CAL FIRE
2009

Madera-Mariposa-Merced Unit
Fire Management Plan

Telegraph Fire July 2008

The 2009 Madera-Mariposa-Merced Fire Management Plan Signature Page

This Fire Management Plan developed for the California Department of Forestry and Fire Protection Madera-Mariposa-Merced Unit:

Dale Hutchinson
Unit Chief, Cal Fire, Madera-Mariposa-Merced Unit

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The CAL FIRE Mission

The Department of Forestry and Fire Protection protects the people of California from fires, responds to emergencies, and protects and enhances forest, range, and watershed values providing social, economic, and environmental benefits to rural and urban citizens.

Statement of Purpose

The goal of the Madera, Mariposa Merced Unit of Cal Fire is to reduce the loss of life, property, watershed values, and other assets at risk from wildfire through a focused pre-fire management program and increased initial attack success.

These goals are accomplished by the implementation of the following objectives.

1. Continue to provide operational training to field personnel that will support safe and successful suppression operations keeping fires less than 10 acres in size.

2. Continue to educate and enforce the Public Resource Code (PRC) 4291, 100 foot clearance around structures.

3. Support project work and planning efforts that encourage fuel reduction projects in and around communities located in high fire severity zones.

4. The development of safe ingress and egress routes for emergency incidents.

5. Support the implementation and enforcement of the new 2008 Wildland-Urban Interface (WUI) Building Standards through the cooperation with local government planning departments.

