



Date: January 30, 2019

Fountaingrove II Open Space Maintenance Association
c/o Focus Real Estate
3936 Mayette Avenue
Santa Rosa, CA 95405

Attn: Board Members

**Tree Failure and Fire Hazard Assessments and Mitigation Prescriptions for
Fountaingrove II Open Space located in Santa Rosa, California and Comprising Work for
Fuel Reduction and Fire Cleanup from Tubbs Firestorm in Fuel Breaks, Landscape
Parcels and Rincon Ridge and Parker Hill Wildland Parks**

PURPOSE AND PROCEDURES

Since 2010, Urban Forestry Associates, Inc. (UFA) has been engaged by the Fountaingrove II Open Space Maintenance Association (OSMA) to prepare Tree Health, Tree Failure and Fire Hazard Assessments and Mitigation Plans for its Open Space parcels located in Fountaingrove II in Santa Rosa, California, and UFA provided the required certifications for OSMA's Annual Reports to the Planning and Economic Development Department of Santa Rosa for years 2010 - 2017.

OSMA requested UFA to do similar work during 2018 for both the Open Space parcels it owns, as well as the Fountaingrove II Wildland Parks which it manages for the City of Santa Rosa under the terms of an Agreement executed with the City in December 2012. Since November 2017, UFA has been engaged by the OSMA to evaluate safety issues with trees damaged by the October 2017 Tubbs Firestorm and recommend how to treat the thousands of trees that were destroyed or damaged by fire on a prioritized basis. This evaluation will continue for the foreseeable future. Due to the number of trees destroyed during the Tubbs Firestorm, OSMA's fire suppression focus turned from forest thinning of crown-to-crown separation to removing dead trees that were safety issues and which were in fuel breaks adjacent to homes or burnt lots. These are areas that OSMA had fuel reduced and performed annual weed abatement on for over a decade.

UFA was engaged on an hourly basis to work on its assessments of trees in several parcels within approximately 220 acres of Open Space owned by the OSMA, and the 13.53 acres of City Wildland Parks that OSMA manages. As per the prior years, UFA summarized its assessments and recommendations on templates which could be incorporated into tree prescription logs combined into: (1) an annual certified UFA report for work completed by OSMA during Year 2018, (2) OSMA's Requests for Proposals (RFPs) which were solicited to vendors, and (3) the Annual Report which OSMA is required to provide to the City of Santa Rosa Planning and Economic Development Department and its Association Members as of February 1, 2019.

This report, and the attached prescriptions, present our observations, and provide OSMA with recommendations to reduce tree-falling hazards and fire hazards for the areas outlined herein.

BACKGROUND, SCOPE OF WORK, AND LIMITATIONS

Information regarding property boundaries, land ownership, tree ownership, and history of the site was supplied to UFA by the Fountaingrove II Open Space Maintenance Association Board. The scope of work is described herein and on the Specification Sheets and Summary of Tree Work attached hereto as Exhibit 1. The scope includes recommendations on: (1) Fire-Hazard Assessment, (2) Treatment Specifications, (3) Tree Inventory, (4) Tree Health and (5) Tree-Hazard Assessment. UFA has no personal or monetary interest in the outcome of this work. Any determinations reflected in this report are objective and to the best of our ability. All judgments regarding the condition of the vegetation were made by UFA, independently, based on our education and professional experience.

SETTING

In November 2017, the OSMA requested UFA to commence performing a visual inspection for fire damage to trees and other vegetation on all its managed Open Space. After analyzing this overview of tree damage and risk, the OSMA and UFA set priorities to review the fuel breaks located in its landscape and wildland parcels to identify trees that should be removed. The first detail reviews by UFA for fire cleanup and safety issues were conducted in the areas with highest risk and included parcels near streets, standing homes or lots that were being cleaned up of debris as required by the government and to enable a rebuild of homes on the burned lots. The fire cleanup review by UFA has been ongoing since it commenced on November 6, 2017. Work recommended by UFA for fire cleanup that was completed in Year 2018 included the following areas and the details of the tree work performed UFA's prescription for work to complete is summarized on Exhibit 1 to this Report:

