City of Encinitas

Urban Forest Management Program Administrative Manual of Procedures

March 24, 2022 Third Edition

INTRODUCTION

The City of Encinitas (City) is fortunate to have such a beautiful population of *trees*, including magnificent individual trees, groupings of trees, and native trees, on both public and private property. These trees make up the *urban forest* and give the City a unique character. Trees provide a source of shade, cooling, and other environmental benefits, and yield both a high quality of life and economic benefits to the community, including enhanced property values.

The City is dedicated to the planting, *maintenance, management*, and protection of the trees in its urban forest, which is recognized as one of the City's greatest natural resources. As such, sustaining trees in Encinitas's developed environment presents a challenge and requires careful planning.

The City's Tree Ordinance and Urban Forest Management Policy are the City's primary regulatory tools to provide for the orderly protection of trees to promote the health, safety, welfare, and quality of life for the residents of the City; to protect property values; and to avoid significant negative impacts on adjacent properties. By ensuring preservation and protection through regulations and standards of care, these documents provide significant contributions to the landscape, streets, and parks, and continue to help define Encinitas.

This Urban Forest Management Program Administrative Manual of Procedures (Manual) is issued by the City Manager, through the Departments of Development Services; Parks, Recreation, and Cultural Arts; and Public Works to establish specific technical standards and specifications necessary to implement City policy. Terms defined in Section 1.00, Definitions, appear *italicized* throughout this Manual.

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SECTION 1.00 – DEFINITIONS

For the purpose of this Urban Forest Management Program Administrative Manual of Procedures (Manual) and interpretation of regulations, the following definitions shall apply. Terms defined in this section are provided in *italics* throughout the Manual.

Basal Flare – The portion of a tree where there is a rapid increase in diameter at the confluence of the trunk and *root crown*.

Best Management Practices – Industry-accepted standards to establish a consistent set of actions that become professional standards by which trees should be cared for and maintained.

Building Area – The area of a parcel that (1) a structure may be built without a variance under applicable zoning regulations; or (2) is necessary for the construction of primary access to structures located on the parcel where there exists no feasible means of access that would avoid protected trees. On single-family residential parcels, the portion of the parcel deemed to be the *building area* access shall not exceed 12 feet in width or 16 feet in width if required by the Fire Department.

Building Footprint – The two-dimensional configuration of a building's perimeter boundaries measured on a horizontal plane at grade level.

Buttress Roots – Roots at the trunk base that help support the tree and equalize mechanical stress.

Certified Arborist – A professional arborist who has a current International Society of Arboriculture (ISA) certification credential, has a minimum of 3 years' full-time experience working in the professional tree care industry, and has passed an extensive examination covering all facets of arboriculture.

City Arborist – The person designated by the City of Encinitas (City).

City Tree – Any tree growing within a City street right-of-way, on City property, or within City easements.

Codominant Stems – Two or more main stems that are similar in diameter size and emerge from the same location on the main trunk. Trees with codominant stems lack a main leader and may be more likely to fail, especially in storms.

Compaction – Compression of the soil, often because of vehicle or heavy-equipment traffic, that breaks down soil aggregates and reduces soil volume and total pore space, especially macropore space.

Critical Root Zone – The area of soil around a tree where the minimum amount of roots considered critical to the structural stability or health of the tree are located.

Dead Tree – A tree that has been damaged beyond repair, or is in an advanced state of decline where an insufficient amount of live tissue, green leaves, limbs, or branches exist to sustain life, and has been determined to be dead by a *certified arborist.*

Developer – A person, entity, or company who purchases, improves, and sells buildings or land, or arranges for new buildings to be built.

Developer, Commercial – A person, entity, or company who purchases, improves, sells, or builds structures or land, or arranges for new buildings to be built, for commercial purposes. The commercial developer builds business properties used for purposes such as factories, warehouses, office buildings, and others.

Developer, Private – A person, entity, or company who purchases, improves, sells, or builds structures or land, or arranges for new buildings to be built, on private property. The developer seeks a profit from development of the land, either by selling a development, or by holding the developed property to reap a return on the investment.

Developer, Public – A person, entity, or company who purchases, improves, sells, or builds structures or land, or arranges for new buildings to be built, on public property. The developer seeks a profit from development of the land, either by selling a development, or by holding the developed property to reap a return on the investment.

Developer, Residential – A person, entity, or company who purchases, improves, sells, or builds structures or land, or arranges for new buildings to be built, for residential purposes. The residential developer builds housing properties such as homes, apartments, condominiums, and others.

Diameter at Standard Height (DSH) – A standard method of expressing the diameter of the trunk of a standing tree by measuring the trunk at 4.5 feet (or 54 inches) above natural grade level. If a tree forks below standard height, it is considered a "multi-trunk."

Direct Impacts – Impacts associated with tree removal or encroachment within the tree-protected zone (i.e., canopy dripline plus 5 feet or 15 feet from trunk, whichever is greater).

Discretionary Development Approval – An approval granted by the Planning and Building Director, Planning Commission, and/or City Council for applications, including, but not limited to, Coastal Development Permits, use permits, variances, subdivisions, and design reviews.

Disturbance – Any action that involves movement or alteration of soil that is occurring to modify the existing land use. *Disturbance* could include such actions as grading, filling, soil excavating, topsoil stripping, blading, contouring, ripping, discing, root raking, moving, ploughing, removing, cutting, chemical treatment, and soil sterilization.

Dripline Area – The area from the trunk of a tree to the outermost edge of the tree canopy. It is an imaginary line defined by the branch spread of a single plant or group of plants.

Emergency, Tree – A tree that has already failed, or that poses an imminent or probable likelihood of failure, before the next inspection, based on the judgment of a certified arborist, and that, due to its location, could impact a target. The tree may be removed without City review or approval, but the City shall be notified prior to the initiation of work and if imminent failure is not occurring. City staff oversight may be required.

Excessive Pruning – Removing more branches, stems, and roots than necessary to accomplish the desired objective. Typically, no more than 25% should be removed in any single year. Pruning in excess of 25% can injure a tree, is prohibited, and may be subject to penalty unless approved by the *City Arborist.*

Green Infrastructure – A strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services, such as water purification, air quality, space for recreation, and climate mitigation and adaptation.

Hazardous Tree – An imminent hazard or threat to the safety of persons or property. If a tree possesses a structural defect that may cause the tree or part of the tree to fall on someone or something of value (i.e., *target*), and the condition is determined to be imminent, the tree is considered *hazardous*.

Heritage Tree – A tree designated by the process outlined in Section 9.00, Heritage Trees, of this Manual that is one of the oldest or largest of its species located in the City and has historic significance due to an association with a historic building, site, street, person, or event, or it is a defining landmark or significant outstanding feature of a neighborhood.

Imminent Failure – A tree that has 30% or greater already fallen or is estimated to fall within 72 hours into the public right-of-way or onto a *target* that cannot be protected, restricted, moved, or removed.

Included Bark – Bark that becomes embedded in the attachment between branch and trunk, or between *codominant stems*. Included bark causes weak attachments.

Indirect Impacts – Results of changes to a site that may cause tree decline, even when the tree is not directly injured. *Indirect impacts* include alterations to stream flow rates, diversion of groundwater flow, introduction of exotic plant species, and alterations to disturbance regimes. Wider-scale alterations to the area near trees and specific changes that occur around the trees are important considerations.

Injury – Any act or omission that substantially affects or seriously jeopardizes the health of a living tree, in the determination of the *City Arborist*. *Injuries* include wounds resulting from any activity, including, but not limited to, *excessive pruning,* cutting, *trenching*, excavating, altering the grade, paving, or *compaction* within the *tree protection zone* of a tree. *Injury* shall include bruising, scarring, tearing, or breaking of roots, bark, trunk, branches or foliage; poisoning; or any other action leading to the death or permanent damage of a tree.

International Society of Arboriculture (ISA) – The international professional society that serves as a credentialing organization that promotes and offers international standards to the professional practice of arboriculture.

Internode – A section of the stem that grows between two *nodes.*

ISA Tree Risk Assessment Qualification – A credential held by an ISA-certified arborist that identifies them as individuals who are knowledgeable on the standardized, systematic process for assessing tree risk, and providing information to tree owners and risk managers when making decisions that will promote the safety of people and property, and enhance tree benefits, health, and longevity.

Landscape Architect – A person licensed in the planning, design, and oversight of landscape or landscape space.

Level 2 Risk Inspection – The Level 2 Basic Tree Risk Assessment is a 360-degree visual assessment that evaluates a tree's crown, trunk, and trunk flare; visible aboveground roots; and site conditions. The assessment involves inspection of a tree's crown, branches, trunk, and root collar for the presence of structural defects such as *included bark*, cavities, fungal fruiting bodies, and/or decay. The Level 2 Assessment also evaluates the likelihood that an observed defect could fail, the likelihood of the defect impacting a specific target should failure occur, and the subsequent damage that may occur should failure and impact occur. See also *Tree Risk Assessment.*

Maintenance – The application of arboricultural methods to increase and retain tree health. Such methods include, but are not limited to, pruning, trimming, training, and thinning of branches.

Management – The protection and *maintenance* of a tree, as well as the planning, planting, and *maintenance* of future trees.

Node – The part of a plant stem from which one or more leaves emerge, often forming a slight swelling or knob.

Percolation Test – A test to determine the water absorption rate of soil in a given area.

Permanent Wilt Point – The minimum amount of water in the soil that the plant requires not to wilt.

Private Development Project – Any project undergoing completion by a private entity, including utility companies.

Project Arborist – A *certified arborist* retained by a property owner or development applicant for the purpose of overseeing on-site activity involving the welfare of the trees. The *project arborist* shall be responsible for all reports, tree preservation plans, or inspections.

Protective Tree Fencing – A temporary enclosure erected around a tree to protect the tree from damage. The fence serves three primary functions:

1. To keep the foliage crown, branch structure, and trunk clear from direct contact and damage by people, equipment, and/or materials.

2. To preserve roots and soil in a non-compacted state.

3. To identify the *tree protection zone* where no soil disturbance is permitted and activities are restricted.

Pruning – To trim a plant by cutting away dead or overgrown branches or stems to promote plant health and proper growth.

Public Development Project – Any project undergoing completion by the City or another public entity.

Public Nuisance – An individual tree on any private property or on any street or public property, or a type or species apt to destroy, impair, or otherwise interfere with any street improvements, sidewalks, curbs, gutters, sewers, or other public improvements, including aboveground and belowground utilities.

Removal – Cutting a tree to the ground or taking any action that would lead to the death of a tree or cause permanent damage that may compromise tree health and stability. Actions that may result in *removal* may include, but are not be limited to, severe pruning or topping, girdling, poisoning, over watering, under watering, trenching, excavating, or altering the soil grade around the tree trunk.

Root Ball – The main mass of roots at the base of a plant such as a shrub or tree. It is of particular significance in horticulture when plants are repotted or planted in the ground. The quality and preparation of the root ball will determine how well the plant will survive this transplantation and then flourish in its new situation.

Root Buffer – A temporary layer of material to protect soil, texture, and roots.

Root Collar – The area where a tree's roots join the main stem or trunk. Also called *root flare* or *root crown*.

Root Flare – See *Root Collar*.

Root Crown – See *Root Collar*.

Root Bridging – Structures installed as footings or paving to bridge over roots. Often used as a method to avoid root cutting that may injure a tree.

Site Plan – A set of drawings (e.g., preliminary drawings, grading, demolition, building, utilities, landscape, irrigation, tree survey) that show existing site conditions and proposed landscape improvements, including trees to be removed, relocated, and/or retained. *Site plan*s shall include the following minimum information that may impact trees:

A. Surveyed tree locations, species, size (height, width, diameter at standard height [DSH]), *dripline area* (including trees located on neighboring property that overhang or within 50 feet of the project site), and *City tree*s adjacent to the project site.

B. Paving, concrete, *trenching*, or grade change (including the limits of over-excavation) located within the *tree protection zone.*

C. Existing and proposed utility easements.

D. Surface and subsurface drainage and aeration systems to be used.

E. Walls, tree wells, retaining walls, and grade change barriers, both temporary and permanent.

F. Landscaping, irrigation, and lighting within dripline of trees, including all lines and valves.

Soil Fracturing – The loosening of hard or compacted soil around a tree that cracks, loosens, or expands the soil to improve the root growing environment.

Stem Girdle (root) – A type of dysfunctional root that grows against the stem (i.e., trunk) that squeezes or compresses the sapwood. As the root and stem grow in diameter, the compression caused by the root may severely slow or stop the flow of water and nutrients to the rest of the tree.

Structural Defect – The feature, condition, or deformity of a tree that indicates a weak structure or instability that could contribute to tree failure.

Target – (1) People, property, or activities that could be injured, damaged, or disrupted by a tree failure; (2) the location of a cut in target pruning.

Target Pruning – The final cuts that are made when completely removing a limb that are made close to the main stem of the tree. This technique ensures that the tree will heal properly, and that the cut does not leave unsightly tears in the bark or allow infection into the collar.

Topping – An inappropriate pruning technique to reduce tree size, cutting back a tree to a predetermined crown limit, often at *internodes*. *Topping* often results in indiscriminate removal of a limb or branch that leaves only lateral branches or stumps on the tree. Topping can be fatal to trees, and may increase the risk of structural failure, resulting in a public safety concern, liability, and risk. *Topping* is considered a prohibited act, and subject to penalty.

Tree – A woody perennial usually having one dominant trunk and a mature height greater than 5 meters (16 feet) and a formed crown of foliage.

Tree Death – See *Dead Tree.*

Tree Protection Area – See *Tree Protection Zone*.

Tree Protection and Preservation Plan – A plan prepared by a *certified arborist* that outlines measures to protect and preserve trees. This plan includes requirements for pre-construction, treatments during demolition and/or construction, establishment of a *tree protection zone*, a tree monitoring and inspection schedule, and continued maintenance of those trees after construction according to the requirements in this Manual.

Tree Protection Zone (TPZ) – The defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, especially during construction or development. The *TPZ* is a restricted activity zone where no soil disturbance is permitted unless otherwise approved by the *project arborist.* The *TPZ* should be, at a minimum, 10 feet outside of the tree's *dripline*. Should it be found that 10 feet is not achievable due to infrastructure, the *TPZ* may be reduced upon approval by the *City arborist*. See also, *tree protection area*.

Tree Report – A written document (prepared by a *project arborist* who is retained by the property owner or agent) that contains information from the tree resource evaluation that is submitted to the City for review. The document provides a detailed overview of the tree resource evaluation, and recommendations for trees that should be preserved and protected during construction or removed prior to development.

Tree Risk Assessment – A systematic process used to identify, analyze, and evaluate tree risk. Tree risk assessments shall be completed by ISA-certified arborists who hold a current qualification for tree risk assessments. See also *Level 2 Risk Inspection.*

Trenching – The linear, open excavation, often used to install utilities or structural footings that can cause tree root damage. Activity may include, but is not limited to, the installation of irrigation foundations, utility lines, services, pipe(s), drainage, or other improvements below

grade. *Trenching* within the TPZ can be injurious to roots and tree health, and is prohibited unless approved. If *trenching* is approved within the TPZ, it must be in accordance with instructions outlined in this Manual.

Urban Forest – All trees and shrubs that were planted and maintained, or otherwise growing in a city, town, or other built environment. Trees in the urban forest may exist in City parks, public rights-of-way, tree wells, medians, slopes, City-maintained riparian areas, residential and commercial properties, or other locations.

Verification of Tree Protection – The *project arborist* shall verify, in writing, that all pre-construction conditions have been met (e.g., tree fencing, erosion control, pruning). An initial inspection of protective fencing and written verification must be submitted to the *City arborist* prior to demolition, grading, and/or building permit issuance.

Vertical Mulching – An aeration or fertilization technique that involves drilling vertical holes in the soil and filling them with materials to improve aeration.

SECTION 2.00 – PROTECTION OF TREES DURING CONSTRUCTION

Introduction

Land development and infrastructure construction are complex processes that are even more challenging when trees are involved. The objective of this section is to reduce the negative effects of construction on trees to a less-than-significant level.

One long-term goal of the City of Encinitas is a sustainably managed urban forest. The maintenance of the social, recreational, ecological, economic, and *green infrastructure* functions of trees and their benefits over time contribute to this goal. Stewardship of naturally occurring and planted trees is a central element in urban forest sustainability. Tree health, safety, and preservation during development and other construction activities; species and site selection; quality of planting stock; standards of performance; and *best management practices* are integral to a sustainable urban forest.

Tree protection should begin before construction starts. If preservation measures are delayed or ignored until construction begins, the trees may be adversely affected. In many cases, construction impacts to trees cannot be eliminated. Therefore, the City's goal is to allow construction projects to proceed while minimizing injury to trees. Successful tree preservation occurs when City staff, designers, construction personnel, and project managers are committed to tree preservation (see Figure 2.1). All members of the project team must be familiar with the rudimentary aspects of tree growth and development in order to understand the relationship between tree survival and construction practices. Coordination with a *certified arborist* will facilitate everyone's understanding of the needs regarding trees.

For example, aboveground parts of trees are not a "mirror" of what lies below ground. Typically, four to 11 large roots radiate from the base of a tree's trunk. These *buttress roots* extend from the *root crown* and sometimes are visible when the trunk flares away from the root crown or collar. These large roots decrease in taper rapidly and branch repeatedly.

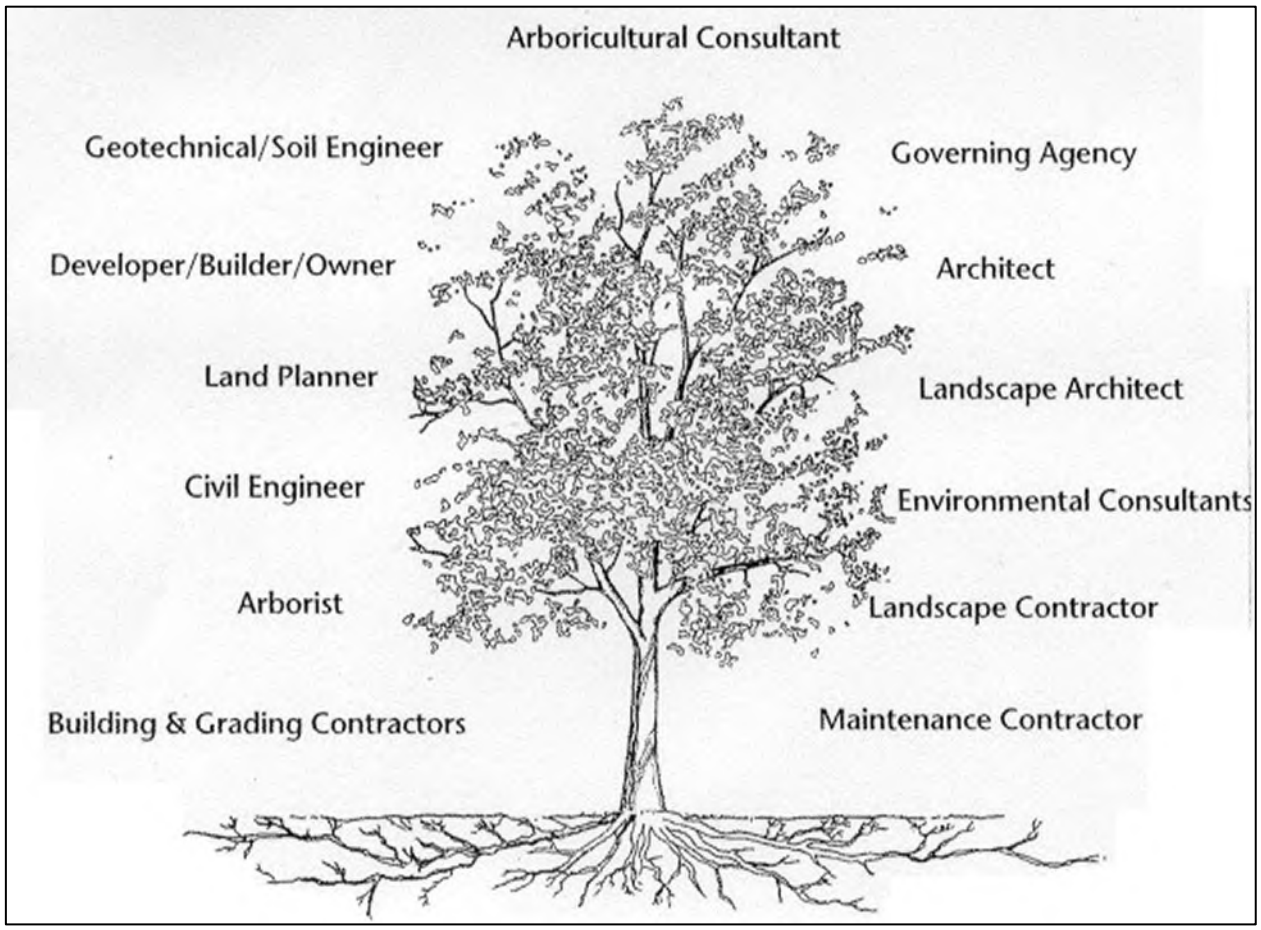
For the most part, tree roots grow horizontally through the soil and can extend far beyond the tree's *dripline area*. Roots are primarily responsible for water and mineral absorption and structural stability. There can be many roots in a cubic inch of soil; thus, any *removal* of soil or root severance can negatively affect the health, safety, and structural stability of a tree.

Not all trees can or should be preserved. Trees that are structurally unstable, dead, in poor health, or unable to survive effects of construction become a liability and may have to be removed. A realistic tree preservation program acknowledges that conflicts between trees and development or other construction projects will exist at times and may sometimes result in the *removal* of some trees or tree roots, and recognizes the detrimental effect to the community if trees die after construction is complete.

The challenge is to determine what impacts will be too severe for the tree to survive, not only in the short term, but also in the long term. Determining the optimum *tree protection zone* (TPZ) provides a guideline.

Tree preservation during development requires the commitment of everyone involved in the project's planning, design, construction, and management, as shown in Figure 2.1.

Figure 2.1 Professionals Involved with Urban Tree Preservation



Source: Matheny, N.P., and J.R. Clark. 1998. *Trees and Development.*

The following are the three guiding principles for tree preservation:

1. Tree preservation is the responsibility of City staff and *developers* to ensure compliance with the requirements of this Manual. Each development participant must understand that their activities and decisions influence the success of tree preservation.

2. Prevention of damage to trees is the best way to preserve the urban forest. This process starts during planning and design of a project.

3. Trees in excellent health or with good structural stability are easier to preserve, but not all trees in the urban forest possess these features.

Following the above principles will increase the chance for success and reduce the possibility that trees will be injured to the point that they will decline and/or die as a result of construction.

2.10 Planning for All Projects

The City considers trees to be important assets and requires plotting tree locations and the *TPZ* on plans for all projects, whether they are private or public development. All private development

projects must have a *project arborist* who will work with the project manager and *City arborist* on developing *TPZs* and tree protection strategies. On all City capital improvement projects, the *City arborist* shall work with the project manager on developing *TPZs* and tree protection strategies for each project.

2.10.1 Planning and Designing for Private Development Projects

Projects are designed by in-house design staff and by outside design firms. Either design team should be given a set of guidelines defining the City's Tree Preservation Policy (Appendix A), Tree Protection Guidelines (Appendix B), and guidelines for How To Prevent Damage To Trees During Construction (Appendix C) to ensure that trees are accounted for from project initiation forward.

The following should occur before and during planning:

A. Survey Before Planning

The survey must accurately plot the trunk locations, including trees located on neighboring property that overhang or are within 25 feet of the project site, as specified in Section 2.20.1, Site Plan. The survey must include construction staging areas and delivery routes. Prior to planning, the *City arborist* shall visit the site and confirm the absence or presence of *City trees* on site. Should no *City trees* be found on site, the *City arborist* shall prepare a written memo that states no *City trees* will be impacted.

B. Plan and Design with Knowledge of Trees

The health and structural confirmation of the surveyed trees must be evaluated by the *project arborist* to anticipate how well the trees will respond to development. The evaluation must describe the character of trees and their suitability for preservation at a level of detail appropriate for the project and phase of planning. The *project arborist* must make this evaluation. The evaluation shall include the following characteristics for each tree:

- Common tree name
- Scientific tree name
- Number of trunks
- Diameter at standard height (inches)
- Tree height (feet)
- Crown width (feet)
- Tree health (excellent, good, fair, poor, critical, dead)
- Tree structure (excellent, good, fair, poor, critical, dead)
- Distance of the trunk from the project footprint

- Distance of the edge of the tree's crown (project side) to the project footprint
- Anticipated tree impacts (direct and indirect impacts)

C. Plan with a Vision

Disruption of any tree by construction activities may negatively affect its physiological processes and cause depletion of energy reserves and decline in vigor, often resulting in *tree death*. Typically, this does not manifest until many years after the tree is disrupted. Preservation of mature trees during construction has significant benefits to the success of a project. When new trees are planted, consideration should be given to species diversity and appropriateness of location. Refer to the City's approved street tree list for examples (Appendix D). To prevent destructive clearance pruning in future years, and to minimize infrastructure conflicts, all planning should consider the potential canopy and root spread of trees at maturity. All proposed tree plantings shall be approved by the *City arborist*.

D. Plan for All Aspects and Entire Duration of Project

Construction projects are multilevel and often require participation of various construction trades, landscaped architects, engineers, and subcontractors, among others. It is important to plan for tree protection with an understanding of construction site dynamics. Trees must be protected in the staging area, construction employee parking area, adjacent properties, and on the actual construction site.

2.10.2 Managing Public Construction Projects

The City's in-house construction team shall be given a set of guidelines that define the City's Tree Preservation Policy (Appendix A), Tree Protection Guidelines (Appendix B), and Guidelines for How To Prevent Damage To Trees During Construction (Appendix C) to ensure that trees are accounted for from project initiation forward.

A. Survey before Planning

For all in-house projects, contact the *City arborist* for an accurate evaluation of trees on the job site. Prior to planning, the *City arborist* shall visit the site and confirm the absence or presence of *City trees* on site. Should no *City trees* be found on site, the *City arborist* shall prepare a written memo that states no *City trees* will be impacted. This survey shall occur during the project planning stage.

B. Plan and Design with Knowledge of Trees

To better understand the condition of the affected trees, the *City arborist* will make available the results of the tree evaluation. This evaluation will provide the City's project manager with knowledge of the resources and the anticipated construction tolerance of the affected trees.

C. Plan with a Vision

Obtain information about trees and minimize negative impacts on the urban forest. Conduct all projects with tree preservation in mind. Urban trees should be part of project design and

planning, and should work congruently with surrounding infrastructure to create a long-term sustainable plan.

D. Plan for all Aspects and for the Entire Duration of the Project

Trees must be protected in the staging area and construction employee parking area, and during demolition and grading. Arrange with the *City arborist* and maintenance supervisor from the City's Department of Parks and Recreation for trees to be watered and for the soil to be protected from *compaction*.

2.20 Pre-Construction Requirements - Tree Protection and Preservation Plan

As part of the City's internal designs and development plan review process, and prior to the commencement of a development project, the *City arborist*, project manager (for either private or public development), and appropriate City staff must be assured that if any activity of the project is within the *dripline* of *City trees* or *heritage trees,* a site-specific tree protection plan will be prepared. Sections 2.20.1 through 2.20.7 of this Manual outline steps that shall be incorporated as part of the *Tree Protection and Preservation Plan.*

2.20.1 Site Plan

For all projects, *site plans* must indicate accurately plotted trunk locations and the *TPZ* of all trees or group of trees to be preserved within the development area or neighboring property that overhang or are within 25 feet of the project site. Additionally, for all *protected trees,* the plans shall accurately show the trunk diameter and dripline, and clearly identify the *TPZ.* The type of protective fencing shall be specified and indicated with a bold dashed line.

*Site plan*s shall also include the following minimum information:

A. Surveyed tree locations, species, and size (height, width, DSH); *dripline area* (including trees located on neighboring property that overhang or are within 25 feet of the project site); and *City trees* adjacent to the project site.

B. Paving, concrete, *trenching*, or grade change (including the limits of over-excavation) located within the *TPZ.*

C. Existing and proposed utility easements.

D. Surface and subsurface drainage and aeration systems to be used.

E. Walls, tree wells, retaining walls, and grade change barriers, both temporary and permanent.

F. Landscaping, irrigation, and lighting within the dripline of trees, including all lines, valves, and other components.

2.20.2 Protective Tree Fencing for All Categories of Protected Trees

Fenced enclosures shall be erected around trees to be protected (Figure 2.2). This will achieve three primary goals: (1) keep crowns and branching structure clear from contact by equipment, materials,

and activities; (2) preserve roots and soil condition in an intact and non-compacted state; and (3) identify the *TPZ* where no soil disturbance is permitted, and activities are restricted unless otherwise approved by the *City arborist* and Department Director.

All trees to be preserved shall be protected with 4-foot to 6-foot-high chain-link or high-density polyethylene fencing with 3.5-inch by 1.5-inch openings. Fences shall be mounted on 2-inch galvanized iron or steel posts, driven into the ground to a depth of at least 2 feet and at no more than 8-foot centers. A 2-foot-wide access gate for tree maintenance shall be installed. Tree fences shall be erected before demolition, grading, or construction begins and remain until final inspection of a project. "Warning" signs shall be prominently displayed on each protective fence. The sign shall be on heavy-duty cardboard or similar material and shall be a minimum of 8.5 inches by 11 inches on a white background with black 2-inch-high or larger block letters. The signs shall clearly state the following:

ENTRY PROHIBITED

TREE PROTECTION ZONE
This Fence Shall Not Be Removed

All work within the *TPZ* requires approval by the *City arborist*. If an unresolved disagreement on work to occur within the *TPZ* for a particular tree occurs, the dispute shall be brought to the Department Director who shall render a final decision on the size of the *TPZ*.

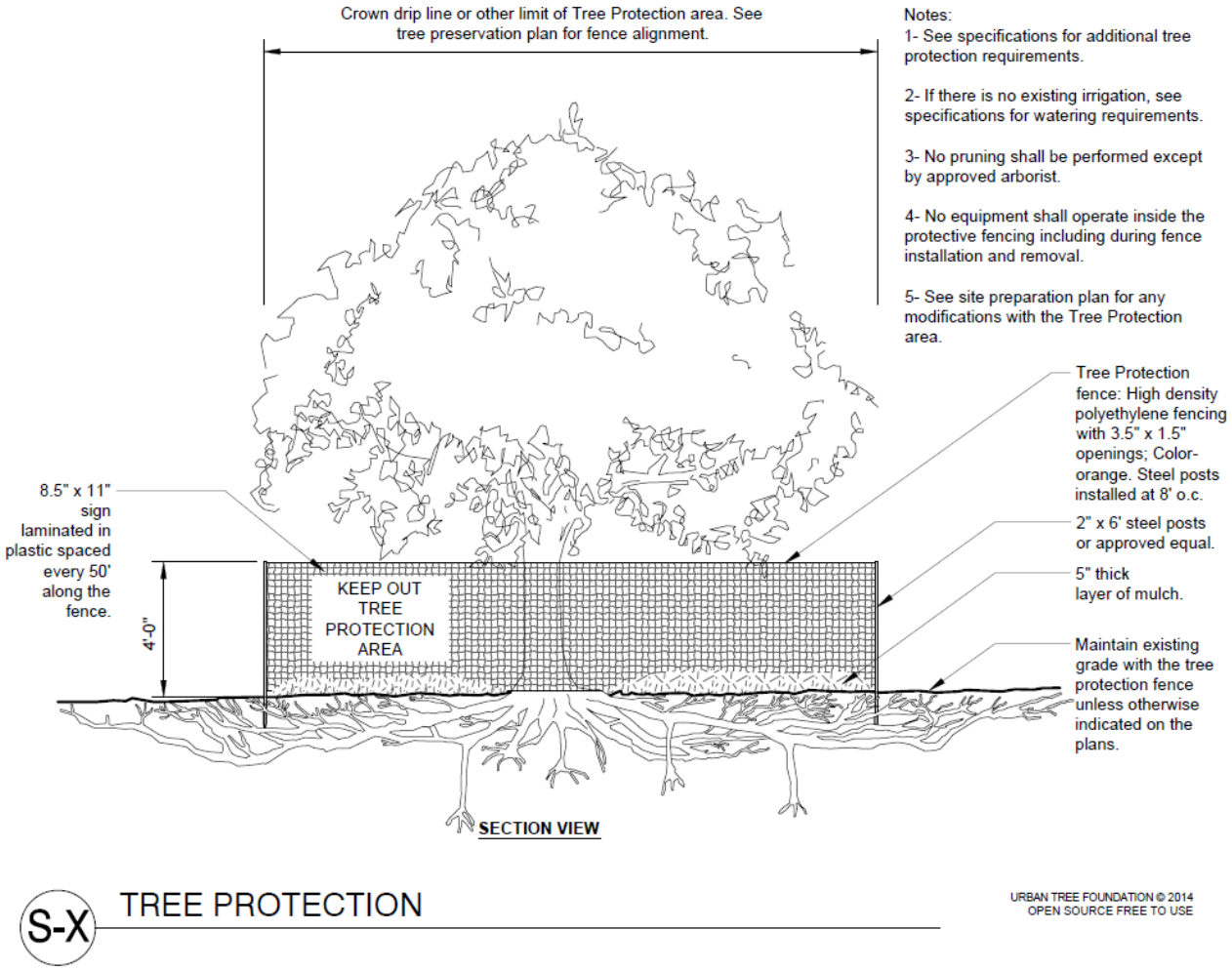
Type I Tree Protection Fence is for trees to be preserved throughout the duration of the project. The fence shall enclose the entire area under the canopy dripline or *TPZ* if specified by the *City arborist*. If fencing must be located on paving or concrete that will not be demolished, an appropriate grade level concrete base may support the posts.

