

Arborist Report Requirements

Draft

Prepared for the Tree Ordinances Steering Committee



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COUNTY OF SAN MATEO
PLANNING AND BUILDING

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Introduction

This staff report summarizes background information concerning arborist credentials and reporting practices. We summarize current industry standards for arborist reports and the differences between the three primary professional arboriculture organizations. Each has its own standards pertaining to professional arborist conduct, tree assessment methods, and reporting formats. The report will enable the Steering Committee to advise County staff on updates to the County of San Mateo's heritage and significant tree ordinances. One goal of the policy update is to establish clear requirements in the revised ordinances when an arborist report is required, what the reports must contain, and who can write them. This report includes policy alternatives that would require certain professional credentials and standardized report formats and content to ensure an unvarnished presentation of the facts and a consistent review of information pertaining to tree trimming, tree removal requests for protected trees, and measures to protect trees during construction.

To meet best professional practices standards, arborists must document in their reports a clear line of evidence to support any conclusions or recommendations that they make. Any recommendations made should reflect the factual findings of the physical tree assessment, and not the wishes of the client. Arborist reports serve as a key evidentiary resource for County staff, the Planning Commission or the Board of Supervisors when considering applications for protected tree removal or trimming. There must be clear standards for the format and content of these reports to ensure reliable information is used in decision making.

Arborist Credentials

Three member-based, professional organizations offer credentials in the field of arboriculture: the American Society of Consulting Arborists (ASCA), the Tree Care Industry Association (TCIA), and the International Society of Arboriculture (ISA). These are the most prominent organizations that oversee certification programs for arboricultural professionals and businesses in the United States.

Certifications and Accreditations

Arborist registration with a professional body represents successful completion of a basic level of training necessary for independent practice, and peer recognition of professional knowledge and skill. Registration certifies that an individual has attained a generally accepted level of knowledge in such areas as tree biology, diagnosis, maintenance practices, safety, and other subject and practice areas within the tree care profession (International Society of Arboriculture, 2017). Recently, registering organizations have tightened their requirements for certification, responding to concerns that some arborists gaining registration lacked the necessary skills and knowledge.

International Society of Arboriculture. An ISA certified arborist must be trained and knowledgeable in all aspects of arboriculture. There are six ISA certification credentials, each of which is earned by passing a different exam. To be eligible for the certified arborist exam, one must have three or more years of full-time, eligible, practical work experience in arboriculture and/or a degree in the field of arboriculture, horticulture, landscape architecture, or forestry from an accredited educational institute. ISA certification is valid for three years. To retain certification, a certified arborist must recertify. There are two methods of recertification, retaking and re-passing the certification exam, or accumulating at least 30 continuing education units (CEUs) over the three-year certification period that relate to the 10 tested domains on the exam. ISA certification is accredited by the American National Standards Institute (ANSI).

Any certified arborist or person with a degree in arboriculture, or related field can apply to take the Tree Risk Assessment Qualification (TRAQ) course and exam. “TRAQ is an ISA qualification program that trains arborists how to use the methodologies outlined in the ISA Best Management Practices for Tree Risk Assessment” (International Society of Arboriculture, 2017). Completing this qualification adds to an arborist’s mastery of professional practices and makes them more desirable to potential clients. This qualification is important in the County as many of the tree removal applications received characterize the tree proposed for removal as a hazard, while the information in the arborist reports often lacks some of the rigor called for in the reports outlined in the TRAQ process.

American Society of Consulting Arborists. To be an American Society of Consulting Arborists (ASCA) member (certified arborist), one must have at least five years of experience in arboriculture plus at least one of these requirements:

- A four-year degree in arboriculture or a closely related field such as urban forestry, horticulture, plant pathology, entomology, forestry, or plant biology;
- Master Arborist Board Certification¹; or
- A minimum of 240 approved CEUs.

The ASCA also has a high-level arborist credential called Registered Consulting Arborist, or RCA (Rouse, 2017). RCAs must meet the following requirements:

- Be a current ASCA member;
- Be a graduate of ASCA’s Consulting Academy. Graduates attend sessions on the function of a consultant, best practices for report writing, the dispute resolution process, and the role a forensic investigation plays; and

¹ Board Certified Master Arborist credential identifies professional arborists who have attained the highest level of arboriculture offered by the International Society of Arboriculture (ISA) and one of the two top levels in the field. There are several paths to the Board Certified Master Arborist, but typically one has been an ISA Certified Arborist a minimum of three to five years before qualifying for the exam (this can vary depending upon other education and experience).

- Meet continuing education requirements: 420 CEUs during the certification period (American Society of Consulting Arborists, 2017).

Tree Care Industry Association. The Tree Care Industry Association (TCIA) offers a third-party consumer confidence verification program to commercial tree service providers that pass a rigorous 63-point audit. The audit includes an on-site inspection of the company's management and employees for ethical business practices, adherence to best business practices, business regulations, and industry standards for operational safety and tree care management operations. The Accreditation has a formal complaint process that can result in termination of a company's accreditation (Rouse, 2017). TCIA also developed the ANSI-300 standards which guide the arboricultural practices of all arborists in the US.

