



Town of Moraga	Agenda Item
Ordinances, Resolutions, Requests for Action	10.C

Meeting Date: May 11, 2022

**TOWN OF MORAGA**

**STAFF REPORT**

**To: Honorable Mayor and Councilmembers**

**From: Breyana Brandt, Parks and Recreation Director**

**Subject: Receive Findings of the Fire Abatement Draft Report, May 2022 and Provide Direction to Staff**

**Background and Discussion**

The Town of Moraga owns 21 parcels that are comprised of 382 acres of developed and undeveloped land. The California fire season has increased in severity and length which has led to increased fire prevention regulations. The Town has, in turn, increased the amount of work it completes each year. The Town's efforts have been reactive as it learns about the new requirements and how to complete the necessary work. The costs to complete the increased fire prevention efforts is projected to increase from \$93,000 in Fiscal Year (FY) 2021/22 to \$109,000 in FY 2022/23 and continue to rise each year thereafter. The increased work requires additional staff resources, and the costs impact multiple budgets across the Public Works and Parks and Recreation Departments.

Recognizing the importance of fire prevention efforts and the need for a strategic and comprehensive plan, the Town Council approved \$20,000 in the Fiscal Year 2020/21 budget to complete a Fire Abatement Study. The original intention was to retain a consultant to evaluate Town-owned parcels and develop recommendations and cost projections to complete annual fire abatement work. The Town was not successful in finding a consultant to complete the project and shifted the project approach to complete the analysis with Town staff in consultation with the Moraga-Orinda Fire District (MOFD). The \$20,000 allocated for the study was redirected to fund fire abatement work.

The opportunity to complete the study in-house provided the added benefit of increased staff knowledge of Town-owned properties, applicable fire codes pertaining to these properties, and effective fire abatement methodology. MOFD provided technical input regarding the fire code, fire prevention techniques and strategies to best manage the Town's properties. The process led to findings that will alter the way the Town approaches fire abatement and outlines a path towards improved efficiency and increased compliance. Reevaluation of the Town's fire abatement work plan, combined

1 with the knowledge gained through the study process and improved coordination with  
2 MOFD enabled the Town to create a comprehensive and strategic approach to annual  
3 fire abatement efforts.

4  
5 The Fire Abatement Draft Report provides information on the regulatory context and  
6 principals that guide vegetation management. It includes detailed information on the  
7 Town-owned parcels and the applicable fire code regulations. It also includes a section  
8 on the Town's Fire Abatement Work Plan which outlines work completed in-house and by  
9 contractors and outlines additional work required to maintain the Town's parcels in  
10 compliance with applicable regulations. Lastly, it outlines the Town's historical costs and  
11 projected future costs.

12  
13 The report concludes with six recommendations as follows:

- 14 • Continue to leverage the support and partnership of MOFD by working in  
15 collaboration on prescribed burns at Mulholland, burn piles and use of MOFD's  
16 chipper program;
- 17 • Continue current grazing on Mulholland and explore expanded use of grazing;
- 18 • Apply for available grant funds;
- 19 • Plan for increased budget appropriations;
- 20 • Implement a phased fuel management schedule over a three-year period; and
- 21 • Consider the purchase of equipment to more efficiently complete work (Tractor  
22 Skid-Steer Loader)

23  
24 The Town recognizes the importance of this critical work in maintaining a safe community  
25 and desires to serve as a good role model to residents and property owners in its  
26 prioritization and approach to fire prevention efforts.

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28 **Fiscal Impact**

29  
30 None

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32 **Recommendation**

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34 Receive findings of the Fire Abatement Draft Report, May 2022 and provide direction to  
35 staff, including direction regarding the purchase of a tractor skid-steer loader as part of  
36 the Fiscal Year 2022/23.

37  
38 **Attachments:**

- 39  
40 **A** Fire Abatement Draft Report, May 2022

# **ATTACHMENT A**

Fire Abatement Draft Report, May 2022

Town of Moraga



**FIRE  
ABATEMENT  
DRAFT  
REPORT**

2022



**In Consultation with:**  
Moraga-Orinda Fire District

May 2022

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# 1. Project Description

California fire season continues to increase in severity making communities keenly aware of the escalating fire threat and the importance of fire prevention efforts. Over the past five years, the Town has continued to increase its operational budget to fund annual fire abatement. With the increased allocation of resources, including staff time and funding, it became evident that a comprehensive analysis to effectively and proactively address the Town-owned parcels, which comprise hundreds of acres throughout Town, was necessary. The Town recognizes the importance of this critical work in maintaining a safe community and the importance of developing a strategy to address fire prevention comprehensively and strategically. In addition, the Town desires to set a good example for the community in its prioritization and approach to fire prevention efforts.

In Fiscal Year 2021-22 the Town Council approved a Fire Abatement Study to assess and analyze the increasing scope and cost of fire abatement work on Town-owned properties. The Town desires through the Fire Abatement Study, to develop a better understanding of the costs associated with implementing and maintaining a proactive fire abatement strategy.

In consultation with the Moraga-Orinda Fire District (MOFD), Town of Moraga staff worked extensively to review, document, and analyze each Town-owned parcel. The existing condition of each parcel was assessed to establish the appropriate level of fuel mitigation required annually to maintain Town-owned parcels in compliance with Local and State requirements. The Fire Abatement Study included an interdepartmental team of Town staff which included the Parks and Recreation Department, the Public Works Department and Town Maintenance staff. In consultation with MOFD, the study process included a series of several meetings between January and May 2022, the development of a parcel map in the Town's Graphic Information System (GIS), review and evaluation of data, site visits, and graphic/photo documentation of each Town-owned parcel which culminated in the development of a comprehensive fire abatement strategy to guide the Town's approach to annual fire abatement work.

# 2. Regulatory Context

Fire safety code and regulations applicable to the Town of Moraga are established by the Moraga-Orinda Fire District (MOFD) and subject to requirements set forth by the State of California. The following documents served to determine applicable fire codes affecting Town of Moraga owned parcels.