6. Utilize prevention operations to reduce ignitions within the unit.

7. Educate the community on their role in the prevention of wildfire and support local Fire Safe Organizations.

Madera-Mariposa-Merced Unit

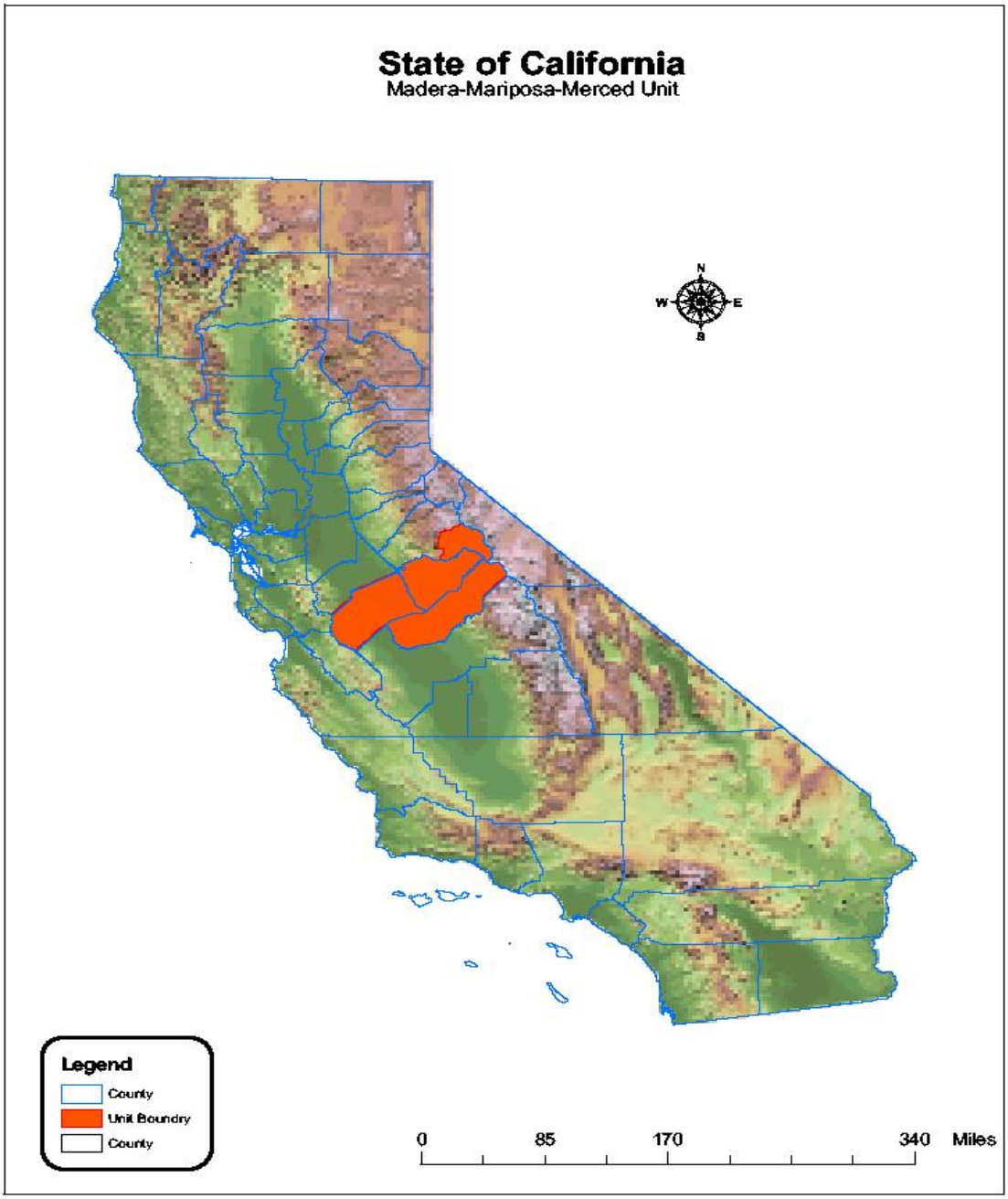

Figure 1 –Cal Fire Madera-Mariposa-Merced Unit

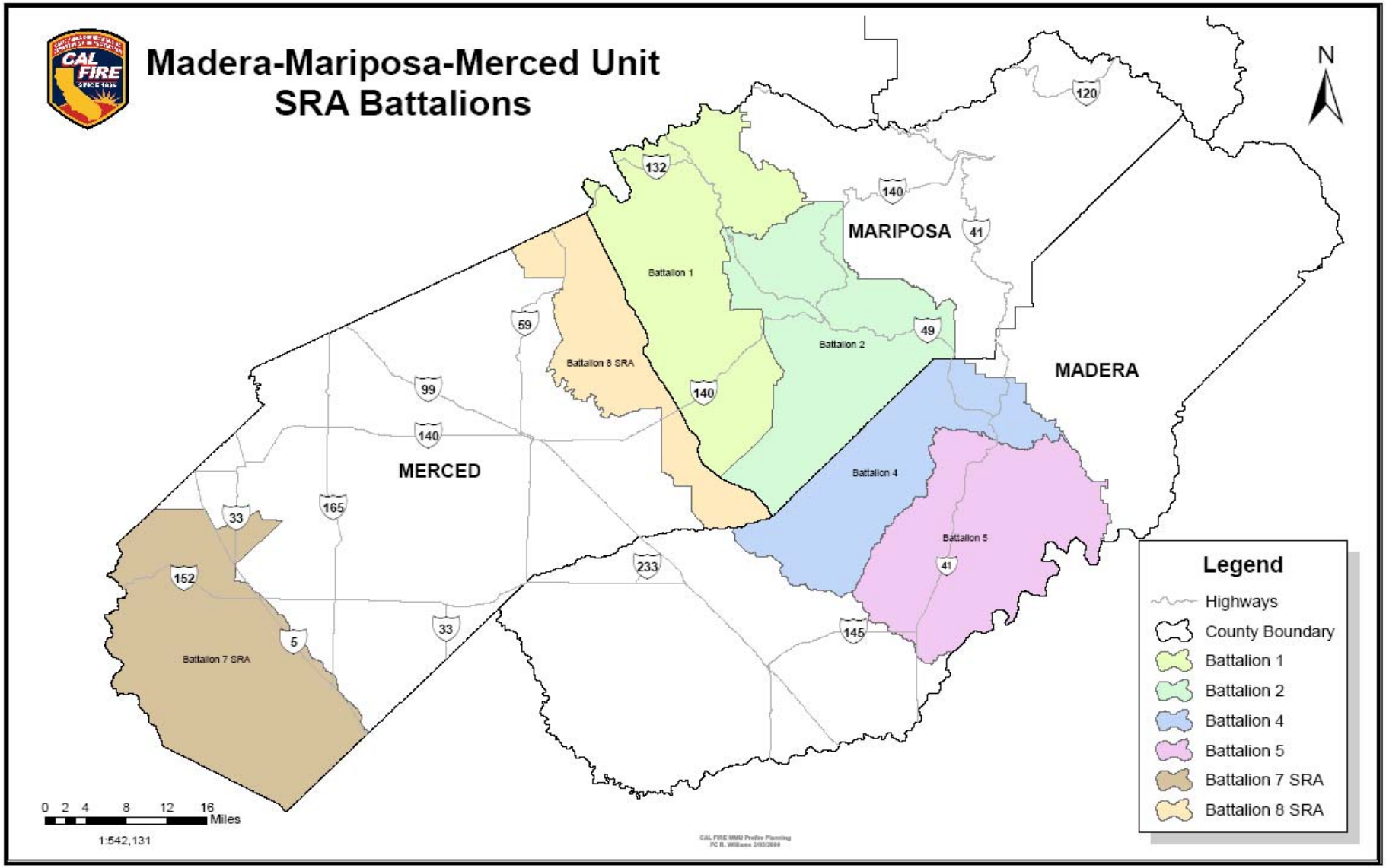

Figure 2 - Madera- Mariposa-Merced State Responsibility Area (SRA) Battalions

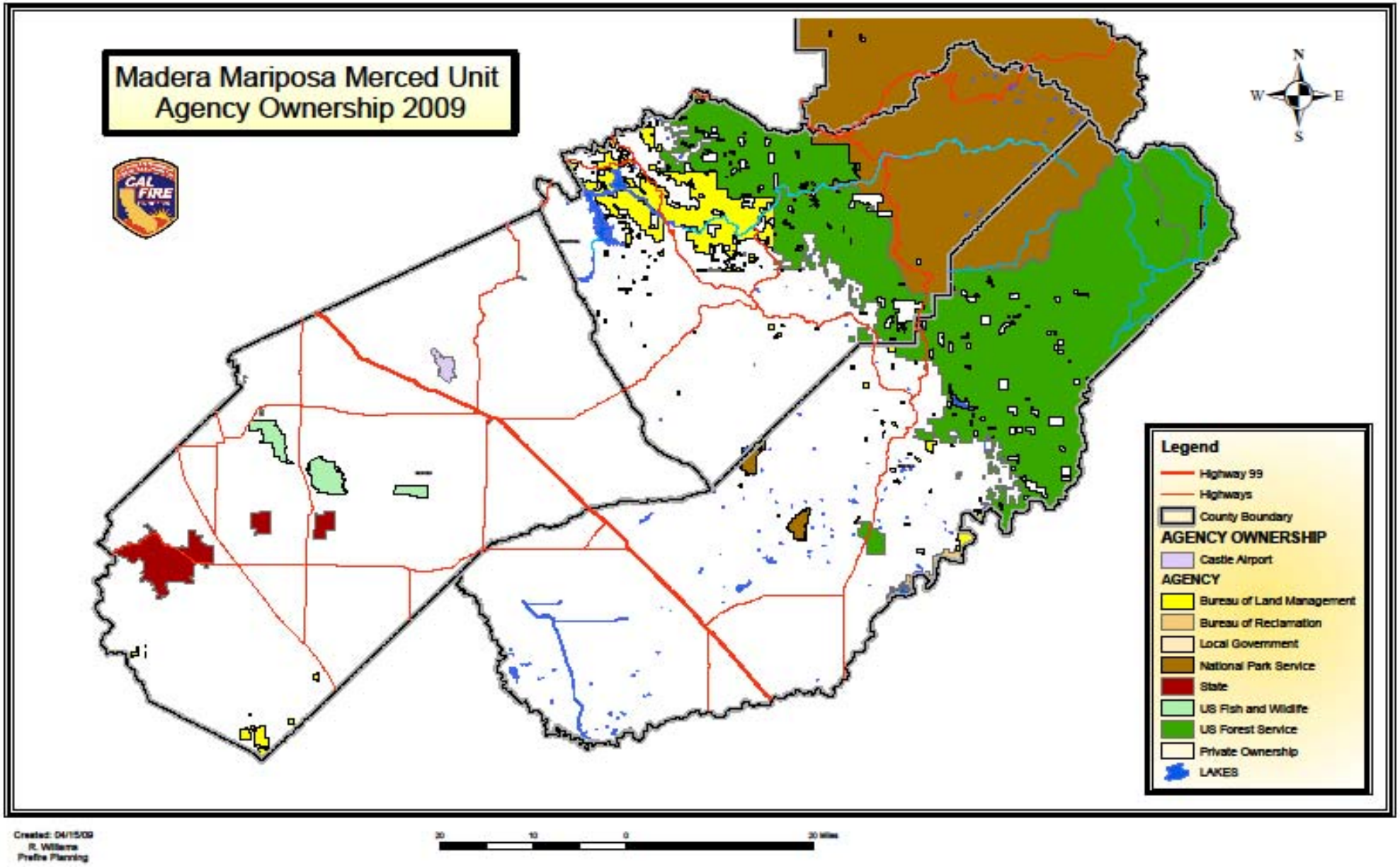

Figure 3 - Madera-Mariposa-Merced Agency Ownership

Madera-Mariposa-Merced Unit Vital Statistics					
	Madera County	**Madera City**	**Mariposa County**	**Merced County**	**Atwater City**
