

A: DESCRIPTION

The fire environment of a community is primarily the product of two factors: the area's physical geographic characteristics and the historic pattern of urban-suburban development. These two factors create a mixture of environments which ultimately determines the area's fire-protection needs.

The basic geographical boundaries of Marin County include National and State Park lands along the Pacific Ocean to the west and south, several suburban communities neighboring the Highway 101 corridor and San Francisco baylands to the east, and rural Sonoma County to the north.

Because of the size of Marin County and its varied microclimates, the characteristics of the fire environment are quite heterogeneous. As such, Marin County has not one, but numerous fire environments, each of which has its individual fire protection demands.

Furthermore, Marin County has a varied topography and vegetative cover. A conglomeration of hills and ridges, with vegetative cover ranging from open grass lands studded with oak to dense forests of Douglas-fir, bishop's pine and coast redwood make up the terrain. Development has occurred as the communities along the Highway 101 corridor have extended west. In addition, development has further spread into the hills and the smaller valleys and canyons of the San Geronimo Valley, Nicasio and Point Reyes Station.

Size and Population. Marin County covers nearly 520 square miles with a population estimated at 252,000. The Marin County Fire Department serves the largest geographic area in Marin County. Within our service area are six (6) fire stations and a total of 86 Fire Department personnel. The Fire Department deftly manages diverse responsibilities including wildland, urban, rural wilderness, freeway, and EMS responses.

Roads and Streets. Lengthy cul-de-sacs generally service new developments. Cul-de-sacs and dead-end roads serve most of the smaller canyons and valleys, and hillsides, as well. Some planned unit developments are served by private roads, which create access problems (i.e., narrow paved widths and limited on-street parking). Roadways with a width of less than 20 feet of unobstructed paved surface, with a dead-ends longer than 150 feet, with a cull-de-sac longer than 800 feet, or with a cul-de-sac diameter less than 68 feet are considered hazardous in terms of fire access and protection. A large number of roadways within Marin County fall into one or more of the above four categories.

Topography. Marin County is a mosaic of rolling hills, valleys and ridges that trend from northwest to southeast. Flat lands are found in the central and northern portions of the County. Most of the existing urban and suburbanized areas are on relatively flat lands (0 – 5% slope). Future residential development is expected in the hill areas of the San Geronimo Valley, Lucas Valley/Nicasio and Point Reyes Station. In addition, as the

value of parcels increase, more marginal lots along Throckmorton Ridge/Panoramic Highway are being developed. The majority of the hillsides and ridges in these areas have slopes ranging from 15 – 30%, and some are 30+%. Elevations are varied in the county with Mt. Tamalpais listed at 2,600 feet above sea level. Marin City and Point Reyes Station are approximately 20 feet above sea level, the San Geronimo Valley is 485 feet, and the Throckmorton Fire Station is at 1,160 feet above sea level, respectively. Correspondingly, there is considerable diversity in slope percentages. San Geronimo Valley slopes run from level (in the valley, itself) to near 70%. Mt. Barnabe has slopes that run from 20 to 70%. Throckmorton ridge has slopes from 40 – 80%. Slope is an important factor in fire spread. As a basic rule of thumb, the rate of spread will double as the slope percentage doubles, all other factors remaining the same.

Vegetation. Marin County's semi-arid climate produces vegetation with specific growth as a result of local topography, proximity to the coast and prevailing wind. In the central and eastern portions of our service area, the south facing exposure is primarily perennial rye grass with occasional clumps of California bay and coast live oak trees in the more sheltered pockets. The north facing slopes are heavily wooded from lower elevations to ridge with oak and bay trees and minor shrubs of the general chaparral class. Many areas in the western portion of our district are heavily forested with Bishop's pine, Douglas-fir and coast redwood.

Expansion of the residential community into areas of heavier vegetation has resulted in homes existing in close proximity to dense natural foliage. Often such dwellings are completely surrounded by highly combustible vegetation compounding the fire problem from a conflagration point of view.

