiple stakes under the dripline. Watering under the dripline allows for good water absorption.

Watering Frequency for Mature Trees

Different tree species require different watering frequencies defined as **minimal**, **moderate**, and **high**. Watering frequency recommendations per common species in Santa Monica can be found in the Appendix of this document (page 9). A number of mobile apps and websites exist to help identify tree species. An internet search for "how to identify trees" is one way to assist you in identification. Urban Forest staff can help identify public trees by submitting a request through the City's Government Outreach (GO) Customer Service Center. **If the tree species is unknown, the "minimal" watering frequency is recommended.**

Recommended Watering Frequency Based on Species	April to October (Warmer Months)	November to March (Cooler Months)
Minimal	Twice a Month	None, Once Established*
Moderate	Three Times a Month	Once a Month
High	Weekly	Twice a Month

**once established means trees over five years old*

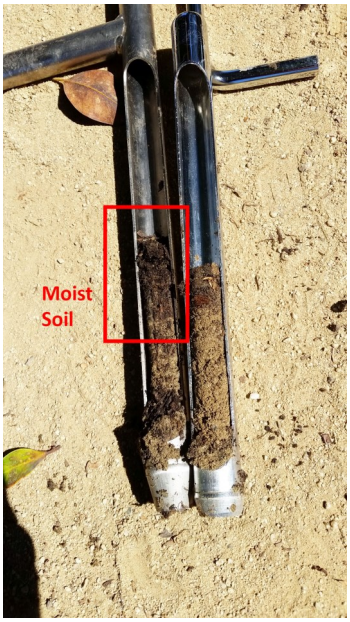
Step 4: Monitor and Adjust to Save Water

After water is provided consistently and in the proper amounts, a tree's appearance should improve. The aim of watering is to provide soil moisture to a depth of 18 to 24 inches beneath as much of the tree canopy, or dripline, as possible (refer to page 4). You can monitor and adjust water use by measuring soil moisture. Soil moisture can be measured by driving a screwdriver six to 12 inches into the soil. If the soil is dry and breaks easily, then it needs water. You can also measure soil moisture using a soil probe (see photos below) available at home improvement stores. A soil probe provides additional information on soil moisture and soil compaction.

A soil probe is used throughout the dripline one to two hours after watering. The soil probe should penetrate into the soil to a depth of 12 inches fairly easily. The soil should feel slightly damp and be darker in color. If the soil is resistant, additional soil decompaction might be necessary. For more information on soil probes see: https://extension.usu.edu/files/publications/publication/HG-518.pdf.

Continued monitoring of a tree's health is essential. If the tree continues to exhibit drought stress signs, consider the frequency and/or watering volume by using the tools described earlier in this guide. Another consideration is the level of nutrients being provided to the tree.

Standard soil probe found at home improvement stores.



Two soil probes. The probe on the left shows moist soil penetration to about 2" inches depth, while the one of the right shows dry soil.

How to use a soil probe.

Appendix: Watering Frequencies for Mature Trees

Recommended Watering Frequency Based on Species	April to October (Warmer Months)	November to March (Cooler Months)
Minimal	Twice a Month	None, Once Established
Moderate	Three Times a Month	Once a Month
High	Weekly	Twice a Month

Common Name	Botanical Name	Irrigation Requirements
ACACIA	Acacia spp.	None, once established
ALEPPO PINE	Pinus halepensis	Minimal
ALEXANDRA PALM	Archontophoenix alexandrae	Minimal
ALMOND	Prunus amygdalus	Moderate
AMERICAN PERSIMMON	Diospyros virginiana	Moderate
AMERICAN SWEETGUM	Liquidambar styraciflua	Moderate
AMERICAN SYCAMORE	Platanus occidentalis	Moderate
APRICOT	Prunus armeniaca	Moderate
ARIZONA ASH	Fraxinus velutina	Minimal
ASH ARIZONA	Fraxinus velutina 'Dr Pironne'	Minimal
ASH GUM	Eucalyptus cinerea	Minimal
ATLAS CEDAR	Cedrus atlantica	Minimal
AUSTRALIAN TEA TREE	Leptospermum laevigatum	Minimal
AUSTRALIAN WILLOW	Geijera parviflora	Minimal
AVOCADO	Persea americana	Moderate
BAILEY ACACIA	Acacia baileyana	None, once established
BANANA	Musa spp.	High
BIDWILLS CORAL TREE	Erythrina bidwillii	Moderate
BIRCH	Betula spp.	Moderate
BLACK ACACIA	Acacia melanoxylon	None, once established
BLUE GUM	Eucalyptus globulus	Minimal
BOTTLE TREE	Brachychiton populneus	Minimal
BRAZILIAN PEPPER	Schinus terebinthifolius	Minimal
BRISBANE BOX	Lophostemon confertus	Minimal
BRONZE LOQUAT	Eriobotrya deflexa	Moderate
BRUSH CHERRY	Syzygium paniculatum	Moderate
BUNYA-BUNYA	Araucaria bidwillii	Moderate
CAJEPUT TREE	Melaleuca quinquenervia	Minimal
CALABRIAN PINE	Pinus brutia	Minimal
CALIFORNIA BAY	Umbellularia californica	None, once established
CALIFORNIA BLACK WALNUT	Juglans hindsii	None, once established
CALIFORNIA FAN PALM	Washingtonia filifera	None, once established
CALIFORNIA PEPPER	Schinus molle	Minimal
CALIFORNIA SYCAMORE	Platanus racemosa	Moderate
CAMPHOR TREE	Cinnamomum camphora	Minimal
CANARY ISLAND DATE PALM	Phoenix canariensis	Minimal
CANARY ISLAND PINE	Pinus canariensis	Minimal
CAPE CHESTNUT	Calodendrum capense	Moderate
CAPE PITTOSPORUM	Pittosporum viridiflorum	Moderate
CARIBBEAN COPPER TREE	Euphorbia cotinifolia	Minimal
CAROB	Ceratonia siliqua	Minimal
CAROLINA LAUREL CHERRY	Prunus caroliniana	Moderate
CARROTWOOD	Cupaniopsis anacardioides	Minimal
CATALINA CHERRY	Prunus lyonii	Moderate
CEDAR	Cedrus spp.	Minimal
CEDAR WEEPING	Cedrus atlantica 'Pendula'	Minimal
CHERRY MT FUJI	Prunus 'Mt Fuji'	Moderate
CHESTNUT	Castanea spp.	Minimal
CHINA DOLL	Radermachera sinica	Moderate

Appendix: Watering Frequencies for Mature Trees

Recommended Watering Frequency Based on Species	April to October (Warmer Months)	November to March (Cooler Months)
Minimal	Twice a Month	None, Once Established
Moderate	Three Times a Month	Once a Month
High	Weekly	Twice a Month

Common Name	Botanical Name	Irrigation Requirements
CHINESE ELM	Ulmus parvifolia	Moderate
CHINESE FLAME TREE	Koelreuteria bipinnata	Moderate
CHINESE FRINGE TREE	Chionanthus retusus	Moderate
CHINESE JUNIPER	Juniperus chinensis	Minimal
CHINESE PISTACHE	Pistacia chinensis	None, once established
CLUSTER PINE	Pinus pinaster	Minimal
COAST LIVE OAK	Quercus agrifolia	Minimal
COAST REDWOOD	Sequoia sempervirens	High
COCKSPUR CORAL TREE	Erythrina crista-galli	Moderate
CORAL GUM	Eucalyptus torquata	Minimal
CORAL TREE	Erythrina spp.	Moderate
CORK OAK	Quercus suber	Minimal
CORKSCREW WILLOW	Salix matsudana 'Tortuosa'	Moderate
CRAPE MYRTLE	Lagerstroemia indica	Minimal
CRAPE MYRTLE	Lagerstroemia indica 'Muskogee'	Minimal
CRAPE MYRTLE TUSCARORA	Lagerstroemia indica 'Tuscarora'	Minimal
CROWN OF GOLD TREE	Cassia excelsa	Minimal
CUBAN ROYAL PALM	Roystonea regia	Moderate
CYPRESS	Cupressus spp.	Minimal
DATE PALM	Phoenix dactylifera	Moderate
DATE PALM	Phoenix loureri	Moderate
DEODAR CEDAR	Cedrus deodara	Minimal
DESERT GUM	Eucalyptus rudis	Minimal
DRACAENA	Cordyline australis	Moderate
DRAGON TREE	Dracaena draco	Moderate
DRAKE ELM	Ulmus parvifolia 'Drake'	Moderate
DROOPING MELALEUCA	Melaleuca armillaris	Minimal
DROOPING SHE-OAK	Casuarina stricta	Minimal
EASTERN REDBUD	Cercis canadensis	Minimal
EDIBLE APPLE	Malus sylvestris	Moderate
EDIBLE FIG	Ficus carica	Moderate
EDIBLE LOQUAT	Eriobotrya japonica	Moderate
EUCALYPTUS	Eucalyptus spp.	Minimal
EUROPEAN WHITE BIRCH	Betula pendula	Moderate
EVERGREEN PEAR	Pyrus kawakamii	Moderate
FERN PINE	Podocarpus gracilior	Moderate
FERN-LEAF CATALINA IRONWOOD	Lyonothamnus floribundus	Minimal
FICUS ALII	Ficus 'Alii'	Moderate
FIG	Ficus spp.	Moderate
FIREWHEEL TREE	Stenocarpus sinuatus	Moderate
FLOODED GUM	Eucalyptus grandis	Minimal
FLOWERING PLUM	Prunus blireiana	Moderate
FOXTAIL PALM	Wodyetia bifurcata	Moderate
FRUITING PEAR	Pyrus communis	Moderate
GIANT BIRD OF PARADISE	Strelitzia nicolai	Moderate
GIANT SEQUOIA	Sequoiadendron giganteum	High
GIANT YUCCA	Yucca elephantipes	None, once established
GINKGO AUTUMN GOLD	Ginkgo biloba 'Autumn Gold'	Minimal
GOLD MEDALLION TREE	Cassia leptophylla	Minimal

Appendix: Watering Frequencies for Mature Trees

Recommended Watering Frequency Based on Species	April to October (Warmer Months)	November to March (Cooler Months)
Minimal	Twice a Month	None, Once Established
Moderate	Three Times a Month	Once a Month
High	Weekly	Twice a Month

