

# City of Sierra Madre



## Community Forest Management Plan



**CITY OF SIERRA MADRE**  
**COMMUNITY FOREST MANAGEMENT PLAN**  
232 WEST SIERRA MADRE BOULEVARD  
SIERRA MADRE, CALIFORNIA 91024

*Adopted March 25, 2014*

*City Council Resolution No. 14-20*

March 2014





## PARTNERSHIPS

This plan was the collaborative effort of multiple partners for community forest advancement.

### **CALFIRE**

Funding for this plan was provided by a grant through the California Department of Forestry and Fire Protection and Community Forestry Program.



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#### **Mayor Pro-Tem**

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#### **City Council Members**

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- Chris Koerber
- Josh Moran

#### **City Clerk**

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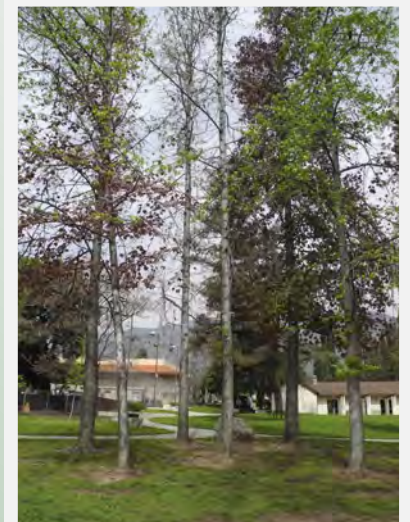
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## STATEMENT OF COMMITMENT

Friends,

It gives me great pleasure to present the Sierra Madre Community Forest Management Plan, which describes the important role that trees play in creating a healthier, more livable and prosperous Sierra Madre. This city, like many cities in the region and state, faces challenges attaining resources to provide its residents the quality of life that allows our generations to thrive. We can work our way through these challenges by making the smart investments and good choices that will make the biggest difference and have the most enduring impact.

Planting trees and caring for them are two of the smartest investments we can make- providing shade, reducing energy costs, cleaning the air, reducing greenhouse gases, capturing polluted urban runoff, improving water quality and adding beauty to our neighborhoods. The Community forest is a critical component of our infrastructure, one that is often taken for granted but will increase in value over time.

The Community Forest Management Plan provides a vehicle in which we can move forward achieving long-term stewardship of this resource, and provides for both community-wide and site-specific tools for planting and maintaining trees in our beautiful city. This Plan goes beyond just planting trees; this will require hard work and cooperation among City government, residents and businesses in our community. It will require a commitment from each of us. We all have an important role to play in this effort.

I thank the members of the Energy, Environment and Natural Resources Commission for their leadership and hard work to bring together this plan.

Sincerely,

Nancy Walsh  
Mayor, City of Sierra Madre





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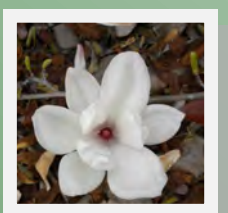
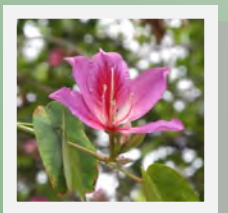
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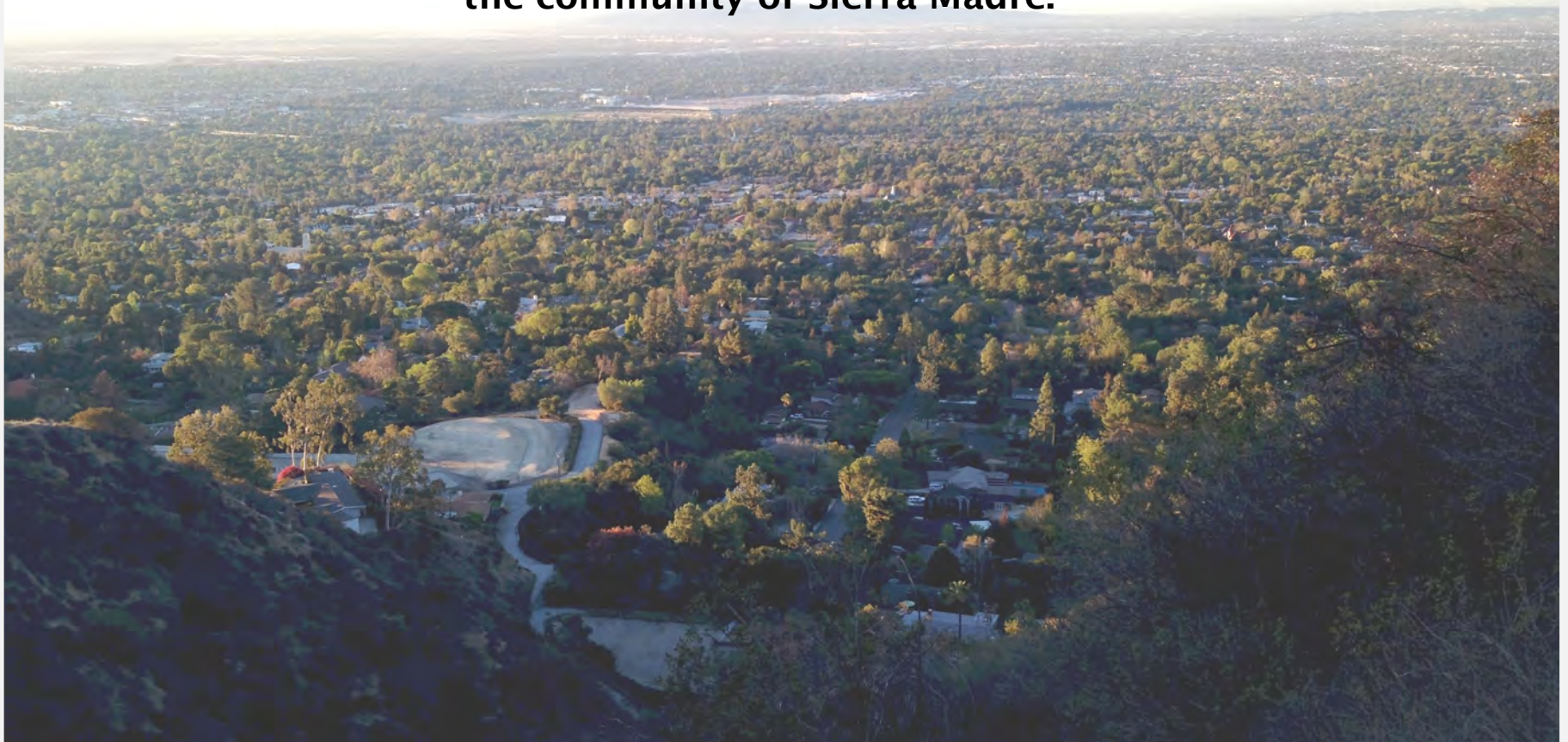






## VISION

**The Community Forest Master Plan ensures the continuation and enhancement of the tree canopy for the beauty, wellbeing, livability, and long-term environmental health of the community of Sierra Madre.**



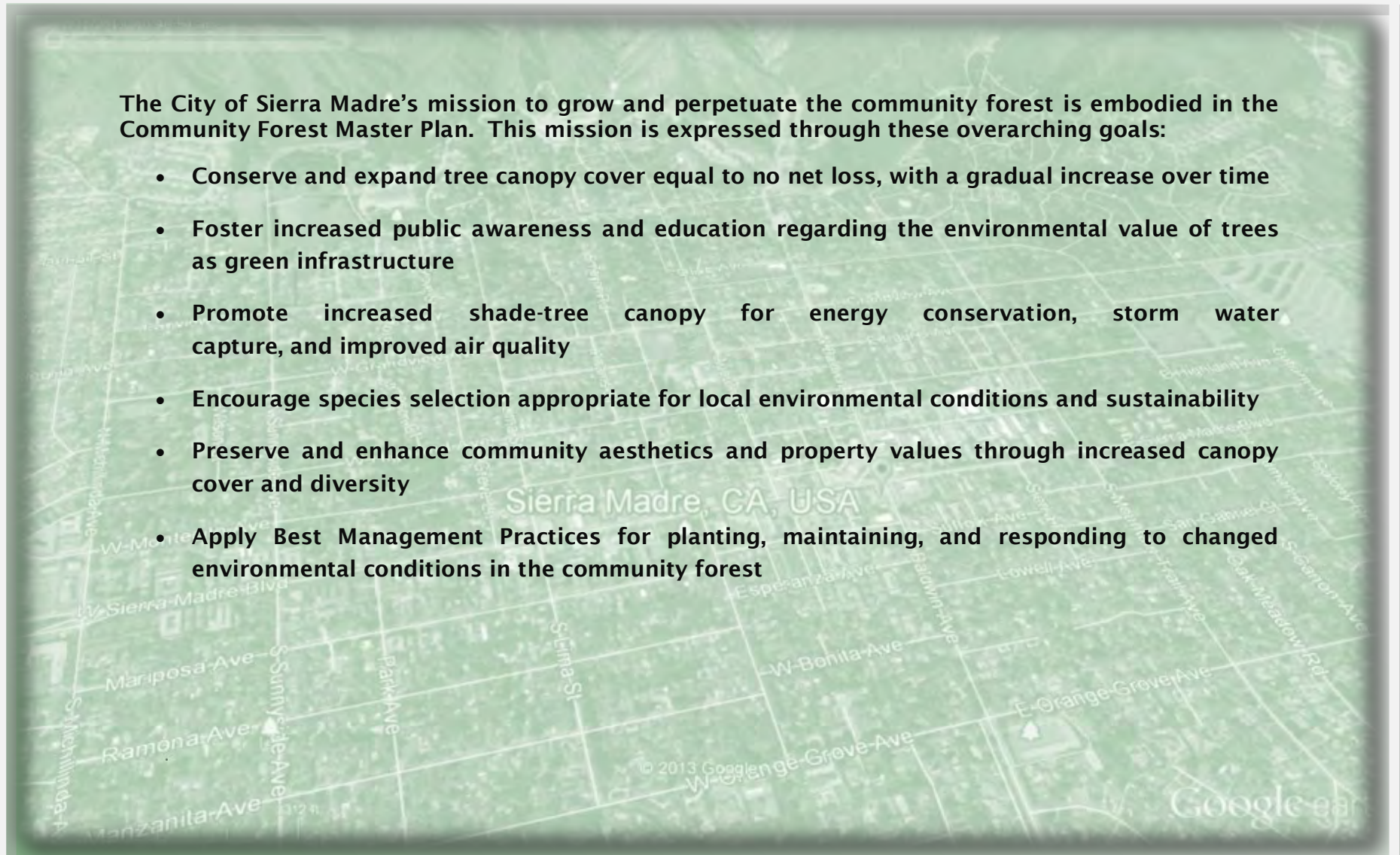




## MISSION STATEMENT

The City of Sierra Madre's mission to grow and perpetuate the community forest is embodied in the Community Forest Master Plan. This mission is expressed through these overarching goals:

- Conserve and expand tree canopy cover equal to no net loss, with a gradual increase over time
- Foster increased public awareness and education regarding the environmental value of trees as green infrastructure
- Promote increased shade-tree canopy for energy conservation, storm water capture, and improved air quality
- Encourage species selection appropriate for local environmental conditions and sustainability
- Preserve and enhance community aesthetics and property values through increased canopy cover and diversity
- Apply Best Management Practices for planting, maintaining, and responding to changed environmental conditions in the community forest





## Community Forest Management Plan

# INTRODUCTION

The City of Sierra Madre is located at the foot of the San Gabriel Mountains in Los Angeles County. The community is proud of its urban forest, which includes many native oaks and sycamores as well as numerous introduced species. Sierra Madre's urban forest directly affects the environment and quality of life that its citizens enjoy.

In 1998, the City Council adopted a Tree Preservation and Protection Ordinance underscoring the City's belief in the value of its urban woodland. The Tree Preservation and Protection Ordinance was updated in February 2014 and will continue to evolve over time to meet the inevitable changes and challenges of tomorrow.

The City of Sierra Madre places a high value on its tree canopy and is committed to the preservation and enhancement of the community forest over the next 50 years. A Tree Preservation and Protection Ordinance protects the community's trees and the Energy, Environment, and Natural Resource Commission (previously the Tree Advisory Commission) oversees the implementation of the ordinance and makes recommendations to the City Council on management strategies. This Community Forest Management Plan ("CFMP") provides guidelines for the continued maintenance and improvement of the community forest. This long-term planning document is an essential tool for the community in the long term care and management of the City's forest.

The CFMP integrates the community forest into the City's infrastructure and addresses the City's need for expanding biomass and canopy coverage with its Guiding Principles. Recommendations for future tree plantings focus on the environmental benefits they provide, site appropriateness, adaptability to the local climate, and enhancement of local neighborhood character and aesthetics.

The CFMP defines the standard of care for the forest and provides direction for the future of the forest for the citizens of Sierra Madre. These standards address public trees, but also serve as a guide for the care of private trees. The maintenance guidelines provide clear criteria to allow for the selective removal of undesirable, potentially hazardous, or aging trees. Suitable replacement species are recommended for various areas within the City. The standards of care follow current Best Management Practices to realize the maximum benefits possible from the community forest.

The development of Sierra Madre's CFMP was a collaboration of community members, decision makers, and City staff. City staff and community stakeholders contributed to the ideals, vision, and guiding principles of the CFMP. Those ideals and principles ultimately serve as the guide for future generations toward a consistent level of care and management of the community forest. The CFMP is a dynamic and living public document that will be a valuable reference available to residents, contractors, and City staff for use in dealing with a wide range of tree-related matters. This CFMP includes long-range policies and guidelines that have been written with enough flexibility to respond to changing conditions over time, yet still provide a consistent standard of care for future generations. ~







# SECTION I - BACKGROUND

## I.1 STARTING POINT: SIERRA MADRE IN RIO HONDO RIVER AND THE LOS ANGELES RIVER WATERSHED

The abrupt topography of the San Gabriel Mountains forms a dramatic backdrop to the City of Sierra Madre. A young mountain range, the San Gabriels rise quickly from the foothills, with slopes as steep as 65-70%. Vertical heights in the range are growing at a rapid rate of two inches per year. The mountainous environment, with steep-walled canyons, a variety of microclimates, soils, geology, plants, and wildlife, transitions from the foothills to the alluvial plain, setting the stage for Sierra Madre's community forest.

Sierra Madre is bound on the north by the San Gabriel Mountains and on the south, west, and east by the San Gabriel Valley. The San Gabriel and San Bernardino Mountains form the divide between the Pacific Ocean watershed and rivers that drain to the Mojave Desert. The western slopes drain to the Pacific Ocean through the Santa Clara, Los Angeles, San Gabriel, and Santa Ana Rivers. The eastern slopes drain to the Mojave Desert.



*When looking at Sierra Madre's urban forest, it is important to look beyond the City limits and recognize the role that trees play within a regional setting.*

Sierra Madre is located within the Rio Hondo River and Los Angeles River watersheds. These watersheds are hydrologically connected by the Rio Hondo River through the Whittier Narrows Reservoir. Whittier Narrows forms a natural gap between the Puente and Montebello Hills, where the San Gabriel and Rio Hondo Rivers converge. The Rio Hondo River formerly meandered across the basin to the San Gabriel and Los Angeles Rivers, but has been channelized and directed to the Los Angeles River for flood control purposes. Many of the Rio Hondo River tributaries have also been channelized and paved. Flood control basins and dams in the Rio Hondo drainage area include the Eaton, Sierra Madre, Big Santa Anita, and Sawpit Dams.



The City's water quality and supply is maintained by the Water Division, a department within Sierra Madre Public Works. The Water Division has two local sources by which they pump, treat, and distribute water. One source of the water supply is derived from four wells drawing from the East Raymond Basin aquifer. The second source is derived from two natural spring tunnels located in the Sierra Madre foothills. Both sources rely on ground water captured throughout the watershed. A third source exists in the form of a connection to an imported water pipeline.

In Sierra Madre, and in downstream communities, water quality is of great concern. Urban storm water runoff is a major source of pollution entering the Los Angeles River and continuing downstream. Located at the



## Community Forest Management Plan

### SECTION I - BACKGROUND, continued

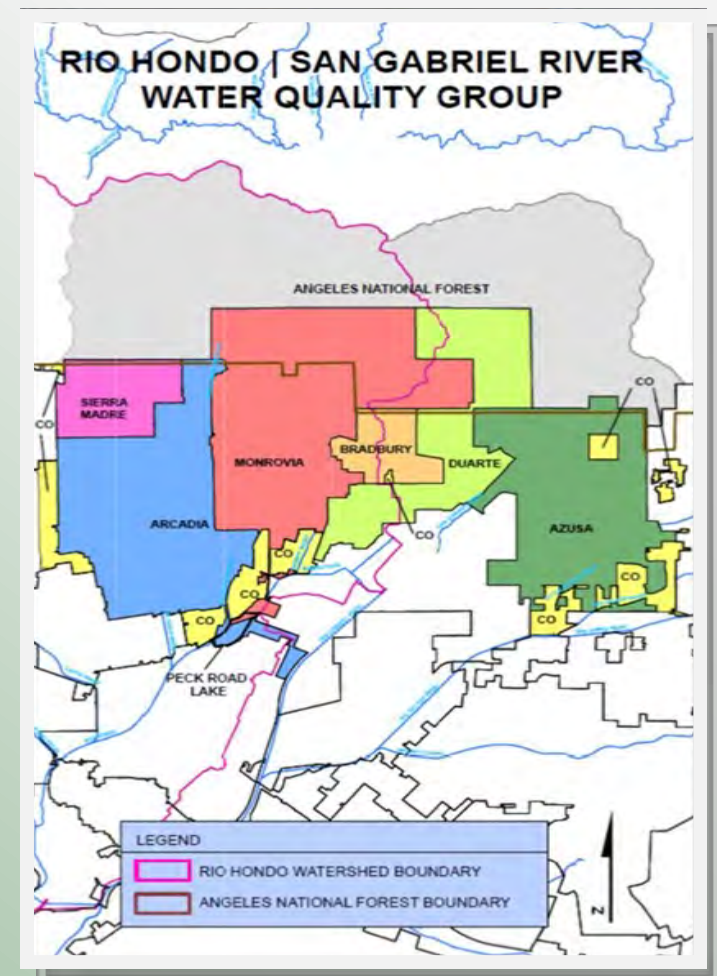
headwaters of the Rio Hondo and San Gabriel River Watersheds, Sierra Madre's community forest reduces the amount of runoff and pollutants that transfer into downstream waters and directly contributes to the improvement of the overall watershed in the following ways:

- Tree leaves and branches intercept, deflect, and slow rainfall
- Runoff volumes and pollutants are reduced by percolation through leaf litter, into organic top soil, and ultimately absorption by roots
- Canopy cover reduces soil erosion and sedimentation by diminishing the impact of rainfall on bare or landscaped surfaces
- Research has indicated that 100 mature trees intercept approximately 100,000 gallons of rainfall per year
- For every five percent of tree cover added to a community, storm water runoff is reduced by approximately two percent

Sierra Madre's location, topography, microclimates, and ecological setting all contribute to the importance of a healthy and sustainable community forest in this area of the Rio Hondo and San Gabriel River Watershed.

**The Rio Hondo/San Gabriel River Watershed Management Group** - as a leader in this group, the City of Sierra Madre acts as the coordinating agency for the Enhanced Watershed Management Plan and Coordinated Monitoring Program development. The group includes the County of Los Angeles, the Los Angeles County Flood Control District, and the Cities of Arcadia, Azusa, Bradbury, Duarte, Monrovia, and Sierra Madre.

When one tugs at a single thing in nature,  
he finds it attached to the rest of the world. - John Muir







## Community Forest Management Plan

### SECTION I - BACKGROUND, continued

#### I.1.A TOPOGRAPHY, SOILS, GEOLOGY

The City of Sierra Madre constitutes an area of 3.1 square miles and is located at the base of the San Gabriel Mountains within Los Angeles County. Elevations in the city rise from a low of approximately 600 feet above sea level as one approaches its southern boundary to 1,500 feet into the foothills. The terrain of the city ranges from generally flat to sloping.

Soil characteristics are typical of for a city built on foothill bedrock and alluvial deposits. Surface soils include unconsolidated, fine-grained deposits of silt, sand, gravel, and alluvial plain deposits. Sandy silt and silt containing clay are moderately dense and firm. Local bedrock consists mainly of weathered and non-weathered, metamorphosed sedimentary and igneous materials. Minor landslides are common on the steeper canyon slopes where weathered residual soil overlies bedrock. Deeper alluvial soils occur in the flatter portions of the city. The steep canyons, soil characteristics, and overall downward slope of the area create potential for floods, liquefaction, and landslides. Understanding the topographical and soil characteristics of the community forest is important for species selection, irrigation considerations, and erosion control. In addition to strategically engineered devices, increases in canopy cover and plantings of deeply rooted trees can help to reduce erosion and landslide potentials.

#### I.1.B CLIMATE AND MICROCLIMATES

Sierra Madre generally has warm, dry summers, and cool, wet winters. Annual precipitation mostly occurs between November and March. Snowfall in town is very rare, and it melts almost immediately. Winter frosts sometimes occur in December through March, but on most winter days the temperatures are fairly mild. Temperatures generally range from 40 degrees in the winter months to 100+ degrees in the summer months.

In the northeast portion of Sierra Madre, the Mt. Wilson Trail leads into the Angeles National Forest via the Sierra Madre Historical Wilderness Area. Bailey Canyon Trail originates from Bailey Canyon Wilderness Park, situated to the western part of Sierra Madre, and connects to the Mt. Wilson Trail below Orchard Camp. From these two trails, hikers can access several other trails that continue into the National Forest or into the San Gabriel Mountain Wilderness Area. It is characteristic for canyon areas to exhibit specific microclimates, with temperatures and humidity fluctuating significantly from the canyons to the lower elevations in town.

Rainfall in the city averages 18 inches per year, with recorded history of no rain whatsoever in some years to 60 inches of rain in very wet years. Typical of Southern California, the rain tends to fall in large amounts during sporadic, and often heavy, storms rather than consistently over several days, or at somewhat regular intervals. Because the metropolitan basin is largely built out, water originating in higher elevation communities can have a sudden impact on adjoining







## Community Forest Management Plan

### SECTION I - BACKGROUND, continued

downstream communities. Flooding from mountain storm runoff has historically impacted Sierra Madre, most notably the flood of 1938.

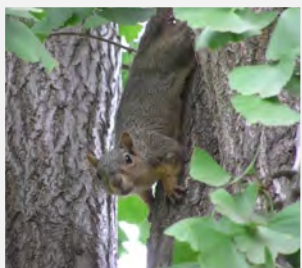
Seasonal, Santa Ana wind conditions impact the City of Sierra Madre. Under Santa Ana conditions, temperatures in the City will vary over a wider range, bringing higher temperatures and very low humidity. While high impact wind incidents are not frequent in the area, significant Santa Ana Wind events and storms like that of December 1, 2011 have historically impacted the community forest.



#### I.1.C ECOLOGICAL SETTING

The San Gabriel Mountains and foothills are diverse and comprise floristic vegetation dominated by plants typical to California native chaparral, alluvial fan scrub, and oak-sycamore woodlands. Nonnative plants are often intermixed with these stands in areas of wildland-urban interface. Riparian areas occur in the canyons that transition from the City into the Angeles National Forest.

These riparian belts are important transitional areas. Vegetation in the riparian areas is dependent on seasonal stream flows, but is generally characterized by plants that require large amounts of water, such as willow, sycamore, and alder trees. Healthy vegetation in riparian buffers can reduce streamside erosion and downstream sedimentation.



Native hillside and canyon bottom plant communities form a natural extension of the community forest. Wildlife thrive in these

areas. Black bear, mountain lion, coyote, mule deer, bobcat, fox, raccoon, skunk, squirrels, and bats are a few mammals that call the Sierra Madre foothills home. Reptiles and amphibians, including snakes, lizards, frogs, newts, and toads also inhabit the canyon areas.

Many bird species find shelter and food in these communities, including Red-tailed Hawk and Cooper's Hawk, Great Horn Owl, California Quail, Anna's Hummingbird, Lesser Goldfinch, House Finch, Western Scrub Jay, Northern Mockingbird, Acorn and Nuttall's Woodpeckers, California Thrasher, Spotted Towhee, and California Towhee. Some of this wildlife ventures into the lower reaches of Sierra Madre, finding shelter and food in community trees.

A large part of Sierra Madre's appeal is its proximity to nature and outdoor recreation. The canyons, streams, and access to wilderness via local trails has long been a defining characteristic of the city. Bailey





## Community Forest Management Plan

### SECTION I - BACKGROUND, continued



Canyon Wilderness Park in northern Sierra Madre embodies the transition from a natural forest system to the community forest system. Live Oak and Canyon View Nature Trails originate from this park. Continuing above the Canyon View trail, Bailey Canyon Trail connects with the Mt. Wilson Trail in the Historical Wilderness. The lower portion of the park includes a native botanical area maintained by members of the Sierra Madre Environmental Council for the education of its visitors. Bailey Canyon Wilderness and Historical Wilderness areas were established by City Council

declaration on January 24, 1967. Sierra Madre was the first city in Southern California to have wilderness preserves. The Mt. Wilson Trail was added to the Register of Historic and Cultural Landmarks on October 12, 1993. A coast live oak tree was planted at the historic Lizzie's Trail Inn to commemorate Jim Hesley, the last surviving burro packer of the Mt. Wilson Trail.



#### I.1.D URBAN FLOODING

Almost 40% percent of the land area in the City of Sierra Madre comprises impermeable surfaces that either collect water, or concentrate the flow of water in engineered channels. During periods of especially heavy rainfall, streets can become swift moving rivers. Storm drain inlets can clog with vegetative debris causing additional, localized flooding.

Specific areas in the city are considered to be a special risk for flooding. These areas are generally up against the foothills, along drainage courses, and below debris basins or the Sierra Madre Dam.

The canyon areas above the city are most prone to major flooding. In the years immediately following a brush fire in the foothills, these areas can pose an extreme hazard to persons and property following abundant rainfall. Flood in the special risk areas can occur rapidly or slowly depending on the severity of rainfall and prior occurrence of fire. Special flood hazard areas located in the lower portion of the city are subject to minor flooding.