- [Moraga-Orinda Wildfire Action Plan](#) – an appendix to the Contra Costa Countywide Community Wildfire Protection Plan

- MOFD Countywide Community Wildfire Protection Plan (CWPP)

The Fire Codes is updated every three years, with the next update scheduled for January 2023. CAL FIRE is in the process of updating the Fire Hazard Severity Zone maps. However, the release of updated Cal Fire maps is relatively insignificant to the Town's fire abatement study as the CAL FIRE maps do not drive defensible space standards and are primarily applicable to development.

### 3. Principals Guiding Vegetation Management

Changing climatic conditions have increased the risk and severity of fires in California. Moraga's local climatic conditions of limited rainfall, low humidity, high temperatures, and high winds, along with existing building construction and landscaping, create hazardous fire conditions that adversely affect the potential fire line intensity, spread rates, and size of fires. The same climatic conditions may result in the concurrent occurrence of multiple fires in Moraga and/or throughout the region.

Moraga is located amongst rolling hills and valleys created by the Berkeley/Oakland hills to the west and open plains of central Contra Costa County to the east. Moraga receives slightly more rainfall than areas further inland, and often, during the summer months, portions of the Moraga are enveloped in fog as the heat in the Central Valley draws cool air in from the San Francisco Bay. However, Moraga also experiences the hot, dry summer weather that is characteristic of central Contra Costa County. This climate promoted the growth of grasslands, chaparral, oaks, and other plant species indigenous to the area.

Due to the systematic exclusion of naturally occurring fire for over 100 hundred years, and a reduction in historical grazing activity as pastures have been developed, indigenous and non-indigenous plant species have created significant fuel loads throughout Moraga and the surrounding areas. The Oakland/Berkeley Hills bring Diablo Wind events characterized by high winds and very low relative humidity in the fall and the hot dry summer weather. These conditions have contributed to major fire loss in the region and throughout the state, with 17 of the 20 most destructive fires in California history occurring in the fall.

Throughout Moraga, homes and structures are surrounded by heavy vegetation with interspersed open areas, creating a semi-rural character. The resulting exposure to wildfire risk is increased by the negative effects of high wind conditions during the fire season. During May to October, critical climatic fire conditions regularly occur when the temperature exceeds 80F; wind speed is greater than 15 mph, fuel moisture is less than or equal to 10 percent, wind direction is from north to the east-southeast, and the ignition component is 65 or greater. These conditions occur more frequently during the fire season, but this does not preclude the possibility that a serious fire could occur during other months of the year.

The critical climate fire conditions create a situation conducive to rapidly moving, high-intensity fires. Fires starting in the wildland areas along the northern border are likely to move rapidly southward into the populated areas creating the potential for significant property loss and a challenging evacuation problem. Fire spread is slowed or stopped when crossing areas in which fuels have been modified to interrupt the continuity of combustive vegetation. Fuel breaks are the primary method used to modify vegetation to reduce the potential for the rapid spread of uncontrolled wildfire and are critical to preventing spread across property lines onto the lands of another and threatening lives and structures.

The Town’s Fire Abatement Study includes the analysis of the Fire Code relative to Town-owned properties and the assessment of existing fire abatement practices. This analysis and assessment work was essential to developing a plan to transition the Town from a reactive to proactive approach to annual fire abatement and enable the Town to serve as a good role model to residents and property owners who are responsible for conducting similar fire abatement work each year.

## 4. Town-owned Properties

The Town of Moraga owns 21 parcels and a total of 382 acres of land all located within the Town limits. The acreage includes parks, trails, open space, vacant lots, and property on which administrative and recreation facilities (structures) are located. In addition to the 382 acres, the Town is also responsible for numerous easements and right-of-way areas which require annual fire abatement work and are not captured in the established Assessor’s Parcel Numbers (APN) but are included in the Town’s annual fire abatement responsibilities. The Town established a comprehensive list of parcel information for all Town-owned properties and cross-referenced APN in collaboration with Contra Costa County and the MOFD to ensure consistency of established ownership and responsibility.

Summary of Town-owned Parcels

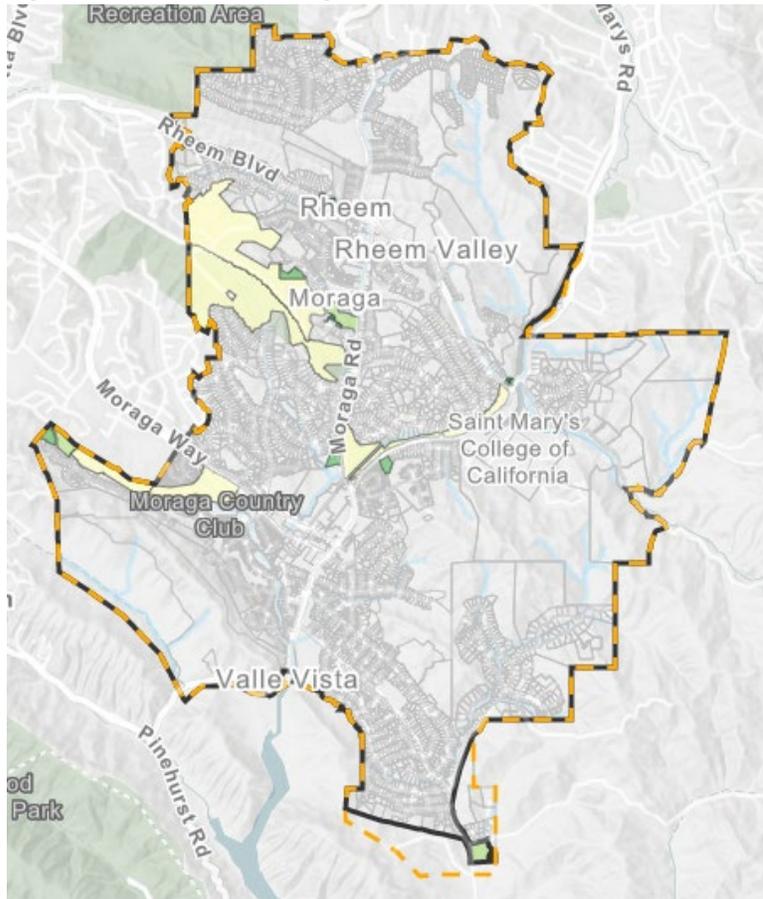
	Parcel Size	# of Parcels	# of Acres
	> 10 Acres	6	336.783
	> 5 to 10 Acres	3	24.612
	> 1 to 5 Acres	6	18.362
	< 1 Acre	6	2.875