Type II Tree Protection Fence is for trees situated in small planting areas where only the planting area is enclosed with the required protective fencing. Walkways and traffic areas shall be left open to the public.

Type III Tree Protection Fence is for trees in small tree wells, building site planters, or sidewalk planters. Trees shall be wrapped with 2 inches of orange plastic fencing from the ground to the first branch and overlaid with 2-inch-thick wooden slats that are bound securely (slats shall not be allowed to dig into the bark). During installation of the plastic fencing, caution shall be used to avoid damaging branches. Major scaffold limbs may also require plastic fencing, as directed by the *City arborist*.

No storage of material, topsoil, vehicles, or equipment shall be permitted within the fenced area throughout the entire duration of the construction project.

Figure 2.2 Tree Protection Fencing Guidelines



2.20.3 Site Plan Review Process

Prior to project approval and the issuance of associated permits, site plans shall be reviewed and approved by the *City arborist*, project manager, and appropriate City staff. The project manager and/or department manager shall work with the appropriate department (i.e., Department of Development Services; Parks, Recreation, and Cultural Arts; and/or Public Works) to ensure project requirements are met. All documents shall be circulated to appropriate City of Encinitas staff and provided to the *City arborist*.

2.20.4 Pre-Construction Meeting

A pre-construction meeting with the project representative shall be scheduled at least 7 days before beginning work to review any questions the contractor may have regarding the work, the project work schedule, and administrative procedures during construction. The following staff and contractors shall attend the pre-construction meeting:

- City arborist
- City project manager
- City's construction inspector
- General contractor
- Consulting arborist
- Subcontractor assigned to install tree(s) and plant protection measures
- Earthwork contractor
- Site utility contractor that may be required to dig or trench into the soil
- Landscape contractor or subcontractor
- Irrigation subcontractor

The following shall occur prior to construction:

- Prior to the pre-construction meeting, the limits of the *TPZ* shall be established and then the alignments of required tree protection fencing and root pruning. Approval of the limits of the protection area and the alignment of all fencing and anticipated root pruning shall be obtained. During this period, written approval of all work to be completed by the City on *City trees* shall be provided.

- All trees to be removed shall be flagged by wrapping orange plastic ribbon around the trunk of each tree. Prior to the start of tree removal, *City arborist* and appropriate City Department Director's approval of all trees to be removed shall be obtained. After approval, all trees and shrubs to be removed shall be marked with orange paint in a band completely around the trunk of the tree 4.5 feet above the ground.

- All trees to remain shall be flagged by wrapping white plastic ribbon around the trunk of each tree. Prior to the start of tree removal, *City arborist* approval of all trees to remain shall be obtained.

- Prior to any construction activity at the site, including utility work, grading, storage of materials, or installation of temporary construction facilities, all tree protection fencing, silt fence, tree protection signs, and mulch and/or wood chips shall be installed as shown on the drawings.

2.20.5 Tree Protection Zone

During the design phase of the project, the *project arborist,* project manager, and *City arborist* shall work together on developing the *TPZ* for each tree impacted by the project. During the design and grading review phase, all tree-work-related applications and documentation shall be completed as part of the approval process. If an unresolved disagreement arises between the *project arborist* and the project manager on the size of a *TPZ* for a particular tree, the dispute shall be brought to the *City arborist* or Department Directors, who shall render a final decision on the size of the *TPZ*.

Each tree to be retained shall have a designated *TPZ* identifying the area sufficiently large enough to protect it and its roots. The *TPZ* shall be shown on all *site plans*, including demolition, grading, irrigation, electrical, and landscaping. Improvements or activities such as paving, utilities, and irrigation *trenching,* including other ancillary activities, shall occur outside the *TPZ,* unless otherwise specified. The protection fence shall serve as the *TPZ.* The *City arborist* shall approve the final *TPZ*.

The construction contractor shall not engage in any construction activities within the *TPZ* without the approval of the *City arborist*, including operating, moving, or storing equipment; storing supplies or materials; or locating temporary facilities, including trailers or portable toilets; and shall not permit employees to traverse the area to access adjacent areas of the project or use the area for lunch or any other work breaks. Permitted activities, if any, within the *TPZ* may be indicated on the drawings, along with any required remedial activities as listed below.

- Activities prohibited within the *TPZ* include the following:
    - Parking vehicles or equipment; storage of building materials, refuse, or excavated soils; and dumping poisonous material on or around trees and roots. Poisonous materials include, but are not limited to, paint, petroleum products, concrete, stucco mix, dirty water, or any material that may be harmful to tree health.
    - The use of tree trunks as a backstop, winch support, anchorage, temporary power pole, signpost, or other similar function.
    - Cutting of tree roots by utility *trenching*, foundation digging, placement of curbs and trenches, or other miscellaneous excavations without prior approval of the *City arborist.*
    - Soil disturbance or grade change.
    - Drainage changes.

- In the event that construction activity is unavoidable within the *TPZ*, the *City arborist* shall be notified and a detailed written plan of action shall be submitted for approval. The plan shall include a statement detailing the reason for the activity, including why other areas are not suitable, a description of the proposed activity, the time period for the activity, and a list of remedial actions that will reduce the impact on the *TPZ* from the activity. In general, demolition and excavation within the *dripline area* of trees and shrubs shall proceed with extreme care either by the use of hand tools, directional boring, and/or air knife excavation where indicated, or with other low-impact equipment that will not cause damage to the tree, roots, or soil. Activities permitted or required within the *TPZ* (upon approval by the *City arborist*) include the following:

    - Mulch: During construction, wood chips may be spread within the *TPZ* to a 4- to 6-inch depth, leaving the trunk clear of mulch. This will aid in inadvertent soil *compaction* and moisture loss. Mulch shall be 2-inch, unpainted, untreated shredded wood, or approved material.

    - Root Pruning: When encountered, exposed roots that are 1 inch and larger in diameter shall be worked around in a manner that does not break the outer layer of the root surface (bark). These roots shall be covered in wood chips and shall be maintained above *permanent wilt point* at all times. Roots 1 inch and larger in diameter shall not be cut without the approval of the *City arborist*. Excavation shall be tunneled under these roots without cutting them. In the areas where roots are encountered, work shall be performed and scheduled to close excavations as quickly as possible over exposed roots.

    - Pruning: Tree branches that interfere with construction may be tied back or pruned to clear only to the point necessary to complete the work. Other branches shall only be removed when specifically indicated by the *City arborist*. Tying back or trimming of all branches and the cutting of roots shall be in accordance with accepted arboricultural practices (Appendix E, American National Standard Institute's A300 Pruning Standards) and be performed under supervision of the *City arborist*.
    - Root Buffer: When areas under the tree canopy cannot be fenced, a temporary buffer is required and shall cover the root zone and remain in place at the specified thickness until the final grading stage. The protective buffer shall consist of material approved in advance by the *City arborist.*

    - Irrigation, aeration, fertilization, or other beneficial practices that have been specifically approved by the *City arborist* for use within the TPZ. The contractor shall be fully responsible for ensuring that adequate water is provided to all plants to be preserved during the entire construction period. Adequate water is defined to be maintaining soil moisture above the *permanent wilt point*.

- Erosion Control: If a tree is adjacent to or in the immediate proximity to a grade slope of 8% or more, approved erosion control or silt barriers shall be installed outside the *TPZ* to prevent siltation and/or erosion within the zone.

2.20.6 Verification of Tree Protection

The *project arborist* shall verify in writing that all pre-construction tree preservation conditions have been met, as follows:

- Tree fencing is installed.
- Erosion control is secured.
- Tree pruning is completed.
- Soil *compaction* preventative measures are installed.
- Tree maintenance schedule is established, and the responsible party is designated.
- *TPZ* is defined.

The project manager, *City arborist*, City construction inspector, and the contractor must review and sign this verification.

2.20.7 Tree Pruning and Removal

Prior to construction, various trees may require pruning to avoid structures or proposed construction activity. ***Construction or contractor personnel shall not attempt pruning.*** Only personnel approved by the *City arborist* can perform pruning operations. All pruning, branch tieback, tree removal, root pruning, fertilizing, and irrigating shall be performed by or under the direct supervision of an ISA- certified arborist approved by the *City arborist*. The qualifications of the ISA-certified arborist shall be submitted prior to project initiation and shall be approved by the *City arborist* and/or Department Directors.

Removal of trees adjacent to trees that are to remain requires a great deal of care. Only personnel approved by the *City arborist* shall engage in tree *removal*. *Removal* of trees that extend into branches or roots of protected trees shall not be attempted by the demolition or construction crew, or by grading or other heavy equipment. Before removing tree stumps, the *City arborist* shall determine if roots are entangled with trees that are to remain. If so, these stumps shall have their roots severed before extracting them.

2.30 Activities During Construction and Demolition Near Trees

Regular monitoring and verification are needed to ensure that the work of the contractor is consistent with *site plans.* Soil disturbance or other damaging activities, including grade changes, within the *TPZ* is prohibited unless approved by the *City arborist*, and mitigation for specific injuries is implemented. All work conducted in the *TPZ* must only occur when the *City arborist* or designated City monitor is present. No encroachment within 10 feet of a trunk shall be permitted under any circumstances unless approved by the *City arborist*.

2.30.1 Soil Compaction

Soil *compaction* is the largest single factor responsible for the decline of trees on construction sites. The degree of *compaction* depends on several factors: amount and type of pressure applied, presence and depth of surface organic litter, soil texture and structure, and soil moisture level.

The greatest increase in soil density occurs during the first few equipment passes over the soil, which underscores the importance of implementing protective measures before the project begins and equipment arrives at the site. To dispense traffic weight, mulch and temporarily *root buffer*s can be used.

The following techniques can lessen *compaction*: *vertical mulching*, *soil fracturing*, core venting, and radial *trenching*. Soil shall not be compacted to a higher density than needed: to 95% Proctor density (moisture – density) in improved areas for asphalt or concrete pavements, and in unimproved areas to the density required by the inspector.

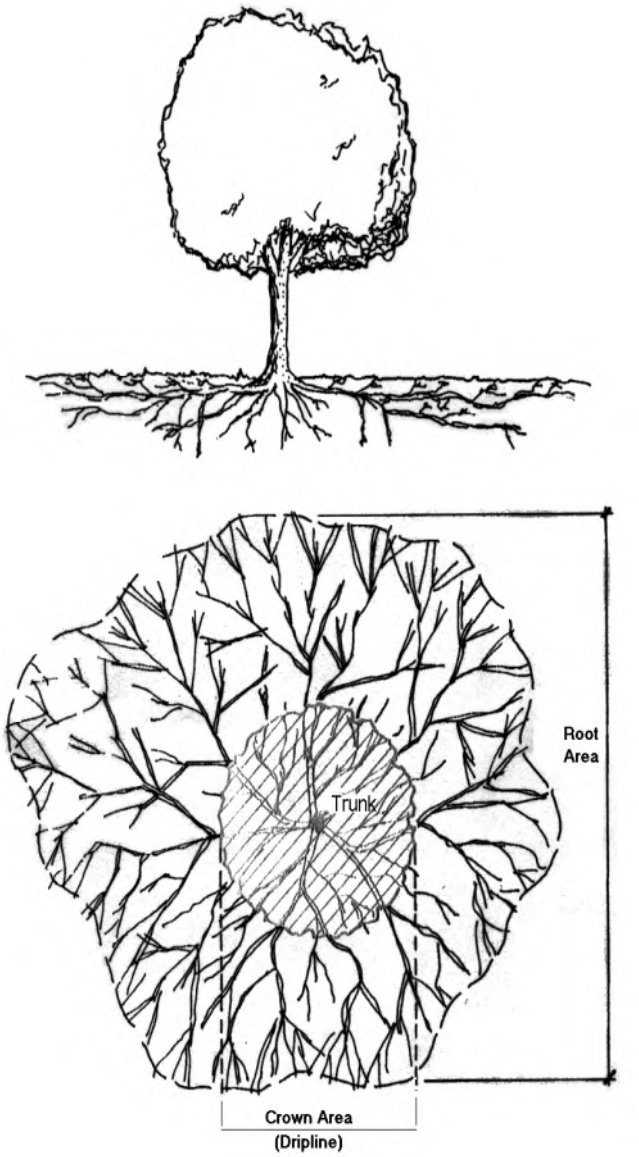
2.30.2 Grading Limitations within the TPZ

Lowering or raising the grade around trees can have an immediate and long-term effect on tree health. Typically, most roots are within the top 2 to 3 feet of soil, and most of the fine roots active in water and nutrient absorption are in the top 12 inches. The following guidelines for grading shall be followed:

- Grade changes within the *TPZ* are not permitted.
- Grade changes outside the *TPZ* shall not adversely alter drainage.
- Grade changes under specifically approved circumstances shall not allow more than 6 inches of fill soil or allow more than 4 inches of existing soil to be removed from natural grade, unless mitigated.
- Grade fills over 6 inches or impervious overlay shall incorporate an approved permanent aeration system, permeable material, or other approved mitigation.
- Grade cuts exceeding 4 inches shall incorporate retaining walls or an appropriate transition equivalent.

Figures 2.3 and 2.4 illustrate the pattern of tree root development and areas where encroachments may have an adverse effect on tree health.

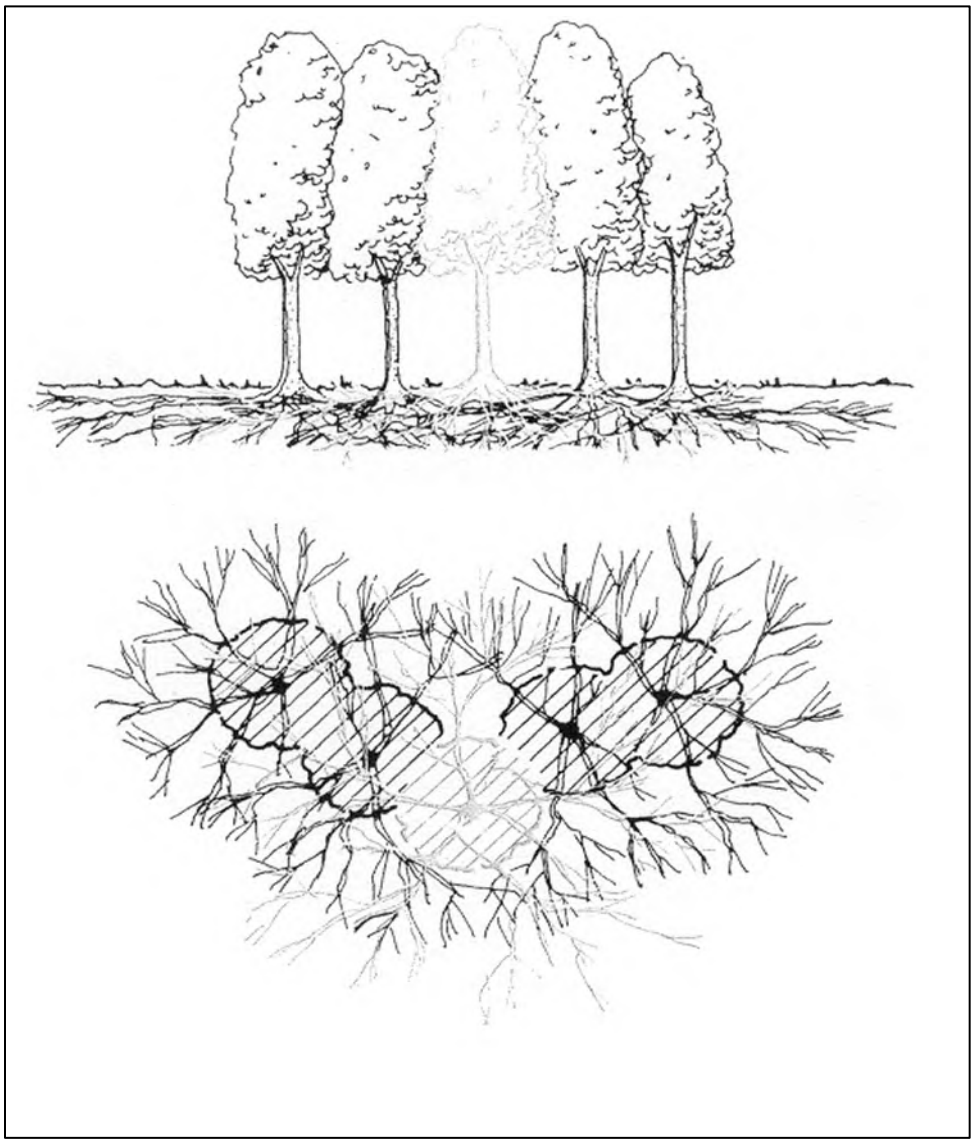
Figure 2.3 Tree Root System



Source: Matheny, N.P., and J.R. Clark. 1998. *Trees and Development.*

The tree root system of a tree can be described as shallow and widespread, extending far beyond the edge of the canopy.

Figure 2.4 Tree Root Systems Overlap



In many parks where trees grow closely together, root systems of individual trees overlap and intertwine, forming a dense mat of roots.

2.30.3 Trenching, Excavation, and Equipment Use

Trenching, excavating, or boring within the *TPZ* shall be limited to activities approved by the *City arborist* or Department Directors. Alternatives for *trenching* within the root zone shall be explored. Exposing roots during hot, dry weather shall be avoided. Trenches shall be backfilled as soon as possible with soil and the area soaked with water the same day. Small roots can die in 10 to 15 minutes, and large roots may not survive after 1 hour of exposure. If the trench must be left open, all roots must be kept moist by wrapping them in peat moss and burlap.

If *trenching* is unavoidable, the distances shown in Table 1 shall be maintained unless prior approval has been determined by the *City arborist*.

Table 1. Trenching Distances from Trees

Trunk Diameter at Standard Height (measured at 4.5 feet above natural grade)	Distance from Both Sides of the Trunk
Up to 6 inches	5 feet
6–9 inches	5 feet
10–14 inches	10 feet
15–19 inches	12 feet
Greater than 19 inches	15 feet

If *trenching* is unavoidable, the following shall occur:

Root Severance. No roots greater than 1 inch in diameter shall be cut without approval of either the *City arborist* or Department Directors. No roots shall be severed without the oversight of the City arborist or their designated monitor. Tunneling under roots is the approved alternative. Prior to excavation for foundation/footing/walls, or grading or *trenching* within the *TPZ,* roots shall be severed cleanly 1 foot outside the *TPZ* to the depth of the planned excavation. When roots must be cut, they shall be cut cleanly with a sharp saw to sound wood and flush with the trench side. When encountered, exposed roots 2 inches and larger in diameter shall be worked around in a manner that does not break the outer layer of the root surface (bark). These roots shall be covered in wood chips and shall always be maintained above permanent wilt point. Roots 1 inch and larger in diameter shall not be cut without the approval of the *City arborist*. Excavation shall be tunneled under these roots without cutting them. In the areas where roots are encountered, work shall be performed and scheduled to close excavations as quickly as possible over exposed roots. All pruning shall be performed by or under the direct supervision of an ISA-certified arborist as approved by the *City arborist*.

Excavation. Any approved excavation, demolition, or extraction of material shall be performed with equipment that is placed outside the *TPZ*. Hand digging, hydraulic excavation, or pneumatic excavation are permitted methods for excavation within the *TPZ.*

Heavy Equipment. Use of backhoes, ditch-witches, steel-tread tractors, or other heavy vehicles within the *TPZ* is prohibited unless approved by the *City arborist* or Department Directors. If allowed, a protective *root buffer* is required.

2.30.4 Tunneling and Directional Drilling

Approved *trenching* or pipe installation within the *TPZ* shall be either cut by hand or air spade, or by mechanically boring a tunnel under the roots with a horizontal directional drill using hydraulic or pneumatic air excavation technology. In all cases, the utility pipe shall be installed immediately, backfilled with soil, and soaked with water within the same day. Tunneling under the root system can greatly reduce both damage to the tree and the cost to repair landscape and other features destroyed in the *trenching* process. There are times, such as when working in rocky soils and slopes, when tunneling is not a reasonable alternative.

The recommendations for tunneling depths shown in Table 2 shall be observed.

Table 2. Tunneling Depths within the Tree Protection Zone

Trunk Diameter at Standard Height (measured at 4.5 feet above natural grade)	Minimum Tunnel Depth
Less than 12 inches	24 inches
12 inches or more	36 inches

2.30.5 Alternative Methods for Hardscape to Prevent Root Cutting

The following remedies shall be considered as alternatives to severing tree roots:

- Grinding a raised walkway or concrete pad.
- Ramping the walkway surface over the roots or lifted slab with pliable paving.
- Routing the walkway around tree roots.
- Using permeable paving materials (e.g., decomposed granite), interlocking pavers, or flagstone walkways on sand foundations.
- *Root bridging*

2.30.6 Using Alternative Base Course Materials

Engineered structural soil mix is an alternative material for hardscape areas near trees. More information can be found at www.amereq.com.

2.40 Tree Maintenance During Construction

Providing adequate maintenance can mitigate stressful changes that occur to a tree's environment during construction. To remain vigorous growth, the tree needs to maintain stored carbohydrates and preserve the effectiveness of its natural growth regulators. It is recommended that large projects provide the maintenance described in the following sections.

2.40.1 Irrigation

Providing supplemental irrigation for trees under water stress may be the single most important treatment to maintain trees during construction. Unless specified otherwise, the contractor shall be fully responsible for ensuring that adequate water is provided to all plants to be preserved during the entire construction period. Adequate water is defined as maintaining soil moisture above the *permanent wilt point*. Irrigation shall be designed to wet the soil within the *TPZ* to the depth of the root zone and to replace that water once it is depleted. Light, frequent irrigation shall be avoided. A 6-inch berm shall be created around trees at the edge of the *TPZ* and filled with no more than 6 inches of mulch, and the basin shall be filled with water. Irrigation shall wet the top 2 to 3 feet of soil to replicate similar volumes provided by normal seasonal distribution. The contractor shall periodically test the moisture content in the soil within the root zone to determine the water content.

2.40.2 Soil Compaction Mitigation

To prevent negligent encroachment into the *TPZ,* trees to be preserved during construction must have the specified type of protection fences in place at all times. *Removal* of fences, even temporarily, to allow deliveries or equipment access is not allowed unless approved by the *City arborist* and a *root buffer* is installed. The *root buffer* components—mulch, gravel, and plywood—must be maintained continually to ensure its effectiveness against soil *compaction*.

2.40.3 Dust Control

During periods of extended drought, wind, or grading, tree trunks, limbs, and foliage shall be sprayed with water to remove accumulated construction dust.

2.40.4 Weed Removal

All plants that are not shown on the planting plan or on the Tree Protection Plan to remain shall be considered as weeds. During the construction period, any weeds that seed in and around the fenced TPZ shall be controlled (hand pulled/dug) at least four times per year. At the end of the construction period, one final weeding of the TPZ shall occur.

2.40.5 Insect and Disease Control

All trees shall be monitored to remain free of disease and insect infestations during the entire construction period. All disease and insect control required to keep the plants in a healthy state using the principles of Integrated Pest Management shall be provided. All pesticides shall be applied by a certified pesticide applicator and approved by the *City arborist* in consultation with City staff. Prior to the use of chemicals, biological control methods shall be evaluated and implemented if found to be more appropriate. All methods shall follow the City's Integrated Pest Management Policy (Appendix F).

2.50 Damage to Trees

2.50.1 Reporting Injury to Trees

Any damage or *injury* to trees shall be reported as soon as possible to the project manager or construction inspector, and always to the *City arborist*. The *City arborist* needs to be aware of an injured tree to monitor its recovery or progress. Injuries to roots and branches must be repaired immediately using ISA best management practices. Plants that are damaged shall be considered as requiring replacement or appraisal in the event that the damage affects more than 25% of the crown, 25% of the trunk circumference or root protection area, or the tree is damaged in such a manner that the tree could develop into a potential hazard. The degree of damage shall be determined by the City arborist, and a written report documenting the observed damage shall be prepared by the arborist. Trees to be replaced shall be removed by the contractor at their own expense. The owner's representative may engage an independent arborist to assess any tree or plant that appears to have been damaged to determine their health and condition.

Any tree that is determined to be dead, damaged, or potentially hazardous by the owner's arborist and upon the request of the owner's representative shall be immediately removed by the contractor at no additional expense to the owner. Tree removal shall include cleanup of all wood parts and grinding of the stump to a depth sufficient to plant a replacement tree or plant, removal of all chips from the stump site, and filling the resulting hole with topsoil.

2.50.2 Contractor Subject to Penalties

If a tree designated to remain is removed or irreversibly damaged as determined by the *City arborist*, a contractor designated by the *City arborist* may be required to install a replacement tree matching in size, quality, and variety. If an acceptable replacement tree is not available, the contractor may be required to pay damages to the City for the value of the damaged tree in accordance with the guidelines set forth in the Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers, current edition, using the Trunk Formula Method. Penalties shall be consistent with Section 15.02.140, Violations and Penalties, of the City's Municipal Tree Ordinance.

2.50.3 Damage Enforcement

Applicants may be required to place a security deposit in the amount of the assessed value of the tree, as determined using the most recent version of the ISA's Guide for Plant Appraisal. The security deposit shall be returned to the applicant upon successful completion of the project and upon verification that the tree has not sustained significant damage during construction. If significant damage has been sustained, and the subject tree requires further monitoring post construction, the City Manager or designee may hold the security deposit for an additional period of time. If the subject tree has fallen into irreversible decline and must be removed based on its condition, the applicant may forfeit the deposit to the City to cover removal and replacement costs.

2.60 Documents to be Included in all Projects

2.60.1 Tree Protection Guidelines

Tree Protection Guidelines (Appendix B of this Manual) should be distributed to the planning and construction designers, project managers, City inspectors, bidding contractors, and contracted designing firms for all relevant projects.

2.60.2 Instructions on How to Prevent Damage to Trees During Construction

Instructions on How to Prevent Damage to Trees During Construction (Appendix C of this Manual) should be distributed to the construction and maintenance staff for implementation during all in-house projects.

2.70 Right-of-Entry Permits and Documents to be Included with Every Permit

To sustain a healthy urban forest, it is imperative that all relevant City staff members understand the need to protect trees. Every individual, organization, or agency issued a right-of-entry permit or agreement to enter City property should be in compliance with City policies concerning protecting trees, and be given documentation that will help to ensure tree protection during the permitted activity. The document titled Instructions on How to Prevent Damage to Trees During Construction (Appendix C of this Manual) shall be distributed to every permittee, and the permittee shall comply with these instructions.

SECTION 3.00 – REMOVAL OF TREES

Introduction

A City tree may not be removed without City review and approval, except in certain *emergencies* (i.e., imminent failure and storm damage). The purpose of City review is to verify that the *removal* is warranted and to prevent unnecessary tree *removal*. Removed trees shall be replaced at a minimum replacement ratio of 1:1 with a 15-gallon or larger tree. The replacement tree shall provide an equivalent canopy at maturity. If not appropriate or feasible, the City arborist shall be consulted to advise how to replace the canopy.

3.10 Tree Removal

3.10.1 Allowable Removal

A written permit is required to remove a *City tree*, except in *emergency* situations outlined in Section 6.00, Hazardous Trees. *Removal* of *trees* is allowed if at least one of the following occurs:

- A tree is determined to be dead, dying, diseased, hazardous (see Section 6.00, Hazardous Trees), a detriment to or crowding an adjacent tree, or a *public nuisance*.

- A tree trunk is touching, or the *basal flare* is under the *building footprint* of an existing building (e.g., uplifting foundation, contact or damage to eaves, gutters).

In the case of *City tree*s, the department responsible for managing the tree, either the Public Works Department or the Parks and Recreation Department, will issue a written permit approving the *removal* of the tree.

In the case of a *heritage tree* shown on previously approved site or landscape plans, the Planning Commission must approve the *removal* before the Director of Planning and Building will issue a written permit approving the *removal* of the tree (see Section 9.00, Heritage Trees), unless deemed an *emergency* (see Section 6.20, Emergency Removal Conditions).

3.10.2 Permit Application

Tree Removal Applications are available online at https://encinitasca.gov/I-Want-To/Applications-Information. All Tree Removal Applications must be submitted through the online Customer Self Service portal.

The following is a checklist of items necessary for City review of tree *removal*. Additional information may be required by the reviewing staff. Response will generally be mailed to the applicant within 10 days. The removal permit must be on site during the *removal*.

The Tree Removal Checklist is as follows:

- Completed City of Encinitas Tree Removal Application, available online at https://encinitasca.gov/I-Want-To/Applications-Information. All Tree Removal Applications must be submitted through the online Customer Self Service portal.

- Payment of review process fees as listed on the planning fee schedule (https://encinitasca.gov/Portals/0/City%20Documents/Documents/Development%20Services/Planning/Land%20Development/Planning%20Application%20Processing%20Fees.pdf).

- Arborist Report from a *certified arborist* on company letterhead to include the following information for each tree:

    - A written narrative describing the tree species (common and scientific names)

    - Location (in relation to street, structures, and property lines)

    - Size (DSH, height, and crown spread)

    - Condition (foliage, vigor, structural integrity)

    - Life expectancy and prognosis (is the tree *hazardous*, in severe decline, causing property damage?)

    - Tree Risk Assessment by an ISA-certified arborist with a current Tree Risk Assessment Qualification Credential

    - Reason for requested *removal*

    - Color photograph of the tree and any identified damage and/or structural deficiencies

3.10.3 Hazardous Trees

To remove a City tree that is not subject to a permit and has been verified as *hazardous*, as defined by these procedures, written approval from the *City arborist* is required and must be available on site when the tree is being removed, unless *emergency* conditions exist (see Section 6.20, Emergency Removal Conditions).

3.10.4 Notification Requirements

When the City has scheduled a tree for *removal*, the following shall apply:

- Except in cases of *emergency* as determined by the City manager or his or her designee, a public notification shall be required prior to the planned *removal* of any *City tree* or *heritage tree* with a DSH greater than 6 inches. Such notification shall, at a minimum, consist of placing two signs no less than 12 inches wide by 18 inches high and visible from at least two directions in the immediate vicinity of each *City tree* or *heritage tree* to be removed no fewer than 14 calendar days prior to the scheduled *removal*. The notification shall include the reason for the proposed *removal* and shall include a link to further information on the City website, including how to appeal the proposed action.

- In cases when a *certified arborist* has determined that a tree or trees are an imminent threat to public safety (*hazardous trees*), the City shall attempt to notify the public as appropriate.

SECTION 4.00 – TREE REPLACEMENT

4.10 When Tree Replacement is Required

Certain conditions determine whether a tree must be replaced, which include:

- City Trees
    - If the City authorizes *removal* of a *City tree* in connection with a development project, it shall specify the replacement requirements in the permit authorizing *removal*.
    - If a tree is determined to be dead, dying, diseased, hazardous (see Section 6.00, Hazardous Trees), a detriment to or crowding an adjacent tree or a *public nuisance.*
    - A tree trunk is touching or the *basal flare* is under the *building footprint* of an existing building (for example, uplifting foundation, contact or damage to eaves, gutters, etc.) a replacement may be required.
- Heritage Trees
    - If the City authorizes *removal* of a *heritage tree* because it is dead, dying, diseased, hazardous, or a nuisance, a tree replacement may be required. In all other cases, the tree must be replaced

4.20 Tree Canopy Replacement Standards

When tree replacement is required, the following standards apply:

- Species
    - The replacement trees shall be a species determined by the *City arborist* who shall follow the City's approved tree list (Appendix D). Factors to be considered include the long-term health of the tree in the location, its compatibility with the adjacent uses, and design considerations. Alternative species may be selected with approval by the *City arborist*. In no case shall a tree on a City-approved invasive tree list be planted in the City of Encinitas right-of-way.
- Location
    - The location of the replacement tree shall be approved by the *City arborist*. If it is not possible or desirable to replace the tree on site, the *City arborist* shall consider the distribution of trees so that diversity and age are considered. Trees shall not be placed where the future tree canopy will extend over existing underground utility lines. Section 5.00,Tree Planting, requirements will apply.
- Size and Number
    - Each tree removed requires, at a minimum, one 15-gallon tree as replacement or as directed by the *City arborist* until all vacant acceptable sites at the construction site are planted.