Obtaining credentials demonstrates an arborist has passed a basic threshold of competency. However, some highly trained and experienced arborists with excellent reputations might choose not to be affiliated with those organizations. Any arborist with integrity and sufficient experience could likely prepare satisfactory tree reports, but determining which un-certified arborists have the requisite experience is challenging for planning staff.

Many professions offer credentials for practitioners who pass an exam or other assessment. All pools of certified professionals include practitioners with a range of ability and commitment to ethical standards of their profession. The Steering Committee should advise the County on whether credentials are necessary requirements. An ISA Certified Arborist, an ASCA Registered Consulting Arborist (RCA) or a TCIA firm may be preferable for the preparation of arborist reports that are used for planning permit decisions regarding tree removal and protection.

Professional Ethics

Arborists registered by the ISA and tree companies certified by TCIA commit to follow a code of ethics. ASCA created similar ethical guidelines called Standards of Professional Practice, to which all ASCA members are expected to adhere. This can help ensure the honest reporting of tree health, structure and safety conditions to clients and regulatory bodies that must make decisions on applications for significant and heritage tree removal. Many local governments require preparers of arborist reports to be ISA certified, to help ensure professional behavior and reporting.

Most arborists adhere to the professional ethics they commit to when they obtain certification from a professional accreditation organization. Some arborists could potentially be swayed by their client's objectives to report that a tree is dead or a hazard, when in fact it is not. Similarly, arborists may report to a client that a tree is in poor health and needs to be removed, when it is still viable, if they stand to gain from tree removal services. Conflicts of interest are addressed explicitly in ISA's Code of Ethics, and implicitly in ASCA's and TCIA's. The following are the ethical and professional standards from these three organizations:

ISA Code of Ethics (International Society of Arboriculture, 2014)

- *Comply with all applicable laws, regulations, policies and ethical standards governing professional practice of arboriculture.*
- *Assure that a conflict of interest does not compromise legitimate interests of a client, employer, employee, or the public and does not influence or interfere with professional judgments.*
- *Refrain from offering or accepting significant payments, gifts or other forms of compensation or benefits in order to secure work or that are intended to influence professional judgment.*
- *Inform appropriate government representatives or agencies when aware of an activity or circumstance that may cause an unsafe condition or violate legal requirements.*

ASCA Standards of Professional Practice (American Society of Consulting Arborists, 2011)

- *Members shall strive to perform Arboricultural Consulting services with impartiality whenever they hold themselves out to be acting as disinterested, impartial and unbiased third parties.*
- *Members shall strive to provide Arboricultural Consulting services with integrity, that is, with fairness and honesty.*
- *Members shall strive to provide Arboricultural Consulting services with objectivity, that is, without bias or prejudice, and based upon facts and reasonably informed assumptions.*
- *Members shall base conclusions, opinions and recommendations on adequate and appropriate methodology (analyses, investigations, tests and other procedures).*
- *Members shall endeavor to report their conclusions, opinions and recommendations in a manner that makes them clear, unambiguous and usable.*

TCIA Code of Ethics (Tree Care Industry Association, 2017)

- *Arborists have the responsibility to provide professional care of trees for current and future generations. We pledge to be advocates and practitioners of the highest arboricultural standards and practices.*
- *Since arboriculture is an ever-changing science, we pledge to educate ourselves, our constituents, and our clients in the most current research and practices available to the industry.*
- *We pledge to conduct ourselves and businesses in an honest and dignified manner, reflecting our adherence to the laws that govern us locally, nationally and internationally.*

- *We agree that the arboriculture profession is extremely high profile in public perception. We pledge to look and act professionally in order to reflect a positive image for the green industry and promote our profession.*
- *We agree that safety, training and education are of the utmost importance in maintaining a professional workforce. We pledge to provide for the safety and training of employees to ensure a healthy work environment. We will endeavor to grow our work force through training and employee development.*
- *We pledge to respect the views, ideas and contributions of our peers. Open and honest communications, sharing of ideas and experiences has been a cornerstone of TCIA membership, fostering goodwill between companies. We pledge to continue this tradition.*
- *As members of TCIA, we believe that active participation on committees and Boards and serving in other areas of leadership are extremely important to keeping a healthy, diverse association.*

The content and general purpose of ISA's and TCIA's codes of ethics and ASCA's standards of professional practice are closely related. These organizations are represented by their members, and they want to promote only the most ethical tree care practices. One of the most important abilities for an arborist to possess is the journalistic approach to writing reports. The integrity to report factual tree conditions is necessary to support client tree management decisions and permit decisions by regulators.