Common Name	Botanical Name	Irrigation Requirements
GOLDEN TRUMPET TREE	Tabebuia chrysotricha	Moderate
GOLDENRAIN TREE	Koelreuteria paniculata	Moderate
GREEN GEM INDIAN LAUREL FIG	Ficus microcarpa 'Green Gem'	Moderate
GREEN WATTLE	Acacia decurrens	None, once established
GUADALUPE PALM	Brahea edulis	Minimal
HACKBERRY	Celtis spp.	Minimal
HEATH MELALEUCA	Melaleuca ericifolia	Minimal
HOLLY OAK	Quercus ilex	Minimal
HOLLYWOOD JUNIPER	Juniperus chinensis 'Torulosa'	Minimal
HONG KONG ORCHID TREE	Bauhinia blakeana	Minimal
HOPSEED	Dodonaea viscosa	Minimal
INCENSE CEDAR	Calocedrus decurrens	None, once established
INDIAN LAUREL FIG	Ficus microcarpa 'Nitida'	Moderate
ITALIAN ALDER	Alnus cordata	Moderate
ITALIAN CYPRESS	Cupressus sempervirens	Minimal
ITALIAN STONE PINE	Pinus pinea	Minimal
JACARANDA	Jacaranda mimosifolia	Minimal
JAPANESE BLACK PINE	Pinus thunbergiana	Minimal
JAPANESE CEDAR	Cryptomeria japonica	Moderate
JAPANESE FLOWERING CHERRY	Prunus serrulata	Moderate
JAPANESE MAPLE	Acer palmatum	Moderate
JAPANESE RED PINE	Pinus densiflora	Minimal
JUNIPER	Juniperus spp.	Minimal
KAFFIR PLUM	Harpephyllum caffrum	Minimal
KAFFIRBOOM CORAL TREE	Erythrina caffra	Moderate
KARO	Pittosporum crassifolium	Moderate
KING PALM	Archontophoenix cunninghamiana	Minimal
LAURUSTINUS	Viburnum tinus	Moderate
LEMON	Citrus limon	Moderate
LEMON BOTTLEBRUSH	Callistemon citrinus	Minimal
LEMON-SCENTED GUM	Eucalyptus citriodora	Minimal
LEYLAND CYPRESS	Cupressocyparis leylandii	Moderate
LOMBARDY POPLAR	Populus nigra 'Italica'	Moderate
LONDON PLANE	Platanus acerifolia	Moderate
LONDON PLANE BLOODGOOD	Platanus acerifolia 'Bloodgood'	Moderate
LONG-LEAFED YELLOWWOOD	Podocarpus henkelii	Moderate
MAGNOLIA SAMUEL SOMMER	Magnolia grandiflora 'Samuel Sommer'	Moderate
MAIDENHAIR TREE	Ginkgo biloba	Minimal
MAJESTY PALM	Ravenea rivularis	Moderate
MANNA GUM	Eucalyptus viminalis	Minimal
MAYTEN TREE	Maytenus boaria	Moderate
MEDITERRANEAN FAN PALM	Chamaerops humilis	Moderate
MEXICAN BLUE PALM	Brahea armata	Minimal
MEXICAN FAN PALM	Washingtonia robusta	None, once established
MOCK ORANGE	Pittosporum tobira	Moderate
MODESTO ASH	Fraxinus velutina 'Modesto'	Minimal
MONTEREY CYPRESS	Cupressus macrocarpa	Minimal
MONTEREY PINE	Pinus radiata	Minimal
MONTEZUMA CYPRESS	Taxodium mucronatum	None, once established

Appendix: Watering Frequencies for Mature Trees

Recommended Watering Frequency Based on Species	April to October (Warmer Months)	November to March (Cooler Months)
Minimal	Twice a Month	None, Once Established
Moderate	Three Times a Month	Once a Month
High	Weekly	Twice a Month

Common Name	Botanical Name	Irrigation Requirements
MORETON BAY FIG	Ficus macrophylla	Moderate
MYOPORUM	Myoporum laetum	None, once established
NAKED CORAL TREE	Erythrina coralloides	Moderate
NEW ZEALAND CHRISTMAS TREE	Metrosideros excelsus	Minimal
NICHOL'S WILLOW LEAFED PEPPERMINT	Eucalyptus nicholii	Minimal
NORFOLK ISLAND PINE	Araucaria heterophylla	Moderate
OLEANDER	Nerium oleander	Minimal
OLIVE	Olea europaea	Minimal
ORANGE	Citrus sinensis	Moderate
ORIENTAL ARBORVITAE	Platycladus orientalis	Moderate
ORIENTAL SWEETGUM	Liquidambar orientalis	Moderate
ORNAMENTAL PEAR	Pyrus calleryana	Moderate
PAPER MULBERRY	Broussonetia papyrifera	Minimal
PEACH	Prunus persica	Moderate
PEPPERMINT TREE	Agonis flexuosa	Minimal
PINCUSHION TREE	Hakea laurina	None, once established
PINDO PALM	Butia capitata	Moderate
PINEAPPLE GUAVA	Feijoa sellowiana	Moderate
PINK BOTTLEBRUSH	Callistemon citrinus 'Violaceus'	Moderate
PINK MELALEUCA	Melaleuca nesophila	Minimal
PINON PINE	Pinus edulis	Minimal
PITTOSPORUM	Pittosporum spp.	Moderate
PLUM	Prunus domestica	Moderate
PLUME ALBIZIA	Albizia distachya	None, once established
PODOCARPUS NAGI	Podocarpus nagi	Moderate
PRIMROSE TREE	Lagunaria patersonii	Minimal
PURPLE ORCHID TREE	Bauhinia variegata	Minimal
PURPLE-LEAF PLUM	Prunus cerasifera	Moderate
PYGMY DATE PALM	Phoenix roebelenii	Moderate
QUEEN PALM	Syagrus romanzoffianum	Moderate
QUEENSLAND PITTOSPORUM	Pittosporum rhombifolium	Moderate
QUEENSLAND UMBRELLA TREE	Schefflera actinophylla	Moderate
RED BAY	Persea borbonia	Moderate
RED CLUSTERBERRY	Cotoneaster lacteus	Minimal
RED FLOWERING GUM	Eucalyptus ficifolia	Minimal
RED GUM	Eucalyptus camaldulensis	Minimal
RED IRONBARK	Eucalyptus sideroxylon	Minimal
RIVER SHE-OAK	Casuarina cunninghamiana	Minimal
ROUGH-SHELL MACADAMIA	Macadamia tetraphylla	Moderate
ROUND-LEAFED SWEETGUM	Liquidambar styraciflua 'Rotundiloba'	Moderate
RUBBER TREE	Ficus elastica	Moderate
RUSTY LEAF FIG	Ficus rubiginosa	Moderate
SENEGAL PALM	Phoenix reclinata	Moderate
SHAMEL ASH	Fraxinus uhdei	Minimal
SIBERIAN ELM	Ulmus pumila	Moderate
SILK OAK	Grevillea robusta	Minimal
SILK TREE	Albizia julibrissin	Minimal
SILK-FLOSS TREE	Chorisia speciosa	Minimal
SILVER DOLLAR GUM	Eucalyptus polyanthemos	Minimal

Appendix: Watering Frequencies for Mature Trees

Recommended Watering Frequency Based on Species	April to October (Warmer Months)	November to March (Cooler Months)
Minimal	Twice a Month	None, Once Established
Moderate	Three Times a Month	Once a Month
High	Weekly	Twice a Month

Common Name	Botanical Name	Irrigation Requirements
SILVER MAPLE	Acer saccharinum	Moderate
SKY FLOWER	Duranta repens	Moderate
SOUTH AMERICAN ROYAL PALM	Roystonea oleracea	Moderate
SOUTHERN LIVE OAK	Quercus virginiana	Minimal
SOUTHERN MAGNOLIA	Magnolia grandiflora	Moderate
SPANISH DAGGER	Yucca gloriosa	None, once established
SPOTTED GUM	Eucalyptus maculata	Minimal
STAR PINE	Araucaria columnaris	Moderate
STRAWBERRY GUAVA	Psidium cattleianum	Moderate
STRAWBERRY TREE	Arbutus unedo	Minimal
SUGAR GUM	Eucalyptus cladocalyx	Minimal
SWEET BAY	Laurus nobilis	Minimal
SWEETGUM	Liquidambar styraciflua	Moderate
SWEETSHADE	Hymenosporum flavum	Moderate
TEA TREE	Leptospermum spp.	Minimal
TIPU	Tipuana tipu	Moderate
TOMLINSON ASH	Fraxinus uhdei 'Tomlinson'	Minimal
TORREY PINE	Pinus torreyana	Minimal
TRIANGLE PALM	Neodypsis decaryi	Moderate
TRINIDAD FLAME BUSH	Calliandra tweedii	None, once established
TRUE MYRTLE	Myrtus communis	Minimal
TULIP TREE	Liriodendron tulipifera	Moderate
TUPIDANTHUS	Tupidanthus calyptratus	Moderate
VICTORIAN BOX	Pittosporum undulatum	Moderate
WATER GUM	Tristaniopsis laurina	None, once established
WATKINS FIG	Ficus watkinsiana	Moderate
WEEPING BOTTLEBRUSH	Callistemon viminalis	Moderate
WEEPING FIG	Ficus benjamina	Moderate
WEEPING INDIAN LAUREL FIG	Ficus microcarpa	Moderate
WESTERN REDBUD	Cercis occidentalis	Minimal
WHITE ALDER	Alnus rhombifolia	Moderate
WHITE IRONBARK	Eucalyptus leucoxylon	Minimal
WHITE MULBERRY	Morus alba	Moderate
WHITE POPINAC	Leucaena glauca	Minimal
WHITE POPLAR	Populus alba	Moderate
WHITE SAPOTE	Casimiroa edulis	Moderate
WILLOW PITTOSPORUM	Pittosporum phillyreoides	Moderate
WINDMILL PALM	Trachycarpus fortunei	Moderate
XYLOSMA	Xylosma congestum	Moderate
YATE	Eucalyptus cornuta	Minimal
YELLOW OLEANDER	Thevetia peruviana	Minimal
YEW PINE	Podocarpus macrophyllus	Minimal
YUCCA	Yucca spp.	None, once established

3.7 TREE RISK MANAGEMENT

Introduction

The Public Landscape Division strives to maximize the environmental benefits delivered to the community by the urban forest while minimizing the associated risks to an acceptable level. To achieve this goal, a Tree Risk Management protocol has been implemented. This program is a strategic method to mitigate tree risk in the City of Santa Monica by assessing hazards prior to failure (dead trees, hanging limbs and deadwood). Not all tree parts are able to be inspected using this method. The Tree Risk Management program will run simultaneously with the City's tree pruning program. In addition, members of the public will have the ability to submit requests through the SM Works Government Outreach Request System.

The delivery of the protocol is systematic and planned. The protocol considers available resources and the size of the publicly owned urban forest. The City of Santa Monica currently manages over 34,000 public trees found mainly in the public right-of-way and on parkland.

The protocol is as follows:

- The geographical area of the City will be broken into 27 numbered districts.
- Two assessors will each inspect at least one district per month.
- The assessors must hold the ISA Certified Arborist certification and will preferably hold the Tree Risk Assessor Qualification (TRAQ).
- Inspections will be performed in accordance with the *American National Standard Institute (ANSI) A300 (Part 9) - 2011 Tree Risk Assessment a. Tree Structure Assessment* and the International Society of Arboriculture (ISA) *Best Management Practices (BMP)*.
- Every public owned tree in the City of Santa Monica will be inspected at least once every twelve months.
- All public trees will be assessed at Level 1: Limited Visual Assessment (Dunster, 2013; ISA, 2011) through a 'drive-by' inspection. Assessors will use best judgement to identify trees for a Level 1: Limited Visual Assessment delivered through a 'walk-by'. Trees adjacent to playgrounds are assessed using a 'walk-by' inspection.
- It is understood that a Level 1: Limited Visual Assessment will typically focus on trees with an imminent or probable likelihood of failure (Dunster, 2013).
- Tree work orders will be generated as needed to mitigate any observed risks in an appropriate and timely manner.

STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
1	02ND ST	MONTANA AVE	CALIFORNIA AVE	FICUS MICROCARPA	QUERCUS AGRIFOLIA	CORYMBIA APARRERINJA
2	02ND ST MEDIANS	MONTANA AVE	CALIFORNIA AVE	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	CORYMBIA CITRIODORA
3	02ND ST	CALIFORNIA AVE	WILSHIRE BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	EUCALYPTUS NICHOLII
4	02ND ST	WILSHIRE BLVD	COLORADO	FICUS MICROCARPA	AFROCARPUS FALCATUS	CORYMBIA APARRERINJA
5	02ND ST	STRAND ST	SOUTH CITY LIMIT	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	TRISTANIOPSIS LAURINA
6	03RD ST	MONTANA AVE	WASHINGTON AVE	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	ANGOPHORA COSTATA
7	03RD ST	WASHINGTON AVE	CALIFORNIA AVE	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	STENOCARPUS SINATUS
8	03RD ST	CALIFORNIA AVE	WILSHIRE BLVD	PRUNUS KAWAKAMII	RHUS LANCEA	PYRUS KAWAKAMII
9	03RD ST	WILSHIRE BLVD	BROADWAY	JACARANDA MIMOSIFOLIA	WASHINGTONIA ROBUSTA	JACARANDA MIMOSIFOLIA
10	03RD ST	PICO BLVD	SOUTH CITY LIMIT	PODOCARPUS SP	PODOCARPUS MACROPHYLLUS	MELALEUCA LINARIIFOLIA

1. **PRIMARY SPECIES:**
   Trees that will be the designated species for individual street segments.
2. **SECONDARY SPECIES:**
   Trees that will be planted at the discretion of the Public Landscape Division.

STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
11	04TH ST MEDIANS	ADELAIDE DR	MONTANA AVE	SYRAGRUS ROMANZOFFIANUM	PINUS PINEA	EUCALYPTUS DELGUPTA
12	04TH ST	ADELAIDE DR	MONTANA AVE	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	EUCALYPTUS DELGUPTA
13	04TH ST	MONTANA AVE	WILSHIRE BLVD	WASHINGTONIA ROBUSTA	ANGOPHORA COSTATA	EUCALYPTUS MACULATA
14A	04TH ST	WILSHIRE BLVD	BROADWAY	FICUS MICROCARPA	AFROCARPUS FALCATUS	TRISTANIOPSIS LAURINA
14B	04TH ST	BROADWAY	COLORADO	FICUS MICROCARPA	GINGKO BILOBA	PHOENIX DACTYLIFERA
15	04TH ST	COLORADO	PICO BLVD	WASHINGTONIA ROBUSTA	BRAHEA ARMATA	HOWEA FORSTERIANA
16	04TH ST	PICO BLVD	OCEAN PARK BLVD	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	BANKSIA INTEGRIFOLIAL
17A	04TH ST MEDIANS	OLYMPIC DRIVE	COLORADO	N/A	CEIBA SPECIOSA	TIPUANA TIPU
17	04TH ST MEDIANS	PICO BLVD	OCEAN PARK BLVD	SYRAGRUS ROMANZOFFIANUM	SYRAGRUS ROMANZOFFIANUM	PARKINSONIA 'DESERT MUSEUM'
18	04TH ST	OCEAN PARK BLVD	SOUTH CITY LIMIT	FICUS MICROCARPA	KOELREUTERIA PANICULATA	RHUS LANCEA

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STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
19	05TH ST	MONTANA AVE	WILSHIRE BLVD	WASHINGTONIA ROBUSTA	BRAHEA EDULIS	TRISTANIOPSIS LAURINA
20	05TH ST	WILSHIRE BLVD	SANTA MONICA BLVD	FICUS MICROCARPA	CORYMBIA CITRIODORA	ALBIZIA JULIBRISSIN
20A	05TH ST	SANTA MONICA BLVD	BROADWAY	AFROCARPUS GRACILIOR	AFROCARPUS FALCATUS	LOPHOSTEMON CONFERTUS
20B	05TH ST	BROADWAY	COLORADO	FICUS MICROCARPA	CORYMBIA CITRIODORA	ALBIZIA JULIBRISSIN
21	05TH ST	COLORADO	DEAD END	TRISTANIOPSIS LAURINA	TRISTANIOPSIS LAURINA	LEPTOSPERMUM PETERSONII
22	05TH ST MEDIANS	COLORADO	DEAD END	CORYMBIA CITRIODORA	CORYMBIA CITRIODORA	AGATHIS ROBUSTA
23	05TH ST	BAY ST	OCEAN PARK BLVD	FICUS MICROCARPA	QUERCUS SUBER	PISTACIA CHINENSIS
24	05TH ST	OCEAN PARK BLVD	HILL ST	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	CALLISTEMON VIMINALIS
25	05TH ST	MARINE ST	DEWEY	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	CALLISTEMON VIMINALIS
26	06TH ST	MONTANA AVE	IDAHO AVE	MAGNOLIA GRANDIFLORA	QUERCUS SUBER	METROSIDEROS EXCELSUS

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27	06TH ST	IDAHO AVE	WILSHIRE BLVD	WASHINGTONIA ROBUSTA	PLATANUS RACEMOSA	MELALEUCA STYPHELOIDES
28	06TH ST	WILSHIRE BLVD	COLORADO	CUPANIOPSIS ANACARDIOIDES	CINNAMOMUM CAMPHORA	KOELREUTERIA BIPINNATA
29	06TH ST	PICO BLVD	DEAD END	WASHINGTONIA ROBUSTA	TRISTANIOPSIS LAURINA	ALLOCASUARINA VERTICILLATA
30	06TH ST	BAY ST	OCEAN PARK BLVD	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	STENOCARPUS SINUATUS
31	06TH ST	MARINE ST	DEWEY	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	PODOCARPUS MACROPHYLLUS
32	06TH ST	OCEAN PARK BLVD	PIER AVE	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	PODOCARPUS MACROPHYLLUS
33	07TH ST	ADELAIDE DR	SAN VICENTE BLVD	CEDRUS DEODARA	CEDRUS DEODARA	PLATANUS RACEMOSA
34	07TH ST	SAN VICENTE BLVD	WASHINGTON AVE	EUCALYPTUS SPECIES	CORYMBIA CITRIODORA	ANGOPHORA COSTATA
35	07TH ST	WASHINGTON AVE	CALIFORNIA AVE	BRACHYCHITON POPULNEUS	CORYMBIA CITRIODORA	LOPHOSTEMON CONFERTUS
36	07TH ST	CALIFORNIA AVE	WILSHIRE BLVD	CEDRUS DEODARA	CEDRUS DEODARA	PLATANUS RACEMOSA

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37	07TH ST	WILSHIRE BLVD	SANTA MONICA BLVD	PODOCARPUS SP	AFROCARPUS FALCATUS	PODOCARPUS MACROPHYLLUS
38	07TH ST	SANTA MONICA BLVD	COLORADO	PHOENIX CANARIENSIS	PODOCARPUS MACROPHYLLUS	WASHINGTONIA FILIFERA
39	07TH ST	COLORADO	BBB MAIN CAMPUS	ARBUTUS MARINA	ARBUTUS MARINA	ANGOPHORA COSTATA - E/S OF STREET
40	07TH ST	MICHIGAN AVE	PICO BLVD	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	JACARANDA MIMOSIFOLIA - W/S OF STREET
41	07TH ST	GRANT ST	SOUTH CITY LIMIT	PODOCARPUS SP	CALLISTEMON CITRINUS (L)	TRISTANIOPSIS LAURINA
42	09TH ST	SAN VICENTE BLVD	ALTA AVE	PINE SP.	PINUS TORREYANA	CEDRUS DEODARA
43	09TH ST	ALTA AVE	MONTANA AVE	EUCALYPTUS FICIFOLIA	ARAUCARIA HETEROPHYLLA	LOPHOSTEMON CONFERTUS
44	09TH ST	MONTANA AVE	WILSHIRE BLVD	WASHINGTONIA ROBUSTA	CEDRUS DEODARA	PINUS TORREYANA
45	09TH ST	WILSHIRE BLVD	COLORADO	MAGNOLIA GRANDIFLORA	ULMUS PARVIFOLIA	QUERCUS ENGELMANNII
46	09TH ST	DEAD END	OLYMPIC BLVD	FICUS MICROCARPA	ULMUS PARVIFOLIA	PLATANUS MEXICANA

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47	09TH ST	DEAD END	PICO BLVD	FICUS MICROCARPA	CINNAMOMUM CAMPHORA	QUERCUS ILEX
48	10 ST	SAN VICENTE BLVD	MONTANA AVE	CERATONIA SILIQUA QUERCUS AGRIFOLIA	QUERCUS AGRIFOLIA	AGATHIS ROBUSTA
49	10 ST	MONTANA AVE	WILSHIRE BLVD	CERTONIA SILIQUA	PINUS CANARIENSIS	QUERCUS AGRIFOLIA
50	10 ST	WILSHIRE BLVD	COLORADO	MAGNOLIA GRANDIFLORA	QUERCUS SUBER	LOPHOSTEMON CONFERTUS 'VARIEGATA'
51	10 ST	DEAD END	OLYMPIC BLVD	ULMUS PARVIFOLIA	ULMUS PARVIFOLIA	PISTACIA CHINENSIS
52	10 ST	DEAD END	PICO BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
53	10 ST	PICO BLVD	OCEAN PARK BLVD	ALLOCASUARINA VERTICILLATA	ALLOCASUARINA VERTICILIATA	RHUS LANCEA
54	11 ST	SAN VICENTE BLVD	MONTANA AVE	MAGNOLIA GRANDIFLORA	MAGNOLIA GRANDIFLORA	FICUS RUBIGINOSA
55	11 ST	MONTANA AVE	IDAHO AVE	EUCALYPTUS SPECIES	EUCALYPTUS AMPLIFOLIA	ANGOPHORA COSTATA
56	11 ST	IDAHO AVE	CALIFORNIA AVE	PINUS CANARIENSIS	PINUS CANARIENSIS	CEDRUS DEODARA

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57	11 ST	CALIFORNIA AVE	WILSHIRE BLVD	MAGNOLIA GRANDIFLORA	EUCALYPTUS MACULATA	ANGOPHORA COSTATA
58	11 ST	WILSHIRE BLVD	COLORADO	LIQUIDAMBAR STYRACIFLUA	PLATANUS RACEMOSA	EUCALYPTUS MACULATA
59	11 ST	COLORADO	PICO BLVD	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	TIPUANA TIPU
60	11 ST	PICO BLVD	OCEAN PARK BLVD	FICUS MICROCARPA	QUERCUS AGRIFOLIA	CINNAMOMUM CAMPHORA
61	11 ST	OCEAN PARK BLVD	SOUTH CITY LIMIT	PRUNUS CAROLINIANA	METROSIDEROS EXCELSUS	LAGERSTROEMIA INDICA
62	12 ST	GEORGINA AVE	MONTANA AVE	CERTONIA SILIQUA	QUERCUS AGRIFOLIA	FICUS RUBIGINOSA
63	12 ST	MONTANA AVE	CALIFORNIA AVE	WASHINGTONIA ROBUSTA	CEDRUS DEODARA	CEDRUS ATLANTICA
64	12 ST	CALIFORNIA AVE	WILSHIRE BLVD	PHOENIX CANARIENSIS	CEDRUS DEODARA	PINUS HALEPENSIS
65	12 ST	WILSHIRE BLVD	COLORADO	LOPHOSTEMON CONFERTUS	LOPHOSTEMON CONFERTUS	CALLISTEMON VIMINALIS
66	12 ST	DEAD END	DEAD END FREEWAY	LAGERSTROEMIA INDICA	TIPUANA TIPU	LAGERSTROEMIA INDICA

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67	12 ST	DEAD END FREEWAY	PICO BLVD	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	TIPUANA TIPU
68	14 ST	SAN VICENTE BLVD	MONTANA AVE	PINUS CANARIENSIS	PINUS CANARIENSIS	PINUS HALEPENSIS
69	14 ST	MONTANA AVE	WASHINGTON AVE	CEDRUS DEODARA	CEDRUS DEODARA	CEDRUS ATLANTICA
70	14 ST	WASHINGTON AVE	WILSHIRE BLVD	FICUS MICROCARPA	METROSIDEROS EXCELSUS	MELALEUCA STYPHELIOIDES
71	14 ST	WILSHIRE BLVD	SANTA MONICA BLVD	MAGNOLIA GRANDIFLORA	EUCALYPTUS MACULATA	MELALEUCA STYPHELIOIDES
72	14 ST	SANTA MONICA BLVD	FREEWAY	MAGNOLIA GRANDIFLORA	MELALEUCA QUINQUENERVIA	MELALEUCA STYPHELIOIDES
73	14 ST	FREEWAY	PICO BLVD	MAGNOLIA GRANDIFLORA	PINUS CANARIENSIS	PINUS HALEPENSIS
74	14 ST	PICO BLVD	OCEAN PARK BLVD	LIQUIDAMBAR STYRACIFLUA	LIQUIDAMBAR STYRACIFLUA	ULMIS PARVIFOLIA 'ALLEE'
75	14 ST	OCEAN PARK BLVD	ASHLAND AVE	FICUS MICROCARPA	AFROCARPUS FALCATUS (8 FT PKWY)	PODOCARPUS MACROPHYLLUS (3 FT PKWY)
76	15 ST	GEORGINA AVE	WASHINGTON AVE	CEDRUS SP.	CEDRUS DEODARA	CEDRUS ATLANTICA

