



**Santa Clara
University**

Tree Care Plan 2017



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Purpose

Santa Clara University holds great pride in its campus grounds, which includes the historical Mission Gardens—ancient trees from the Mission era—and a beautiful and diverse campus canopy. This plan ensures the preservation of the University’s canopy cover and historical natural sites through sustainable maintenance guidelines and sets goals for an increase in native and drought tolerant vegetation around campus. We aspire to create a biologically diverse urban forest at SCU through sustainable practices, education, and student involvement with tree management.

A healthy and abundant tree canopy is not only a great way to reduce the heat island effect of the University, but also provides a comfortable and natural environment for wildlife to flourish and the local community to enjoy. It is important to SCU that it protects its existing tree population and promotes a positive and respectful attitude towards trees and the environment. The purpose of the Campus Tree Care Plan is to establish a system of sustainable tree maintenance that will allow SCU’s beautiful and unique tree population to be preserved and grow for future generations. The objectives of the plan are as follows:

- Provide a range of comfortable and natural study environments by maintaining diverse tree coverage
- Ensure that any removal of trees on campus is conducted with proper considerations and adequate replacement
- Protect trees during construction/renovation and replace trees lost to development, old age, or disease.
- Ensure the continued care of campus trees to provide a natural and aesthetically pleasing campus for future generations
- Provide appropriate habitats for tree dwellers to promote biodiversity around campus
- Encourage community respect and appreciation of trees and nature

Responsible Department

The responsible department for enforcement of this plan is the **Facilities Department of University Operations**. The Campus Tree Advisory Committee will advise on any projects and yearly plans.

Tree Advisory Committee

The Campus Tree Advisory Committee is comprised of representatives dedicated to the goals of urban forestry. They are the authors of this document and help oversee the plan's implementation. All questions about the Tree Care Plan are directed towards this group. They are as follows:

1. Chris Young, *Assistant Director, Buildings and Grounds Dept., University Operations*
2. Gary Vargas, *Landscape Maintenance Supervisor, Buildings and Grounds Dept., University Operations*
3. Tim Mains, *Grounds Crew Member, Buildings and Grounds Dept., University Operations*
4. Tim O'Keefe, *Applications Technology Manager, Business Services, University Operations*
5. Lindsey Kalkbrenner, *Director, Center for Sustainability, University Operations*
6. James Wang, *Environmental Science '19 and Center for Sustainability Student Intern*
7. Dr. John Farnsworth, *Senior Lecturer, Environmental Studies and SCU Gone Wild* faculty associate*
8. Dr. Michelle Bezanson, *Associate Professor, Anthropology and SCU Gone Wild* faculty associate*
9. Katelyn Diggs, *Environmental Science '18 and SCU Gone Wild Student Intern*
10. Linda Hylkema, *Director, Cultural Resources Management/Campus Archaeologist, University Operations*
11. Brian McGovern, *I.S.A. Certified Arborist, Owner of 'Woodpecker Certified Arborist'*

**SCU Gone Wild is Santa Clara University's natural history project that focuses on campus naturalism*

Arboriculture Practices and Policies

Tree Planting

Plant Selection

University Operations strives to use plants that are drought-tolerant and California native; however, this selection depends on the given site. Native trees will be prioritized wherever possible, but aesthetics and environmental factors (ground water content, light exposure, etc.) will ultimately be the determining factors in the selection of plant species. On sites of historical significance, archeological impacts will also be considered.

Site Preparation

Soils at the plant site will be checked for compaction. In the case of a compacted site, amendments shall be made to the soil using appropriate means to make it suitable for planting. The planting hole should be dug roughly twice the diameter of the root ball and at a depth equal to the height of the root ball plus any additional depth necessary for settled native soil underneath. Any deeper may result in the settling of the plant causing it to sit too low in the soil.