These codes of ethics provide some potential guidance for policy. For example, ethical requirements to "provide professional care of trees for current and future generations" (TCIA) and "report ... conclusions, opinions and recommendations in a manner that makes them clear, unambiguous and usable" (ASCA) can be incorporated into policy objectives and requirements. The County will not be in a position to enforce ethical standards, except insofar as they are embodied in the tree ordinances as requirements.

Arborist Report Formats

American Society of Consulting Arborists

ASCA recommends a variety of arborist report styles and formats depending on the needs of the client. The major report formats are: oral, form, letter, and booklet reports.

The simplest report is delivered orally to the client. The oral report is the least expensive, and is generally only useful for communicating management recommendations to the client. This kind of service is very beneficial for homeowners who are looking for guidance on tree care and maintenance. It cannot be used for applying for permits from the County.

The form report is the simplest written report, and is done on a standardized form for expediency and cost effectiveness, using visual means of observation only. It is meant to provide basic information and to identify problems/deficiencies that might require more thorough evaluation at another time (LandArbor Consulting, 2017). The form report may not constitute a satisfactory arborist report when applying for a County permit, depending on the nature of the issues related to the tree and its removal. Form reports generally include:

- *Date and property address*
- *Tree dimensions*
- *Tree location on property*
- *Initial impression of tree health*
- *Apparent wounds*
- *Infestations*
- *Branching structure*
- *Root system*
- *Needs of the tree*
- *Relevant pictures of tree*

When tree removal or development permit applications are involved, the arborist typically produces a more in-depth written report to capture tree and site conditions and satisfy County requirements. These are known as letter reports or booklet reports, according to industry terminology (LandArbor Consulting, 2017). The letter report is best suited for assessing one to three trees, and is designed for situations where a detailed report is required by the permitting agency, to disclose the arborist's professional opinion on the overall health and condition of the tree that the owner wishes to be trimmed or removed. Letter reports are typically 2 or 3 pages and, in addition to the information found in a form report, typically include:

- *Discussion of property owners' goals and reason for consultation*
- *Discussion of site conditions*
- *Discussion of equipment and methods used to assess tree health*
- *Discussion of potential targets if the tree were to fall*
- *Conclusions drawn from inspection*
- *Recommendations made to property owner*

The booklet report is a more in-depth assessment designed to organize large amounts of details or assess large numbers of trees. This kind of report is expansive and more expensive, as it requires considerable time to thoroughly assess tree health conditions. A booklet report is typically required as accompaniment to a large-scale site development plan, or a controversial removal, such as a Heritage Tree, and will typically include:

- *Background and history of site vegetation*
- *Discussion of the assignment*
- *Limiting conditions*
- *Purpose and use of the report*
- *Location and dimensions of all trees on the property with DBH>4"*
- *Discussion of methods*
- *Conclusion*
- *Recommendations*

- *Observations*
- *Testing and analysis*
- *Site plans and photos*
- *Certificate of performance*

International Society of Arboriculture

ISA uses a report classification system crafted by the Tree Care Industry Association (TCIA), the official secretariat of the American National Standards Institute's (ANSI) A300 for Tree, Shrub, and Other Woody Plant Management (Rouse, 2017). TCIA was accredited as a standards developing organization in 1991. They followed standards writing protocols established by ANSI to compose this unified and authoritative set of standard practices; Part 9 addresses tree risk and structure assessment. "ANSI A300 standards provide the industry standard of practice in legal language format and are considered the authority in the civil court system. ISA BMPs provide the 'how to' instructional guides for industry practices and are a valuable resource for accurate, efficient, and ethical field work and report writing" (Rouse, 2017). ANSI A300 defines three levels of tree risk assessment, and ISA has incorporated them into their core curriculum. Level 1 is a limited visual assessment, Level 2 is a basic assessment, and Level 3 is the advanced assessment (Smiley, 2013).

ANSI A300 Part 9 Tree Risk Assessment

Level 1: A limited visual assessment typically focused on identifying trees with an *imminent* and/or *probable* likelihood of failure, evaluating an individual tree or a population of trees to identify obvious defects (Smiley, 2013).

Level 2: A basic assessment is a detailed visual inspection of a tree and surrounding site, and a synthesis of the information collected; it may include the use of simple tools to gain additional information about the tree or defects, and is the standard assessment performed by arborists in response to a client's request for tree risk assessment (Smiley, 2013).

Level 3: An advanced assessment collects detailed information about specific tree parts, defects, targets, or site conditions. It is usually conducted in conjunction with or after a basic assessment, if the tree risk assessor needs additional information. Specialized equipment, data collection and analysis, and/or expertise are required for advanced assessments (Smiley, 2013).

An arborist will typically perform a basic tree assessment or an advanced tree assessment as the field component of a project, and then write a letter format report to capture those findings and communicate them to the client.