Population (July 2008)	148,333	56,710	17,976	246,117	26,000
Fire Districts	None	None	**Mariposa Public Utility District**	**Atwater Fire Protection District**	**Atwater Fire Protection District**
California State Parks					None
USDA Forest Service	**Sierra National Forest**	None	**Sierra and Stanislaus National Forest**		None
National Parks	**Yosemite National Park**	None	**Yosemite National Park**	None	None
Bureau Of Land Management	Yes	No	Yes	Yes	None
Bureau Of Indian Affairs	Yes	None	Yes	None	None
US Fish & Wildlife Service	None	None	None	Yes	None
US Army Corp. Engineers	Yes	None	Yes	None	None

Table 1 - Madera-Mariposa-Merced Unit Vital Statistics

Madera-Mariposa-Merced Unit Local Government Fire Agencies		
Madera County	**Mariposa County**	**Merced County**
Madera City Fire*	**Mariposa County Fire**	**Merced County Fire***
Chowchilla City Fire	**Mariposa Public Utility Dist.**	**Merced City Fire**
Chowchilla Correctional Women Facility Fire		**Atwater City Fire***
Station 8 Chuchansi Casino*		**Los Banos City Fire**
Madera County Fire*		**Livingston City***
Firebaugh City Fire		**Gustine City***
		Dos Palos City*
* CAL FIRE schedule A agreement for fire protection in effect.		