The 21 parcels were further categorized into developed / undeveloped categories and sub-categorized into the applicable parcel size categories that determine the fire abatement work required to maintain compliance. Four Town-owned parcels are currently leased to the Moraga Country Club who is responsible for the necessary fire

abatement work. Therefore, the Town is responsible for a total of 17 parcels which include eight developed parcels and nine undeveloped parcels and comprise of 321.8 acres.

The Town's Graphic Information System (GIS) provided a platform to create and establish an internal layer to provide mapping, tracking, and planning capabilities pertaining to annual and ongoing fire abatement work conducted by the Town. Figure 1 shows the location of the 17 Town-owned Parcels.

Figure 1.0 – Town of Moraga Owned Parcels (GIS)



#### 4.1. Town-Owned Developed Parcels

The Town is responsible for nine developed parcels which total 63.13 acres. Four parcels are single parcels that include Town-owned facilities with structures or buildings. Moraga Commons Park is comprised of two parcels and the Hacienda de las Flores is comprised of three parcels.

##### Town Hall – 1.03 acres / 1 parcel

The parcel includes the Town Hall structure which is 12,000 sq. ft. The majority of the parcel is occupied by the structure and parking lot. The parcel is subject to defensible space standards and minimal work is required annually to comply as routine landscaping work accomplishes the majority of the fire abatement requirements.

Council Chambers/Corporation Yard – 0.52 acres / 1 parcel

The parcel includes a structure which consists of 1,100 sq. ft. of building space. The corporation yard is comprised of significant hardscape which reduces the annual work required on this parcel.

Library – 2.57 acres / 1 parcel

The Moraga Library is a single parcel that contains a 5,210 sq. ft. building and parking lot. The property contains a hillside that abuts private property. The parcel is subject to defensible space standards, and fuel break requirements for right-of-way and neighboring developed properties that are privately owned. Additional weed abatement upon the hillside to the rear of the library building is required annually.

Hacienda de las Flores – 9.86 acres / 3 parcels (8.86, 0.38, 0.62)

The Hacienda is a mixed-use site and designated as a developed parcel. The Hacienda is comprised of four structures: Hacienda Building - 7,200 sq. ft., La Sala Building 2,035 sq. ft., Casita Building - 1,390 sq. ft., and the Pavilion Building -1,000 sq. ft. which are all subject to defensible space standards.

The property abuts Town-owned open space on one side that creates continuous ownership and enables a portion of the hillside and trail network to be treated as an undeveloped parcel and included in the work plan for Mulholland. The two smaller parcels that make up the Hacienda property are each less than one acre and are subject to the total abatement requirements. The larger parcel is subject to the defensible space standards and required fuel breaks.

A challenge at the Hacienda de las Flores is the Eucalyptus grove that is located on the hillside adjacent to the Hacienda parking lot. The grove is located on Town property and surrounded by privately-owned homes on two sides, and Town-owned open space of 250 acres on one side, and the Hacienda structure itself on the final side. The proximity of this grove would enable a fire to spread very quickly. In 2020, the Town removed six Eucalyptus trees in closest proximity to private structures to widen the fuel break.

Over the three-year period of 2015 to 2017, a 3-phase fuel load reduction program was completed along the portion of the Hacienda property adjacent to Mulholland. This project included thinning the hillside and widening the access road. After completing the first phase in which the Town contributed \$5,000 in one-time funds, a Diablo Fire Safe Grant was obtained in 2016 and 2017 to complete phase 2 and 3 of the project. The grant contributed an additional \$4,792 in funding each of those two years.

Moraga Commons Park – 40.82 acres / 2 parcels (19.37 and 21.45)

Moraga Commons Park is a mixed-use park space that contains two structures: the main restroom building and the bandshell. Right-of-way along Moraga Road is also included in this parcel. A portion of the parcel is maintained as lawn and regularly mowed. The remaining portion of the parcel includes the Disc Golf Course known as the “Back 40” which requires the Town conduct approximately 212,500 sq. ft. of flail mowing.

The second parcel that makes up Moraga Commons Park is comprised mostly of right-of-way land that runs the length of St. Mary's Road from Moraga Road towards Carter Drive and St. Mary's Road. This stretch of roadway is considered an evacuation route which increases the importance of fire abatement work on this parcel. Using a combination of in-house and contractors, work is completed annually to disc over 1,000 ft. between Rheem Boulevard and Stafford Drive and an additional 22,500 sq. ft. from the end of the island on St. Mary's Road to Rheem Boulevard.

The second parcel is considered "developed" as it includes the preschool building (formerly Mulberry Tree). The majority of fire abatement requirements pertaining to the structure remain the responsibility of the tenant per the lease terms. Responsibility of Zone 2 defensible space requirements remain the responsibility of the Town as the boundary 100 feet from the structure is located in Moraga Commons Park which is outside of the lease footprint.