Arborist Report Requirements in Other Jurisdictions

The Palo Alto Tree Technical Manual (TTM), along with ordinances in Sacramento and Santa Cruz Counties, call for an ISA certified arborist to prepare tree reports. Palo Alto's TTM is very specific as to when an arborist report is required, who can prepare it, what is to be included,

and which kind of report is required in different circumstances (pages 67-70). This kind of specificity provides clarity on what is expected from all parties involved. There are three different report formats in the TTM that can be used to satisfy city requirements. A fourth format is discussed in the TTM, but it is for tree dollar value appraisals.

Letter Report

- *A brief format that can generally be used for assessing one or two trees. The report is to be on letterhead stationery of the individual preparing the report, including their ISA Certification number.*
- *If for a tree removal (i.e., an application request for a single tree removal only, not in connection with a property development), the report shall provide information and determination whether the tree is dead, hazardous or constitutes a nuisance.*
- *If for development on a single family residential lot (not a subdivision), the report shall also clearly indicate whether or not any protected or designated tree is so close to the 'building area or building footprint' that it will be killed or permanently injured by disturbance. The report must make specific recommendations to protect and preserve the tree during the course of construction.*
- *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, accurate size of the trunk diameter (measurement taken at 54-inches above natural grade); perimeter of leaf canopy; proximity to structures; condition of the tree health (and/or decay presence), condition of the tree structure, imminent danger of failing; interface with utility services; conclusion and recommendation(s), photographs (encouraged) and Tree Protection Instructions (if needed) (Dockter, 2001).*

Tree Survey Report

- *More extensive report required for all development projects except single-family residential lots. The report shall inventory all trees that are greater than 4-inches in diameter (measured at 12-inches above natural grade) on site, including trees to be removed, relocated and retained on the property (including trees on neighboring properties that overhang the project site) and all street 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, appraised value of the trees and any other information pertinent to the project (Dockter, 2001).*
- *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 (include tree species, size, health, structure, etc. for all trees on the project site, including those to be removed (tables may be used); condition of the trees (include*

information with respect to health, structure, decay, imminent danger of falling, existing property lines, structures and utility services) conclusion, recommendation(s) and rated for suitability for preservation. The report shall include a separate list of all protected trees with location numbers. If necessary, other supporting information, photographs, diagrams, etc. may be required or provided.

Tree Protection and Preservation Report

- *All protected or designated trees 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 the Planning Division is required when trees to be saved may be injured by disturbance.*
- *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 and conditions: preconstruction; during construction, post construction, demolition activities; methods of avoiding injury, damage treatment and inspections. Schedules shall be included.*
- *The tree protection and preservation plan shall establish a tree protection zone (TPZ) for each tree to be fenced and clearly outline site-specific measures for protection of the trees during construction and describe a plan for continued maintenance of those trees after construction. After project approval, any changes to the protection measures must be approved in writing, by the City Arborist.*
- *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 insure their survival. This site plan shall accurately show the surveyed location, species, size of trunk and leaf canopy; show the dripline of any neighboring trees that may overhang the site and street trees that are within 30-feet on each side of the project. Failure to show a tree on the plans and 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.*
- *In addition to the above information, final improvement plans shall include and show the following information: show the tree protection zone of any tree to be retained and denote a 5-foot chain link type fencing around the protected zone of each tree or group of trees (to be clearly identified as such on all plans as a bold-dashed line); 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; landscaping and irrigation within dripline of trees (Dockter, 2001).*

Palo Alto's Tree Protection and Preservation Report is very similar to San Mateo County's recent ordinance amendment, Section 12,020.4 – Existing Tree Plan. They both require development permit applicants to have an arborist assess health and longevity conditions of protected trees on the development site that are not proposed for removal. They both require

precise mapping of retained tree locations and associated driplines. However, Palo Alto is more specific with respect to what is required of arborists involved in this kind of project.

Marin County's Native Tree Preservation and Protection Ordinance defines an arborist as:

- 1) *"A person currently certified by the Western Chapter of the International Society of Arboriculture as an expert on the care of trees;*
- 2) *A consulting arborist who satisfies the requirements of the American Society of Consulting Arborists; or*
- 3) *Such other qualified professionals who the Director determines has gained through experience the qualifications to identify, remove or replace trees."* (Marin County Planning Division, 2002)

The City of Sonoma's Tree Ordinance contains the following definitions:

- 1) *A Certified Arborist is "a person who has been tested by and is currently certified as an "arborist" by the International Society of Arboriculture"*
- 2) *A Project Arborist is "an International Society of Arboriculture (ISA) certified arborist selected by the city to report on and oversee the protection of trees on a site subject to new development"* (City of Sonoma Planning Department, 2016)

Marin County and the City of Sonoma both require ISA credentialed arborists, as do many other cities and counties around the country. Marin makes few references to arborist reports in their ordinance, only stating that a tree removal permit applicant might require an arborist report to show proof of poor tree health or the threat of insects spreading to adjacent trees. Sonoma City requires an arborist's report at the time of application for any new development, "unless no significant trees are found on the proposed project site or adjoining lots. The report shall provide the necessary information to determine the appropriate extent of tree preservation and protection and tree replacement requirements. The report shall indicate the genus and species, the shape, the trunk diameter of each tree and the non-intrusion zone around each tree on the property" (City of Sonoma Planning Department, 2016). The community development director selects an arborist from a list provided by the city's 3-member tree committee. "All costs and fees for the services of the arborist shall be paid by the applicant and shall be paid in full at the time of the project application" (City of Sonoma Planning Department, 2016).