The Sierra Madre Mountain Conservancy was founded in 1989 to protect open space for watershed and wildlife protection in the foothills above the urbanized areas of the town. With donations and land purchases, the conservancy holds conservation easements on City-owned lands to protect City's watershed and areas of storm water infiltration.

#### I.1.E WATER QUALITY

Water quality issues include potential contamination of groundwater and waterways by pollutants such as hydrocarbons, fertilizers, bacteria, toxins, and urban litter. The City of Sierra Madre has a comprehensive stormwater pollution prevention program that is designed to educate residents, contractors, developers, businesses and schools about the need to eliminate stormwater pollution. The City contracts with the County of Los Angeles Public Works to perform annual catch basin cleaning. In conjunction with the annual cleaning, catch basins in high traffic areas are cleaned monthly.





## Community Forest Management Plan

### SECTION I - BACKGROUND, continued

#### I.2 BENEFITS OF THE COMMUNITY FOREST

##### I.2.A ENVIRONMENTAL

###### Carbon Sequestration

Like those in natural forests, urban trees capture and store (sequester) atmospheric carbon dioxide directly and indirectly: as woody and foliar biomass as they grow and by reducing green house gas (GHG) emissions associated with electric power production for heating and air conditioning.

- A tree can absorb as much as 48 pounds of carbon dioxide per year and can sequester one ton of carbon dioxide by the time it reaches 40 years old.



- According to the USDA Forest Service, “Trees properly placed around buildings can reduce air conditioning needs by 30 percent and save 20-50 percent in energy used for heating.”
- The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day.

###### Improving Air Quality

Trees produce oxygen through photosynthesis, intercept airborne particulates, and reduce smog, enhancing a community's respiratory health. Trees provide shade and windbreaks, reduce energy consumption, and reduce the amount of air pollutants emitted into the atmosphere. Trees contribute to improved air quality by:

- Absorbing pollutants such as ozone and nitrogen oxides through leaf structures
- Intercepting particulate matter such as dust, pollen, ash, and smoke
- Releasing oxygen through photosynthesis
- Transpiring water and shading surfaces, which lowers local air temperature and reducing ozone levels
- One large tree can provide a supply of oxygen for two people

Tools, such as the Tree Carbon Calculator (CTCC) developed by the Urban Ecosystems and Processes Team, provide quantitative data on carbon dioxide sequestration and building heating/cooling energy savings provided by individual trees. CTCC outputs can be used to estimate GHG benefits for existing trees or to forecast future benefits. The CTCC is approved by the California Climate Action Reserve's Urban Forest Project Reporting Protocol for quantifying carbon dioxide sequestration from GHG tree planting projects.

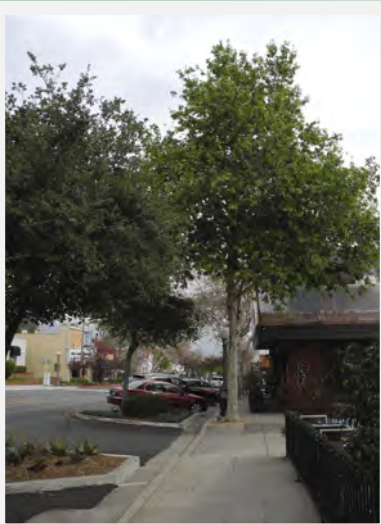




## Community Forest Management Plan

### SECTION I - BACKGROUND, continued

On the other hand, trees emit various biogenic volatile organic compounds (BVOCs) and release carbon into the atmosphere when they are cut down or fall and decay naturally. Species vary dramatically in their ability to produce net air quality benefits. While all emit some BVOCs, most species contribute benefits to overall air quality that far outweigh these emissions. Typically, large-canopied trees with large leaf surface areas that are not high emitters of BVOCs produce the greatest benefits. A dense but diverse community forest will generally balance out the carbon cycle and produce net air quality improvements to the community.



#### I.2.B COMMUNITY

One of the most frequently cited reasons that people plant trees is for beautification. Trees soften the hard geometry that dominates an urban environment. Trees add color, texture, line, and form to the landscape. Research also indicates that views of trees and nature brings relaxation and increased concentration.

A healthy community forest contributes to the social and economic well-being of landowners and community residents. The presence of trees provides a welcoming setting for recreation, outdoor gatherings, and pedestrian activities, all which lead to improved community health. Tree-lined streets in commercial and retail areas encourage consumers to linger and shop longer. Families are enticed to window-shop and frequent outdoor dining establishments. Well maintained street trees and neighborhood parks bring the “curb appeal” of the community and increase residential property values.

Community occasions for planting trees bring neighbors together and provide educational opportunities regarding the benefits of the urban forest.

#### WILDLIFE HABITAT

Life thrives where the complex interactions between organisms and their surroundings are balanced.

Trees provide connectivity between native and suburban habitats. They offer habitat for a wide variety of wildlife that may otherwise have a difficult time living in our cities.

Native trees support insects that provide pollination services and that move energy up the food chain from plants to birds, frogs, lizards and other wildlife. A single oak tree can support up to 500 species of insects and invertebrate species, thereby providing a broad range of dietary choices for birds, bats, and other wildlife. These creatures in turn provide natural pest control services in suburban gardens.

Additionally, by shading streams, reducing soil erosion, and capturing pollutants that would otherwise contaminate waterways and reach the ocean, trees support aquatic and riparian wildlife, as well as microorganisms that live in the soil itself.





## Community Forest Management Plan

### SECTION I - BACKGROUND, continued

#### I.3 HISTORICAL PERSPECTIVE OF THE COMMUNITY FOREST

The Gabrielino/Tongva people were the original inhabitants of the Los Angeles Basin. Artifacts of the Gabrielino or Tongva Indians have been discovered in Sierra Madre Canyon. Acorns from the Engelmann and coast live oak trees were an important food source. The good climate and presence of water added to the attraction for native American settlements in the Sierra Madre area.

The same attributes that brought the Gabrielino/Tongva people to the foothills of the San Gabriels attracted Nathaniel Carter. In February 1881, Mr. Carter purchased the original 1,103 acres that comprise Sierra Madre: 845 from "Lucky" Baldwin; 108 from the Southern Pacific Railroad Company; and 150 from Levi Richardson. The town quickly took shape as others were attracted to the agricultural opportunities of the area.

In the early years, there wasn't a set street tree design or palette. Trees were added over time as the town grew and evolved. Along with native species, immigrants brought seeds and young trees of species that had sentimental attachment or food value from their places of origin.



26 N. Baldwin Avenue, circa 1888

In 1958, the Sierra Madre City Council adopted a master plan of street tree plantings. The resolution set guidelines for specific tree plantings along 27 streets or street-sections within the city. Seventeen species were included in the planting palette, only one of which was a California native tree.

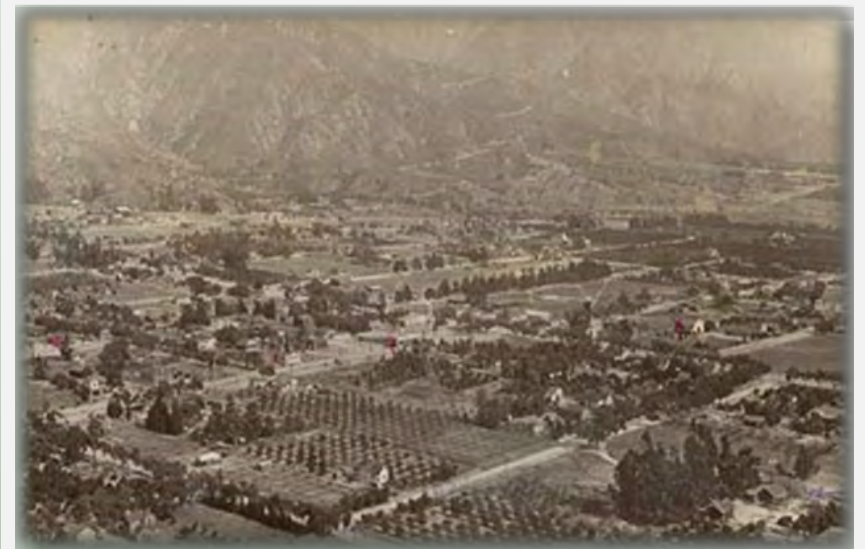
Many of those original trees continue to grace the designated parkways.

The great French Marshal Lyautey once asked his gardener to plant a tree. The gardener objected that the tree was slow growing and would not reach maturity for 100 years. The Marshal replied, "In that case, there is no time to lose; plant it this afternoon!"

- John F. Kennedy



20 S. Baldwin Avenue, circa 1889



Sierra Madre sometime before 1915; facing northeast





## Community Forest Management Plan

### SECTION I - BACKGROUND, continued



An Engelmann oak and street trees at 481 West Highland Avenue ~ 1920



Kersting Court - circa 1920



Young street trees at 585 West Sierra Madre Blvd. circa 1925



North Baldwin from Esperanza, circa 1919





## Community Forest Management Plan

### SECTION I - BACKGROUND, continued

An update to the master plan for street trees was crafted in 1971. The number of streets or street sections with designated trees was increased from 27 to 89. Three species were removed from the recommended list and 10 new species were added.

Informal updates to the street tree palette have occurred over the years as new species have been introduced, pests or diseases have impacted certain species, or as other species have fallen out of favor. The most recent update was in 2012. The list designates species appropriate for small or large parkways, cut-outs, and areas with utility conflicts. The Community Forest Management Plan will assist with the future selection of species within the planting palette in the coming decades.

" CITY OF SIERRA MADRE Street Tree Planting "	
<u>SIERRA MADRE BOULEVARD:</u>	
Michillinda- Lima	Indian Laurel
Lima- Baldwin	"
Baldwin-Mt.Trail	"
Mt.Trail- East City Limits	Magnolia
<u>CARTER AVENUE:</u>	
Entire Length	Fern Pine (Canariensis)
<u>ALLEGRIA AVENUE:</u>	
Entire Length	Jacaranda
<u>FAIRVIEW AVENUE:</u>	
Entire Length	Magnolia
<u>GRAND VIEW AVENUE:</u>	
West of Baldwin	BALDWIN TO GROVE: MODESTO AGH Fern Pine (Elaeagnus)
East of Baldwin	GROVE TO MICHELLINDA: CALIF. OAK Magnolia
<u>HIGHLAND AVENUE:</u>	
Entire Length	Tulip Tree (Liriodendron Tulipifera)
<u>MIRA MONTE AVENUE:</u>	
Entire Length	Jacaranda
<u>MONTECITO:</u>	
Baldwin-Michillinda	Camphor (Plant 40 ft or more apart)
Baldwin- East	Quercus Ilex- Holly Oak

A portion of  
the 1958 Street  
Tree Planting List



375 E. Grand View Avenue; circa 1906 and 2012

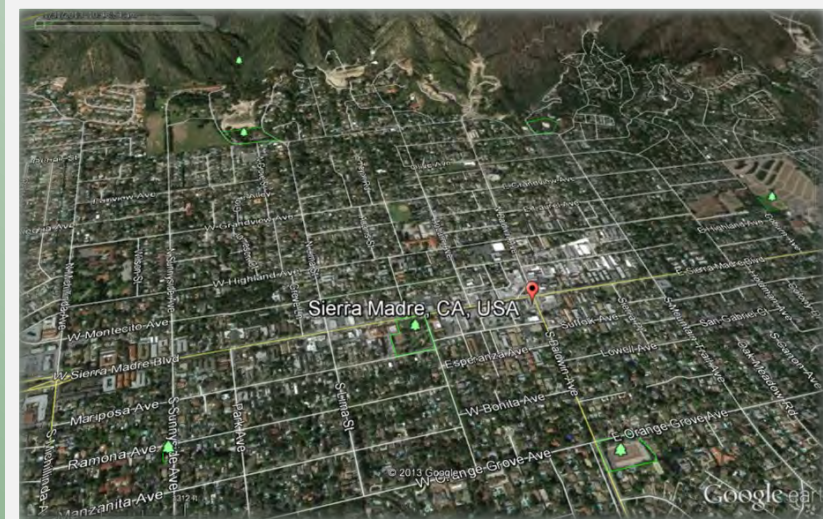


## Community Forest Management Plan

# SECTION 2 - SIERRA MADRE TODAY AND TOMORROW

## 2.1 GENERAL IMPRESSION OF THE COMMUNITY FOREST

Sierra Madre today consists of residential neighborhoods defined by tree-lined streets, attractive yards, and a variety of traditional architectural styles, including Victorian, California Bungalow, Mission Revival, and Ranch-style homes. Residential neighborhoods surround the central downtown business district and Kersting Court, which is generally located along Sierra Madre Boulevard and North Baldwin Avenue.



Tree canopy cover varies from one area of the city to the next. Species diversity and density differs between the Residential Canyon Zone, the Downtown Overlay Zone, the Hillside Management Zone, and the neighborhoods that lay outside those zones.

Streetscapes range from those that include sidewalks on both sides, on one side, no sidewalks, traditional curb and gutter, rural gutters, and no curb or gutter. Streets in the downtown area differ greatly from those in the

canyon area: this leads to a wide variety in the character of the community forest. Some streets include a monoculture of species, such as jacaranda, ficus, oak, or cypress. Other streets include a wide variety of tree species that may have been planted by both residents and the city. Some streets appear to lack street trees altogether.

In the residential canyon zone, public right of way is sometimes difficult to ascertain, and space is limited by the narrow and twisting confines of the canyon. The line between public and private tree can be blurred in this area of the city. Species selection and public education in this area is especially important for fire and riparian considerations.

Sierra Madre includes both developed and natural parks, which contribute greatly to the community forest. A wide variety of native and non-native trees are included in the parks and in the wilderness preserve. No one species currently dominates in the parklands. Trees that were popular at the time of the park's development generally grace the landscape. The exception is Bailey Canyon Wilderness Park, where ornamental trees transition into the native oaks and sycamores of the canyon.







## Community Forest Management Plan

### SECTION 2 - SIERRA MADRE TODAY AND TOMORROW, continued

#### 2.2 THE HUMAN COMPONENT

The quaint, small-town atmosphere and beautiful natural setting draw residents and visitors to Sierra Madre. The pedestrian-friendly downtown, parks, and wilderness opportunities bordering the city engage citizens and visitors in community recreation, hiking, fellowship in shared interests, and support of educational programs. Public outreach and education on matters of citizen interest and safety are integral parts of community life in Sierra Madre.



In 1972, Sierra Madre, by a resolution of the City Council, designated the City of Sierra Madre as a wildlife Sanctuary. Active members of the community created the Sierra Madre Environmental Action Council (SMEAC). The SMEAC acts in stewardship over City-owned Bailey Canyon Wilderness Park, a popular gateway to the Angeles Forest

and numerous hiking trails. SMEAC group members educate the public through articles and newsletters, and promote a Nature Awareness Program for schools. Bailey Canyon Wilderness Park is a unique aspect of the community forest; engaging the community as a transition between the natural and built environments.

The same aspects that bring the community together for outdoor recreation and appreciation bind them in the risk of wildland fires, flooding, and debris flows from the natural areas.

##### 2.2A WORKING WITH STAKEHOLDERS

Local business owners, community groups, associations, and residents are stakeholders who have a vested interest in Sierra Madre's community

forest. They all have the potential to be effected by, concerned about, or involved in some way with the community environment and tree issues.

Aligning with stakeholders creates a forum where concerns are heard, solutions are formed, and tangible goals are achieved. By sharing experiences with neighboring cities and agencies in the region the opportunity arises to share tasks, work load, and staff hours to meet common environmental goals. Partnerships provide support for healthier urban environments by broadening the scope of resources for funding and education. Collaboration at regional and local levels increases the likelihood of a successful and sustainable urban forestry program. The City of Sierra Madre recognizes the interdependent nature of the community forest, energy policies, water usage, and watershed issues. The City actively embraces environmental partnerships in many forms.

- The City of Sierra Madre has adopted a Green Street Policy
- The City maintains a position on the Raymond Basin Management Board
- The City participates in the Rio Hondo River and The Los Angeles River Watershed Group; coordinating the efforts of all eight acting agencies in establishing measures that keep harmful runoff out of the waterways and groundwater

City-led stakeholders groups collaborate on subjects relevant to:

- Wildland fires - by providing guidelines for developing fire-resistant landscapes and establishing a defensible space for safe protection of properties and lives, and by brush clearance inspections of urban properties that interface with wildlands.
- Soil erosion and flood management - by stewarding projects to install devices for flood control, and by providing guidelines for appropriate planting to hold soil in place, which also includes list of trees and plants to avoid in those areas.





## Community Forest Management Plan

### SECTION 2 - SIERRA MADRE TODAY AND TOMORROW, continued

- Protecting public health and environment - by keeping harmful runoff out of the waterways and groundwater through implementing projects that improve water quality.
- Water conservation measures based on the levels of groundwater supply.
- Preventing pollution of the watershed by implementing storm water BMP projects initiated by the City and private sector that will affect any of the above relevant subjects

As part of these efforts, Sierra Madre works with the following agencies: Southern California Edison, Los Angeles County Department of Public Works - Flood Control District, USDA - Forest Service, Angeles National Forest, Neighboring Cities of Arcadia and Pasadena, Rio Hondo/San Gabriel River Watershed Quality Group, Council for Watershed Health, Amigos de los Rios, Raymond Basin Management Board, and California Polytechnic - Cal Poly Pomona.



By continuing and strengthening their relationships with these agencies, Sierra Madre will continue to bring new levels of energy, enthusiasm and resources to their efforts on behalf of a healthy and sustainable community forest.

Community-led stakeholders groups may form when members of the community come together on their own to represent tree related issues in the City. The members of these groups may contribute to the implementation of the Sierra Madre Community Forest Management Plan. Opportunities for collaboration

include:

- Assisting the City with dissemination of interpretive technical arboricultural material and the use of Best Management Practices
- Provision of community feedback regarding implementation of the community forest plan

The City of Sierra Madre strives to protect and preserve the community forest as a natural resource and integral part of the City's green infrastructure.

Homeowners are the largest group of stakeholders in the City, and they carry significant responsibility for the care of the community forest. Homeowners have a duty to care for trees on public property adjacent to their land, per Sierra Madre Municipal Code Chapter 12.20, TREE PRESERVATION AND PROTECTION. Homeowners must also adhere to the Tree Ordinance of the Municipal Code in protecting all protected tree species on private property. It is a citizen's duty to understand the City Ordinance and to perform with due care the necessary actions to keep trees on their property and in their adjacent parkways healthy. Homeowners are also responsible for remaining abreast of any changes that are made to the existing Tree Preservation and Protection Ordinance.

### 2.3 - EVALUATION OF THE EXISTING TREE INVENTORY

#### 2.3.A OVERVIEW

The Sierra Madre tree inventory provides accurate records which assist in making management decisions such as budget development, tree maintenance cycles, and phased removal and replacement schedules. It provides the basis for planning to maximize public benefits and minimize public expense in achieving these benefits.



## Community Forest Management Plan

### SECTION 2 - SIERRA MADRE TODAY AND TOMORROW, continued

Maximum community and environmental benefits are achieved when the overall tree canopy is healthy and well maintained. Factors such as tree population age, size, diversity of species, and susceptibility to

pests become evident when trees represented in any of these categories are out of proportion in the community forest.



Sierra Madre's current tree inventory includes 5105 trees represented by 175 species. Considering that the community forest is spread over three square miles, a balanced forest would include an evenly distributed population. Currently, the three most common species include jacaranda, crape myrtle, and American sweetgum. These three species are represented in the community forest at 10% each. This represents a highly monocultural forest, especially when noting that

these trees are often planted one next to another in the streetscape.

In the event of insect or disease infestation, the potential for devastation among the monocultural species is significant.

Palm trees of five genera compose 9% of the tree inventory. Given Sierra Madre's proximity to the San Gabriel Mountains and the associated wildfire and watershed issues, this number of palms in the landscape is highly undesirable.

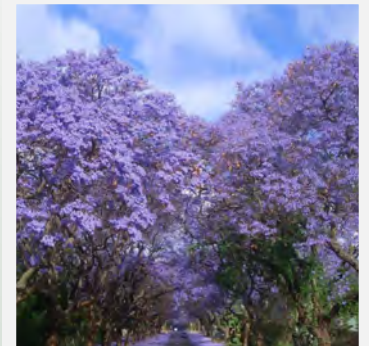
The potential for tree infestation by pests or diseases in Southern California is significant. Aside from native pests and diseases, Sierra Madre's proximity to the Port of Los Angeles, one of the largest in the world, increases the risk of exposure to imported pests from other continents. These pests often thrive in our Southern California climate

and, without natural predators, become threats to California agriculture, and native and non-native amenity plants.

Not all pests will attack trees or become successful in our environment. However, within the last two decades, devastating tree losses due to the eucalyptus lerp psyllid and eucalyptus long horn borer are sobering reminders of the potential impacts that pests can have on a community forest. Because there were no natural predators, these insects increased in numbers and caused devastation in California eucalyptus tree populations.

Wood boring insects have also caused significant tree losses. Local pine forests were decimated in the last decade by increased numbers of native beetles. Infestations were exacerbated by prolonged drought and fire suppression in the forests.

Both native and urban forests currently face threats by three different wood boring beetles affecting oaks, sycamores, ashes, and many other trees. While the threat of tree infestation is potentially significant in both native and ornamental trees, it is exacerbated when a monoculture is present within a community forest population.



The Polyphagous Shot Hole Borer (PSHB) is a new pest in Southern California. This boring beetle, from the group of beetles known as ambrosia beetles, drills into trees and brings with it a fungus (*Fusarium* sp.) that kills the infected tissue. The PSHB attacks many species of trees, but many species are resistant to the fungus it carries. The long-term consequences of this beetle are unknown.

Another current threat to urban forest trees is Pierce's disease (*Xylella fastidiosa*). Insects vector this disease to a wide variety of trees, shrubs, other plants. American sweetgum (*Liquidambar styraciflua*) is





## Community Forest Management Plan

### SECTION 2 - SIERRA MADRE TODAY AND TOMORROW, continued

one of the most common urban trees to be affected by this disease. The many strains of *Xylella fastidiosa* usually cause leaf scorching, can slow and stunt a plant's growth, and can ultimately result in plant death.



Increasing species diversity and maintaining the community forest at maximum health are the best strategies to avoid significant losses when pests or disease threaten a population of trees. Proper irrigation of young trees for deep root establishment, careful species selection, and proper pruning increases the overall vigor and structure of an urban forest.

#### 2.3.B EVALUATION OF THE 25 MOST COMMON TREES

The City's tree inventory was evaluated as part of the development of this Community Forest Management Plan. The evaluation represents a snapshot of the tree population at the time of the analysis. Four tables that summarize the current population and provide guidance for future plantings were developed and are included in this plan or the Appendices. These tables include:

- Evaluation of the City of Sierra Madre's Existing Tree Inventory - 25 Most Common Trees
- Trees to Discourage
- Trees to Encourage
- Designated Street Tree List (Selected Streets)

#### Evaluation of the most common 25 trees

The evaluation of the 25 most commonly planted trees included an analysis of each tree's characteristics to determine their suitability and resiliency as street trees in Sierra Madre's unique setting. More than 15 characteristics were analyzed. Based on the findings, lists of trees that should be encouraged or discouraged were developed.

#### Trees to Encourage and Discourage

When compiling the lists of trees to encourage or discourage, consideration was given to not only the characteristics ratings, but feed-back received from City staff, Commissioners, and the public. Feedback revealed a community desire for trees that:

- herald the change of seasons
- produce showy flowers
- introduce diversity and minimize monocultural planting
- minimize potential impacts of disease and pest concerns
- are water conserving
- are native to Southern California in origin
- address conflicts with power lines, and
- decrease potential to spread fire



This table is located in the Appendices and may be updated by the City over time to reflect environmental conditions and community input.

The wonder is that we can see these trees and not wonder more.

- Ralph Waldo Emerson



Engelmann oak - the City's official tree



## Community Forest Management Plan

### SECTION 2 - SIERRA MADRE TODAY AND TOMORROW, continued



#### The Designated Street Tree List (Selected Streets)

The Designated Street Tree List includes main thoroughfares and streets with many vacant tree planting locations. This table was created based on both drive-and walk-through inspections of streets. Many Sierra Madre streets have utility lines on one side and right-of-way (ROW) areas vary from one side of the street to another.

To allow for these variations, the table provides a list of two trees of various sizes as recommended for the street, and two trees as alternatives if needed due to property-owner preference or other

factors. This table is provided in the Appendices.

#### 2.3.C VALUATION OF THE COMMUNITY FOREST

The economic value of Sierra Madre's community forest trees is roughly \$18,000,000. This value was calculated using the tree inventory software provided by the City's tree service contractor. The software incorporates formulas used in the "Guide for Plant Appraisal, 9th Edition." Information regarding the economic valuation of the community forest is elaborated on in the Appendices.

#### 2.4 FIRE ZONE SUITABILITY

The wildland-urban interface is the area where urban and suburban development meets native, naturally vegetated areas. In Sierra Madre, the entire City may be considered part of the wildland-urban interface. Proximity to natural hillsides, canyons, and riparian areas is part of the

appeal to many Sierra Madre citizens. The natural beauty and abundance of wildlife present in the hillside chaparral, oak woodlands, and sycamore-alder woodlands draw many residents to live as close as possible to these natural settings. In many ways, Sierra Madre is an idyllic place to live, but benefits of being near nature come with risks. One of the most daunting risks is wildfire.

Wildfires are part of the natural environment in Southern California. Properties in the wildland-urban interface are more prone to exposure to wildfire. Residents living in the wildland-interface must take precautions and prepare for fire occurrences by maintaining their properties with materials and practices that minimize the ignition and spread of wildfires. Beyond preparing homes and structures, residents should strive to develop a fire-resistant landscape, where plants and hardscape are maintained to minimize the spread of fire. Public parkways and improved parks should also be properly maintained for this purpose.