Note: When replacement trees are required within an area designated as a Very High Fire Hazard Severity Zone by fire department maps, the type, replacement ratio, and planting location of trees in these areas shall be determined by current fire and wildland codes.

4.30 Tree Value Replacement Standard

When the value of a tree needs to be determined for establishing the amount of security deposit required, or for any other purpose, the value shall be determined by using the most recent edition of the Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers.

4.40 Security Deposits

As a condition of a development's approval, the City may require that the developer post a security deposit between 25% and 100% of the value of the trees to be preserved, as determined by using the most recent edition of the Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers. The security may be a cash deposit, letter of credit, or surety bond, and shall be filed with the Finance Department. It shall be in a form satisfactory to the City Attorney. The security deposit shall be posted before issuance of any grading or building permits. The guarantee period shall be specified; in general, it shall be a minimum of 2 years after expected completion of construction. If trees fail to survive, the developer shall replace them; if the developer fails to do so, the City may use the security to provide off-site trees and/or landscaping.

SECTION 5.00 – TREE PLANTING

Introduction

Planting specifications apply for trees that are (1) planted as a replacement, (2) to be planted as a *City tree* within the right-of-way or on other public land, or (3) planted as part of a landscape plan subject to *Discretionary Development Approval.* Using the following specifications will result in consistent City-wide plantings and superior tree growth and vitality. To achieve this in development projects, the *landscape architect* shall incorporate these items into their specifications, and the *City arborist* shall review and approve all plantings. All trees planted in the City of Encinitas shall conform to approved tree palettes identified in all City and Community Master Plans, General Plans, and Specific Plans. In no case shall a tree on a City-approved invasive tree list be planted in the City of Encinitas right-of-way. The City arborist shall review placement of proposed trees as to not interfere with the operation of existing underground utilities.

5.10 Planting Stock and Materials

5.10.1 Quality

It is the contractor's responsibility to supply stock that meets American National Standard Institute (ANSI) Standards (Appendix E, American National Standard Institute's A300 Pruning Standards). The following standards shall apply:

- All trees installed within the City of Encinitas shall conform to Urban Forest Ecosystems Institute′s Guideline Specifications for Nursery Stock Quality at the time of delivery (Appendix G).

- All trees shall be sound, healthy, vigorous, and free of plant disease and insect pests and their eggs.

- The size, color, and appearance of leaves shall be typical for the time of year and stage of growth of the species or cultivar. Trees shall not show signs of prolonged moisture stress or overwatering as indicated by wilted, shriveled, or dead leaves.

- Branches: Shoot growth (length and diameter) throughout the crown shall be appropriate for the age and size of the species or cultivar. Trees shall not have dead, diseased, broken, distorted, or otherwise injured branches. Main branches shall be distributed along the central leader, not clustered together. Branches shall form a balanced crown appropriate for the cultivar/species. Branch diameter shall be no larger than two-thirds (one-half is preferred) the diameter of the central leader, measured 1 inch above the branch union. The attachment of the largest branches (scaffold branches) shall be free of *included bark*.

- Trunk: The tree trunk shall be relatively straight, vertical, and free of wounds that penetrate to the wood (properly made pruning cuts, closed or not, are acceptable and are not considered wounds), sunburned areas, conks (fungal fruiting bodies), wood cracks, sap leakage, signs of boring insects, galls, cankers, girdling ties, or lesions (mechanical injury).

- Container stock shall be grown for at least 8 months in the containers in which they were delivered and shall not be root bound or have girdling roots. The *root collar* and the inside portion of the *root ball* shall be free of defects, including circling, kinked, and stem girdling roots. Soil removal near the *root collar* may be necessary to inspect the root defects (see Figure 5.1).

- Roots on the periphery and bottom of the root ball shall be less than 0.25 inches in diameter (1.8 inches is preferred). The tree shall be well rooted in the container media. Root distribution shall be uniform throughout the container media. Structure and growth shall be appropriate for the species/cultivar. When the container is removed, the root ball shall remain intact. When the trunk is lifted, both the trunk and root system shall move as one (see Figure 5.2).

- Trees shall not have been topped.

- At time of observations and delivery, the root ball shall be moist throughout. Roots shall not show signs of excess soil moisture conditions as indicated by stunted, discolored, distorted, or dead roots.

- The *City arborist* or other appropriate ISA-certified staff shall inspect and verify, in writing, that all tree material to be installed on a development site meets the above standards and is acceptable. The *City arborist* shall inspect all other plantings of *City trees* (e.g., right-of-way, public land).

- The written verification shall be forwarded to the City Planning Department within 1 week of acceptance.

- Inspection shall occur at the time of stock delivery to the project site. Trees not meeting the City's guidelines shall be rejected and sent back to the nursery.

- Trees with broken tops, branches, or injured trunks shall also be rejected.

Figure 5.1 Examples of Desirable and Not Desirable Root and Stem Growth for Container Stock

Figure 5.2 Examples of Desirable and Not Desirable Root Distribution throughout Container Media, when Removed from Container

5.10.2 Miscellaneous Materials

The following materials shall be used unless otherwise specified:

- Tree stakes. Support stakes shall be treated, at least 2-inch-diameter Lodgepole Pine, free of knots and of diameters and lengths appropriate to the size of the plant as required to adequately support the plant. Tree stakes shall be a minimum height of 8 feet. Two stakes per tree or approved equivalent shall be included in the container. No cross brace shall be used.

- Tree Ties. Vinyl tube tree ties (recommended) or equivalent, twist brace, fabric- reinforced rubber (0.375-inch minimum), or equivalent approved by the *City arborist* shall be used and installed in a figure-eight configuration to support the tree to the stakes.

- Tree Bark Protector. Tree bark protectors shall be black extruded resin mesh, 4 inches in diameter and 5 feet long. The split side of the tree bark protector shall be fastened together in three places with black plastic tape.

- Mulch. Mulch shall be "walk on" grade, coarse, ground, and from tree and woody brush sources. The size range shall be a minimum (less than 25% or less of volume) of fine particles measuring 0.375 inches or less in size, and the maximum size of individual pieces (largest 20% or less of volume) shall be approximately 1 to 1.5 inches in diameter and maximum length of approximately 4 to 8 inches. Pieces larger than 8 inches long that are visible on the surface of the mulch after installation shall be removed. Mulch shall be spread to a 2-inch depth out to the edge of the *root ball*. The mulch shall be kept at least 2 inches away from the trunk and shall be applied to each tree.

- Root Control Barriers. Barriers shall be used along all public sidewalks and indicated on approved plans and drawings. A 24-inch Linear Barrier LB18-2 root control barrier shall be used. Unless specified otherwise, a 10-foot length shall be placed on center with the tree and on the sidewalk side only. Root barrier boxes are not approved. All efforts shall be taken to ensure the right tree is planted in the right location. Planting of the right tree in the right place will minimize infrastructure damage from tree roots. Care shall be taken to not encircle the tree in a root barrier.

- Tree Grates. Where the sidewalk width is less than 8 feet and new trees will be installed in a tree well, metal tree grates shall be used and approved by the City. Minimum size grates shall be 4 feet by 4 feet unless specified otherwise. All tree grates shall be mounted in frames; frames shall be inset into a concrete foundation within the sidewalk or surface material and shall be flush with the surrounding surface. Tree grates shall be removed and replaced with an appropriate alternative should tree grates become or will become detrimental to tree health and structure.

5.20 Planting Season

Planting shall only be performed when weather and soil conditions are suitable for planting the materials specified in accordance with locally accepted practice. Plants shall be installed during the planting time as described below unless otherwise approved in writing by the *City arborist*. In the event that the contractor requests planting outside the dates of the planting season, approval of the

request does not change the requirements of the warranty.

Planting times shall be as follows:

- Deciduous trees and shrubs, October through May.
- Evergreen trees and shrubs, October through May.
- No planting shall take place during extremely hot, dry, or windy weather.

5.30 Planting Site Preparation

5.30.1 Soil Preparation and Conditioning

Using hand tools, tracked mini-excavator, or auger, the planting hole shall be excavated into the planting soil to the depth of the root ball measured after any root ball modification to correct root problems and 3 times as wide. All debris, wood chips, pavement, concrete, and rocks over 2 inches in diameter shall be removed from the planting pit to a minimum of 24-inch depth, unless specified otherwise (see also Section 7.60, Soil Improvement). All underground digging requires a call to Underground Service Alert (DigAlert, https://www.digalert.org/, dial 811) prior to starting.

5.30.2 Planter Pit

- Trees in a confined planter pit or sidewalk area: The planting hole shall be excavated to the depth of the root ball measured after any root ball modification to correct root problems, and 3 times as wide, or the exposed area shall be excavated if the planter pit is less than 3 times as wide. The sides of the pit shall be scarified (see Section 5.40, Planting the Tree). Soil beneath the root ball shall be compacted to prevent settling.
- Trees in all other areas: The hole shall be excavated to a minimum width of 3 times the diameter of the container, and to the depth of the root ball measured after any root ball modification to correct root problems. The sides of the pit shall be scarified, and the soil beneath the root ball shall be compacted to prevent settling.
- The height of the container root ball shall be 1 to 2 inches higher than grade level after root ball modification (see Section 5.40, Planting the Tree), except when structural urban tree soil mix is used (see Section 2.30.6, Using Alternative Base Course Materials), in which case the tree may be planted at level grade.

5.30.3 Drainage

A percolation test is required to ensure there is adequate drainage for planting new trees. A minimum of one test per site shall be reviewed with the *City arborist* or *landscape architect* prior to plant installation.

The planning percolation test shall be as follows:

- Fill planting hole with water and ensure drainage that is greater than 2 inches per hour. If percolation is less, one or more of the mitigation measures outlined in Section 7.60, Soil

Improvement, must be implemented.

Mitigation for locations with poor drainage shall be as follows:

- Select a tree species that is suited for moist soil conditions. If a tree species is not suitable for the soil conditions and growing space limitations, then one of the following options may be applied:
    - Install French drain. The trench shall radiate away from the tree and be a minimum of 18 inches in depth filled with drain rock. The grade shall fall away from the tree trunk.
    - Install drain tiles or perforated pipe directing water away from the tree.
    - Install a drain chimney at the bottom of the planting pit a minimum of 4 inches in diameter and filled with medium sand or fine gravel to ensure percolation of all water from the filled planter pit. Auger bore drain holes to penetrate hard pan or clay a minimum of 12 inches into undisturbed pervious soil. Angle the boring as close to vertical as possible.

5.40 Planting the Tree

All tree planting shall be in accordance with the City's tree planting standards.

5.40.1 Depth

To check the proper depth of the planting hole, identify the tree's trunk flare in the container. If needed, remove soil from the container until the trunk flare is exposed. Remove the tree from the container and place the tree in the hole. Lay a lodge pole or shovel across the original grade—the top of the root ball should be 1 to 2 inches higher.

5.40.2 Placing the Tree

Locate the tree in the center of the hole. If the tree is located near a street right-of-way, rotate the tree to direct the main branches until they are positioned to grow horizontally between the street side and sidewalk.

5.40.3 Filling the Hole

Fill the hole halfway with original soil or amended soil when approved, and tamp out air pockets by stepping on the soil or by using a shovel handle. Fill the rest of the hole to grade and again tamp out air pockets. Add additional soil if needed to fill the hole to grade.

5.40.4 Staking

Evenly space the stakes directly apart from each other, 2 inches outside the edge of the root ball, and drive them 2 feet into undisturbed ground. During stake installation, avoid contact with the branches. If in an area with consistent prevailing winds, set the stakes in a plane at right angles to the wind. Remove the nursery stake from the newly planted tree. Loosely place two ties in a figure-eight around the trunk, as low as needed to hold the tree upright, and nail the ties to the stake. Trim the stakes so that the branches clear the top of the stake. Do not install a cross-brace.

5.40.5 Berm, Mulch, and Water

In non-turf areas, form a soil berm 3 to 4 inches high at the outermost edge of the root ball. Place a 2- to 3-inch layer of mulch or bark over the root ball and a 4-inch layer over the berm, keeping mulch 4 inches away from the trunk. Fill the berm to capacity with water (see Section 7.50, Watering Schedule) and repeat as necessary until it has received 15–20 gallons of water.

5.50 Planting in Difficult Soil Conditions

5.50.1 Turf Areas

In turf areas that receive regular watering, prevent irrigation from watering the area within 3 feet of the tree. The watering berm may be eliminated after a few weeks to ensure the tree is receiving adequate water. The turf shall be removed a minimum of 1-foot diameter around the new tree, with a 2- to 3-inch layer of mulch placed on the bare soil. The mulch shall be kept 4 inches from the trunk of the tree.

5.50.2 Alternate Specifications

Occasionally, tree planting must occur in poor or difficult soil where standard planting techniques will result in poor-to-average performance or mortality (such as unique or unusual regional geology, slope, soil volume, restrictive physical or chemical properties, poor drainage, or other situations). In this case, the responsible party must investigate alternative solutions to enable long-term tree growth. Alternative planting specifications or plans that vary from the native or typical soil conditions shall be submitted to the *City arborist* for approval prior to installation.

- Alternative or specified soils, such as engineered, amended, or structural urban tree soil mix, including written specifications and physical samples, shall be submitted for approval from the *City arborist* and/or *landscape architect*. (see Section 2.30.6, Using Alternative Base Course Materials).

SECTION 6.00 – HAZARDOUS TREES

Introduction

The health and safety of a tree are two distinct and separate functional characteristics.

A tree that appears to be vigorous and healthy may not necessarily be of sound wood or structure. To remove a dangerous tree, it shall first be evaluated, and the tree determined to be *hazardous*, as defined in this section and Section 1.00, Definitions. This must be verified in writing by the *City arborist* before the City tree can be *removed*.

6.10 Tree Hazards

A. Tree Hazard Responsibility

1. City-owned trees on City property that may be a public safety hazard should be reported to the City of Encinitas, Public Works Department at (760) 633-2850.

2. On private property, it is the responsibility of the property owner to mitigate or abate a known hazardous condition of a *heritage tree* that may be of questionable structure or deemed as hazardous. Most tree hazards can be prevented with regular inspection by a tree care professional and timely maintenance action by the property owner. The City does not require advance permission for removal of *heritage trees* in emergencies. However, it does require documentation of the situation after the fact. This is to avoid the unlawful removal of sound trees on the grounds that they are hazardous. If there is no immediate danger, and the structural deficiency can be corrected, it should be. If the City determines that there was no reasonable basis for believing there was an *emergency*, the property owner may face penalties for violating City law (Ordinance 2017-02).

B. Recognizing Tree Hazards

Determining whether a tree's defect constitutes a condition that presents an imminent hazard to an area requires a high degree of knowledge and experience. Tree risk assessment shall only be conducted by a *certified arborist* who has the *ISA Tree Risk Assessment Qualification*, is familiar with tree physiology, and can interpret the external signs of weaknesses. The *certified arborist* can perform internal checks if necessary and recommend mitigation.

6.20 Emergency Removal Conditions

A. Abatement

When a *City tree* or *heritage tree* has partially failed (or it is apparent it is about to fail), and persons or properties are threatened, the tree may be removed without City review or approval. The City does not require an arborist report before the *removal* in this instance. The City shall be notified prior to the initiation of work, and if imminent failure is not occurring, City staff oversight may be required.

B. Authorization

Such cases must be substantiated after the fact by the property owner and tree professional with photographs, abatement information, insurance claim, or other relevant information and completion of a Tree Removal Application. The information is to be submitted to the City's Planning Department within 5 days of *emergency removal*. All other authorizations are subject to the standard procedure outlined in Section 3.00, Removal of City Trees.

6.30 Criteria Used by the City to Determine if a Tree is Hazardous

6.30.1 Definition of Hazardous

The City of Encinitas defines "hazardous" as an imminent hazard or threat to the safety of persons or property. If a tree possesses a structural defect that may cause the tree or part of the tree to fall on someone or something of value (i.e., *target*), and the condition is determined to be imminent, the tree is considered hazardous.

6.30.2 Assessment Form

The City uses the national standard, an ISA Tree Risk Assessment Form, as a basis to determine the risk rating of a tree (see Section 6.40, Determining a Tree's Risk Rating). This form must be completed by a *certified arborist* who is *Tree Risk Assessment Qualified*. The *City arborist* retains discretionary right to approve, request in writing a second opinion of a rating, or recommend action that may reduce the condition to a less-than-significant level of risk.

6.30.3 Authorization

If the *hazardous* condition or *target* cannot be mitigated or reduced to a less-than-significant level (see Section 6.60, Hazard Reduction and Prevention), then removal of the tree shall be authorized by the City, with the exception of an *emergency*, as outlined in Section 6.20, Emergency Removal Conditions.

6.40 Determining a Tree's Risk Rating

For *removal*, if a tree is declared a hazard, it must be rated for the level of risk to persons or property by using the ISA's Tree Risk Assessment Matrix (Figure 6.1).

Figure 6.1 International Society of Arboriculture Tree Risk Matrix for Evaluating Risk

Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

6.50 Tree Risk Assessment

All tree risk assessments shall be performed by an ISA-certified arborist who is qualified in *tree risk assessment*. All tree risk assessments shall be a Level 2 Risk Inspection, performed in accordance with best management practices for tree risk assessments, and shall follow the ISA Basic Tree Risk Assessment Form (Appendix H). The tree risk assessment shall include an evaluation of site factors, tree health and species profile, load factors, crown and branches, trunk, and roots/and root collar (as visible). Depending on the findings of tree risk assessment, a Level 3 evaluation, using advanced testing, may be required (i.e., sonic tomography, Resistograph analysis, static pull testing).

6.60 Hazard Reduction and Prevention

City staff and the City arborist shall use the following list to reduce hazardous conditions:

A. Plant trees that are known to have strong branching structure and are appropriate for the spacing conditions of the planting site.

B. A healthy, vigorous tree that receives regular care is less likely to become hazardous than one that is ignored. Proper maintenance is the best method to lower the potential for a tree hazard problem.

C. It should first be decided if the risk to *targets* can be reduced by removing them from the hazard area. This could include moving picnic tables or other *targets* from beneath a tree, or installing fencing to reroute pedestrian or vehicular traffic around a tree. The risk of a hazard tree may be further reduced by removing dead and broken branches, pruning trees for sound structure, mechanically supporting weak branches from below, or by cabling and bracing.

D. If there are no other options to abate the hazard, then tree removal may be warranted.

SECTION 7.00 – TREE MAINTENANCE GUIDELINES

Introduction

This section establishes the minimum standard of care and maintenance of trees for which the City of Encinitas is responsible. These standards apply to all persons who own or are engaged in the business of repairing, maintaining, or preserving *City trees*. The following standards of care are set forth for pruning (including utility, fire and traffic encroachment); planting; watering; maintaining soil and nutrient requirements; and controlling insects, diseases, and fruit.

7.10 Care of Trees

All owners of *City tree*s and *heritage tree*s are to follow the required maintenance standards set forth in this Manual. If special pruning or situations require a variance from these standards, it is the responsibility of the *project arborist,* property owner, or other City staff to clarify why the changes are needed, and to review them with the *City arborist*.

In addition to following standards for care, the City shall maintain an electronic inventory of all *City trees* and *heritage trees*. The inventory shall document, at a minimum, the tree species (both botanical and common name), location, and maintenance records.

All tree care work shall follow the guidelines set forth in the Tree Care for Birds and Other Wildlife Best Management Practices in California (Appendix I). Best management practices have been established to protect birds and other wildlife during and beyond the nesting season, and to enhance habitat. All tree care work shall follow the guidelines established within these best management practices.

7.20 Prohibited Acts

Improper maintenance of *City trees* and *heritage trees* may constitute a prohibited act, as defined by the City of Encinitas Municipal Code Chapters 15.04 and 15.08, and may constitute a violation that may be subject to penalty. The following prohibited maintenance practices for *City tree*s and *heritage trees* apply:

A. Excessive Pruning. Removing more than 30% of a tree's crown shall be considered a prohibited act, unless approved by the City arborist.

B. Topping. The indiscriminate removal of a limb or branch that leaves only lateral branches or stumps on the tree. Topping can be fatal to trees, and may increase the risk of structural failure, resulting in a public safety concern, liability, and risk. *Topping* is not acceptable and shall be considered a prohibited act.

C. Other Prohibited Actions. Taking any action that may lead to the death of a tree or permanent damage to its health, including, but not limited to, *excessive pruning*, cutting, girdling, poisoning, overwatering, unauthorized relocation or transportation, and posting unpermitted signs or other objects on a tree. No *trenching*, excavating, altering the grade, or paving within the TPZ shall be permitted without prior approval of the *City arborist.*

7.30 Standards for Pruning Trees

The goals and outcomes for pruning a tree must be clear before beginning the work. Acceptable goals for pruning trees could include removing a hazard, improving structure, or managing a pest or disease. Improving health is not a goal of pruning. All pruning cuts are wounds on the tree that will take time and energy to conceal. As such, all work to be performed on trees shall be in accordance with the following standards or as approved by the City arborist:

A. Specifications. All specifications for working on *City trees* and *heritage tree*s shall be written and administered by a qualified arborist and shall be designed to promote the preservation of tree structure and safety.

B. Industry Standards. All work on trees shall be in accordance with the most current edition of the ANSI standards, including ANSI A300 and ANSI Z133.1, Safety Standards (Appendix E).

7.30.1 Pruning Mature Trees

There are seven types of pruning methods that may be appropriate for use on mature trees (see Appendix E) depending on the goals for tree pruning. Prior to pruning the tree, the tree worker is required to be familiar with these types of pruning methods, as stated in ANSI A300. Following are the types of pruning:

1. Crown cleaning

2. Crown thinning

3. Crown raising

4. Crown restoration

5. Crown reduction

6. Utility pruning

7. Root pruning

Climbing and pruning practices shall not injure the tree except for the pruning cuts.

7.30.2 Reduce, Reuse, Recycle Green Waste

Standard tree maintenance and care can produce tree trimmings, wood, and other green waste material. This material should be repurposed, reused, or recycled to provide further environmental benefit from trees. Repurposed urban wood keeps harmful greenhouse gases stored in trees and can be turned into lumber and furniture. Tree trimmings should be diverted from landfills and used as mulch.

7.30.3 Pruning Distressed Trees

Distressed trees require as much leaf area as possible to overcome stressed conditions, and pruning shall be minimized to the extent possible. The following measures shall be followed to promote the health and safety of these trees:

A. Injury or Soil Disturbance. If a tree has been damaged by *injury* or soil disturbance, pruning shall be delayed until deadwood becomes evident (typically 1–3 years after *injury*). Crown cleaning is then recommended.

B. Neglect. Trees that have received little or no care or maintenance may need moderate crown thinning, reduction of end weights, or entire crown restoration.

7.30.4 Structural Pruning of Immature and Young and Immature Trees

The mortality rate for trees growing in urban conditions depends on many factors, including the quality of the nursery stock, tree planting standards, and consistency of establishment care watering. Pruning immature and young trees to improve structure and correct defects in the crown will lower the potential for more costly pruning needs when the tree is large and mature, and will maintain the tree in a safer condition. Immature and young trees shall be pruned in the following ways to promote sounds structure:

A. Immature trees should be pruned during the second or third year after planting to improve their structure, such as removing codominant stems and training a main leader. Main branches of immature trees should be pruned to maintain an appropriate aspect ratio. Aspect ratio is the diameter of the trunk relative to the diameter of the branch. Any branch that has an aspect ratio greater than 0.5 should be reduced in length every 2–3 years until the branch-to-trunk aspect ratio is 0.25 or less. Refer to Appendix E.

B. Do not top the main leader or any other branches.

C. Select permanent branching and allow temporary branching on the lowest part of the trunk to remain. Any branch 14 feet or less on trees planted adjacent to a street side shall be considered a temporary branch, as they will eventually need to be removed to maintain clearance for vehicular traffic. These branches shall be maintained by reducing their length as needed to prevent them from growing into the street.

7.40 Fertilizing Standards

This section outlines performance standards for fertilizing, and applies only if fertilizing is specified by the *City arborist*. Fertilizing mature trees is not necessary under almost all growing conditions. Fertilizing will only be specified for trees when it is determined by the *City arborist* that no other method is available to promote the health and vigor of the tree, improve soil conditions, or increase stored resources that may aid the tree in overcoming stress. Refer to Appendix E.

Fertilizing, if specified, shall be performed to the following standards:

1. Method of Application: The method shall be subsurface injection, on approximate 3-foot centers (within the root ball on young trees, 2 feet from the trunk on older trees) and out to

the tree's approximate *dripline* perimeter. Specific situations may justify other variations such as vertical mulch, soil-fracture, or surface-broadcast methods.

2. Material and Rates: Unless specified otherwise, fertilizer formula shall be a slow- release, complete fertilizer with chelate trace elements (e.g., 22-14-14 or 20-20-20) and mixed at label rates not to exceed 4 pounds nitrogen per 100 gallons of water. Extraordinary cases may require soil and tissue sampling to correct *target* deficiencies.

3. Amount: Unless specified otherwise, volume shall be determined by mixing 10 gallons of water per inch of DSH of the tree.

4. Timing: Timing shall not be detrimental to tree health. Best results are derived from applications made during the prior growing season. Fertilizer shall be applied May through September for best results.

7.50 Watering Schedule

Newly installed trees, including drought-tolerant species, are dependent upon supplemental irrigation until established, typically for 2 to 3 years after planting, but may benefit from supplemental irrigation for up to 5 years. Periods of extreme heat, drought, or extended rain events may require more or less water than recommended in the below specifications. The amount that is applied may vary depending upon the species type, heat, existing irrigation, planted in turf or ground cover, periods of abnormal rainfall, or soil composition. The watering of newly planted and mature trees shall follow these standards:

A. New Trees. During the establishment period (2–3 years), water shall be applied to thoroughly saturate the root ball, typically achieved by hand watering with a hose, watering bag, or bucket. An establishment care watering plan for trees planted as part of a development project shall be submitted with the landscape planting plan. The establishment care water plan shall include species types, watering needs, soil conditions, schedule of watering, and the method by which trees shall be watered. The minimum standard for a new tree watering schedule shall be as follows:

1. 1–9 months in the ground: 4 times per month or as necessary

2. 10–18 months in the ground: 2 times per month or as necessary

3. 19–24 months in the ground: 1 time per month or as necessary

4. 25–36 months in the ground: water as needed during extreme heat events or prolonged heat waves

B. Mature Trees. Mature and established trees do not need frequent supplemental irrigation unless there is evidence that the tree is declining in health and vigor. If so, it should be further determined by a qualified arborist that the tree will benefit from supplemental irrigation. It is also appropriate to water trees prior to and during extreme heat events and prolonged heat waves to maintain health. When watering mature trees, saturate the entire area of soil underneath the tree canopy, but do not directly apply water to the trunk or visible supporting roots.

C. Watering Methods. The following methods are approved to provide supplemental irrigation to newly planted trees and shall fulfill the watering requirements. One or more of the following shall be used dependent upon the site conditions and subject to approval by the *City arborist*. Approved methods are as follows:

1. Automated Watering Systems. All new *City trees* planted within the right-of-way shall be provided with one of the following automatic watering systems. Other City-maintained systems shall be per the *City arborist*'s approval.

a. Bubbler heads (preferred). One or two bubbler heads mounted on flexible tubing are to be placed adjacent to or on top of the root ball. The placement of a bubbler within an aeration tube is not allowed.

b. Drip loop system. A continuous loop of drip tubing circling around the trunk at a point two-thirds out from the trunk to the edge of the root ball. For new trees that are 36-inch box size and greater, a second loop of drip tubing is required at a point just beyond the root ball on native soil.

2. Hand Watering Systems. Hand watering is recommended for trees that do not have irrigation systems and/or that are part of a development project that must be watered to ensure tree survival during construction until automatic irrigation is installed. Hand watering shall be applied inside the watering basing and on top of the root ball to allow the water to infiltrate through the root zone.

3. Soaker Hose. Soaker hose watering is slow, deep watering using a garden type soaker hose.

4. Watering Bag. Slow release watering bags shall be attached to the tree stake. The watering bag shall be moved to the opposite tree stake before each watering to ensure water is distributed to the entire root zone. Do not attach watering bags to the tree trunk.

D. Watering Amount. Unless otherwise specified, the volume of water applied at each irrigation site shall be in the range of 10 gallons per inch of DSH. The final decision of whether to water shall be based on accurate soil probe samples that are taken from the root ball.

7.60 Soil Improvement

During development, *compaction* of the soil is one of the largest single factors responsible for the decline of oaks and older trees. Compaction that occurs to the upper 18 inches of soil occurs during the first pass of heavy equipment is difficult to reverse. Every effort to avoid *compaction* of soil porosity within the *TPZ* shall be taken at all times. When required by the conditions of *Discretionary Development Approval* for a project or to mitigate for *injury* or a prohibited action, the following performance standards for improvement of compacted or damaged soil shall be implemented:

A. Aeration. Soil that is damaged or compacted within the *dripline* of a tree shall be loosened or aerated to promote root growth and enhance tree vitality. One of the following aeration methods shall be specified an in effort to correct compacted soil conditions:

1. Vertical mulching: Auger holes 2 to 4 inches in diameter, 2 to 3 feet deep, on 4-foot centers and backfilled with porous material such as perlite, vermiculite, or volcanic

rock.

2. Radial trenching with an air excavator: Excavate a soil trench 3 to 6 inches wide and a minimum of 12 inches deep from (approximately) 3 feet from the trunk out to the *dripline* area. The trenches shall radiate out from 1 foot apart at the closest point.

3. Soil-fracturing with a pneumatic air-driven device. Subsurface injections under moderate hydraulic pressure using a 3-foot probe and applied on 3-foot centers under the *dripline*.

B. Drainage. Adequate drainage must be provided to the surrounding soil for the planting of new trees. If the trees are to be planted in impermeable or infertile soil, and water infiltration rates are less than 2 inches an hour, then one of the following drainage systems or other approved measures must be implemented (see Section 5.30.3, Drainage):

1. French drain, a minimum depth of 3 feet.

2. Drain tiles or lines beneath the trees.

3. Auger six drain holes at the bottom perimeter of the planting pit, a minimum of 4 inches in diameter, 24 inches deep, and filled with medium sand or fine gravel.

7.70 Insect and Disease Control

Generally, insect populations do not threaten tree health to the point of mortality. More often, when their populations become too great, insects create a nuisance. For example, scale on tulip trees or aphids feeding on purple leaf plum trees produce sticky honeydew that may be a nuisance if dripping on cars or at a storefront entry. Occasionally, pests such as the larva from oak tussock moth can defoliate and severely damage a tree. Pathogens that cause disease vary in severity from only causing cosmetic damage to tree mortality.

For pest or pathogen issues, identification of the causal agent is recommended first. If action is warranted, Integrated Pest Management techniques recommend timely treatment. It is the responsibility of the owner to evaluate the tree's condition according to the following guidelines to prevent further deterioration. All insect and disease control within the City shall follow the City's Integrated Pest Management Policy (Appendix F).

A. Insects and Mites. For treatment, consult a pest control advisor who is licensed by the California Department of Pesticide Regulation. Accurate timing is critical for success.

Nontoxic materials shall be used whenever possible to control detrimental pests (e.g., leaf-chewing insects, piercing/sucking insects, boring insects, mites).

B. Disease and Decay (aboveground). Disease, such as heart-rot decay, that erodes the health or weakens the structure of a tree may compromise the safety of people or property. It is the owner's responsibility to correct a known hazardous condition in a timely fashion. Owners shall consult with a *certified arborist* for remedy possibilities, for example, pruning out infected branches, thinning, or spray application of a chemical treatment.

C. Disease (below ground). Soilborne diseases can be present in soils and cause disease if

environmental conditions are optimal. Often, a poor landscape design surrounding old trees can promote the development of harmful and often lethal diseases. The following conditions that favor a disease environment must be avoided:

1. Conditions to Avoid. Combined with poorly drained soil, soil compaction within the tree's *dripline*, adding fill dirt, rototilling, *trenching*, removing soil from the tree root area, excessive or regular watering on or near the tree trunk area, and planting incompatible high-water-need plants within the tree's *dripline* shall all be avoided. These conditions often encourage opportunistic pathogens to infect the tree, which can lead to decline or tree death. Decline can be slow and may not be evident for many years.

2. Landscape Design. When planning landscaping around a tree, an evaluation of the tree and soil must be performed to determine if there is a disease present. If the tree is diseased and landscaping will contribute to decline, cause permanent damage, or render it hazardous, it is the obligation of the property owner to take reasonable measures to reduce or eliminate the conditions that may cause the decline of the tree.

3. To identify cultural conditions that may lead to fungal diseases caused by soilborne fungi, review the Sunset Western Garden Book or consult with a *certified arborist.*

D. Foliar Disease. Leaf spots or galls may be chronic or reoccur during specific seasons. Although many of these diseases destroy leaf tissue and become unsightly, they usually do not significantly reduce the tree's health and typically do not need to be treated.