The City of Atlanta, Georgia requires arborists who submit tree reports to be ISA certified. They also require the arborists prescribing trimming or removal of a tree to do the work themselves, as it was detailed in reports they submit (City of Atlanta Office of Buildings – Arborist Division, 2015). In the City of Kirkland, Washington, arborist reports are "... necessary when removing trees in a critical area, if more than two trees are being removed within a 12 month period, or if the trees are the last two trees on a property" (City of Kirkland Planning Department, 2015).

Current Requirements from County Ordinances

When is an Arborist Report Required?

The arborist report requirements in the heritage and significant tree removal ordinances are basically identical. *“An Arborist's report is required for significant or heritage trees proposed for removal on the basis of poor health, potential hazard, or when a significant or heritage tree(s) is proposed to remain, but new development would encroach within the dripline of the tree(s)”*.

When a significant or heritage tree(s) is proposed to remain on a project site, but new development would encroach within the dripline of the tree(s), there is a requirement for an arborist report to document the affected trees and the necessary protection measures.

When tree removal or trimming permits are appealed to the Planning Commission or are part of development proposals being reviewed by the Planning Commission, the Commission has broad discretion to require additional information to guide its decision making. More extensive arborist reports may be required to address specific questions that arise during Planning Commission review. County Ordinance Section 12,020.4. *Existing Tree Plan Application Requirements*, added by Resolution No. 04763 on October 18th 2016, requires an arborist report as part of existing tree plans, which must be submitted when applying for a planning or building permit. An arborist report is required if trees outside of the proposed structure's footprint will be affected, as detailed in Appendix 1. The County currently does not specify in its ordinances what kind of report the applicant is required to provide, and the content requirements are broad and somewhat imprecise, and could be more expansive and detailed, including requiring differing levels of information in different circumstances.

What Contents Are Required in an Arborist Report?

The application requirements for tree removal permits include, in part that *“General health of tree to be trimmed, cut down or removed, as documented by a licensed arborist... The arborist report shall assess the condition and health of the tree proposed for removal, the actions that could be taken to avoid removal, and the recommended course of action. The submitted arborist report shall be subject to the review of an independent arborist, who shall provide a recommendation to the Community Development Director and other decision making bodies on whether to deny or conditionally approve the application.”* The tree plan must accurately show the location of tree trunks and canopy, structural footprints and proposed utilities, and must be prepared by a licensed surveyor or a registered civil engineer.

The letter format report will satisfy the County's needs for cases that involve a property owner applying for the removal of one to three trees. The information required in a significant tree removal permit application could be used as a baseline for what is required in a letter format arborist report:

- *The diameter and height of the tree.*

- *The type of trees (e.g., coniferous, evergreen hardwood and deciduous hardwood).*
- *A map or accurate sketch of location and trees proposed to be cut (show other significant trees, shrubs, buildings or proposed buildings within 25 feet of any trees proposed to be cut including any off the parcel; photographs may be used to show the area).*
- *Method for marking the tree proposed to be trimmed, cut down, removed or destroyed.*
- *Description of method to be used in removing or trimming the tree.*
- *Description of tree planting or replacement program, including detailed plans for an irrigation program, if required.*
- *Reasons for proposing removal or trimming of the tree.*
- *Street address where tree is located.*
- *General health of tree to be trimmed, cut down or removed, as documented by a licensed tree surgeon or arborist.*

This basic information, along with conclusion and recommendations sections, is already included in most letter reports. The County asks for this information in the tree removal permit application, but does not specify what the accompanying arborist report must contain.

There are many different tools used by arborists to accomplish their task of determining external and internal conditions of a given tree. The tools and methods used depend on the specific goal of the permit applicant and the level of assessment agreed upon with the arborist. A limited visual assessment typically won't involve any tools. Basic assessment might be conducted with sounding and probing techniques (McLean, 2014). Sounding is usually performed with a rubber or nylon mallet, and involves striking a part of the tree and recognizing the different sounds made by solid and hollow wood. Probing is done by inserting a measuring stick into cavities in the tree to assess the extent of internal decay.

In the advanced assessment, battery-powered drills or increment borers can be used to inspect internal conditions in the tree (McLean, 2014). These tools allow for the arborist to pull out and inspect wood shavings or tubular wood cores, noting changes in color or density. The more expensive tools are gaining popularity in the industry, because they provide for more accurate assessments of internal conditions. The resistance-recording drill can be used to locate internal decay. "A small drill bit is used to drill into wood at a constant speed. The relative resistance encountered during drilling is plotted or recorded digitally" (McLean, 2014).