Fuel Breaks 2, 3, 4, 9, 10, 11, 12 and 13
Landscape Parcels East & West
Parker Hill and Rincon Ridge Parks

UFA also provided tree reviews in other Fuel Breaks during 2018, but the work has not been completed by OSMA, which is managing fire cleanup work on a prioritized basis as financial resources become available. The recommendations/assessments of UFA not included in this Report will be supplemented for updated reviews in 2019 as necessary, and these prescriptions will be included in future OSMA Annual Reports provided to the Planning and Economic Department of Santa Rosa which are due as of February 1st of each year.

The topography, aspect (direction of slope), fuels, other fire hazard factors and emergency response access varied from location to location, and the prescription recommendations took these factors into account.

As noted above, prescription work performed in 2018 by UFA, but not completed as of December 31, 2018, will be incorporated into future UFA reports to OSMA. This approach eliminates duplicate reporting and confusion if UFA makes supplemental recommendations which may be necessary before OSMA completes the work. Forest health and structural condition on Open Space within Fountaingrove II are constantly changing, and management specifications should be reviewed and updated just prior to providing input to vendors solicited to do work on trees. OSMA faces rapidly changing circumstances due to pests and diseases attacking its trees, particularly Douglas fir, California bay laurel, coast live oak and California black oak. Weather extremes (i.e. the recent extended drought) have also created hazard issues.

Chaparral: No formal report was requested by OSMA for chaparral prescriptions in Year 2018.

FIRE HAZARD ASSESSMENT

The City of Santa Rosa has designated Fountaingrove II as an Urban Wildland Interface Fire Area and a Very High Fire Hazard Severity Zone. The only effective approach to mitigate fire hazards in these fire-prone areas is to alter the vegetation fuels by changing its loading (reducing the amount of fuel), arrangement (disrupting the vertical and horizontal continuity), and composition (favoring less flammable species). OSMA and UFA require that special status species be preserved. Recommendations to reduce the fire hazard in the reviewed areas are presented below for the surface, ladder, and aerial fuels.

Surface Fuels: Within the subject area, surface vegetation consists primarily of seasonally dry grass and accumulated organic material (leaves and branches) cast from trees and shrubs. Fires in these fine, flashy, surface fuels tend to spread rapidly with relatively low intensity (low thermal output and short flame lengths). Light ground fuels are where ignitions typically occur. Surface fires predispose aerial fuels to ignition and make it difficult to control crown fires. We recommend OSMA continue its annual mowing of grasses and periodically chipping downed limbs (every 5 years) to reduce rates of spread and fire intensity of these surface fuels. Care has been taken to preserve special status species.

Ladder Fuels: Shrubs (broom and toyon) and small trees (acacia, eucalyptus and fir saplings) create an intermediate fuel stratum in the fire ladder between the ground fuels and the tree canopies. These ladder fuels burn with great upward intensity (moderate thermal output to severe and moderate to severe flame lengths depending on fuel load and flammability), preheating and moving fire to the tree canopy. Although madrone trees occupy this layer in the subject areas, they do not constitute problematic ladder fuels owing to a lack of accumulated dead leaves and fine branches. We recommend that ladder fuels including the broom, acacia, eucalyptus and fir saplings (less than 6 inches DBH) be cleared from this area to create greater separation between the surface and aerial fuels. All madrone trees should be retained unless they are a high risk of failure with a target of value. Annual treatment of re-sprouting broom, Himalayan blackberry, acacia, and eucalyptus will be needed for long-term control and to prevent these invasive fire-prone plants from moving further into the open space.