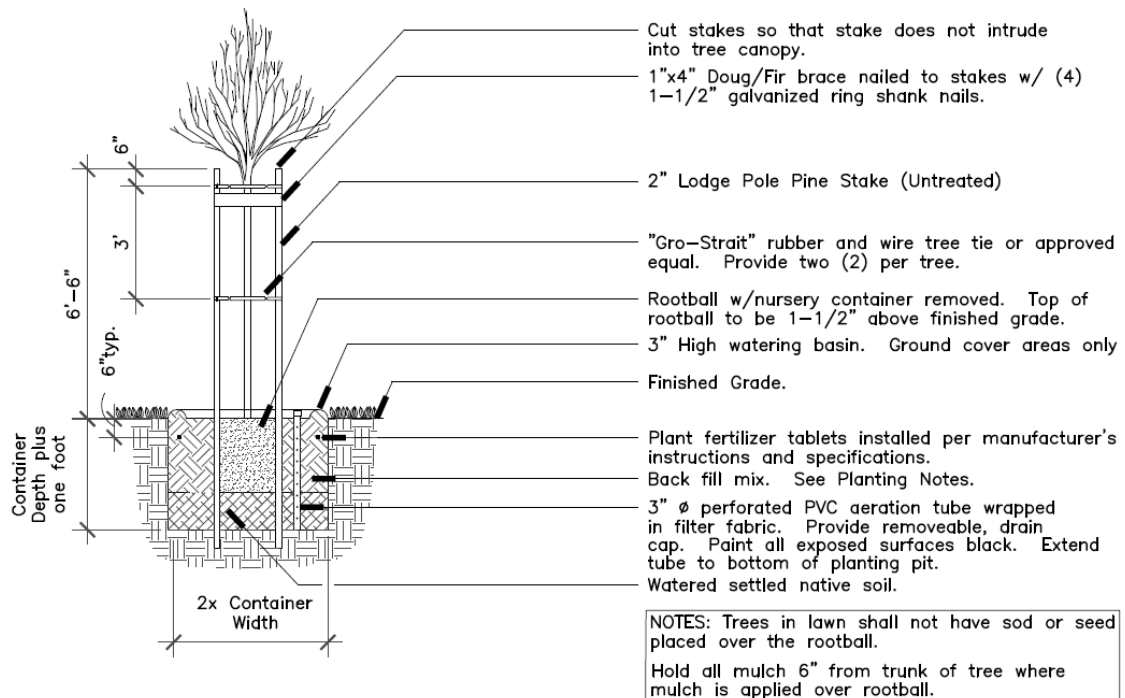
Staking


Trees shall be staked only when necessary for protection or support purposes during establishment. A plant that is not stable following the completion of the planting process should be staked according to standards determined by SCU or any contracted firms (*depicted in the staking diagram, below*).

Setting the Plant and Backfilling the Hole

Planting holes shall be dug twice the width of the root container, and one foot deeper than the height of the container, allowing for one foot of settled native soil under the root container. Remove the plant from the nursery container before placing it into the planting hole, and ensure that when settled the top of the rootball extend 1½” above the finished grade. Mulch should be applied over the planting hole, holding back 6” from the tree trunk, and depending on the tree and site an aeration tube will sometimes be necessary. After the hole has been filled, pack it so that a 3” deep watering basin is established over the hole.

The following diagram is a visual representation of the planting and staking process.



 **Tree Staking Diagram w/Aeration Tube**
Not to Scale

Tree Maintenance/Removal

Pruning

Following the planting of trees, pruning shall occur only for safety, health, or aesthetic purposes, and should never be conducted without a clear objective or outcome. University Grounds staff is in charge of conducting any ground level maintenance and removal of fallen debris, while all larger-scale tree-care work is managed by the contractor hired at the time. Trees are pruned annually through a preventative maintenance pruning program, conducted on an if-need-be basis. Campus trees are periodically surveyed to determine scheduling priorities.

Tree Removal

Trees that are determined by University Operations or a certified arborist to be structurally weak, invasive, a safety hazard, or in competition with desired species, will be removed or relocated by the contractor unless it is small enough to be managed by the Facilities crew. Trees removed due to unplanned circumstances

will be replaced, unless the ground is of historical significance in which case the replacement of the tree will depend on archeological impacts.

Fallen Limb Removals

University Operations is responsible for all fallen tree limbs and ground-level debris. Debris will generally be removed the day that it falls, and in the case of strong winds or severe storms, a campus-wide clean-up will be conducted to clear all debris, prioritizing anything blocking major campus thoroughfares, posing hazards to the campus community, or disrupting campus operations.