Resistance-recording drill,
Image from: arvores-e-pessoas.pt



Sonic tomography,
Image from: argus-electronic.de

Sonic tomography is like a tree ultrasound, in which “a series of sensors is used to measure the time it takes sound to pass through a piece of wood. Solid wood transmits sound faster than decayed wood or hollows” (McLean, 2014). These tools are expensive, however, there are affordable units being used by professionals in the field to collect evidence for arborist reports. Air spades are frequently used to assess root crown conditions without damaging the root system, or to facilitate targeted excavation and root pruning as part of utility or foundation installation.

Issues with Current Ordinances

There is a need for consistent terms used in the current Significant and Heritage Tree Removal ordinances. The term tree surgeon is used a number of times where it should say arborist, to be more consistent with the rest of the documents. There is a lack of clear and consistent requirements for when an arborist report is required and what it must contain, who is allowed to prepare it, and under what conditions more elaborate assessments are required. The arborist’s role in crafting tree protection plans may require clarification as well as the arborist’s role in supervision of prescribed protection measures before, during, and after construction. The ordinance does not adequately address requirements for development projects involving many trees, and tree impacts, which may require more specific in-depth analyses.

The new County Arborist position will assist with the task of reviewing arborist reports that accompany permit applications, but there is no description of this process in the ordinances. The County Arborist should also be able to provide advice on when more extensive reporting is required from arborists.

Policy Options

The following policy options are routes for establishing clear requirements of arborist credentials, and arborist report contents and requirements, based on the comparative analysis of other ordinances and issues identified with our current ordinances.

1. Required content of arborist reports in different permitting situations

- a. Significant or Heritage Tree trimming/removal permit application, or development on sites where protected trees are located

Permit applicant should submit a letter format arborist report with the application that contains the information required in a significant tree removal permit application, along with professional and unbiased recommendations. The report must include the following items to be considered complete and usable by Planning staff for decision-making purposes:

- Name, business address, contact information, qualifications/certifications of the licensed arborist preparing the report;
- Street address where tree(s) is located;
- Date of inspection and date the report was prepared, including dates for photographs included in the report;
- For multiple-tree applications, a table/spreadsheet that shows clearly for each tree the following information:
 - Common and Scientific name of the tree
 - Estimated height
 - Canopy/Crown spread
 - DBH (Diameter of the trunk at breast height, usually measured at 4.5 ft. above ground level)
 - Comments on the vitality, structure and form of the tree
 - Tree number (to correspond with the site plan, see below)
 - If required, inclusion of an assessment of value/significance/suitability
 - Are there any other trees in the property? If so, how many and list the DBH of each tree;
- A map or accurate sketch of location and trees proposed to be cut (show other significant trees, shrubs, buildings or proposed buildings within 25 feet of any trees proposed to be cut including any off the parcel; photographs may be used to show the area). The map should include the trunk location and dripline;
- Methods or techniques used in the inspection, e.g., visual assessment, use of decay detection device, below ground root inspections, aerial inspections, etc.;
- A discussion of the data collected and reported in the spreadsheet: general health of tree(s) to be trimmed, cut down or removed, as documented by an ISA certified arborist. The assessment should address the roots, trunk, canopy and foliage, consistent with ISA standards;
- Color photographs of the tree(s) annotated with assertions made in the report, e.g., pointing out decay, poor form, disease, etc.;
- Measures that can be undertaken to remedy any disease, poor structure, lack of vigor, hazards or other issues, such as treatment, watering, fertilization, trimming, cabling, etc.;
- Reasons for proposing removal or trimming of the tree;

- the actions that could be taken to avoid removal, and the recommended course of action to restore or preserve tree health;
- Conclusions and recommendations, based on explicit logical deductions, supported by the facts, arboricultural practices and best professional judgement, and framed in context of the species proposed for removal and their general longevity and health;
- Method for marking the tree proposed to be trimmed, cut down, removed or destroyed;
- Description of method to be used in removing or trimming the tree;
- Description of tree planting or replacement program, including detailed plans for an irrigation program, if required.

The County Arborist or Community Development Director may require the submittal of a booklet report or Level 3 report, if the information in the letter report is inadequate to inform decision making.

b. Existing tree plan, when applying for planning or building permit for development

Current existing tree plan requirements approximate a booklet report, i.e., “The Arborist’s report shall assess the tree condition for all significant or heritage trees, and any measures necessary to protect trees on-site during demolition or construction. Tree protection measures shall comply with San Mateo County’s tree protection requirements. For development within a tree dripline, the report shall assess potential tree survival and longevity, and special measures needed to protect any such trees during construction” (County of San Mateo Planning and Building Department, 2016). “Tree Protection Plans and accompanying recommendations shall comply with the latest version of ANSI A300 Part 5 – Management of Trees and Shrubs during Site Planning, Site Development, and Construction” (Rouse, 2017).