B: PREPAREDNESS AND FIREFIGHTING CAPABILITIES

The Marin County Fire Department is an all risk agency that provides a full range of emergency response services including Emergency Medical Services (EMS), Urban Search and Rescue (USAR) and water rescue teams, structural and wildland fire protection, fire prevention, public education, and hazardous material discharge response. As one of six contract counties with the State of California, the department is responsible for the protection of 205,000 acres of State Responsibility Area (SRA) within the county. Significantly, the Marin County Fire Department staffs an Emergency Command Center (ECC) that dispatches for Marin County Fire Department and local volunteer fire departments, coordinates wildland incidents within the SRA or FRA, and acts as the County of Marin's Office of Emergency Services (OES) coordination center for fire dispatching. During peak season preparedness, MCFD resources include:

MCFD Resources

59 Personnel
6 Fire Stations
7 Engines
1 Transport/bulldozer
2 Water Tenders

City/District Resources

140 Personnel
34 Fire Stations
57 Engines
1 Transport/bulldozer

The Marin County Fire Department participates in local and state mutual aid and auto aide agreements, and various contracts for service:

Memorandums of Understanding/Automatic Aid Agreements

The Marin County Fire Department is one of six counties who contract with CalFire to provide all-risk emergency services to state responsibility areas. In addition to this contract there is a well-organized local mutual aid system in Marin County based on the principles of resource sharing and cooperation, the goal of which is to provide the public with the highest level of service no one agency is equipped to provide. These agreements include resources from all fire agencies, law enforcement, volunteer fire departments, Office of Emergency Services (OES), the National Parks Service (NPS), CALFIRE, and local landowners. When MCFD resources are drawn down to a minimum standard while providing assistance to other agencies through the mutual aid system or assistance by hire process, off-duty personnel and reserve equipment are used to maintain standard operational readiness in all of MCFD's responsibility zones.

The following is a list of the mutual aid agreements/plans in which MCFD participates:

- Mount Tamalpais Mutual Threat Zone Plan
- Southern Marin Mutual Threat Zone Plan
- Marin County Mutual Aid Agreement
- County of Marin Urban Search and Rescue
- County of Marin Office of Emergency Services

- State of California Master Mutual Aid

In addition, MCFD provides resources to local stakeholders through various agreements that do not include an annual revenue resource, but in some cases funds are recovered through an assistance-for-hire agreement.

- Marin Municipal Water District
- Skywalker Ranch Fire Brigade
- National Park Service
- Point Reyes National Seashore
- Golden Gate National Recreation Area
- Muir Woods National Monument

The Marin County Fire Department has maintained an independent dispatch center since the 1930s. The Emergency Command Center (ECC) functions to receive, disseminate, and transmit information to field units. The ECC has the additional responsibility to act in a supervisory role for incidents prior to the arrival of field units. The ECC also acts as the central ordering point for all state resources that are committed to SRA incidents in Marin County. In addition to the state responsibility areas, the ECC acts as a central ordering point for Region II OES requests and OES coordination of local government resources entering or leaving the County of Marin operational area.

The ECC is staffed by one 24-hour dispatcher year round. Beginning in the spring each year, a dispatch clerk is hired to work 10 hour shifts, 7 days a week through the end of fire season (generally May 1 through October 31), supplementing the dispatcher. During complex emergencies the ECC utilizes a call back system to assist in up-staffing for large scale emergencies and has the ability to set up an expanded dispatch center when necessary. The ECC processes approximately 3,000 calls annually, and is also responsible for handling all business calls received by the department. In 2005, the ECC was remodeled and upgraded to incorporate a Computer Aided Dispatch (CAD) system. Additionally, to order, fill, and track requests for OES and State resources, the ECC uses a statewide intercom system and the Resource Ordering Status System (ROSS).

The California Legislature directed the Board of Forestry, the California Department of Forestry and Fire Protection, and contract counties including Marin to deliver a fire-protection system that provides an equal level of protection for lands of similar type (Public Resources Code §4130). To evaluate this standard, we used an analysis process that defines a level of service rating that is applied to the wildland areas. The rating is expressed as the percentage of fires that are successfully extinguished with initial-attack resources. The level of service rating provides a powerful tool for setting program priorities and defining program benefits. The level of service rating also provides a way to evaluate the contribution of various program components (fire prevention, fuels management, engineering and suppression) toward the goal of keeping damage and cost within acceptable limits. During the past 5 years, (2005-2010) a total of 318 wildland fires occurred within the jurisdiction of the Marin County Fire Department.

Vehicular and power line fires were the two most common known causes of fires. Fires ranged in size from small roadside spots to 330 acres, averaging 1.0 acre (excluding the two largest fires). Extended attack was required in all cases where fires burned more than 10 acres; additional support in the form of a hand crew was also needed where fires burned in heavy fuels. Level of Service is calculated as follows:

Fires Extinguished by Initial Attack	308
Total State Responsibility Area Fires	318
Level of Service = ----- x 100 =	97%