7.80 Fruit Control

All trees produce flowers or fruit, but some trees can be considered a nuisance if the use area is not compatible with the litter generated by the tree. For example, the fruit of European olive (*Olea europaea*) and American sweet gum (*Liquidambar styraciflua*), and acorn drop of a holly oak (*Quercus ilex*) may be safety hazards if they are in the proximity of accessible access ramp or other high pedestrian area, and will thus justify control measures. Control can only be successful if materials are applied carefully at optimum timing. For treatment, consult a pest control advisor who is licensed by the California Department of Pesticide Regulation.

SECTION 8.00 – TREE REPORTS

Introduction

An arborist report is needed for development projects, tree *removal* permits requested by private property owners, and tree *removals* recommended by City staff. The report must be prepared for the applicant by a *certified arborist* and submitted to the City for the purpose of providing accurate information and opinions regarding the condition, health, structure, maintenance, preservation, and/or value of trees. If tree maintenance or removal is required, a Tree Work Permit is required.

8.10 When a Written Tree Report Is Required

Generally, there are three circumstances in which *tree report*s are required: (1) when a tree *removal* permit is sought by a private property owner to remove a *City tree* or a *heritage tree*; (2) to complete and verify a *site plan*, assess tree impacts, and establish tree protection for property development within the dripline of a *City tree* or *heritage tree*; and (3) when the City has determined that a *City tree* needs to be removed (i.e., public safety concern).

8.20 Who May Prepare the Report

Reports are to be prepared by a *certified arborist* who is *Tree Risk Assessment Qualified* (TRAQ) by the ISA, and retained by the applicant, property owner, or City. This person shall possess a current ISA certification and TRAQ credential.

8.30 Reports for Individual Tree Removal Permit

A. Tree *Removal* Permit

This procedure involves three steps that must be completed and approved to remove a *City tree* or a *heritage tree*. The information contained within the application shall be reviewed by the *City arborist* for written response.

B. Submittals

For this purpose, the following information shall be submitted to the City for review:

1. Application: A completed application for the *tree removal*

2. Filing Fee

3. Arborist Report: An arborist report prepared by a *certified arborist*

C. Written Authorization

To remove a *City tree* (on City land or in the street right-of-way), the property owner shall first have obtained written permission from Public Works Department or *City arborist*. For a *heritage tree* on private property, the permit from the Planning Division must be on site when the tree is being removed. For trees removed as part of a development project, the approved plans serve as the approval, and no separate written permit is needed.

8.40 Types of Reports

A. Letter Report

1. Letter Report Format

A brief format is acceptable for (a) and (b) below, and can generally be used for assessing multiple trees. The report is to be on letterhead stationery of the certified arborist preparing the report, which must include their ISA certification number.

a. Removal

If for a tree *removal* (i.e., an application request for *removal* only, not in connection with a property development), the report shall provide information and determination whether the tree is dead or hazardous, or constitutes a nuisance. If the tree is reported as hazardous, the report shall also discuss why no other mitigation measures would be successful to reduce the hazard and risk associated with the tree.

b. Development

If for development on a single-family residential lot (not a subdivision), the report shall also clearly indicate whether or not any *heritage tree* or *City tree* is so close to the *building area* or *building footprint* that it will be killed or permanently injured. The report must make specific recommendations to protect and preserve the tree during construction that are consistent with the specifications within this Manual.

2. Letter Report Submittals

a. Standard Information

All letter reports shall contain the following information: arborist name and certification number; purpose of the report and for whom; site address; date of the inspection(s); a to-scale diagram of the tree's location and DSH perimeter of leaf canopy; proximity to structures; condition of the tree's health (and/or decay presence) and tree structure, and imminent danger of failing; interface with utility services; conclusion and recommendations; photographs (encouraged); and tree protection instructions (if needed).

b. Specific Situations

Other conditions may require the following additional information on an as-needed basis if requested by the reviewing City staff: tree protection plans; appraised value; and any other supporting information, photographs, diagrams that may be necessary.

B. Tree Survey Report

1. Tree Survey Report Format

A more extensive tree survey report is required for all development projects except those identified above. The report shall inventory all trees that are greater than 4 inches in diameter (measured at DSH) on site, including trees to be removed, relocated, and retained on the property (including trees on neighboring properties that will be impacted by development), and all publicly owned trees in the right-of-way within 30 feet of the project site. In addition to information required in a letter report, the tree survey report shall include an inventory of the trees, *site plan*, picture of the trees, appraised value of the trees, and any other information pertinent to the project.

2. Tree Survey Report Submittals

a. Standard Information

All tree survey reports shall contain the following information: arborist name and certification number, cover letter, title page, table of contents (if necessary), purpose of the report and for whom, site address, date of the inspection(s), *site plan* (showing each tree location by number that correlates with the tree inventory on plans), tree inventory data (including tree species, size, health, structure, for all trees on the project site, including those to be removed; may be provided in table format), condition of the trees (including information with respect to health; structure; decay; imminent danger of falling; and existing property lines, structures, and utility services), conclusion, recommendations, and ratings for suitability for preservation. The report shall include a separate list of all *heritage trees* with location numbers. If necessary, other supporting information, such as photographs and diagrams, may be required or provided.

b. Appraised Value

The monetary value that each tree contributes to the real estate value of the property shall be determined and listed separately within the tree survey report. The formula used shall be noted (see Section 8.80, Appraisal Methods).

8.50 Tree Protection and Preservation Plan

All publicly owned or *heritage tree*s to be retained on a development site shall be shown on approved sets of civil, building, and landscape plans, and shall be protected during the construction process. A *Tree Protection and Preservation Plan* submitted for review by Development Services is required when trees to be preserved on site may be injured. The *Tree Protection and Preservation Plan* shall assume compliance with standards in Section 2.00, Protection of Trees During Construction, of this Manual. In addition, the following submittal information must be included in the report:

A. Scope and Construction Phasing. The *Tree Protection and Preservation Plan* shall identify, but not be limited to, written recommendations for the health and long-term welfare of trees that are to be followed during the following distinct phases: pre-construction, during construction, post-construction, and demolition activities. The plan shall provide guidelines for methods of avoiding *injury*, damage treatment, and inspections. Schedules shall be included.

B. Tree Protection Zone. The *Tree Protection and Preservation Plan* shall establish a *TPZ* for

each tree, to be fenced; clearly outline site-specific measures for protection of the trees during construction; and describe a plan for continued maintenance of those trees after construction. The TPZ shall be 5 feet from the tree's dripline, or 15 feet from the trunk, whichever is greater. After project approval, any changes to the protection measures must be approved in writing by the *City arborist*. The *Tree Protection and Preservation Plan* shall include the site plan elements identified in the following section.

8.60 Site Plan

8.60.1 Disclosure of All Trees On and Near the Site

The property owner or designee shall provide accurate information to the *project arborist* to develop the tree protection measures and to enable accurate recommendations to ensure their survival. This *site plan* shall accurately indicate the surveyed location, species, and size of trunk and leaf canopy; show the dripline of any neighboring trees that may be impacted by the project; and depict publicly owned trees that are within 30 feet on each side of the project. Failure to show a tree on the plans later determined to be affected by construction may require the work to stop until mitigation can be agreed upon by the property owner and the City.

8.60.2 Plans Submitted to the City

In addition to the above information, final improvement plans shall include and depict the following information: the *TPZ* of any tree to be retained and a bold-dashed line clearly denoting a 5-foot chain-link type fence around the protected zone of each tree or group of trees; permeable paving located within the dripline area; approved utility pathways; grade changes; surface and subsurface drainage and aeration systems to be used; walls, tree wells, retaining walls, and grade change barriers, both temporary and permanent; and landscaping and irrigation within dripline of trees.

8.60.3 Plans Must Show Tree Protection

Protective tree fencing identified within the arborist report, both written and diagrammatic, shall be clearly shown as a bold, dashed line on the approved *site plan*s submitted for demolition, grading, construction, building permit, or any other aspects that are relevant to the project.

8.70 Tree Appraisal

Landscape value typically contributes to the value of a property. An individual tree has an inherent value to the property that can be determined by an appraisal prepared by a *certified arborist*. An appraisal is a process for determining a monetary opinion of the value of a tree as it relates to the property, a group of trees, and/or the immediate community. A qualified *certified arborist* is required to determine this value and must exercise good and fair judgment by adjusting the basic value by the tree's condition and location. There are two methods to determine tree value: (1) the Replacement Cost Method, based on the size and availability of the replacement tree, and (2) the Trunk Formula Method, if the tree cannot be replaced (e.g., not sufficient room on site or it is too large to replace). In all cases, the type of formula used must be identified.

8.80 Appraisal Methods

The *certified arborist* must prepare the appraisal by using the most current edition of (1) the Guide

for Plant Appraisal, published by the Council of Tree and Landscape Appraisers, and (2) the most recent Form for Southern California established by the ISA. The appraisal shall be consistent with Section 15.02.140 of the City Ordinance.

8.80.1 The Replacement Cost Method

This method applies to smaller trees with a trunk size up to 4 inches in diameter or 48-inch box size trees (replaceable). For this method, the appraised value shall be determined by combining price quote + transportation + planting + other costs, and applying the condition and location value to the tree. The sum of these is the appraised replacement cost.

8.80.2 The Trunk Formula Method

This method applies to trees that are too large for practical replacement (transplanting) and shall be appraised by determining the basic tree value and adjusting this value by condition and location ratings. The appraised value shall be determined by using the most recent edition of the Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers. The Trunk Formula or Replacement Cost Method forms for Southern California established by the ISA must be used to compute the appraised value. All trees with a DSH larger than 4 inches shall be calculated in this manner.

SECTION 9.00 – HERITAGE TREES

9.10 Designation of Heritage Trees

A. Upon nomination by any person or agency and with the written consent of the property owner(s), a tree or trees may be designated as a *heritage tree or trees*. *Heritage tree*s may be located on City or private property.

B. Nominations for a *heritage tree* shall be reviewed by the Urban Forest Advisory Committee, and the Environmental Commission, and the Environmental Commission shall make a recommendation on *heritage tree* nominations to the Planning Commission.

C. The Planning Commission may designate a tree as a *heritage tree* upon a finding that it is unique and of importance to the community due to any of the following factors:

1. It is one of the oldest and largest of its species located in Encinitas.

2. It is a tree of unique form or species.

3. It has historic significance due to an association with an historic building, site, street, person, or event.

4. It is a defining landmark or significant outstanding feature of a neighborhood.

D. Upon Planning Commission approval, the tree(s) shall be designated as a *heritage tree(s)*. Any work on, or adjacent to, a designated *heritage tree* that may impact its health shall be done in accordance with this Manual and under the provisions of a City-issued permit. The requirement for a permit may be waived in cases of *hazardous trees* or other cases where immediate action must be taken for public health or safety reasons.

E. After Planning Commission approval of a *heritage tree* designation, the City shall notify the property owner(s) in writing. A listing of trees so designated, including the specific locations thereof, shall be kept by the City.

F. It shall be the responsibility of any private property owner whose property contains a *heritage tree* to ensure that any future owners, successors, heirs, personal representatives, transferees, and/or assigns of said property owner knows of the designated *heritage tree(s)* and the requirements that come with this designation.

G. Once designated, a *heritage tree* shall be subject to the provisions of this Manual unless removed from the list of *heritage tree*s by action of the Planning Commission. The Planning Commission may remove a tree from the list upon its own motion or upon written request by the property owner. Request for such action must originate in the same manner and proceed through the same process as nomination for *heritage tree* designation.

H. Any person may appeal the designation of a tree or trees as a *heritage tree(s)*, or the *removal* of such designation, in accordance with the procedures set forth in Chapter 1.12 of the Municipal Code (Appeals).

SECTION 10.00 – DEVELOPMENT AND PERMIT APPLICATIONS

10.10 Disclosure of Information Regarding Existing Trees

A. Any application for discretionary development approval, or for a building or demolition permit where no discretionary development approval is required, shall be accompanied by a statement by the property owner or authorized agent that discloses whether any *City tree(s)* or *heritage tree(s)* exist on the property that is the subject of the application, and describing each such tree, its species, size, *dripline* area, and location. This requirement shall be met by including the information on plans submitted in connection with the application.

B. In addition, the location of all other trees on the site and in the adjacent public right-of-way that are within 30 feet of the area proposed for development, and trees located on adjacent property that will be impacted by development, shall be shown on the plans, identified by species.

C. The Director of Planning and Building may require submittal of such other information as is necessary to further the purposes of this section, including, but not limited to, photographs.

D. Disclosure of information pursuant to this section shall not be required when the development for which the approval or permit is sought does not involve any change in *building footprint* or any grading or paving.

E. Knowingly or negligently providing false or misleading information in response to this disclosure requirement shall constitute a violation of this Manual.

10.20 Development Conditions of Approval

A. *Discretionary Development Approvals* for property containing *City trees* or *heritage tree*s shall include appropriate conditions providing for the protection of such trees during construction and for maintenance of the trees thereafter.

B. *Discretionary Development Approvals* for projects for which a landscape plan is required shall include appropriate conditions providing for the protection of all existing trees to remain on the project site during construction, and the protection and maintenance of all existing and newly planted trees thereafter.

C. All trees included in a required landscape plan for a project with a *Discretionary Development Approval* shall be protected and maintained in accordance with the standards and regulations contained within this Manual.

D. Any modifications to a landscape plan of a project with a *Discretionary Development Approval* shall require the submittal of an application for substantial conformance with the original permit for minor modifications to the landscape plan consistent with the original approval, or the submittal of an application for modification of the original permit for major modifications to the landscape plan.

E. It shall be a violation of the Municipal Tree Ordinance for any property owner or agent of the owner to fail to comply with any development approval condition concerning preservation, protection, and maintenance of any tree, including, but not limited to, *City trees* or *heritage tree*s.

SECTION 11.00 – ENFORCEMENT

11.10 Prohibited Acts

It shall be a violation of Urban Forest Management Program policy for anyone to remove or cause to be removed a *City tree* or *heritage tree*, except as allowed in this section:

A. In the absence of development, *City trees* or *heritage tree*s shall not be removed unless determined by the Director of Public Works and/or City arborist on the basis of a *tree report* prepared by a *certified arborist* for the applicant and other relevant information that the tree should be removed because it is dead, hazardous, a detriment to or crowding an adjacent *City tree* or *heritage tree*, or constitutes a *public nuisance* as defined in this Manual, except when an *emergency* removal is needed (Section 6.20, Emergency Removal Conditions).

B. In the case of development on a single-family residential lot, other than in connection with a subdivision, the following shall apply:

1. *City trees* or *heritage tree*s shall not be removed unless the trunk or *basal flare* of the tree is touching or within the *building footprint*, or the Director of Planning and Building has determined, on the basis of a *tree report* prepared by a *certified arborist* for the applicant and other relevant information, that the tree should be removed because it is dead, is hazardous, is a detriment to or crowding an adjacent trees, or constitutes a *public nuisance* as defined in this Manual.

2. If no *building footprint* exists, *City trees* or *heritage trees* shall not be removed unless the trunk of the tree is located in the *building area*, or the Director of Engineering Services has determined, on the basis of a *tree report* prepared by a *certified arborist* for the applicant and other relevant information, that the tree should be removed because it is dead, is hazardous, is a detriment to or crowding an adjacent *City trees or heritage trees*, or constitutes a *public nuisance* as defined in this Manual.

3. If *removal* is allowed because the tree trunk is located in the *building footprint*, or the trunk or *basal flare* is in the *building area*, or because the Director of Engineering Services has determined that the tree is so close to the *building area* that construction would result in the death of the tree, the tree removed shall be replaced in accordance with the standards in this Manual.

C. In connection with a proposed subdivision of land into two or more parcels, no *City trees or heritage trees* shall be removed unless *removal* is unavoidable due to restricted access to the property or deemed necessary by the City arborist or managing Department Director to repair a geologic hazard (e.g., landslide, repairs). The tree removed shall be replaced in accordance with the standards in this Manual. Tree preservation and protection measures for any lot that is created by a proposed subdivision of land shall comply with the regulations of this Manual.

D. In all circumstances other than those described in paragraphs A, B, and C of this section, *City trees or heritage trees* shall not be removed unless one of the following applies:

1. The Director of Engineering Services, the Director of Parks and Recreation, or the Director of Public Works has determined, on the basis of a *tree report* prepared by a *certified arborist* for the applicant and other relevant information, that the tree should be removed because it is dead, dangerous, or constitutes a *public nuisance* as defined in this Manual. In such cases, the *dripline* area of the removed tree, or an equivalent area on the site, shall be preserved from development of any structure unless *removal* would have been permitted under paragraph 2, below, and tree replacement in accordance with the standards in this Manual shall be required.

2. *Removal* is permitted as part of a discretionary development approval. In such a case, the approval shall be conditioned upon replacement in accordance with the standards in this Manual.

11.20 No Limitation of Authority Under Title 30

Nothing in this Manual limits or modifies the existing authority of the City under Title 30 (Zoning Ordinance) to require trees and other plants not covered by this Manual to be identified, retained, protected, and/or planted as conditions of the approval of development. In the event of conflict between provisions of this Manual and conditions of any permit or other approval granted pursuant to Title 30, the more protective requirements shall prevail.

11.30 Care of City Trees or Heritage Trees

A. All owners of property containing *City trees* or *heritage tree*s shall follow the maintenance standards in this Manual.

B. The standards for protection of trees during construction contained in this Manual shall be followed during any development on property that contains, is adjacent to, or impacts in any way *City trees* or *heritage tree*s.

11.40 Responsibility for Enforcement

The following designated employee positions may enforce the provisions of the Municipal Tree Ordinance by the issuance of citations: Building Official, Assistant Building Official, and Code Enforcement Officer.

11.50 Enforcement - Remedies for Violation

In addition to all other remedies set forth in this Code or otherwise provided by law, the following remedies shall be available to the City for violation of any Urban Forest Management Program policy:

A. Stop Work – Temporary Moratorium

1. If a violation occurs during development, the City may issue a stop work order suspending and prohibiting further activity on the property pursuant to the grading, demolition, and/or building permit(s) (including construction, inspection, and issuance of certificates of

occupancy) until a mitigation plan has been filed with and approved by the Director of Planning and Building, agreed to in writing by the property owner(s), and either implemented or guaranteed by the posting of adequate security. The mitigation plan shall include measures for protection of any remaining trees on the property, and shall provide for replacement of each tree removed on the property or at locations approved by the Director of Planning and Building or by the Director of Public Works, if replacement is to occur on public property. The replacement ratio shall be in accordance with the standards set forth in this Manual and shall be at a greater ratio than that required where tree *removal* is permitted pursuant to the provisions of this Manual.

2. If a violation occurs in the absence of development, or while an application for a building permit or discretionary development approval for the lot upon which the tree is located is pending, the Director of Planning and Building may issue a temporary moratorium on development of the subject property, not to exceed 18 months from the date the violation occurred. The purpose of the moratorium is to provide the City an opportunity to study and determine appropriate mitigation measures for the tree *removal*, and to ensure measures are incorporated into any future development approvals for the property. Mitigation measures as determined by the Director of Planning and Building shall be imposed as a condition of any subsequent permits for development on the subject property.

B. Civil Penalties

1. As part of a civil action brought by the City, a court may assess against any person who commits, allows, or maintains a violation of any provision of this Manual a civil penalty in an amount not to exceed $5,000.00 per violation.

2. Where the violation has resulted in *removal* of a tree, the civil penalty shall be in an amount not to exceed $5,000.00 per tree unlawfully removed, or the replacement value of each such tree, whichever amount is higher. Such amount shall be payable to the City. Replacement value for the purposes of this section shall be determined using the most recent edition of the Guide for Plant Appraisal, published by the Council of Tree and Landscape Appraisers.

C. Injunctive Relief. A civil action may be commenced to abate, enjoin, or otherwise compel the cessation of such violation.

D. Costs. In any civil action brought pursuant to this Manual in which the City prevails, the court shall award to the City all costs of investigation and preparation for trial, the costs of trial, reasonable expenses including overhead and administrative costs incurred in prosecuting the action, and reasonable attorney fees.

11.60 Fees

*Tree report*s required to be submitted to the City for review and evaluation pursuant to this Manual shall be accompanied by the fee prescribed therefor in the municipal fee schedule.

11.70 Severability

If any provision of this Manual or the application thereof to any person or circumstance is held to be invalid by a court of competent jurisdiction, such invalidity shall not affect any other provision of this Manual that can be given effect without the invalid provision or application, and to this end, the provisions of this Manual are declared to be severable.

11.80 Appeals

Any person seeking the director's approval to remove *City trees* or *heritage trees* pursuant to the regulations in this Manual, who is aggrieved by a decision of the Director of Planning and Building or the Director of Public Works, may appeal such decision in accordance with the procedures set forth in Municipal Code Chapter 1.12 (Appeals).

SECTION 12.00 – EDUCATION AND OUTREACH

Introduction

Education is an integral and primary element of the Urban Forest Management Program. Education tempers the use of regulations by empowering citizens. The City believes citizens will act responsibly if given the information they need to make sound decisions.

Distinct educational strategies can be developed to reach a wide range of affected people, including the general public, the development community (property owners, architects, realtors, investors, builders, and contractors), public agencies, and educational institutions. The common factor in educating these groups is to provide them with information about how proper tree planting, maintenance, and protection can contribute to and enrich the quality of life.

The most important point is not the method of knowledge distribution, but knowledge distribution itself. Information circulation places trees and their care in front of the public and allows them to learn, understand, and relate to the City's Urban Forest Management Program. When public tree and community forest knowledge is raised, whether through the Tree City USA celebrations, presentations, press releases, handouts, or conversations, raising the tree awareness of Encinitas citizens will have a significant, positive effect on the community forest at large.

12.10 Public Relations

The City will use several effective methods available for raising the awareness of Encinitas citizens in terms of tree care. Many citizens are unaware that there are resources for information regarding proper tree selection, planting, and maintenance. The City will employ the following methods to educate our citizens and our staff:

A. Direct public relations are practiced when any City employee discusses tree care or tree issues with members of the public. All employees who have contact with the public concerning urban forest management issues will be trained to answer questions properly. Staff will carry ISA handouts describing common tree issues and proper practices that can be easily distributed. Staff will also participate in regional activities and hold Arbor Day celebrations.

B. Indirect public relations are no less important than direct public relations and can often reach a larger audience. The City will provide news releases, when appropriate; social media posts; exhibits at local fairs; and educational programs and materials to schools.

12.20 Distribution of Education Material

The City will develop and provide education materials to be used as handouts and displays. The City will develop an approach to educating its customers and provide some of the following education materials: social media posts, videos, flyers, newsletters, fact sheets, brochures, and informational signs. In addition, the City will develop a section on its website dedicated to the Urban Forest Management Program, which will include links to maintenance schedules, removal notices, heritage tree nomination forms, protected tree lists, educational materials, contact information, and general tree care information.

12.30 Tree City USA

The City will maintain its Tree City USA status. There are many benefits to maintaining Tree City USA status. The benefits include providing a framework for community forest standards, elevating the public image of the City and citizen pride, providing access to urban forestry–related financial assistance, and providing opportunities for good direct public relations.

To qualify as a Tree City USA community, a town or city must meet four standards established by The Arbor Day Foundation and the National Association of State Foresters. These standards ensure that every qualifying community has a viable tree management plan and program. To qualify as a Tree City USA community, a town or city must establish the following:

1. A tree board or department
2. A tree care ordinance
3. A community forestry program with an annual budget of at least $2 per capita
4. An Arbor Day observance and proclamation

APPENDIX A – TREE PRESERVATION POLICY

Purpose

The purpose of the Tree Preservation Policy is to establish a regulatory tool to provide orderly protection of specified trees, protect their value, and avoid significant negative impacts to the ecosystem. The policy regulates protection of trees in two categories: *City trees* and *heritage trees.*

Heritage Trees

Heritage trees are individual trees of any size or species that are specifically designated as heritage because of their historical, commemorative, or horticultural significance. The list of designated *heritage trees* remains open for new designations, and provides useful information to City of Encinitas (City) staff regarding the importance of their actions while planning activities near *heritage trees*. Since *heritage trees* are protected trees, recommendations from the *City arborist* must be obtained before any alterations to protected trees are made that may cause the trees to become damaged, relocated, or removed. The *City arborist* and Department Directors must approve the recommendation before any action proceeds.

Pruning also can cause irreversible damage to the tree and must be done in compliance with the International Society of Arboriculture (ISA) Tree Pruning Guidelines. Pruning must be performed under supervision of ISA-certified staff only. If the tree poses an immediate threat to life or public safety, the *City arborist* may compromise the process, if proper documentation, including digital photographs, is kept. *Heritage trees* identified as dead by the *City arborist* will be removed and recorded into the designated *heritage trees* list. The *heritage trees* list can be obtained from the City of Encinitas Department of Parks and Recreation.

City Trees

Most City trees have great value beyond the shade they provide. They are a scenic resource to surrounding neighborhoods, and their removal or disfigurement by extreme pruning for construction clearance or other reasons diminishes the value of the urban forest and often provokes public protest. All trees provide aesthetic, sentimental, economic, and environmental value. The extent of tree canopy cover across the City can have a significant cooling effect on the urban environment. Every tree in Encinitas is recognized as a valuable asset. This Urban Forest Management Program Administrative Manual of Procedures provides guidelines for protecting trees during construction, and offers suggestions and alternative technical solutions to avoid damages to trees.

APPENDIX B – TREE PROTECTION GUIDELINES

Model Tree Preservation Specifications

These specifications shall be made a part of all construction documents. The intent is to protect all trees that have either direct or indirect encroachment into their driplines during construction within City of Encinitas (City) parks. The *City arborist* shall be invited to the job start/kickoff meeting and notified 48 hours prior to the start of construction. They may be contacted at (760) 633-2740.

General Tree Protection Requirements

1. No equipment shall be operated or parked under a tree, nor is any material to be stored within the dripline of a tree or leaned against a tree trunk. Soil shall not be piled or compacted within a dripline.

2. In areas of construction, soil surface shall be protected from traffic compaction with 3 inches of mulch or overlapping 0.75-inch plywood sheets.

3. No surface irrigation shall be installed within the dripline of a tree.

4. All work shall be in accordance with the City of Encinitas Tree Preservation Policy.

5. No chemical herbicides shall be used within 100 feet of a tree's dripline.

6. No grade stakes or anything else shall be nailed to trees.

7. Encroachment from paving or structures within the dripline of a tree shall be permitted only with written authorization from the *City arborist*.

8. Topsoil shall not be stripped around trees. Any vegetation to be removed shall be removed by cutting at ground level rather than pulling out by equipment.

9. A pneumatic drill shall be used to excavate under woody roots larger than 2 inches in diameter. Any root with a diameter larger than 2 inches shall not be cut without prior approval of the *City arborist*. If roots must be severed, cuts shall be made by a *certified arborist,* and soil shall be backfilled immediately.

Typical Work Procedures

These procedures have been developed to minimize the impacts to each tree and protect them from unscheduled damage. All work around any existing tree to remain and to be protected shall follow these work procedures.

1. All work within a tree's root zone shall follow this Urban Forest Management Program Administrative Manual of Procedures.

2. The extent of all work affecting any protected tree shall be staked by field survey and reviewed with the Parks and Recreation arborist prior to construction.

3. The *City arborist* shall approve any pruning of protected trees prior to the start of construction.

4. The vertical trench shall be hand dug at the final cut line and to the final grade; roots shall be cleanly cut behind torn ends. Pruning seal shall not be applied because roots will form their own internal barriers to decay.

5. Type I, II, or III tree protection fencing shall be constructed at the limit of approved work to protect trees from unauthorized damage. Fencing shall remain in place until landscape work commences.

6. No further work within the tree protection zone shall be done beyond what was approved without obtaining written approval from the *City arborist* prior to proceeding.

7. The area within the chain-link fence shall not be used for material or equipment storage or parking during construction.

8. During construction, the impacted trees shall be closely monitored for symptoms of shock. The contractor shall be prepared to provide temporary water to irrigate, and if needed, wash dust from foliage. Irrigation shall wet the top 2–3 feet of soil to replicate similar volumes and normal seasonal distribution. The *City arborist* shall be contacted if a decline in tree condition is noted.

9. Contact (760) 633-2740 for any general questions regarding trees in parks.

Damages

If a tree designated to remain is removed or irreversibly damaged as determined by the *City arborist*, a contractor may be required to install a replacement tree matching in size, quality, and variety, using a contractor designated by the *City arborist*, and pay damages to the City for the value of the damaged tree in accordance with the guidelines set forth in the most current edition of the Guide for Plant Appraisal, using the Trunk Formula Method. All appraisal methods shall be consistent with the City's Municipal Tree Ordinance.

Implementation

Please direct questions about construction adjacent to heritage trees to the *City arborist.*

APPENDIX C – HOW TO PREVENT DAMAGE TO TREES DURING CONSTRUCTION

Introduction

The long-term goal of the City of Encinitas (City) is urban forest sustainability. The City seeks to maintain social, recreational, ecological, and economic functions of trees and their benefits over time. Stewardship of naturally occurring and planted trees is a central element in forest sustainability. Concerns integral to a sustainable urban forest are tree health and structure, preservation during development and redevelopment, species and site selection, quality of planting stock, standards of performance, maintenance practices in parks, and recycling.

Land development and capital improvement projects are a complex process and are even more challenging when trees are involved. Construction can be one of the greatest causes of tree decline and death in urban areas. Tree protection should begin prior to construction. If preservation measures are delayed or ignored until construction begins, the trees may decline. In some cases, construction impacts on trees cannot be completely eliminated. The goal for planners and designers should be to keep injury to trees to a minimum and allow building projects to proceed at the same time. Successful tree preservation occurs when designers, construction personnel, and project managers are committed to tree preservation. All members of the project team must be familiar with the rudimentary aspects of tree growth and development to understand the relationship between tree survival and construction practices.

There are many myths about how trees grow. For example, the aboveground parts of trees are not a "mirror" of what lies below ground. In actuality, typically four to eleven large roots radiate from the base of a tree's trunk. These *buttress roots* extend from the *root crown* and sometimes are visible when the trunk flares away from the root crown. These roots grow horizontally through the soil and, depending on the tree, can extend 40 feet or more beyond the branch tips.

The smaller roots are primarily responsible for water and mineral absorption. There can be hundreds of roots in a cubic inch of soil; thus, any removal of soil or root severance forces a tree to compromise its physiological processes to sustain the loss. All trees will eventually reach a point when it is no longer feasible, or conducive to public safety, to preserve them. Trees that are structurally unstable, in poor health, or unable to survive construction effects become a liability to the project and should be removed. A realistic tree preservation program acknowledges that conflicts between trees and development may sometimes result in the removal of some trees, and recognizes the detrimental effect to the project and community when trees die after construction is completed.

Successful tree preservation occurs when construction impacts to trees are minimized or avoided altogether. The challenge is to determine when impacts will be too severe for the tree to survive, not only in the short term, but also in the long term. There are no quantitative methods to calculate this critical level. Determining the optimum tree protection zone provides a guideline, although trees often survive and flourish with smaller protection areas. The following are the three guiding principles for tree preservation:

1. The acknowledgement that not all trees are in excellent health or have good structural stability.
2. Tree preservation cannot be the responsibility of City of Encinitas staff alone. Each development participant must understand that his or her activities and decisions influence the success of tree preservation efforts.
3. The ability of a *certified arborist* to cure construction injury is very limited, so the focus of preservation efforts is the *prevention* of damage.

Instructions

An arborist should be called in as a consultant to the construction site before any work is started. The arborist will recommend the removal of trees that are not likely to survive construction activities regardless of the scope of work. In general, the contractor is responsible for preventing damage to trees. The construction and maintenance staff must make the best effort to avoid unnecessary activities within the *dripline* of trees. The following guidelines shall be followed to prevent damage to trees.

A. Fences. Construction fences shall be erected around trees that are to remain. The fences shall be placed as far from the trunk as possible to protect the aboveground portion of the trees and the root system.

B. Storing and Piling. Leaning objects against the tree trunk and piling soil over the root zone is prohibited.

C. Pruning. Pruning for vertical clearance of buildings, traffic, and construction equipment shall be performed by an arborist only, and not by construction or maintenance personnel.

D. Compaction. Driving equipment and walking within the dripline causes soil compaction and is a cause of tree decline and death, and may manifest long after construction is complete. Fences around trees reduce unnecessary traffic. If traffic cannot be avoided, it is recommended to spread a 6- to 12-inch-thick layer of mulch to reduce compaction. As an added precaution, placing large plywood sheets over the mulch can disperse weight.

E. Excavation. Excavation causes major damage to trees. Digging and trenching shall be planned ahead to minimize root loss. When roots must be severed, an arborist shall make clean cuts. The soil shall then be backfilled immediately to minimize drying of the roots.