#### Rancho Laguna Park – 8.33 acres / 1 parcel

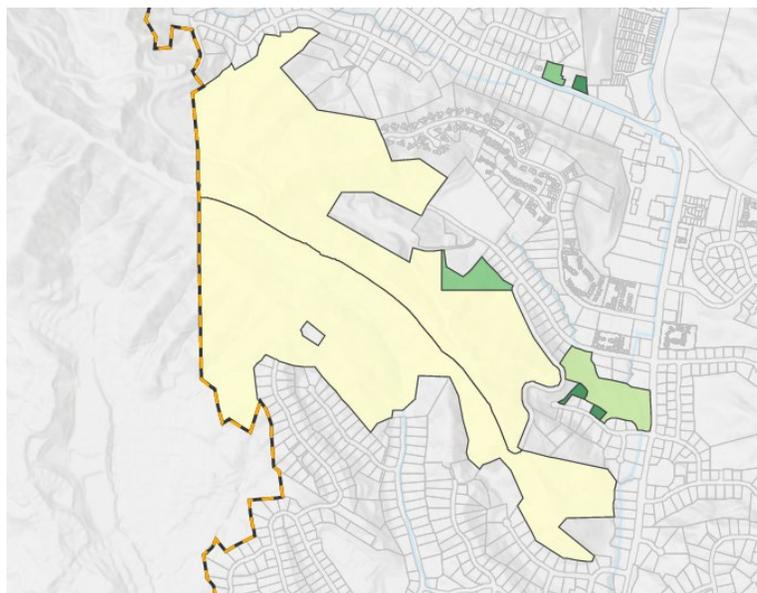
This park space is less developed than Moraga Commons yet categorized as a developed parcel due to the restroom structure that is located on the property. The parcel includes a combination of maintained lawn space and natural areas that are subject to fire abatement requirements.

## **4.2. Town-owned Undeveloped Parcels**

The Town is responsible for a total of eight undeveloped parcels which include 258.67 acres of undeveloped land (80% of the Town-owned and maintained land). The majority of the Town's undeveloped acreage is comprised of Mulholland Ridge Open Space Preserve (Mulholland) which makes up 250.33 of the 258.67 undeveloped parcel acreage.

#### Mulholland Open Space Preserve – 250.33 acres / 3 parcels (123.81, 122.60, 3.92)

Mulholland is the largest parcel(s) of land under the Town's ownership. The Open Space Preserve is comprised of three parcels and a total of 250 acres, it makes up over 65% of the Town's land ownership and 96% of the undeveloped property owned by the Town. The parcel contains fire trails and vehicle access points and is currently grazed by cattle through a lease agreement. A large portion of Mulholland remains in its natural state, and topography makes the exploration and analysis of Mulholland



challenging. Mulholland abuts over 70 developed parcels which contain homes and structures that are privately-owned.

Moraga Road Right-of-Way – 4.49 acres / 1 parcel

A right-of-way parcel is located across from Moraga Commons Park along Moraga Road; this parcel abuts the newly acquired West Commons Park. The parcel requires approximately 37,500 sq. ft. of discing work annually.

Vacant Lots – 1.32 acres / 3 parcels (0.65, 0.37, 0.30)

The Town is responsible for three individual parcels that are located at the intersection of Rheem Boulevard and St. Mary's Road. Each of the three parcels is less than one acre prompting total abatement requirements.

West Commons Park – 2.53 acres / 1 parcel

The addition of West Commons Park will add an additional 2.53 acres of undeveloped park land to the Town's fire abatement responsibility and further assessment is required for this parcel.

## 5. Applicable Fire Codes

Fire codes differ for developed and undeveloped parcels and further vary within each of those categories based upon the size and configuration of the individual parcels. The significant factors affecting the requirements for each parcel include: the size of the parcel; whether a structure is located on the parcel, and whether that parcel falls within a priority area.

A developed parcel is a parcel or lot of land altered from its natural state by the construction, creation, or addition of impervious area, except public streets or highways. Developed parcels include lands in which multi-use parks, Town offices and community buildings are located.

Undeveloped parcels are those that remain in their original and natural state and that have not been altered by the construction, creation or addition of an impervious area. The most notable Town-owned undeveloped parcels are the three parcels in the Mulholland Ridge Open Space Preserve (Mulholland). The Town is also responsible for rights-of-way and vacant lots that are included in the undeveloped category.

### 5.1. Fuel Breaks

Fuel Breaks are a critical tool utilized to reduce fire spread rates and intensity to allow the timely containment of wildfire. By interrupting the continuity of the fuel beds through which fire spreads, their presence decreases the potential for small fires spreading to the lands of another and slows the rate at which large fires travel, buying time for orderly

evacuations and the aggregation of an effective firefighting response for the protection of lives and structures. Fuel breaks are applicable to both Developed and Undeveloped parcels.

A Fuel Break requires the removal or modification of fuel, maintained on an annual or recurring basis, in a manner that will prevent the transmission of fire. Specifically:

- Grass and weeds cut to less than 3” no later than June 1 of each year.
- Removal of Hazardous Vegetation in the form of surface fuels.
- Removal of non-irrigated brush.
- Trimming of healthy trees to create no less than a 6’ vertical clearance between the lower portions of the canopy and the ground or ground fuels.
- Removal of Ladder Fuels.
- Removal of dead or dying trees.
- Removal of non-vegetative Combustible Material. Specifically, rubbish, litter, or material of any kind that is combustible and endangers the public safety as determined by the Fire Chief or their designee.

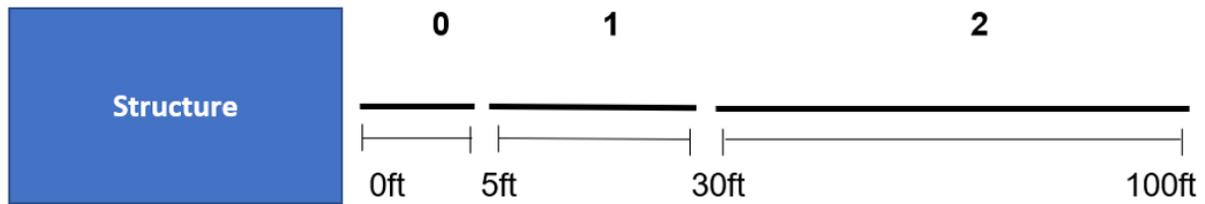
Hazardous vegetation is defined as vegetation that is combustible and endangers the public safety by creating a fire hazard including but not limited to seasonal and recurrent grasses, weeds, stubble, brush, dry leaves, dry needles, dead, dying or diseased trees and any other vegetation as determined by the fire code official. Combustible material refers to rubbish, litter or material of any kind other than hazardous vegetation that is combustible and endangers the public safety by creating a fire hazard as determined by the fire code official.