## Community Forest Management Plan

### SECTION 2 - SIERRA MADRE TODAY AND TOMORROW, continued

Establishment of defensible space is necessary to reduce the risk of fire spreading to structures as well as for firefighter access. Defensible Space Guidelines for areas within the Very High Fire Hazard Severity Zone in Los Angeles County recommend maintaining specific vertical and horizontal spacing, and annual brush clearance and pruning of trees and shrubs to minimize or eliminate the ladder effect for vegetative fuels.

Proper maintenance for fire safety does not mean eradication of all plants, but rather selective removal of highly flammable vegetation and making selective planting choices in high fire zones. Fire spreads by transmission of fire or embers from one plant to another, and ultimately to homes. Tall trees and shrubs can transmit long flame lengths. Certain species, such as palms and pines, are especially prone to volatility during fires and can contribute to the transmittal of live embers for long distances. The table, "Fire Transmitting Trees and Shrubs," is included in the Appendices. This table includes a short list of plants that can transmit fire and several alternatives.



Fire-wise landscapes should also address invasive plants, which are not adapted to wildland fires, but add to fuel loads and contribute to soil erosion after fire has occurred. Many native trees and shrubs are fire-adapted and can readily re-sprout from root stock or survive fire events.

This Community Forest Management Plan evaluates the existing and proposed tree species for the urban-wildland interface of Sierra Madre. The Appendices contain a table representing trees that are suitable to the high fire zones along the San Gabriel foothills. More information on this subject can be obtained from the local Los Angeles County Fire Department, the California Board of Forestry and Fire Protection, The California Fire-Safe Council, California Invasive Plants Council, and the California Native Plant Society.









## Community Forest Management Plan

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## Community Forest Management Plan

# SECTION 3 - GUIDING PRINCIPLES

The Guiding Principles of this Community Forest Management Plan outline urban forest industry principles that have been developed over decades for the implementation of urban forestry plans. Foresters, municipal managers, arborists, and academics of arboriculture and silviculture have studied, practiced, and established arboricultural management systems. As a result, a series of industry-accepted principles have evolved as guidelines for developing and implementing urban forest management plans. The selected principles for Sierra Madre are benchmarks for the management of healthy trees in the urban environment. These have been evaluated and modified for the City's municipal structure and its unique topographical location in the foothills of the San Gabriel Mountains.

### 3.1 THE COMMUNITY FOREST AND ITS ENVIRONMENT

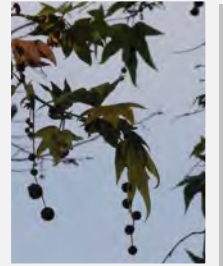
The trees in Sierra Madre are a living component of the City, interacting continually with their surrounding environment and contributing to the life experience of every resident. The individual public or private tree provides aesthetic, psychological, and physical benefits, but as a whole the forest has a powerful influence on the community. The City's public trees are found in neighborhoods, parks, a cemetery, parking lots, and surround public buildings. These trees comprise the Sierra Madre Community Forest.



The Community Forest mitigates the impact of the urban environment and provides residents and visitors with healthy and pleasant places for recreation and social interaction. The Community Forest also provides essential benefits by offsetting storm water runoff, shading and cooling streets and buildings to

reduce the urban heat island effect, reducing air pollution, controlling erosion, sequestering carbon and providing habitat for urban wildlife.

By regularly quantifying and reporting on the environmental benefits which trees provide, this Plan's Guiding Principles will raise public awareness and understanding that the City's trees are the green element of the City's infrastructure.



#### 3.1.A COMMUNITY FOREST PERFORMANCE REPORTS

The Public Works Department will conduct periodic evaluations of street trees to assess progress in achieving environmental performance goals. Based on records, the following reports should be submitted for review during the City's budget process:

- Number of trees in the urban forest
- Number of existing vacancies
- Number of trees removed
- Number of trees planted
- Number of trees trimmed
- Number of emergency tree failure responses
- Claims value as a cost to the City for tree failures
- Forestry budget

The Public Works Department will use current methodology for establishing additional periodic evaluations of street trees to assess progress in achieving environmental performance goals.





## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, continued

Each time the opportunity presents itself, typically in the form of government grants, the City should work with the stakeholders and conduct a benefit-cost analysis of the urban forest.

When these opportunities arise, City staff should analyze the environmental benefits of the urban forest based on current tree inventory data:

- Estimated energy savings, reduction of stormwater runoff, air quality improvements and carbon sequestration
- Canopy coverage
- List of the top 15 species most frequently planted on City streets
- Ratio of deciduous to evergreen trees
- Ratio of native to exotic trees

#### 3.1.B. PUBLIC ADVISORY BODY

The City Council may continue to recognize the value of an advisory body that meets regularly to address City tree related issues. An effective advisory body promotes transparency in government activities and provides an avenue for adaptive practices and policies with meaningful input from the community. An effective advisory body makes recommendations to the City Council on urban forest management issues that are both scientifically sound and based on the spirit of the



community. This advisory body can recommend the formation of task forces to accomplish specific projects.

#### 3.2 UNDERSTANDING AND APPRECIATING THE COMMUNITY FOREST

The public will develop a greater appreciation of the community forest if there is a general understanding of its value and the benefits it provides. Genuine appreciation for the value and benefits of the community forest can result in a shift in attitude, which often influences the priority and level of stewardship citizens feel toward the resource. To that end, an ongoing public education process appropriately tailored to all age levels and demographics is essential.

The goal of this Principle is to ensure that the community is aware of the benefits trees provide and that residents, property owners, architects, engineers, planners, developers, and landscape and tree contractors are familiar with the Best Management Practices contained in the appendices of this plan for the planting and care of trees. This goal also ensures that residents are included as stakeholders in decision-making processes.

##### 3.2.A PUBLIC EDUCATION

The City may develop an educational campaign to reach a wide audience to raise awareness of the urban forest. Public outreach will be targeted, informative, and proactive. The City may consider the following as part of this campaign:

- Conduct periodic public workshops on tree care.
- Create educational programs about the community forest for youth.





## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, continued

- Provide residents with information that is specific to the care of newly planted street trees adjacent to their homes.
- Produce public information packets on Best Management Practices for street tree care and regulations governing public trees as needed or when new standards or regulations are identified.
- Utilize appropriate existing communication tools to disseminate information about the community forest and its care.
- Periodically mount displays of tree care books and other publications at the City Library.
- Provide the street tree inventory and street tree palette online with links to photographs and information about each street tree species.
- Periodically evaluate outreach effects and adjust methods as necessary.



#### 3.2.B LEGACY TREE PROGRAM

The Legacy Tree program may be implemented and monitored by the City with input from an advisory body. The program will be administered by the City for the nomination and designation of legacy 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 Sierra Madre's environment. This designation will

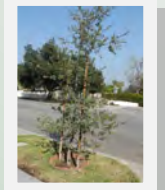
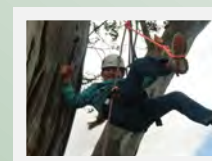
emphasize appreciation and education of the community through creative outreach strategies.

The definition of, and the criteria for, a Legacy Tree may include:

- Tree specimens that are particularly rare in the Los Angeles basin and of considerable size and age.
- Trees or groves with unique characteristics or special significance.
- Exceptional tree specimens in good condition and health that are of a significant size and/or make a significant and outstanding aesthetic impact to their setting.
- Trees with special significance to a historic building or district because of their age.
- Any newly-planted tree on private property in order to memorialize a person or event (if requested by the property owner).

#### 3.2.C ARBOR DAY CELEBRATION

To build appreciation for the community forest and continue the City's tree legacy, the City may celebrate Arbor Day each year with a community tree planting or other suitable event. Arbor Day can be celebrated in conjunction with Earth Day to bring further recognition to the role trees play in the environment.







## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, continued

#### 3.2.D OTHER AGENCIES

The City may continue to engage and collaborate with other agencies on a local and regional level, and may continue a leadership role with stakeholders on tree-related issues. The City may promote cooperative relationships with the schools located in the City to promote awareness of trees and the contributions they make to the community. In addition, the City may share tree planting opportunities with these institutions that will include educational programs for youth.

#### 3.3 ECONOMICS OF THE COMMUNITY FOREST

The trees of Sierra Madre are capital asset of the City valued at over \$18,000,000. It is the only element of the City's infrastructure that increases in value as it ages. A healthy community forest enhances property values, brings people to the City to visit parks, natural recreational areas, and frequent its local shops and restaurants.

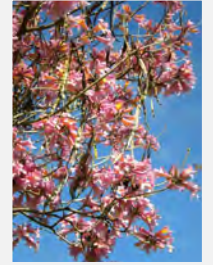


This Guiding Principle calls for stable City funding levels to be provided for adequate and consistent maintenance of the community forest as well as its future enhancement. Supplemental fundraising efforts may also be considered to complement the City's efforts.

The Goal of this Guiding Principle is to raise awareness of the economic importance of the community forest and to work towards sufficient financial resources that will conserve and strengthen its health.

#### 3.3.A CITY FUNDING

As part of the ongoing budget process and to the maximum extent practicable, the City will approve adequate capital and operating funds to ensure a healthy and diverse urban forest. The funds should be sufficient to accomplish the following:



- Provide adequate annual maintenance of existing trees.
- Support street tree planting in order to promptly replace vacancies.
- Sustain and enhance the community forest to avoid prolonged vacancies in the future.
- Support consultation with qualified consultants when major decisions regarding Sierra Madre's community forest are being considered.
- Provide ongoing outreach support to ensure there is widespread education about the community forest and its care.

#### 3.3.B EXTERNAL FUNDING

The City may seek out external funding sources to support the goals and strategies of the Management Plan, including the following:

- Grants from county, state, and federal sources to extend tree planting and infrastructure improvements.
- Provide a process for the public to make donations for the planting and care of new public trees.



## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, continued

- Fundraising by interested residents or non-profit groups to supplement City funds for specific projects.
- Creating community driven programs where organized groups would be City partners engaged with planting and after-care for trees.
- The City's Tree Bank program, providing opportunities for members of the public to make donations for the planting and care of new public trees.

#### 3.4 COLLABORATING ON COMMUNITY FOREST MANAGEMENT

Given the extensive and varied responsibilities of City staff, the urban forest can be affected on any given day by the work activities of several departments. There must be a collaborative process in place where City staff can communicate effectively among all departments and with outside contractors regarding proposed work affecting street trees. The collaborative process should involve staff at all levels of the organization.

When development plans for private projects are reviewed by the City, special attention must be provided to existing street trees potentially affected by the proposed project, as well as opportunities for adding new street trees during the project's design phase. The collaborative process must be in place to protect existing trees that should be retained, and to support the planting of new trees where appropriate. To further support these efforts architects, developers, and real estate companies should receive clear guidelines stating the City's requirements regarding trees and tree care.

The goal of this Guiding Principle is to develop an inter-departmental process to review development plans, to ensure optimum street tree conservation, planting and care, and to ensure that City staff and



contractors working in the City are familiar with and follow Best Management Practices when working on, or around public trees.

##### 3.4.A INTERNAL COLLABORATION

The Public Works Department may keep staff of all City departments informed when implementing the policies set forth in the Management Plan, so that the Plan's implications are known and staff responsibilities are clearly understood. Ongoing interdepartmental communication will ensure a heightened focus on actions that enhance the community forest. City departments may receive the following support from the Public Works Department:

- Best Management Practices awareness training (with use of appendices of this Plan) for staff members from other departments to ensure adherence to tree standards, as appropriate.





## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, Continued



- Information on any scheduled City sponsored or utility tree pruning or tree planting that would occur during construction activities.
- Updates regarding Best Management Practices.
- Updates on adopted changes in the City's Municipal Tree Ordinance, and its enforceable policies.

#### 3.4.B COORDINATION WITH PRIVATE ENTITIES

The City may develop a permitting and recording system to communicate with private citizens who wish to prune or plant a tree in the public right-of-way. By doing so, the City will educate the public and assure that all BMP requirements for trees are provided to the citizen.

The City may include requirements for the development of adequate infrastructure, allowing for the planting of new street trees as part of private development by implementing the following:

- Including the Public Works staff in an interdepartmental Pre-Submittal Review process for applicable development projects.
- Including the Public Works staff when the City is planning for projects that will involve development agreements, ensuring that the City's Green Streets Policy and water quality and conservation parkway landscaping are considered as a public benefit.
- Including issuance of permits for individuals who request and are approved for a street tree to be pruned or planted.

#### 3.4.C COMMUNITY AND NEIGHBORHOOD COLLABORATION

The Public Works Department may work collaboratively with formal or informal neighborhood groups to develop street tree planting themes and replacement planting plans related to street segments, as appropriate and consistent with the approved Street Tree Designations List.

#### 3.4.D SCHOOL DISTRICT COLLABORATION

The City may initiate tree planting activities in the schools for occasions such as Arbor Day. Additional educational activities may be conducted at any 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.

### 3.5 STEWARDSHIP OF THE COMMUNITY FOREST

Sierra Madre's Community Forest includes all public trees. Their conservation, for generations to come, should become part of the City's culture. Conservation efforts should include maintenance standards for ongoing management and clear criteria to allow for the selective removal of trees. The urban forest should be maintained with a standard of care that is consistent with the Vision and Mission Statements of this plan.





## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, Continued



The Goal of this Guiding Principle is to account for the entire life cycle of the City's public trees by encouraging stewardship practices that result in the maximum benefits possible from the community forest.

#### 3.5.A TREE CARE

Private property owners are partners with the Public Works Department and share responsibility for the care of the urban forest. Tree Care Guidelines are set forth in the Appendices.

#### 3.5.B TREE INVENTORY

The City may maintain an electronic inventory of all publicly owned trees. Inventory data will be routinely updated by the Public Works Department when trees are pruned, removed, or planted during the annual maintenance program. The entire community forest should be re-inventoried periodically as opportunity or necessity presents itself.

#### 3.5.C BEST MANAGEMENT PRACTICES

As budgets allow, the City will follow Best Management Practices to reduce the likelihood of decline, pest infestation or disease infection of their street and park trees.

#### 3.5.D MANDATORY TREE PROTECTION DURING CONSTRUCTION

In the course of periodic updates to the Tree Protection and Preservation Ordinance, the City may consider the viability of instituting or increasing penalties or mitigation requirements for

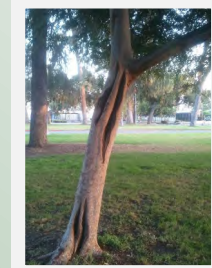
damage or loss of the City's street trees. Penalties may be necessary, because the movement of building materials onto construction sites, the use of heavy building equipment, grading and/or trenching for underground utilities, and inevitable dirt and dust can cause irreparable damage to adjacent City street trees. As part of each project plan review, the City may require establishment of a Tree Protection Zone (TPZ) around public street trees prior to the commencement of demolition or construction activities. Protection measures may include exclusionary fencing, cautionary signage, trunk wrapping, placement of anti-compaction materials within the dripline, and/or other appropriate measures dependent on specific site conditions.

#### 3.5.E RISK ASSESSMENT

Risk assessment of City-owned trees will conform to the International Society of Arboriculture guidelines. References are provided in the Appendices.

#### 3.5.F DECLINING TREES

The City may identify and monitor declining trees, evaluate them for possible treatment, and generally allow them to remain in place, dependent on the risk of failure or disease/pest transmission to other trees.







## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, Continued

#### 3.5.G INTER-PLANTING IN LIEU OF REMOVAL

The City may consider inter-planting new or replacement species that may differ from the existing species of the street in advance of, or instead of, removing a tree or grove that is losing viability. This may be done in an effort to maintain or increase canopy coverage and biomass of an area.

#### 3.5.H STREET TREE NOTICING AND REMOVAL

Street trees may be considered for removal when situations are determined to be consistent with the current Tree Protection and Preservation Ordinance and the conditions outlined in the Appendices of this Management Plan. Noticing of trees identified for removal will be consistent with the current ordinance.

#### 3.5.I PUBLIC TREES AND CITY PUBLIC PROJECTS

The City will incorporate existing healthy trees into the design of City public improvement projects to the maximum extent feasible and consistent with the project's design objectives.

Where tree removal is included as part of the proposed design, the City will provide direction for replacement or relocation of trees with good survival prospects.

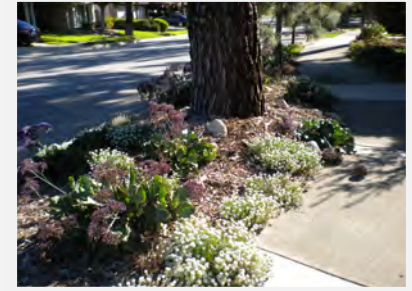


#### 3.5.J DAMAGE TO PUBLIC TREES

The City encourages reporting of illegal tree removals, vandalism and poor maintenance practices via current and emerging communication technologies.

#### 3.5.K PARKWAY UNDERSTORY PLANTING GUIDELINES

Guidelines to educate residents about planting and maintaining their parkway should include information on climate-appropriate plant materials, irrigation, mulch, grading, access, and visibility. The



The selection of plants with similar requirements to the City tree in front of a particular residence will contribute to the health of street trees. The City will review these guidelines periodically to ensure that the guidelines support the community forest and will make the guidelines part of education and marketing efforts. The Parkway Landscaping Guidelines are outlined in the Appendices.

#### 3.5.L NEW TECHNOLOGIES

Public Works staff may endeavor to keep abreast of and implement new technologies of the tree care industry that can benefit the community forest.

#### 3.5.M LANDMARKS AND HISTORIC DISTRICTS

In the case of street tree designations adjacent to currently designated landmarks, or within designated historic districts, City staff may confer with the Planning Commission in an advisory capacity to address contextual issues prior to selecting replacement species.

If approved Street Tree Designations need to be changed in areas adjacent to future designated historic landmarks or within future designated historic districts, City staff may confer with the Planning Commission in an advisory capacity to further staff's understanding of the historic context.



## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, Continued

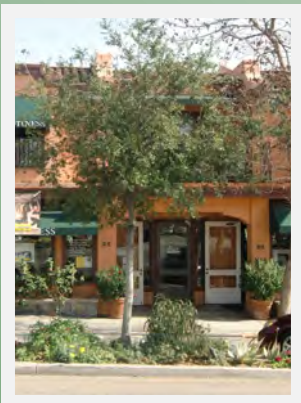
#### 3.5.N LEGACY TREES

The Public Works Department will continue to evaluate trees for legacy status.

#### 3.6 ENHANCING THE COMMUNITY FOREST

As seen in the natural environment, we believe the City's urban forestry program can be planned, implemented and maintained as a whole system. Inherent to this philosophy are guidelines to achieve and sustain urban forests and landscapes through such actions as rainwater harvesting, integrated planting palettes, successional planting, and species diversity. The community forest is in a constant state of change, and this guiding principle recognizes that it is a dynamic, natural system, heavily influenced by its location in the foothills along the San Gabriel Mountain range.

This Management Plan will retain flexibility for addressing the inevitable growth and decline of the City's trees. The enhancement of the community forest enables the City to create significant street tree themes where there are currently declining species or vacancies, and to use one or more replacement species to create a unified, beautiful, and healthy urban forest over time.



Specific to Sierra Madre is an entire residential community built proximate to a fire zone. This plan addresses suitable and non-compatible tree species for these areas, as well as recommending species that reflect the City's water source variability and intermittent statewide drought conditions. As the urban forest is set in the headwaters of the overall watershed, storm water quality and water conservation are major influencing factors in this Plan. The Plan considers that the City has

implemented a progressive Mandatory Water Conservation Plan, which promotes customer water curtailment of 30 to 50 % by year 2021. Future species selection for certain areas of the city may depend heavily on species-specific water usage.



Sierra Madre's community forest benefits the entire community by improving the life experience of every resident, visitor, and employee. This Management Plan considers the urban forest as a whole, and not just a sum of its parts. Species diversity is important to achieving overall forest health, and this Management Plan seeks to increase this diversity to avoid unnecessary loss of trees due to a species-specific pathogen.

Optimizing and enhancing the City's total biomass is also of primary importance in achieving the City's sustainability goals. This Management Plan promotes the creation of a maximally functional forest, by increasing both current total canopy coverage and total biomass. The strategies of this Plan ensure the maximum feasible forest biomass on every street, given the specific conditions and limitations of each site, and recommends increasing grow spaces to accommodate large canopied trees where feasible.

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 community forest enhancement is in conflict with other goals, conservation should be balanced with developing the forest of the future on a case-by-case basis. Factors that should be considered in this balancing act 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.





## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, Continued



The Goal of this Guiding Principle is to enhance the urban forest by expanding canopy coverage and species diversity throughout the City.

#### 3.6.A. IMPLEMENTATION OF STREET TREE DESIGNATIONS LIST

The City may use the partial street tree designations list contained in the Appendices of this Management Plan. This partial list of designated trees should be periodically reviewed and

updated by evaluating the success of newly introduced species. Periodic reviews should evaluate the species designations list in conjunction with an updated tree inventory to adjust for species performance, changing conditions and public input.

#### 3.6.B. DIVERSITY

Over time, any single species of street tree should not exceed ten percent (10%) of the total tree population in the urban forest. The current tree inventory has three tree species that are in the 10 % range. Continued planting of those species that are over 10% of the total tree population is discouraged until such time that the population is well below the 10% threshold. Periodic review of the City's tree inventory will guide decisions regarding appropriate species selection for diversity over time.

#### 3.6.C. ACCOMMODATING LARGE CANOPY TREES

In addition to planting trees in existing parkways, the City may continue to identify opportunities to increase canopy coverage by modifying the infrastructure to accommodate large-statured trees by:

- 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.
- Considering the redesign (enlargement) of parkways containing small parkways.
- Making recommendations for larger street tree grow spaces in association with private development projects.
- Seeking opportunities on Public Works construction projects that involve sidewalks, curbs, gutters and other street-related work to enhance street tree grow spaces.

#### 3.6.D. CANOPY PRIORITY

To increase the City's canopy and biomass, the City may prioritize areas with the least amount of canopy coverage and areas most impacted by pollution.





## Community Forest Management Plan

### SECTION 3 - GUIDING PRINCIPLES, Continued

#### 3.6.E. VACANT AREAS BACKLOG

Contingent upon continued availability of funding, the City may work to eliminate the backlog of street tree vacancies identified in the 2013 tree inventory.

#### 3.6.F. FIRE ZONE SUITABILITY

Placement and location of plants in the landscape and the mode of care they receive determines their suitability in the fire zone. Plants that take longer to ignite, don't transfer fire, and do not have significant dry biomass build-up are proven to be more suitable. Annual maintenance of a horizontal space between mature plants and regularly pruning all vegetation to eliminate a "ladder" for fuels is essential. Massive amounts of vegetation should be positioned away from structures. The area immediately surrounding a home should function as a firebreak. This area also becomes a work area for firefighters and their equipment. For a list of trees and plants to avoid in the fire zone, and how to maintain landscapes within this zone, see Appendices.



#### 3.6.G. TREE SUPPLY

To the extent feasible, the City may work with commercial growers to secure the required supply of designated species selected for street tree planting.







# SECTION 4 - MOVING FORWARD

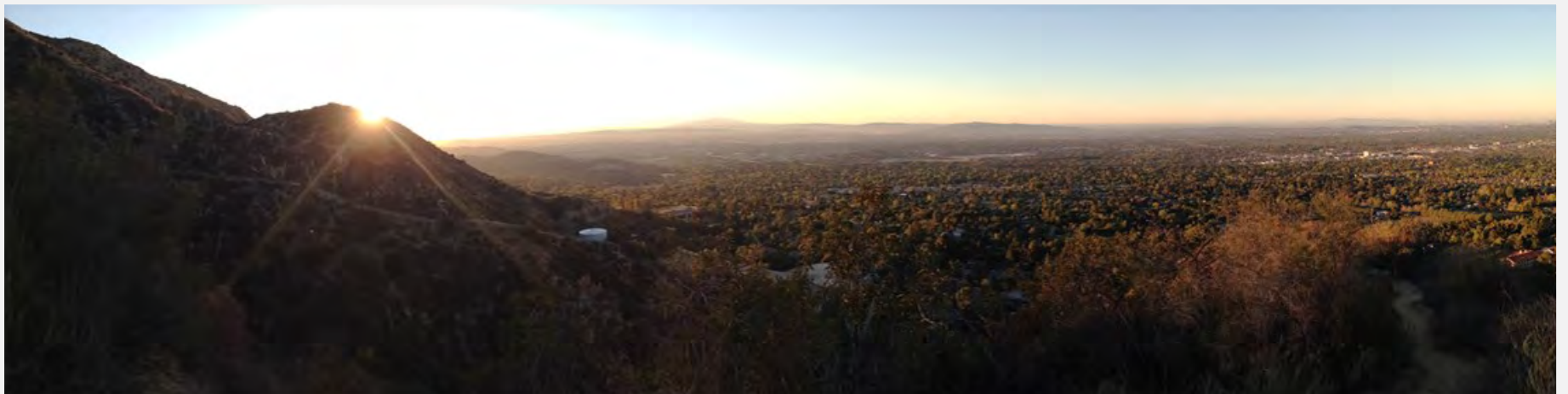
## SECTION 4 – MOVING FORWARD

The Sierra Madre Community Forest Management Plan is a dynamic and living planning document that provides guidelines for the continued maintenance and improvement of the community forest. The Plan includes an evaluation of benefits of the community forest, provides guiding principles for future forest management, and in the Appendices, provides comprehensive technical recommendations.

This Plan will serve the future managers of the City of Sierra Madre as a spring-board for evaluation and update of Goals, Strategies and Standards. As a living document, periodic updates may be undertaken when new technologies, tree science, or regional changes affecting tree performance occur. Updates may also address the development of innovative changes in public works' industry standards, and as potential increases in funding resources for maintenance and management of the community forest arise.

It is well that you should celebrate your Arbor Day thoughtfully, for within your lifetime the nation's need of trees will become serious. We of an older generation can get along with what we have, though with growing hardship; but in your full manhood and womanhood you will want what nature once so bountifully supplied and man so thoughtlessly destroyed; and because of that want you will reproach us, not for what we have used, but for what we have wasted.