F. Tree Maintenance. Abruptly terminating regular tree maintenance is another cause for tree decline. Supplemental irrigation shall be provided as prescribed by the Tree Protection and Preservation Plan for the project.

Additional Resources

The City of Encinitas recommends the following technical guide to help minimize construction impacts and damage to trees:

Matheny, N.P., and J.R. Clark. 1998. *Trees and Development. A Technical Guide to Preservation of Trees During Land Development.* International Society of Arboriculture. Hagerstown, Indiana: Exponent Publisher Inc.

The publication can be obtained as follows:

International Society of Arboriculture (ISA)
BOX 3129
Champaign, IL 61826-3129
Phone: (217) 355-9411
Fax: (217) 355-9516
Order toll-free: (888) ISA-TREE
www.isa-arbor.com

APPENDIX D – APPROVED STREET TREE LIST

City of Encinitas Species Palette

Pkwy*	Botanical Name	Common Name	Zone(s)**	Height (feet)	Spread (feet)	Type
2'+	*Callistemon citrinus*	**Lemon Bottlebrush**	8, 9, & 12–24	25	20	evergreen
2'+	*Cercis canadensis.* 'Oklahoma'	**Oklahoma Redbud**	1–3 & 7–20	20	15	deciduous
2'+	*Chionanthus retusus*	**Chinese Fringe Tree**	2–9 & 14–24	20	15	deciduous
2'+	*Eriobotrya deflexa*	**Bronze Loquat**	8–24	25	25	evergreen
2'+	*Eucalyptus erythrocorys*	**Red Cap Gum**	18–24	25	25	evergreen
2'+	*Lagerstroemia indica*	**Crape Myrtle**	7–9, 12–14, 18–21	25	20	deciduous
2'+	*Prunus c. 'Purple Pony'*	**Dwarf Purple Leafed Plum**	2–22	12	12	deciduous
2'+	*Stenocarpus sinuatus*	**Firewheel Tree**	16, 17, 20–24	25	15	evergreen
2'+	*Syagrus romanzoffianum*	**Queen Palm**	12, 13, 15–17, 19–24	50	20	evergreen
2'+	*Tabebuia chrysotricha*	**Yellow Trumpet Tree**	12, 13, 20–24	25	20	deciduous
2'+	*Tristania laurina*	**Water Gum**	19–24	20	10	evergreen
3'+	*Cercis canadensis*	**Eastern Redbud**	1–3 & 7–20	35	30	deciduous
3'+	*Chitalpa tashkentensis*	**Chitalpa**	7–9, 12–14 & 18–21	25	25	deciduous
3'+	*Hymenosporum flavum*	**Sweetshade**	8, 9 & 14–24	40	20	evergreen
3'+	*Pittosporum rhombifolium*	**Queensland Pittosporum**	12–24	35	20	evergreen

City of Encinitas Species Palette

Pkwy*	Botanical Name	Common Name	Zone(s)**	Height (feet)	Spread (feet)	Type
3'+	*Podocarpus henkelii*	**Long-Leafed Yellow-Wood**	8, 9, 14–24	25	15	evergreen
3'+	*Pyrus betulifolia*	**Dancer Pear**	2–9 & 14–21	25	20	deciduous
3'+	*Pyrus c. 'Aristocrat'*	**Aristocrat Pear**	2–9 & 14–21	35	20	deciduous
3'+	*Pyrus c. 'Chanticleer'*	**Chanticleer Pear**	2–9 & 14–21	35	20	deciduous
3'+	*Pyrus c. 'Redspire'*	**Redspire Pear**	2–9 & 14–21	35	20	deciduous
5'+	*Agonis flexuosa*	**Peppermint Tree**	15–17 & 20–24	35	35	evergreen
5'+	*Albizia julibrissen*	**Silk Tree**	2–23	40	40	deciduous
5'+	*Bauhinia variegata*	**Purple Orchid Tree**	13 & 18–23	30	20	semi
5'+	*Brachychiton acerfolius*	**Flame Tree**	16–21 & 23	40	30	evergreen
5'+	*Brachychiton populneus*	**Bottle tree**	12–24	50	40	evergreen
5'+	*Calodendrum capense*	**Cape Chestnut**	19 & 21–24	40	40	semi
5'+	*Cassia leptophylla*	**Gold Medallion tree**	21–24	25	20	evergreen
5'+	*Eucalyptus nicholii*	**Nichol's Willow-leafed Peppermint**	5, 6 & 8–24	40	40	evergreen
5'+	*Eucalyptus sideroxylon*	**Red or Pink Ironbark**	5, 6 & 8–24	60	40	evergreen
5'+	*Fraxinus angustifolia 'Raywood'*	**Raywood Ash**	3–9 & 12–24	35	30	deciduous
5'+	*Geijera parviflora*	**Australian Willow**	8, 9 & 12–24	40	25	evergreen

City of Encinitas Species Palette

Pkwy*	Botanical Name	Common Name	Zone(s)**	Height (feet)	Spread (feet)	Type
5'+	*Ginkgo biloba 'Autumn Gold'*	**Maidenhair Tree**	1, 10, 12 & 14–24	60	40	deciduous
5'+	*Jacaranda mimosifolia*	**Jacaranda**	12–13 & 15–24	40	50	semi
5'+	*Liriodendron tulipifera*	**Tulip Tree**	1–12 & 14–23	80	40	deciduous
5'+	*Magnolia g. 'Majestic Beauty'*	**Majestic Beauty Magnolia**	4–12 & 14–24	40	20	evergreen
5'+	*Magnolia g. 'Samuel Sommer'*	**Samuel Sommer Magnolia**	4–12 & 14–24	40	30	evergreen
5'+	*Melaleuca linarifolia*	**Flaxleaf Paperbark**	9 & 13–23	30	30	evergreen
5'+	*Melaleuca quinquenervia*	**Cajeput Tree**	9, 13, 15–17, 20–24	40	20	evergreen
5'+	*Metrosederos excelsus*	**New Zealand Christmas Tree**	17, 23 & 24	40	40	evergreen
5'+	*Nyssa sylvatica*	**Sour Gum**	3–10 & 14–21	50	25	deciduous
5'+	*Pinus eldarica*	**Afghan Pine**	16–18 & 21–23	60	50	evergreen
5'+	*Pistacia chinensis*	**Chinese Pistache**	4–16 & 18–23	40	40	deciduous
5'+	*Quercus ilex*	**Holly Oak**	4–24	50	50	evergreen
5'+	*Sapium sebiferum*	**Chinese Tallow Tree**	8, 9, 12–16, 18–21	40	35	deciduous
5'+	*Sophora japonica*	**Japanese Pagoda Tree**	1–24	40	40	deciduous
5'+	*Tabebuia avellanedae*	**Pink Trumpet Tree**	15, 16 & 20–24	30	30	deciduous
5'+	*Bauhinia blakeana*	**Hong Kong Orchid**	13 & 18–23	30	20	semi
8'+	*Cedrus deodara*	**Deodar Cedar**	2–12 & 14–24	80	40	evergreen

City of Encinitas Species Palette

Pkwy*	Botanical Name	Common Name	Zone(s)**	Height (feet)	Spread (feet)	Type
8'+	*Celtis sinensis*	**Chinese Hackberry**	8–16 & 18–20	50	50	deciduous
8'+	*Cinnamomum camphora*	**Camphor Tree**	8, 9 & 12–24	50	60	evergreen
8'+	*Eucalyptus citriodora*	**Lemon-Scented Gum**	5, 6 & 8–24	90	45	evergreen
8'+	*Koelreuteria bipinnata*	**Chinese Flame Tree**	8–24	50	50	deciduous
8'+	*Liquidambar s. 'Burgundy'*	**Burgundy Sweetgum**	\	60	35	deciduous
8'+	*Liquidambar s. 'Festival'*	**Festival Sweetgum**	\	60	35	deciduous
8'+	*Liquidambar s. 'Palo Alto'*	**Palo Alto Sweetgum**	\	60	35	deciduous
8'+	*Liquidambar s. 'Rotundiloba'*	**Round-Leafed Sweetgum**	14–24	60	35	deciduous
8'+	*Liquidambar styraciflua*	**American Sweetgum**	1–12	60	35	deciduous
8'+	*Lophostemon confertus*	**Brisbane Box**	19–24	60	40	evergreen
8'+	*Magnolia grandiflora*	**Southern Magnolia**	4–12 & 14–24	60	40	evergreen
8'+	*Pinus canariensis*	**Canary Island Pine**	16–18 & 21–23	80	50	evergreen
8'+	*Pinus pinea*	**Italian Stone Pine**	16–18 & 21–23	60	40	evergreen
8'+	*Podocarpus gracilior*	**Fern Pine**	8, 9 & 13–24	60	60	evergreen
8'+	*Quercus agrifolia*	**Coast Live Oak**	7–10 & 12–24	70	80	evergreen
8'+	*Quercus virginiana*	**Southern Live Oak**	4–24	50	80	evergreen
8'+	*Tipuana tipu*	**Tipu Tree**	13–16 & 18–24	50	55	semi

City of Encinitas Species Palette

Pkwy*	Botanical Name	Common Name	Zone(s)**	Height (feet)	Spread (feet)	Type
8'+	*Ulmus p. 'Frontier'*	**Frontier Elm**	1–11, 14–21	80	50	deciduous
8'+	*Zelkova serrata*	**Sawleaf Zelkova**	3–21	40	40	deciduous

Last Updated February 7, 2014

* Parkway is the area needed between the sidewalk and the street to plant the tree. This is the minimum distance needed for the tree to grow properly and not damage infrastructure.

** Zone(s) are climate planting zones.

Appendix E – AMERICAN NATIONAL STANDARD INSTITUTE A300 PRUNING STANDARDS

ANSI A300: The American National Standard Institute's (ANSI) Standard for Pruning Trees

The publication can be obtained from the International Society of Arboriculture (ISA): https://wwv.isa-arbor.com/store/product/124/

ANSI Z133.1: The American National Standard Institute Standards for Arboricultural Operations

The publication can be obtained from the International Society of Arboriculture (ISA): https://wwv.isa-arbor.com/store/product/122/

APPENDIX F – CITY OF ENCINITAS INTEGRATED PEST MANAGEMENT POLICY

CITY OF ENCINITAS
ADMINISTRATIVE MANUAL

Policy Title: Integrated Pest Management Plan Section: General

Responsible Department: Public Works and Parks and Recreation Number: G009

Approved By: City Manager Originally Approved: September 30, 2003
Amended: August 27, 2010
Signature: _____ Amended: June 23, 2015
Amended: October 28,2015
Amended: September 11, 2019

1.0 PURPOSE

The purpose of the Integrated Pest Management Plan (Plan) is to describe procedural guidelines for implementation of the Plan in buildings and related facilities; grounds and open space; and other property owned or managed by the City of Encinitas and conducted by city staff or contractors. The Plan is intended to set a standard by utilizing the most environmentally sound approaches to pest management, and to reduce and eliminate, where possible, the volume and toxicity of chemical pest control treatments.

2.0 DEFINITION

A. **"Antimicrobial agents"** means any substance or mixture of substances intended for inhibiting the growth of or destroying any bacteria, fungi pathogenic to human and other animals, or viruses declared to be pests under Section 12754.5 of the California Food and Agricultural Code, except slime control agents, substances intended for the use in or on humans or other animals, and use in or on processed food, beverages, and pharmaceuticals. Antimicrobial agents include, but are not limited to disinfectants; sanitizers; bacteriostats; sterilizers; fungicides and fungi-stats applied to raw material or manufactured products.

B. **"Best Management Practices (BMP)"** means actions based on current science and technology that have been proven to be effective in the control and management of the site or pests to prevent or reduce the incidence of pest problems, with careful consideration given to protect public health and safety, wildlife and the environment.

C. **"City"** means the City of Encinitas.

D. **"City Department"** means any department of the city and includes any pesticide applicator hired by a city department to apply pesticides on city property.

E. **"Contract"** means a binding written agreement, including but not limited to a contract, lease, permit, license or easement between a person, firm, corporation or other entity, including a governmental entity, and a city department, which grants a right to use or occupy property of the city for a specified purpose or purposes.

F. **"Contractor"** means a person, firm, corporation or other entity, including a governmental entity that enters into a contract with a city department.

G. **“Glyphosate”** means a specific broad-spectrum, post emergent, non-selective, systemic herbicide, ($C_3H_8NO_5P$) which effectively kills or suppresses most plant types, including grasses, perennials, vines, shrubs, and trees**.**

H. **"Eco-exempt"** means pesticides designated by U.S. EPA as minimum risk pesticides by Federal Insecticide, Fungicide, Rodenticide Act Section 25(b) and California Code of Regulations Section 6147, or products approved for organic production systems by the National Organic Program.

~~I.~~ **“Integrated Pest Management (IPM)”** means a decision-making process which selects, integrates, and implements long-term pest control strategies to prevent or control pest populations without unnecessary pesticide use. IPM uses a "whole systems approach", looking at the target species as it relates to the entire ecosystem. Control methods are cultural, physical, mechanical, biological, or chemical in nature and include effective monitoring and inspection to detect pest problems and correct inadequate conditions. Action to control pests is only undertaken when predetermined action thresholds are met. All control methods must be effective, with the least-risk to health and the environment and include the use of preventative solutions to avoid future pest problems.

J. **“Integrated Pest Management Policy”** means City Council Policy C031 which describes environmentally sensitive management practices that reduce the exposure of the general public, building occupants, and maintenance personnel to potentially hazardous chemical, biological and particulate contaminants that adversely affect air quality, human health, building systems and finishes, and the environment at city facilities.

K. **“Neonicotinoids”** means synthetic chemical insecticides that are similar in structure and action to nicotine a naturally occurring plant compound.

L. **“Organic Materials Research Institute (OMRI)"** means an organization that determines which input products are allowed for use in organic production and processing.

M. **“Pest”** means any of the following that is, or is liable to become, dangerous or detrimental to the agricultural or nonagricultural environment of the state: (a) Any insect, predatory animal, rodent, nematode or weed; (b) Any form of terrestrial, aquatic, or aerial plant or animal, virus, fungus, bacteria, or other microorganism (except viruses, fungi, bacteria, or other microorganisms on or in living man or other living animals); and (c) Anything that the director (of CDFA), by regulation, declares to be a pest. California Food and Agricultural Code (FAC).

N. **“Pesticide”** means any substance or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, as defined in California Food and Agricultural Code (FAC) section 12754.5 which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment whatsoever.

O. **“Specific Pest Management Plan"** means a written plan identifying the use and management of a particular location or location types to minimize pest impacts and the use of pesticides. Site plans describe the site characteristics and site-specific management needs to address pests. These include, but are not limited to, pest biology,

economic thresholds, recommended treatments, monitoring frequency, cultural practices, and site modifications.

P. **“Special Use Pesticides”** means materials that do not meet the criteria for use, but are considered critical to the protection of public health and safety, the environment, wildlife, or the preservation of city property.

Q. **"Toxicity Category I, II, III, IV Pesticide Product"** means any pesticide product that meets the United States Environmental Protection Agency criteria for the appropriate toxicity categories and bearing on the front label panel the word Danger, Warning, or Caution, as specified in Section 156.10 of Title 40 of the Code of Federal Regulations.

3.0 SCOPE

This Plan establishes procedures for managing indoor and outdoor pests in a way that protects human health and the surrounding environment through the most effective, least-toxic options. This Plan shall govern operations of all city IPM activities. This Plan complies with the city's IPM Policy C031 and establishes specific procedures and protocols for IPM activities to include but not limited to:

- Methods for site or pest inspections, pest population monitoring, and evaluation of the need for pest control.

- Specification of the circumstances under which an emergency application of pesticides in buildings or on surrounding grounds can be conducted without complying with established provisions.

- A communications strategy for notifying the general public of applications of pesticides.

3.1 The city shall continue to abide by the following existing city policies and programs, which were previously adopted and implemented embodying Best Management Practices:

3.1.1 Environmentally Preferable Purchasing and Contracting Policy (approved March 1, 2010)

3.1.2 Building Exterior and Hardscape Management Plan (Effective Date February 1, 2010)

3.1.3 Storm Water Management Ordinance (EMC 20.08)

3.1.4 Grading, Erosion, and Sediment Control Ordinance (EMC 23.24)

3.1.5 Storm Water Best Practices Manual, Part II

3.1.6 Jurisdictional Urban Runoff Management Program

4.0 PROCEDURES

The city recognizes that pesticides are potentially hazardous to human health, wildlife and the environment, and shall give preference to available, safe and effective non-pesticide alternatives and cultural practices when considering options for pest management on city property. City staff

will follow the Plan procedures outlined below:

4.1 Require contractors providing pest management services to comply with the city's IPM Policy C031, Plan G009 and local, state and federal laws.

4.2 Require purchase of products and services that minimize environmental and health impacts, pollution, toxicity, and hazards to worker and community to the greatest extent possible.

4.3 Monitor and record each pest ecosystem to determine pest population, size, occurrence, and natural enemy population; if present. Identify decisions and practices that could affect populations (IPM Observation Form, Exhibit 1).

4.4 Consider a range of potential treatments for the pest problem. Employ non-pesticide management tactics first. Consider the use of pesticides only as a last resort and select pesticides only within the provisions of this Plan (IPM Flow Chart, Exhibit 2).

4.4.1 Determine the most effective treatment time, based on pest biology and other variables, such as weather, seasonal changes in wildlife use and local conditions.

4.4.2 Design and construct indoor and outdoor areas to reduce and eliminate pest habitats.

4.4.3 Modify management practices, including watering, mulching, waste management, and food storage.

4.4.4 Modify pest ecosystems to reduce food and living space.

4.4.5 Encourage the use of physical controls such as hand-weeding, traps and barriers.

4.4.6 Encourage the use of biological controls (introducing or enhancing pests' natural enemies).

Nothing contained in this Plan shall be construed as requiring a department, buyer, or contractor to procure products that do not perform adequately for their intended use, exclude adequate competition, or are not available at a reasonable price in a reasonable period of time. It is not the intent of this Plan to require a department, buyer, or contractor to take any action that conflicts with local, state, or federal requirements.

5.0 METHODOLGY

In support of IMP Policy C031, this Plan incorporates fundamental principles of IPM, as described below.

5.1 Education

Education is a critical component of this Plan. A representative from the appropriate departments using IPM is responsible for educating city staff, contractors, and the public

about IPM Policy C031 and this Plan.

5.2 Identification

The accurate identification of pests will result in the appropriate control methods to use in conjunction with correct action thresholds. Proper identification of pests reduces the possibility that control methods will be implemented when they are not necessary. University of California Cooperative Extension, the San Diego Agricultural Commissioner's office, licensed pest control professionals and other appropriately trained individuals should be consulted for pest identification resources.

5.3 Monitoring & Recordkeeping

Monitoring methods by each site will be used at regular intervals and data will be systematically recorded. City staff will coordinate and utilize standardized pest mapping protocols.

5.4 Establish Threshold Level

Before taking any pest control action, an acceptable threshold level of treatment for each target pest and site will be established. Threshold levels for common pests are at levels which environmental conditions indicate that pest control action may be taken. The threshold level is critical to guide future pest control decisions. In some instances, treatment could be required by federal or state law.

5.5 Upon determining that treatment is necessary, the following criteria should be used to help select the appropriate IPM treatment strategy:

1. Least disruptive of natural controls
2. Least hazardous to human health
3. Least toxic to non-target organisms
4. Cost effective in the short and long-term

5.6 Treatment Strategies

Each city department shall make its own determination about appropriate and effective treatments, based on site-specific requirements. Commitment to the most environmentally sound approach is expected, with non-chemical methods considered first. Prevention, cultural control, mechanical/physical control, biological control and chemical control are the techniques used in IPM. In general, a combination of treatments is more effective than a single approach. City departments are encouraged to seek out and experiment with innovative IPM treatments (and combinations of treatments) and share this information. The following treatment strategies are listed in the order in which they should be executed:

5.6.1 Prevention

This is the most effective pest management strategy. By reducing the capacity of the ecosystem to support target pest populations through design and appropriate

management, the opportunities for pest establishment can be reduced or eliminated.

5.6.2 Cultural

Cultural control is the use of management activities that prevents pests from developing due to enhancement of favorable conditions.

5.6.3 Mechanical/Physical

Mechanical control is accomplished by using physical methods or mechanical equipment to control pest infestations.

5.6.4 Biological

Biological controls include the introduction or enhancement of natural enemy populations to target pests. Introduction of non-indigenous organisms has an associated risk factor and should be thoroughly evaluated prior to implementation.

5.6.5 Chemical

Chemical control of pests is accomplished by using chemical compounds registered as pesticides.

5.7 Training

Ensure that city staff and contractors are certified by the California Department of Pesticide Regulation in the use of pesticides that are approved for use by the city and that applicators follow label directions, precautions, and application regulations.

5.8 Evaluation

A designated representative from the appropriate departments using IPM is responsible to document information on all treatments (including non-chemical ones). Annually, designated city representatives will review and evaluate the success and challenges of the Plan in an effort to continually improve outcomes and adhere to best management practices.

6.0 PESTICIDE USE

It is the goal of the city to use pesticides only when necessary and pesticide selection should be the most effective and least toxic option. The use of toxicity Category I and II pesticides shall be eliminated unless no other means of pest control is effective and the use of toxicity Category III and IV pesticides shall be minimized to the greatest extent possible.

6.1 Except as noted under the Special Use Category Subsection 6.2 and Exemptions Subsection 6.3 pesticide shall not contain ingredients identified in the following sources:

6.1.1 Products listed as Toxicity Category I or II;

6.1.2 California's Proposition 65 list - the Safe Drinking Water and Toxic Enforcement

Act of 1986; as it pertains to pesticides;

6.1.3 California's Department of Pesticide Regulation groundwater protection list - Food and Agriculture Code 13145(d);

6.1.4 Organophosphates, organochlorines, or carbamates listed by the United States Environmental Protection Agency Office of Pesticides Programs or California Environmental Protection Agency Department of Pesticide Regulation Chemical Inquiries Database;

6.1.5 A known carcinogen, probable carcinogen, or possible carcinogen as it relates to pesticides, by the United States Environmental Agency as per "List of Chemicals Evaluated for Carcinogenic Potential; and,

6.1.6 Any known endocrine disruptor listed by the United States Environmental Protection Agency.

6.1.7 Neonicotinoids: Recent research suggests that there is a possible link between pesticides that contain neonicotinoids and the die-off of plant pollinators including honeybees, native bees, butterflies, moths and other insects. Neonicotinoids are synthetic chemical insecticides that are similar in structure and action to nicotine, a naturally occurring plant compound. Neonicotinoids are absorbed into plant tissue and can be present in pollen and nectar making them potentially toxic to pollinators; and,

6.1.8 SGARs – Second Generation Anticoagulant Rodenticides active ingredients brodifacoum, bromadiolone, diffenacoum and difethialone.

6.2 Special Use Category

There may be circumstances when it is necessary to use a pesticide that does not meet the criteria for use under Section 6.1 which are critical to the protection of public health, the environment, wildlife, safety or the preservation of city property. These products will only be used in conjunction with an IPM plan where other products and methods do not adequately control the pest based on the recommendation of a licensed pest control advisor in conjunction with City Staff.

6.3 Exemptions (Special Use)

6.3.1 Improving and Maintaining Water Quality

Notwithstanding any other provision of this Section, this Subsection shall not apply to the use of any pesticide for the purpose of improving or maintaining Water quality at:

- Drinking water treatment plants
- Waste water treatment plants
- Reservoirs
- Related collection, distribution, and treatment facilities

6.3.2 Emergency

Notwithstanding any other provision of this Section, this Subsection shall not apply in the event that an emergency pest outbreak poses an immediate threat to public health or significant economic damage will result from failure to use an eliminated pesticide.

In the event an emergency pest outbreak poses a threat to public health or severe economic damage, treatment other than that outlined above may be required.

- The affected building or area shall be closed off and quarantined until such time corrective action is taken.

- Signs shall be posted in accordance with Subsections 7.1 through 7.4. Signs shall be posted 12 to 24 hours in advance of application and remain in place for 72 hours following the application, pursuant to state law unless manufacturer's label specifies a longer posting period.

When circumstances determine the need to use products which fall under the Special Use Category or Exemptions, the following shall occur:

- Approval by the city department director or its designee in writing;
- Make a good-faith effort to find alternatives to the eliminated pesticide;
- Demonstrate that effective, economic alternatives to the eliminated pesticide do not exist for the particular use; and,
- Develop a reasonable plan for investigating alternatives to the eliminated pesticide.

Choice of pesticide and application may be superseded by county, state, or federal regulations to mitigate quarantined pests or vectors of human or animal disease, e.g. rodents, mosquitoes, highly invasive species.

7.0 NOTIFICATION

The city shall provide the public and its employees with notification of pesticide applications in accordance with the following procedures:

7.1 Signs should be posted at all regular public and employee points of entry to the treated area, and pursuant to state and/or federal law.

7.1.1 Signs shall be posted (i) at every entry point where the pesticide is applied if the pesticide is applied in an enclosed area, and (ii) in highly visible locations around the perimeter of the area where the pesticide is applied if the pesticide is applied in an open area.

7.2 Signs shall be posted at least 24 hours in advance of application and remain in place for 72 hours following the application, pursuant to state law unless manufacturer's label

specifies a longer posting period. If volatile pesticides are sprayed indoors for structural application, notification signs shall be posted seven (7) days in advance of application and remain in place for seven (7) days following the application.

7.3 Signs shall be of a standardized design that is easily recognizable to the public and city staff and contractors.

7.4 Signs shall contain the name and active ingredient of the pesticide product, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide product, the date for re-entry to the area treated, and the name and contact number for the city or city's agent responsible for the application.

7.5 City departments shall not be required to post signs in accordance with Subsection 7.1 in right-of-way locations that the general public does not use for recreational purposes. However, each city department that uses pesticides in such right-of-way locations shall develop and maintain information on the city website for the public to access regarding pesticide applications in the right- of-way areas. The Information shall include for any pesticide that will be applied within the next three days or has been applied within the last four days: A description of the area of the pesticide application, the name and active ingredient of the pesticide product, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide product, the re-entry period of the area treated and the name and contact number for the city or the city's agent responsible for the application.

7.6 When using approved Category IV, Eco-exempt, or OMRI approved pesticides, posting may be on the day of application and remain in place for at least four (4) days.

7.7 City departments using baits or other pesticides granted an exemption by the city department or its agent pursuant to Subsection 7.8 shall not be required to post signs in accordance with Subsection 7.1. However, each city department that uses pesticide baits or other pesticides granted an exemption by the department pursuant to Subsection shall post a permanent sign: (1) in each building or vehicle where such pesticides are used, (2) at the city department's main office or a similar location where the public obtains information regarding the building or vehicle, and (3) when such pesticides are used outdoors to control rats and other pests, in a conspicuous location outside of the area where they are used. The sign shall indicate the name and active ingredient of the pesticides used in and around the building or vehicle, the target pests, the signal word indicating the toxicity category of the pesticide product, the area or areas where the pesticides are commonly placed, and the contact information of the city or the city's agent responsible for the application.

7.8 In the event of a public health emergency or to comply with worker safety requirements, the city will close off and quarantine the affected building or area until such time corrective action is taken. Signs meeting the requirements of Subsection 7.1 through Subsection 7.4 shall be posted 12 to 24 hours in advance of pesticide application and remain in place for 72·hours following the application, pursuant to state law unless manufacturer's label specifies a longer posting period.

7.9 The city may grant exemptions to the notification requirements for one-time pesticide uses and may authorize permanent changes in the way the city notifies the public about

pesticide use in specific circumstances, upon a finding that good cause exists to allow an exemption to the notification requirements. Prior to granting an exemption pursuant to this Subsection, the city shall identify the specific situations in which it is not possible to comply with the notification requirements and propose alternative notification procedures.

8.0 RECORD KEEPING

8.1 Each city department that uses pesticides shall keep records of all pest management activities. Each record shall include the following information:

8.1.1 The target pest;
8.1.2 The type and quantity of pesticide used;
8.1.3 The site of the pesticide application;
8.1.4 The date the pesticide was used;
8.1.5 The name of the pesticide applicator;
8.1.6 The application equipment used;
8.1.7 Prevention and other non-chemical methods of control used;
8.1.8 Experimental efforts; and,
8.1.9 Exemptions granted by the Department pursuant to Section 6.0 for that application.

8.2 Pest management records shall be made available to the public in accordance with the Brown Act Compliance City Policy G033.

9.0 CITY CONTRACTS AND RESPONSIBLE PARTY

The city and all respective departments are responsible for ensuring that staff and contract provider's complete work in accordance with this Plan. All contractors who manage pests for the city shall be required to adhere to the guidelines established in the IPM Policy C031 and this Plan. In addition, when a city department enters into a new contract or extends the terms of an existing contract, the contract shall obligate the contractor to comply with all the provisions of the IPM policy and this Plan.

10.0 REFERENCE DOCUMENTS/POLICIES

1. Environmentally Preferable Purchasing and Contracting Policy (Approved March 1, 2010).
2. Building Exterior and Hardscape Management Plan (Effective Date February 1, 2010).
3. Storm Water Management Ordinance (EMC 20.08).
4. Grading, Erosion, and Sediment Control Ordinance (EMC 23.24).
5. Storm Water Best Practices Manual, Part II.
6. Jurisdictional Urban Runoff Management Program.
7. Grounds and Landscape Maintenance Services Agreement.

CITY OF ENCINITAS **EXHIBIT 1**
INTEGRATED PEST MANAGEMENT
OBSERVATION REPORTING FORM

DATE: _____ OBSERVER: _____ OBSERVATION#: _____

SITE: _____

HOST: _____

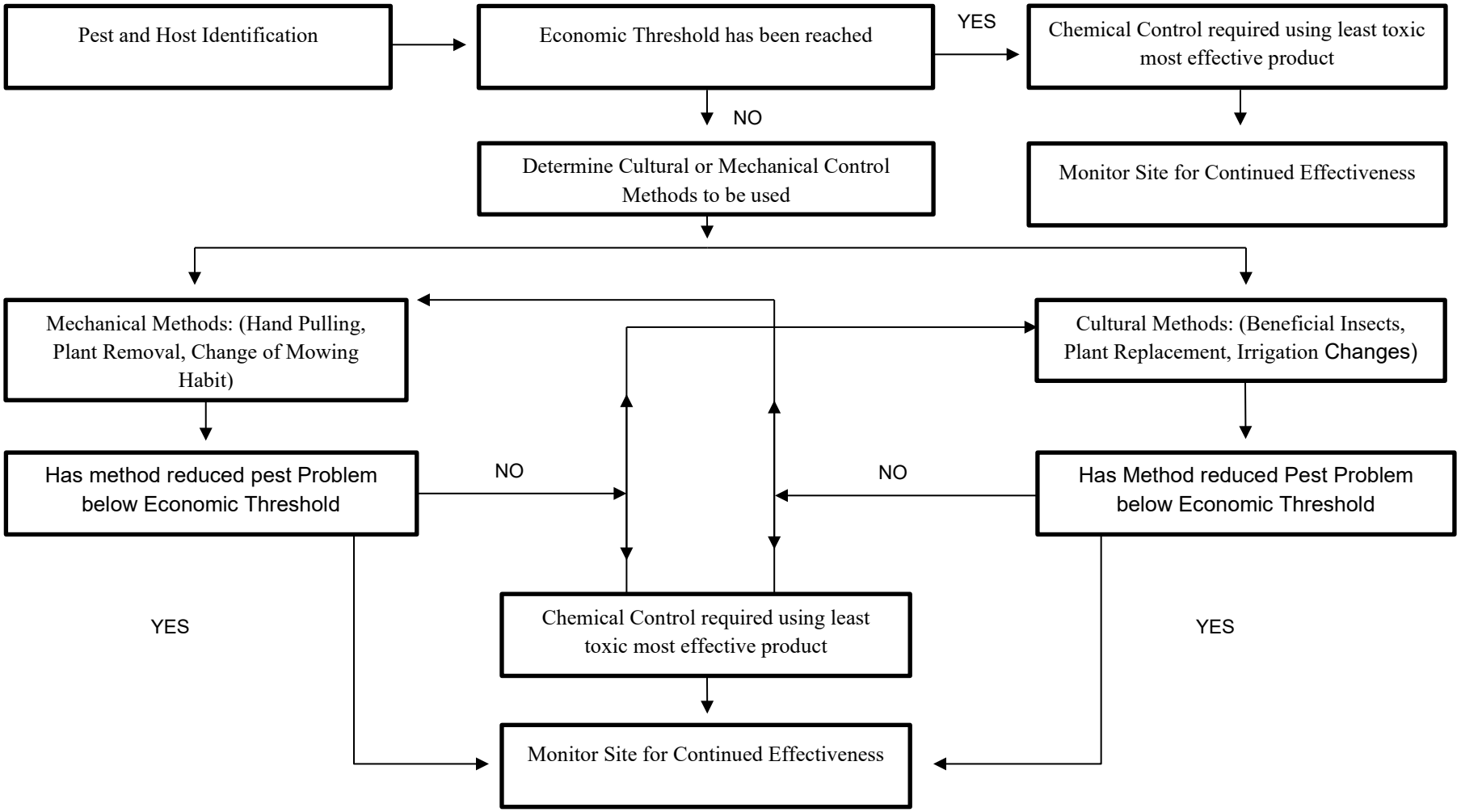
INFESTATION: _____

Describe Observation:
Actions Taken:
Results:
Control Effective After (day/week/month/year):

CITY OF ENCINITAS **EXHIBIT 2**

INTEGRATED PEST MANAGEMENT PLAN G009

PEST MANAGEMENT FLOW CHART



APPENDIX G – GUIDELINE SPECIFICATIONS FOR NURSERY STOCK

Guideline Specifications for Nursery Tree Quality

Selecting Quality Nursery Stock

A committee comprised of municipal arborists, urban foresters, nurserymen, U.C. Cooperative Extension horticultural advisors, landscape architects, non–profit tree groups, horticultural consultants, etc., developed the attached specifications to ensure high quality landscape trees. After more than a year of work, they succeeded in drafting a document entitled Specification Guidelines for Container–grown Trees for California. This document will be published and the guidelines promoted throughout the nursery and landscape industry. Its intent is to help landscape professionals develop their own comprehensive and detailed specifications to ensure that they obtain high quality container–grown nursery trees. The document is also intended to help nursery professionals in their efforts to improve the quality of trees grown in California. These specifications can be modified for specific simulations.

