



Public Tree Plan

Effective 5/12/2021

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BACKGROUND

Tree Policies, Procedures and Practices

In October 2019, the Sahuarita Town Council approved Ordinance No. 2019-145, which added provisions for Urban Forestry in Sahuarita Town Code (STC) Chapter 8.40. The code includes basic standards for the care and preservation of public trees. The code establishes a Tree Committee, to be appointed by the Parks, Recreation & Community Services (PRCS) Director, for the purpose of approving a Tree Plan.

Other tree policies, procedures and practices are included in STC Chapter 18.73, "Landscaping, Buffering and Screening Standards", which require property owners and developers to landscape their properties with appropriate plants, including trees. Residential developers are required to provide recreation areas as described in the "Parks and Recreation Area Design & Development Standards Manual"; the recreation area plan is submitted by the developer with the tentative plat and is reviewed by Town staff for appropriate landscaping, to include trees. The use of low water use, drought tolerant, native and non-invasive trees, is encouraged by the Town of Sahuarita, and the Town Approved Plant List is managed by the Planning and Building Department (PB).

The Town of Sahuarita outsources much of the routine maintenance of public trees that are both owned and maintained by the Town. The contract scope of work includes Town standards and specifications for tree care within the service requirements that the contractor is expected to provide.

Many street trees in the public rights of ways (ROW) are maintained, and the cost of such maintenance funded by, private owners and developers. The Public Works (PW) Director is authorized to approve agreements for private maintenance related to portions of required buffer yards that are in the public ROW. Private owners and developers often outsource their landscape and tree maintenance in these areas to landscape contractors.

Tree Maintenance Standards

Basic tree maintenance standards for public trees are provided in STC 8.40, "Urban Forestry."

Additional standards for PRCS and PW staff and respective landscape maintenance contractors include:

- Pruning tools shall be clean, operative, and in sharp condition and sterilized periodically. If disease or infection is suspected or known within a certain tree, cutting tools shall be sterilized between each cut. All hand shears and loppers shall have two cutting edges; anvil-type pruners are not acceptable.
- Irrigation systems will be inspected regularly and repaired as necessary to preserve and sustain the tree.

- Irrigation water must be contained within the target area for the tree. Water should not run into or upon streets and other hardscapes. The irrigation schedule will be adjusted as necessary to control runoff.
- Tree work in close proximity to public streets shall be attentive to line of sight requirements for traffic. In those specific instances where the interest of public safety is in conflict with prescribed standards of horticultural or arboricultural maintenance practices, the public safety consideration will prevail in determining pruning or other maintenance activities in those specific situations, so as to fully preserve and protect the interest of public safety.
- The maintenance and protection of roadway traffic during tree maintenance in medians and along streets is considered as important as the maintenance effort. Traffic control shall consist of providing, placing, maintaining, moving and removing barriers, barricades, signs, delineators, cones, lights, signals and any other devices intended to direct or control the movement of vehicular or pedestrian traffic. Traffic shall be maintained in a reasonably smooth and safely traveled manner and shall be appropriately marked by signs and guiding devices. The latest edition of the Manual of Uniform Traffic Control Devices, available at <http://mutcd.fhwa.dot.gov/> shall be used.
- Contractors working in the ROW providing tree care or for any other purpose are required to obtain a ROW permit from the Town of Sahuarita Public Works Department (PW).

Public Tree Inventory Fall/Winter 2020 - Baseline

In fall/winter 2020, PRCS staff facilitated a comprehensive inventory and condition assessment of trees both owned and maintained by the Town. The inventory was funded in part by a grant from the Arizona Department of Forestry and Fire Management, which enabled the hiring of a consulting arborist for the project. This initial inventory indicated 3,736 public trees comprised of approximately 22 species. The asset management system (Cartegraph) used by Town staff to store tree inventory data can be sorted by park trees, street trees, and municipal trees, street, park and facility location, species, condition rating, and other attributes.

The inventory field work and data collection yielded the following quantities of trees at the following locations:

Anamax Park	255		
North Santa Cruz Park	166		
Parque los Arroyos	132		
Quail Creek-Veterans Municipal Park	265		
Sahuarita Lake Park	242		
Subtotal		Park trees	1,060

Municipal Complex	408		
Subtotal		Municipal trees	408
La Canada Rd.	731		
Nogales Hwy.	707		
Sahuarita Rd.	830		
Subtotal		Street trees	2,268
	Total	Public trees	3,736

The public tree baseline inventory is dominated by five tree genus: mesquite (three species), palo verde, ash, desert willow and oak. Of the total public trees, mesquite comprise 49%, palo verde 15%, ash 8%, desert willow 7%, and oak 6%. Stated another way, 85% of the public trees in the baseline inventory consist of five tree genus.

In addition to collecting genus, species and size (i.e., diameter at breast height or DBH, estimated height), the condition of each tree was noted during the inventory. The following issues were of the most concern to staff and the consulting arborist for the baseline inventory:

Cracks: Major cracks can separate the bark, softwood, and heartwood, weakening the structural integrity of the tree and making it vulnerable to disease, decay, and insects.

