SECTION IV: PRE-FIRE MANAGEMENT STRATEGIES

A: Fire Prevention

The Fire Prevention Bureau is staffed with three full-time personnel, the Fire Marshal, Forester, and Pre-Fire Engineer. The Fire Marshal/Battalion Chief is responsible for managing all of MCFD's fire prevention programs, which include MCFD's engine company residential defensible space and business inspection programs, land development plan reviews and construction inspections, all fire alarm and suppression system plan reviews, fire investigations, inspections of Hazardous and Assembly occupancies, as well as code and standard development.

The Forester and the Pre-Fire Engineer share joint responsibility for determining where and how to implement vegetation management projects. These projects are developed per the Community Wildfire Protection Program (CWPP), which they also share responsibility for producing and periodically updating. MCFD uses a variety of methods to manage fire-prone vegetation, including constructing fuel breaks, "shaded" fuel breaks (by clearing understory vegetation below the forest canopy), developing and writing prescriptions for controlled burns, and conducting fire prone forest/tree removal projects adjacent to assets-at-risk.

In addition to the Bureau's full-time personnel, the Bureau has retained the services of a contract Fire Inspector two-days per week. The Fire Inspector's primary duties are to respond to homeowner defensible space inspection requests and complaints. The Fire Inspector also reviews Vegetation Management Plans (a requirement for all new construction and substantial remodels in the WUI).

As part of their effort to identify assets-at-risk during the development of their CWPP, MCFD has identified their Wildland-Urban Interface Zone (WUI). In essence, this zone identifies communities adjacent to, and/or where wildland areas intermingle with structures and homes. Based on this analysis, MCFD determined there are 73,311 structures on 57,572 developed parcels totaling 59,498 acres with an assessed value of $56.5 billion in Marin County.

MCFD has, for the past seven years, approached the mitigation of this threat on two main fronts. One approach utilizes public education (mailers, movie theater "trailers", newspaper opinion pieces, public events and workshops), engine company defensible space inspections, as well as complaint driven Company Officer and Fire Marshal inspections. The purpose of these activities is two-fold; to raise the level of public awareness of the wildland fire threat, and to increase and improve the defensible space around structures. Our goal is to reduce ignitions by 10% through public education, enforcement, and inspections.

The other approach is to construct fuel breaks. These fuel breaks are constructed by the Marin County Fire Department's Tamalpais Fire Crew and other local resources. The location and extent of the breaks are determined by conformance with MCFD's CWPP, and availability of grant and other types of funding. The budget for the

Tamalpais Fire Crew is provided as a long term "pilot" project funded (from the Marin County General Fund) by the County Board of Supervisors.

The Fire Marshal also serves as a Fire Investigation Team Leader on the Marin County Fire Investigation Team. The Marin County Fire Investigation Team is a multi-agency fire investigation team offering assistance to those agencies requesting fire investigation support on large and/or complex fires, or where the respective agency does not have an investigator available. The team is also included in the Marin County Fire Agency Master Mutual Aid Agreement.

An analysis of MCFD's ignitions for the past several years (2003-2010) indicates that MCFD experiences on average approximately 25 structure fires per year. Similarly, MCFD responds to an average of approximately 60-65 vegetation fires per year. Of the vegetation fires, prevalent identifiable causes include tree branches contacting power lines (or some other power line associated failure), and fires caused by mechanical equipment (hot work, cutting, and agricultural equipment). However, the majority of MCFD's vegetation fires are small, roadside spots of less than a ¼-acre. Although the majority of these fires have been classified as undetermined due to the absence of identifiable ignition mechanisms, many are most probably caused by vehicle exhaust system debris.

1. Engineering & Structure Ignitability

What are the factors that lead to the ignition of homes during a wildfire event? Recent research indicates that wildland fires progress from a fire involving wildland vegetation only, to embers and wildland vegetation igniting domestic vegetation, which then ignites the adjacent structure. Subsequently, the fire morphs in to a series of structure fires, with involved structures igniting other structures.