## **5.2 Defensible Space**

Developed parcels must also comply with the requirements established for defensible space/landscape zones. Defensible Space refers to the area or zone adjacent to a structure or dwelling as determined by the fire code official. Wildfire prevention or protection practices are implemented to provide the key point of defense from an approaching wildfire and/or to minimize the spread of a structure fire to wildlands or surrounding areas. Standards for defensible space/landscaping are broken into three zones.

The following outlines the requirements for landscaping zones based upon the fire code updates scheduled for January 2023 to ensure that the Town is planning for future compliance. A comprehensive list of defensible space/landscaping zone requirements is provided as **Attachment A**.

## Defensible Space Zones



### Zone

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#### 0 Ember Resistant / Ignition Zone

- Extends 5 feet from the edge of a building, structure, or deck. This zone includes the area under and around all attached decks and requires the most stringent wildfire fuel reduction. The ember-resistant zone is designed to keep fire or embers from igniting materials that can spread.
- Science has proven this zone to be the most critical of all the defensible space zones.
- Use of hardscape like gravel, pavers, concrete and other noncombustible mulch materials. No combustible bark or mulch.

#### 1 Lean, Clean and Green Zone

- Extends 30 feet from buildings, structures, decks, etc. or to the property line, whichever is closer.

#### 2 Reduce Fuel Zone

- Extends 30 feet to 100 feet out from buildings, structures, or decks, etc. or to the property line, whichever is closer.

### 5.3 Standards for Undeveloped Parcels

In Open Space areas, most notably applicable to Mulholland, the Town is required to meet the regulations pertaining to undeveloped parcels.

- Parcels of Ten Acres or Greater - a Fuel Break of 100 feet shall be maintained around the entire perimeter of the Parcel.
- Multiple contiguous parcels owned by the same entity may be treated as a single Parcel with the approval of the Chief or their designee if a Fuel Break of 100 feet is provided.

- Vacant lots are not subject to defensible space standards, but those less than one acre in size are required to meet complete abatement standards which include complying with regulations pertaining to weed abatement and fuel break standards. The portions of vacant lots located along street fronts are subject to additional rights-of-way standards along those portions.

Topography of the land must be considered to establish significant slopes that would determine the potential for an uphill or downhill fire run in the event of a fire. Given the topography of Moraga, this factor is significant in developing a fire prevention plan and also in determining the type of equipment that is suitable for use upon the property.

Dead trees are common in large, open space areas and are not deemed a priority unless located within a fuel break which requires 100 feet clearance on the portions of undeveloped parcels abutting a developed parcel and/or structure.

## 6. Fire Abatement Work Plan

The Fire Abatement Work Plan is an internal document that provides detailed specifications for the fire abatement work necessary at each of the 17 Town-owned parcels requiring fire abatement. The Work Plan is reviewed and updated regularly to address changes in the fire code, changes in parcel ownership, and changes to the method in which work is to be completed.

The Work Plan prioritizes work as follows:

1. Structures/Personal Property – other than protecting life, the highest priority is to protect structures and personal property, especially given the high value of many homes.
2. Evacuation Zones – evacuation zones are essential to protecting life and maintaining a safe community. The evacuation routes should be properly maintained to fire code standards.
3. Fire Trails – are an essential part of defending property and protecting life. MOFD has established fire trails which should be properly maintained.

The work plan identifies fire abatement responsibilities to be completed by Town staff as “in-house” fire abatement work. In-house responsibilities were determined by the capacity of maintenance staff given their other responsibilities and the availability of training and readily available equipment to appropriately complete the work. Contracted work was determined by the size and the complexity of the work, and/or the need for specialized equipment. The third major work area is the work specific to Mulholland.

Town maintenance staff complete the majority of fire abatement work within the Town’s active park system, and a portion of the fire abatement work on developed parcels and along rights-of-way that front Town-owned properties, and determine the level of abatement required upon a parcel based upon the condition and height of weed, brush and tree growth. Assessment determines the timing factors related to the Work Plan to

maximize efforts and minimize mobilization of contracted crews. The growth and height of tree limbs determines the specific trees that require trimming to meet the required 6-foot or 15-foot clearance. In addition, the condition and health of trees is assessed to determine those prioritized for removal. The growth of shrubs and brush is erratic and growth patterns change year to year. Assessment determines growth located within an established fuel break or defensible space zone so that the Work Plan can reflect the appropriate approach to address this growth.

An important outcome of the annual assessment is determining what work can be completed in-house (given capacity and capabilities) and that which will require the assistance of a contractor. The Town has learned several important lessons through the Fire Abatement Study. Some common fire abatement practices conducted by the Town are no longer recommended or required. This has been reflected in the removal of cross breaks on grazed parcels in the Work Plan allowing those resources and costs to be shifted to new priorities. The 2020 purchase of the flail mower attachment has allowed additional work to be completed in-house by Town maintenance staff, allowing the Town to redirect that budget to other prioritized contractor efforts expanding the total work completed within a given year.

### In-House Fire Abatement Work

#### Weed Abatement

- Flail Mowing – A flail mower is a large piece of powered garden/agricultural equipment to cut heavy grass/scrub which a normal lawn mower cannot handle. The purchase of a flail attachment for the tractor in 2020 has enabled this work to be completed in-house at a lower cost with increased control over scheduling. Prior to the purchase of the flail mower attachment, the weeds were eradicated through annual discing performed by a contractor. Given the growth of weeds, this work is conducted two to three times each year in active, non-lawn portions of the parks and has increased the usability of several areas.
- Trimming/Edging – Not all portions of parcels are accessible by the large, powered equipment such as a mower or tractor. Patches of land adjacent to buildings, parking lots, pathways, trees, trails, trail markers and signs, and larger landscape rocks are addressed through trimming and edgework that is completed with handheld equipment. Trimming and edging of non-lawn areas is completed between May and October exclusively for fire abatement.
- Medians – all median abatement is completed in-house. Following the removal of weeds, treatment includes prevention efforts that utilize the least toxic pesticides as specified in the Town's Integrated Pest Management Policy (IPM).