Decay: Occurs when an infection causes the inner heartwood tissues to soften.

Disease: Prevalent in the Sahuarita climate zone are:
 Sooty Canker fungal infection - *Hendersonula toruloides*
 Verticillium Wilt - soil fungus *Verticillium dahliae*
 Texas Root Rot - soil-borne fungus *Phymatotrichopsis omnivora*

Girdled Roots: Tree roots wrapped around the trunk compete with the tree trunk for water and nutrients, lack of anchor roots cause unstable trees and premature death.

Improper/Insufficient Irrigation: Lack of emitters and/or not adjusted as the tree matures.

Improper Planting: Too deep covers the root collar, causes reduced growth rate, dwarfed leaf size and/or defoliation, yellowing, late spring leaf emergence, early fall coloration, branch dieback, split bark, girdled roots.

Parasites/Invasives: Undesirable plants, animals, and microorganisms.

Problems with Root Plate: Softening or degradation of the root plate can

lead to a disconnection with the lateral root system, causing the tree to become unstable.

Summer Sunscald: Thin-barked trees are susceptible. Occurs when young trees are pruned too soon and older trees are pruned too much, exposing the under bark to sun exposure. Cracks form on the west side trunk.

Winter Sunscald: Occurs with rapid fluctuations in temperatures in winter: frozen tissue on the south/southwest side of the trunk thaws and then rapidly refreezes. (There were record low temperatures and hard freezes in Sahuarita circa 2010 and the effect on trees is still evident.)

Significant findings from the baseline public tree condition assessment include:

Park Trees

Cracks found in Sweet Acacia and Mesquite

Decay found on Mesquite, Ash and Sweet Acacia

Improper planting, trees planted too deep

Trees by drainage areas, bottom of slopes, root ball covered with too much soil carried by water runoff

Insufficient drip irrigation

Mistletoe in 1% of trees, predominantly Mesquite

Winter Sunscald on Acacia, most noticeable at North Santa Cruz Park

Sahuarita Lake Park, one Acacia Salicina with Conks/fungi on bark, indication of infection

Street Trees

Cracks found in Sweet Acacia, Mesquite and Ash

Decay found on several trees, mainly Mesquite

Improper planting was common, trees planted too deep

Trees by drainage areas, bottom of slopes, root ball covered with too much soil carried by water runoff

Over pruning/poor pruning practices, especially along Nogales Highway

Insufficient drip irrigation

Mistletoe in 2% of trees, predominantly Mesquite

Subterranean termites in dead wood of Mesquite, Ash, and Chinese Elm

Ash in decline: Verticillium Wilt, under watering

Municipal Trees – Municipal Complex

Verticillium Wilt, Ash and Pistache in parking lot medians

Insufficient drip irrigation

Possible over watering trees on both sides fountain area

Summer Sunscald several trees

Recommendations:

The consulting arborist for the baseline inventory project was asked to provide a report with recommended priority tree maintenance actions and a recommended tree planting plan designed to sustain and diversify the Town's urban forest. Although the report did not include detailed recommendations, it did provide several general maintenance and planting guidelines, including:

Maintenance

Train personnel in proper tree pruning practices

Verticillium Wilt - the disease remains in the soil, do not plant another susceptible species in the same area. Wait for spring 2021 to evaluate Ash and Pistache recovery before deciding to remove/replace

Clean pruning tools to prevent transfer of disease – disinfect tools with solution of 1 part bleach to 9 parts water

Planting

Consider adding more of the following trees:

- Acacia Aneura
- Canyon Hackberry
- Chaste Tree
- Chinese Pistache
- Evergreen Elm
- Feather Bush
- Ironwood
- Mastic Tree
- Morning Cloud Chitalpa
- Red Oak
- Shoestring Acacia

Texas Ebony
Texas Mountain Laurel
White Thorne Acacia
Willow Acacia

The Urban Forest Diversity Guild recommends that, by 2040, resilient urban tree populations should consist of no more than 5% any single species, 10% any one genus, and 20% any one family.

TREE COMMITTEE

Composition and Process

The Parks, Recreation & Community Services (PRCS) Director appointed five people to the Tree Committee in February 2021. Members and areas of representation included: Jeff Allen (Town of Sahuarita Parks and Recreation Commissioner, retired/former public works director), Sean Nicholson (City of Tucson Parks and Recreation Superintendent, Sahuarita resident), Bill Carley (Master Gardener, member Green Valley Gardeners Association), Laura Hester (Town of Sahuarita Parks and Facilities Manager), Refugio Gallegos (Town of Sahuarita Streets Superintendent). The draft Tree Plan was compiled by staff based on findings from the baseline inventory and assessment, research and best practices. The Tree Committee met to discuss the draft Tree Plan on March 6 and provided suggestions for changes and additions which were discussed on April 20. Revisions were incorporated in the final draft, which was reviewed by staff and presented to the Tree Committee by the Parks, Recreation and Community Services, Public Works, and Planning and Building directors on April 28. The Tree Plan was finalized on May 12, 2021 and approved by the members of the Tree Committee.