Stump Grinding

After trees are removed, stumps are scheduled by the contractor for grinding. Depending on the area, the chips are either raked and left slightly mounded for decay and settling to occur, or are cleared up and transported away from the cut site.

Protection and Preservation Policies

Existing trees of both high and low priority will always be taken into consideration when a site is being selected for a construction project at SCU. Projects will be planned such that existing trees are incorporated into the design of the project in a way that is both healthy for the tree as well as aesthetically pleasing. If prioritization is necessary for a given project, high-priority trees will be given precedence based on the judgement of the project landscape architect or an SCU facilities landscape department representative.

Construction and Development Policies

During all construction, renovation, or development of any sort that occurs on campus, the following policies will be followed strictly (or else the penalties stated in *Tree Damage Assessment* will be enforced):

- I. When construction occurs within the dripline of existing trees, the contractor shall pile soil on the side away from the tree. When this is not possible, place the soil on plywood, tarp, or a 4" - 5" thick bed of mulch. This is to avoid cutting into the soil surface when the backhoe or tractor blade refills the trench.
- II. Refill open trenches quickly within hours of excavation when they occur within the drip line of existing trees. If this is not possible and the weather is hot, dry, or windy, the contractor must keep the root ends moist by covering them with wet burlap. If the temperature is 80°F or greater, the burlap must be inspected every hour and re-wet as necessary to maintain a constant cool moist condition.
- III. When roots 2" or larger are required to be cut, shovel by hand near the roots and prune the roots with an industry-approved pruning tool. Roots that are accidentally broken should be pruned 2" from the damaged end. Crushed or torn roots are more likely to allow decay to begin. Sharply cut roots produce a flush of new roots helping the tree to recover from its injury.
- IV. Contractor shall notify the project landscape architect or an SCU facilities landscape department representative 72 hours in advance of any work requiring digging around or within the dripline of existing trees.
- V. Materials, equipment, temporary buildings, fuels, paints and other construction items shall not be placed within the dripline of existing trees.
- VI. Fence all trees to be retained to completely enclose the tree protection zone prior to demolition, grubbing, or grading. Fence shall be placed at the dripline of existing trees or,

if possible, 1.5 times the radius of the dripline out from the trunk of the tree. A warning sign shall be prominently displayed on each fence. The sign shall be a minimum of 8.5" x 11" and clearly state "warning - tree protection zone, this fence shall not be removed without approval by the project arborist or landscape architect." Fences shall remain until all grading and construction work is completed. In addition, wrap all trees in the construction zone with straw waddle and snow fencing up to the main branch to protect them from bark damage caused by the work.

- VII. No trenching shall be done within the dripline of existing trees without the approval of the project landscape architect or an SCU facilities landscape department representative. Open trenching in the root zone of a public tree is prohibited except in cases where the trenching falls outside of the dripline of the tree involved. Exceptions may be allowed if, in the opinion of the project landscape architect or an SCU facilities landscape department representative, the impact of trenching on the tree will be negligible.
- VIII. Any cutting of existing roots of city trees shall be done with approved light equipment under the direct supervision of the project landscape architect or an SCU facilities landscape department representative. Any cutting of existing roots of private trees shall be done with approved equipment under the direct supervision of an I.S.A. certified arborist.
- IX. Grading should not create drainage problems for trees by channeling water into them, or creating sunken areas.
- X. All grading within the dripline of SCU trees shall be done with approved equipment under the direct supervision of a project landscape architect or an SCU facilities landscape department representative. The original grade at the base of existing trees shall not be modified. If a grade increase is necessary, dry wells should be used.
- XI. When trenching is allowed, the contractor must first cut the roots with an approved root cutter prior to any trenching in order to avoid tugging or pulling of roots.
- XII. Trees that are determined by the project landscape architect or an SCU facilities landscape department representative to need to be removed due to an unforeseen circumstance during construction shall be replaced by the contractor. The project landscape architect or an SCU facilities landscape department representative shall determine the replacement specie, size, quantity, and spacing.
- XIII. Place 4" - 5" thick of mulch around all existing trees (out from the trunk to their dripline) that are to be retained prior to any construction. This will help maintain moisture under tree within the fencing area.
- XIV. Bore pits are not allowed within the dripline of any tree.