#### Fuel Reduction

- Limb-Up Trees – Trees located within developed parcel fuel breaks are subject to the required 6-foot clearance. The majority of this work on both developed and undeveloped parcels is completed in-house. Trees are limbed annually and the process to complete the work is done over a period of months (February – May).
- Shrub and Brush Removal – Shrub and brush removal is significant in Town parks, along rights-of-ways, and in vacant lots. Developed parcels that are larger in size,

like the library, require significant shrub and brush removal each year. Some of the removal can be completed with the use of existing equipment such as the flail mower or with hand tools. Some shrub and brush removal requires the use of a steer-skid loader and masticator or hand crew and is categorized in the contractor work that is outlined in the next section. Shrub and brush removal is also completed annually over a period of months.

- Chipper – The Town utilizes the MOFD chipper program which is an effective method to clear debris that has the added benefit of creating local wood chips to use on Town parcels.

### Contracted Fire Abatement Work

Contracted work includes weed abatement and fuel reduction work of increased complexity, and work that requires equipment the Town does not own. Contracted fire abatement work occurs on portions of both developed and undeveloped parcels, and includes a variety of work in parks, open space, and rights-of-way areas. This work occurs year-round and is subject to the Town's Purchasing Policy and the availability of contractors. The Town contracts for the following types of work.

#### Weed Abatement –

- Large areas, (such as Mulholland, rights-of-ways, and fire trails) require specialized equipment such as disc and masticator attachments to effectively and efficiently complete weed abatement work. Heavier equipment cuts the weeds and can turn the vegetation under the soil, thus diminishing the fire hazard. The cost of mobilization reaches \$5,000 per occurrence.

#### Fuel Reduction

- Tree Removal - Removal of dead trees when they are located within defensible space zones or a required fuel break. The cost of tree removal can average \$5,000-\$6,000 per tree.
- Complex and Specialized Fuel Reduction – Large areas and/or areas with extremely thick brush or sloped land require specialized equipment including a masticator, tracked steer-skid loader or tractor with disc attachment are required.
- Limb-Up Trees - When the tree canopy is not accessible by Town staff using in-house equipment, tree canopies located within the rights-of-way are limbed up to meet the 15 feet clearance requirement.
- Hand Crews - Typically comprised of five persons, hand crews are contracted on a per day basis. Hand crews are essential on steep hillsides that are too dense with trees or too steep to be accessed with equipment. As this work is highly specialized, the cost of a typical five-person crew can cost up to \$20,000 per day.

An opportunity exists to in-source one element of work currently being completed by a contractor. A masticator is a well-known and widely utilized equipment in forestry work that is able to eradicate brush that is too thick for the Town's flail mower. A masticator has the ability to navigate on relatively steep hillsides that are not accessible by other equipment. Under existing practices, the Town utilizes a contractor with a masticator on the following properties: Fire Trails, Rights-of-Way, Vacant Lots, Library, and accessible

areas of Mulholland. Portions of Mulholland are too steep for even a masticator which is why hand crews are necessary. The purchase of a masticator and in-sourcing of this work would not only save money in the long run, it would also enable the Town to have greater control over scheduling.

The Town obtained a \$119,547 quote from Sourcewell, the Town's vehicle purchasing collaborative, for a skid-steer loader, masticator and root grapple. The Town currently pays \$27,000 annually for work requiring this special equipment and spends resources coordinating the work. Staff estimates that the payback for the equipment would be six years. Additionally, the potential exists for the Town to recuperate additional investment costs by performing contract work for MOFD. MOFD currently utilizes a skid-steer loader 30 days each year and can reimburse agencies for this work at a rate of \$1,318 per day (up to \$39,540 annually). The Town could additionally consider renting the equipment to MOFD which is an option subject to legal review and risk management review to ensure that appropriate coverage and agreements are in place.

Another opportunity to follow is the utilization of goat grazing to treat areas that are challenging to access or difficult to manage with equipment, and areas where the application of herbicides is not appropriate. Preliminary exploration of goat grazing at Rancho Laguna Park was considered in 2020 but was not pursued due to the lack of funding. The Town should periodically obtain costs and consider the utilization of goat grazing in fire abatement efforts at Town parks and on vacant lots.

### Mulholland

The Town is responsible for coordinating and completing the annual fire abatement work at Mulholland. The open space provisions allow the three parcels within Mulholland to be treated as a single parcel. The western portion of Mulholland abuts open space owned by the City of Orinda. The other three sides of Mulholland abut privately owned parcels. Given its proximity to over 70 developed parcels, the Town is required to maintain a 100-foot fuel break along the perimeter of the parcel. The Town is currently meeting this requirement only in limited areas of Mulholland and additional work is needed to meet and maintain compliance.

The western border of Town property that abuts City of Orinda open space is exempt from the 100-foot fuel break. The significant slopes of the lands on Mulholland pose the potential for uphill fire runs. Typical weather patterns dictate that the areas on the south-western and north-eastern portions of Mulholland are prioritized as they abut developed parcels with structures or homes.

### Weed Abatement

- The Town has maintained a grazing program on Mulholland since inception and there is a current grazing lease in effect through August 31, 2024. The use of grazing on lands is known to reduce wildfire dangers by reducing fire fuels. The lease holder completes annual fire abatement efforts annually as specified in the lease terms. The Town has a current lease agreement in place with Hoover Cattle Company to graze lands on Mulholland.

- There are existing fire trails located on Mulholland which are maintained annually through the collaborative efforts of MOFD and the Town of Moraga.
- The Town utilizes a contractor to disc Mulholland from Goodfellow Drive to Kimberly Drive with a secondary pass to the end of Harold Drive. This stretch is 1,800 ft. x 30 ft. wide. Additionally, a contractor is utilized to disc and blade on Mulholland from Donald Drive to Laird Drive a total of 900 ft. x 9 ft. along the area referred to as the Coyote Scat Trail. This area was previously a fire trail, but due to access challenges with the private property owner on Laird Drive it has been abandoned as such until vehicle access can be restored. Blading along Goodfellow Drive to Ascot Drive is completed by a contractor for a 1,400 ft. stretch that is 9 ft. wide. The Goodfellow Trail is accessible and a potential volunteer fire abatement project in the future.