- Theodore Roosevelt, 1907 Arbor Day Message





## Community Forest Management Plan

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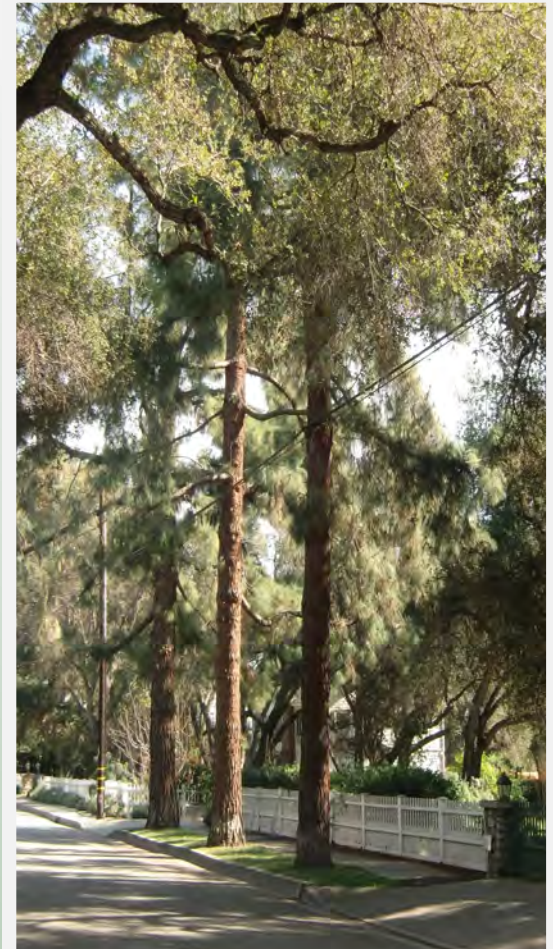
# APPENDICES

## APPENDICES

- A. RESIDENT RESPONSIBILITY
- B. ENERGY, ENVIRONMENT AND NATURAL RESOURCES COMMISSION
- C. PRUNING GUIDELINES
- D. TREE INSPECTIONS
- E. RISK ASSESSMENTS
- F. TREE REMOVALS
- G. ROOT PROTECTION AND ROOT PRUNING
- H. TREE PROTECTION ZONES
- I. OFF-SITE IMPROVEMENTS
- J. STREET TREE DESIGNATION CRITERIA
- K. PLANTING TREES
- L. GUIDELINES FOR WATERING TREES
- M. LEGACY TREES
- N. GUIDELINES FOR PARKWAY LANDSCAPING
- O. NO-FEE PERMIT PROCEDURE
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- Q. FIRE ZONE
- R. TREES TO ENCOURAGE
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- T. GLOSSARY AND ACRONYMS
- U. REFERENCES
- V. PHOTOGRAPHIC REFERENCES
- W. ACKNOWLEDGEMENTS

The cultivation of trees is the cultivation of the good, the beautiful, and the ennobling in man.

- J. Sterling Morton





# APPENDICES

**Appendices A - V** establish technical standards and specifications for the daily management of the community forest. These appendices will be evaluated and updated periodically to incorporate new technology for Best Management Practices, to add or delete language for consistency with other City of Sierra Madre guidelines, plans, or codes, such as the Sidewalk Master Plan, and to insure the continued improvement of the community forest.





## APPENDIX A - RESIDENT RESPONSIBILITY

### RESIDENT RESPONSIBILITY

Property owners or residents having the possession or control of real property in the City are responsible for the proper care and cultivation of the street tree adjacent to their property. Resident responsibility for street tree care includes:

- Financial responsibility for damage or loss
- Proper irrigation
- Maintaining the right-of-way planting area free from weeds, vines, and debris, or uneven walking surfaces
- Maintaining the right-of-way free of obstructions that could be a threat to public safety
- Keeping tree trunks and branches free from climbing vines
- Maintaining understory planting and irrigation in a manner beneficial to the tree
- Keeping trees trimmed and removing any foliage that encroaches into the space above a street to a height of fourteen feet (14') and above sidewalk areas to a height of eight feet (8').



## APPENDIX B - ENERGY, ENVIRONMENT & NATURAL RESOURCES COMMISSION

### ENERGY, ENVIRONMENT, AND NATURAL RESOURCES COMMISSION

Members of the Energy, Environment, and Natural Resources Commission ("Commission") are appointed by City Council and serve at its pleasure. Commissioners serve staggered four-year terms; the commission includes seven members. The Commission holds regular public meetings on the third Wednesday evening of each month at City Hall. Meetings are subject to the requirements of the Brown Act.

In its capacity as an advisory panel, the Commission makes recommendations to the City Council on the care and management of the community forest.

- The Commission reviews subdivision-related development plans and tree surveys (pursuant to the City's CEQA guidelines) processed through the Public Works Department. The Commission makes recommendations to the Public Works Director or the Planning Commission relative to the removal of trees and the mitigation measures to be implemented by the applicant.
- The Commission reviews appeals of the proposed actions of the Public Works Department relative to requests from owners or occupants of private property to remove, plant, mitigate damages to, or prune any protected tree.
- The Commission is responsible for the development and promotion of educational activities within the City relative to the care, planting, and preservation of trees on private property within the City.
- The Commission is charged with the development and maintenance of a list of trees native to the Sierra Madre area. The native tree list is used to describe the growth characteristics of such native trees, outlines their proper care and maintenance, and describes suitable locations for planting such trees.
- The Commission is charged with the development and maintenance of a Street Tree Designation Plan for the City. This plan includes a list of trees suitable for planting in the City's parkways, favoring the recommendation of native species where possible. The street tree designation plan provides guidelines for spacing of tree plantings from existing trees and other parkway improvements such as sidewalks, hydrants, driveways or street lights. Such determinations will be made by the Commission after consultation with arborists or tree experts.
- The Commission identifies and recommends to the City Council sites on public property that are suitable for the planting of native trees.





## APPENDIX B - ENERGY, ENVIRONMENT & NATURAL RESOURCES COMMISSION, CONTINUED

A tree list is used to describe the growth characteristics of such native trees, outlines their proper care and maintenance, and describes suitable locations for planting such trees.

- The Commission is charged with the development and maintenance of a Street Tree Designation Plan for the City. This plan includes a list of trees suitable for planting in the City's parkways, favoring the recommendation of native species where possible. The street tree designation plan provides guidelines for spacing of tree plantings from existing trees and other parkway improvements such as sidewalks, hydrants, driveways or street lights. Such determinations will be made by the Commission after consultation with arborists or tree experts.
- The Commission identifies and recommends to the City Council sites on public property that are suitable for the planting of native trees.



# APPENDIX C - PRUNING GUIDELINES

## TREE TRIMMING

The pruning standards described in this Appendix are consistent with the Pruning Standards adopted by the International Society of Arboriculture and the ANSI A300 Part 1: Tree Shrub and other Woody Plant Maintenance – Standard Practices, Pruning and the International Society of Arboriculture Best Management Practices. Given that these guidelines are generic in nature and do not apply to specific tree species, the standards in this Management Plan have been tailored to meet the criteria for tree care in Sierra Madre.

In permitting any trimming or removal of trees, the Public Works Department will follow the standards of the latest version of International Society of Arboriculture Pruning Guidelines and the American National Standards Institute A300 standards for tree maintenance. The aforementioned standards, as they may be amended from time to time, should be kept on file and available for public reference at City Hall and the City Library.

## PRUNING CYCLES

### Time of Year

Tree pruning activities optimally should be timed to minimize stress to the trees and refrain from subjecting them to infestation and disease or during periods when insects are most active. The times to prune some species may vary in a given year depending on weather and other conditions. The following general guidelines should be followed:

- Hazardous trees may be pruned at any time to mitigate risks.
- Trees with thin bark should not be pruned in the summer.
- if the tree has known root damage or disturbance, pruning may be delayed until the deadwood is apparent, usually within one to three years after injury. Crown cleaning is the recommended pruning treatment.
- Neglected trees may need specific limbs removed or reduced in length, crown thinning, or crown restoration.
- Eucalyptus and pine species should only be pruned between November and April, when wood boring insects are not active.
- Oak species should only be pruned between July and September to avoid fungal and other infections and pest infestation.



# APPENDIX C - PRUNING GUIDELINES, CONTINUED

### Pruning Treatments

Trees located in the public right of way require pruning both to maintain their health and form and for public safety. The objective of pruning is to improve health and structural stability for the tree.

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

- Structural pruning for young trees to avoid future problems for the tree.
- Clearance pruning for vehicles, bicycles and public transportation.
- Removal of dead and dying branches from palm, broadleaf or conifer trees (crown cleaning).
- Pruning to restore the form of a tree after improper pruning, storm damage or limb failure (crown restoration).
- Selective removal of branches and foliage to reduce “wind-sail” (crown thinning).
- Reducing the size of trees to limit size or reduce end-weight on heavy branches (crown reduction).
- Pruning after a natural disaster or storm event to restore tree structure.
- Utility line clearance.

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

- Avoid pruning on windy days in order to reduce the transmission of spores.
- To avoid the spread of pathogens to other trees, pruning tools should be sterilized before pruning another tree. 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 with known wood boring insect infestations should be chipped into pieces smaller than four inches (4”) and spread at the site.
- Wood that is infected with disease should be handled and disposed of in a manner that minimizes the possibility of transmission of disease. This may include transporting green waste in covered containers.





# APPENDIX C - PRUNING GUIDELINES, CONTINUED

### Palm Pruning

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

- Sterilized handsaws are used to prune all palms of the Phoenix genus.
- Trunks may not be skinned unless directed by the Public Works Department.
- Chainsaws are not used on any palms in the Phoenix genus.
- Chainsaws are not used on any palm species susceptible to pathogens that can be spread by chainsaw use.
- Typically, only the dead fronds are removed. Leaves should be pruned to 180 degrees.
- Trunk balls should not be shaped to avoid creating large wounds.

### Clearance Pruning

Clearance pruning consists of the selective shortening or removal of limbs to provide vertical clearance for bicycles, pedestrians, vehicles and structures. Selected branches may be subordinated by shortening them so that they can be removed later. The ratio of live crown to clear trunk remaining after pruning should be no less than fifty percent (50%) to preserve the health of the tree. Only those branches that need to be removed to achieve the established height clearance standard are typically pruned. All pruning cuts should be taken to the nearest lateral found above the set minimum height standard.

Whenever possible, young or developing trees should be pruned so that at least one-half (1/2) of the foliage is on branches that originate in the lower two-thirds (2/3) of the tree. Branches should have even distribution of foliage along their lengths for a well-formed, tapered structure and even weight distribution throughout the tree.

- Trees that line sidewalks or park pathways should have limbs and branches raised to a minimum of eight feet (8') above finish grade. Limbs may be retained below this minimum elevation as long as they do not interfere with pedestrian or vehicle traffic, do not otherwise create a safety risk, and conform to the natural shape of the species.
- Street trees that line streets should have branches and limbs raised gradually from eight feet (8') at the curb to fourteen feet (14') over travel lanes. The branch structure should create an arch over the street when completed. Major arterial streets may require a higher maximum over central traffic lanes to accommodate existing limbs that contribute to a mature canopy.



### APPENDIX C - PRUNING GUIDELINES, CONTINUED

- Trees should be maintained for streetlight and/or signage clearance by removing selected limbs to create an open canopy that will allow increased light and visibility. Only those branches that need to be removed to attain visibility clearance desired should be pruned. All pruning cuts should be made at the nearest lateral found away from the structure that is to be cleared. Severe pruning treatments are not allowed.

#### **Crown Cleaning**

This pruning treatment consists of the removal of dead, dying, crossed or hanging branches. Crowded, weakly attached branches are also removed during this process. Up to twenty-five percent (25%) of the live foliage may be removed.

#### **Crown Restoration**

Restoration pruning is remedial pruning for a tree that has been topped, vandalized, over pruned or broken in a storm. Restoration pruning should involve several pruning treatments over a period of many years.

#### **Crown Thinning**

Thinning is utilizing conservative pruning techniques to minimize the necessary amount of foliage removed. It is generally used to reduce the density of canopy by as much as twenty-five percent (25%) to increase air movement through the crown and increase light under the canopy, but still retain the wind dampening effects of branch massing. It must be performed carefully, leaving interior foliage and concentrating on the outer two-thirds of the canopy. An even distribution of foliage should be maintained throughout the canopy. Removal of all sucker growth may not be necessary.

#### **Crown Reduction**

Crown reduction is the selective removal of branches to reduce the height or spread of a tree. The work is accomplished using reduction cuts and not heading cuts that result in stubbed limbs. Crown reduction may be used to reduce end-weight on trees that are unbalanced, utility line clearance and other types of clearance pruning. Older, stressed mature trees may require careful evaluation by Public Works staff prior to this pruning treatment.

#### **Restoring Damaged Trees**

Pruning after a storm requires an evaluation by the Public Works staff to determine the best course of action. Trees that experience storm damage may require restoration pruning under the following guidelines:

- Trees that can be restored that are free from cracks or large wounds on the main trunk or structural roots.



### APPENDIX C - PRUNING GUIDELINES, CONTINUED

- Clean broken and cracked branches. Trees need to access stored energy in the limbs to recover. Leaving the tree unbalanced is acceptable to avoid removing too much live canopy.
- Heading cuts, or cuts that leave a stub, may be necessary to preserve canopy after a storm event. These cuts should not be used on healthy, undamaged trees.
- Storm damaged trees may require reconstructive pruning over several years in order to recover.

#### Pruning 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 should 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 upright stems and branches back to lateral branches.

#### Utility Clearance Pruning

New construction, modification or replacement of existing utility facilities, and the replacement or repair of utility lines and structures, are governed by the SMMC except that utility company employees need not be Contractors to accept payment to remove or substantially trim any tree in the City. Utilities are responsible for damage to any protected tree, street tree, or public tree. Utilities are required to notify the City five working days prior to any maintenance activity that might affect any protected tree, street tree, or public tree. "Maintenance activities" as used in this section should include Public Utilities Commission-mandated line clearing.





### APPENDIX C - PRUNING GUIDELINES, CONTINUED

As an alternative to individual prior notifications for each maintenance activity, the utility may submit an annual notification of maintenance activities to the City. This notification should include, but is not limited to, the following:

- List of facilities.
- Schedule of work.
- Extent of maintenance activities.
- List of protected trees, street trees, or public trees that might be affected.

Utilities may take emergency action with respect to any protected tree, street tree, or public tree without giving advance notice when immediate action is required to protect the public or the utility's employees, prevent damage or destruction of facilities and property, or to effect expeditious reinstatement of utility service following an interruption. Any utility taking emergency action under this paragraph has to notify the City of such action within 72 hours of commencement of the action.

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. Additionally, the following should be considered when pruning street trees for utility line clearance:

- Each species of tree has a slightly different branch collar where a proper cut can be made. Utility line clearance contractors are required to know the species and understand where to cut to encourage the formation of callus tissue.
- Flush cuts and stub cuts are not allowed.
- The amount of wood taken in a season should not exceed twenty-five percent (25%). This percentage may be adjusted based on the age, health and tree species. Older, stressed trees may perform better if pruning occurs over several years rather than all in one year.
- To avoid damage from sunburn injury, pruning should not expose the bark tissue of the interior trunk and branches.

Line-clearance tree workers should 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 should adhere to these standards as well as the most recent version of the utility pruning standards established by the International Society of Arboriculture (ISA) and the Utility Arborists Association (UAA).



### APPENDIX C - PRUNING GUIDELINES, CONTINUED

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 should be managed with lateral or directional pruning (thinning cuts). Directional pruning removes a branch from the trunk or large lateral branch growing away from the conductor.
- Heading cuts are prohibited.
- Pruning cuts should be determined by structure and branching habit of the species. Branches should not be arbitrarily cut to a pre-established clearance limit.
- All trees should be examined for hazards prior to line clearance work. Hanging branches and dead wood should be removed first.
- Climbing spikes on live trees is prohibited. Only dead trees may be climbed with spikes.



# APPENDIX D - TREE INSPECTIONS

## TREE INSPECTIONS

### RESIDENT REQUESTS

Requests for pruning or maintenance outside the pruning cycle should be considered on an individual basis. Public Works staff will inspect the tree for hazardous conditions and general health. All treatments will be approved by Public Works staff and follow the specifications in this Appendix.

### SERVICE REQUESTS

Special circumstances may require a City tree to receive a pruning treatment on an “as-needed” basis. Specific examples where requests may be authorized include but may not be limited to:

- Energized utility line clearance.
- Pruning to clear a traffic sign, storefront, traffic signal, or streetlight.
- Pruning to clear a structure or roadway or to provide line-of-sight.
- Pruning to remove a hazard such as a hanging or broken branch.

### INSPECTION CRITERIA

Public Works staff will conduct individual tree inspections. The purpose of this activity is to determine a change in the tree’s health and/or diagnose a condition before a problem develops or becomes serious.

Inspections can be conducted upon request for individual trees, or stands of trees, to evaluate their health, condition and vitality. Inspections should first be ground level visual assessments performed in adequate light to assess the health of the tree. Public Works staff may require further tests or investigation to diagnose problems in trees including but not limited to:

- Root crown excavations.
- Aerial inspection.
- Samples sent to a diagnostic laboratory for insect or disease pathogens.
- Air spade to reveal root structure.





### APPENDIX D - TREE INSPECTIONS, CONTINUED

- Resistograph, tomograph or other decay measurement tool to determine extent of decay and/or sound wood in a tree.

As a standard practice, the following criteria is used when inspecting trees:

- Evaluate growing conditions
  - Root space
  - Air space
  - Soil fertility and compaction
  - Pollution/Salt spray
  - Mulch
  - Moisture content of soil
- Research history
  - Root pruning events
  - Tree pruning events
  - History of failures
  - History of damage/vandalism
- Evaluate tree structure
  - Lean
  - Trunk and branch taper
  - Branching structure
  - End-weight issues
  - Decay in trunk or branches (compounding factors)



## APPENDIX D - TREE INSPECTIONS, CONTINUED

- Evaluate leaves and canopy
  - Dieback in leaves, twigs or branches
  - Small or yellowing leaves
  - Premature fall color
  - New shoot growth (in the correct season for each species)
- Evaluate root condition
  - Root decay
  - Crossed or girdling roots
  - Limited root area
  - Root pruning or construction damage
- Inspect for insect, disease or damage
  - Insect infestation
  - Borer holes
  - Sapping and oozing
- Physical damage to leaves, trunk or branches
- Disease (virus, bacteria, fungus)
  - Butt and heart rots
  - Bulges, depressions and poor taper
  - Conks, mushrooms and other fungus
  - Streaking or staining in the cambium or wood
  - Sapping and oozing
  - Leaf discoloration



## APPENDIX D - TREE INSPECTIONS, CONTINUED

- Mechanical or other damage
  - Damage from stakes and ties
  - Damage from construction soil compaction
  - Equipment damage to bark, trunk or branches
  - Fire





## APPENDIX E - RISK ASSESSMENTS

### RISK ASSESSMENT

Trees should be assessed for risk using the Inspection criteria set forth by the International Society of Arboriculture. Ideally, assessments should be conducted by a Qualified Tree Risk Assessor using the most current industry standard.

Tree risk assessment is the systematic process of evaluating the potential for a tree or one of its parts to fail. The degree of risk will vary with the size of the tree, type and location of the defect, tree species, maintenance history and the nature of the impact or the failure. Assessing tree risk involves:

- Evaluating the tree's health and structural condition.
- Consideration of environmental factors affecting the site, e.g., past weather conditions and/or maintenance history of a tree that could contribute to the tree's failure.
- Assessing the likelihood that a person would be harmed or property could be damaged should a tree failure occur.



# APPENDIX F - TREE REMOVALS

## TREE REMOVALS

It is unlawful for any person to remove any protected tree from private property, a public street or right-of-way without first obtaining a removal permit from the Public Works Department.

In the event that removal of a public tree or street tree, four inches or more in diameter, is proposed, due to a City determination that such removal is desirable for public safety, preservation of public utilities or sidewalk repair, or similar reasons, notice of the proposed removal will be posted on the individual tree(s).

The Public Works Director may authorize the removal of protected trees from City parks and street rights-of-way. Such removals may be approved on the basis of the health of the tree, hazardous condition of the tree as determined by a Certified Arborist or the Director, and/or to allow for repair of tree related damage to private property or public improvements.

Prior to the removal of any public tree, the City will evaluate the condition of the tree, its remaining life span, health and condition, structural stability, root mass, trunk, branching system, canopy and foliage. In some instances there are situations where removing public trees cannot be avoided.

Persons objecting to the removal of any such tree may file a written appeal to the Public Works Director no later than ten business days after the date of the posting of the notice. The appeal should be processed in the manner specified in chapter 17.66 of the SM Municipal Code. If a timely appeal is filed, no action will be taken to remove such tree until the Public Works Director, Commission or City Council has heard the appeal as provided in this chapter.

## Removal Criteria

The Public Works Department will make a determination of whether a tree should be removed. In rendering a determination, the City reserves the right to engage the services of an independent arborist to conduct an independent evaluation. The removal of a single tree or groups of trees may be necessary as a result of the following situations:

- A tree is dead.
- A tree in a state of declining health that is reasonably estimated to result in its ultimate demise within one (1) year. Declining trees are defined as having a permanent and progressive reduction in health, vigor and/or structural stability that can eventually lead to its death or structural failure. Declining trees may typically be over mature, suffering from old wounds or other impacts that has interrupted the living system resulting in impeded growth and followed by the depletion of energy reserves that are normally stored in the root mass resulting in the reduction of health, condition and stability. Declining trees with chronic, irreversible symptoms should be removed.



### APPENDIX F - TREE REMOVALS, CONTINUED

- A tree infected with a disease that cannot be treated successfully and/or there is a strong indication that the pathogen could spread to other trees in the immediate vicinity that poses a threat to the health of other trees nearby, and/or a wider population of the urban forest.
- A tree has been determined through a Risk Assessment Report to be a hazard because of its high potential for failure due to considerable dead or dying foliage, branches, roots or trunk.
- A tree requires extensive root pruning because of excessive hardscape damage resulting in the severe reduction of its capacity to support itself thereby creating a potential safety hazard.
- A tree that is not a good candidate for relocation.
- A tree is not a good candidate for relocation and has been approved for removal as part of a City Council approved public improvement project that has already gone through the established public process.
- A tree planted by a private party in the public right-of-way may be subject to removal of the tree by the City.

Trees are generally not approved for removal because of leaves or berries dropping from the tree, too much shade, urban wildlife nesting in the tree, or obstruction of street lights.

#### Exemptions and emergency removal of trees

A permit to remove a tree is not required under the following circumstances:

- A protected tree has been damaged by a storm, fire or other natural disaster and determined by the Public Works Director to be an immediate hazard to persons or property.
- A protected tree whose removal is deemed necessary by fire department personnel actively engaged in fighting a fire.
- When a determination has been made by the Public Works Director or the Commission that the tree is in an obvious state of decline or is a threat to persons or property.
- The removal of a tree by an overhead utility franchise holder which reasonably determines it must remove a tree that threatens to interrupt energized utility service or damage utility property.





# APPENDIX F - TREE REMOVALS, CONTINUED

### Notification Process for Tree Removals

If it is determined that a tree should be removed, a removal notification will be issued for public review. The tree removal notification should provide details on the following:

- Tree location
- Reason for removal
- How the public can give feedback or ask questions about the removal
- Posting the removal notice on the tree.

Notices will be posted for a period of ten (10) working days in advance of the intended removal. Trees that pose an imminent threat of failure with the potential to cause personal injury or property damage will be removed as soon as possible with the approval of the Public Works Department, with no public notification.

### APPEAL PROCESS FOR TREE REMOVALS

Any person objecting the removal of a City tree may appeal the decision. Any person objecting to the determination of the City or Commission may appeal to the City Council.

Appeals must be filed with the Public Works Director within ten business days of the director or commission action being appealed and have to be accompanied by a written statement of grounds for the appeal. Failure to include a written statement of grounds for appeal will invalidate the appeal and constitute a waiver of such appeal. At least ten days prior to the City Council hearing on an appeal, notice of the time and date of the hearing will be posted at or near the subject tree or trees and mailed to the appellant.



## APPENDIX G - ROOT PROTECTION AND ROOT PRUNING

### ROOT PROTECTION AND ROOT PRUNING

Protecting tree roots from damage during construction or other maintenance activities is important to the long-term health of public trees. The majority of a tree's roots are found in the top two feet (2') of soil. Street trees have a very small ratio of root mass to canopy. Roots within approximately five to ten feet (5' to 10') of the trunk act as anchor or stabilizing roots. As roots extend outward towards the edge of the canopy the larger roots taper down to smaller roots measuring one to two inches (1" to 2") in diameter. These roots are important to the overall health of the tree and act as both stabilizers and conduits for water and nutrients.



# APPENDIX H - TREE PROTECTION ZONES

## TREE PROTECTION ZONES

Construction activities can cause irreparable damage to adjacent street trees, and it is important that they be protected to ensure tree longevity. This is important during the design phase, when a determination is made how a proposed project will impact existing street trees, trees on the site of the proposed project, or on adjacent properties.

The Public Works Department will approve all work within a Tree Protection Zone (TPZ). A Tree Protection Plan prepared by a Certified Arborist may be required for larger projects.

- All cut, fill and/or building foundation work should be located a distance from the outside edge of the trunk of any remaining tree at least three times the diameter (dbh) of the affected tree, unless the Certified Arborist under contract to the applicant determines a lesser distance is adequate due to the species of the tree.
- No stockpiling, storage, or placement of project materials or excavated soils or other changes in grade may occur within the drip line of any protected tree, either temporarily during construction or permanently.
- The ground area surrounding the trunk of any remaining tree in which construction or other project activity may not intrude must be clearly designated prior to the commencement of the project by semi-permanent construction fencing. The fencing should not be closer than five feet from the trunk of a remaining tree unless the Certified Arborist under contract to the applicant determines a different distance is necessary for the protection of the tree. Tree protection areas should not be used to park vehicles or store demolition/construction-related materials and supplies. Tree protection areas must be maintained in a natural condition, and not be compacted by foot traffic, vehicle traffic or other means.
- Applicants must submit a utility trenching plan to the Public Works Department for review and approval prior to issuance of a building permit for the project. The plan must show the precise location and sizes of all trees on the project site. The plan should also show trees on neighboring properties with root zones that intrude into the project site, and plot the portion of the root zones of those trees that lies within the project site. The plan must show all facilities to be placed below grade including, but not limited to, storm and runoff drains; sewers; gas lines; electrical, cable television and telephone lines; irrigation facilities and water mains. The plan must also show all lateral lines serving the proposed project and any proposed subgrade irrigation facilities. The plan should comply with the following unless the Public Works Department determines otherwise:
  - The trenching pathway plan must avoid the root zone of protected trees.
  - In cases where alternative routes are not available, tunneling under roots may be used for all underground lines such as utility and drain lines in order to preserve roots two inches or larger in diameter. All tunneling must be performed under the on-site supervision of the Certified Arborist under contract to the applicant.