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77	15 ST	CALIFORNIA AVE	COLORADO	MAGNOLIA GRANDIFLORA	EUCALYPTUS MACULATA	ANGOPHORA COSTATA
78	15 ST	OLYMPIC BLVD	DEAD END FREEWAY	CEDRUS DEODARA	CEDRUS DEODARA (S/S FWY)	PLATANUS RACEMOSA (N/S FWY)
79	16 ST	SAN VICENTE BLVD	MONTANA AVE	CEDRUS SP.	CEDRUS DEODARA	CEDRUS ALANTICA
80	16 ST	MONTANA AVE	WASHINGTON AVE	LOPHOSTEMON CONFERTUS	ULMUS PARVIFOLIA 'ALLEE'	LOPHOSTEMON CONFERTUS
81	16 ST	WASHINGTON AVE	CALIFORNIA AVE	PINUS CANARIENSIS	PINUS CANARIENSIS	PINUS TORREYANA
82	16 ST	CALIFORNIA AVE	WILSHIRE BLVD	CINNAMOMUM CAMPHORA	ULMUS PARVIFOLIA 'ALLEE'	CINNAMOMUM CAMPHORA
83	16 ST	WILSHIRE BLVD	COLORADO	MAGNOLIA GRANDIFLORA	CORYMBIA CITRIODORA	MAGNOLIA GRANDIFLORA
84	16 ST	COLORADO	OLYMPIC BLVD	MAGNOLIA GRANDIFLORA	PLATANUS RACEMOSA W/S	PINUS TORREYANA - E/S OF STREET
85	16 ST	OLYMPIC BLVD	DELAWARE END @ FREEWAY	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILIATA	CEDRUS DEODARA
86	16 ST	FREEWAY	DELAWARE AVE	CEDRUS DEODARA	CEDRUS DEODARA	CEDRUS ATLANTICA

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87	16 ST	PICO BLVD	OCEAN PARK BLVD	MAGNOLIA GRANDIFLORA	TIPUANA TIPU	ULMIS PARVIFOLIA 'ALLEE'
88	16 ST	OCEAN PARK BLVD	SOUTH CITY LIMIT	PODOCARPUS SP	AFROCARPUS FALCATUS	STENOCARPUS SINUATUS
89	17 ST	SAN VICENTE BLVD	MONTANA AVE	MAGNOLIA GRANDIFLORA	FICUS RUBIGINOSA	MAGNOLIA GRANDIFLORA
90	17 ST	MONTANA AVE	CALIFORNIA AVE	PINUS SP.	PINUS PINEA	PLATANUS RACEMOSA
91	17 ST	CALIFORNIA AVE	WILSHIRE BLVD	BRACHYCHITON POPULNEUS	EUCALYPTUS AMPLIFOLIA	PLATANUS RACEMOSA
92	17 ST	WILSHIRE BLVD	COLORADO	MAGNOLIA GRANDIFLORA	ULMUS PARVIFOLIA 'ALLEE'	QUERCUS SUBER
93	17 ST	COLORADO	DEAD END FREEWAY	MAGNOLIA GRANDIFLORA	FICUS RUBIGINOSA	LOPHOSTEMON CONFERTUS
94	17 ST	DEAD END FREEWAY	PICO BLVD	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA (E/S)	PLATANUS RACEMOSA (W/S)
95	17 ST	PEARL ST	OCEAN PARK BLVD	MAGNOLIA GRANDIFLORA	QUERCUS AGRIFOLIA	QUERCUS SUBER
96	17 ST	OCEAN PARK BLVD	ASHLAND AVE	CERTONIA SILIQUA	CINNAMOMUM CAMPHORA	KOELREUTERIA BIPINNATA

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96A	17 ST	ASHLAND AVE	SOUTH CITY LIMIT	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	KOELREUTERIA BIPINNATA
97	18 ST	SAN VICENTE BLVD	MONTANA AVE	WASHINGTONIA ROBUSTA	JUBAEA CHILENSIS	WASHINGTONIA ROBUSTA
98	18 ST	MONTANA AVE	WASHINGTON AVE	WASHINGTONIA ROBUSTA	QUERCUS AGRIFOLIA	QUERCUS SUBER
99	18 ST	WASHINGTON AVE	WILSHIRE BLVD	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	RHUS LANCEA
100	18 ST	WILSHIRE BLVD	COLORADO	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	TIPUANA TIPU
101	18 ST	DEAD END NORTH OF OLYMPIC	DEAD END FREEWAY	PYRUS KAWAKAMII	TRISTANIOPSIS LAURINA	PYRUS KAWAKAMII
102	18 ST	END OF ST SOUTH OF FREEWAY	PICO BLVD	LIQUIDAMBAR STYRACIFLUA	LIQUIDAMBAR STYRACIFLUA	LOPHOSTEMON CONFERTUS
103	18 ST	CEDAR ST	OCEAN PARK BLVD	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	LEPTOSPERMUM PETERSONII
104	18 ST	OCEAN PARK BLVD	SOUTH CITY LIMIT	NERIUM OLEANDER	ARBUTUS MARINA	LOPHOSTEMON CONFERTUS 'VARIEGAT
105	19 ST	SAN VICENTE BLVD	MONTANA AVE	CEDRUS DEODARA	CEDRUS DEODARA	CEDRUS ALTANTICA

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106	19 ST	MONTANA AVE	WILSHIRE BLVD	WASHINGTONIA ROBUSTA	WASHINGTONIA ROBUSTA	BRAHEA BRANDEGEEI
107	19 ST	WILSHIRE BLVD	BROADWAY AVE	WASHINGTONIA ROBUSTA	WASHINGTONIA ROBUSTA	CEDRUS DEODARA
108	19 ST	BROADWAY AVE	COLORADO	WASHINGTONIA ROBUSTA	PINUS CANARIENSIS	PINUS TORREYANA
109	19 ST	COLORADO	OLYMPIC BLVD	WASHINGTONIA ROBUSTA	PINUS CANARIENSIS	CEDRUS ATLANTICA
110	19 ST	MICHIGAN AVE	PICO BLVD	LIQUIDAMBAR STYRACIFLUA	QUERCUS SUBER	QUERCUS AGRIFOLIA
111	20 ST	SAN VICENTE BLVD	MONTANA AVE	CEDRUS DEODARA	CEDRUS DEODARA	CEDRUS ATLANTICA
112	20 ST	MONTANA AVE	WILSHIRE BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	KOELREUTERIA BIPINNATA
113A	20 ST	WILSHIRE BLVD	ARIZONA AVE	WASHINGTONIA ROBUSTA	JACARANDA MIMOSIFOLIA	TIPUANA TIPU
113	20 ST	ARIZONA AVE	COLORADO	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	MELALEUCA QUINQUENERVIA (NEW CUTOUTS ON E/S)
114	20 ST	COLORADO	FREEWAY	CALLISTEMON CITRINUS	CALLISTEMON VIMINALIS	CALLISTEMON CITRINUS

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115	20 ST	FREEWAY	PICO BLVD	CALLISTEMON CITRINUS	LAGERSTROEMIA INDICA "MUSKOGEE"	STENOCARPUS SINUATUS
116	20 ST	PICO BLVD	OCEAN PARK BLVD	LAGERSTROEMIA INDICA	LAGERSTROEMIA INDICA	TRISTANIOPSIS LAURINA
117	21ST PLACE	LA MESA DRIVE	SAN VINCENTE BLVD	FICUS MACROPHYLLA	FICUS MACROPHYLLA	FICUS RUBIGINOSA
118	21ST PLACE	SAN VICENTE BLVD	MONTANA AVE	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILIATA	PINUS RADIATA
119	21 ST	SAN VICENTE BLVD	MONTANA AVE	PHOENIX CANARIENSIS	JUBAEA CHILENSIS	PHEONIX DACTYLIFERA
120	21 ST	MONTANA AVE	WILSHIRE BLVD	WASHINGTONIA ROBUSTA	PHOENIX DACTYLIFERA	WASHINGTONIA FILIFERA
121	21 ST	WILSHIRE BLVD	ARIZONA AVE	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	TIPUANA TIPU
122	21 ST	SANTA MONICA BLVD	BROADWAY AVE	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	RHUS LANCEA
123	21 ST	OLYMPIC BLVD	MICHIGAN AVE	LIQUIDAMBAR STYRACIFLUA	METROSIDEROS EXCELSUS	QUERCUS SUBER
124	21 ST	DEAD END FREEWAY	DELAWARE AVE	LAGERSTROEMIA INDICA	LAGERSTROEMIA INDICA	TRISTANIOPSIS LAURINA

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125	21 ST	VIRGINIA AVE	PICO BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	PISTACIA CHINENSIS
126	21 ST	PICO BLVD	OCEAN PARK BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
127	21 ST	OCEAN PARK BLVD	SOUTH CITY LIMIT	JACARANDA MIMOSIFOLIA	ULMUS PARVIFOLIA 'ALLEE'	JACARANDA MIMOSIFOLIA
128	22ND ST	SAN VICENTE BLVD	MONTANA AVE	MAGNOLIA GRANDIFLORA	ULMUS PARVIFOLIA 'ALLEE'	TIPUANA TIPU
129	22ND ST	MONTANA AVE	WILSHIRE BLVD	SCHINUS MOLLE	KOELREUTERIA BIPINNATA	LEPTOSPERMUM PETERSONII
130	22nd ST	WILSHIRE BLVD	ARIZONA AVE	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	KOELRUEUTERIA BIPINNATA
131	22nd ST	PENNSYLVANIA AVE	MICHIGAN AVE	PYRUS KAWAKAMII	KOELREUTERIA BIPINNATA	PYRUS KAWAKAMII
132	22nd ST	DEAD END FREEWAY	VIRGINIA AVE	PODOCARPUS SP	KOELREUTERIA BIPINNATA	PODOCARPUS MACROPHYLLUS
133	22nd ST	PICO BLVD	OCEAN PARK BLVD	FICUS MICROCARPA	ULMUS PARVIFOLIA 'TRUE GREEN'	TIPUANA TIPU
134	23RD ST	SAN VICENTE BLVD	MONTANA AVE	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	LOPHOSTEMON CONFERTUS

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135	23RD ST	MONTANA AVE	WILSHIRE BLVD	PODOCARPUS SP	MELALEUCA LINARIIFOLIA	PODOCARPUS MACROPHYLLUS
136	23RD ST	WILSHIRE BLVD	BROADWAY AVE	CRYTOMERIA JAPONICA	MELALEUCA LINARIIFOLIA	GEIJERA PARVIFOLIA
137	23RD ST	PICO BLVD	OCEAN PARK BLVD	CASSIA LEPTOPHYLLA	CORYMBIA CITRIODORA	ARBUTUS 'MARINA'
138	23RD ST	OCEAN PARK BLVD	SOUTH CITY LIMIT	LAGERSTROEMIA INDICA	LAGERSTROEMIA INDICA "MUSKOGEE"	RHUS LANCEA
139	24 ST	LA MESA DRIVE	SAN VINCENTE BLVD	FICUS MACROPHYLLA	FICUS MACROPHYLLA	FICUS RUBIGINOSA
140	24 ST	SAN VICENTE BLVD	MONTANA AVE	PINUS CANARIENSIS	PINUS CANARIENSIS	PINUS HALEPENSIS
141	24 ST	IDAHO AVE	WILSHIRE BLVD	SCHINUS MOLLE	KOELREUTERIA BIPINNATA	GEIJERA PARVIFOLIA
142	24 ST	WILSHIRE BLVD	ARIZONA AVE	CHIONANTHUS RETUSUS	ULMUS PARVIFOLIA	CALLISTEMON VIMINALIS
143	24 ST	SANTA MONICA BLVD	BROADWAY AVE	FICUS MICROCARPA	CUPANIOPSIS ANACARDIOIDES	MELALEUCA LINARIIFOLIA
144	24 ST	MICHIGAN AVE	DELAWARE AVE	CINNAMOMUM CAMPHORA	LOPHOSTEMON CONFERTUS	CUPANIOPSIS ANACARDIOIDES