Goals and Targets

Campus Canopy Plan

Santa Clara University aims to maintain its baseline canopy regardless of development over time and has an aspirational goal of expanding the campus canopy for future generations. By protecting trees during construction and renovation as well as replacing trees lost to development, old age, or disease, the University hopes to provide a range of comfortable and natural study environments for its students by maintaining diverse tree coverage as well as ensuring the continued care of campus trees to provide a natural and aesthetically pleasing campus for years to come. Furthermore, by providing appropriate habitats for tree dwellers and other animals, the University hopes to promote biodiversity around campus and encourage community respect and appreciation of trees and nature.

Tree Inventory

In addition, SCU plans to update its campus Tree Inventory on ArborPro (software used by Facilities) to include:

- a. More individual tree data such as age, DBH, condition, crown diameter
- b. Species data (ecological niche, native/non-native)
- c. Historical and cultural notes
- d. An interactive GIS map for students to use in future classwork or research

Tree Damage Assessment, Enforcement, and Penalties

Contractors shall tag and identify existing trees which are to remain within the project limits, and will protect all tagged trees at all times from damage by the work. Treatment of all minor damage to tagged trees shall be performed by an I.S.A. certified arborist or other personnel approved by the project landscape architect or an SCU Facilities landscape department representative. If a tagged tree is permanently disfigured or killed as a result of the work, contractors shall remove the tree from the site, including its roots, and replace each removed tree with an equal-sized tree. If such replacement is not possible, the contractor shall reimburse to the tree owner the amount listed in the table below. The project landscape architect or an SCU Facilities landscape department representative shall be the sole judges of the condition of any tree.

Contractors shall pay the tree owner the value of existing trees to remain that died or were damaged as a result of the contractor's failure to provide adequate protection and maintenance. The payment amount shall be in accordance with the following schedule of diameters and values:

DIAMETER	VALUE
7 inches	\$ 2,400
8 inches	\$ 3,400
9 inches	\$ 4,400
10 inches	\$ 5,200
11 inches	\$ 6,200
12 inches	\$ 7,200
13 inches	\$ 8,200
14 inches	\$ 9,200
15 inches	\$ 10,000
16 inches	\$ 11,000
17 inches	\$ 12,000
18+ inches	Add \$1,200 for every caliper inch.

Damage to campus trees resulting from vandalism or careless behavior will be reported to Campus Safety Services who will pursue responsible parties and enforce penalties. The party responsible for the damage will be billed by the University for the damages incurred in addition to serving the penalties determined by the University's judicial board.

Prohibited Practices

University Regulations

- Climbing of campus trees is prohibited unless authorized by the SCU Facilities Department (for maintenance purposes).
- No flyers, posters or signs are to be attached to any campus trees.
- Bicycles and other forms of personal transportation are not to be locked or bound to campus trees in any way.
- No dumping of chemicals or waste fluids within the dripline of any campus trees.
- Attaching of ropes or cables to campus trees for the support of hammocks, canopies, slack lines or other similar devices is strictly prohibited.
- Planting, removing or pruning of any trees on campus without the approval of Facilities is strictly prohibited.

County Tree Preservation and Removal Ordinance

In addition to the aforementioned University regulations, any planting, removing, or altering of trees shall be done in accordance with the [County of Santa Clara CA Ordinance Code, Title C § C16.](#)

Definitions

WORD	DEFINITION
Bole Height	The distance from the base of the tree to the base of the first living branch that forms a part of the tree crown.
Crown Diameter	The average horizontal width of the crown from dripline to dripline.
DBH	Diameter at Breast Height - The diameter or width of the main stem of a tree as measured 4.5 feet above the natural grade at its base. Whenever a branch, limb, defect or abnormal swelling of the trunk occurs at this height, the DBH shall be measured at the nearest point above or below 4.5 feet at which a normal diameter occurs.
Development	The act, process or state of erecting buildings or structures, or making improvements to a parcel or tract of land.
Invasive	Non-native and tending to spread wildly in an environment or habitat, often at the cost of native species. Invasive species often have few natural predators or other biological controls in their new environment.
I.S.A.	International Society of Arboriculture
Topping	The practice of removing whole tops of trees or large branches and/or trunks from the tops of trees, leaving stubs or lateral branches that are too small to assume the role of a terminal leader.
Tree Canopy	The cover formed by the collection and overlapping of individual plant crowns.
Tree Dripline	The ring around a tree that water run-off from the tree canopy falls within.
Tree Protection Zone	The area surrounding a tree that is essential to the tree's health and survival, and is protected within the guidelines of the stated regulations.

