

HOW TO HELP URBAN TREES SURVIVE A DROUGHT

URBAN TREE CARE



City of
Santa Monica®



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INTRODUCTION

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

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

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

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

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

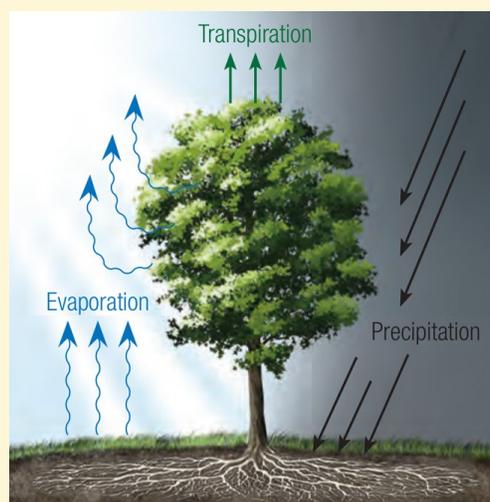
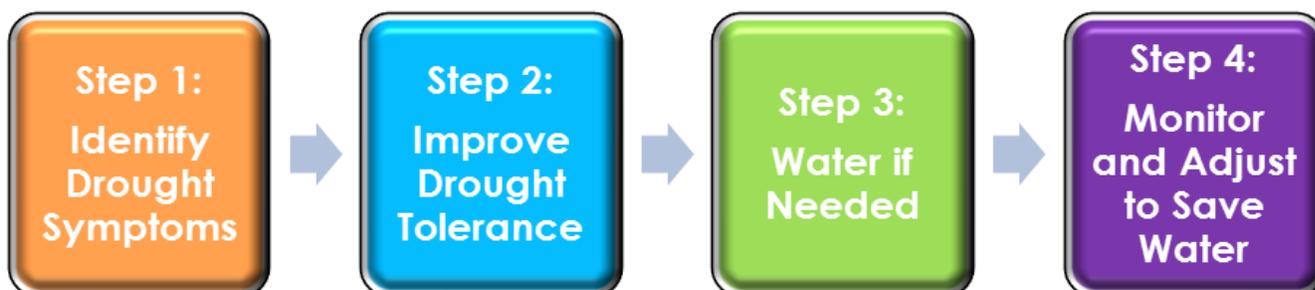


Photo credit: Arbor Day Foundation

Four Steps To Help Urban Trees Survive A Drought



Step 1: Identify Drought Symptoms

Signs of Drought Stress

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

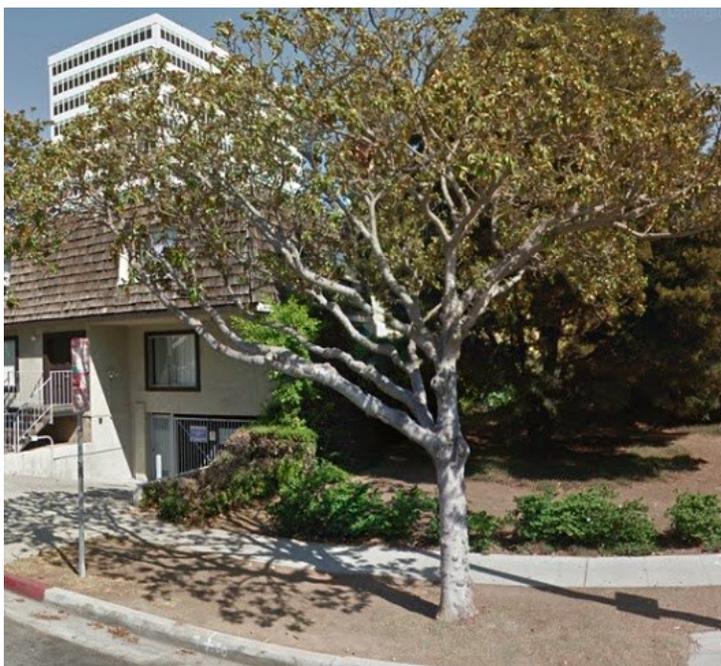


Photo 2: The Magnolia tree above has a thin canopy with smaller than usual and browning leaves.



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



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

Step 2: Improve Drought Tolerance



Steps to Improve a Tree's Drought Tolerance



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

DO NOT....

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

Step 3: Water if Needed - Watering Tools

Recommended Watering Tools to Conserve Water

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

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

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



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

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



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



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



Photo 3: A 20 gallon tree water bag.

Step 3: Water if Needed-Young Trees

Helping Young Trees During a Drought

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

How Much Water & How Often?

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

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

How to Water a Young Tree

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

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

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

Step 3: Water if Needed-Mature Trees

Helping Mature Trees During a Drought

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

How Much Water Does a Mature Tree Need?

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



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

Watering Frequency for Mature Trees

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

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

*once established means trees over five years old

Step 4: Monitor and Adjust to Save Water

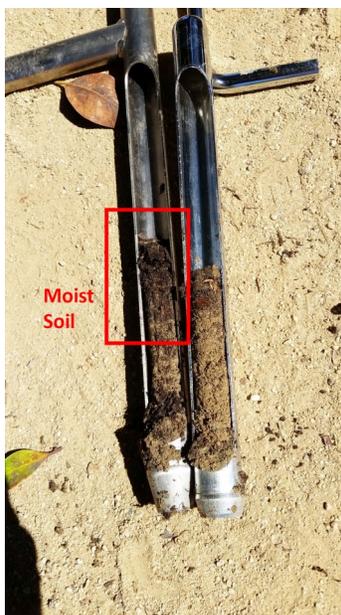
After water is provided consistently and in the proper amounts, a tree's appearance should improve. The aim of watering is to provide soil moisture to a depth of 18 to 24 inches beneath as much of the tree canopy, or dripline, as possible (refer to page 4). You can monitor and adjust water use by measuring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

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

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



Standard soil probe found at home improvement stores.



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



How to use a soil probe.

Appendix: Watering Frequencies for Mature Trees

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

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

Appendix: Watering Frequencies for Mature Trees

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

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

Appendix: Watering Frequencies for Mature Trees

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

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

Appendix: Watering Frequencies for Mature Trees

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

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

Appendix: Watering Frequencies for Mature Trees

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

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