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STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
145	24 ST	PICO BLVD	PEARL ST	PODOCARPUS SP	CORYMBIA CITRIODORA	PODOCARPUS MACROPHYLLUS
145A	24 ST	DEAD END	OCEAN PARK BLVD	PODOCARPUS SP	PODOCARPUS MACROPHYLLUS	GEIJERA PARVIFOLIA
146	25 ST	SAN VICENTE BLVD	MONTANA AVE	CEDRUS SP.	CEDRUS ATLANTICA	CEDRUS DEODARA
147	25 ST	MONTANA AVE	WILSHIRE BLVD	NERIUM OLEANDER	TRISTANIOPSIS LAURINA	GEIJERA PARVIFOLIA
148	25 ST	WILSHIRE BLVD	ARIZONA AVE	CHIONANTHUS RETUSUS	STENOCARPUS SINUATUS	CALLISTEMON CITRINUS
149	25 ST	SANTA MONICA BLVD	BROADWAY AVE	WASHINGTONIA ROBUSTA	CALLISTEMON VIMINALIS	KOELREUTERIA BIPINNATA
150	25 ST	PICO BLVD	OCEAN PARK BLVD	SCHINUS MOLLE	METROSIDEROS EXCELSUS	KOELREUTERIA BIPINNATA
151	25 ST	OCEAN PARK BLVD	ASHLAND AVE	LIQUIDAMBAR STYRACIFLUA	EUCALYPTUS MACULATA	LOPHOSTEMON CONFERTUS
152	26 ST	NORTH CITY LIMIT	GEORGINA AVE	N/A	HOWEA FORSTERIANA	NONE
153	26 ST	GEORGINA AVE	COLORADO	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	CORYMBIA CITRIODORA

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STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
154	26 ST	COLORADO	OLYMPIC BLVD	WASHINGTONIA ROBUSTA	WASHINGTONIA ROBUSTA	PHEONIX DACTYLIFERA
155	26 ST	OLYMPIC BLVD	CLOVERFIELD	PHOENIX DACTYLIFERA	PHOENIX DACTYLIFERA	WASHINGTONIA FILIFERA
156	26 ST	PICO BLVD	DEAD END	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILIATA	PARKINSONIA 'DESERT MUSEUM'
157	27 ST	VIRGINIA AVE	KANSAS AVE	PODOCARPUS SP	PODOCARPUS MACROPHYLLUS	GEIJERA PARVIFOLIA
158	27 ST	PICO BLVD	PEARL ST	LAGERSTROEMIA INDICA	LAGERSTROEMIA INDICA "MUSKOGEE"	RHUS LANCEA
159	28 ST	PICO BLVD	OCEAN PARK BLVD	SCHINUS MOLLE	KOELREUTERIA BIPINNATA	KOELREUTERIA PANICULATA
160	28 ST	OCEAN PARK BLVD	DEAD END	NO TREES	N/A	N/A
161	29 ST	PICO BLVD	OCEAN PARK BLVD	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	TRISTANIOPSIS LAURINA
162	30 ST	PICO BLVD	OCEAN PARK BLVD	PODOCARPUS SP	PODOCARPUS MACROPHYLLUS	ALBIZIA JULIBRISSIN
163	31 ST	PICO BLVD	OCEAN PARK BLVD	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	CALLISTEMON VIMINALIS

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STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
164	32 ST	PICO BLVD	OCEAN PARK BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
165	33 ST	PICO BLVD	OCEAN PARK BLVD	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	MELALEUCA LINARIFOLIA
166	34 ST	PICO BLVD	OCEAN PARK BLVD	PODOCARPUS SP	PODOCARPUS MACROPHYLLUS	ALBIZIA JULIBRISSIN
167	34 ST	EXPOSITION BLVD	CENTINELA AVE	CUPANIOPSIS ANACARDIOIDES	ULMUS PARVIFOLIA 'DRAKE'	ULMUS PARVIFOLIA 'ALLEE'
168	AIRPORT AVE	CITY LIMITS	CENTINELA AVE	MULTIPLE	QUERCUS AGRIFOLIA	QUERCUS SUBER
169	ALTA AVE	OCEAN AVE	7 ST	MAGNOLIA GRANDIFLORA	MAGNOLIA GRANDIFLORA	FICUS RUBIGINOSA
170	ALTA AVE	7 ST	11 ST	EUCALYPTUS FICIFOLIA	EUCALYPTUS AMPLIFOLIA	AGONIS FLEXUOSA
171	ALTA AVE	11 ST	14 ST	FICUS MICROCARPA	PLATANUS RACEMOSA	QUERCUS SUBER
172	ALTA AVE	14 ST	26 ST	PINUS CANARIENSIS	PINUS CANARIENSIS	PINUS HALEPENSIS
173	ARIZONA AVE	OCEAN AVE	7 ST	TRACHYCARPUS FORTUNEI	ULMUS PARVIFOLIA 'ALLEE' & 'DRAKE' (M	LOPHOSTEMON CONFERTUS

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174	ARIZONA AVE	7 ST	26 ST	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	ANGOPHORA COSTATA
175	ARIZONA AVE	26 ST	CENTINELA AVE	FICUS MICROCARPA	AFROCARPUS FALCATUS	PISTACHIA CHINENSIS
176	ASHLAND AVE	NEILSON WAY	2 ST	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	LOPHOSTEMON CONFERTUS
177	ASHLAND AVE	2 ST	LINCOLN BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
178	ASHLAND AVE	LINCOLN BLVD	14 ST	CINNAMOMUM CAMPHORA	KOELREUTERIA BIPINNATA	PISTACHIA CHINENSIS
179	ASHLAND AVE	14 ST	17 ST	FICUS MICROCARPA	AFROCARPUS FALCATUS	PLATANUS MEXICANA
180	ASHLAND AVE	17 ST	23 ST	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	LOPHOSTEMON CONFERTUS
181	ASHLAND AVE	23 ST	25 ST	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	CALLISTEMON VIMINALIS
182	HOLLISTER AVE	BARNARD WAY	NEILSON WAY	WASHINGTONIA ROBUSTA	BRAHEA EDULIS	BRAHEA ARMATA
182A	BAY ST	OCEAN FRONT WALK	OCEAN AVE		BRAHEA BRANDEGEEI	BRAHEA ARMATA 'CLARA'

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183	BAY ST	OCEAN AVE	6 ST	WASHINGTONIA ROBUSTA	BRAHEA ARMATA	BRAHEA EDULIS
184	BAY ST	6 ST	LINCOLN BLVD	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	BANKSIA INTEGRIFOLIAL
185	BAY ST	LINCOLN BLVD	10 ST	LYONOTHAMNUS FLORIBUNDUS ASPLENIFOLIUS	CALLISTEMON VIMINALIS	TRISTANIOPSIS LAURINA
185A	BAY ST	10 ST	11 ST	FICUS MICROCARPA	CUPANIOPSIS ANACARDIOIDES	AFROCARPUS FALCATUS
186	BAY ST	11 ST	EUCLID	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
187	BAY ST	14 ST	16 ST	FICUS MICROCARPA	CUPANIOPSIS ANACARDIOIDES	AFROCARPUS FALCATUS
188	BEACH ST	2 ST	3 ST	LAGUNARIA PATERSONII	PARKINSONIA X 'DESERT MUSEUM'	RHUS LANCEA
189	BERKELEY ST	STANFORD ST	WILSHIRE BLVD	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	MELALEUCA LINARIFOLIA
190	BERKELEY ST	WILSHIRE BLVD	PENNSYLVANIA AVE	PYRUS KAWAKAMII	RHUS LANCEA	PYRUS KAWAKAMII
191	BEVERLEY AVE	KENSINGTON RD	OCEAN PARK BLVD	MAGNOLIA GRANDIFLORA	CORYMBIA CITRIODORA	MELALEUCA VIMINALIS

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192	BICKNELL AVE	OCEAN AVE	NEILSON WAY	WASHINGTONIA ROBUSTA	PHOENIX DACTYLIFERA	MELALEUCA LINARIFOLIA
193	BICKNELL AVE	NEILSON WAY	4 ST	PYRUS KAWAKAMII	METROSIDEROS EXCELSUS	LAGUNARIA PATERSONII
194	BRENTWOOD TERRACE	12 ST	14 ST	CEDRUS DEODARA	CEDRUS DEODARA	CEDRUS ATLANTICA
195	BROADWAY AVE	OCEAN AVE	LINCOLN BLVD	KOELREUTERIA BIPINNATA	KOELREUTERIA BIPINNATA	KOELREUTERIA PANICULATA
196	BROADWAY AVE	LINCOLN BLVD	11 ST	MAGNOLIA GRANDIFLORA	ULMUS PARVIFOLIA 'DRAKE'	KOELREUTERIA BIPINNATA
197	BROADWAY AVE	11 ST	16 ST	LOPHOSTEMON CONFERTUS & CORYMBIA FICIFOLIA	ULMUS PARVIFOLIA 'DRAKE'	LOPHOSTEMON CONFERTUS
198	BROADWAY AVE	16 ST	CLOVERFIELD	MAGNOLIA GRANDIFLORA	ULMUS PARVIFOLIA 'DRAKE'	LOPHOSTEMON CONFERTUS
199	BROADWAY AVE	CLOVERFIELD	26 ST	LOPHOSTEMON CONFERTUS	ULMUS PARVIFOLIA 'DRAKE'	LOPHOSTEMON CONFERTUS
200	BROADWAY AVE	26 ST	CENTINELA AVE	EUCALYPTUS FICIFOLIA	CORYMBIA CITRIODORA	GEIJERA PARVIFOLIA
200A	BROADWAY AVE MEDIANS	26TH	CENTINELA AVE	CALODENDRUM CAPENSE	CEIBA SPECIOSA	EUCALYPTUS AMPLIFOLIA

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201	CALIFORNIA AVE	OCEAN AVE	7 ST	PHOENIX CANARIENSIS	PINUS PINEA	ANGOPHORA COSTATA
202	CALIFORNIA AVE MEDIANS	OCEAN AVE	7 ST	EUCALYPTUS SIDEROXYLON	CEIBA SPECIOSA	KOELREUTERIA BIPINNATA ARBUTUS 'Marina'
203	CALIFORNIA AVE	7 ST	LINCOLN BLVD	MAGNOLIA GRANDIFLORA	CINNAMOMUM CAMPHORA	CEDRUS DEODARA
204	CALIFORNIA AVE	LINCOLN BLVD	14 ST	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	FICUS RUBIGINOSA
205	CALIFORNIA AVE	14 ST	20 ST	FICUS MICROCARPA	FICUS MICROCARPA	CUPANIOPSIS ANACARDIOIDES
205A	CALIFORNIA AVE	20 ST	CHELSEA	BRACHYCITON POPULNEUS	GEIJERA PARVIFLORA	CALLISTEMON VIMINALIS
206	CALIFORNIA AVE	CHELSEA AVE	26 ST	FICUS MICROCARPA	ALBIZIA JULIBRISSIN	PYRUS KAWAKAMII
207	CARLYLE AVE	9 ST	14 ST	LIQUIDAMBAR STYRACIFLUA	LIQUIDAMBAR STYRACIFLUA 'ROTUNDIL	AGATHIS ROBUSTA
208	CARLYLE AVE	14 ST	26 ST	PINUS CANARIENSIS	PINUS CANARIENSIS	PINUS HALEPENSIS
209	CEDAR ST	7 ST	LINCOLN BLVD	FICUS MICROCARPA	CUPANIOPSIS ANACARDIOIDES	GEIJERA PARVIFOLIA