The following people worked on the **Guideline Specifications for Nursery Tree Quality:**

David Burger	UC Davis, Department of Environmental Horticulture, Davis
Barrie Coate	Consulting Arborist, Los Gatos
Larry Costello	UC Cooperative Extension, Half Moon Bay
Robert Crudup	Valley Crest Tree Company, Sunol
Jim Geiger	Center for Urban Forest Research UC Davis, Davis
Bruce Hagen	California Dept. of Forestry & Fire Protection, Santa Rosa
Richard Harris	UC Davis Department of Environmental Horticulture, Davis
Brian Kempf	Urban Tree Foundation, Visalia
Jerry Koch	City of Berkeley Division of Urban Forestry, Berkeley
Bob Ludekens	L. E. Cooke Company, Visalia
Greg McPherson	Center for Urban Forest Research, UC Davis, Davis
Martha Ozonoff	California ReLeaf, Sacramento
Ed Perry	UC Cooperative Extension, Stanislaus County
Markio Robert	Caltrans, LDA Maintenance Division, Oakland

Illustrations:

Front page, c) temporary branches C. Trunk Taper Illustration by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida.
All other Illustrations adapted from Integrated Management of Landscape Trees, Shrubs and Vines, Fourth Edition, 2003, Harris, Clark, Matheny
Photos: Brian Kempf
For more information contact Brian Kempf 559–713–0631 or brian@urbantree.org

Guideline Specifications for Nursery Tree Quality

I. PROPER IDENTIFICATION

All trees shall be true to name as ordered or shown on the planting plans and shall be labeled individually or in groups by species and cultivar (where appropriate).

Illustration by Edward F. Gilman, Professor, Environmental Horticulture Department, IFAS, University of Florida.

II. COMPLIANCE

All trees shall comply with federal and state laws and regulations requiring inspection for plant disease, pests and weeds. Inspection certificates required by law shall accompany each shipment of plants. Clearance from the County Agricultural Commissioner, if required, shall be obtained before planting trees originating outside the county in which they are to be planted. Even though trees may conform to county, state, and federal laws, the buyer may impose additional requirements.

III. TREE CHARACTERISTICS AT THE TIME OF SALE OR DELIVERY

A. TREE HEALTH

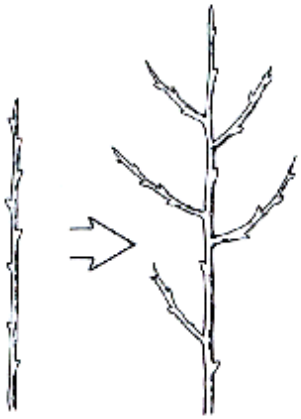
As typical for the species/cultivar, trees shall be healthy and vigorous, as indicated by an inspection for the following:

1. Trees shall be relatively free of pests (insects, pathogens, nematodes or other injurious organisms).
2. An inspection of the crown, trunk, and roots shall find the following characteristics:

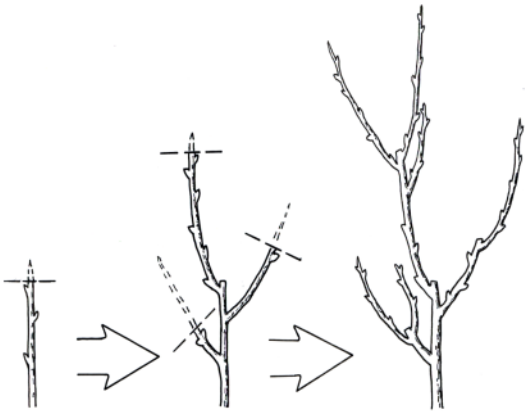
a. Crown Form: The form or shape of the crown is typical for a young specimen of the species/cultivar. The crown is not significantly deformed by wind, pruning practices, pests or other factors.
b. Leaves: The size, color and appearance of leaves are typical for the time of year and stage of growth of the species/cultivar. Leaves are not stunted, misshapen, tattered, discolored (*chlorotic or necrotic*) or otherwise atypical.
c. Branches: Shoot growth (*length and diameter*) throughout the crown is typical for the age/size of the species/cultivar. Trees do not have dead, diseased, broken, distorted or other serious branch injuries.
d. Trunk: The tree trunk should be fairly straight, vertical and free of wounds (*except properly–made pruning cuts*), sunburned areas, conks (*fungal fruiting bodies*), wood cracks, bleeding areas, signs of boring insects, galls, cankers/lesions and girdling ties.
e. Tree height and trunk diameter are typical for the age, species/cultivar and container size.
f. Roots: The root system is free of injury from biotic (*insects, pathogens, etc.*) and abiotic agents (*herbicide toxicity, salt injury, excess irrigation, etc.*). Root distribution is uniform throughout the soil mix or growth media and growth is typical for the species/cultivar.

B. CROWN

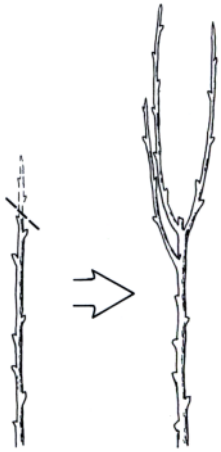
1. **Central Leader**: Trees shall have a single, relatively straight central leader and tapered trunk, free of codominant stems and vigorous, upright branches that compete with the central leader. If the original leader has been headed, a new leader at least ½ (*one–half*) the diameter of the original leader shall be present.



Maintaining a single, centeral leader is preferable.



Heading and retaining a leader is acceptable.

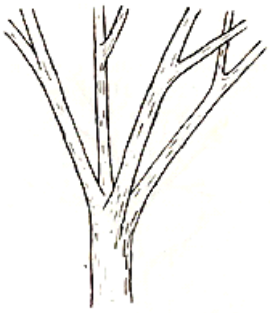


Heading without retaining a leader is unacceptable.

2. **Main Branches** (*scaffolds*): Branches should be distributed radially around and vertically along the trunk, forming a generally symmetrical crown typical for the species.

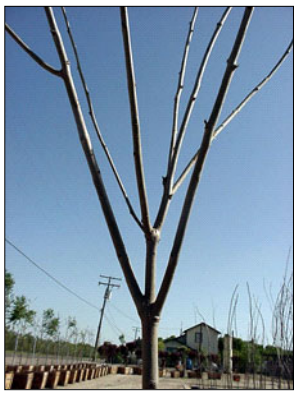
a) **Main branches**, for the most part, shall be well spaced.

preferable



unacceptable

preferable



unacceptable

b) **Branch diameter** shall be no greater than 2/3 (*two thirds*) the diameter of the trunk, measured 1" (*one inch*) above the branch.

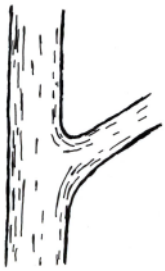
preferable

unacceptable

preferable

unacceptable

c) The attachment of scaffold branches shall be free of **included bark**.



preferable

unacceptable

preferable

unacceptable

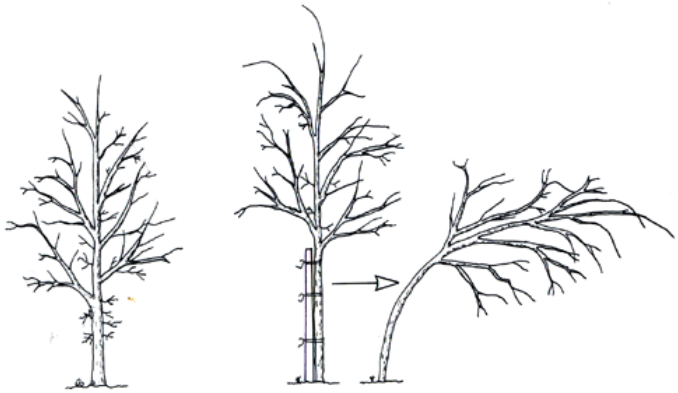
3. **Temporary branches:** Temporary branches should be present along the lower trunk, particularly for trees less than 1–1/2" (*one and one–half inches*) in trunk diameter. They should be no greater than 3/8" (*three–eighths inch*) in diameter. Heading of temporary branches is often necessary to limit their growth.


Good


Not as Good

C. TRUNK

1. **Trunk diameter and taper** shall be sufficient so that the tree will remain vertical without the support of a nursery stake.



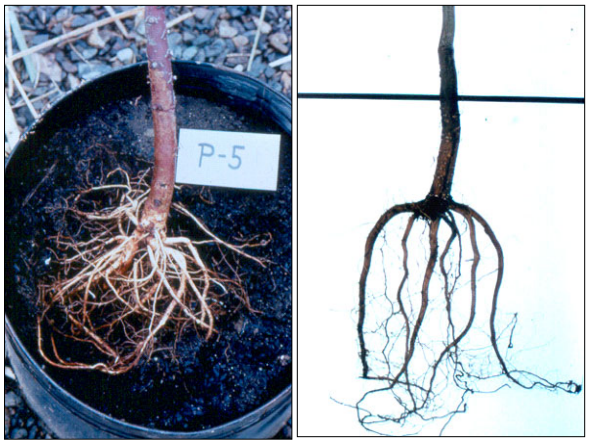
2. The **trunk shall be free of wounds** (*except properly–made pruning cuts*), sunburned areas, conks (*fungal fruiting–bodies*), wood cracks, bleeding areas, signs of boring insects, galls, cankers and/or lesions.

3. **Trunk diameter** at 6" (*six inches*) above the soil surface shall be within the diameter range shown for each container size below:

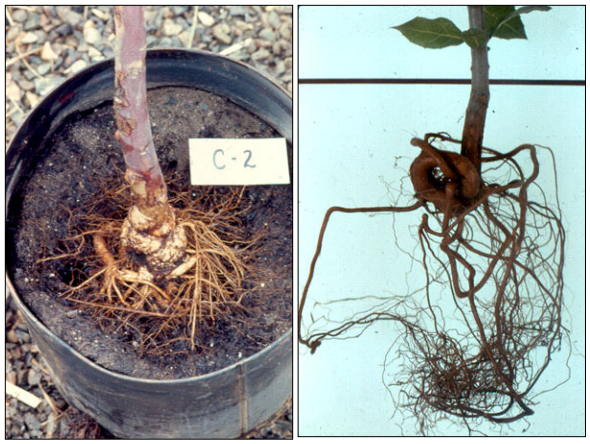
Container Size	Trunk Diameter (*inches*)
# 5 (gallon)	0.5" to 0.75"
# 15 (gallon)	0.75" to 1.5"
24 inch box	1.5" to 2.5"

D. ROOTS

1. The trunk, **root collar** (*root crown*) and large roots shall be free of circling and/or kinked roots. Soil removal near the root collar may be necessary to inspect for circling and/or kinked roots.



preferable



unacceptable

2. The tree shall be **well rooted** in the soil mix. When the container is removed, the rootball shall remain intact. When the trunk is carefully lifted both the trunk and root system shall move as one.

preferable

unacceptable

3. The **upper–most roots** or root collar shall be within 1" (*one inch*) above or below the soil surface.

preferable

unacceptable

4. The **rootball periphery** should be free of large circling and bottom–matted roots. The acceptable diameter of circling peripheral roots depends on species and size of rootball. The maximum acceptable size should be indicated for the species (*if necessary*).

preferable

unacceptable

E. MOISTURE STATUS

At time of inspection and delivery, the rootball shall be moist throughout. The crown shall show no signs of moisture stress as indicated by wilted, shriveled or dead leaves or branch dieback. The roots shall show no signs of excess soil moisture conditions as indicated by poor root growth, root discoloration, distortion, death or foul odor.

V. INSPECTION

The buyer reserves the right to reject trees that do not meet specifications as set forth in these guidelines or as specified by the buyer. If a particular defect or substandard element or characteristic can be easily corrected, appropriate remedies shall be required. If destructive inspection of a rootball(s) is to be done, the buyer and seller should have a prior agreement as to the time and place of inspection, minimum number of trees or percentage of a species or cultivar to be inspected and financial responsibility for the inspected trees.

DELIVERY

The buyer should stipulate how many days prior to delivery that notification is needed.

GLOSSARY:

Codominant – Two or more vigorous and upright branches of relatively equal size that originate from a common point, usually where the leader has been lost or removed.

Crown – The aboveground part of the tree including the trunk.

Cultivar – A named plant selection from which identical or nearly identical plants can be produced, usually by vegetative propagation or cloning.

Girdling root – A root that partially or entirely encircles the trunk and/or buttress roots, which could restrict growth and downward movement of photosynthate and/or water and nutrients up.

Included bark – Bark embedded within the crotch between a branch and the trunk or between two or more stems that prevents the formation of a normal branch bark ridge. This often occurs in branches with narrow-angled attachments or branches resulting from the loss of the leader. Such attachments are weakly attached and subject to splitting out.

Kinked root – A primary root(s), which is sharply bent, causing a restriction to water, nutrient, and photosynthate movement. Kinked roots may compromise the structural stability of root systems.

Leader – The dominant stem which usually develops into the main trunk.

Photosynthate – Pertains to sugar and other carbohydrates that are produced by the foliage during photosynthesis, an energy trapping process.

Root collar – The flared area at the base of a tree where the roots and trunk merge. Also referred to as the "root crown" or "root flare".

Shall – Used to denote a practice that is mandatory.

Should – Used to denote a practice that is recommended.

Scaffold branches – Large, main branches that form the main structure of the tree.

Temporary branch – A small branch that is retained temporarily along the lower trunk of young trees. Temporary branches provide photosynthate to increase trunk caliper and taper and help protect it from sunburn damage and mechanical injury. Such branches should be kept small and gradually removed as the trunk develops.

Trunk – The main stem or axis of a tree that is supported and nourished by the roots and to which branches are attached.

APPENDIX H – ISA BASIC TREE RISK ASSESSMENT FORM

Basic Tree Risk Assessment Form

Client _____ Date _____ Time _____

Address/Tree location _____ Tree no. _____ Sheet _____ of _____

Tree species _____ dbh _____ Height _____ Crown spread dia. _____

Assessor(s) _____ Time frame _____ Tools used _____

Target Assessment

Target number	Target description	Target zone: Target within drip line	Target zone: Target within 1 x Ht.	Target zone: Target within 1.5 x Ht.	Occupancy rate (1 – rare, 2 – occasional, 3 – frequent, 4 – constant)	Practical to move target?	Restriction practical?
1							
2							
3							
4							

Site Factors

History of failures _____ **Topography** Flat ☐ Slope ☐ _____% **Aspect** _____

Site changes None ☐ Grade change ☐ Site clearing ☐ Changed soil hydrology ☐ Root cuts ☐ Describe _____

Soil conditions Limited volume ☐ Saturated ☐ Shallow ☐ Compacted ☐ Pavement over roots ☐ _____% Describe _____

Prevailing wind direction _____ **Common weather** Strong winds ☐ Ice ☐ Snow ☐ Heavy rain ☐ Describe _____

Tree Health and Species Profile

Vigor Low ☐ Normal ☐ High ☐ **Foliage** None (seasonal) ☐ None (dead) ☐ Normal _____% Chlorotic _____% Necrotic _____%

Pests _____ **Abiotic** _____

Species failure profile Branches ☐ Trunk ☐ Roots ☐ Describe _____

Load Factors

Wind exposure Protected ☐ Partial ☐ Full ☐ Wind funneling ☐ _____ **Relative crown size** Small ☐ Medium ☐ Large ☐

Crown density Sparse ☐ Normal ☐ Dense ☐ **Interior branches** Few ☐ Normal ☐ Dense ☐ **Vines/Mistletoe/Moss** ☐ _____

Recent or planned change in load factors _____

Tree Defects and Conditions Affecting the Likelihood of Failure

— Crown and Branches —

Unbalanced crown ☐ LCR _____%

Dead twigs/branches ☐ ____% overall Max. dia. _____

Broken/Hangers Number _____ Max. dia. _____

Over-extended branches ☐

Pruning history

Crown cleaned ☐ Thinned ☐ Raised ☐

Reduced ☐ Topped ☐ Lion-tailed ☐

Flush cuts ☐ Other _____

Cracks ☐ _____ Lightning damage ☐

Codominant ☐ _____ Included bark ☐

Weak attachments ☐ _____ Cavity/Nest hole ____% circ.

Previous branch failures ☐ _____ Similar branches present ☐

Dead/Missing bark ☐ Cankers/Galls/Burls ☐ Sapwood damage/decay ☐

Conks ☐ Heartwood decay ☐ _____

Response growth _____

Main concern(s) _____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐ _____

Likelihood of failure Improbable ☐ Possible ☐ Probable ☐ Imminent ☐ _____

— Trunk —

Dead/Missing bark ☐ Abnormal bark texture/color ☐

Codominant stems ☐ Included bark ☐ Cracks ☐

Sapwood damage/decay ☐ Cankers/Galls/Burls ☐ Sap ooze ☐

Lightning damage ☐ Heartwood decay ☐ Conks/Mushrooms ☐

Cavity/Nest hole _____% circ. Depth _____ Poor taper ☐

Lean _____° Corrected? _____

Response growth _____

Main concern(s) _____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure

Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

— Roots and Root Collar —

Collar buried/Not visible ☐ Depth _____ Stem girdling ☐

Dead ☐ Decay ☐ Conks/Mushrooms ☐

Ooze ☐ Cavity ☐ _____% circ.

Cracks ☐ Cut/Damaged roots ☐ Distance from trunk _____

Root plate lifting ☐ Soil weakness ☐

Response growth _____

Main concern(s) _____

Load on defect N/A ☐ Minor ☐ Moderate ☐ Significant ☐

Likelihood of failure

Improbable ☐ Possible ☐ Probable ☐ Imminent ☐

Risk Categorization

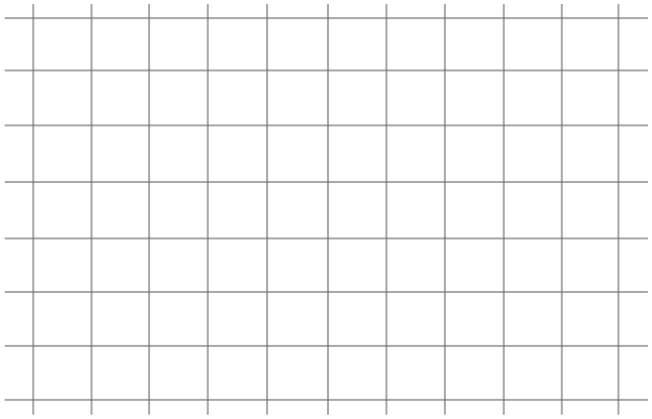
Condition number	Tree part	Conditions of concern	Part size	Fall distance	Target number	Target protection	Likelihood: Failure: Improbable	Likelihood: Failure: Possible	Likelihood: Failure: Probable	Likelihood: Failure: Imminent	Likelihood: Impact: Very low	Likelihood: Impact: Low	Likelihood: Impact: Medium	Likelihood: Impact: High	Likelihood: Failure & Impact (from Matrix 1): Unlikely	Likelihood: Failure & Impact (from Matrix 1): Somewhat	Likelihood: Failure & Impact (from Matrix 1): Likely	Likelihood: Failure & Impact (from Matrix 1): Very likely	Consequences: Negligible	Consequences: Minor	Consequences: Significant	Consequences: Severe	Risk rating of part (from Matrix 2)
1							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
2							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
3							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
4							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
							○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	

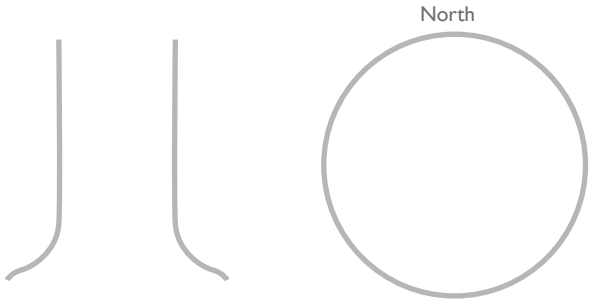
Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impacting Target			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low





Notes, explanations, descriptions _____

_____

_____

_____

_____

Mitigation options _____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

_____ **Residual risk** _____

Overall tree risk rating Low ☐ Moderate ☐ High ☐ Extreme ☐ **Work priority** 1 ☐ 2 ☐ 3 ☐ 4 ☐

Overall residual risk Low ☐ Moderate ☐ High ☐ Extreme ☐ **Recommended inspection interval** _____

Data ☐Final ☐Preliminary **Advanced assessment needed** ☐No ☐Yes-Type/Reason _____

Inspection limitations ☐None ☐Visibility ☐Access ☐Vines ☐Root collar buried Describe _____

APPENDIX I – TREE CARE FOR BIRDS AND OTHER WILDLIFE BEST MANAGEMENT PRACTICES IN CALIFORNIA

Tree Care for Birds & Other Wildlife

Best Management Practices in California

Tree Care for Birds & Other Wildlife
Kara Donohue, Ryan Gilpin, and Corey Bassett
www.treecareforbirds.com
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February 26, 2018

Best Management Practices
in California

TREE CARE FOR BIRDS & OTHER WILDLIFE

Kara Donohue, Ryan Gilpin, and Corey Bassett

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Acknowledgements

The authors would like to acknowledge the funders, businesses, organizations, and individuals who have made significant contributions to this publication. We would like to start with thanking our employers for allowing us to use work time to prepare this document. Thank you, Southern California Edison, (Kara Donohue), HortScience Inc. (Ryan Gilpin), and West Coast Arborists, Inc. (Corey Bassett).

This project would not have been possible without grant funding from our two primary funders and financial support from our secondary funders.

Primary Funders

Secondary Funders

Altacal Audubon
Pomona Valley Audubon
California Urban Forest Council
Sea and Sage Audubon
Cavity Conservation Initiative
West Coast Arborists, Inc.

We would like to thank some of our fellow Tree Care for Birds & Other Wildlife members for their organizational support, recommendations and experiences:

Thomas Dietsch, US Fish and Wildlife Service
Anne Fege, City of San Diego Community Forest Advisory Board
Chris Guenther, City of Escondido
Star Howard, Sea and Sage Audubon
David Lee, Davey Resource Group
Gillian Martin, Cavity Conservation Initiative
Mike Palat, West Coast Arborists, Inc.
Amelia Oliver, California ReLEAF
Diana Ruiz, Riverside Corona Resource Conservation
Magen Shaw, Davey Resource Group

Susan Sims, Sims Tree Learning Center
Andrew Trotter, West Coast Arborists, Inc.

We are also grateful to everyone who has commented on the development and drafts of these Best Management Practices.

Illustrations created by Brian French and Monica Edwards.

Fiscal management for the Tree Care for Birds & Other Wildlife Project was provided by

CALIFORNIA ReLEAF

Purpose

This document was written to provide guidance to the California tree care and landscape industry about how to minimize impacts to wildlife during the course of tree work and manage wildlife habitat. While many tree care workers and managers wish to act responsibly around wildlife, little information has been available about how work can best be accomplished while minimizing impacts to wildlife. In addition, Federal and California wildlife regulations are not widely known within the tree care industry, thereby putting uninformed workers at risk of significant fines and public criticism.

This guidance document is meant to be voluntary. These Best Management Practices (BMPs) are not meant to impose new regulations on the tree care industry but rather aim to help those in the industry follow current laws and regulations.

Introduction

The tree care industry is different from conventional forestry in that it focuses on the selection, planting, and care of trees of all ages located in city centers, suburban neighborhoods, rural areas and some relatively wild areas with human influences such as roads and utility lines. Tree care activities vary in their level of labor intensity, equipment, frequency, noise, and expense. Managing trees is critical to their success and can maximize their potential environmental benefits. At their most basic, tree care activities include planting, pruning, removal, plant health care, ground maintenance activities, utility clearing, planning, and management (Appendix I - Tree Care Industry Overview, page 30).

One of the important values of trees in urban areas is providing habitat for wildlife. Because of habitat loss due to development, urban landscapes are more vital than ever to wildlife. Wildlife (including birds, mammals, reptiles and amphibians) rely on trees and landscapes for food and shelter as they feed, roost, and reproduce. In turn, wildlife control insects, provide food for other wildlife, pollinate plants, distribute seeds, and are good indicators of environmental health. When trees are managed to support wildlife, landscapes can be more diverse and ecologically rich. Knowledge of breeding, nesting, and foraging habits of wildlife can empower tree care workers to positively manage habitat and encourage the enjoyment of wildlife (Appendix II - Wildlife in California page 33).

The project team determined there is a gap in the resources available to aid the

tree care industry in the management of work performed in proximity to wildlife. Unlike most Best Management Practices in the tree care industry, this project:

- is a grassroots project with no large supporting organization,
- has no ANSI A300 Standard on which to base the Best Management Practices,
- is intended for an audience wider than the tree care industry, and
- is focused only on California because of the state's unique environment and regulations.

Extensive expert knowledge of tree care and wildlife biology from the team's roster of professionals provided diverse backgrounds to apply to the writing of this document. The project team also reviewed the limited scientific literature on impacts from tree care practices on wildlife populations and habitats. The scientific literature that exists is primarily conducted in natural areas which may not pertain to most tree care situations.

There are many federal and state laws and regulations about wildlife pertinent to the tree care and landscape industry in California. Local regulations and policies may also exist and should be researched for individual areas. These laws and regulations are broad and results based. They tend to focus on whether or not wildlife were disturbed, injured, or killed. The agencies provide little information about what type of activities may be in violation of the laws. A list and brief explanation of the relevant laws and regulations can be found in Appendix III - Laws and Regulations (Page 46). Of particular note are the Migratory Bird Treaty Act and California Fish and Game Codes 3503 and 3503.5 which apply to the majority of birds.

The section *Minimizing Direct Impacts to Wildlife* (Page 4) outlines procedures to help keep tree care industry workers from violating these laws and regulations. Many factors go into whether tree care near nesting wildlife is lawful, including: wildlife biology, intensity and duration of work, and proximity of work to nests. These Best Management Practices are recommendations that can help minimize the chance of violating the law but cannot eliminate the possibility. Most importantly, nests with eggs or young should not be removed, moved or worked near. Similarly, these Best Management Practices are only recommendations and should not be viewed as regulations or the only way to minimize impacts to wildlife.

The tree care industry's impact on wildlife goes beyond disturbing nesting

wildlife. Habitat structure is altered by pruning and planting trees. The 2017 update to the ANSI A300 Pruning Standard includes “Manage Wildlife Habitat” as a pruning objective. The section of these Best Management Practices titled Managing Wildlife Habitat (Page 18) introduces new and old ideas for tree care industry workers to think about while working in landscapes.

Lastly, it was necessary in writing these BMPs to create a hierarchy of various activities and mitigation strategies appropriate for professionals with different levels and types of training in both tree care and wildlife biology. The roles and titles used, like **Wildlife Trained Arborist** and **Wildlife Biologist,** are defined in the text and the Glossary (Page 24) but do not refer to specific certifications that existed at the time of writing. Rather, the project team hoped to provide recommendations on the type of training and expertise necessary to minimize impacts to wildlife in different situations and to set the stage for the development of certification programs. Educational resources and training information will be available at www.treecareforbirds.com.

Minimizing Impacts to Wildlife

This section provides guidance to help tree care workers organize their work to comply with California state and U.S. federal laws and regulations. The step-by-step process guides what level of training and expertise may be most appropriate for different situations. Tree care workers should plan projects appropriately. In the field, tree care workers should be aware of wildlife and respond to their presence by involving people with adequate training.

Some companies may choose to develop a programmatic approach to minimizing impacts to wildlife. For example, rather than evaluating BMP recommendations as they apply to each individual work site, a company program could assess their area as a whole for potential conflicts and develop a program specific to their activities and impacts. A company with a program in place may not need the aid of these BMPs, but for a company just starting to develop a program these BMPs may provide a starting point.

Providing training and materials for workers prior to work can aid in the ability to recognize and respond to situations with the potential to harm wildlife. Training materials, an **Awareness Training** video, and other resources can be found at www.treecareforbirds.com.

- Tree care worker with minimal training: **Awareness Training** can be provided by a **Wildlife Trained Arborist** at the project site during the daily job briefing. **Awareness Training** is a brief crew training provided by a **Wildlife Biologist** or **Wildlife Trained Arborist** that covers general information about looking for signs of nesting wildlife or may be specific to a location.
- A **Wildlife Trained Arborist** is a tree care worker with training and/or experience in: determining habitat value, conducting pre-work nesting inspections, identifying signs of nesting wildlife, determining if nests are active, responding to wildlife emergencies, and contacting Wildlife Biologists when needed.
- A **Wildlife Biologist** is a person with knowledge and experience in identifying wildlife species that may occur in an area, and is familiar with wildlife behavior, nesting requirements, tolerance to impacts, and suitable survey methods.

If the project is covered by a California Environmental Quality Assessment (CEQA) determination, the mitigations identified in the final decision must be followed. If the project is covered by US Fish and Wildlife Service or other

agency consultation, the conditions of that consultation must be followed. If the project has permit requirements, the requirements must be followed. These BMPs do not attempt to replace those processes in any way.

This section is divided into two phases of work: Project Preparation and Fieldwork. Each phase of work has a narrative. Project Preparation is represented by Table 1 (Page 8), and Fieldwork has a flowchart (Figure 5, Page 13) to guide tree care in ways that minimize impacts to wildlife.

Project Preparation

The goals of the Project Preparation phase are to establish the breeding season and habitat value of a work site and use this information to select a Category for the Fieldwork phase (Table 1, Page 8). Adult mammals and birds will likely flee when tree care workers arrive to a work area so work can proceed. During nesting, however, eggs and young wildlife cannot move from nests. Because they are vulnerable and stationary during this time period, nesting wildlife are those most likely to be impacted by tree and shrub care. To minimize impacts, it is critical to identify, avoid, and protect wildlife nests. Nesting wildlife can be found in any type of habitat at any time of year. However, certain types of habitats are more likely to contain nesting wildlife. Most wildlife nest during the spring and summer.

Tree care projects can be divided into three categories based on two criteria: the time of year of the work (breeding season or non-breeding season) and the habitat value of the work area. See Appendix IV - Bird Group Breeding Information Table (Page 51) for general breeding season periods for various groups of birds. It is important to note that breeding seasons vary by factors such as location and species, and that climate change will also likely impact the breeding season timing in the future. Different types of landscapes have different habitat values. Habitat value is defined by the likelihood of finding wildlife using an area throughout the year. Appendix V - Pre-work Inspection Form (Page 54) is a pre-work inspection form to help decide the habitat value. The habitat values listed in this document are: **riparian habitat** (Figure 1, Page 6) **high value habitat** (Figure 2, Page 7), and **low value habitat** (Figure 3, Page 7).

*Figure 1**. Riparian habitat** is the interface between land and constant or intermittent rivers or streams and generally provide the highest value habitat for wildlife. Riparian areas can be identified by their distinctive soils and vegetation, particularly willows (Salix spp.), mulefat (Baccharis salicifolia), sycamore (Platanus spp.), and cottonwood (Populus spp). This may include concrete channels when the associated riparian vegetation and soils are present.*
Illustrator - Brian French

Figure 2. ***High value habitat*** *generally has low human use, low impervious surfaces, high plant species diversity, high plant structural diversity, close to water bodies, many mature trees, many dead or dying trees, and abundant wildlife.*
Illustrator – Monica Edwards

Figure 3. ***Low value habitat*** *generally has high human use, high impervious surfaces, low plant species diversity, far from water bodies, few mature trees, few dead and dying trees, and few/no wildlife present.*
Illustrator - Brian French

Conducting a desktop review of the biological resources potentially present at a project location can help identify the appropriate category choice prior to beginning tree care activities. Sources of information include USFWS Critical Habitat designations and Wetland Mapper, CNDDB, public lands (USFS, BLM, State Parks, etc.), and local Audubon chapters. Should a desktop review reveal the project location is in or near USFWS designated critical habitat, sensitive species locations, or wetlands/riparian areas, the project activities may require more caution.