### Fuel Reduction

- Completing work in non-accessible portions requires the use of hand crews. Hand crews have the ability to complete 5,000 square feet of work per day and typically work in a crew of five persons. The Town completed one day of hand crew work in Fiscal Year 2021/22 at a cost of \$18,800 per day.

### Additional Work Required

- Prescribed Burns at Mulholland are recommended as a method to minimize the need for hand crew work. Prescribed burns have not been previously utilized given the land's status as an Open Space Preserve. Given the increasing fire threats, prescribed burns have become a commonly utilized tool in eradicating fuel. Local land conservation entities have come to utilize prescribed burns as part of regular fire prevention efforts. Prescribed burns are beneficial to maintain healthy areas of open space and are recommended for Mulholland.
- Additional hand crew work is necessary to obtain the required 100-foot fuel breaks on the portions of Mulholland that abut private/developed parcels. The Town should plan for an additional five days each year, at an estimated additional cost of \$94,000 annually. It is recommended that the Town phase in the increase over a period of three years (two days in 2022/23; four days in 2023/24; and six days in 2024/25).
- One method of controlling costs associated with debris removal is to increase coordination with MOFD to schedule burn piles. Debris must be relocated and piled to an accessible portion of the parcel that can be accessed by MOFD equipment. Burn piles have been occasionally utilized at Mulholland, but not on a regular basis. Coordination with MOFD is required, so that fuel/debris is piled for a minimal amount of time. This method could be highly effective in dealing with the volume of fuel/debris removal necessary at Mulholland.



## 7. Fire Abatement Costs

Historically, the majority of fire abatement work was completed by Town maintenance staff. Prior to 2018, the only work contracted out was the annual discing of fuel breaks which cost the Town approximately \$4,500 annually. In recent years, the scope of work required for fire abatement has increased significantly and it is now necessary to increase both the work completed in-house and that scope of work completed by contractors. The cost escalation associated with the increased scope requires the Town to obtain numerous cost quotes based upon the Town's Purchasing Policy. This practice requires additional time and resources to complete the process but assures that the Town obtains the best cost estimate to complete the work.

As part of the Fire Abatement Study, the Town has commenced tracking of fire abatement costs, especially the costs associated with contracted work. Data for costs in previous years was obtained by analyzing accounts payable and purchase order records associated with the Town's on-call contractors and the vendors in the Town's financial record system. The costs identified in 2020/21 and 2021/22 are most accurate, and those identified in prior years are reflective of the costs obtained through the methods outlined above.

The following outlines the Town's fire abatement expenditures the past five years.

2017/18	2018/19	2019/20	2020/21	2021/22
\$4,500	\$25,000	\$30,000	\$52,000	\$93,000

2017/18 – Discing of fuel breaks was the only contracted work completed in 2017/18 and the years prior.

2018/19 – Fire abatement costs increased by \$20,000 as the Town added additional scope to contractor work to address portions of the Hacienda and Library parcels and commenced minor tree removal efforts focused only on the highest priority trees and limbs at Rancho Laguna Park.

2019/20 – The Town purchased a flail attachment for the mower and increasing flail mowing in-house. The \$30,000 in contractor costs were associated with maintaining the work completed the previous year and expanded discing.

2020/21 – Additional work added in 2020/21 included the addition of minor tree removal at a cost averaging \$5,000-\$6,000 per tree.

2021/22 – Following adoption of the new fire code, wider fuel breaks were required. Increasing fuel breaks from 30 ft. to 100 ft. increased the scope of work which required a combination of contractor and in-house efforts for most parcels.

In Fiscal Year 2022/23 Proposed Budget, the Town has created a new account number for fire abatement work to improve the accuracy in tracking expenses in future years. Recommended line item budgets for fire abatement follow:

Hacienda Grounds	\$17,000
Parks and Open Space	\$76,000
Streets	<u>\$16,000</u>
	\$109,000

There are additional fire abatement costs associated with the budgets of the Library and at the office buildings, but they are relatively nominal and included within the Grounds Maintenance budget.

The recommended future budget for fire abatement follows:

	Fire Abatement Budget	Additional Budget for Phased Work at Mulholland	Total
2022/23	\$93,000	\$18,800 (1 additional day)	\$111,800
2023/24	\$95,700	\$58,000 (3 additional days)	\$153,700
2024/25	\$98,700	\$99,600 (5 additional days)	\$198,300

To accommodate the phased fuel management schedule and phase the implementation of perimeter fuel breaks at Mulholland, a modification request would need to be approved by MOFD. Portions of the parcel remain inaccessible until perimeter fuel abatement is completed. Once these areas are accessed, the steep slopes of the Mulholland hillsides will require additional assessments for geological hazards which could lead to additional requests for fuel modifications in the future. The Town Manager can submit a written request to the Fire Chief requesting a modification as allowed in the California Fire Code (CFC 104.8).

At the end of the three-year phased period, the Town should budget \$200,000 annually to comply with current fire abatement regulations and escalate accordingly for CPI.

## 8. Recommendations

### **1. Continue to leverage the support and partnership of MOFD by working in collaboration on the following items.**

- Prescribed Burns at Mulholland to maintain healthy areas of open space.
- Expand the use of burn piles to reduce costs associated with hauling and disposal of fuel/debris.
- Expand the use of MOFD's Chipper Program to reduce costs associated with hauling and disposal of fuel/debris.

### **2. Continue Current Grazing on Mulholland and Explore Expanded Use of Grazing**

Cattle grazing on Mulholland should be continued as it is an effective way to reduce fire fuels on hillsides that can be challenging to access with equipment. Additional grazing opportunities should be explored in the future as an effective method to aid in ongoing fire abatement on undeveloped portions of Town parcels including parks and vacant lots.