### APPENDIX H - TREE PROTECTION ZONES, CONTINUED

- Wherever possible, underground lines are to be combined in the fewest possible trenches.
- Where it is not possible to avoid encroachment into root zones, the design must minimize such encroachment. The Public Works Department may require that these encroachments and mitigation measures be documented in a supplemental report prepared by the Certified Arborist under contract to the applicant.
- No more than one-third of the root zone of remaining protected oak trees may be affected by new development, unless the Certified Arborist under contract to the applicant demonstrates to the satisfaction of the Director that the tree will not be harmed as a result
- Damage to the root feeding zone of remaining trees other than protected species may be permitted only when specified by the Certified Arborist under contract to the applicant.
- The Director may establish root zone standards for other tree species common to Sierra Madre based on their growth habit on a case by case basis if necessary.
- All approved construction work within the root zone of trees scheduled for preservation should observe the following minimum tree protection practices:
  - ⇒ Hand trenching at point of grade cuts closest to the trunk to expose roots two inches (2") and larger. Large roots can be cut only with permission of the Certified Arborist under contract to the applicant. In cases where rock or unusually dense soil prevents hand trenching, the Public Works Department may approve use of mechanical equipment; provided that work inside the drip line of any remaining tree is done under the supervision of the Certified Arborist under contract to the applicant to minimize tearing or other damage to major roots.
  - ⇒ The minimum distance between the trunk and any open trench or excavation should be one foot (1') or six inches (6") for every six inches (6") of trunk diameter measured at four and a half feet (4-1/2') above existing grade, whichever is greater.
  - ⇒ Excavated soil should be deposited in trucks to be hauled off-site or temporarily stored on one inch (1") plywood outside the TPZ. No soil should be stored, even temporarily, on unprotected natural grade.
  - ⇒ Protect exposed roots from contamination by construction materials or concrete.
  - ⇒ Permitted cutting of roots should be accomplished with a handsaw. Roots should not be ripped by backhoe, ditching machine, or similar grading equipment.
  - ⇒ Typically, the entire TPZ should be covered with two to four inches (2 - 4") of mulch in an effort to improve the growing environment for the roots. During construction phase maintain a layer of chip mulch over the soil surface to reduce soil compaction, improve aeration, enhance moisture retention and reduce temperature extremes. Mulch generally consists of shredded leaves or bark, pine straw, peat moss, wood chips or composted green waste.



### APPENDIX H - TREE PROTECTION ZONES, CONTINUED

- ⇒ In cases where the mulch needs to be removed after construction has been completed, an absorbent tarp or heavy cloth secured by stakes may be used to cover the new grade cuts within the root zone of a protected tree. Two to four inches of compost or woodchip mulch can then be spread over the tarp or cloth to prevent soil moisture loss. The compost or mulch and tarp should be thoroughly wetted twice per week until backfilling occurs unless the Arborist under contract to the applicant otherwise directs.
- ⇒ Root pruning is to be done with a handsaw, with clean cuts and performed according to standards of the International Society of Arboriculture. Do not apply pruning sealant to any of the pruning cuts.
- ⇒ Redirect roots in backfill areas where possible. Large lateral roots can be exposed beyond excavation limits as required to bend and redirect them as long as it can be accomplished without damage.
- ⇒ Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- ⇒ Decks or patios may be constructed above the root zone of remaining trees provide the design calls for post and beam construction or another method that reduces the need for root pruning or removal that which would otherwise occur with raised foundation design.
- ⇒ On-grade patios or paving that covers more than one-third of the root zone of remaining protected oak trees must be constructed of permeable materials that allow air and water to penetrate the soil.
- ⇒ Planting and weed control beneath remaining trees must take into consideration the watering requirements of such trees to prevent damage from over- or under-watering or other adverse effects on the health of the trees. A list of plants suitable for under-planting should be submitted to the Director for approval during the plan check phase of the project.
- ⇒ Planting turf or other plants that require frequent watering beneath oak trees should be avoided.



# APPENDIX I - OFF-SITE IMPROVEMENTS

## OFF-SITE IMPROVEMENTS

### Sidewalks, Curbs, Gutters, Drains, Asphalt Paving and Other Improvements

- Off-site improvements in conjunction with construction projects should consider replacing concrete sidewalks with alternative sidewalk materials that can have secondary benefits through the reduction of urban runoff.
- Place a sheet of six (6) mil or thicker plastic over the grade within affected portions of tree protection areas prior to pouring concrete sidewalks, curbs, inlets, ramps and driveway approaches. The plastic will assist in providing a non-leaching barrier between the concrete, soil and roots.
- Limit grading to a maximum of two inches (2") of fill over natural grade within critical root zones. Fill should consist of sandy loam topsoil. Clay soils should not be used as fill. When using fill soil, the existing surface to receive fill should be scarified or roughened prior to filling. Any filling operation should not occur during water saturated soil conditions.
- Alternative base course materials may be used upon approval from the City. Engineered structural soil mix is an alternative for hardscape near trees.
- Masonite type forms are preferred for curb and gutter construction because they minimize excavation. This method should be used in the Critical Root Zone (CRZ). Where appropriate, use curbs with discontinuous footings to maintain natural grade near the base of trees adjacent to the curbing and to minimize injury to roots and root flares.
- Typar BioBarrier may be used between the curb and tree roots to help inhibit root growth that may exploit small cracks in the curb.
- Provide for easy concrete removal and replacement where roots may cause sidewalk cracking in the future. This is accomplished by installing an expansion joint on both sides of the root or by etching the concrete on either side of the root to allow that particular section to be broken out and replaced.
- Compaction rating for the replacement walkway should not exceed eighty percent (80%) proctor density. Tree roots will continue to slowly add girth every year; therefore, the base material needs to be malleable (e.g. suitable subgrade aggregates, crushed granite, or compacted sand) to prevent a fulcrum or pressure point that can crack or heave the walkway.
- Where appropriate, and under the direction of the Public Works Department, root-restricting barriers can be installed with a minimal amount of disturbance. These should be linear barriers, not circling barriers. Each situation should be analyzed individually and soil compaction, root space and species should be considered. Landscape related materials may be used as barriers to root growth.





# APPENDIX J - STREET TREE DESIGNATION CRITERIA

## STREET TREE DESIGNATION CRITERIA

In order to designate future replacement trees as they succumb to disease, become hazardous, or die, street tree designation criteria are followed.

All streets in the City are divided into segments based on tree populations, grow-space size, and neighborhoods. Blocks with streets that exhibit similar characteristics are grouped into a segment. Some segments span the entire City, while some are only a block long.

Each street segment, and its existing trees, takes into account quantity, size, health, and aesthetic suitability. If the dominant tree on the segment is determined to be the right tree for the right place, it will remain as the designated tree. If not, the following criteria will be considered when selecting a different species.

The Engelmann Oak, *Quercus engelmannii*, is designated as the official tree of the City of Sierra Madre. The Engelmann oak is a preferred replacement tree for mitigation measures, and is also given special consideration for preservation in the review of development plans.

### Species Diversity

The top 15 species should only be designated in existing healthy stands of trees that are considered to be the right trees for the right place. New species, which thrive in similar climates, should be regularly introduced to increase diversity of the urban forest. When filling vacancies to complete existing monocultures, combinations of two tree types with similar characteristics may be used.

### Aesthetics and Neighborhood Character

If a new species is considered for a street segment, its appearance alongside existing trees must be considered. Since this plan will be implemented over time, new trees will be phased in one at a time, so they must blend aesthetically with existing trees and consider the neighborhood character during the replacement process.

### Tree Site and Grow-space

The grow-space available at the tree site is the most significant factor in tree selection. The soil volume is limited in small cut-outs and parkways and the list of trees that will thrive in those conditions is short. Root pruning may be necessary for trees planted in small grow-spaces, so a tree planted in such a space must be able to tolerate root pruning. Large grow-spaces offer an opportunity to increase canopy cover and environmental benefits for the City and a large range of trees can be planted in area with plenty of soil volume.



# APPENDIX J - STREET TREE DESIGNATION CRITERIA, CONTINUED

### Canopy Size

The mature size of the canopy is also a factor in tree selection. Adjacent building size and setback should be evaluated to determine whether a tree should have an upright, vase shaped, or spreading canopy.

Both vertical and horizontal shapes are considered. Because increasing the canopy cover throughout the City is a main objective, the largest possible tree for the grow-space should be considered.

### Land Use and Traffic Considerations

Commercial districts with boulevards will be considered differently than residential streets. Tree debris should always be considered on streets which are used for parking.

Trees that line streets that have truck traffic need to be tolerant of being “limbed up” when young. Trees that are tolerant of pollution and help mitigate pollution should be used for high traffic streets and areas in close proximity to high-traffic corridors. Shade and comfort of pedestrians will always be considered.

### Micro-climate and Growing Conditions

Some trees are adapted to grow in windy environments and others need some heat and protection from wind to thrive. Growing conditions for each street will be considered. The intent is to not supplementally water trees after establishment. Thus, they should be able to survive on establishment water when young, tapering off to little water when established.

### Nursery Availability

Research should continually be done for all new species introductions regarding the possibility of having them grown locally. Uncommon species may need to be contract grown to create availability for this species.



## Community Forest Management Plan

### APPENDIX J - STREET TREE DESIGNATION CRITERIA, CONTINUED

DESIGNATED STREET TREE LIST (SELECTED STREETS)								
Street	ROW	Parkway	Utilities Overhead	Existing dominant species	RECOMMENDED		ALTERNATIVE	
					Tree 1	Tree 2	Tree 1	Tree 2
Alegria Ave/E	11	6	No	Jacaranda Liquidambar	Engelmann oak ( <i>Quercus engelmannii</i> )	Hong Kong Orchid Tree ( <i>Bauhinia x blakeana</i> )	Cape Chestnut ( <i>Calodendron capense</i> )	Golden Trumpet Tree ( <i>Handroanthus chrysotrichus</i> )
Baldwin Ave/N	11 - 14	4.5 - 9	No	London plane Silk oak ( <i>Grevillea robusta</i> ) Coast live oak	London plane ( <i>Platanus x acerifolia</i> )	Red flowering gum ( <i>Corymbia ficifolia</i> )	Rainbow eucalyptus ( <i>Eucalyptus deglupta</i> )	Chinese pistache ( <i>Pistacia chinensis</i> )
Baldwin Ave/S	10	5	No	Coast live oak Indian laurel fig ( <i>Ficus microcarpa</i> )	Coast live oak ( <i>Quercus agrifolia</i> )	Engelmann oak ( <i>Quercus engelmannii</i> )		
Bonita Ave/E	12	12	No	Modesto ash ( <i>Fraxinus velutina</i> )	Engelmann oak ( <i>Quercus engelmannii</i> )	Coast live oak ( <i>Quercus agrifolia</i> )	Apple gum ( <i>Angophora costata</i> )	Catalina Ironwood ( <i>Lyonothamnus floribundus</i> ssp. <i>Asplenifolius</i> )
Bonita Ave/W	10 - 12	6	Yes	Southern magnolia many species, including palms	Coast live oak ( <i>Quercus agrifolia</i> )	Holly oak ( <i>Quercus ilex</i> )	Strawberry tree ( <i>Arbutus 'Marina'</i> )	California pepper ( <i>Schinus molle</i> )
Carter Ave/E	9	4	Yes	Incense cedar	Incense cedar ( <i>Calocedrus decurrens</i> )	Eastern redbud ( <i>Cercis canadensis</i> )	Coast live oak ( <i>Quercus agrifolia</i> )	Chinese tallow tree ( <i>Sapium sebiferum</i> )
Carter Ave/W	9	4	Yes	Incense cedar	Coast live oak ( <i>Quercus agrifolia</i> )	Engelmann oak ( <i>Quercus engelmannii</i> )	Yew Pine ( <i>Podocarpus macrophyllus</i> 'Maki')	Redbud ( <i>Cercis</i> spp.)
Esperanza Ave	11	6	Yes/No	Southern Magnolia Crape myrtle	Grecian laurel ( <i>Laurus nobilis</i> )	Eastern redbud ( <i>Cercis canadensis</i> )	Chinese fringe tree ( <i>Chionanthus retusus</i> )	Australian willow ( <i>Geijera parviflora</i> )
Grandview Ave/E	9	4	Yes	Southern magnolia Pines (various)	Catalina Ironwood ( <i>Lyonothamnus floribundus</i> ssp. <i>Asplenifolius</i> )	Yew Pine ( <i>Podocarpus macrophyllus</i> 'Maki')	Lemon bottlebrush ( <i>Callistemon citrinus</i> )	Redbud ( <i>Cercis</i> spp.)
Grandview Ave/W	7 - 8	2.5 - 4	Yes	Coast live oak Holly oak	Yew Pine ( <i>Podocarpus macrophyllus</i> 'Maki')	Catalina Ironwood ( <i>Lyonothamnus floribundus</i> ssp. <i>Asplenifolius</i> )	Lemon bottlebrush ( <i>Callistemon citrinus</i> )	Redbud ( <i>Cercis</i> spp.)





## Community Forest Management Plan

### APPENDIX J - STREET TREE DESIGNATION CRITERIA, CONTINUED

DESIGNATED STREET TREE LIST (SELECTED STREETS)								
Street	ROW	Parkway	Utilities Overhead	Existing dominant species	RECOMMENDED		ALTERNATIVE	
					Tree 1	Tree 2	Tree 1	Tree 2
Hermosa Ave/N	7	3 - 4	Yes	Tulip tree ( <i>Liriodendron tulipifera</i> ), Pines, Cypress	Weeping bottlebrush ( <i>Callistemon viminalis</i> )	Yew pine ( <i>Podocarpus macrophyllus</i> 'Maki')	Australian willow ( <i>Geijera parviflora</i> )	Golden Trumpet Tree ( <i>Handroanthus chrysotrichus</i> )
Hermosa Ave/S	11	5	No	Jacaranda	Jacaranda ( <i>Jacaranda mimosifolia</i> )	Weeping bottlebrush ( <i>Callistemon viminalis</i> )	Silk tree ( <i>Albizia julibrissin</i> )	Flaxleaf paperbark ( <i>Melaleuca linariifolia</i> )
Highland Ave/E	11	4 - 5	Yes	Jacaranda, Ficus, Ash, Melaleuca	Catalina Ironwood ( <i>Lyonothamnus floribundus</i> ssp. <i>Asplenifolius</i> )	Weeping bottlebrush ( <i>Callistemon viminalis</i> )	Strawberry tree ( <i>Arbutus</i> 'Marina')	Golden Trumpet Tree ( <i>Handroanthus chrysotrichus</i> )
Highland Ave/W	10 - 11	5 - 6	Yes	Ficus; Pines	Australian willow ( <i>Geijera parviflora</i> )	Horsetail tree ( <i>Casuarina cunninghamiana</i> )	Cajuput tree ( <i>Melaleuca quinquenervia</i> )	Lavender or Pink Trumpet tree ( <i>Handroanthus avellanedae</i> )
Lima St/N	10	4.5	Yes	Jacaranda/Schinus molle/Cupressus/Q. ilex and more	Weeping bottlebrush ( <i>Callistemon viminalis</i> )	Yew Pine ( <i>Podocarpus macrophyllus</i> 'Maki')	Australian willow ( <i>Geijera parviflora</i> )	Redbud ( <i>Cercis</i> spp.)
Lima St/S	5 - 10	4.5	Yes	Wide variety species	Chinese flame tree ( <i>Koelreuteria bipinnata</i> )	Grecian laurel ( <i>Laurus nobilis</i> )	Australian willow ( <i>Geijera parviflora</i> )	Golden Trumpet Tree ( <i>Handroanthus chrysotrichus</i> )
Manzanita Ave/W	9 - 12	5	Yes	<i>Quercus</i> /Pinus/Lagerstroemia Olives and more	Deodar cedar ( <i>Cedrus deodara</i> )	California pepper ( <i>Schinus molle</i> )	Grecian laurel ( <i>Laurus nobilis</i> )	Lavender or Pink Trumpet tree ( <i>Handroanthus avellanedae</i> )
Mariposa Ave/W	4 - 7	4 - 7	Yes/No	Wide variety of trees	Bottle tree ( <i>Brachychiton populneus</i> )	Chinese tallow tree ( <i>Sapium sebiferum</i> )	Brisbane box ( <i>Lophostemon confertus</i> )	Lavender or Pink Trumpet tree ( <i>Handroanthus avellanedae</i> )
Montecito Ave/E	11	4 - 5	Yes	Cypress Brisbane box	Chinese pistache ( <i>Pistacia chinensis</i> )	Brisbane box ( <i>Lophostemon confertus</i> )	Lavender or Pink Trumpet tree ( <i>Handroanthus avellanedae</i> )	Redbud ( <i>Cercis</i> spp.)
Montecito Ave/W	10 - 12	5 - 6.5	No	Jacaranda Camphor tree	Cape chestnut ( <i>Calodendron capense</i> )	Grecian laurel ( <i>Laurus nobilis</i> )	Chinese tallow tree ( <i>Sapium sebiferum</i> )	Golden Trumpet Tree ( <i>Handroanthus chrysotrichus</i> )
Orange Grove Ave E - W	10	4.5	No	Oaks, Palms; variety of trees	Coast live oak ( <i>Quercus agrifolia</i> )	Black oak ( <i>Quercus kelloggii</i> )	Blue palo verde ( <i>Cercidum floridum</i> )	Redbud ( <i>Cercis</i> spp.)
Ramona Ave	2.5 - 10	2.5 - 10	No	Jacaranda	Apple gum ( <i>Angophora costata</i> )	Catalina Ironwood ( <i>Lyonothamnus floribundus</i> ssp.)	Chinese pistache ( <i>Pistacia chinensis</i> )	Redbud ( <i>Cercis</i> spp.)



## Community Forest Management Plan

### APPENDIX J - STREET TREE DESIGNATION CRITERIA, CONTINUED

DESIGNATED STREET TREE LIST (SELECTED STREETS)								
Street	ROW	Parkway	Utilities Overhead	Existing dominant species	RECOMMENDED		ALTERNATIVE	
					Tree 1	Tree 2	Tree 1	Tree 2
						<i>Asplenifolius</i> )		
Sierra Madre Blvd/E	10	4.5	Yes	Magnolia/Tulip/Camphor/ London plane	Chinese flame tree ( <i>Koelreuteria bipinnata</i> )	Weeping bottlebrush ( <i>Callistemon viminalis</i> )	Chinese pistache ( <i>Pistacia chinensis</i> )	Redbud ( <i>Cercis spp.</i> )
Sierra Madre Blvd/W	12	6.5	No	Southern Magnolia/Tulip/Camphor/ London plane	Chinese flame tree ( <i>Koelreuteria bipinnata</i> )	Weeping bottlebrush ( <i>Callistemon viminalis</i> )	Chinese pistache ( <i>Pistacia chinensis</i> )	Redbud ( <i>Cercis spp.</i> )
Sunnyside Ave/N	9 - 11	4 - 6.5	No	Jacaranda Liquidambar, Mexican fan palm ( <i>Washingtonia filifera</i> )	Catalina Ironwood ( <i>Lyonothamnus floribundus ssp.</i> <i>Asplenifolius</i> )	Yew Pine ( <i>Podocarpus macrophyllus</i> 'Maki')	Chinese flame tree ( <i>Koelreuteria bipinnata</i> )	Golden Trumpet Tree ( <i>Handroanthus chrysotrichus</i> )
Sunnyside Ave/S	12	7 - 8	Yes/No	Camphor/Liquidambar/and variety	Cape chestnut ( <i>Calodendron capense</i> )	Lavender or Pink Trumpet tree ( <i>Handroanthus avellanedae</i> )	Chinese tallow tree ( <i>Sapium sebiferum</i> )	Redbud ( <i>Cercis spp.</i> )
Parkway in front of Sierra Vista Park	n/a	5 x 5	No	Southern magnolia ( <i>Magnolia grandiflora</i> )	Weeping bottlebrush ( <i>Callistemon viminalis</i> )	Yew pine ( <i>Podocarpus macrophyllus</i> 'Maki')		



# APPENDIX K - TREE PLANTING

## TREE PLANTING

Persons wishing to plant trees along public streets must obtain a tree permit from the Public Works Department. In permitting any planting of trees pursuant to this section, the City follows the versions of the standards of the International Society of Arboriculture and the American National Standards Institute A300 standards for tree maintenance. These standards may be amended from time to time and will be kept on file and available for public reference at City Hall and the City Library.

There are certain tree species that are prohibited from planting in City right of way as well as within the high fire hazard zone. Prior to selecting and planting a new tree it is necessary to check with the Public Works Department to make sure the proposed species is appropriate for the planting site.

The City may require tree planting on or adjacent to a project site when a determination has been made that new tree(s) will mitigate a project's biological, aesthetic and land use impacts. In cases where tree planting adjacent to a project site is required, priority should be given to the replacement of public street trees in the vicinity that have died, or have been removed.

## Nursery Stock

Container material is the most common type of nursery stock in California and is preferable for use in Sierra Madre.

### Types of Nursery Stock

- Container
- Ball and Burlap

### Selecting Quality Container Nursery Stock

Trees should meet the following minimum standards. Trees that do not meet these requirements will be rejected. The City retains the right to inspect the root mass from a sample tree of each species. Extra provisions may be necessary in project contracts to notify nurseries of this requirement.

Recommended tree planting specifications is as follows:

- All trees should be true to type or botanical name as ordered or shown on planting plans or contract orders.
- All trees should have a single, relatively straight trunk with a good taper and branch distribution vertically, laterally and radially with a live crown





### APPENDIX K - TREE PLANTING, CONTINUED

ratio (distance from bottom of canopy to tree top/tree height) of at least sixty percent (60%). All branches in the canopy should be less than two-third (2/3) the trunk diameter and free of included bark. The trunk and main branches should be free of wounds except for properly made pruning cuts, damaged areas, conks, bleeding and signs of insects or disease.

- All trees should be healthy, have a form typical for the species or cultivar, be well-rooted and pruned as appropriate for the species.
- All trees should have sufficient trunk diameter and taper so that it can remain vertical without the support of a nursery stake.
- The root ball of all trees should be moist throughout and the crown should show no sign of moisture stress.
- The tree should be well rooted in the soil mix. The point where the topmost root in the root ball emerges from the trunk should be visible at the soil surface of the root ball. When the container is removed, the root ball should remain intact. When the tree is lifted, the trunk and root system should move as one.
- All trees should comply with federal and state laws requiring inspection for plant diseases and pest infestations.
- No tree should be accepted that has been severely topped, headed back or lion-tailed.
- No tree should 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 should 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 should 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.

#### Tree Planting

Prior to planting, the following guidelines can be followed:

#### Sites for New Street Trees

Typically street trees can 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 could be filled.

#### Street Tree Spacing



### APPENDIX K - TREE PLANTING, CONTINUED

In order to minimize impacts upon adjoining properties and infrastructure components, the planting of new trees should be subject to the following guidelines and restrictions.

The typical guidelines for planting trees on private property are:

- Place large shade trees on the south side of the house where possible
- 5' feet away from side property lines
- 10' from front and rear property lines

The typical guidelines for street tree spacing is as follows:

- 30'-35' feet on center
- 30' feet from the corner property line
- 20'-25' feet on center for smaller statured trees
- 10' feet from driveway approaches
- 10' feet from light poles
- 5' feet from utility meter boxes

Street trees are not recommended when the following conditions exist:

- 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.
- Utility meters are in the way.
- The tree could block views of oncoming traffic.
- The tree is not on the Street Tree Designations List (Appendix 3).



# APPENDIX K - TREE PLANTING, CONTINUED

### Minimum size of Street Trees

The minimum size for a new street tree should be a 15-gallon container.

### Tree Planting by Residents

Residents are allowed to plant an approved designated street tree in the parkway or tree well. Residents may plant any size tree they choose however the minimum size acceptable to the City will be in a 15-gallon container. Tree planting may only be done after obtaining a permit issued by the City. The tree will then be incorporated into the City's tree inventory.

### Planting Procedures

- All planting locations within the public right of way must be checked for underground conflicts. It is mandatory that **Dig Alert** is notified to detect all underground utilities prior to any digging.
- Dig planting holes 2-3 times as wide as the container. The depth of the planting pit needs to be equal to the height of the rootball. Place the tree in the planting pit so the trunk flare or the top of the rootball is at least one-half inch to 1 inch (1/2" to 1") above finish grade. In grass-covered parkways the top of the rootball should be higher than the surrounding soil by one-half inch to one inch (1/2" to 1"). When planting trees in a concrete tree well, the rootball should be one inch (1") above the level of the finished surface of the surrounding concrete.
- When obtaining a tree from a nursery, always carry the tree by its container or rootball, never by the trunk.
- After removing the tree from the container, cut circling roots and matted roots off the bottom. Check for any circling roots missed during initial inspection. Any roots less than one-third (1/3) the size of the trunk should be removed with a sharp pruning tool.
- Before placing the tree in the planting pit, examine the root ball for injured roots and the canopy for broken branches. Damaged roots need to be cleanly cut off at a point just in front of the break. Broken branches should be cut out of the canopy making sure that the branch collar is not damaged.
- Backfill with soil removed from the planting hole. 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. Only add fertilizer or compost if a soil analysis indicates it is required. Build a temporary four to six inches (4" to 6") water retention berm around the root ball to allow for establishment watering. Immediately after planting the tree, water it thoroughly by filling the water retention basin twice.
- All trees should be staked with two wooden lodge poles and two ties per pole. The minimum diameter of a lodge pole is two inches (2"), but may be larger for 36" and 48" box trees. Place the tree ties at one-third (1/3) and two-third (2/3) of the trunk height. Drive the stake into the ground approximately twenty-four to thirty inches (24" to 30") below grade making sure not to penetrate the root ball.