Arborist reports submitted with existing tree plans shall include the information outlined above in Significant or Heritage Tree trimming/removal permit application, and shall be supplemented as necessary to address any proposed encroachments by equipment during construction or permanent effects of structures or utilities within the critical root zone of protected trees. The report shall also outline all remedial measures needed to address any health deficiencies of protected trees on the site, and measures needed subsequent to construction to sustain health of all trees to remain, including replacement trees for trees removed. For accessways, utilities and structures that encroach into the critical root zone, the report shall describe all excavation and construction methods employed to minimize tree impacts, including but not limited to structural soil, pervious pavers, foundation beams and posts, air-spade or hand excavation, root pruning techniques, and other measure needed to minimize adverse construction effects.

2. When is an arborist report required

- a. Arborist reports are always required to accompany all significant or heritage tree removal/trimming permit applications, except in documented emergency situations. Arborist reports are also required to accompany planning or building permit applications, whenever protected trees are found on the subject property or on adjoining lots.

A letter report would generally suffice for the significant or heritage tree removal/trimming permit applications (as described above), but a booklet style report would be required when applying for planning or building permits and there is one or more heritage trees or more than three significant trees on the subject property, or when additional information is needed to support decision making in single-tree applications for removal. In the case of a smaller scale development project, where only 1-3 protected trees are located on the subject property, a letter format report could be used to satisfy the arborist report requirement, as long as it contains thorough tree protection prescriptions for any protected trees that aren't proposed for removal.

The policy should include exceptions for special circumstances, when arborist reports are not necessary, such as severely diseased or dead trees, or when emergency conditions require a rapid response.

3. Options for who can prepare arborist reports

- a. Only ISA Certified Arborists or ASCA Registered Consulting Arborists can prepare arborist reports that accompany tree removal/trimming permit applications or site development plans.

This requirement would help to ensure the professional and ethical practice of arboricultural work in the county that directly impacts the granting or denying of relevant permits. This Community Development Director shall have the discretion to accept reports from unlicensed tree professionals with a proven track record of competently performing arboricultural services for a considerable period of time in the County, as recognized by ISA licensed professionals.

- b. Create and maintain a County of San Mateo List of Certified Arborists that is available to the public.

Arborists that wish to conduct report writing businesses in San Mateo County must meet a number of requirements established by the County. Documentation must be

submitted and reviewed before an arborist can be added to the List of Certified Arborists. The requirements are:

- Be an ISA Certified Arborist or ISA Board Certified Master Arborist, or an ASCA Registered Consulting Arborist
- Have a fundamental knowledge of County ordinances that pertain to significant and heritage tree protection/removal
- Have the ability to write a comprehensive report that details the needs of the client, site conditions and proposed development plans, and background information of the subject site, along with all pertinent tree species and condition information
- Have at least 2 samples of work which demonstrate the ability to meet all these requirements

Many arborists in the county can satisfy all of these requirements. However, the County does not want to be perceived as biased or picking winners and losers, therefore, maintaining a list of recommended arborists may not be workable.

c. The County Arborist.

4. Options for addressing conflict of interest issues

a. Require TCIA Accreditation for businesses that prepare arborist reports used in Planning and Building Department decision-making processes.

TCIA Accreditation helps consumers identify qualified tree care companies who conduct business in a safe, legal, and ethical manner (Tree Care Industry Association, Inc., 2017). This could be helpful for issues where a third party commercial arborist is required to give peer review opinion, or perhaps in a case where the parties have a dispute regarding which arborist/company is qualified to do the work (Rouse, 2017). The County staff is unfamiliar with TCIA, and whether relying on arborists with this accreditation will necessarily eliminate or substantially reduce conflicts of interest. It also could create a barrier for qualified ISA or ASCA certified arborists lacking this credential.

b. Require the trimming/removal permit applicant to pay for a 3rd party consulting arborist (potentially including the County Arborist) to review the arborist report as part of County decision-making process, to ensure ethical practice.

This would help the County to get unbiased professional opinion, but would increase permit costs. Some landowners applying for the trimming or removal of one significant

or heritage tree may not be able to afford this option. The City of Cupertino uses this process to ensure fair and ethical reporting by arborists.

- c. Employ the “County List of Certified Arborists” tactic from option 3.b above, which provides the County with a means of controlling who is allowed to prepare arborist reports in cases where they are required to accompany tree removal/trimming permit applications or site development plans

This option would enable the County Planning Department to preapprove consulting arborists, but the issue of the County favoring one company over another remains, and could serve as a competitive barrier.