As such, in addition to the defensible space available around structures, other factors that lead to structure ignition include the configuration of building elements and the type of construction materials used. For example, in CALFIRE Assistant Chief Ethan Foote's study of Santa Barbara's Paint Fire (1993) for his master's thesis, found that an 86% survival rate for homes with non-combustible roofs and 30 feet of defensible space.

Similarly, research indicates that home ignitibility, rather than wildland fuels is the main cause of home losses during WUI fire events. Recent research findings included the fact that, at the Witch and Guejito fires, two out of every three structures destroyed were ignited by embers. The research clearly shows that the key elements in preventing structure loss are as follows:

- Defensible space immediately adjacent to the subject structure such that adjacent ornamental and domestic vegetation is configured to reduce the possibility of the vegetation transferring the fire to the structure.
- Building and construction systems that reduce the accumulation of embers.
- Maintenance of the subject structure such that embers do not find a receptive fuel bed to propagate and support combustion.

The California Building Code (CBC), Chapter 7A specifically, addresses the wildland fire threat to structures by essentially requiring the fire hardening of structures located in state or locally designated WUI or Fire Hazard Severity Zones. However, these requirements only apply to new construction, and do not address existing structures or remodels and additions to existing structures.

To address home ignitibility in both new and existing construction, MCFD has extensively amended the 2003 International Urban-Wildland Interface Code. As part of these amendments, MCFD applies more stringent building standards, vegetation management (requiring the preparation of a Vegetation Management Plan, per MCFD's VMP Standard), fire apparatus access and water supply requirements to new structures and structures substantially remodeled, located in the WUI.

Included in the aforementioned amendments, MCFD requires structures in the WUI that are being remodeled or altered to comply with a standard specifically developed to require those specific building elements affected by the alterations to be "WUI" compliant. For example, if a window is replaced, the new window is required to be dual-paned with one pane tempered.

Furthermore, MCFD has amended the CFC Chapter 49 requirements for defensible space around existing homes (whose un-amended requirements are identical to the Public Resource Code and Government Code requirements). The MCFD amended version modifies the language of PRC 4291 such that the property line no longer limits the amount of defensible space required around structures.

2. Information & Education

The information and education programs administered by MCFD are coordinated efforts supported by our command staff, the Fire Prevention Bureau, each of our fire stations' personnel, and our cooperators. These cooperators include the Marin County Sheriff's Office, Marin County OES, FireSafe Marin, and the Marin County Fire Chiefs' Association.

Information

During emergency events, the public information function is covered 24 hours per day by Incident Command System (ICS) qualified Public Information Officers (PIO's) and by the Emergency Command Center personnel. The overall goal of this function is to keep our constituents, the people of Marin County, informed by providing timely and accurate information to the varied media market in the northern Bay Area. In addition, MCFD is in constant contact with CalFire's Duty Chief regarding fire condition updates and ensures all local dignitaries are regularly briefed with changes or updates.

In addition, the Fire Marshal, EMS Battalion Chief, as well as MCFD's command staff regularly provide press releases, and interviews to media outlets on request. As an adjunct to these activities, the Fire Marshal and EMS Battalion Chief serve as MCFD's representatives on the county Public Information Team (PIT). This group meets once per month and provides a forum for each department to get their respective messages

out to other departments and the public, enables the county government to have uniformity in the various departments' messages, training, and opportunities to craft department specific informational videos about their programs.

Education

Annually, thousands of Marin County residents attend community events, such as MCFD's Fire Station pancake breakfasts, community fairs where MCFD and/or FireSafe Marin sponsor exhibits, CPR, CERT, Ready, Set, Go!, and "Get-Ready" classes, and school programs. Presentations include disaster and wildfire event preparedness, home safety, fire safety, defensible space, and vegetation management.