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210	CEDAR ST	LINCOLN BLVD	14 ST	CASSIA LEPTOPHYLLA	LOPHOSTEMON CONFERTUS	ALLOCASUARINA VERTICILLATA
211	CEDAR ST	17 ST	18 ST	SCHINUS TEREBINTHIFOLIUS	METROSIDEROS EXCELSUS	QUERCUS SUBER
212	CENTINELA AVE	CARMELINIA AVE	WILSHIRE BLVD	CASUARINA CUNNINGHAMIANA	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILLATA
212A	CENTINELA AVE	WILSHIRE BLVD	PICO BLVD	MAGNOLIA GRANDIFLORA	SCHINUS MOLLE	CUPANIOPSIS ANACARDIOIDES
213	CENTINELA AVE	PICO BLVD	OCEAN PARK BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
213A	CENTINELA AVE	OCEAN PARK BLVD	DEAD END	MAGNOLIA GRANDIFLORA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
214	CHELSEA AVE	WASHINGTON AVE	WILSHIRE BLVD	FICUS MICROCARPA	METROSIDEROS EXCELSUS	PISTACHIA CHINENSIS
215	CHELSEA AVE	WILSHIRE BLVD	SANTA MONICA BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	PISTACHIA CHINENSIS
216	CHELSEA PLACE	CHELSEA AVE	DEAD END	CALLISTEMON VIMINALIS	CALLISTEMON VIMINALIS	LEPTOSPERMUM PETERSONII
217	CLOVERFIELD	SANTA MONICA BLVD	COLORADO	MELALEUCA QUINQUENERVIA	PHOENIX DACTYLIFERA	HOWEA FORSTERIANA

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218	CLOVERFIELD	COLORADO	MICHIGAN AVE	PHOENIX DACTYLIFERA	PHOENIX DACTYLIFERA	TIPUANA TIPU (MEDIANS)
219	CLOVERFIELD	FREEWAY	PICO BLVD	LOPHOSTEMON CONFERTUS	LOPHOSTEMON CONFERTUS	LAGERSTROEMIA INDICA
220	CLOVERFIELD	PICO BLVD	OCEAN PARK BLVD	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
221	COLORADO	OCEAN AVE	4 ST	PLATANUS MEXICANA	PLATANUS MEXICANA	NO ALTERNATE
222	COLORADO AVE - SEARS TRIANGLE	2 ST	MAIN ST	WASHINGTONIA ROBUSTA	PHOENIX DACTYLIFERA	EUCALYPTUS DEGLUPTA
223	COLORADO	4 ST	20 ST	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	ALBIZIA JULIBRISSIN
223A	COLORADO	20 ST	26 ST	WASHINGTONIA ROBUSTA	PHOENIX DACTYLIFERA	WASHINGTONIA FILIFERA
224	COLORADO	26 ST	CENTINELA AVE	FICUS MICROCARPA	CORYMBIA CITRIODORA (3 FT)	EUCALYPTUS MACULATA (8FT)
225	DELAWARE AVE	15 ST	18 ST	CASUARINA CUNNINGHAMIANA	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILLATA
226	DELAWARE AVE	18 ST	CLOVERFIELD	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	QUERCUS SUBER

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227	DELAWARE AVE	STEWART ST	WARWICK AVE	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
228	DEWEY ST	16 ST	21 ST	PINUS RADIATA	NORTH SIDE: RHUS LANCEA SOUTH SIDE: PINUS TORREYANA	NORTH SIDE: CERCIS TEXANA SOUTH SIDE: PINUS CANARIENSIS
228A	DEWEY ST	21 ST	23 ST	PINUS RADIATA	NORTH SIDE: RHUS LANCEA SOUTH SIDE: PINUS TORREYANA	NORTH SIDE: CERCIS TEXANA SOUTHSIDE: PINUS HALEPENSIS
229	DORCHESTER AVE	EXPOSITION BLVD	VIRGINIA AVE	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	BANKSIA INTEGRIFOLIAL
230	DORCHESTER AVE	DEAD END	PICO BLVD	LAGERSTROEMIA INDICA	LAGERSTROEMIA INDICA	BANKSIA INTEGRIFOLIAL
231	ESPARTA WAY	SAN VICENTE BLVD	DEAD END	MAGNOLIA GRANDIFLORA	METROSIDEROS EXCELSUS	TIPUANA TIPU
232	EUCLID ST	GEORGINA AVE	MONTANA AVE	MAGNOLIA GRANDIFLORA	MAGNOLIA GRANDIFLORA	FICUS RUBIGINOSA
233	EUCLID ST	MONTANA AVE	WILSHIRE BLVD	MULTIPLE	CEDRUS DEODARA	AGONIS FLEXUOSA
234	EUCLID ST	WILSHIRE BLVD	BROADWAY AVE	PALM SP. & MAGNOLIAS	EUCALYPTUS NICHOLII	ALBIZIA JULIBRISSIN
235	EUCLID ST	BROADWAY AVE	COLORADO	WASHINGTONIA ROBUSTA	PLATANUS RACEMOSA	CORYMBIA APARRERINJA

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236	EUCLID ST	DEAD END	OLYMPIC BLVD	MAGNOLIA GRANDIFLORA	CORYMBIA CITRIODORA	PISTACHIA CHINENSIS
237	EUCLID ST	DEAD END FREEWAY	PICO BLVD	QUERCUS ILEX	QUERCUS SUBER	QUERCUS AGRIFOLIA
238	EUCLID ST	PICO BLVD	OCEAN PARK BLVD	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	TIPUANA TIPU
239	EUCLID ST	OCEAN PARK BLVD	ASHLAND AVE	LIQUIDAMBAR STYRACIFLUA	LIQUIDAMBAR STYRACIFLUA	PINUS HALEPENSIS
240	EXPOSITION BLVD	STEWART ST	CENTINELA AVE	GEIJERA PARVIFLORA	GEIJERA PARVIFOLIA	PODOCARPUS MACROPHYLLUS
241	FRANK ST	DELAWARE AVE	VIRGINIA AVE	TRISTANIA LAURINA	TRISTANIOPSIS LAURINA	PYRUS KAWAKAMII
242	FRANKLIN ST	MONTANA AVE	WILSHIRE BLVD	GEIJERA PARVIFLORA	GEIJERA PARVIFOLIA	LAGERSTROEMIA INDICA "MUSKOGEE"
243	FRANKLIN ST	WILSHIRE BLVD	COLORADO	FICUS MICROCARPA	ALBIZIA JULIBRISSIN	TIPUANA TIPU
244	FRANKLIN ST	COLORADO	NEBRASKA AVE	ULMUS PARVIFOLIA	ULMUS PARVIFOLIA 'DRAKE'	TIPUANA TIPU
245	FRASER AVE	BARNARD WAY	NEILSON WAY	METROSIDEROS EXCELSUS	BRAHEA EDULIS	METROSIDEROS EXCELSUS

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246	GEORGINA AVE	OCEAN AVE	14 ST	PHOENIX CANARIENSIS	JUBAEA CHILENSIS	PHOENIX DACTYLIFERA
247	GEORGINA AVE	14 ST	17 ST	CASUARINA CUNNINGHAMIANA	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILLATA
248	GEORGINA AVE	17 ST	26 ST	FICUS MICROCARPA	FICUS MICROCARPA	ULMUS PARVIFOLIA
249	GLENN AVE	MARINE ST	ASHLAND AVE	CALLISTEMON VIMINALIS	CALLISTEMON VIMINALIS	CALLISTEMON CITRINUS
250	GRANT ST	6 ST	LINCOLN BLVD	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	TIPUANA TIPU
251	GRANT ST	LINCOLN BLVD	16 ST	FICUS MICROCARPA	AFROCARPUS FALCATUS	ARBUTUS 'MARINA'
252	HART AVE	BARNARD WAY	NEILSON WAY	METROSIDEROS EXCELSUS	BRAHEA ARMATA	METROSIDEROS EXCELSUS
253	HARVARD ST	MONTANA AVE	WILSHIRE BLVD	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	ALBIZIA JULIBRISSIN
254	HARVARD ST	WILSHIRE BLVD	COLORADO	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	LAGERSTROEMIA INDICA
255	HIGHLAND AVE	OCEAN PARK BLVD	SOUTH CITY LIMIT	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	CALLISTEMON VIMINALIS

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256	HILL ST	NEILSON WAY	4 ST	TRACHYCARPUS FORTUNEI	TRACHYCARPUS FORTUNEI	HOWEA FORSTERIANA
257	HILL ST	4 ST	6 ST	MELALEUCA QUINQUENERVIA	MELALEUCA LINARIIFOLIA	MELALEUCA STYPHELIOIDES
258	HILL ST	HIGHLAND AVE	LINCOLN BLVD	TRACHYCARPUS FORTUNEI	TRACHYCARPUS FORTUNEI	HOWEA FORSTERIANA
259	HILL ST	LINCOLN BLVD	11 ST	PODOCARPUS MACROPHYLLUS	CALLISTEMON VIMINALIS	PODOCARPUS MACROPHYLLUS
260	HILL ST	11 ST	17 ST	LAGERSTROEMIA INDICA	LAGERSTROEMIA INDICA	CUPANIOPSIS ANACARDIOIDES
261	HILL ST	17 ST	21 ST	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	LAGERSTROEMIA INDICA
262	HILL ST	21ST	25 ST	FICUS MICROCARPA	QUERCUS ILEX	QUERCUS SUBER
264	HOLLISTER AVE	BARNARD WAY	MAIN ST	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	LEPTOSPERMUM PETERSONII
265	HOLLISTER AVE	MAIN ST	3 ST	LAGERSTROEMIA INDICA	LAGERSTROEMIA INDICA	TRISTANIOPSIS LAURINA
266	HOLLISTER AVE	4 ST	BEVERLY AVE	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	LEPTOSPERMUM PETERSONII

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267	IDAHO AVE	OCEAN AVE	7 ST	LIQUIDAMBAR STYRACIFLUA	LIQUIDAMBAR STYRACIFLUA 'ROTUNDIL	EUCALYPTUS LEUCOXYLON
268	IDAHO AVE	7 ST	14 ST	CEDRUS DEODARA	CEDRUS DEODARA	EUCALYPTUS MACULATA
269	IDAHO AVE	14 ST	21 ST	WASHINGTONIA ROBUSTA	PINUS PINEA	PINUS HALEPENSIS
270	IDAHO AVE	21ST	26 ST	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	FICUS RUBIGINOSA
271	KANSAS AVE	CLOVERFIELD	DEAD END	PODOCARPUS GARCILIOR	AFROCARPUS FALCATUS	GEIJERA PARVIFLORA
272	KENNSINGTON AVE	BEVERLY AVE	LINCOLN BLVD	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	EUCALYPTUS LEUCOXYLON
273	KINNEY ST	NEILSON WAY	MAIN ST	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	TRISTANIOPSIS LAURINA
274	LA MESA DRIVE	19 ST	26 ST	FICUS MACROPHYLLA	FICUS MACROPHYLLA	FICUS RUBIGINOSA
275	LA MESA PLACE	LA MESA DRIVE	26 ST	FICUS MACROPHYLLA	FICUS MACROPHYLLA	FICUS RUBIGINOSA
276	LIPTON AVE	STANFORD ST	CENTINELA AVE	TRACHYCARPUS FORTUNEI	TRACHYCARPUS FORTUNEI	BANKSIA INTEGRIFOLIAL