### APPENDIX K - TREE PLANTING, CONTINUED

- Mulch with a two to four inch (2" to 4") layer of nitrolized mulch where appropriate to conserve soil moisture, provide protection from extreme temperatures and prevent damage from weed eaters. Mulch should be kept three to four inches (3" to 4") away from the tree trunk and should extend at minimum to the boundary of the water retention basin. It may extend further if desired.
- The soil around the new tree should 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 may be required as specified by the Public Works Department. The length of the barriers will depend on the species of tree to be planted. As a rule, the length of barriers should extend the length of the mature size of the canopy. Place the barriers against the hardscape with the uppermost edge above finish grade by one- quarter inch (1/4") or less.
- Residents will be provided with information on newly planted trees that will include the species, growth characteristics, watering and maintenance requirements.



# APPENDIX L - GUIDELINES FOR WATERING TREES

## GUIDELINES FOR WATERING STREET TREES

Newly planted trees need consistent moisture to promote root and shoot growth. Trees should have moisture beyond the original planting hole to encourage roots to grow into the native soil. Site conditions influence watering needs. Trees planted in planting cutouts have more reflected heat and may require more water than the guideline suggested below.

Do not place water-impermeable material, such as tar paper or plastic, over the root zone of a street tree or public tree, or use materials or chemicals that sterilize the soil within the root zone of a street tree or public tree unless expressly authorized to do so by the Public Works Department.

Young trees typically need the following:

- A watering basin or berm outside the finished planting hole to allow for soaking the root ball of the tree.
- Adequate soil moisture to promote root growth in the top two feet (2') of soil for a diameter at least one foot (1') beyond the planting area. Moisture can be measured in the soil using a core sampler or Tensiometer.

As a general guideline, trees should be watered:

- 1 to 3 months after planting: 4 times per month or as necessary
- 4 to 6 months after planting: 2 times per month or as necessary
- 7 to 12 months after planting: 1 time per month or as necessary

## WATERING ESTABLISHED TREES

Fluctuations in watering regimens can cause established trees to decline. If possible, it is important to provide moisture in the entire root zone. Roots are generally located in the top two feet (2') of the soil surface, and out at least fifteen feet (15') beyond the edge of the canopy. Mature trees have anchor or stabilizing roots near the trunk that should remain dry.

Mature trees can be watered with existing irrigation systems following the Sierra Madre Municipal Code - Water Conservation Requirements. If an irrigation system does not exist, trees can be watered by hand using a soaker hose or root feeder (metal tube with holes in it attached to a hose). Water should penetrate at least twelve inches (12"). Water should not spray onto the trunks of trees. This can encourage moisture loving disease pathogens that can cause the tree to decline.



# APPENDIX L - GUIDELINES FOR WATERING TREES, CONTINUED

## GUIDELINES FOR WATERING STREET TREES

### Key Factors to Remember When Watering Street Trees

- Trees in Sierra Madre require different amounts of water at different times of the year. Sierra Madre's forest is primarily made up of trees that flourish in a moderate climate with naturally dry conditions. Many species found in Sierra Madre do not require regular watering and actually thrive when they receive minimal amounts. Other species require no irrigation during the summer months as it is detrimental to their health. Mature or established trees usually can get by with infrequent watering depending on the species of tree.
- Most of Sierra Madre's street trees require a climate with long, hot summers and mild winters with a moderate amount of rainfall. They do best in sandy loam soil but can tolerate other types of soils.
- The most important area to water for deciduous trees is within the dripline (from the trunk to the outer edges of the trees branches).
- For evergreens, water three to five feet (3' to 5') beyond the dripline on all sides of the tree.

### Current Age and Size

- Older trees are sensitive to increased amounts of water. Trees that have been thriving on a certain level of soil moisture, and then subjected to increased amounts, can respond in different ways.
- Increased shoot growth adds new foliage and weight to the limbs in the canopy and increases pruning requirements. In order to reduce the potential for limb failures, pruning cycles need to be increased. Too much water can also kill roots from lack of oxygen in the soil.
- Mature trees that suffer from too much water in the soil will respond with dead tips, dieback throughout the canopy and excessive leaf drop. In extreme cases, trees with dead roots can fall over.

Water directed onto the trunk can aggravate wood decay if there are wounds at the base of the tree. This eventually weakens the trunk and creates a potential for total tree failure.

There are several fungal diseases known to afflict trees that thrive in southern California's climate. The diseases that infect these trees can cause considerable damage and even the demise of a street tree. These problems mainly arise due to conditions that are different from their native habitat. Conditions such as summer watering or excessive watering in the winter result in fungi, bacteria and viruses in the soil that trees cannot withstand. This condition can ultimately lead to the failure of a mature tree in spite of a healthy-appearing canopy.





### APPENDIX L - GUIDELINES FOR WATERING TREES, CONTINUED

The main ingredient necessary for establishing new trees is a source of moisture. Regular moisture allows new trees to grow quickly by developing a consistent amount of foliage and shoot growth, while irregular watering forces trees to only produce foliage that can be sustained by minimal or infrequent amounts of moisture.

A simple method to follow is to fill up the swale or berm around the trunk base with water and let it percolate into the root ball. After the water has all drained into the soil, fill the swale or berm once more and allow it to drain.

Follow this method twice a week during the warm months of May through October, and once a week during the cool months of November through April. When watering trees, it helps to understand these facts about roots:

- A tree's root mass is its foundation and provides the structural support it needs to remain standing upright. Over watering leads to damage to that foundation and can affect the stability of a street tree.
- Most, if not all, of a tree's roots are found in the upper two feet (2') of soil.
- Most, if not all, roots are found where water, nutrients and oxygen are readily absorbed.
- The distances that roots can spread horizontally, and the area where most of the moisture is absorbed, are directly related.
- Trees need oxygen for their roots. Too much water in the soil interferes with the roots ability to exchange oxygen, which can lead to root rot and the eventual decline or failure of a tree.

The roots of a street tree can extend up to four times the diameter of its canopy, which places much of the root mass in a front yard landscape. Watering a front yard landscape forces the tree to develop its network of roots under the sidewalk and in a front yard.

- Deep and/or infrequent watering forces a tree to develop a root system that is far reaching and/or deep.
- Regular water for a front yard landscape allows street trees to develop a shallow root system that does not extend any farther than it has to in order to reach a source of moisture.



# APPENDIX M - LEGACY TREES

## LEGACY TREES

Any person may nominate a tree or grove of trees for "Legacy Tree" status. The Energy, Environment, and Natural Resources Commission (the Commission) receives nominations of trees for "Legacy Tree" status through the Director of Public Works. The property owner and/or the nominator is provided with a notice of the date, time, and place for the Commission meeting at which the nomination will be considered. Such notice will be provided at least ten days prior to the Commission meeting. No tree will be designated as a legacy tree by the Commission without the written consent of the property owner.

Any Legacy Tree may be identified with a marker or other means as determined by the Commission, provided the property owner consents to such an identification. The Director of Public Works will maintain a current list of all Legacy trees so designated by Commission. The cost of making or installing Legacy Tree markers is the responsibility of the property owner.

A tree that meets the definition of a "Legacy Tree," as defined in section 12.20.020 of the SMMC, or which is designated as a "Legacy tree" by the Commission, remains the property of the landowner. The care of the tree is the responsibility of the property owner; any property owner having a Legacy Tree on his property is expected to give the tree reasonable care to ensure its continued good health.

Upon designation of the Commission as a Legacy tree, the tree is afforded the same protection as provided for public and private protected trees under this code. Such protection of the legacy tree applies regardless of the species of the tree so designated.

From time to time the Commission may recommend to the City Council for adoption by Council resolution, incentives for property owners to designate trees as legacy trees.

A Legacy tree is defined as follows:

- Any existing tree in the City, whether located on public or private property, which is at least 13 inches in circumference (approximately 4 inches in diameter) measured 4 1/2 feet above natural or established grade and which has been designated by action of the Commission as a Legacy Tree.
- A multi-stemmed tree which has one stem of at least 24 inches or more in circumference as measured at 4 ½ feet above natural or established grade and which has been designated by action of the Commission as a Legacy Tree.
- Any tree or group of trees which has a relationship to an event of historical significance or is of public interest and which has been designated by action of the Commission as a Legacy Tree.
- Any tree newly-planted on private property in order to memorialize a person or event and which has been designated by action of the Commission as a Legacy Tree.



### APPENDIX M - LEGACY TREES, CONTINUED

To be designated a "Legacy Tree" by the Commission, a tree or trees must meet the following criteria:

- The tree must be considered an outstanding specimen (or group) of its species by virtue of either its location, health, conformation, age, size, identification with a specific person or historic event, or rarity, or any combination of the same;
- The tree must be in a location and in a state of health which indicates a high possibility of survival, given reasonable care, and in a location which would not automatically preclude reasonable future development of the site.
- The tree is not of a species prohibited for planting under Section 12.20.105 or of a species determined surplus by the commission under Section 12.20.150.
- A tree may be planted by a private property owner in order to memorialize a person or event and subsequently nominated by that property owner for Legacy Tree status.





# APPENDIX N - GUIDELINES FOR PARKWAY LANDSCAPING

## GUIDELINES FOR PARKWAY LANDSCAPING

The parkway is typically the area between the edge of the sidewalk closest the private property and the back side of the curb. On streets that do not have sidewalks, the parkway can also be the strip of land between the edge of the paved roadway or the back of the curb and a property line. These areas are a component of the public right-of-way, however it is the adjacent property owner's responsibility to maintain the parkway area in conformance with the City's code. For information regarding the parkway width at a specific location, contact the Sierra Madre Public Works Department.

Property owners can create attractive, useful frontages adjacent to their property that will also enhance the growing conditions for City street trees growing in the parkways.

Parkway landscaping should take into consideration personal safety, vehicle safety, efficient access for pedestrians and vehicles and resource conservation. Adjacent property owners are required to maintain parkways in good order according to City policy.

These guidelines on landscaping within parkways also take into consideration competing interests that impact the public right-of-way. The City is responsible for all activities that impact the public right-of-way such as overhead or underground utilities, street trees, street lighting, and bus stops. 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.

### Applicability

These guidelines apply to all parkways of the City of Sierra Madre where any kind of retrofitting, modifications or improvement of landscaping and/or irrigation takes place.

All landscaping in a parkway must conform to state and local laws regarding the parkway, including Sierra Madre's Green Streets policy. Modifications to the parkway must not violate any of these laws.

### Basic Recommended Approach

Parkways can be landscaped using a mixture of permeable paving and climate-appropriate plants that provide vehicle operators and passengers safe access to and from on-street parking and pedestrian's safe use of the sidewalk as well as access to and from vehicles parked at the curb. Parkway landscapes should require little or no irrigation and produce no runoff.

### Safety

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

### Step-Out Strips

A step-out strip is a uniform, firm, walking surface from the back of curb inward and is provided for passengers to enter and exit vehicles parked at the



# APPENDIX N - GUIDELINES FOR PARKWAY LANDSCAPING, CONTINUED

curb. Step-out strips should be at least eighteen inches (18") in width and at least thirty-six inches (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 may be constructed of permeable paving, decomposed granite (DG), pavement or plant material. The step-out strip material must provide a firm, uniform walking surface in all weather conditions.

The layout of step-out strips should be constructed in a manner that avoids all damage to the trunk flare or roots of street trees. Step-out strips are not permitted adjacent to red curbs or where roots of existing street trees make construction of a step-out strip with the required dimensions impossible or impractical.

Additional step-out strips may be provided adjacent to driveway aprons as desired.

### Walkways

If desired, the landscape design of a parkway may include a walkway for the purpose of pedestrian access across a landscaped parkway to vehicles parked at the curb. If included, walkways 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.

Walkways should be constructed of at least fifty to eighty percent (50-80%) permeable hardscape material, and may be constructed of permeable paving, DG, pavement or plant material.

The irregular root systems found above the soil surface in some parkways are crucial to tree stability and could limit areas for step-out strips or walkways. The layout of walkways should be constructed in a manner that avoids damage to the trunk flare or roots of street trees. Paver layouts should blend with the existing surface roots by setting them in compacted sand with topsoil or DG placed in between.

### Landscape Areas

All portions of the parkway other than step-out strips and walkways are potential landscape areas. These areas may be composed of plant material, mulch or other features except where installation of such features would damage or negatively impact the roots of existing street trees.

Impermeable hardscape, such as concrete, is strongly discouraged in the parkway as it contributes to urban runoff.

### Grading and Drainage

It is important to have no grade difference between the finish grade of the parkway and adjacent hardscape surfaces such as the curb top, sidewalk or driveway apron. Grade changes on step-out strips and walkways should meet ADA requirements.

If impermeable surfaces are used within parkways, they should be constructed to drain to permeable areas.



# APPENDIX N - GUIDELINES FOR PARKWAY LANDSCAPING, CONTINUED

### Plant Material

Landscape areas can include trees and plants. Trees in Sierra Madre's parkways are managed by the Public Works Department. Additions or modifications to trees in the parkway must be authorized by the Public Works Department.

Native and/or Mediterranean plants with a mulch overlay require little or no irrigation and are preferred for parkway planting.

To create open visibility to the street for vehicles and pedestrians, plant material should not exceed thirty-four inches (34") in height at maturity.

Plant material should not present a danger to public access. Plants with sharp, pointed protrusions such as needles or thorns are discouraged. Vines and other plant material that grow onto a street tree or presents a tripping hazard are discouraged.

Planting should be designed in a manner that does not endanger the health or stability of existing street trees. Particular attention must be paid to landscaping within the Critical Root Zone (CRZ) of the tree.

When removing plant material such as turf grass from a parkway, there should be no damage to the street tree roots. Replace the turf grass with mulch, DG or replant the area immediately so the tree roots are not exposed to undo harm. Trees that need ample or regular water can be adversely affected by a sudden lack of water.

Root pruning should be consistent with guidelines set forth in this document.

Do not plant shrubs and flowers or any other plant material within 24 inches of the base of a tree trunk.

Parkways must be kept free of weeds and are subject to SMMC Chapter 12.20.

Shrubs and flowers should not be planted around the base of trees. They rob newly planted trees of nutrients and moisture. Plants that surround the trunk flare of mature trees create conditions for crown rot, which can ultimately lead to the decline and failure of the tree.

### Mulch Material

A two to four inch (2" to 4") layer of organic mulch is recommended in planting beds and under trees. More than four inches may inhibit the growth of plants and street trees. To avoid harm to street trees, do not place mulch within twenty-four inches (24") of tree trunks.

Gravel or stone mulches, with the exception of decomposed granite, can cause damage to the road surface during street cleaning and are strongly discouraged. If using stone mulches, make sure the stone is not less than six inches (6") wide or greater than eight inches (8") wide. Boulders or any other rock material greater than eight inches (8") in vertical clearance from the finished grade should not be installed.

A minimum two-inch (2") layer of mulch should be applied on all exposed soil surfaces, except in areas within twenty-four inches (24") from the base of the tree trunk or areas covered by groundcovers. Mulch should not run off into the street.





# APPENDIX N - GUIDELINES FOR PARKWAY LANDSCAPING, CONTINUED

The installation of new artificial turf or the replacement of existing artificial turf with new artificial turf in any portion of the parkway is strongly discouraged. Artificial turf can cause heat hazards, buildup of zinc, lead, and other harmful chemicals, and soils that have had artificial turf overlain require significant remediation if returned to supporting natural plant material.

### Irrigation Systems for Parkway

Parkway irrigation systems should be designed according to all local, state, and federal laws and regulations.

Permanently installed irrigation for plant material in parkways is neither required or encouraged. Low-volume, non-spray irrigation systems or hand watering is preferred where irrigation is needed.

Irrigation systems should be designed and installed in such a manner that a precipitation rate of 0.75 inches/hour is not exceeded in any portion of the landscape. Drip irrigation or low flow rotary nozzles can meet this requirement.

Spray irrigation devices of any type are discouraged within twenty-four inches (24") of any impermeable surface or street trees.

Installing new irrigation systems with overhead irrigation sprinklers is strongly discouraged in parkways. Existing systems with spray irrigation heads may be retrofitted with acceptable low flow rotary nozzles or drip irrigation.

Irrigation systems in parkways should be designed and constructed in a manner that will eliminate all overspray and surface runoff onto any impermeable surface, public or private, under any condition, regardless of wind conditions.

All irrigation equipment in parkways including heads, valves, piping, tubing and control wire should be installed in accordance with the Sierra Madre Municipal Code.

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.

Drip irrigation that emits two gallons (2) or less per hour should be used for plants that are one gallon (1) in size or larger.

The planned coverage area of spray irrigation systems in parkways should not include any area within twenty-four inches (24") of trees.

### Strategies for Compliance with Narrow Parkway

A buffer strip of permeable, non-living groundcover such as decomposed granite is recommended between the plant material and the hardscape.

Plant material within the twenty-four inch (24") buffer be irrigated with a subsurface drip irrigation system to irrigate the perimeter planting area.



# APPENDIX N - GUIDELINES FOR PARKWAY LANDSCAPING, CONTINUED

In some cases, mature tree roots may make the installation of these systems impractical.

In cases where surface roots of street trees may make landscaping, access ways, step-out strips and/or the installation of an irrigation system impractical or impossible, as determined by the Public Works Department, installation is not recommended.

### Recommendations for Installing Decomposed Granite (DG) Paving

#### Materials

Base Course Aggregate: ASTM C33, crushed stone or crushed gravel

Decomposed Granite (DG):

- Clean, hard, durable particles or fragments of minus fines, select brown/gray crushed granite, river rock or basalt. Fines should be evenly mixed throughout the aggregate. When produced from gravel, fifty percent (50%) by weight of the material retained on a No. 4 sieve should have one fractured face. Color to be California Gold, Brimstone or Architect approved equal.
- The portion retained on the No. 4 sieve should have a maximum percentage of wear of 50 at 500 revolutions as determined by AASHTO T96-77.
- The portion passing a No. 4 sieve should have a maximum liquid limit of 25 and a maximum plasticity index of 7, as determined by AASHTO T89-81, and AASHTO T90-81, respectively.
- The crushed aggregate screenings should be free from clay lumps, vegetable matter, and deleterious material.

#### Preparation for Installation

Surface Preparation:

- All excavation within the dripline of street trees should be done with hand tools. Mechanical excavations are not allowed.
- Excavation within the dripline should not exceed a depth of three and a half inches (3-1/2").
- All roots two inches (2") and larger should be left intact. Roots two inches (2") and smaller may be pruned in accordance with the root pruning standards in this Appendix.
- Establish subgrade by hand and compact with tamper. Building up of subgrade under forms after they are in place is not permitted. Set forms in place, test subgrade with template, reduce high spots to grade and raise low spots to grade with materials compacted in place by tamping.

Decomposed Granite (DG):

- Subgrade preparation - Prior to placing the DG, shape, fill, grade, and compact the subgrade (crushed aggregate base).



### APPENDIX N - GUIDELINES FOR PARKWAY LANDSCAPING, CONTINUED

- Forms - Install adjacent paving in lieu of forms, the full depth of decomposed granite area, curving as required, and secure in place to hold firmly to and grade required.
- If stabilizer is to be used, modify these instructions according to the manufacturer's specifications. If stabilizer is used, decomposed granite paving will be considered an impermeable surface in parkways governed by this policy.

#### Installation

##### Base Course:

- Construct a base course layer to a depth of two inches (2") compacted. Deposit aggregate directly on prepared subgrade or preceding layer of compacted aggregate. Keep placed material free from segregation. Compact each layer of material with tamping roller, with pneumatic tired roller, with vibration machine, or with combination of the three.
- If subgrade material is worked into base course material during compacting or finishing operations, remove base course material within affected area and replace with new aggregate. Restrict hauling over completed or partially completed work when subgrade is soft or there is tendency for subgrade material to work into base course material.
- Compact each layer with aid of water. Provide sufficient moisture to prevent segregation into pockets of fine and coarse materials
- Decomposed Granite (DG):
- Place the DG on the prepared subgrade, in one layer of two inches (2") minimum thickness and rake smooth using a steel tine rake to desired grade and cross section. Do not apply DG deeper than three inches (3").

#### Maintenance Responsibility

Landscape maintenance of parkways is the responsibility of the adjacent property owner.

The City may request the removal of any existing pedestrian obstructions, traffic dangers, landscaping, or irrigation system.

The City has the right to remove any offending improvements and restore the parkway using City staff. The abutting property owner should be responsible for the reimbursement of all costs incurred by the City to properly restore parkway areas fronting his/her property.

#### Parkway Grass Removal Guidelines

Removing turf from underneath a City's street tree can cause irreparable damage if it is not done properly. It is imperative that the following guidelines be adhered to in order to protect the health and stability of street trees.





# APPENDIX N - GUIDELINES FOR PARKWAY LANDSCAPING, CONTINUED

Removing turf from under a tree is a major change in a tree's growing environment, as is the reduction of irrigation. Trees growing in an irrigated turf setting are accustomed to the consistent moisture in the top four to six inches (4" to 6") of topsoil, which is also where much of the trees' roots are found.

The loss of organic material, which greatly contributes to the health of plants, must also be considered. It must be restored as compost, aged manure, or in some other form. Usually, topsoil must also be replaced after turf is removed. Some of it may be shaken out of the sod that was removed, however more will be needed, especially when raising the level of the subgrade.

### Excavation Within the Parkway

Where excavation for turf removal is required within a tree protection zone or the critical root zone, care should be taken to avoid disturbing the roots. All excavation under the dripline of any tree should be done manually with hand tools or an Air Spade®. The objective of these methods is to prevent breakage or other injury to branches and roots. Excavated turf and soil should be deposited in trucks and hauled off or deposited temporarily on one inch (1") thick plywood outside the critical root zone. Excavated turf and soil should not be deposited, even temporarily, on unprotected natural grade.

No roots larger than two inches (2") should be cut during excavation without tree trimming permit from the Public Work Department. Smaller roots that require cutting should be cut flush at the edge of the excavated area with pruning saws or pruning shears.

The minimum distance between an excavated area or an open trench and any tree should be one foot (1') or six inches (6") for every six inches (6") of trunk diameter measured at four and a half feet (4-1/2') above existing grade if this method defines a greater distance.

Redirect roots in backfill areas where possible. When encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and/or redirect them without breaking. When encountering roots that cannot be redirected and redirection is not practical, consult with the Public Works Department on pruning requirements and techniques.

Do not allow exposed roots to dry out before replacing soil and mulch. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

### Recommended Turf Removal Process

Water the area three days prior to removing the turf to make the soil easier to work with. The soil should be moist but not soggy.

Use a sod cutting machine or a flat edge spade to slice just under the grass, then pull the turf back while severing the roots of the grass just below the soil line.

Cut the turf into parallel strips using an edger or sharp spade (with square edge). Be sure to keep strip sizes small, approximately one foot (1') wide by two feet (2') long, otherwise they will be difficult to move. Shake off excess topsoil during this process.



# APPENDIX O - NO-FEE PERMIT PROCEDURE

## NO-FEE PERMIT PROCEDURE

Permits to remove or substantially trim trees are discretionary and issued by the Public Works Department upon approval.

Applications for a tree removal or substantial trimming permit can be obtained from the City and must be accompanied by a fee unless a no-fee permit is issued.

Applications are reviewed by the Public Works Director to determine whether the submittal is complete. Permit requests that are not related to a development project, or that the development project will not impact protected trees, and/or that the project for which an application is received requires no further discretionary approval of any City official or agency. In those cases the Public Works Director may issue a no-fee permit.

In some cases applicants may be required to post a deposit equal to the estimated cost to remove and replace the subject tree. The Director will then schedule the City's tree maintenance contractor to remove and replace the subject tree upon receipt of the deposit. Any un-used portion of the deposit will be returned to the applicant upon completion of the removal and replacement of the subject tree.

All owners and residents having the possession or control of real property in the City will be responsible for the cost of removal and replacement of or substantial trimming of street trees when the request for removal or substantial trimming is approved by the Public Works Director and the cause for the removal has not been determined to be a hazard to the safety of the public or private property.

The number of replacement trees required will be as specified in the City's Tree Replacement Matrix. Should the area from which the tree was removed be too small to accept the number of replacement trees so specified, then replacement should be in the form of payment of the cost of required planting(s) into the City's tree replacement fund.

In cases where the Public Works Director determines that Commission review of the permit request is required, the Director submit the request to the Commission for review.

### Commission Review and Permit Procedure

The Commission reviews applications for removal or substantial trimming of protected trees in connection with the issuance of a discretionary permit issued by the City under the building code, zoning ordinance, or any other authority for development or other activity that results in the removal or substantial trimming of protected trees.

An application for a tree removal or substantial trimming permit from the commission is submitted on a form prepared by the City accompanied by a permit fee.

In the event that a property owner applies for a building permit for a property from which a protected tree has been removed in the prior twelve months, the property owner will be required to provide mitigation for the removal of the tree in the form of replacement trees in accordance with the City's mitigation guidelines.



### APPENDIX O - NO-FEE PERMIT PROCEDURE, CONTINUED

In the event that a property owner has been found to have removed a protected tree without a permit the property owner will be required to provide mitigation for the removal of the tree in the form of replacement trees in accordance with the City's mitigation guidelines. The Commission may recommend to the Planning Commission that approval of building permit application or other development entitlement application be prohibited for up to five years. In determining whether to impose such a five-year prohibition, the Planning Commission will consider whether the tree violation appears to be part of a development project, as evidenced in the extent of damage, removal, damage to the root system, and/or excessive trimming of trees within the buildable area of a property; oral or written admissions or repeated actions taken in spite of prior warnings; notices of violations; and the number and size of the damaged and/or removed trees.