Communication Strategy

The Campus Tree Care Plan will be published on both the SCU Sustainability website and University Operations website to be made available to the public. In addition, we will encourage our student newspaper to run an article regarding the University's participation in Tree Campus USA with summaries of the plan's main objectives as well as a link to the Tree Care Plan itself.


Following the approval of the campus Tree Care Plan, it will be implemented into Santa Clara University's standards of practice for design and construction for contractors, subcontractors, and campus staff working on maintenance and construction to reference. The plan will also be reviewed and updated on a biennial basis as well as be included in SCU's annual AASHE STARS report.

Dedicated Annual Expenditures

DESCRIPTION	COST
Tree mitigation project phase 1 (plant 2 for every 1 tree removed due to construction)	\$15,000
Contracted tree maintenance and emergency response.	\$70,000
In-house staff maintain only what is reachable from the ground.	Negligible
ArborPro tree inventory software to track tree maintenance, removals, plantings, etc.	Negligible
Total approximate annual cost:	\$85,000

Arbor Day Observance

On Thursday, October 26, 2017, the Santa Clara community celebrated SCU's second Arbor Day by planting a three *Ulmus parvifolia* (Chinese Elm) trees.



Sustainability at SCU was live — with Santa Clara University at Santa Clara University.
October 26 at 12:00pm · Santa Clara · 🌐 · 🌐

Watch Live as we plant 3 Chinese Elms for SCU's Arbor Day celebration, part of Tree Campus USA! Scroll to 4:40 for more info. #sustainableSCU

91 Views

Center for Sustainability Facebook live video of the inaugural Arbor day tree planting



**ARBOR DAY
TREE PLANTING**

**Thursday, October 26, 12:30 PM
Library Lawn**

Come learn about trees on campus and how to plant a tree!

*In compliance with the ADA/504, please direct your accommodation requests to James Wang at jwang5@scu.edu at least 72 hours prior to the event.

mission sustainable

Center for Sustainability flyer reminding the community of the upcoming Arbor Day



 sustainable SCU
Santa Clara University [Follow](#)

sustainable SCU To celebrate this year's Arbor Day, the Facilities' landscaping crew and students planted three Chinese elms in front of the library! Help us name the trees by commenting your ideas below!
#sustainable SCU #ArborDay #treecampususa
#carbonsequestration #urbanforest
#climateaction #climatechange
citizenvirgo ☐☐ "Sunny"!! @neiloop

35 likes
7 DAYS AGO

Log in to like or comment.

Center for Sustainability Instagram post to broadcast Arbor Day and the tree planting



Timeline of volunteers digging the hole and learning about the significance of planting trees



Timeline of volunteers starting to plant the Ulmus Parvifolia trees



Timeline of volunteers helping to maintain and finish planting the Ulmus Parvifolia trees

Service Learning Project

In order to engage the student population in tree-related projects and activities around campus, SCU Facilities has opened all tree planting on campus (unless unsafe or requiring only professionals) to student and community volunteers. Following the approval of a tree planting by the Assistant Director of the Buildings and Grounds Department, a notification will be sent out via the Center for Sustainability's monthly e-newsletter to make students aware of the event. Students who wish to participate will be asked to show up in appropriate clothing (closed toed shoes & maximum skin cover) in order to minimize the chance of any injuries or irritations.

In the future, we have plans to work with different classes to engage students in service learning and promote a larger appreciation for all our campus trees. We are also appealing to the student body by letting volunteers suggest names for the trees they plant and putting up Facebook polls to have people vote on the names they like the most.

Moreover, we are also working with students to conduct a campus tree inventory over the course of the next several years in order to record data on existing trees as well as begin collecting data on new trees that are planted. The inventory will be conducted primarily by students with support from SCU Gone Wild, University Operations, and the Center for Sustainability.

SCU Gone Wild students have so far measured 170 trees, and have recorded data on tree height, DBH, bole height, and crown diameter. In addition, a photograph of each tree is taken after all necessary data has been recorded to serve as a reference for current condition.