Tree care work can be broken into three categories based on the value of the habitat and whether or not the work is scheduled during the breeding season (Table 1). The level of expertise required for these projects may be dictated by other factors. Many construction projects, permit requirements, and CEQA documentation will require **Wildlife Biologists** to be involved in the project. In those cases, a **Wildlife Biologist** should be contacted rather than using the below categories.

Table 1. Determining Category

	Low value habitat	**High value habitat**	**Riparian habitat**
Non-breeding season	Category 1	Category 2	Category 3
Breeding season	Category 2	Category 3	Category 3

Category 1 is **low value habitat** during the non-breeding season where nesting wildlife are least likely to be encountered. A pre-work inspection by a tree care worker with **Awareness Training** is recommended. This inspection should be completed before equipment has been turned on at the site, preferably within a week of the start date as many birds can build nests quickly.

Category 2 covers two situations. The first is **low value habitat** during the breeding season where nesting wildlife are more likely to be encountered. The second is **high value habitat** during the non-breeding season where sensitive habitats are more likely to be encountered. Sensitive habitats are habitats which are home to special status species or are themselves rare. A pre-work inspection by a **Wildlife Trained Arborist** is recommended.

Category 3 covers **high value habitat** during the breeding season or **riparian habitat** at any time of the year, nesting wildlife and sensitive habitats are more likely to be encountered. It is recommended a **Wildlife Biologist** be contacted

for direction**.** However, companies who have taken a programmatic approach to protecting wildlife may be able to use a well-trained arborist to minimize impacts in these locations. Ideally the **Wildlife Biologist** provides advice on how the project can proceed. The biologist will collect information about the job, timing, and location to provide recommendations. They may be able to approve the work as planned, but more likely will need to visit the site and may recommend timing or methodological changes to the project. For projects in riparian areas, permits from regulatory agencies may be required for tree and vegetation pruning and removal (Appendix III, Page 46).

Because wildlife can nest year round in any type of habitat, the Category level assessed at the time of planning may change during the fieldwork. Encountering signs of wildlife during fieldwork may require further expertise to handle the situation.

Figure 4. A tree care worker conducting a pre-work inspection is looking for signs of wildlife including wildlife breeding behavior such as carrying sticks or food, acting agitated, distress calls, as well as concentrations of bird droppings, nests that may be active, eggs, young, or wildlife reliant on nest. See Appendix V (Page 54) for a sample pre-work inspection form.
Illustrator – Monica Edwards

After scheduling the work with assistance from someone with the appropriate level of training based on the Category, the final step of project preparation is to gather contact information for a **Wildlife Biologist** and local wildlife rehabilitator. Contact information for both of these resources will be important

if a wildlife emergency or situation that needs expertise arises during fieldwork. A wildlife emergency is a situation where wildlife are injured, orphaned, or in danger or where nests are abandoned or disturbed.

Fieldwork

After following the Project Preparation phase (Page 5) the appropriate Category of BMP determines how to proceed in the Fieldwork phase. For a **Category 1** job, a person with **Awareness Training** should perform a pre-work inspection. For a **Category 2** job, a **Wildlife Trained Arborist** should perform a pre-work inspection. For a **Category 3** job, a **Wildlife Biologist** is recommended to advise workers when and how to safely work in the area. For any job, contact information for a **Wildlife Biologist** and wildlife rehabilitator should be on-hand in the field. Figure 5 (Page 13) is a graphical depiction of this text.

Category 1

- **Low value habitat** during the non-breeding season,
- Nesting wildlife are unlikely to be encountered, and
- **Awareness Training** is recommended.

A pre-work inspection performed by someone with A**wareness Training** is recommended. This inspection can occur prior to starting work, or in the days before the work is scheduled, but not more than a week before the work is planned to begin. The pre-work inspection can be part of the site walk to discuss the work for the day, safety precautions, etc. but is best done at a quiet time when wildlife activity can be observed. Wildlife being present on a site does not mean that they will be negatively impacted by the work. It is important to look for nests that may be active and signs of wildlife. Signs of wildlife include: wildlife breeding behavior such as carrying sticks or food, acting agitated, distress calls, as well as observing concentrations of bird droppings, nests that may be active, eggs, young, or wildlife reliant on nests. If any of these signs of wildlife are observed during the site walk or during the work, a **Wildlife Trained Arborist** or a **Wildlife Biologist** should be contacted.

If there are no signs of nesting wildlife during the pre-work inspection, the work can proceed as normal. While working, be aware of wildlife, cavities, and nests.

Category 2

- **Low value habitat** during the breeding season, or
- **High value habitat** during the non-breeding season where
- Nesting wildlife are more likely to be encountered, and

- A pre-work inspection by a **Wildlife Trained Arborist** is recommended.

A pre-work inspection by a **Wildlife Trained Arborist** should be completed before the work is started. This inspection can occur the morning of the work or in the days before the work is scheduled but not more than a week before the work is planned to begin.

If no active nests are found that may be impacted by the tree work, the crew can proceed with the work. If active nests are found that may be impacted by the tree work, the best option is for the **Wildlife Trained Arborist** to delay the work until the young have fledged from the nest and work can safely proceed. Most **Wildlife Trained Arborists** will not be able to identify the species of wildlife and predict when the nest is likely to become inactive, but Appendix IV (Page 51) provides some typical time frames. In some cases, the **Wildlife Trained Arborist** may be able to suggest that work starts on a portion of the site, but that some areas are left until after the young have left the nest.

When a nest is discovered during the pre-work inspection or during work, a **Wildlife Trained Arborist** should perform an evaluation to determine whether the nest is active. If it cannot be determined whether the nest is active or whether the nest is a raptor nest (typically a platform nest or cavity nest), a **Wildlife Biologist** should make this determination. Raptors may reuse their nests and should not be removed without consulting a **Wildlife Biologist**. If necessary due to tree removal, inactive non-raptor nests can be destroyed provided no possession of the nest occurs. U.S. Fish and Wildlife Service details guidance for nest destruction in their 2003 Migratory Bird Permit Memorandum.

Category 3

- **Riparian habitat** anytime,
- **High value habitat** during the breeding season,
- Nesting and/or sensitive wildlife are likely to be encountered, and
- A pre-work inspection by a **Wildlife Biologist** is recommended.

For **high value habitat** during the breeding season or when working in or adjacent to **riparian habitats**, there is a higher chance of disturbing nesting wildlife or impacting special status species or their habitat. The direction provided by the **Wildlife Biologist** should be followed. This may mean work may proceed as planned similar to **Category 2**, but more likely the **Wildlife Biologist** will recommend an inspection and periodic monitoring until the work is complete.

If no active nests are found that may be impacted by the tree work, the **Wildlife Biologist** will instruct the crew to proceed with work while maintaining awareness of any wildlife in the area. If active nests are found that may be impacted by the tree work, the best option is for the **Wildlife Biologist** to delay the work until the young have fledged from the nest and work can safely proceed. In some cases the **Wildlife Biologist** may be able to suggest alternative methods to use near the nest (Considerations for Work Performed Near Active Nests, Page 14) or suggest that work starts on a portion of the site, but that some areas are left until after the young have left the nest.

Emergencies

Wildlife emergencies occasionally occur during tree work. While the first priority is to try to avoid these emergencies, the second priority is to respond appropriately. If wildlife are injured or young wildlife and eggs are abandoned by their parents as a result of the tree work, a local wildlife rehabilitator should be contacted. Explain the situation to these experts in wildlife emergencies. The wildlife rehabilitator likely can provide guidance on how to proceed. In some situations, they may advise doing nothing and allowing the parents to return and care for the wildlife. In other situations, they may advise bringing the injured wildlife immediately to a care facility. To continue working after a wildlife emergency, a **Wildlife Biologist** should be contacted.

If no wildlife emergencies occur and no signs of nesting wildlife are observed, continue working while being aware of wildlife, cavities and nests. If at any time the crew feels uncomfortable or unsure of how to work in the area, a **Wildlife Trained Arborist** or a **Wildlife Biologist** should be contacted.

In the case of a human health and safety emergency, a **Wildlife Biologist** can help coordinate permission to remove an active nest with the US Fish and Wildlife Service and the CA Department of Fish and Wildlife. Human health and safety emergencies pose immediate risk to human health and/or safety and require action to alleviate imminent danger circumstances. These agencies can grant permission for removal of an active nest when deemed appropriate. If a tree with an active nest needs to be removed for human health and safety, a Tree Risk Assessment Qualified (TRAQ) arborist should perform a Level 2 inspection and show that tree risk exceeds risk tolerance of the property owner and seek USFWS and CDFW approval. In a time-sensitive situation, action may need to be taken before permission can be received, but this should only be done in the most extreme situations.

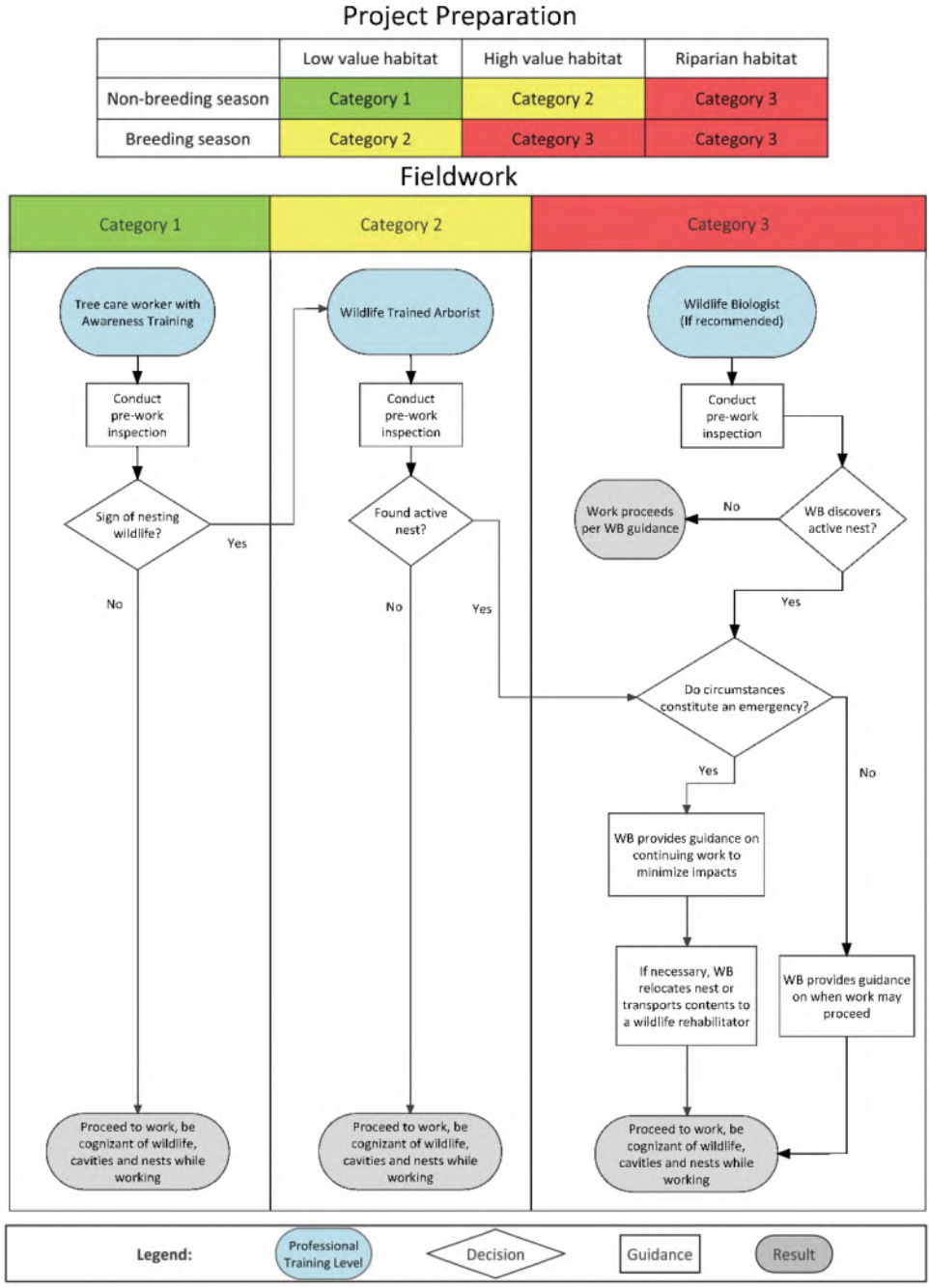

Figure 5: Project Preparation and Fieldwork phase decisions flowchart

Considerations for Work Performed Near Active Nests

When an active nest is discovered in a work area, it is best to delay work until the nest becomes inactive. In the absence of direction from a **Wildlife Biologist**, setting larger, conservative buffers may help reduce the likelihood of impacts. However, there are circumstances when it may be possible to continue work in the vicinity of an active nest without resulting in the abandonment of a nest. In particular, when circumstances are such that imminent danger exists that may result in an emergency or there is a public safety concern, it may be necessary to complete a minimal amount of work until the nest becomes inactive.

Key considerations for work near active nests include:

- the duration of the work to be completed,
- the tools used,
- the species involved,
- distance of the work to the active nest,
- the status of the nest,
- location specifics (e.g. urban vs. rural), and
- environmental conditions (temperature and wind).

It may be necessary to communicate with a **Wildlife Biologist** to determine the appropriate methods for work to continue. Typically, a no activity buffer should be established around the nest. A nest buffer is an area in which no work should occur in order to prevent the abandonment of the nest by the adults. For example, if an active nest is discovered in a tree near a project, a no work zone should be established. This area can be cylindrical or circular and radiate out from the nest an appropriate distance that the adult birds can continue normal activities of tending to their nest without being disturbed (Figure 6, Page 15). Appendix IV (Page 51) recommends buffers for different types of birds depending on the habitat value of the work area. These buffers should be large for most situations, **Wildlife Biologists** may be able to recommend smaller buffers depending on specific situations.

Work Duration and Temperature

An active nest is less likely to fail if the work duration nearby is kept to a minimum. Adults kept away from an active nest during moderate weather conditions for 30 minutes or less are unlikely to abandon the nest or have mortality to the eggs or young occur. However, if work duration is several hours or if weather conditions are extreme, the adults are likely to abandon their nest and/or mortality may result due to starvation, predation, or the eggs or hatchlings being too hot or cold. Bird embryos are more sensitive to overheating

than to cold.

Tools

Often disturbance level can be minimized by tool selection. Hand tools may be recommended over gasoline powered tools to reduce noise. It should be taken into consideration that if hand tools significantly increase the duration of work at a location, the benefit from reduction of noise may be canceled out by the longer duration of work.

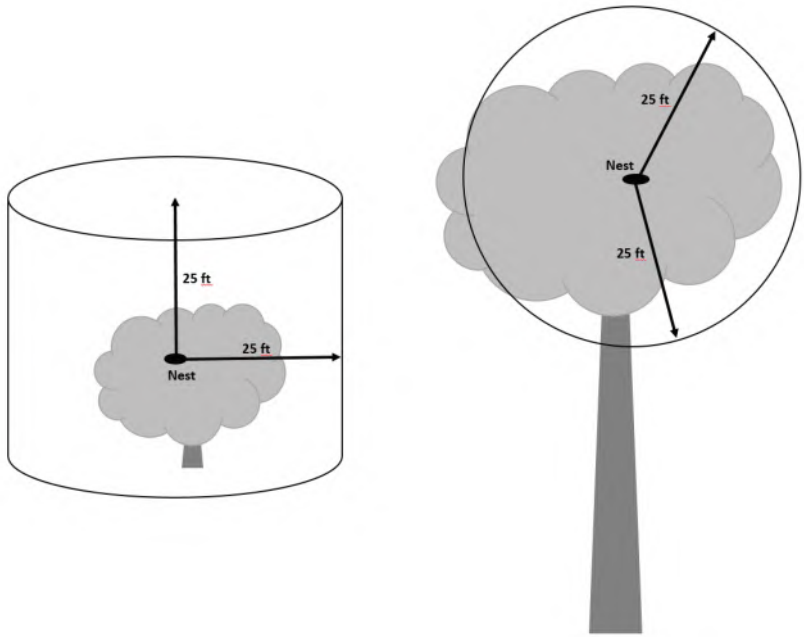

Figure 6: Three dimensional no activity buffer around a nest

Species, Species Behavior, and Distance Considerations

Buffers for active nests should consider species-specific tolerances for disturbance, if known. Typically, larger buffers are used for large bird species and for species that are not tolerant of disturbance. Smaller buffers are generally used for smaller avian species and also species that have a high tolerance for disturbance, such as those that are commonly found nesting close to development.

Some species differ in tolerance based on location and therefore the appropriate buffer may vary. A blue-gray gnatcatcher (*Polioptila caerulea*), for example, nesting in a thicket or understory is less likely to be disturbed than one nesting in a more exposed location in a shrub or small tree even though both

nests are the same distance from the activity. Likewise, a red-tailed hawk (*Buteo jamaicensis*) that has acclimated to human activities is less likely to be disturbed at its nest than one that is not accustomed to human activity.

For ground-based activities, vertical separation of the nest from the construction area may be considered when selecting the appropriate buffer. Some species build their nests very high in trees and structures. For example, a nest 50 feet off the ground is less likely to be affected by ground work occurring directly below than a nest 10 feet off the ground. Nests close to the ground may be better suited to a cylinder shaped no work buffer area while spherical no work buffer areas may be suitable for nests farther from the ground (Figure 6).

The observed behavior of an individual bird during the nest search process and consequent nest monitoring will help determine the appropriate buffer distance. For example, an incubating adult that appears more skittish and is readily disturbed could receive a larger buffer than an incubating adult that sits tight and appears more acclimated to disturbance.

Nest Status

Generally, nesting birds are most susceptible to failure early in the nesting cycle when fewer resources have been invested towards the nest. Therefore, it is more important to reduce disturbances during egg laying rather than later in the nesting cycle, which could result in the determination of a larger buffer being necessary early on, then reducing its size later in the nesting season.

When a nest is close to fledging, if disturbance occurs young may be more likely to leave the nest prematurely, unable to adequately fly, and therefore more susceptible to predation or injury. Similar to early in the nesting cycle, a larger buffer may be necessary until the young have fledged.

Environmental Conditions

Extreme weather events may produce conditions that would increase the likelihood of nest failure. Combined with the stress of nearby activity, a nest might fail that would otherwise succeed. On unseasonably hot, cold, or windy days, buffers may need to be increased.

Summary

The appropriate buffer (area surrounding the nest in which no activity may occur) for each nest often should be determined in consultation with a **Wildlife Biologist**. The **Wildlife Biologist** can use information from the above categories in combination to judge the buffer size needed to avoid or reduce the likelihood

of the abandonment of an active nest. When long work duration is combined with hot weather and the nest is in the early incubation stage, larger buffers will be needed when compared to work that will take only 30 minutes, requires only hand tools, occurs during cool weather, and has a nest of older chicks. Taking into account the variety of factors when establishing buffers minimizes work activity impacts to nesting birds.

Managing Wildlife Habitat

When tree care crews work in landscapes, they change the structure and availability of potential habitats for wildlife. Many factors go into tree care decisions such as: plant health, branch structure, clearance requirements, aesthetics, risk, and climber safety. Many within the tree care industry are interested in including managing wildlife habitat into their tree care decisions. The laws protecting wildlife apply to habitat management. Any time that a crew is working near, or may encounter, nesting or sensitive wildlife, they should be following the recommendations for Minimizing Impacts to Wildlife (Page 4). This section is not intended to provide mitigation for removing active nests or sensitive habitat, but to provide guidance for those managing wildlife habitat.

Managing wildlife habitat includes more than improving habitat. In certain situations, land managers may be looking to decrease the habitat value of their landscapes. Possible reasons include minimizing human wildlife conflicts due to planned construction, excessive feces or noise in use areas, wildlife damaging infrastructure, etc. While this section focuses on improving habitat, the opposite approach may be more appropriate in areas of human-wildlife conflicts. However, the benefits of trees should be considered.

Hundreds of different species of wildlife live in California landscapes. Many of these species have different nesting, dietary, and behavioral needs. It is not possible to guide the management of landscapes to increase or decrease the habitat values for all species. However, research, experience, and common sense can guide tree care workers in managing wildlife habitat. Two approaches can be used separately or together to accomplish habitat goals: a species-specific approach and a diversity approach.

Species Specific

Land managers may be interested in increasing the numbers of a particular species or type of wildlife. This could be for practical purposes (e.g. increased raptors to reduce rodent populations) or for ecological reasons (e.g. acorn woodpeckers are underrepresented in the area). Research into the life cycle of that species and what is likely restricting its numbers in this area can be conducted. Based on that research, the landscape can be managed in a particular way to potentially increase the numbers of the desired species. For example, Nuttall's woodpeckers typically excavate their nests in trees with heart rot. Rather than remove trees that are declining in health (and selecting those that are not a safety risk), tree care workers may be able to recommend management for tree risk via such means as height reduction and limb removal

or reduction, and recommend monitoring their stability for future woodpecker use.

In order to help determine the requirements and management options for specific species, contact a **Wildlife Biologist** or your local Audubon chapter.

Diversity Approach

In general, single-species habitat management limits the potential benefits to other wildlife. An ideal goal is to encourage landscape managers to consider establishing natural conditions that support a broad variety of wildlife. Larger and more diverse habitats with minimal human disturbance are likely to benefit a greater number of species.

Plant Management

Generally, expanding landscapes through tree, shrub and ground cover planting will create more habitat for wildlife. Proper pruning, plant health care, planning, irrigation, pest and disease management, and managing risk will be important to keep trees and shrubs from declining. Decades of research and experience have gone into growing and maintaining landscapes and many of these topics are covered in International Society of Arboriculture Best Management Practices. Some practices in the tree care industry that are particularly important to wildlife include:

- Plant young trees and provide young tree care programs: irrigation, support, structural pruning, etc.
- For healthy trees, follow pruning Best Management Practices in which branches are removed only to meet particular objectives. Whenever possible, use a Natural Pruning System and follow the standard that "pruning operations should remove no more living material than what is necessary to achieve specified objectives" (ANSI A300 Pruning Standards). Prune trees only when necessary; trees should be on an inspection cycle not a pruning cycle.
- Use an Integrated Pest Management approach to plant health care. Limit broad spectrum pesticides which kill non-target insects.
- Retain mature trees whenever possible.

Diversity of Habitats

The hundreds of species of wildlife that visit and live in urban landscapes have many different habitat requirements. Each community is different and should offer different habitats within its community and different habitats from neighboring communities. This focus on diversity will also drive resiliency, ensuring that landscapes survive into the future. Some metrics of natural forest

structures can be used to manage and improve diversity in landscapes: diversity of species, ages, structures, and distribution.

- Increase tree species diversity. A common recommendation for a city in the tree care industry is to have at least 30-20-10 diversity. No more than 30% of a city's trees should be of any one family [such as *Fagaceae* which include oaks (*Quercus*), beeches (*Fagus*), and other genera]. No more than 20% of a city's trees should be of any one genus [such as oaks (*Quercus*)]. No more than 10% of a city's trees should be of any one species [such as coast live oak (*Quercus agrifolia*)]. These targets may be too high and could be even lower. Regardless of current diversity, when planning tree planting, look to increase species diversity.
- Increase tree age diversity. Diverse landscapes have young trees and mature trees. Young trees are planted each year and mature trees are managed and protected to extend their lifespan.
- Increase dead, dying, and declining trees. Many species of wildlife rely on dead and dying trees or on large dead limbs of live trees for nesting in cavities inside of trees. When risk can be adequately managed, consider retaining defects traditionally removed during tree care. Dead, dying, and declining trees are also important for insects and wildlife that feed on insects. These benefits should be balanced with pest species outbreaks and fire risk.
- Increase groundcover and shrub cover. Landscapes contain shrubs and groundcovers important for wildlife. Habitats of lawns with trees are probably over-represented throughout California. A more diverse groundcover palate accompanied with increased shrub and small tree layers are likely to increase habitat value. The shrub layer is especially important for escape cover, allowing wildlife to hide from predators and seek shelter from the elements. Ideally a mix of wood chips, ground covers, and bare earth can be used in the landscape.
- Increase native species when it is appropriate and where doing so increases diversity. The small number of California native trees currently available in the landscape trade and their low suitability to many urban situations makes it difficult to meet tree diversity targets, including the 30-20-10 guideline, using only native trees. In many communities, native trees can be added to the landscape while still increasing overall species diversity. A wider variety of native bushes and ground covers are available and are underused in many California landscapes.
- Increase spatial diversity. The above factors will be more beneficial if distributed unevenly throughout an area. For example, a new species should be planted throughout a city, not just in one area. But an overly

organized pattern is also not ideal because some species require pockets of a particular habitat type.

Retaining Dead, Dying and Decaying Trees, and Branches

One area that the tree care industry has a high potential to increase habitat in is in dead, dying, and decaying trees and branches. Many wildlife species are reliant on trees or parts of trees that are routinely removed with no thought about the habitat that they provide. Wildlife that nest exclusively in dead, dying, and decaying trees and branches would benefit greatly from greater awareness of their habitat requirements and effort in preserving these types of trees. Local Audubon Chapters and the Cavity Conservation Initiative may be able to help with specific needs and recommendations for a particular area or project.

Priority must be given to human safety when managing dead, dying, and decaying trees and branches; however, when risk does not exceed tolerance, many of these important habitats can be retained. The Tree Risk Assessment Best Management Practices lists cavity openings and nesting holes as positive indicators of decay or internal voids. Trees with cavity nests are given a higher likelihood of failure and recommended for removal more often than trees without cavity nests. Decayed trees and branches are considered less structurally stable because their capacity to withstand force diminishes according to the size and location of decay. However, no scientific studies have conclusively demonstrated the loss of strength from these cavities. Not all dead, dying, and decayed trees can or should be retained, but extending the life of a dead or dying tree a few years could be beneficial to wildlife.

Trees and branches for which risk exceeds risk tolerance do not always need to be removed, other mitigation methods can be employed. Pruning techniques that are not commonly used on healthy trees can be employed on unhealthy or hazard trees in order to preserve the tree while mitigating for risk. For example, Figure 7 (Page 22) shows a branch with a cavity growing over a house. If risk outweighs risk tolerance, a reduction cut is unlikely to adequately mitigate the risk, and a removal cut will remove the potential nesting cavity. A heading cut could adequately mitigate risk and preserve habitat in these cases, though heading cuts are generally not recommended because of the physiological effect on the tree. This branch would likely need to be completely removed to mitigate risk if not using a heading cut, and the branch is already decayed, so future decay from the heading cut is less of a concern.

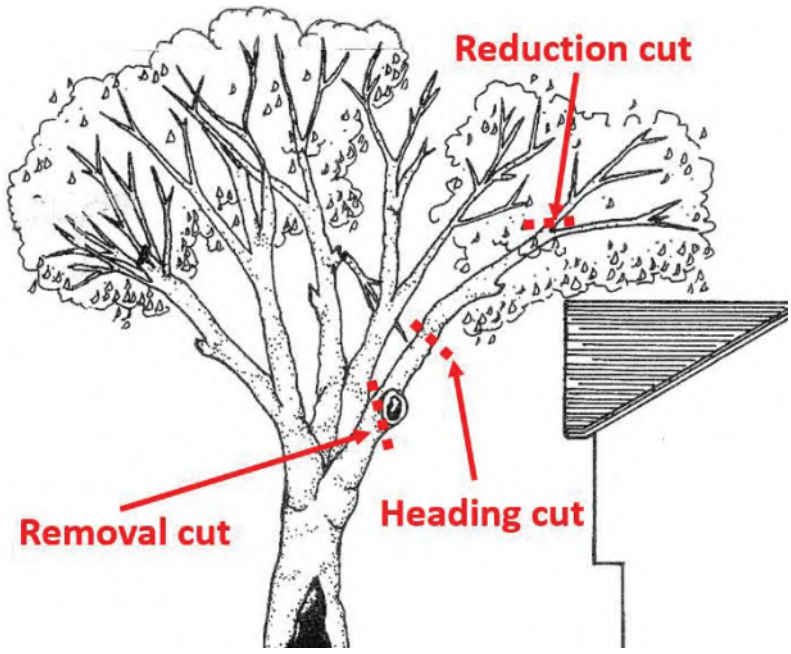

Figure 7. Different types of cuts may be appropriate to accomplish different pruning objectives. In this situation, a heading cut may be able to preserve a potential cavity nest site and mitigate risk.

Some mature, declining trees can be severely pruned to reduce risk while leaving some available habitat. Even a tall stump may provide important habitat to cavity nesting wildlife in areas where decayed wood is not abundant. Retrenchment is a natural progression that many trees go through later in life, and retrenchment pruning is practiced more often in the United Kingdom to extend the life of declining mature trees.

Nest boxes may be one way to mitigate loss of cavities from dead, dying, and decaying tree and branch removal. When nest boxes are provided, they can be quickly occupied and sometimes lead to an immediate rise in breeding density. Cavity nesting bird populations are not solely limited by the availability of cavities. When considering creating habitat for these species, the availability of suitable food and types of predators in the habitat need to be considered. Dead, dying, and decayed trees and branches are complex ecosystems and simply attaching a nest box to a young tree cannot replace the lost value of those ecosystems. If installing nest boxes, the correct type, height, protection, and maintenance need to be considered. Local Audubon groups may be able to provide important information regarding these requirements (Additional Resources, Page 28).

Once on the ground, tree parts continue to be used by wildlife and are important features of landscapes. If sections of trunks and branches, brush piles, or toppled trees can be incorporated into the landscape aesthetically and with an acceptable level of risk, wildlife may benefit.

Forestry research has led to more invasive ways of increasing habitat value such as girdling trees to kill them in areas where dead trees are not common, cutting the tops off of trees to create snags, and using chainsaws to cut artificial cavities into trees to increase the habitat value for secondary cavity nesters. Some of these techniques are being experimented with by tree care workers and may become more prevalent as awareness of wildlife increases.

Glossary

Awareness Training - crew training provided by a **Wildlife Biologist** or **Wildlife Trained Arborist** that covers general information about looking for signs of nesting wildlife or may be specific to a location. **Awareness training** typically takes no more than 15 minutes. A video is available at www.treecareforbirds.com.

Breeding season - the time of year when most wildlife breed, nest, and care for offspring that cannot care for themselves. Across the different habitats of California, most wildlife breed between February 1st and August 31st, in most years. However, this varies by region and species. In some years variable weather patterns or abundance of food may cause early or late breeding.

Buffers - areas established around an active nest in which no work is allowed to occur to prevent abandonment or destruction.

Category 1 - For a **low value habitat** during the non-breeding season, no trained personnel are required.

Category 2 - For a **low value habitat** during the breeding season or a **high value habitat** during the non-breeding season, pre-work inspections by a **Wildlife Trained Arborist** are recommended.

Category 3 - For a **high value habitat** during the breeding season or **riparian habitat** areas at any time of the year, the project should follow recommendations from a **Wildlife Biologist**.

Human health and safety emergency - immediate risk posed to human health and/or safety. Requires action to alleviate imminent danger circumstances.
Habitat value - the likelihood of finding wildlife using an area throughout the year.

> **Riparian habitat -** areas are the interface between land and constant or intermittent rivers or streams and generally provide the highest value habitat for wildlife. Riparian areas can be identified by their distinctive soils and vegetation, particularly willows (*Salix spp*.), mulefat (*Baccharis salicifolia*), sycamore (*Platanus* spp.), and cottonwood (*Populus* spp). This may include concrete channels when the associated riparian vegetation and soils are present.

High value habitat - generally areas with low human use, low impervious surfaces, high plant species diversity, high plant structural diversity, close to water bodies, many mature trees, many dead or dying trees, and with abundant wildlife.

Low value habitat - generally areas with high human use, high impervious surfaces, low plant species diversity, far from water bodies, few mature trees, few dead and dying trees, and few/no wildlife present.

Nest - a structure or place made or chosen by wildlife for laying of eggs or sheltering its young.

Active - eggs or young present

Inactive - no eggs or young present

Abandoned - eggs or young present, but adults are no longer returning to tend the nest

Non-breeding season - the time of year when most wildlife are not breeding, nesting, or caring for offspring that cannot care for themselves. Across the different habitats of California, most wildlife are not breeding between September 1st and January 31st, in most years. However, this varies by region and species. In some years variable weather patterns or abundance of food may cause early or late breeding.