Table 2 - Madera-Mariposa-Merced Unit Local Government Fire Agencies

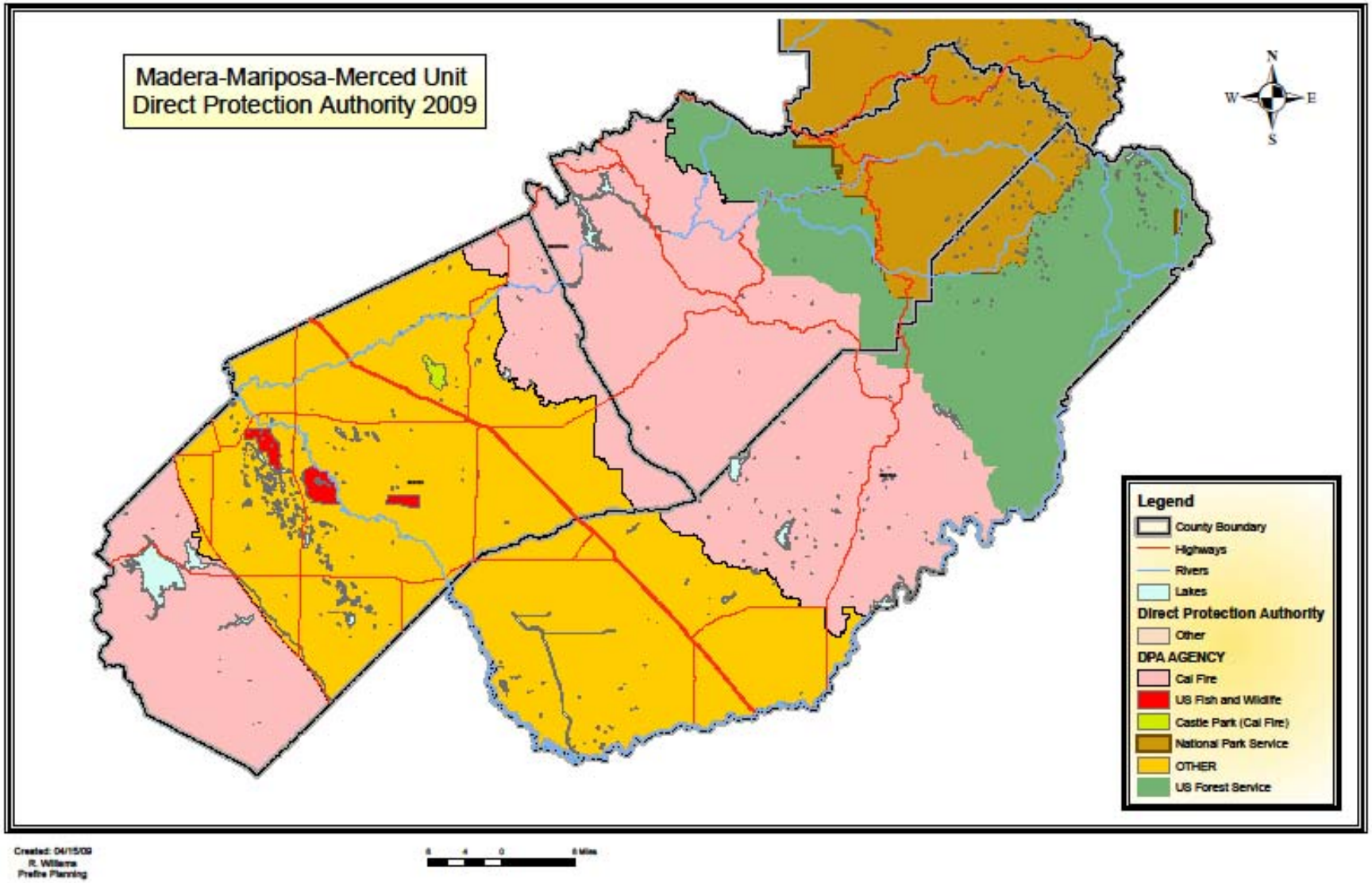

Figure 4 - Madera-Mariposa-Merced Unit Direct Protection Authority 2009

Executive Summary

Cal Fire Madera-Mariposa-Merced Unit (MMU) has drafted a comprehensive update of the unit fire plan for wildland fire protection in Madera, Mariposa and Merced Counties. The MMU Unit Fire Management Plan documents wildland fire potential within the unit and acts as a Community Wildfire Protection Plan (CWPP) for the three counties. The plan outlines MMU's operational structure. It includes stakeholder contributions, priorities, and identifies strategic targets for pre-fire solutions. This plan is a living document to be amended as new information is collected.

The planning process defines a level of service measurement, considers assets at risk, incorporates the cooperative interdependent relationships of wildland fire protection providers, provides for public stakeholder involvement, and creates a fiscal framework for policy analysis.

Statement of Purpose

The goal of the Madera, Mariposa, Merced Unit is to reduce the loss of life, property, watershed values, and other assets at risk from wildfire through a focused pre-fire management program and increased initial attack success.

These goals are accomplished by the implementation of the following objectives:

1. Continue to provide operational training to field personnel that will support safe and successful suppression operations keeping fires less than 10 acres in size.

2. Continue to educate and enforce the Public Resource Code (PRC) 4291, 100 foot defensible space around structures.

3. Support project work and planning efforts that encourage fuel reduction projects in and around communities located in high fire severity zones.