Aerial Fuels: Once a fire reaches the forest canopy (eucalyptus, oak, bay, and fir) individual trees begin burning rapidly from bottom to top (torching) and spread from tree to tree (crown fire), fueling an intense conflagration (high thermal output and high flame lengths). Burning trees may generate fire brands that are blown downwind and ignite spot fires in advance of the flame front up to a quarter mile. Most home ignitions are also due to ember blizzards and fire brands. Both eucalyptus and acacia are recognized as especially flammable; eucalyptus is notorious for producing fire brands and embers that move considerable distances downwind during a fire. Eucalyptus is also "self-laddering" allowing fire to ascend the trunk in the absence of other ladder fuels. We recommend that all eucalyptus and acacia trees be removed from the areas within Fountaingrove II Open Space, and their remaining stumps be treated to prevent re-sprouting. Also Douglas fir should be pruned to a minimum canopy height of 10 feet above grade, total size permitting.

FIRE HAZARD MITIGATION SUMMARY OF TREES FOR THIS REPORT

During Year 2018, the OSMA took a conservative approach to cutting fire damaged trees, and UFA provided multiple reviews of the trees in Open Space to ensure that the OSMA could only cut trees that were dead or irreparably damaged by the Tubbs Firestorm. Dead Trees removed in 2018 by OSMA are noted on the attached prescriptions attached hereto as Exhibit 1, and include cutting of the following trees by species:

Douglas fir	347
Native Oaks	294
California Bay Laurel	408
Madrone	40
Big Leaf Maple	6
Redwood	<u>26</u>
Total dead trees removed in 2018 by Species	<u>1,121</u>

In accumulating the number of trees cut, the OSMA has considered the stems cut of Bays as a single tree. This decision was made since many of the cut bays were in clumps, yet separated by each other, and were probably the result in regrowth from a prior wildfire. This tracking also enabled the OSMA to plan their tree work in areas that were only accessible by a Track Chipper that could not chip/process trees or limbs in excess of 12" in diameter.

The diameters of the trees cut are included on the attached Exhibit 1 and are summarized below:

6.0" to 9.0"	343
9.1" to 11.9"	216
12.0" to 24.0"	461
Over 24.0"	<u>101</u>
Total dead trees removed in 2017 by DBH	<u>1,121</u>

All recommended tree removals by OSMA were within the City of Santa Rosa Use Permit as amended July 7, 2011 and the guidelines of the existing Use Permit and Open Space Management Plan for Fountaingrove II Open Space. Recommendations of invasive or nonnative trees are not tracked by UFA or OSMA for reporting purposes.

Fire Hazard Mitigation: Significant (yet manageable) fire hazards were identified within the subject areas. Continuing to maintain or create shaded fuel breaks should be a continuing objective for OSMA. This practice will help slow a wildfire originating within or progressing towards Open Space. Suggested ongoing mitigation measures should include:

1. Continue to mow cured grasses annually.
2. Limb up trees to 10' above the ground, size permitting (minimum cycle of 5 years)
3. Treat chaparral for regrowth (minimum cycle of 5 years).
4. Remove ladder fuels, including chaparral and Douglas fir reproduction under 6" DBH
5. Remove invasives and treat for re-spouting of acacia, eucalyptus, broom, pampas grass, euphorbia, blackberry and new invasive species that OSMA discovers in Open Space.
6. In certain areas, logs greater than 8" in diameter could be left onsite to decompose.

Urban Forestry Associates, Inc.

Date: January 30, 2019

Certification: Urban Forestry Associates, Inc. (UFA) herein certifies we have read and to the best of our ability understand the applicable governing documents of Fountaingrove II Open Space Maintenance Association. UFA certifies under penalty of perjury that to the best of our knowledge our recommendations herein, and as noted on the Prescription Worksheets attached as Exhibits 1 are in compliance with the prescribed management practices for the Open Space of Fountaingrove II. Our recommendations comply with all the requirements of the approved Design Program for Open Space Management and Use Permits supplied to UFA by OSMA Board members, and these documents are attached hereto as reference Exhibits.

Sincerely,

URBAN FORESTRY ASSOCIATES, INC.

A handwritten signature in blue ink that reads "Ray Moritz". The signature is written in a cursive style with a horizontal line underneath the name.

Ray Moritz, Urban Forester SAF Cert #241
ISA Certified Tree Risk Assessor