Raptor - birds of prey such as owls, hawks, eagles, vultures, and falcons which are in the orders *Strigiformes*, *Accipitriformes*, and *Falconiformes*.

Signs of nesting wildlife - wildlife breeding behavior such as carrying sticks of food, acting agitated, distress calls, as well as observing concentrations of bird droppings, nests that may be active, eggs, young, or wildlife reliant on nest.

Sensitive habitat - habitat that is home to special status species and/or the habitat itself may be rare and could be easily disturbed or degraded by human activities and developments.

Tree - a woody perennial, usually having one dominant vertical trunk and a height greater than 15 ft.

Tree Care Worker - a term that can describe any professional working with trees including but not limited to arborists, tree climbers, trimmers, ground workers, consultants, managers, etc.

Wildlife Trained Arborist - a tree care worker with training and/or experience in: determining habitat value, conducting pre-work nesting surveys, identifying signs of nesting wildlife, determining if nests are active, responding to wildlife emergencies, and contacting **Wildlife Biologists** when needed.

Wildlife Biologist - a person with knowledge and experience in identifying wildlife species that may occur in an area and is familiar with wildlife behavior, nesting requirements, tolerance to impacts and suitable survey methods.

Wildlife rehabilitator - an individual or organization with training, experience, and (if required) applicable permit(s) allowing them to care for injured or abandoned wildlife.

Wildlife emergency - a situation where wildlife are injured, orphaned, or in danger or where nests are abandoned or disturbed.

Wildlife - undomesticated living animals especially birds, mammals, amphibians, and lizards.

> **Native species -** species that is present by a natural process with no human intervention.
>
> **Non-native species -** species that has been brought to a new geographic region beyond its normal range.
>
> **Invasive species -** species exhibiting a strong ability to colonize an area and harm other species.
>
> **Special status -** species of wildlife that have one or more designations from authorities. The US Fish and Wildlife Service and California Department of Fish and Wildlife each have their own list of endangered, threatened, and candidate (Federal) or species of special concern (California). If there is potential to encounter special status species, contact the agency responsible for the species or a Wildlife Biologist familiar with the species for further guidance. For more information see the CDFW Special Animal List.

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Additional Resources

Birds of North America, Cornell Lab of Ornithology
https://birdsna.org/Species-Account/bna/home

City of Portland Environmental Services. 2016. Avoiding Impacts on Nesting Birds: Best Management Practices for Vegetation and Construction Projects. 44 p.
https://www.portlandoregon.gov/bes/index.cfm?a=322164

California Agricultural Extension Offices
https://ucanr.edu/County_Offices/

California Audubon Chapters
http://ca.audubon.org/about/chapters

California Department of Pesticide Regulation
http://calpip.cdpr.ca.gov/county.cfm

California Forest Practice
http://calfire.ca.gov/resource_mgt/resource_mgt_forestpractice

California List of California Wildlife Rehabilitators
https://www.wildlife.ca.gov/Conservation/Laboratories/Wildlife-Investigations/Rehab/Facilities

California Natural Diversity Database (CNDDB)
https://www.wildlife.ca.gov/Data/CNDDB

California Snakes
https://www.wildlife.ca.gov/News/Snake

California Endangered Species Act Lists
https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals

California Fully Protected Species
http://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html

California Herps
www.californiaherps.com

California Special Animal List
https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406

California Wildlife Habitat Relationships
https://www.wildlife.ca.gov/Data/CWHR

Cavity Conservation Initiative
www.cavityconservation.com

Conserving Waterways - Preventing Impacts from Human Activity
http://www.rcrcd.org/uploads/files/ConservingWaterways.pdf

Living with Wild Reptiles and Amphibians
http://www.californiaherps.com/info/livingwithherps.html

NestWatch - All About Birdhouses
http://nestwatch.org/learn/all-about-birdhouses/

U.S. Fish and Wildlife Critical Habitat
Online Mapper
https://ecos.fws.gov/ecp/report/table/critical-habitat.html

USFWS Wetland Mapper
https://www.fws.gov/wetlands/data/mapper.HTML

Appendix I - Tree Care Industry Overview

This section is compiled from excerpts from personal communications with Dr. Jim Clark, updated from *Arboriculture: Integrated Management of Landscape Trees Shrubs and Vines* by Harris, Matheny and Clark, 2004.

The tree care industry generally practices arboriculture that is *concerned with the selection, planting, and care of trees of all ages*. The tree care industry is different from conventional forestry in that it focuses on trees in city centers, suburban neighborhoods, rural areas, and some relatively wild areas with human influences such as roads and utility lines.

> *A tree is defined as a 'woody perennial usually having one dominant trunk and a mature height of greater than 5 meters (16 feet)' (International Society of Arboriculture, 2015)… Definitions serve to distinguish trees from shrubs which are normally multi-stemmed and shorter in height. For practical purposes, arborists consider palms trees, even though such plants are not strictly woody.*

Many professional organizations exist for the tree care industry; however, the largest organization is the International Society of Arboriculture (ISA). The ISA *represents more than 24,000 arborists in 47 countries with 37 chapters, 8 associate organizations and four professional affiliations*. California is in the Western Chapter that includes Nevada, Arizona, and Hawaii. The International Society of Arboriculture offers training and testing to become a Certified Arborist. It also offers other types of training and tests to become a Certified Tree Worker Specialist, Tree Risk Assessment Qualified, Certified Arborist Utility Specialist, and others. The tree care industry is a combination of people with and without these certifications and affiliations.

> *The International Society of Arboriculture describes arboriculture as a broad field with several areas of specialization:*
>
> ***Municipal arborists** (also known as municipal foresters and urban foresters) are involved in the management of publicly owned trees, particularly in cities, towns, and other public locations. They are commonly employed by public agencies either directly or on a contract basis.*

Commercial arborists *operate businesses that provide tree care activities such as pruning, fertilization, health care, planting, and tree removal on a fee basis. Clients include public agencies, private firms and individuals.*

Utility arborists *are involved in the management of trees along utility rights-of-way. Their primary management goal is the maintenance of safe and uninterrupted supply of power. To that end, utility arborists are involved in assessing the need for and scheduling tree selection, pruning, applying tree growth regulators, and tree removal. They may be employed by either the utility itself or contractors who provide vegetation management services.*

Arboricultural consultants *provide technical expertise including problem diagnosis, management programs, and tree appraisal rather than performing service work. Although most consulting arborists operate on a commercial basis, employees of institutions such as the U.S. Department of Agriculture (USDA) Cooperative Extension and state urban forestry programs may also provide consulting expertise.*

The industry has a series of standards of work performance. The American National Standards Institute (ANSI) produces several voluntary standards for arboriculture including those for Tree Care Operations Safety (Z133.1), Standard Practices Pruning (A300), and Nursery Stock (Z60.1).

The ANSI Standard Practices (A300) cover the topics:

- pruning,
- soil management,
- supplemental support systems,
- lightning protection systems,
- planting and transplanting,
- integrated vegetation management,
- root management, and
- tree risk management.

The ISA Best Management Practices currently cover the topics:

- tree support systems,
- tree planting,

- integrated vegetation management,
- tree risk assessment,
- tree pruning,
- lightning protection,
- root management,
- soil management,
- tree and shrub fertilization,
- tree inventories,
- utility pruning of trees, and
- integrated pest management

and are available for purchase from their website (www.isa-arbor.com).

Tree care activities vary in their level of labor intensity, equipment, frequency, noise, and expense. Managing trees is critical to their survival, success, and maximizing the potential of their environmental benefits within the landscape. At their most basic, tree care activities include:

- **Planting** - After species have been selected, trees are planted. Irrigation and stabilization are often added after planting.
- **Pruning** - Using a variety of tools, tree care workers selectively remove branches to meet a variety of objectives outlined in the ANSI Standards. Pruning is most important and effective when trees are young but often continues on a regular basis throughout the lifespan of a tree.
- **Removal** - Tree care workers cut down trees as requested by tree managers, often for tree health, public safety, and clearance needs.
- **Plant health care** - Treatment of disease and deficiencies often occurs for specially selected trees or stands and is often cost prohibitive at large scales. There are a variety of products used, including contact chemical sprays, injected systemic treatments, fertilizer application, etc.
- **Ground maintenance activities** - Many tree care activities occur on the ground and do not require access to the tree canopy. These activities take place periodically, especially after planting, and include mulching, watering, removing or placing stakes, inspections, etc.
- **Utility clearing** - Utility lines must be cleared for safety, reliability, and fire risk. Tree removal, pruning, and herbicide use are the most common methods of controlling vegetation in the utility right-of-way.
- **Planning and management** - The tree care industry is involved in planning and managing landscapes, but politicians and city staff make many higher level decisions about trees.

Appendix II - Wildlife in California

Wildlife (including birds, mammals, reptiles, and amphibians) rely on trees and landscapes for food and shelter as they feed, nest, and reproduce. In turn, wildlife control insects, provide food for other wildlife, pollinate plants, distribute seeds, and are good indicators of environmental health. This section discusses wildlife that can be found in the course of tree work that arborists should be aware of.

There are over 700 terrestrial vertebrate species in California (https://www.wildlife.ca.gov/Data/CWHR). Of these, over half are birds and one quarter are mammals (Figure 8). California and Federal laws are focused more on birds than the other groups. Because birds are more diverse and more protected than other types of species, these BMPs discuss birds more than other wildlife.

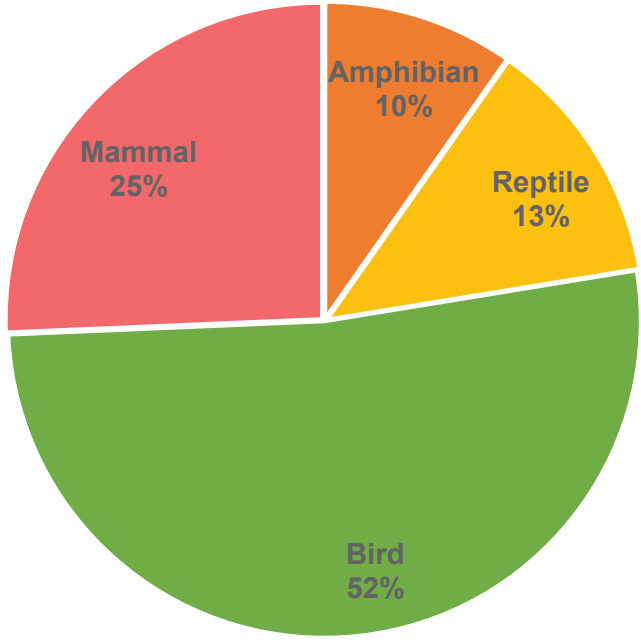


Figure 8. Percentage of wildlife groups by California Department of Fish and Wildlife.

Adult mammals and birds will likely flee a work area so work can proceed. During nesting, however, eggs and young wildlife cannot move from nests.

Because they are vulnerable and stationary during this time period, nesting wildlife are those most likely to be impacted by tree and shrub care. To minimize impacts, it is critical to identify, avoid, and protect wildlife nests.

It is important to keep in mind where the nests in a tree may be found (Figure 9). While a nest may be found almost anywhere, different birds prefer to nest in particular locations. Nests may be in trees (including palm trees), shrubs, vines, woodpiles, dead trees, decayed sections of live trees, man-made structures, or burrows in the ground. Nests can also be placed on the ground surface. Tree care workers need to be aware of the variety of types and locations of nests.

Figure 9. Nest locations may be high in trees, on the ground, and everywhere in between. Certain types of wildlife tend to build nests in certain types of locations.

Birds

Hundreds of bird species live in California. Bird species have varied behaviors and life cycles that affect how they interact with the environment. Birds feed on nectar, seeds, fruits, insects (in bark, in the air, on the ground), and other wildlife. To breed successfully, birds must find food, a water source, and a nesting location. When protecting their nests, birds may fly or swoop at apparent threats, make repeated warning calls, or stay put and attempt to camouflage their nests.

Raptors are a subset of birds including hawks, eagles, owls, and falcons that have distinct life cycles and biology. They are typically larger than other birds and are predators and are often referred to as birds of prey. Raptors are also subject to specific protected status (Appendix III, Page 34), and generally have nests protected by regulation even when inactive.

Mammals

All bats (order *Chiroptera*) and woodrats (*Neotoma* spp.) are protected. Woodrats build large stick nests in tree canopies and at the base of trees. Several species of woodrats have special status (wildlife descriptors, Page 33) and have specific protections. Bats are nocturnal mammals that may use trees as temporary, daytime, and/or long term roosts. They do not construct nests but find shelter in cavities, loose bark, and cracks. Bats are inactive in the day and rarely seen, except at dusk when they emerge from roosts and feed on insects. Many species of bats are in decline.

Some small mammals are considered nuisance species. The black rat (*Rattus rattus*), eastern gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), and Virginia opossum (*Didelphis virginianus*), which are common in urban areas, are not protected in California. Rats are commonly found nesting in palm trees. Many consider opossums, mice, squirrels, and other rodents a nuisance. Contact your local agricultural extension (Additional Resources, Page 21) for information on the best way to deal with nuisance species in your area.

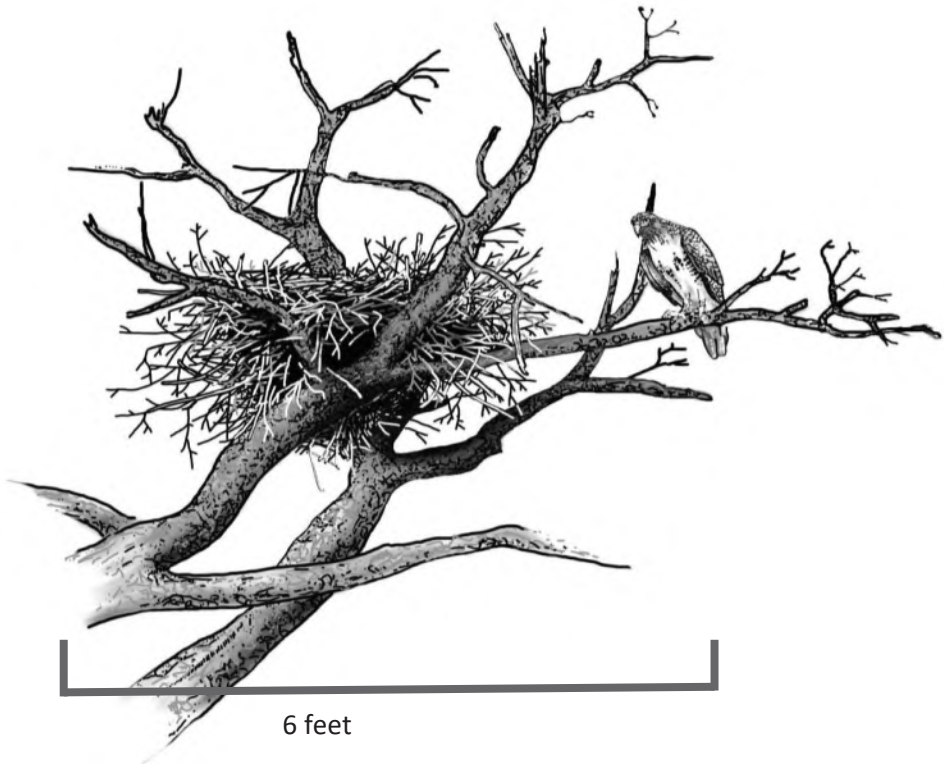
Reptiles

Shelter and cover are critical to the life cycles of reptiles and amphibians. They are exothermic or “cold blooded” and regulate their body temperatures by moving in and out of the sun. On trees, they can be found basking in the sun and living in cavities. Many live in holes in the ground; however, they are usually not found in turf covered areas. Areas with downed wood, bark, or large pieces of decaying wood are ideal sites for reptiles as they serve as both shelter and food source. Lizards and snakes can help control pests like insects and rodents.

All native reptiles and amphibians are also protected in California.

Rattlesnakes are the most common venomous snakes native to California. They are rarely found in trees (though occasionally found in tree cavities) but can be found on the ground or at the base of trees and shrubs. In general, they will only strike when provoked. Arborists should look for snakes when performing pre-work inspections and should not approach them if found. Refer to https://www.wildlife.ca.gov/News/Snake for more information.

Cup nests are common among small songbirds like robins, finches, and hummingbirds. Whatever their size, cup nests always have a deep depression. They tend to be sturdy, founded on supportive coarse woody twigs, sometimes bound with mud, and are lined inside with softer vegetation or feathers.
Illustrator - Brian French



Platform nests are most often made by large, heavy birds like raptors, doves, and others. Upper canopies and tree tops are ideal for these large nests. Nest materials are primarily woody. These structures, which take considerable time and effort to construct, can last several seasons.
Illustrator - Brian French

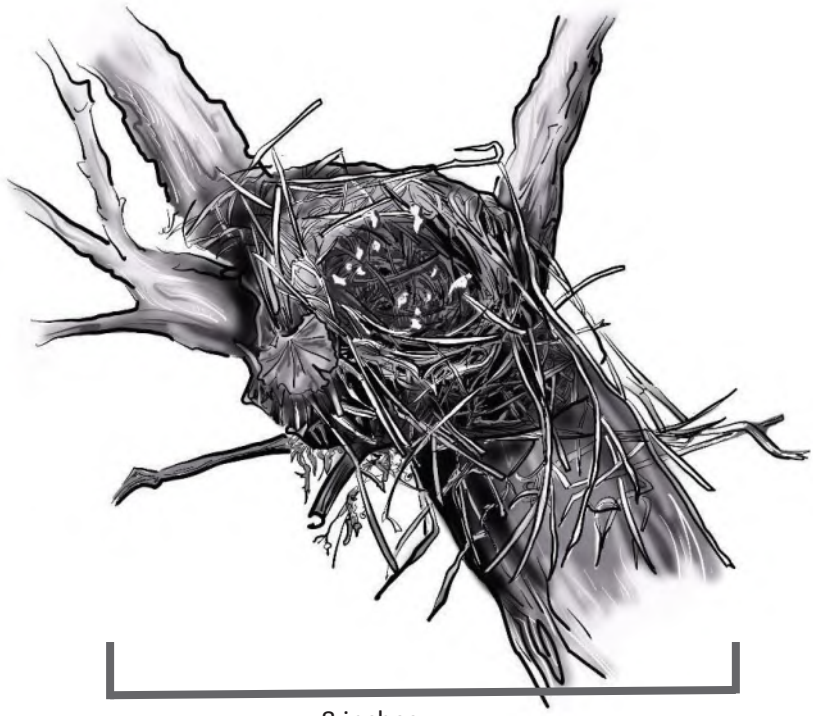
Hanging/pendulous nests hang from palm fronds or tree branches and are made by species like bushtits and orioles. These nests are supported by slings of strong but flexible material.
Illustrator - Brian French

Excavated cavity nests are among the most difficult to detect and to determine whether vacant or occupied. Their entrances are characteristically round, carefully chiseled, and generally no more than 2-3 inches in diameter and can occur almost anywhere on the trunk or branches. Though initially made by woodpeckers, birds like Western bluebirds, house wrens, owls, and other wildlife use these nests as well. Cavity nesters are especially relevant to the tree care industry because most cavity nesters are wholly reliant on trees for their nesting success and because these cavities indicate potentially weak internal tree structure. Nest boxes are replications of cavity nests. Illustrator - Brian French

Natural cavity nest - These young barn owls are living in a naturally formed cavity. Illustrator - Brian French

Natural cavity nests have openings that are highly irregular in shape and size. Occupancy increases during the nesting season, but some cavity nesters use them as roosts all year. Often these cavities are formed from branch failures decaying in living or dead trees. Mammals also use these cavities during the nesting season.
Illustrator – Brian French

Scrape nests are slight depressions on the ground or on ledges that have been slightly cleared to create a nest. They are made by birds such as killdeer, shorebirds, peregrine falcons, and a few owls.
Illustrator - Brian French



Inactive non-raptor nests have no eggs or young that are reliant on the nest. These nests can generally be destroyed if required to accomplish tree work objectives.
Illustrator – Monica Edwards

Tree squirrels build large leafy nests typically found on larger branches of trees or at crotches where two or more branches meet. Tree squirrels typically build multiple nests in a season and may rotate nests while raising their young.
Illustrator – Monica Edwards

Insects

Insects lack broad legal protection in California. Several species of insects have special status and are protected. For instance, the Valley Elderberry Longhorn Beetle is protected by the Federal Endangered Species Act as a threatened species. The California Department of Pesticide Regulation maintains a database on species status species and sensitivities to pesticides (Additional Resources, Page 29).

Insects are an important part of the food web. High insect diversity can act as a buffer to limit insect pests. Insect populations provide the base of the food web for many species of wildlife and are important pollinators for trees and other plants. Pest species are the vast minority of insects and should be managed when populations exceed thresholds, but healthy insect populations contribute to landscape health.

Wildland Areas

When working in locations such as wildlife preserves, state parks, National Forest lands, or other open spaces where impact on special status species may be more likely, it may be necessary to gather further information, either by contacting agencies directly, or through performing a desktop review. Prior to performing the work, check to see if any special status species have been recently seen or are known to rely on the area. The desktop review can be done using resources publicly available online such as the California Natural Diversity Database (CNDDB) (https://www.wildlife.ca.gov/Data/CNDDB) and U.S. Fish and Wildlife Critical Habitat online mapper (https://ecos.fws.gov/ecp/report/table/critical-habitat.html). If the desktop review finds sensitive areas a **Wildlife Biologist** should contacted.

Wildlife Descriptors

Below are some important terms regarding wildlife in California:

Native species - species that is present by a natural process with no human intervention.

Non-native species - species that has been brought to a new geographic region beyond its normal range.

Invasive species - species exhibiting a strong ability to colonize an area and harm other species.

Special status - species of wildlife that have one or more designations from authorities. The US Fish and Wildlife Service and California

Department of Fish and Wildlife each have their own list of endangered, threatened, and candidate (Federal) or species of special concern (California). If there is potential to encounter special status species, contact the agency responsible for the species or a Wildlife Biologist familiar with the species for further guidance. For more information see the CDFW Special Animal List.

Wildlife Impacts

Tree and shrub care can disturb wildlife. These activities may include injuring or killing wildlife and removing a nest with eggs or young wildlife within. However, some activities may not cause direct harm. Pruning branches near a nest with eggs or chicks in it may cause the parents to abandon the nest or the eggs or chicks to become more exposed to the elements or predators. The goal of this document is to help tree care workers to avoid these types of impacts to wildlife. Effective planting and maintenance of trees has the opportunity to both maintain existing and create new habitat to enhance wildlife.

Appendix III - Laws and Regulations

Below is a list of laws and regulations pertaining to wildlife that are relevant to the tree care and landscape industry. The specific language from these laws is provided in quotations for reference. Language not in quotations is explanatory and paraphrased.

Wildlife

Federal Requirements

The primary Federal laws protecting birds as well as other wildlife include:

Migratory Bird Treaty Act (MBTA)

- Protects most species of birds in North America along with their parts (e.g. feathers), eggs, young, and nests.
- Upland game bird species are not protected by MBTA, but rather are regulated by states.
- "The MBTA provides that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply." Take is defined in regulations as: 'pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect."

Endangered Species Act (ESA)

- Protects species listed as threatened or endangered by U.S. Fish and Wildlife Service. Take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct". In addition to protecting species, the Endangered Species Act also protects the habitat a species depends on.

Bald and Golden Eagle Protection Act (BGEPA)

- Protects bald and golden eagles. Take is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb". Unlike MBTA, BGEPA also protects eagles from disturbance.
- Eagle nests are protected year-round, regardless of status, and require a permit to remove or destroy.

State of California Requirements

The primary Fish and Game Code (FGC) sections protecting birds as well as other wildlife include:

Sections 2050-2115.5 - California Endangered Species Act (CESA)

- Protects species listed as threatened or endangered by the California Department of Fish and Wildlife.

Section 3503 - All Birds

- Protects all birds and protects nests from needless destruction.
- "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto."

Section 3503.5 - Raptors

- Protects birds of prey or raptors, and their eggs and nests. Current taxonomy places these species in three orders rather than the two stated in the Code: *Accipitriformes*, *Falconiformes*, and *Strigiformes*. These include owls, eagles, falcons, hawks, and vultures.
- "It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto."

Section 3505

- "It is unlawful to take, sell, or purchase any aigrette or egret, osprey, bird of paradise, goura, numidi, or any part of such a bird."

Section 3511 - Fully Protected Birds

- This section provides a list of bird species protected from take and possession for which there are no permits allowed except for scientific purposes.
- "The following are fully protected birds:
  (1) American peregrine falcon (Falco peregrinus anatum).
  (2) Brown pelican.
  (3) California black rail (Laterallus jamaicensis coturniculus).
  (4) California clapper rail (Rallus longirostris obsoletus).
  (5) California condor (Gymnogyps californianus).
  (6) California least tern (Sterna albifrons browni).
  (7) Golden eagle.
  (8) Greater sandhill crane (Grus canadensis tabida).
  (9) Light-footed clapper rail (Rallus longirostris levipes).
  (10) Southern bald eagle (Haliaeetus leucocephalus leucocephalus).
  (11) Trumpeter swan (Cygnus buccinator).
  (12) White-tailed kite (Elanus leucurus).

(13) Yuma clapper rail (Rallus longirostris yumanensis). “

Section 3513 - References MBTA

- Migratory nongame bird as designated in the MBTA, or any part of such migratory nongame bird, except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Section 3801 – Exceptions

- House sparrows and European starlings are not protected by section 3503.

Section 86 - Definition of Take

- To hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

Environmental Protection

California Environmental Quality Act (CEQA)

It should be uncommon for routine tree care activities to require going through the CEQA process. However, tree care work that is part of a “project” as defined under CEQA would be required to undergo CEQA review and follow any mitigation measures resulting from the environmental document. In such circumstances, the CEQA environmental document supersedes the guidance provided here.

“The term project refers to the whole of an action that has the potential, directly or ultimately, to result in a physical change to the environment (CEQA Guidelines Section 15378). This includes all phases of a project that are reasonably foreseeable, and all related projects that are directly linked to the project.” (UC CEQA Handbook 2002).

Riparian Habitat

California Fish and Game Code Section 1602

(a) ”An entity may not substantially divert or obstruct the natural flow of, or *substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake*, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, unless all of the following occur:...”

Electric Utility

State of California

Public Resource Code, Section 4292: Power Line Hazard Reduction

- Poles and towers of electrical transmission or distribution lines in wildland areas must be at least 10 feet clear of any flammable vegetation.

Public Resource Code, Section 4293: Line Clearance Guidelines

- Electrical lines in wildland areas must be clear of vegetation at a distance depending on voltage. "Dead trees, old decadent or rotten trees, trees weakened by decay or disease and trees or portions thereof that are leaning toward the line which may contact the line from the side or may fall on the line shall be felled, cut, or trimmed so as to remove such hazard."

General Order 95, Rule 35: Tree Pruning

- "Where overhead conductors traverse trees and vegetation, safety and reliability of service demand that certain vegetation management activities be performed in order to establish necessary and reasonable clearances the minimum clearances set forth in Table 1, Cases 13 and 14, measured between line conductors and vegetation under normal conditions, shall be maintained."
- Summary of Table 1 (above) - For Supply Conductors and Supply Cables (750 - 22,500 Volts), the radial clearance of bare line conductors from tree branches or foliage must be 18 inches. The radial clearance of bare line conductors from vegetation in Extreme and Very High Fire Threat Zones in Southern California must be 48 inches.

Federal

North American Electric Reliability Council (NERC) Standard FAC-003-4: Transmission Vegetation Management Standard

- "To maintain a reliable electric transmission system by using a defense-in-depth strategy to manage vegetation located on transmission rights of way (ROW) and minimize encroachments from vegetation located adjacent to the ROW, thus preventing the risk of those vegetation-related outages that could lead to Cascading."
- Provides minimum required clearances from vegetation based on voltage and altitude.

Tree Care Ordinances

Tree care is often regulated by local ordinances and policies as well as private organizations (HOA's, tree boards, etc.). These regulations may cover tree species, tree planting spacing and distances from curbs and other infrastructure, pruning and other maintenance practices, tree removal, landscape provisions in community plans and development permits, compliance enforcement, and establishment of an advisory board.

Appendix IV - Bird Group Breeding Information Table

Bird Group	Typical Breeding Season	Incubation (Eggs)	Chicks	Buffer LHV (Radius in feet)[1]	Buffer HHV/R[2]
Waders (e.g. herons, egrets)	January through August	19-27 days	21-81 days	200	300
Eagles	January through July	35-46 days	10-11 weeks	Bald 660 feet Golden 0.5-1 mile	Bald 660 feet Golden 0.5-1 mile
Birds of Prey (e.g. hawks, vultures, falcons)	February through August	25-36 days	4-7 weeks	300	500
Doves and Pigeons (mourning doves and band-tailed pigeons)	February through November	14-20 days	13-30 days	100	300
Owls Burrowing owl[3]	January through July February through June	26-35 days	28-60 days	300	500

[1] Low Habitat Value area
[2] High Habitat Value or Riparian area
[3] Burrowing owls and acorn woodpeckers have different breeding seasons than most species in their order

Bird Group	Typical Breeding Season	Incubation (Eggs)	Chicks	Buffer LHV (Radius in feet)[1]	Buffer HHV/R[2]
Hummingbirds	December through July	13-18 days	20-23 days	100	300
Woodpeckers Acorn woodpecker[3]	April through August March through October	11-13 days	~30 days	100	300
Many songbirds (e.g. finches, kingbirds, mockingbirds)	February through August	11-17 days	9-25 days	100	300
Corvids (e.g. crows, ravens, jays)	February through August	15-21 days	18 days Jays 35 days Crows 5-6 weeks Ravens	100	300

Sources:
Birds of North America, Cornell Lab of Ornithology: https://birdsna.org/Species-Account/bna/home
Southern California Edison Nesting Bird Management Plans

The buffer ranges provided in this table are meant as starting points. Refer to **Considerations for Work Performed Near Active Nests** for further guidance on determining the appropriate distance work may be conducted from an active nest. It is important to seek the aid of a **Wildlife Biologist** when attempting to work near active nests, especially when work may cause the nest to fail. **Wildlife Biologists** may recommend different buffers based on individual situations, and programmatic approaches may use different sized buffers or a totally different system for minimizing impacts to wildlife.

Riparian habitat - the interface between land and constant or intermittent rivers or streams and generally provide the highest value habitat for wildlife. Riparian areas can be identified by their distinctive soils and vegetation, particularly willows (*Salix spp*.), mulefat (*Baccharis salicifolia*), sycamore (*Platanus* spp.), and cottonwood (*Populus* spp). This may include concrete channels when the associated riparian vegetation and soils are present.

High value habitat - generally has low human use, low impervious surfaces, high plant species diversity, high plant structural diversity, close to water bodies, many mature trees, many dead or dying trees, and with abundant wildlife.

Low value habitat - generally has high human use, high impervious surfaces, low plant species diversity, far from water bodies, few mature trees, few dead and dying trees, and few/no wildlife present.

Appendix V - Pre-work Inspection Form

Inspector:_____ Certification Level:_____ Date:_____
Time:_____ Weather conditions:_____
Description of work:_____ When is work: _____
Wildlife Biologist:_____ Wildlife Rehabilitator:_____

Habitat Value

Low
- ☐ High human use
- ☐ High impervious surfaces
- ☐ Low plant species diversity
- ☐ Low plant structural diversity
- ☐ Far from water bodies
- ☐ Few mature, dead and dying trees
- ☐ Few/no wildlife present

High
- ☐ Low human use
- ☐ Low impervious surfaces
- ☐ High plant species diversity
- ☐ High plant structural diversity
- ☐ Close to water bodies
- ☐ Many mature, dead and dying trees
- ☐ Abundant wildlife present

Riparian
- ☐ Within or adjacent to water bodies
- ☐ Within or adjacent to dry water channels
- ☐ Riparian vegetation present

Breeding Season
- ☐ Breeding Season (Feb. 1 – Aug. 31)
- ☐ Non-breeding Season (Sep. 1 – Jan. 31)

Category

☐ Category 1 ☐ Category 2 ☐ Category 3

Recommended level of training: _____

Inspection
- ☐ Scan the sky, trees, ground, shrubs, and branches.
- ☐ Check trunk or branch cavities and holes in the ground.
- ☐ Listen for wildlife sounds.
- ☐ Look for wildlife flying or running away.

Signs of Nesting Wildlife
- ☐ Nests that may have eggs or young
- ☐ Concentrations of white colored droppings
- ☐ Wildlife exhibiting breeding behavior
- ☐ Wildlife carrying nesting materials
- ☐ Repeated wildlife visits to area

Nest Found
- ☐ Location_____
- ☐ Species_____
- ☐ Type_____
- ☐ Buffer Distance _____

Active Nest? (Y / N)
- ☐ Nest contains eggs or young wildlife

Health and Human Emergency

Risks _____
Actions _____

Wildlife Emergency

Situation _____
Contacted _____
Advice given _____
Actions _____