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STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
277	LINCOLN BLVD	SAN VICENTE BLVD	MONTANA AVE	CERTONIA SILIQUA	QUERCUS AGRIFOLIA	QUERCUS SUBER
278	LINCOLN BLVD	MONTANA AVE	WILSHIRE BLVD	WASHINGTONIA ROBUSTA	QUERCUS AGRIFOLIA	QUERCUS SUBER
279A	LINCOLN BLVD	WILSHIRE BLVD	FREEWAY	LOPHOSTEMON CONFERTUS	LOPHOSTEMON CONFERTUS	CORYMBIA APPARRERINJA
279B	LINCOLN BLVD	FREEWAY	PICO BLVD	LOPHOSTEMON CONFERTUS	CORYMBIA CITRIODORA	EUCALYPTUS NICHOLII
279C	LINCOLN BLVD	PICO BLVD	OCEAN PARK BLVD	LOPHOSTEMON CONFERTUS	EUCALYPTUS MACULATA	EUCALYPTUS LEUCOXYLON
279D	LINCOLN BLVD	OCEAN PARK BLVD	SOUTH CITY LIMIT	LOPHOSTEMON CONFERTUS	LOPHOSTEMON CONFERTUS	ULMUS PARVIFOLIA 'DRAKE'
279E	LINCOLN BLVD MEDIANS	WILSHIRE BLVD	FREEWAY	LOPHOSTEMON CONFERTUS	PHOENIX DACTYLIFERA	PHOENIX DACTYLIFERA
279F	LONGFELLOW ST	OZONE AVE	MARINE ST	ARBUTUS MARINA	CERCIS CANADENSIS 'FOREST PANSY'	ARBUTUS 'MARINA'
280	MAIN ST	COLORADO	PICO BLVD	PODOCARPUS MACROPHYLLUS	CORYMBIA CITRIODORA	TIPUANA TIPU
281	MAIN ST	PICO BLVD	SOUTH CITY LIMIT	FICUS MICROCARPA	CUPANIOPSIS ANACARDIOIDES	AFROCARPUS FALCATUS

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STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
282	MAPLE ST	LINCOLN BLVD	16 ST	FICUS MICROCARPA	CUPANIOPSIS ANACARDIOIDES	LOPHOSTEMON CONFERTUS
283	MAPLE ST	17 ST	18 ST	PODOCARPUS GARCILIOR	CALLISTEMON VIMINALIS	RHUS LANCEA
284	MARGARET LANE	MARINE ST	DEAD END	NO TREES	N/A	N/A
285	MARGUERITA AVE	OCEAN AVE	7 ST	PHOENIX CANARIENSIS	JUBAEA CHILENSIS	PHOENIX DACTYLIFERA
286	MARGUERITA AVE	7 ST	14 ST	PHOENIX CANARIENSIS	WASHINGTONIA FILIFERA	PHOENIX RECLINATA
287	MARGUERITA AVE	14 ST	16 ST	FICUS MICROCARPA	ULMUS PARVIFOLIA	PINUS HALEPENSIS
288	MARGUERITA AVE	16 ST	17 ST	CASUARINA CUNNINGHAMIANA	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILLATA
289	MARGUERITA AVE	17 ST	22 ST	PHOENIX CANARIENSIS	JUBAEA CHILENSIS	PHOENIX DACTYLIFERA
290	MARGUERITA AVE	22 ST	26 ST	CINNAMOMUM CAMPHORA	CINNAMOMUM CAMPHORA	TIPUANA TIPU
291	MARINE ST	NEILSON WAY	4 ST	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	TRISTANIOPSIS LAURINA

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292	MARINE ST	4 ST	HIGHLAND AVE	PODOCARPUS MACROPHYLLUS	METROSIDEROS EXCELSUS	TRISTANIOPSIS LAURINA
293	MARINE ST	HIGHLAND AVE	LINCOLN BLVD	PODOCARPUS GARCILIOR	STENOCARPUS SINUATUS	PARKINSONIA 'DESERT MUSEUM'
294	MARINE ST	LINCOLN BLVD	17 ST	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
295	MARINE ST	18 ST	23 ST	FICUS MICROCARPA	ULMUS PARVIFOLIA 'DRAKE'	TIPUANA TIPU
296	MICHIGAN AVE	7 ST	LINCOLN BLVD	SCHINUS MOLLE	PINUS TORREYANA	AGONIS FLEXUOSA
297	MICHIGAN AVE	LINCOLN BLVD	20 ST	FICUS MICROCARPA	AFROCARPUS FALCATUS	GEIJERA PARVIFLORA
298	MICHIGAN AVE	21 ST	CLOVERFIELD	PLATANUS RACEMOSA	LOPHOSTEMON CONFERTUS	PLATANUS RACEMOSA
299	MICHIGAN AVE	CLOVERFIELD	DEAD END	TRACHYCARPUS FORTUNEI	LOPHOSTEMON CONFERTUS 'VARIEGA	LAGERSTROEMIA INDICA
300	MILLS ST	2 ST	3 ST	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	MELALEUCA STYPHELOIDES
301	MONTANA AVE	OCEAN AVE	7 ST	LIQUIDAMBAR STYRACIFLUA	LIQUIDAMBAR STYRACIFLUA 'ROTUNDIL	ULMUS PARVIFOLIA 'ALLEE'

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302	MONTANA AVE	7 ST	17 ST	FICUS MICROCARPA	CORYMBIA CITRIODORA	LOPHOSTEMON CONFERTUS
303	MONTANA AVE	17 ST	21ST	PODOCARPUS MACROPHYLLUS	AFROCARPUS FALCATUS	GEIJERA PARVIFLORA
304	MONTANA AVE	21 ST	STANFORD ST	BRACHYCITON POPULNEUS	PLATANUS MEXICANA	ULMUS PARVIFOLIA 'ALLEE'
304A	MONTANA AVE MEDIANS	20 ST	23 ST	HYMENOSPORUM FLAVUM	CEIBA SPECIOSA	LOPHOSTEMON CONFERTUS
305	NAVY ST	HIGHLAND AVE	LINCOLN BLVD	PODOCARPUS GRACILIOR	PODOCARPUS MACROPHYLLUS	ARBUTUS 'MARINA'
306	NAVY ST	18 ST	23 ST	FICUS MICROCARPA	ULMUS PARVIFOLIA 'DRAKE'	TRISTANIOPSIS LAURINA
307	NEBRASKA AVE	STEWARD ST	CENTINELA AVE	NO TREES	PLATANUS RACEMOSA	N/A
311	NEILSON WAY MEDIANS	PICO BLVD	SOUTH CITY LIMIT	CASSIA LEPTOPHYLLA	KOELREUTERIA PANICULATA	CEIBA SPECIOSA
312	NORMAN PLACE	MAIN ST	2 ST	METROSIDEROS EXCELSUS	LAGERSTROEMIA INDICA 'NATCHEZ'	METROSIDEROS EXCELSUS
313	OAK ST	11 ST	14 ST	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	PYRUS KAWAKAMII

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314	OAK ST	14 ST	17 ST	MAGNOLIA GRANDIFLORA	CALLISTEMON CITRINUS	RHUS LANCEA
315	OAK ST	17 ST	23 ST	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
316	OAK ST	23 ST	25 ST	FICUS MICROCARPA	METROSIDEROS EXCELSUS	AFROCARPUS FALCATUS
317	OCEAN AVE	NORTH CITY LIMIT	COLORADO	PALM SP.	BRAHEA BRANDEGEEI	PHOENIX DACTYLIFERA
318	OCEAN AVE	COLORADO	BICKNELL AVE	PALM SP.	BRAHEA ARMATA	BRAHEA BRANDEGEEI
319	OCEAN AVE	BICKNELL AVE	STRAND ST	PALM SP.	BRAHEA ARMATA	BRAHEA BRANDEGEEI
320	OCEAN AVE	STRAND ST	HOLLISTER AVE	WASHINGTONIA ROBUSTA	BRAHEA ARMATA	BRAHEA BRANDEGEEI
320A	OCEAN AVE MEDIANS	COLORADO	PICO BLVD	WASHINGTONIA ROBUSTA AND ARBUTUS MARINA	BRAHEA EDULIS	ARBUTUS 'MARINA'
320B	OCEAN AVE MEDIANS	PICO BLVD	BICKNELL AVE	METROSIDEROS EXCELSUS	BRAHEA EDULIS	BRAHEA EDULIS
321	OCEAN PARK BLVD	BARNARD WAY	NEILSON WAY	SYAGRUS ROMONZOFFIANUM	BRAHEA EDULIS	METROSIDEROS EXCELSUS

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322	OCEAN PARK BLVD	NEILSON WAY	MAIN ST	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	BRAHEA EDULIS
323	OCEAN PARK BLVD	MAIN ST	LINCOLN BLVD	ARBUTUS MARINA	GEIJERA PARVIFOLIA	RHUS LANCEA
324	OCEAN PARK BLVD	LINCOLN BLVD	14 ST	LIQUIDAMBAR STYRACIFLUA	TIPUANA TIPU	ALBIZIA JULIBRISSIN
325	OCEAN PARK BLVD	14 ST	25 ST	PODOCARPUS MACROPHYLLUS	CORYMBIA CITRIODORA	PODOCARPUS MACROPHYLLUS
326	OCEAN PARK BLVD	25 ST	CENTINELA AVE	LIQUIDAMBAR STYRACIFLUA	CORYMBIA CITRIODORA	AFROCARPUS FALCATUS
326A	OCEAN PARK BLVD MEDIANS	BARNARD WAY	NEILSON WAY	SYAGRUS ROMANZOFFIANUM	SYAGRUS ROMANZOFFIANUM	SYAGRUS ROMANZOFFIANUM
326B	OCEAN PARK BLVD MEDIANS	MAIN ST	5 ST		MELALEUCA LINARIIFOLIA	BRAHEA ARMATA
326C	OCEAN PARK BLVD MEDIANS	5 ST	LINCOLN BLVD		BRAHEA ARMATA	KOELREUTERIA BIPINNATA
327	OCEAN PARK BLVD MEDIANS	25 ST	34 ST	PINUS CANARIENSIS	PINUS CANARIENSIS	QUERCUS AGRIFOLIA
327A	OCEAN WAY	PICO BLVD	BAY ST		BRAHEA BRANDEGEEI	BRAHEA ARMATA 'CLARA'

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328	OLYMPIC BLVD MEDIANS	10 ST	CENTINELA AVE	ERYTHRINA CAFFRA	PINUS CANARIENSIS	PINUS PINEA
329	OLYMPIC BLVD	10 ST	19 ST	BAUHINIA VARIEGATA	STENOCARPUS SINUATUS	PARKINSONIA 'DESERT MUSEUM'
330	OLYMPIC BLVD	19 ST	CLOVERFIELD	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	BANKSIA INTEGRIFOLIAL
331	OLYMPIC BLVD	CLOVERFIELD	26 ST	MELALEUCA QUINQUENERVIA	MELALEUCA LINARIIFOLIA	MELALEUCA QUINQUENERVIA
332	OLYMPIC BLVD	26 ST	CENTINELA AVE	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	MELALEUCA LINARIIFOLIA
333	OZONE AVE	HIGHLAND AVE	LINCOLN BLVD	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	GEIJERA PARVIFLORA
334	OZONE AVE	LINCOLN BLVD	FREDERICK ST	SCHINUS MOLLE	TRISTANIOPSIS LAURINA	GEIJERA PARVIFLORA
335	PACIFIC ST	OCEAN AVE	NEILSON WAY	PALM SP.	BRAHEA BRANDEGEEI	BANKSIA INTEGRIFOLIAL
336	PACIFIC ST	NEILSON WAY	4 ST	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	PYRUS KAWAKAMII
337	PACIFIC ST	4 ST	6 ST	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	LAGUNARIA PATERSONII