MCFD, along with many of our cooperators and corporate sponsors recently produced a defensible space and wildland fire preparedness video. The video, "Marin on Fire" has several 5-minute chapters, covering access, defensible space, making your home ignition resistant, and tips on what to do if a wildfire is approaching your house. MCFD has also released a 5-minute video whose subject is the few simple things a homeowner can do to increase their home's survival during a wildfire event.

The Fire Chief and Fire Marshal are frequent contributors the local newspaper, as well. They have both written editorial columns on various aspects of fire safety and disaster preparedness, including such topics as winter/holiday home fire safety, and wildfire preparedness.

MCFD strives to make their wildfire and defensible space safety messages consistent with those promulgated by Cal-Fire. As part of this effort, MCFD posts Cal-Fire's defensible space flyers and handouts on their website, and has these brochures available at each of our fire stations' lobbies. MCFD also annually (prior to fire-season) sends out a mailer to every property owner in MCFD's WUI zone. The mailer contains a check-list of MCFD's defensible space and maintenance requirements (per PRC 4291), to be completed by the property owner by the start of fire season. The mailer also includes MCFD's modified Cal-Fire Defensible Space flyer, and offers the homeowner a free-of-charge consultation by fire personnel from their local fire station.

B: Vegetation Management

Marin County Resource Management Staff administers the following programs that support the Strategic Fire Plan.

- ✓ **Vegetation Management Program (VMP)** – The Vegetation Management Program (VMP) is a cost-share program that applies prescribed fire and mechanical treatments to reduce wildland fire fuel hazards and address other resource management issues within State Responsibility Area (SRA) lands. Use of prescribed fire models natural processes, restores fire to its historic role in

wildland ecosystems, and provides significant fire-hazard-reduction benefits that improve public and firefighter safety.

- ✓ **Grant-Funded Fuel Treatments** – These projects generally involve the construction and maintenance of ridge top fuel breaks that are planned from Sausalito to Lagunitas. Removal of fire-prone stands of trees such as eucalyptus and pine are also used to mitigate fire hazards.

- ✓ **Tamalpais Fire Crew** – The Marin County Board of Supervisors funds a 13-person fire crew that is available for project fuel break construction and both initial attack and mop-up fire suppression activities.

- ✓ **Marin on Fire Video** - "Marin on Fire" has several 5-minute chapters, covering access, defensible space, making your home ignition resistant, and tips on what to do if a wildfire is approaching your house. MCFD has also prepared a 5-minute video whose subject is the few simple things a homeowner can do to increase their home's survival during a wildfire event.

- ✓ **Defensible Space Mailer**- MCFD sends its mailer with a PRC 4291 checklist to all residents within MCFD's WUI zone. The checklist consists of defensible space requirements to be completed by the property owner by the start of fire season. The mailer also includes MCFD's modified Cal-Fire Defensible Space flyer, and offers the homeowner a free-of-charge consultation by fire personnel from their local fire station.

- ✓ **Creekside Guide to Fire Safe and Fish Friendly Best Practices**- MCFD prepared and distributed a brochure to 600 creek side residents in the San Geronimo Valley. This brochure provided guidance to concerning methods for controlling flammable vegetation near homes while protecting Coho salmon habitat.

- ✓ **4291 Stand Down** – For the 2012 Fire Season, and in conjunction with MCFD's Defensible Space/4291 flyer mentioned above, MCFD assigned its seasonal firefighters to go door-to-door in each station's response zone's target hazard areas. While at each residence, the firefighters would make contact with the occupant/homeowner, conduct a vegetation management/defensible space inspection, and offer tips and suggestions on how to comply with the regulations. If the homeowner was not present or unavailable/unwilling to participate in the inspection, a door-hanger was left at the residence explaining the process and the areas where the residence fell short of the requirements. The inspections are also being followed up with subsequent re-inspections by station personnel. With this effort, MCFD inspected over 1,800 residences in one weekend.