Application for a tree removal permit is accompanied by a tree survey that contains the following information:

- The location of the trunks and drip lines of all the protected trees on the project site or immediately adjacent to the project site which are affected by the project.
- The species and diameter at standard height of each such tree
- An indication of whether or not the protected trees are proposed for removal or pruning as part of the project.
- Photographs illustrating all of the protected trees on the site or immediately adjacent to the project site which are impacted by the project.
- A professional report prepared at the expense of the applicant containing specific information on tree condition, analysis of the potential impact of the project on affected protected trees, valuation of the tree as calculated utilizing ISA tree valuation standards, recommended actions and mitigation measures, and proposed monitoring conditions with respect to one or more trees.
- A report prepared by a Certified Arborist, selected and hired by the applicant describing how the work was monitored during the project and how any impact to protected trees was mitigated. Reports must be submitted to the Public Works Director at the completion of the project verifying that the conditions of approval of the permit were adhered to and the manner in which the conditions were complied with. In the event the conditions of approval were not complied with the report should indicate as such, the impacts and any consequences.

Applications are reviewed by the Public Works Director to determine whether the submittal is complete. Complete applications are then be submitted to the Department of Public Works and/or the Commission who will then recommend whether or not and under what conditions, a permit should be granted. Applications for permits under this section are evaluated under the following standards:

- The design and placement of development should preserve existing healthy protected trees in place.
- The visual prominence and function of each protected tree on the site should be considered prior to a decision on the application.

Protected tree removal or substantial trimming are not approved unless one of the following applies:

- The tree(s) prevent reasonable development of permitted uses due to site topography and required setbacks. Existing development on similar sites in the same zone as the project site and having similar topography and vegetation are considered.





### APPENDIX O - NO-FEE PERMIT PROCEDURE, CONTINUED

- A hazardous condition of the tree(s) with respect to disease, maturity, danger of falling, proximity to existing structures, parking, high pedestrian traffic areas, activity areas or interference with utility services, which condition cannot be controlled or remedied other than by removing or substantially trimming the tree;
- Good urban forestry practice suggests a reduction in the number of trees due to incapacity of the property to sustain the trees present in a healthy condition after completion of the project.

Protected trees approved for removal must be replaced, unless a finding is made at the time of granting an application that the site is inadequate to support the required number of replacement trees under the following guidelines:

- Protected trees that prevent reasonable development are replaced within one year of removal by a minimum of one tree of the same species, or a suitable alternative species approved by the Public Works Department, which serves a comparable function (shade, screening, erosion control, etc.) as that of the tree removed.
- Minimum replacement tree size is at least fifteen (15) gallon but not larger than forty-eight (48) inch box.
- If a replacement tree dies within five years of being planted, the permittee or his or her successor in interest in the property are required to replace the tree with one of comparable size, within six months of the death or removal of the failed replacement tree.
- Trees estimated by the Public Works Department to be one hundred years old or more, or trees the Commission determines the tree to be of high visibility or extraordinary aesthetic quality must be replaced by large, specimen trees if deemed appropriate.
- The permittee and his or her successor in interest in the property are obliged to provide for continuing maintenance of required replacement trees for five years after they are planted.
- If a site cannot support all of the replacement trees required by this chapter, the applicant should at the City's discretion, provide the following:
  - Planting native trees or related species approved by the Public Works Director on public property identified by the City;
  - Payment of an in lieu fee to the City's tree replacement fund according to a fee schedule established by resolution of the City Council.

In either of the above cases, priorities for such tree planting locations are given to the replacement of public and street trees

#### CALIFORNIA ENVIRONMENTAL QUALITY ACT

Permit applications in this section of the Appendix may be subject to the provisions of the California Environmental Quality Act (CEQA), including the provisions of the City's most recently adopted local CEQA Guidelines except as otherwise provided by CEQA or other law.

All applications for tree removal from undeveloped property or relative to development are subject to the provisions of the City of Sierra Madre Guidelines for Implementing California Environmental Quality Act (CEQA) as adopted by the City Council in April of 1998.



# APPENDIX O - NO-FEE PERMIT PROCEDURE, CONTINUED

Before any street improvements in any new subdivision of real property in the City are accepted by the City Council, the subdivider enters into a subdivision improvement agreement and provides the City with a bond in an amount equal to the total cost for purchasing and planting of all trees to be planted along all streets in such subdivision.

The subdivider is responsible for the planting of the trees at the proper time as determined by their tree expert and approved by the Public Works Director. If the subdivider fails to plant the trees as directed, the bond is forfeited to the City and the City will plant such trees.

All applications for tree removal relative to development are subject to the provisions of the City of Sierra Madre Guidelines for Implementing California Environmental Quality Act (CEQA) as adopted by the City Council in April of 1998.

The owner of any development project in which protected tree removal is proposed must enter into a mitigation agreement with the City. The mitigation must be submitted in a form approved by the City and must specify the tree removal mitigation measures as agreed on. The agreement must also specify the time frame under which the mitigation measures are to be implemented by the owner and the penalties to be imposed should the owner fail to comply with the provisions of the mitigation agreement.

## CONTRACTOR STANDARDS FOR TREE WORK

The Public Works Department oversees contractor operations with the objective of ensuring contract adherence and to identify and correct problems throughout the length of each individual project. Contractors who are hired to work for the City or obtain permits to prune City trees should be required to comply with the City's contract requirements throughout the term of the contract or until the work has been completed.

## CITY TREE CONTRACTS

Contractor should be in the business of providing full service urban forest maintenance programs to governmental agencies and/or municipalities that include, but is not limited to the pruning, removal and replacement of trees for at least five (5) years. Experience should include the prevention of disease transmission between trees, protection of wildlife, and current industry standards for pruning. In addition, prospective contractors must provide five (5) references with contact information for the main agency manager.

Contractor should show, through documentation by records of past performance and references, a capability that includes the ability to perform the following work, both consistently and concurrent with other required services:

- Contractor should hold valid State of California Contractor's Licenses C61/ D49 and C27 at the time of proposal submittal.
- Contractor should meet all specified City insurance requirements and endorsements.
- Contractors should maintain at their own cost and expense for the duration of all contracts, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work or services hereunder by the Contractor, their agents, representatives, employees, or subcontractors. The cost of such insurance should be borne by the Contractor.



### APPENDIX O - NO-FEE PERMIT PROCEDURE, CONTINUED

- Contractor should exhibit, by portfolio and references, the capability to respond to emergency tree incidents, ranging from limb failures on single trees to storm related damages affecting many trees, in a manner that meets the requirements of the City of Sierra Madre.
- Contractor should have the capability to process notifications to the community on all work activities and to operate and maintain, at no additional cost to the City, an internet based computerized tree inventory system that has the capacity to integrate existing tree inventory data and work histories and to update site specific tree data and work records as described herein.
- Contractor should have a sufficient inventory of equipment to perform their scope of work for the City.
- Contractor should possess the capability of processing the quantities of green waste and refuse that are generated from performing the work described herein in a manner compliant with the requirements of the California Integrated Waste Management Act (AB939).
- Contractor should have on staff an adequate number of full-time permanently employed personnel that are fully trained in urban forestry Best Management Practices.

Without in any way affecting the indemnity provided, the Contractor should secure, before commencement of any work and be maintained throughout the contract, the following types and amounts of insurance:

- City Insurance requirements would be verified at the time of contract.
- Contractor should maintain Commercial General Liability (CGL) with a limit of not less than \$3,000,000 each occurrence/\$3,000,000 annual aggregate.
- CGL insurance should be written on Insurance Services Office form CG 00 01 (or a substitute form providing equivalent coverage) and should cover liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury liability assumed under an insured contract (including the tort liability of another assumed in a business contract), and explosion, collapse and underground hazards.
- The City of Sierra Madre, its officers, officials, employees, and volunteers should be covered as additional insureds with respect to liability arising out of automobiles owned, leased, hired, or borrowed by or on behalf of the Contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. Under the CGL policy, using the Insurance Services Office additional insured endorsement form CG 20 26 or a substitute providing equivalent coverage. City and other additional insureds mentioned in this paragraph should not, by reason of their inclusion as additional insureds, become liable for any payment of premiums to carriers for such coverage. (Applies to CGL and Business Auto Liability)
- Workers' Compensation and Employer's Liability Insurance: Contractor should maintain workers' compensation insurance as required by the State of California and Employer's Liability Insurance in the amount of \$1,000,000 per accident for bodily injury or disease.
- Contractor's insurer should agree to waive all rights of subrogation against the City of Sierra Madre, its officers, officials, employees, and volunteers for losses arising from activities and operations of Contractor in the performance of services under the contract.





### APPENDIX O - NO-FEE PERMIT PROCEDURE, CONTINUED

- Business Automobile Liability Insurance: Contractor should maintain business auto liability with a limit of not less than \$1,000,000 each accident.
- Business Automobile Liability Insurance should cover liability arising out of any auto (including owned, hired, and non-owned autos). If necessary, the policy should be endorsed to provide contractual liability coverage equivalent to that provided in the 1990 and later editions of CA 00 01.
- For any claims related to their projects, the Contractor's insurance coverage should be primary as respects to the City of Sierra Madre, its officers, officials, employees, and volunteers. Any insurance or self- insurance maintained by the City of Sierra Madre, its officers, officials, employees, or volunteers should be excess of the Contractor's insurance and should not contribute with it.

#### RECOMMENDED QUALIFICATIONS FOR PRIVATE TREE SERVICE CONTRACTORS (PERFORMING WORK ON PUBLIC TREES)

The City should oversee all contractor operations to ensure contract adherence and to identify and correct problems throughout the length of each individual project. Contractors who are hired to work for the City should be required to comply with the City's contract requirements throughout the term of the contract.

Qualified contractors can prune City street trees to augment or complement City maintenance activities. A permit can be obtained by completing an application submitted to the City of Sierra Madre. Permits are issued directly to qualified tree care contractors through Public Works staff. Contractor is responsible for notifying adjacent neighbors of any work as part of the permit process. Contractors should meet the following minimum requirements:

- C-27 or C61/D49 Contractors license in good standing with the California State Contractor's License Board.
- Arborist that is certified by the International Society of Arboriculture.
- Workers' Compensation & Employer's Liability Insurance.
- Commercial General Liability Insurance.
- Business Automobile Liability Insurance.
- Contractor should be familiar with and have a clear understanding of the City's Pruning Guidelines and the most current Pruning Standards, as adopted by the International Society of Arboriculture.
- Contractors should follow all guidelines as detailed in the most current ANSI A300 Standards for Tree Care Operations.
- -ANSI A300 Part-1 (2008)
- -ANSI Standard Z133.1 (2006) Safety Requirements
- Contractor should use 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) if the flow of traffic is to be disrupted on streets and highways.



### APPENDIX O - NO-FEE PERMIT PROCEDURE, CONTINUED

Permit applications may be denied for the following reasons:

- Contractor does not meet minimum requirements or has demonstrated poor understanding of the required standards.
- Pruning is requested to allow for the growth of grass or other plants under the tree canopy.
- The requested pruning might compromise the health of the tree.
- The tree has been recently pruned and does not require pruning at this time.
- Pruning is requested to create a view that does not currently exist and would have a detrimental effect on the health, stability or future condition of the street tree.



# APPENDIX P - TREE VALUATION

## TREE VALUATION METHOD

The value of Sierra Madre's tree population was derived from the Arbor Access Inventory system used by West Coast Arborists, the current tree service contractor. One of the Arbor Access program's attributes is a valuation component. The method used to evaluate the Sierra Madre tree canopy was based on the following:

The Gross Estimated Value (GEV) of a tree is derived from formulas used in the Guide for Plant Appraisal, 9th Edition, by the Council of Tree & Landscape Appraisers, and from species ratings taken from the Species Classification & Group Assignment, Western Chapter ISA (WC-ISA) 2004.

All trees are divided into two broad categories: Broadleaf & Coniferous (BC), and Palms (PM). For BC, Species Classification Number and corresponding Rating are as follows: 1 (90%); 3 (60%); 5 (30%). Rating 1 is classified as Good, 3 is classified as Average, and 5 is classified as Poor.

'Good' refers to WC-ISA species classification rating 1; Average refers to ratings 2 and 3; Poor refers to ratings 4 and 5. All ratings are rough averages for species in both the Northern CA and Southern CA regions. Ratings for Average and Poor are set as such, since a compromise needed to be made for working with only three ratings; for Average it is between the 70% rating for 2 and the 50% rating for 3. For Poor the rating is set higher, with the belief that any tree is better than no tree at all.

The assumptions are as follows:

Trees are in GOOD (75%, 24 of 32 points) condition.

Location factor is GOOD (Site = 80%, Placement = 80%, Contribution 80%), thus 80%.

DBH 1: Replacement Cost Method: replacement tree \$905, installation \$900.

DBH 2,3,4,5,6: Trunk Formula Method: replacement tree \$905, installation \$900.

For Palms, Brown Trunk Heights (BTH) used to determine values are based on bottom range of height range (i.e., 15-30 ft height range = 15' BTH is used), except for lowest range (0-15). NO OTHER FACTORS ARE USED IN DETERMINING VALUES OF PALMS.

For a more specific estimated value of your urban forest, the City may obtain a more focused evaluation, using the updated inventory and precise species classification ratings suitable to Sierra Madre's specific locale.

For specific estimated value of individual trees, the City may obtain an appropriate tree appraisal, on a case-by-case basis, which should give a fair and reasonable value of the tree in question.







### APPENDIX Q - FIRE ZONE

Defensible Space Guidelines for Very High Fire Hazard Severity Zones in Los Angeles County require maintaining horizontal space, adequately spaced and well-pruned vegetation, including trees, in order to eliminate ladder for fuels near structures.

Information and guidelines specific to Sierra Madre can be obtained from the following agencies:

California Board of Forestry and Fire Protection, [www.bof.fire.ca.gov](http://www.bof.fire.ca.gov)

Los Angeles County Fire Department, [www.fire.lacounty.gov](http://www.fire.lacounty.gov)

California Native Plant Society, <http://www.cnps.org/cnps/conservation/resources.php>

Sierra Madre Fire Marshall (City Hall)

Sierra Madre Volunteer Fire Department (City Hall)

California Chaparral Institute <http://www.californiachaparral.org/fire.html>

Continued on next page...



## Community Forest Management Plan

### APPENDIX Q - FIRE ZONE, CONTINUED

FIRE-TRANSMITTING TREES AND SHRUBS Not suitable for Fire Zone Areas in the San Gabriel Mountain Foothills		ALTERNATIVES (ABBREVIATED LIST)
NAME	COMMENTS	NAME
FAN PALMS <i>Washingtonia spp.</i>	Grows tall; ignited fronds dislodge from trunk and can transmit fire long distances; invasive; spreads easily by producing high number of seeds.	FERN PINE <i>Podocarpus gracilior</i>
CANARY ISLAND DATE PALM ( <i>Phoenix canariensis</i> )		
SHAMEL ASH ( <i>Fraxinus uhdei</i> )	Grows tall; invasive; spreads easily by producing high number of seeds; can spread by distal roots.	CALIFORNIA NATIVE OAKS <i>Quercus spp.</i>
EUCALYPTUS ( <i>Eucalyptus spp.</i> )	Grows well over 100 feet in height; displaces other vegetation	
TREE OF HEAVEN ( <i>Ailanthus altissima</i> )	Invasive plant that can create thickets from 30-65 feet in height; eradication is difficult	BLUE ELDERBERRY <i>Sambucus mexicana</i>
PINE TREES ( <i>Pinus spp.</i> )	These species have characteristics that make them highly flammable if not pruned to keep small, regularly irrigated, and widely spaced when planted.	TOYON <i>Heteromeles arbutifolia</i>
JUNIPERS ( <i>Juniperus spp.</i> )		
CYPRESS ( <i>Cupressus spp.</i> )		WESTERN REDBUD <i>Cercis occidentalis</i>
YEW ( <i>Taxus spp.</i> )		
CEDAR (most) <i>Thuja spp.</i>	These plants can form a dense monoculture that excludes other vegetation. After they become established, eradication is extremely difficult.	DEER GRASS <i>Muhlenbergia rigens</i>
ACACIA trees and shrubs		
PEPPER TREES ( <i>Schinus spp.</i> )	Spreads readily and is difficult to eradicate; causes reduction of groundwater.	
MYOPORUM ( <i>Myoporum laetum</i> )		
TAMARISK ( <i>Tamarix ramosissima</i> )	Can dominate in riparian areas, forming dense thickets; rapidly resprouts after cutting.	
EDIBLE FIG ( <i>Ficus carica</i> )		





## Community Forest Management Plan

# APPENDIX R - TREES TO ENCOURAGE

Special 11 x17 inches fold out table. Insert behind this page.



## Community Forest Management Plan

TREE TO ENCOURAGE IN SIERRA MADRE'S PALETTE																																							
COMMON NAME	BOTANICAL NAME	EXISTING IN HIGH COR- CORRESPONDING / EMPHASIS URBAN FOREST	Native To CA	Type	Mature Height		Canopy Spread	Canopy Shape & Foliage Density	Max. Cold	Growth Rate	Bark Useful Life	Typical Pruning Frequency	Conflicts With Infrastructure	Additional Maintenance & Care	Native Usher or Allergen Producer	Optimal Cultural Care	Adapts to Special Conditions	Fire Issues	Nursery Stock Availability	Special Notes and Specific Observations																			
					San Gabriel Valley Sierra Madre Central	10-20 ft 20-40 ft 40-60 ft 60-80 ft 80-100 ft 100-120 ft 120-140 ft 140-160 ft 160-180 ft 180-200 ft 200-220 ft 220-240 ft 240-260 ft 260-280 ft 280-300 ft 300-320 ft 320-340 ft 340-360 ft 360-380 ft 380-400 ft 400-420 ft 420-440 ft 440-460 ft 460-480 ft 480-500 ft 500-520 ft 520-540 ft 540-560 ft 560-580 ft 580-600 ft 600-620 ft 620-640 ft 640-660 ft 660-680 ft 680-700 ft 700-720 ft 720-740 ft 740-760 ft 760-780 ft 780-800 ft 800-820 ft 820-840 ft 840-860 ft 860-880 ft 880-900 ft 900-920 ft 920-940 ft 940-960 ft 960-980 ft 980-1000 ft 1000-1020 ft 1020-1040 ft 1040-1060 ft 1060-1080 ft 1080-1100 ft 1100-1120 ft 1120-1140 ft 1140-1160 ft 1160-1180 ft 1180-1200 ft 1200-1220 ft 1220-1240 ft 1240-1260 ft 1260-1280 ft 1280-1300 ft 1300-1320 ft 1320-1340 ft 1340-1360 ft 1360-1380 ft 1380-1400 ft 1400-1420 ft 1420-1440 ft 1440-1460 ft 1460-1480 ft 1480-1500 ft 1500-1520 ft 1520-1540 ft 1540-1560 ft 1560-1580 ft 1580-1600 ft 1600-1620 ft 1620-1640 ft 1640-1660 ft 1660-1680 ft 1680-1700 ft 1700-1720 ft 1720-1740 ft 1740-1760 ft 1760-1780 ft 1780-1800 ft 1800-1820 ft 1820-1840 ft 1840-1860 ft 1860-1880 ft 1880-1900 ft 1900-1920 ft 1920-1940 ft 1940-1960 ft 1960-1980 ft 1980-2000 ft 2000-2020 ft 2020-2040 ft 2040-2060 ft 2060-2080 ft 2080-2100 ft 2100-2120 ft 2120-2140 ft 2140-2160 ft 2160-2180 ft 2180-2200 ft 2200-2220 ft 2220-2240 ft 2240-2260 ft 2260-2280 ft 2280-2300 ft 2300-2320 ft 2320-2340 ft 2340-2360 ft 2360-2380 ft 2380-2400 ft 2400-2420 ft 2420-2440 ft 2440-2460 ft 2460-2480 ft 2480-2500 ft 2500-2520 ft 2520-2540 ft 2540-2560 ft 2560-2580 ft 2580-2600 ft 2600-2620 ft 2620-2640 ft 2640-2660 ft 2660-2680 ft 2680-2700 ft 2700-2720 ft 2720-2740 ft 2740-2760 ft 2760-2780 ft 2780-2800 ft 2800-2820 ft 2820-2840 ft 2840-2860 ft 2860-2880 ft 2880-2900 ft 2900-2920 ft 2920-2940 ft 2940-2960 ft 2960-2980 ft 2980-3000 ft 3000-3020 ft 3020-3040 ft 3040-3060 ft 3060-3080 ft 3080-3100 ft 3100-3120 ft 3120-3140 ft 3140-3160 ft 3160-3180 ft 3180-3200 ft 3200-3220 ft 3220-3240 ft 3240-3260 ft 3260-3280 ft 3280-3300 ft 3300-3320 ft 3320-3340 ft 3340-3360 ft 3360-3380 ft 3380-3400 ft 3400-3420 ft 3420-3440 ft 3440-3460 ft 3460-3480 ft 3480-3500 ft 3500-3520 ft 3520-3540 ft 3540-3560 ft 3560-3580 ft 3580-3600 ft 3600-3620 ft 3620-3640 ft 3640-3660 ft 3660-3680 ft 3680-3700 ft 3700-3720 ft 3720-3740 ft 3740-3760 ft 3760-3780 ft 3780-3800 ft 3800-3820 ft 3820-3840 ft 3840-3860 ft 3860-3880 ft 3880-3900 ft 3900-3920 ft 3920-3940 ft 3940-3960 ft 3960-3980 ft 3980-4000 ft 4000-4020 ft 4020-4040 ft 4040-4060 ft 4060-4080 ft 4080-4100 ft 4100-4120 ft 4120-4140 ft 4140-4160 ft 4160-4180 ft 4180-4200 ft 4200-4220 ft 4220-4240 ft 4240-4260 ft 4260-4280 ft 4280-4300 ft 4300-4320 ft 4320-4340 ft 4340-4360 ft 4360-4380 ft 4380-4400 ft 4400-4420 ft 4420-4440 ft 4440-4460 ft 4460-4480 ft 4480-4500 ft 4500-4520 ft 4520-4540 ft 4540-4560 ft 4560-4580 ft 4580-4600 ft 4600-4620 ft 4620-4640 ft 4640-4660 ft 4660-4680 ft 4680-4700 ft 4700-4720 ft 4720-4740 ft 4740-4760 ft 4760-4780 ft 4780-4800 ft 4800-4820 ft 4820-4840 ft 4840-4860 ft 4860-4880 ft 4880-4900 ft 4900-4920 ft 4920-4940 ft 4940-4960 ft 4960-4980 ft 4980-5000 ft 5000-5020 ft 5020-5040 ft 5040-5060 ft 5060-5080 ft 5080-5100 ft 5100-5120 ft 5120-5140 ft 5140-5160 ft 5160-5180 ft 5180-5200 ft 5200-5220 ft 5220-5240 ft 5240-5260 ft 5260-5280 ft 5280-5300 ft 5300-5320 ft 5320-5340 ft 5340-5360 ft 5360-5380 ft 5380-5400 ft 5400-5420 ft 5420-5440 ft 5440-5460 ft 5460-5480 ft 5480-5500 ft 5500-5520 ft 5520-5540 ft 5540-5560 ft 5560-5580 ft 5580-5600 ft 5600-5620 ft 5620-5640 ft 5640-5660 ft 5660-5680 ft 5680-5700 ft 5700-5720 ft 5720-5740 ft 5740-5760 ft 5760-5780 ft 5780-5800 ft 5800-5820 ft 5820-5840 ft 5840-5860 ft 5860-5880 ft 5880-5900 ft 5900-5920 ft 5920-5940 ft 5940-5960 ft 5960-5980 ft 5980-6000 ft 6000-6020 ft 6020-6040 ft 6040-6060 ft 6060-6080 ft 6080-6100 ft 6100-6120 ft 6120-6140 ft 6140-6160 ft 6160-6180 ft 6180-6200 ft 6200-6220 ft 6220-6240 ft 6240-6260 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ft 7800-7820 ft 7820-7840 ft 7840-7860 ft 7860-7880 ft 7880-7900 ft 7900-7920 ft 7920-7940 ft 7940-7960 ft 7960-7980 ft 7980-8000 ft 8000-8020 ft 8020-8040 ft 8040-8060 ft 8060-8080 ft 8080-8100 ft 8100-8120 ft 8120-8140 ft 8140-8160 ft 8160-8180 ft 8180-8200 ft 8200-8220 ft 8220-8240 ft 8240-8260 ft 8260-8280 ft 8280-8300 ft 8300-8320 ft 8320-8340 ft 8340-8360 ft 8360-8380 ft 8380-8400 ft 8400-8420 ft 8420-8440 ft 8440-8460 ft 8460-8480 ft 8480-8500 ft 8500-8520 ft 8520-8540 ft 8540-8560 ft 8560-8580 ft 8580-8600 ft 8600-8620 ft 8620-8640 ft 8640-8660 ft 8660-8680 ft 8680-8700 ft 8700-8720 ft 8720-8740 ft 8740-8760 ft 8760-8780 ft 8780-8800 ft 8800-8820 ft 8820-8840 ft 8840-8860 ft 8860-8880 ft 8880-8900 ft 8900-8920 ft 8920-8940 ft 8940-8960 ft 8960-8980 ft 8980-9000 ft 9000-9020 ft 9020-9040 ft 9040-9060 ft 9060-9080 ft 9080-9100 ft 9100-9120 ft 9120-9140 ft 9140-9160 ft 9160-9180 ft 9180-9200 ft 9200-9220 ft 9220-9240 ft 9240-9260 ft 9260-9280 ft 9280-9300 ft 9300-9320 ft 9320-9340 ft 9340-9360 ft 9360-9380 ft 9380-9400 ft 9400-9420 ft 9420-9440 ft 9440-9460 ft 9460-9480 ft 9480-9500 ft 9500-9520 ft 9520-9540 ft 9540-9560 ft 9560-9580 ft 9580-9600 ft 9600-9620 ft 9620-9640 ft 9640-9660 ft 9660-9680 ft 9680-9700 ft 9700-9720 ft 9720-9740 ft 9740-9760 ft 9760-9780 ft 9780-9800 ft 9800-9820 ft 9820-9840 ft 9840-9860 ft 9860-9880 ft 9880-9900 ft 9900-9920 ft 9920-9940 ft 9940-9960 ft 9960-9980 ft 9980-10000 ft 10000-10020 ft 10020-10040 ft 10040-10060 ft 10060-10080 ft 10080-10100 ft 10100-10120 ft 10120-10140 ft 10140-10160 ft 10160-10180 ft 10180-10200 ft 10200-10220 ft 10220-10240 ft 10240-10260 ft 10260-10280 ft 10280-10300 ft 10300-10320 ft 10320-10340 ft 10340-10360 ft 10360-10380 ft 10380-10400 ft 10400-10420 ft 10420-10440 ft 10440-10460 ft 10460-10480 ft 10480-10500 ft 10500-10520 ft 10520-10540 ft 10540-10560 ft 10560-10580 ft 10580-10600 ft 10600-10620 ft 10620-10640 ft 10640-10660 ft 10660-10680 ft 10680-10700 ft 10700-10720 ft 10720-10740 ft 10740-10760 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## APPENDIX R - TREES TO ENCOURAGE

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### APPENDIX S - TREES TO DISCOURAGE

TREES TO DISCOURAGE IN THE SIERRA MADRE COMMUNITY FOREST			
COMMON NAME	BOTANICAL NAME	EXISTING IN CURRENT TREE INVENTORY	SPECIAL NOTES AND SPECIFIC OBSERVATIONS
AMERICAN SWEETGUM	<i>Liquidambar styraciflua</i>	Yes	Invasive roots; fruit is a trip hazard; susceptibility to bacterial leaf scorch ( <i>Xylella fastidiosa</i> ). No known treatment.
ALEPPO PINE	<i>Pinus halepensis</i>	No	Branches (and sometimes entire trees) tend to fail if trees are not pruned regularly; too large for most city parkways.
CALLERY PEAR	<i>Pyrus calleryana</i>	No	Inherently poor branching structure; tends to break apart at maturity.
CANARY ISLAND PINE	<i>Pinus canariensis</i>	Yes	Susceptibility to bark beetles if drought-stressed; already well-represented in the City.
CAROB TREE	<i>Ceratonia siliqua</i>	No	Susceptibility to root and trunk base rot.
CARROTWOOD	<i>Cupaniopsis anacardioides</i>	Yes	If not trained properly, branches may break as trees mature; fruit drop is problematic.
CHINESE ELM	<i>Ulmus parvifolia</i>	Yes	Susceptibility to Anthracnose canker; susceptibility to unpredictable limb drop.
EUCALYPTUS (most)	<i>Eucalyptus sp.</i>	No	Susceptibility to summer branch drop; susceptibility to wood decay; can be weak-wooded.
EVERGREEN PEAR	<i>Pyrus kawakamii</i>	No	Susceptibility to bacterial fireblight.
FIG	<i>Ficus sp.</i>	No	Invasive roots; fruit drop can be problematic; already well-represented in the City.
JACARANDA	<i>Jacaranda mimosifolia</i>	Yes	Already well-represented in the City.
MODESTO ASH	<i>Fraxinus velutina 'Modesto'</i>	No	Inherently poor branching structure; tends to break apart at maturity.
PALMS	All large varieties	Yes	('Large' = > 6 feet tall at maturity) Minimal environmental benefits; invasive; in fire events are easy transmitters
RAYWOOD ASH	<i>Fraxinus oxycarpa</i>	No	Susceptible to Raywood ash 'dieback syndrome'; should not be planted in California. Alternative species is green ash ( <i>Fraxinus pennsylvanica</i> )
SHAMEL ASH	<i>Fraxinus uhdei</i>	Yes	Grows too large to be planted in city parkways; requires at the minimum at 15-foot parkway or median; excellent park tree if planted away from hardscape.
TULIP TREE	<i>Liriodendron tulipifera</i>	Yes	Requires supplemental irrigation to thrive; could continue to plant on Sierra Madre Boulevard as other tulip trees decline or die.