TREE PLAN Effective May 12, 2021

Responsibility Key: PRCS – Parks, Recreation and Community Services
PW – Public Works
PB – Planning and Building

Near-Term Public Tree Maintenance Actions

1. Address findings from the fall/winter 2020 baseline inventory and condition assessment; implement corrective actions
 - a. Train Town staff and, when applicable, corrections personnel in proper pruning and tool sanitation techniques (PRCS, PW)
 - b. Meet with grounds keeping services contractor to review and emphasize pruning standards and contract specifications (PRCS, PW)

- c. Reduce irrigation application rate on trees near Municipal Complex fountain (PW)
 - d. Treat termite infestations (PW)
 - e. Evaluate Ash with Verticillium Wilt (VW) to determine level of recovery (PW)
 - f. Replace VW diseased Ash with a different species resistant to VW soil fungus (PW)
 - g. Remove 20 trees rated dead and 99 trees rated very poor (PRCS, PW)
 - h. Replace 119 removed trees (if/where irrigation is available) with diverse tree types from the Town Approved Plant List (PRCS, PW)
 - i. Remove mistletoe (PRCS, PW)
 - j. Remove excess soil from root balls/root collars (PRCS, PW)
 - k. Expose and remove girdled roots; replant trees (PRCS, PW)
 - l. Adjust drip emitters to appropriate locations (drip line) and quantities (PRCS, PW)
2. Evaluate areas with missing trees which were not included in the baseline inventory; replace (if/where irrigation is available) with diverse tree types, add info to the asset management system
 - a. Municipal Complex – 1 tree and Streets – 74 trees (PW)
 - b. Parks – 11 trees (PRCS)
 3. Inventory and assess trees on property recently acquired and improved by the Town; add info to the asset management system
 - a. SAMTEC (PW)
 4. Install irrigation along streets where replacement/future trees are desired (PW)
 5. Inventory and assess trees along other public streets; differentiate these trees as “maintained by private owner” and add info to the asset management system
 - a. Abrego Dr. (PW)
 - b. Campbell Ave. (PW)
 - c. Duval Mine Rd. (PW)

- d. Old Nogales Hwy. (PW)
 - e. Quail Crossing Blvd. (PW)
 - f. Rancho Sahuarita Blvd. (PW)
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- 6. Hold off on conducting a tree-by-tree inventory and assessment of trees on Town property that is unimproved or to be left in a natural state. Instead, calculate the percentage of tree canopy/coverage for the property and add info to the asset management system. Trees in these unimproved areas should not be included in the calculation to determine annual urban forest net gain/loss until property, or distinct portions thereof, is developed.
 - a. Washes/Drainage ways (PW)
 - b. Twin Buttes (PRCS)
 - 7. Research and estimate the cost of periodic certified municipal arborist technical consulting to enhance tree evaluation and risk management (PRCS)
 - 8. Establish a standard public tree replacement value (tree damage related to accidents and noted in police reports, insurance claims, restitution) i.e., 36" box, two hours labor, irrigation/staking supplies = \$ value (PRCS, PW)
 - 9. Measure the completion/status of all near-term actions on November 1st and May 1st each year until all items are addressed (PRCS, PW)

On-Going Public Tree Plan Actions

- 1. Update the public tree inventory data in the asset management system as tree maintenance occurs and no less than annually (PRCS, PW)
- 2. Track tree additions and subtractions and calculate a net result (gain or loss) annually (PRCS, PW)
- 3. Increase the quantity of public trees owned and maintained by the Town annually (PRCS, PW)
- 4. Reduce the dominance of mesquite, palo verde, ash, desert willow and oak as a proportion of overall public tree inventory annually (PRCS, PW)
- 5. Implement prioritized tree maintenance to mitigate: hazardous conditions, conflicts with hardscapes and other elements, nuisances, disease and other risk factors on going (PRCS, PW)
- 6. Submit Tree City USA application annually (PRCS)
- 7. Conduct an Arbor Day celebration in April annually (PRCS)

8. Propose budgets to replace, increase and maintain public trees (park, street and municipal) owned and maintained by the Town each fiscal year (PRCS, PW)
9. Train Town staff and, when applicable, corrections personnel in proper pruning and tool sanitation techniques as needed and no less than annually (PRCS, PW)
10. Meet with grounds keeping services contractor to review and emphasize pruning standards and contract specifications as needed and no less than annually (PRCS, PW)
11. Seek ISA certified municipal arborist certification for key Town staff (PRCS, PW)
12. Identify and match potential grant resources with desirable tree projects and submit grant applications when appropriate (PRCS, PW)
13. Communicate with homeowner associations, commercial and private property owners regarding their responsibility to maintain street trees in accordance with STC 8.40.040 on going (PW, PB)
14. Communicate with developers and property owners during development plan and building permit review regarding the need to diversify the urban forest; encourage developers and property owners to reduce the use of mesquite, palo verde, ash, desert willow, and oak, especially in the ROW on going (PB)
15. Measure the completion/status of all on-going actions on May 1st each year (PRCS, PW, PB)