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338	PACIFIC ST	6 ST	LINCOLN BLVD	WASHINGTONIA ROBUSTA	QUERCUS AGRIFOLIA	MELALEUCA STYPHELIOIDES
339	PACIFIC ST	LINCOLN BLVD	14 ST	CASUARINA CUNNINGHAMIANA	CASUARINA CUNNINGHAMIANA	ALLOCASUARINA VERTICILIATA
340	PACIFIC ST	14 ST	16 ST	FICUS MICROCARPA	TRISTANIOPSIS LAURINA	ALLOCASUARINA VERTICILIATA
341	PALISADES AVE	OCEAN AVE	7 ST	MAGNOLIA GRANDIFLORA	MAGNOLIA GRANDIFLORA	FICUS RUBIGINOSA
342	PEARL ST	LINCOLN BLVD	14 ST	FICUS MICROCARPA	QUERCUS AGRIFOLIA	CINNAMOMUM CAMPHORA
343	PEARL ST	14 ST	16 ST	FICUS MICROCARPA	QUERCUS AGRIFOLIA	EUCALYPTUS AMPLIFOLIA
344	PEARL ST	16 ST	20 ST	EUCALYPTUS SPECIES	ALBIZIA JULIBRISSIN	JACARANDA MIMOSIFOLIA
345	PEARL ST	20 ST	28 ST	BRACHYCITON POPULNEUS	ALBIZIA JULIBRISSIN	JACARANDA MIMOSIFOLIA
346	PEARL ST	28 ST	CENTINELA AVE	BRACHYCITON POPULNEUS	MELALEUCA LINARIIFOLIA	GEIJERA PARVIFLORA
347	PENNSYLVANIA AVE	21 ST	22 ST	MELALEUCA QUINQUENERVIA	MELALEUCA QUINQUENERVIA	MELALEUCA STYPHELIOIDES

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348	PENNSYLVANIA AVE	26 ST	STEWART ST	PLATANUS RACEMOSA	PLATANUS RACEMOSA	CUPANIOPSIS ANACARDIOIDES
349	PENNSYLVANIA AVE	STANFORD ST	CENTINELA AVE	MULTIPLE	JACARANDA MIMOSIFOLIA	LAGERSTROEMIA INDICA
350A	PICO BLVD	OCEAN AVE	LINCOLN BLVD	PLATANUS ACERIFOLIA	CORYMBIA CITRIODORA	PLATANUS RACEMOSA (MEDIANS)
350B	PICO BLVD	LINCOLN BLVD	14 ST	PLATANUS ACERIFOLIA	CALLISTEMON VIMINALIS	PLATANUS RACEMOSA (MEDIANS)
350C	PICO BLVD	14 ST	CLOVERFIELD	PLATANUS ACERIFOLIA	LOPHOSTEMON CONFERTUS	PLATANUS RACEMOSA (MEDIANS)
350	PICO BLVD	CLOVERFIELD	CITY LIMITS	PLATANUS ACERIFOLIA	EUCALYPTUS MACULATA	JACARANDA MIMOSIFOLIA (MEDIANS)
351	PIER AVE	NEILSON WAY	2 ST	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	LEPTOSPERMUM PETERSONII
352	PIER AVE	4 ST	LINCOLN BLVD	PODOCARPUS MACROPHYLLUS	TRISTANIOPSIS LAURINA	PODOCARPUS MACROPHYLLUS
353	PIER AVE	LINCOLN BLVD	11 ST	FICUS MICROCARPA	AFROCARPUS FALCATUS	CUPANIOPSIS ANACARDIOIDES
354	PIER AVE	17 ST	21 ST	CERATONIA SILIQUA	QUERCUS ILEX	QUERCUS SUBER

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355	PIER AVE	21 ST	CLOVER ST	NERIUM OLEANDER	MELALEUCA LINARIIFOLIA	PYRUS KAWAKAMII
356	PINE ST	7 ST	LINCOLN BLVD	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	PARKINSONIA 'DESERT MUSEUM'
357	PINE ST	LINCOLN BLVD	14 ST	FICUS MICROCARPA	METROSIDEROS EXCELSUS	AFROCARPUS FALCATUS
358	PINE ST	17 ST	18 ST	JACARANDA MIMOSIFOLIA	JACARANDA MIMOSIFOLIA	TIPUANA TIPU
359	PRINCETON ST	MONTANA AVE	WILSHIRE BLVD	FICUS MICROCARPA	TIPUANA TIPU	CUPANIOPSIS ANACARDIOIDES
360	PRINCETON ST	WILSHIRE BLVD	COLORADO	CUPANIOPSIS ANACARDIOIDES	CUPANIOPSIS ANACARDIOIDES	STENOCARPUS SINUATUS
361	PROSPECT AVE	MARINE ST	DEAD END	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	LEPTOSPERMUM PETERSONII
362	RAYMOND AVE	4 ST	LINCOLN BLVD	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	PARKINSONIA 'DESERT MUSEUM'
363	ROBSON AVE	17 ST	DEWEY ST	FICUS MICROCARPA	EUCALYPTUS AMPLIFOLIA	AGONIS FLEXUOSA
364	SAN VINCENTE MEDIANS	OCEAN AVE	26 ST	ERYTHRINA CAFFRA	ERYTHRINA CAFFRA	N/A

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365	SAN VINCENTE BLVD	OCEAN AVE	7 ST	MAGNOLIA GRANDIFLORA	CORYMBIA CITRIODORA	METROSIDEROS EXCELSUS
366	SAN VINCENTE BLVD	7 ST	26 ST	MAGNOLIA GRANDIFLORA	CORYMBIA CITRIODORA	QUERCUS SUBER
367	SANTA MONICA BLVD	OCEAN AVE	LINCOLN BLVD	KOELREUTERIAS BIPINNATA	KOELREUTERIA BIPINNATA	LOPHOSTEMON CONFERTUS
368A	SANTA MONICA BLVD	LINCOLN BLVD	20 ST	CUPANIOPSIS ANACARDIOIDES	CORYMBIA CITRIODORA	ERIOBOTRYA DEFLEXA
368B	SANTA MONICA BLVD	20 ST	CLOVERFIELD	FICUS MICROCARPA 'NITIDA'	ULMUS PARVIFOLIA 'ALLEE'	CORYMBIA CITRIODORA
368C	SANTA MONICA BLVD	CLOVERFIELD	26 ST	ERIOBOTRYA DEFLEXA	ULMUS PARVIFOLIA 'ALLEE'	CORYMBIA CITRIODORA
369	SANTA MONICA BLVD	26 ST	EAST CITY LIMIT	WASHINGTONIA ROBUSTA	WASHINGTONIA ROBUSTA	CORYMBIA CITRIODORA
370	STANFORD ST	MONTANA AVE	WILSHIRE BLVD	CERCIS OCCIDENTALIS	PODOCARPUS MACROPHYLLUS	PARKINSONIA 'DESERT MUSEUM'
371	STANFORD ST	WILSHIRE BLVD	COLORADO	CERCIS OCCIDENTALIS	RHUS LANCEA	LEPTOSPERMUM PETERSONII
372	STANFORD ST	COLORADO	NEBRASKA AVE	CASUARINA CUNNINGHAMIANA	TIPUANA TIPU	JACARANDA MIMOSIFOLIA

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373	STEWART ST	COLORADO AVE	EXPOSITION BLVD	LOPHOSTEMON CONFERTUS	LOPHOSTEMON CONFERTUS	EUCALYPTUS AMPLIFOLIA
373A	STEWART ST	EXPOSITION BLVD	PICO BLVD	LOPHOSTEMON CONFERTUS & EUCALYPTUS AMPLIFOLIA	LOPHOSTEMON CONFERTUS	EUCALYPTUS AMPLIFOLIA
374	STRAND ST	OCEAN AVE	MAIN ST	METROSIDEROS EXCELSUS	METROSIDEROS EXCELSUS	LEPTOSPERMUM PETERSONII
375	STRAND ST	MAIN ST	LINCOLN BLVD	PODOCARPUS MACROPHYLLUS	PODOCARPUS MACROPHYLLUS	BANKSIA INTEGRIFOLIAL
376	SUNSET AVE	GLENN AVE	16 ST	CALLISTEMON CITRINUS	WASHINGTONIA ROBUSTA	N/A
377	URBAN AVE	PICO BLVD	YORKSHIRE AVE	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	PARKINSONIA 'DESERT MUSEUM'
378	VIRGINIA AVE	20 ST	CLOVERFIELD	FICUS MICROCARPA	ULMUS PARVIFOLIA	PISTACHIA CHINENSIS
379	VIRGINIA AVE	CLOVERFIELD	27 ST	PODOCARPUS MACROPHYLLUS	GEIJERA PARVIFOLIA	PINUS CANARIENSIS
380	VIRGINIA AVE	STEWART ST	CENTINELA AVE	PODOCARPUS MACROPHYLLUS	PINUS CANARIENSIS	PINUS HALEPENSIS
381	WADSWORTH AVE	BARNARD WAY	NEILSON WAY	METROSIDEROS EXCELSUS	BRAHEA ARMATA	METROSIDEROS EXCELSUS

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382	WARWICK AVE	EXPOSITION BLVD	VIRGINIA AVE	CALLISTEMON CITRINUS	CALLISTEMON CITRINUS	ULMUS PARVIFOLIA 'DRAKE'
383	WASHINGTON AVE	OCEAN AVE	4 ST	WASHINGTONIA ROBUSTA	EUCALYPTUS AMPLIFOLIA	EUCALYPTUS MACULATA
384	WASHINGTON AVE	4 ST	7 ST	WASHINGTONIA ROBUSTA	CINNAMOMUM CAMPHORA	TIPUANA TIPU
385	WASHINGTON AVE	7 ST	14 ST	MAGNOLIA GRANDIFLORA	PINUS PINEA	CINNAMOMUM CAMPHORA
386	WASHINGTON AVE	14 ST	16 ST	CUPANIOPSIS ANACARDIOIDES	CEDRUS DEODARA	FICUS RUBIGINOSA
387	WASHINGTON AVE	16 ST	21 ST	MULTIPLE	FICUS RUBIGINOSA	EUCALYPTUS AMPLIFOLIA
388	WASHINGTON AVE	21 ST	26 ST	GREVILLEA ROBUSTA	No wires: ULMUS PARVIFOLIA 'DRAKE'/ W	No wires: ALBIZIA JULIBRISSIN/ Wires: EUCALYPTUS MACULATA
389	WASHINGTON AVE	26 ST	STANFORD ST	GREVILLEA ROBUSTA	CORYMBIA CITRIODORA	KOELREUTERIA BIPINNATA
390	WILSHIRE BLVD	OCEAN AVE	CENTINELA AVE	WASHINGTONIA ROBUSTA	WASHINGTONIA ROBUSTA	WASHINGTONIA HYBRID
391	WILSHIRE BLVD MEDIANS	OCEAN AVE	CENTINELA AVE	DYSIS DECARYI	CEIBA SPECIOSA	NEODYPSIS DECARYII (AT CROSSINGS)

1. **PRIMARY SPECIES:**
   Trees that will be the designated species for individual street segments.
2. **SECONDARY SPECIES:**
   Trees that will be planted at the discretion of the Public Landscape Division.

STREET SEGMENT #	STREET SEGMENT	FROM	TO	EXISTING SPECIES	PRIMARY SPECIES[1]	SECONDARY SPECIES[2]
392	YALE ST	MONTANA AVE	ARIZONA AVE	FICUS MICROCARPA	TIPUANA TIPU	ULMUS PARVIFOLIA 'DRAKE'
393	YALE ST	ARIZONA AVE	COLORADO	HYMENOSPORUM FLAVUM	CALLISTEMON VIMINALIS	LEPTOSPERMUM PETERSONII
394	YORKSHIRE AVE	PICO BLVD	DEAD END	PODOCARPUS GRACILIOR	PODOCARPUS MACROPHYLLUS	PARKINSONIA 'DESERT MUSEUM'

1. **PRIMARY SPECIES:**
   Trees that will be the designated species for individual street segments.
2. **SECONDARY SPECIES:**
   Trees that will be planted at the discretion of the Public Landscape Division.

3.9 ACKNOWLEDGEMENTS

SANTA MONICA CITY COUNCIL

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WEST COAST ARBORISTS, INC.