# APPENDIX T - GLOSSARY AND ACRONYMS

Terms that are **BOLD** are indicative of terms used within the Plan. Terms that are not bold are others commonly used in the fields of arboriculture and urban forestry that may assist the reader.

### **ADAPTIVE MANAGEMENT APPROACH**

The principle of accommodating changes and unforeseen events without forcing changes to strategic goals and key objectives.

A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices.

### **AIR QUALITY MANAGEMENT DISTRICT (AQMD)**

The air pollution control agency for all of Orange County and the urban portions of Los Angeles, Riverside and San Bernardino counties. Also known as South Coast Air Quality Management District, or South Coast AQMD.

### **ALLUVIAL FAN**

A fan-shaped deposit of eroded soil or sediment formed by flowing water.

### **ALLUVIAL (PLAIN) DEPOSIT**

**Eroded soil deposited by flowing water.**

### **BEDROCK**

A deposit of solid rock that is typically buried beneath soil and other broken or unconsolidated material.

### **BENEFIT-COST ANALYSIS**

A type of economic evaluation in which both the costs and consequences of different interventions are expressed in monetary units.

### **BEST MANAGEMENT PRACTICES (BMP)**

Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

A practice or combination of practices determined to be the most effective and practical means (technological, economic, and institutional) that when implemented to their maximum efficiency will facilitate the protection, maintenance, health and management of the urban forest, city streets and its users.

### **BIODIVERSITY**

The spectrum of life forms and the ecological processes that support and sustain them. Biological diversity is a complex of four interacting levels: genetic, species, community and landscape.

### **BIOGENIC VOLATILE ORGANIC COMPOUNDS (BVOC)**

Emissions of biogenic volatile organic compounds.





## APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### **BIOMASS**

The total mass of living matter, including plants, vegetation, large animals and insects.

Plant materials, vegetation and agricultural waste used as source of energy.

### **BIOSWALE**

A storm water runoff conveyance system that provides an alternative to storm sewers. Designed to absorb low flows or carry runoff from heavy rains to storm sewer inlets or directly to surface waters.

A landscape element designed to remove silt and pollution from surface runoff water; consisting of a swaled drainage course with gently sloped sides that are filled with vegetation and permeable materials, such as gravel and/or riprap.

### **BRANCH COLLAR**

Wood tissue that forms around the base of a branch between the main stem and the branch. Usually as a branch begins to die the branch collar begins to increase in size.

### **CALLUS**

New growth made by the cambium layer around all of a wound.

### **CAMBIUM LAYER**

Growing point between the bark and sapwood.

### **CANOPY**

The branches and foliage of a tree above ground or water.

### **CARBON SEQUESTRATION**

Removal of carbon from the air by living trees and plants to be stored in their cells through the process of photosynthesis.

### **CAVITY**

An open and exposed area of wood, where the bark is missing and internal wood has been decayed and dissolved.

### **COMPACTION**

The compression of soil, causing a reduction of pore space and an increase in the density of the soil. Tree roots cannot grow in compacted soil.

### **COMPLETE STREETS**

Streets that are designed to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street.

### **CONIFER**

Plant that bears seeds in a cone.



# APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### CONTINUOUS IMPROVEMENT PROCESS/CYCLE

An ongoing effort to improve products, services or processes on an incremental basis or breakthrough improvement all at once.

### CRITICAL ROOT ZONE (CRZ)

The area of undisturbed natural soil around a tree defined by a concentric circle with a diameter in feet equal to twice the number of inches of trunk diameter that is used to determine compliance with design standards and construction specifications.

### CURB EXTENSIONS

A traffic calming measure, primarily used to extend the sidewalk and reduce the crossing distance to allow pedestrians preparing to cross and approaching vehicle drivers to see each other when vehicles parked in a parking lane would otherwise block visibility.

Also known as curb bump-outs and curb pop-outs.

### CUT BACK

Specified reduction of the overall size of a tree or individual branches, but may include the overall reduction of the sides as well as the top of the tree.

### DIAMETER AT STANDARD HEIGHT (DSH)

Measurement standard for trees taken at a four and a half feet (4-1/2') height from finish grade.

### DECIDUOUS TREE

A tree that naturally sheds its leaves seasonally.

### DECLINING TREE

Declining trees are defined as having a permanent and progressive reduction in health, vigor and/or structural stability that can eventually lead to its death or structural failure. Declining trees may typically be over mature, suffering from old wounds or other impacts that have interrupted the living system resulting in impeded growth and followed by the depletion of energy reserves that are normally stored in the root mass resulting in the reduction of health, condition and stability.

### DECOMPOSED GRANITE (DG)

Granite stone that is broken down into smaller pieces to become gravel made up of fine particles that can be compacted into a permeable walking surface.

### DIG ALERT

A service used to locate underground utilities prior to any kind of excavation in the public right-of-way.

### DIVERSITY

A term used to refer to the total number of different species.



### APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

#### DORMANT

A condition of non-active growth. Deciduous trees are considered to be dormant from the time the leaves fall until new foliage begins to appear.

#### ECOLOGY

An interconnected and symbiotic grouping of animals, plants, fungi and microorganisms.

#### ECOSYSTEM

The interacting system of a biological community and its non-living environmental surroundings.

#### EMISSIONS

The discharge of a substance into the environment as the result of a process, partially or completely treated or in its natural state. Generally refers to the release of gases into the atmosphere as a by-product of combustion.

#### ENDEMIC

In ecology, a species or higher taxonomic unit found only within a specific area.

#### E/S

East side

#### EVAPOTRANSPIRATION

The process by which moisture is carried through plants from roots to small pores on the underside of leaves, where it changes to vapor and is released to the atmosphere. The evaporation of water molecules from the surfaces of plants, soil and other objects.

An effect of evapotranspiration is the cooling of surrounding air.

#### EVERGREEN TREE

A tree that has leaves in all seasons. These trees can be broadleaved, conifers or palms.

#### EXPANSIVE SOILS

Expansive soils swell when wetted and shrink as they dry out.

#### GAP-GRADED SOIL

Soil with some particles coarse and some fine, but without any significant amount of intermediate-sized fine and very fine sand particles, and consisting chiefly of small uniformly sized and angular stones (80 percent) and soil (20 percent). Once compacted, can support root growth as well as stability for pavement.

#### GENERA (GENUS)

A group level of plants in the taxonomic hierarchy indicating a group of species. *Quercus* is the genus of oaks and contains the relative species *agrifolia*, *engelmannii*, *lobata*, *suber*, etc.



# APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### GEOGRAPHIC INFORMATION SYSTEM (GIS)

A Geographic Information System is a system designed to capture, store, manipulate, analyze, manage and present all types of geographically referenced data.

A computerized system organizing data sets through the geographical referencing of all data included in its infrastructure.

### GIRDLING ROOTS

Located above or below ground level, whose circular growth around the base of the trunk or over the individual roots applies pressure to the bark area, thereby choking or restricting the flow of sap.

### GOAL

The result or achievement toward which effort is directed. Goals can be short term, long term and adaptable.

### GREENHOUSE EFFECT

The process that raises the temperature of air in the lower atmosphere due to heat trapped by greenhouse gases, such as carbon dioxide, methane, nitrous oxide, chlorofluorocarbons and ozone.

### GREENHOUSE GAS (GHG)

A gas involved in the greenhouse effect.

### GREEN INFRASTRUCTURE

The interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water and provides a wide array of benefits to people and wildlife.

An interconnected network of protected land and water that supports native species, maintains natural ecological processes, sustains air and water resources and contributes to the health and quality of life for communities and people.

### GREEN STREETS

Streets, parkways and sidewalks designed to capture runoff and infiltrate it through paved and landscaped areas, utilizing permeable materials and drought tolerant plants.

A green street is designed to:

- Integrate a system of stormwater management within its right of way • Reduce the amount of water that is piped directly to streams, rivers, and oceans
- Be a visible component of a system of “green infrastructure” that is incorporated into the aesthetics of the community
- Make the best use of the street tree canopy for stormwater interception as well as temperature mitigation and air quality improvement
- Ensure the street has the least impact on its surroundings, particularly at locations where it crosses a stream or other sensitive areas. ([oregonmetro.gov](http://oregonmetro.gov))

### GREY INFRASTRUCTURE

A city’s physical elements such as buildings, roads and utilities, all of which are vital to a community. Grey elements are also impervious, forcing stormwater to run off roofs, parking lots and streets into stormwater sewer systems.





## APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### **GUIDING PRINCIPLE**

Overall guiding force that forms a vision.

### **GROWSPACE**

The ground level space that a tree is allotted to grow.

### **HABITAT**

A place where the physical and biological elements of ecosystems provide a suitable environment including the food, cover and space resources needed for plant and animal livelihood.

### **HARDSCAPE**

Paved area surrounding a tree or adjacent to a tree; such as a sidewalk, street, curb, gutter, driveway, planter wall, retaining wall, walkway etc.

### **HAZARD EVALUATION**

A report form as described in the book by Nelda P. Matheny & Report James R. Clark, A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas.

### **HAZARD TREE**

A tree, or part of a tree, that has a high potential for failure and hitting a nearby target because of dead or dying foliage, branches, roots or trunk.

### **HEAT ISLAND EFFECT**

A rise in atmospheric temperatures in urban and suburban areas due to isolating air pollutants as well as reflected heat off buildings, asphalt and concrete surfaces.

### **INFRASTRUCTURE**

The basic physical organization of a city's capital assets (e.g. sewer, utility, transportation systems) needed for operational function within a city.

### **INTEGRATED PEST MANAGEMENT (IPM)**

An ecological approach to controlling pests and their damaging effects through use of mechanical, chemical, biological, cultural and regulatory techniques and the limited use of chemicals and pesticides.

### **iTREE**

A software program developed by the U.S. Forest Service to help Urban Foresters assess and manage the structure, function and value of urban tree populations. The program provides information on the benefits and services provided by community trees and is used to create effective urban forest management and arboricultural practices.



## APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### LEGACY TREE

A tree that meets one or more of the following criteria:

- It exemplifies, symbolizes or manifests elements of the cultural, social, economic, political or architectural history of the City.
- It has aesthetic or artistic interest or value, or other noteworthy interest or value.
- It is identified with historic personages or with important events in local, state or national history.
- It embodies distinguishing architectural characteristics valuable to a study of a period, style, method of construction, or the use of indigenous materials or craftsmanship, or is a unique or rare example of an architectural design, detail, or historical type to such a study.
- It is a significant or a representative example of the work or product of a notable builder, designer or architect.
- It has a unique location, a singular physical characteristic or is an established and familiar visual feature of a neighborhood, community or the City.

### LAND USE

The use of land.

### LION'S TAILING

The removal of all inner foliage from a particular branch displacing the weight to the end of the branch giving the branch the appearance of a lion's tail.

### LIFTING

The removal of lower branches for under clearance.

### LIVING STREET

A street in which the needs of vehicles are secondary to the needs of the users of the street as a whole.

### MITIGATION

Measures taken to reduce adverse impacts on the environment.

### MONOCULTURE

Continuous stands of the same tree species. A large number of the same trees in a city or region.

### MONOLITHIC CURB

A curb that is cast as one piece, formed or composed of material without cut-outs or planting areas.

### MUNICIPAL CODE

City legislation adopted by the Municipality.



## APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### **NATIVE PLANT**

A plant that lives or grows naturally in a particular region without direct or indirect human intervention. Plants indigenous to a region, naturally occurring and not introduced by humans.

### **NONPOINT SOURCE POLLUTION**

Pollution that occurs when rainfall or irrigation runs over land or through the ground, picks up pollutants and deposits them into rivers, lakes and coastal waters or introduces them into ground water. (EPA)

N/S

North side

### **ORDINANCE**

City legislation on specific subject adopted by a municipality and added to the Municipal Code.

### **PACIFIC FLYWAY**

A major north-south route of travel for migratory birds in the Americas, extending from Alaska to Patagonia.

### **PARENT STEM**

The main trunk system of a tree.

### **PARKWAYS**

That portion of a public street right-of-way lying between the curb and sidewalk.

### **PARTICULATES**

Finely divided solid or liquid particles in the air or in an emission. Particulates include dust, smoke, fumes, mist, spray and fog (EPA).

### **PRECUT/PRE-CUTTING**

The removal of a branch at least 6" beyond the finished cut, to prevent splitting into parent stem or branch.

### **PRUNING**

The removal of dead, dying, diseased, live interfering, objectionable and weak branches in a scientific manner.

### **PRUNING STANDARDS**

Pruning Standards which have been adopted by the International Society of Arboriculture (ISA) and/or the National Arborists Association (NAA).

### **RECEIVING WATERS**

Rivers, lakes, oceans or other bodies that receive treated or untreated waste waters.



## APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### **RIPARIAN**

Areas adjacent to rivers, streams and watersheds with a differing density, diversity and productivity of plant and animal species relative to nearby uplands.

### **RISK ASSESSMENT**

Identifying the risks associated with trees involving the following three components:

A tree with a potential to fail.

An environment that may contribute to that failure.

A target that may be damaged (i.e. person or property).

### **ROOT BARRIER**

A mechanical guide used to redirect normal root growth away from a specified area such as a sidewalk or street.

### **ROOT ZONE**

The area and volume of soil around the tree in which roots are normally found. May extend to three or more times the branch spread of the tree or several times the height of the tree.

### **RUNOFF**

The portion of rainfall or irrigation water that flows across ground surface and eventually is returned to the ocean.

### **SAP FLOW**

The definite course assumed by sap in its movement through a tree.

### **SAPROPHYTE**

An organism that obtains its nutrition from dead organic matter.

### **SCARS (INJURIES)**

Natural or man made lesions of the bark in which wood is exposed. Also referred to as injuries.

### **SOIL STRUCTURE**

The arrangement of soil particles into aggregates and larger structures in natural soil.

### **SPECIES**

A group of plants that resemble each other closely and interbreed freely.

### **SPECIFICATIONS**

Precise written documents created to establish detailed construction methods to be carried out by contractors.





## APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### **STRATEGY**

The art of devising or employing plans or stratagems towards a goal.

### **STREET**

A thoroughfare in the City that is wider than an alley or lane and usually includes sidewalks.

### **STREETSCAPE**

A term used to describe the natural and built fabric of the street that usually includes street trees, ornamentals, landscape and site amenities.

### **STREET TREES**

Any tree growing within the public right-of-way.

### **STREET TREE PALETTE**

Street trees selected by following specific guidelines and strategies.

### **SUBGRADE**

Soil underneath a constructed surface or areas where soils for planting are to be installed.

### **STANDARD**

Recommended practices that help protect, maintain and manage a City's urban forest.

### **STORMWATER CAPTURE**

A term used to describe natural and built in infrastructure that captures rainwater to increase local water supply, reducing polluted run-off and to recharge groundwater aquifers.

### **STORMWATER RUNOFF**

Precipitation which travels via flow across surfaces, such as streets, parking lots, construction sites and industrial facilities, through storm drain systems into lakes, streams and beaches.

### **SUCKERS**

Abnormal growth of small branches usually not following the general pattern of the tree.  
Also known as water sprouts.

### **SUSTAINABILITY**

The quality of not harming the environment or depleting natural resources and thereby supporting a long-term ecological balance.  
Meeting the needs of the present without compromising the ability of future generations to meet their own needs.

### **THINNING OUT**

The removal of live branches to reduce wind resistance and to create more space.



# APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### TOPPING

The indiscriminate cutting of tree branches to stubs or lateral branches that are not large enough to assume the terminal role.

### TRACING

Careful cutting of the bark along the lines of sap flow to encourage closure and to be the outline of a wound area.

### TREE PROTECTION ZONE (TPZ)

A designated area around trees where maximum protection and preservation efforts are implemented to minimize soil compaction, etc., especially during construction.

### TREE SPECIMEN

A tree of particular kind.

### TRIMMING

The same as pruning.

### UNDERSTORY

Trees and plants that naturally grow or adapt to live below a mature tree canopy.

### URBAN AND COMMUNITY FORESTRY

A planned and programmatic approach to the development and maintenance 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.

### URBAN FORESTRY

The art, science and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economic and aesthetic benefits trees provide society.

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.

The management, establishment and protection of trees and forests within cities, suburbs and towns.

### URBAN RUNOFF

Water and stormwater runoff from city streets and adjacent domestic or commercial properties that carries pollutants of various kinds into sewer systems, storm drains and receiving waters.

### VISION

Thinking and planning for the future with imagination and wisdom.



# APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

### **WATERSHED**

The area of land from which rainfall drains into a stream or other water body. Watersheds are also sometimes referred to as drainage basins or drainage areas.

### **WILDLIFE CORRIDOR**

A pathway or habitat linkage that connects discreet areas of natural open space otherwise separated or fragmented by urbanization. Such a corridor allows animals to move between remaining habitats and provides escape routes from fire, predators and human disturbances.

### **WOUND CLOSURE**

Refers to the roll of the callus growth around the wound area.

## **ACRONYMS:**

ADA - American Disability Act

AQMD - Air Quality Management District

BMP - Best Management Practices

BVOC - Biogenic Volatile Organic Compounds

CEQA - California Environmental Quality Act

CFMP - Community Forest Management Plan

CGL - Commercial General Liability

CRZ - Critical Root Zone

CTCC - The Tree Carbon Calculator

DG - Decomposed Granite

DSH - Diameter Standard Height

EPA - Environmental Protection Agency



## APPENDIX T - GLOSSARY AND ACRONYMS, CONTINUED

E/S - East side

GHG - Greenhouse Gas

GIS - Geographic Information System

IPM - Integrated Pest Management

ISA - International Society of Arboriculture

NAA - National Arborists Association

N/S - North side

ROW - Right Of Way

SMEAC - Sierra Madre Environmental Action Council

SMMC - Sierra Madre Municipal Code

S/S - South side

TPZ - Tree Protection Zone

USDA - United States Department Of Agriculture

W/S - West side





# APPENDIX U - REFERENCES

## REFERENCES

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## APPENDIX V - PHOTOGRAPHIC REFERENCES

Photographs are referenced by page number. All photographs by Carlberg Associates staff unless otherwise noted.

Cover - Clockwise from top left - Downtown Sierra Madre, Coast live oaks at the Baldwin entrance to town, Bailey Canyon Park, and jacaranda trees (Carlberg stock photo).

Partnerships - Memorial Park, Sierra Madre City Hall

Statement of Commitment - Coast live oak seeding

Table of Contents - first page from top down - Carlberg stock photos - *Erythrina coralloides* flower, *Bauhinia sp.* flower, and *Magnolia × soulangiana* 'Speciosa' flower

Table of Contents - second page from top down - Carlberg stock photos - *Ginkgo biloba* leaf, *Liquidambar styraciflua* leaves, and *Platanus racemosa* leaves and fruit

Table of Contents - Appendices page - Coast live oaks on Grand View Avenue, Sierra Madre

Page 1 - Vision photo - view of Sierra Madre from a trail above Bailey Canyon

Page 2 - Google Earth Image of City of Sierra Madre

Page 3 - Kersting Court ca. 1920 and 2013 (Sierra Madre Historical Society & Carlberg stock)

Page 4 - Overview of City of City of Sierra Madre from a trail above Bailey Canyon and Sierra Madre Dam

Page 6 - Aerial photo of Sierra Madre and San Gabriel Mountains

Page 7 - Wind-thrown tree on West Laurel Street - 2011 windstorm; Squirrel on a ginkgo in Sierra Madre; Bailey Canyon Wilderness Park

Page 8 - Bailey Canyon Wilderness Park; Lizzie's Trail Inn; Downtown Sierra Madre

Page 9 - Coast live oaks on Grand View Avenue, Sierra Madre

Page 10 - Downtown Sierra Madre (left); Baldwin Avenue trees at entrance to City (top right), and Memorial Park, City Hall

Page 11 - Photographs as labeled from the City of Sierra Madre Historical Society



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Page 12 - Photographs as labeled from the City of Sierra Madre Historical Society

Page 13 - Photograph as labeled from the City of Sierra Madre Historical Society and Google Maps (2012)

Page 14 - Google Earth Aerial of Sierra Madre today; Grand View Avenue jacaranda (top), Bailey Canyon (middle), Memorial Park/City Hall (bottom)

Page 15 - Bailey Canyon Wilderness Park

Page 16 - Liquidambar on Grand View Avenue

Page 17- Sierra Madre Boulevard (left), and jacaranda trees in bloom (Carlberg stock)

Page 18 - Liquidambar leaf with symptoms of *Xylella sp.* (top left); Ginkgo tree in fall color (Carlberg stock); Engelmann oak (Carlberg stock)

Page 19 - London plane tree (Carlberg stock); 2011 wildfire above Sierra Madre, a view from downtown  
(<http://urbanartifactjournal.wordpress.com/2011/10/19/artifact-2-sierra-madre-ca-2/>)

Page 20 - Urban interface landscape - Carter Avenue, Sierra Madre

Page 23 - Sierra Madre Pioneer Cemetery (bottom left); California sycamore leaves and fruit (Carlberg stock)

Page 24 - Young ginkgo on Esperanza Avenue; ginkgo leaves

Page 25 - Carter Avenue Incense cedar; Arbor Day photos (Carlberg stock) and young oak on Baldwin Avenue.

Page 26 - Stock photos of Sweetshade tree (*Hymenosporum flavum*) and Lavendar Trumpet tree (*Handroanthus avellanadae*)

Page 27 - Stock photo of California sycamore

Page 28 - Stock photo of Cape chestnut flowers (*Calodendrum capense*), and a London plane on Sierra Madre Boulevard

Page 29 - Grandview Avenue Canary Island pines and coast live oaks; root mass of silver leaf maple (*Acer saccharinum*) and a Chinese elm (*Ulmus parviflora*) with canker disease (Carlberg stock)

Page 30 - Curved sidewalk to accommodate public trees in set-back and alternative parkway landscaping (Carlberg stock)

Page 31- Young coast live oak on Baldwin Avenue in downtown Sierra Madre (left) and Engelmann oak leaves





## APPENDIX V - PHOTOGRAPHIC REFERENCES, CONTINUED

Page 32 - Cape chestnut tree in bloom and camphor trees (Carlberg stock)

Page 33 - Wildfire photo of hills above Sierra Madre (4-29-08\_SantaAnita-SierraMadreFire\_1.jpg - <http://www.kinshipcircle.org/disasters/monitor/2008/sierra-madre-fire.html>) and mature deodar cedar (Carlberg stock)

Page 34 - Overview of Sierra Madre from the National Forest above Bailey Canyon Wilderness park

Page 1 - Appendices - Grand View Avenue Canary Island pines, Sierra Madre

Page 76 - Appendices - California sycamore bark



## APPENDIX W - ACKNOWLEDGEMENTS

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