Appendix 1

Arborist Report Requirements in Current Ordinances

Appendix 1: Arborist Report Requirements San Mateo County Heritage and Significant Tree Removal Ordinances	
SECTION 11,051.1. EXISTING TREE PLAN - APPLICATION REQUIREMENTS	SECTION 12,020.4. EXISTING TREE PLAN- APPLICATION REQUIREMENTS
<ul style="list-style-type: none"> • An arborist's report is required for significant or heritage trees proposed for removal on the basis of poor health, potential hazard, or when a significant or heritage tree(s) is proposed to remain, but new development would encroach within the drip line of the tree. • The arborist's report shall assess tree condition for all significant or heritage trees, and any measures necessary to protect trees on site during demolition or construction, including any remedial measures necessary to sustain impacted trees. Tree protection measures shall comply with San Mateo County's tree protection requirements. • For development within a tree dripline the report shall assess potential tree survival and longevity, and special measures needed to protect any such trees during or post construction. 	<ul style="list-style-type: none"> • An arborist's report is required for significant or heritage trees proposed for removal on the basis of poor health, potential hazard, or when a significant or heritage tree(s) is proposed to remain, but new development would encroach within the drip line of the tree. • The arborist's report shall assess tree condition for all significant or heritage trees, and any measures necessary to protect trees on site during demolition or construction, including any remedial measures necessary to sustain impacted trees. Tree protection measures shall comply with San Mateo County's tree protection requirements. • For development within a tree dripline the report shall assess potential tree survival and longevity, and special measures needed to protect any such trees during or post construction.

SECTION 11,052. APPLICATION FOR AND GRANTING OF PERMITS	SECTION 12,021. PERMIT APPLICATIONS
<ul style="list-style-type: none"> • Any person desiring to cut down, destroy, move or trim one or more heritage trees on public or private property must apply to the San Mateo County Planning Department for a Heritage Tree Removal/Trimming Permit on a form provided by the Planning Department. • Said application shall, consistent with Section 11,051.1 above, include a detailed site plan and arborist report, contain a brief statement of the reason for the requested action, and describe any other pertinent information the Community Development Director may require. • The arborist report shall assesses the condition and health of the tree proposed for removal, the actions that could be taken to avoid removal, and the recommended course of action. • The submitted arborist report shall be subject to the review of an independent arborist, who shall provide a recommendation to the Community Development Director and other decision making bodies on whether to deny or conditionally approve the application. • If trimming is to be performed by a licensed tree surgeon, the tree surgeon's inspection and decision may be accepted by the Community Development Director for purposes of compliance with this section. 	<p>Any person desiring to cut down, remove, destroy, or cause to be removed any tree regulated herein shall apply to the San Mateo County Planning Department for a Tree Cutting Permit on forms provided. Said application shall be accompanied by such drawings, written material, photographs, and other information as are necessary to provide data concerning trees within the affected area, which shall include:</p> <ul style="list-style-type: none"> • General health of tree to be trimmed, cut down or removed, as documented by a licensed arborist. • The arborist report shall assess the condition and health of the tree proposed for removal, the actions that could be taken to avoid removal, and the recommended course of action. • The submitted arborist report shall be subject to the review of an independent arborist, who shall provide a recommendation to the Community Development Director and other decision making bodies on whether to deny or conditionally approve the application

SECTION 11,055. BUILDING PERMITS	SECTION 12,020.5. TREE PROTECTION PLAN
<ul style="list-style-type: none"> • Identify, establish and maintain tree protection zones throughout the entire duration of the project • Isolate tree protection zones from all construction activity using 5-foot tall, orange plastic fencing supported by poles pounded into the ground, located at the driplines as described in the arborist's report • Maintain tree protection zones free of equipment and materials storage; contractors shall not clean any tools, forms or equipment within these areas • If any large roots or large masses of roots need to be cut, the roots shall be inspected by a certified arborist or registered forester prior to cutting as required in the arborist's report. Any root cutting shall be undertaken by an arborist or forester and documented. Roots to be cut shall be severed cleanly with a saw or topers. A tree protection verification letter from the certified arborist shall be submitted to the Planning Department within five (5) business days from site inspection following root cutting. • Normal irrigation shall be maintained, but oaks shall not need summer irrigation, unless the arborist's report directs specific watering measures to protect trees 	<ul style="list-style-type: none"> • Identify, establish and maintain tree protection zones throughout the entire duration of the project • Isolate tree protection zones from all construction activity using 5-foot tall, orange plastic fencing supported by poles pounded into the ground, located at the driplines as described in the arborist's report • Maintain tree protection zones free of equipment and materials storage; contractors shall not clean any tools, forms or equipment within these areas • If any large roots or large masses of roots need to be cut, the roots shall be inspected by a certified arborist or registered forester prior to cutting as required in the arborist's report. Any root cutting shall be undertaken by an arborist or forester and documented. Roots to be cut shall be severed cleanly with a saw or topers. A tree protection verification letter from the certified arborist shall be submitted to the Planning Department within five (5) business days from site inspection following root cutting. • Normal irrigation shall be maintained, but oaks shall not need summer irrigation, unless the arborist's report directs specific watering measures to protect trees

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