### **3. Apply for Available Grant Funds**

The Town should continue to leverage available grant funding opportunities for fire abatement work. Contra Costa County has recently announced the availability of \$4.5 million in Measure X funds which have been designated for wildfire mitigation. The County is working on a mechanism to disburse the funds to various projects throughout Contra Costa County.

### **4. Plan for Increased Budget Appropriations**

In addition to increasing the FY 2022/23 budget for fire abatement to \$109,000, the Town should commence planning for an additional \$94,000 in ongoing annual expenses associated with the fire abatement work required at Mulholland.

### **5. Phased Fuel Management Schedule**

It is recommended that the hand crew work to establish and maintain the perimeter fuel breaks required at Mulholland be phased in over a three-year period from 2021/22 to 2024/25 and that the Town request a fuel modification through MOFD.

### **6. Consider Purchase of Equipment (Tracked Skid-Steer Loader)**

The Town should consider purchasing a Kubota skid-steer loader with a forestry package and the following attachments: battle axe mulcher attachment and a 30 series root grapple, or comparable. The \$119,547 cost of purchasing the skid-steer loader could be funded with Fund 100 – Palos Colorados.

# Attachment A: Defensible Space Standards (2023)

## Zone

**0** Ember Resistant/Ignition Zone – Extends 5 feet from the edge of a building, structure, or deck. Science has proven this zone to be the most critical of all the defensible space zones. This zone includes the area under and around all attached decks and requires the most stringent wildfire fuel reduction. The ember-resistant zone is designed to keep fire or embers from igniting materials that can spread. Use of hardscape like gravel, pavers, concrete and other noncombustible mulch materials. No combustible bark or mulch.

- Maintain all ground areas within 2 feet of the exterior walls of any habitable structure or building free of combustible ground cover including combustible mulch and barks.
  - Exception: Ornamental vegetative fuels or cultivated ground cover, such as green grass, ivy succulents or similar plants used as ground cover, provided that they do not form a means of readily transmitting fire as determined by the fire code official.
- All native and non-native plant species next to a habitable structure must be maintained in a manner that removes combustible material within a 2 foot horizontal and 1 foot vertical area, measured from the base of the structure.
- Annual grasses must be removed or cut to less than 3 inches.
- All Monterey Pines (*Pinus radiata*) and Eucalyptus (Genus *Eucalyptus*) must be 6 feet or greater, measured horizontally or vertically from any habitable structure.
- Maintain 6 feet of vertical clearance between roof surfaces and portions of trees overhanging any structure.
- Maintain any tree, shrub, or other plant adjacent to or overhanging any structure free of dead limbs, branches or other combustible material that is determined to be a fire hazard.
- Maintain the roof of any structure and roof gutters free of leaves, needles, or hazardous vegetation and other combustible materials.
- Maintain trees to remove ladder fuels so that foliage, twigs or branches are greater than 6 feet above the ground or surface fuels within 100 feet of any structure, or within 10 feet of the paved edge of any fire apparatus access road.
- Remove all branches within 10 feet of any chimney or stovepipe outlet
- Limit combustible items (outdoor furniture, planters, etc.) on top of decks
- Relocate firewood and lumber to Zone 2.

**Zone 1** Lean, Clean and Green Zone – Extends 30 feet from buildings, structures, decks, etc. or to the property line, whichever is closer.

- All hazardous vegetation and combustible material capable of being ignited and endangering property shall be removed by the owner or occupant of the premises.
- Annual grasses must be removed or cut to less than 3 inches.
- Remove all dead plants, grass and weeds (hazardous vegetation).
- Maintain trees to remove ladder fuels so that foliage, twigs or branches are greater than 6 feet above the ground or surface fuels within 100 feet of any structure, or within 10 feet of the paved edge of any fire apparatus access road.
- Shrubs shall not exceed 6 feet in height
- Shrub groupings shall be separated from other groupings a minimum of 15 feet.
- Shrub groupings shall be separated from structures a minimum of 30 feet.
- Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of 3 times the height of the understory shrubs or 10 feet, whichever is greater.
- New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet from any combustible structure.
- The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet.
- Liquid Propane Gas (LPG) storage tanks, out buildings and wood piles shall have the following minimum clearance: ten feet (10 ft.) of clearance to bare mineral soil and no flammable vegetation for an additional ten feet (10 ft.) around their exterior.

**Zone 2** Reduce Fuel Zone – Extends 30 feet to 100 feet out from buildings, structures, or decks, etc. or to the property line, whichever is closer.

- All hazardous vegetation and combustible material capable of being ignited and endangering property shall be removed by the owner or occupant of the premises.
- Annual grasses must be removed or cut to less than 3 inches.
- Maintain trees to remove ladder fuels so that foliage, twigs or branches are greater than 6 feet above the ground or surface fuels within 100 feet of any structure, or within 10 feet of the paved edge of any fire apparatus access road.
- Shrubs shall not exceed 6 feet in height
- Shrub groupings shall be separated from other groupings a minimum of 15 feet.
- Shrub groupings shall be separated from structures a minimum of 30 feet.
- Where shrubs are located below or within a tree's drip line, the lowest tree branch shall be a minimum of 3 times the height of the understory shrubs or 10 feet, whichever is greater.
- New trees shall be planted and maintained so that the tree's drip line at maturity is a minimum of 10 feet from any combustible structure.

- The horizontal distance between crowns of new trees and crowns of adjacent trees shall not be less than 10 feet.
- All exposed wood piles must have a minimum of 10 feet of clearance, down to bare mineral soil, in all directions.
- Remove vegetation and items that could catch fire from around and under decks, balconies and stairs.
- Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.
- Liquid Propane Gas (LPG) storage tanks, out buildings and wood piles shall have the following minimum clearance: ten feet (10 ft.) of clearance to bare mineral soil and no flammable vegetation for an additional ten feet (10 ft.) around their exterior.
- All developed parcels greater than one acre in size shall create a 100 foot fuel break around the perimeter of the parcel.