4. The development of safe ingress and egress routes for emergency incidents. Continue to educate and enforce the Public Resource Code (PRC) 4291:
   (1) Road standards for fire equipment access.
   (2) Standards for signs identifying streets, roads, and buildings.
   (3) Minimum private water supply reserves for emergency fire use.
   (4) Fuel breaks and greenbelts.

5. Support the implementation and enforcement of the new 2008 Wildland-Urban Interface (WUI) Building Standards through the cooperation with local government planning departments.

6. Utilize prevention operations to reduce ignitions within the unit.

7. Educate the community on their role in the prevention of wildfire and support local Fire Safe Organizations.

This plan will utilize the five strategic objectives and Fire Plan Framework identified in the California Fire Plan and incorporates them into the planning and implementation process. The five objectives and framework components of the MMU Prefire Management Plan are as follows:

- **Wildfire Protection Zones:**
  To create wildfire protection zones that reduces the risks to citizens and firefighters.

- **Initial Attack Success:**
  To assess wildfire initial attack successes on lands of similar type. This is measured in terms of a percentage of fires that are successfully controlled before unacceptable costs and losses occur. The analyses can be used to determine the department and unit's level of service.

- **Assets Protected:**
  The plan will establish a methodology for defining assets protected and their degree of risk from wildfire. The assets addressed in the plan are citizens and firefighter safety, structures, infrastructure, watersheds and water, timber, wildlife and habitat (including rare and endangered species), unique areas (scenic, cultural, and historic), recreation, range, and air quality. Stakeholders -- national, state and local, and private agencies, interest groups, etc. -- will be identified for each asset at risk from wildfire, enabling fire service managers and stakeholders to set priorities for prefire management project work.

- **Prefire Management Prescriptions:**
  The prefire management aspect focuses alternatives to protect assets at risk. Projects include a combination of fuels reduction, ignition management, fire-safe engineering activities, and forest health. Prefire management prescriptions designed to protect these assets will also identify those who benefit and who should share in the project costs.

- **Fiscal Framework:**
  The State Board of Forestry and Cal Fire are developing a fiscal framework for assessing and monitoring annual and long term changes in California's wildland fire protection systems. This plan will incorporate Prefire Workload Analyses into the plan in an attempt to provide meaningful data for developing future fiscal frameworks and public policies.

The Fire Plan Framework aspires to:

- Identify for state, federal, and local officials and for the public those areas of concentrated assets and high risk.

- Allow Cal Fire to create a more efficient fire protection system focused on meaningful solutions for identified problem areas.

- Give stakeholders an opportunity to identify, design and carry out projects to protect assets at risk.

- Identify, before fires start, where cost-effective prefire management investments can be made to reduce taxpayer costs and citizen losses from wildfire.

- Encourage an integrated intergovernmental approach to reducing costs and losses.

- Enable policy makers and the public to focus on what can be done to reduce future costs and losses from wildfires.

Fire Plan Target Area Successes

MMU's past fire plans put projects to paper, thus creating target areas for fuel reduction and shaded fuel breaks. Through the work of the Eastern Madera Fire Safe Council, the Mariposa Fire Safe Council, the Southwest Interface Team (SWIFT), the Natural Resource Conservation District's and other non-profit organizations these fire plans helped justify grant funds. Through these groups and our own Cal Fire personnel, we have a number of fuel reduction projects, either completed or in various levels of completion throughout the unit. Some of these successes include establishing shaded fuel breaks around the Oakhurst/Ahwahnee basins, the community of Ponderosa Basin, the community of Northfork and the community of Greely Hill.

Community Wildfire Protection Plans

In 2008 and 2009, Madera and Mariposa Counties completed Community Wildfire Protection Plans (CWPP). These plans were developed to identify and prioritize communities at risk within the particular counties. The writing of these plans was funded with various governmental grants. Two small communities in Mariposa County, Foresta and Yosemite West developed their own CWPP's as a result of grant funding from the National Park Service. Like the Unit Fire Plan, the CWPP's are living documents that require annual review and updates when appropriate. Internet links to these CWPP's are included in the MMU Fire Plan.

Summary

Increased development in the Wildland Urban Interface (WUI) has created more preventable fire ignitions. Prevention and education efforts must continue to concentrate on the reduction or elimination of preventable fire ignitions. Residents must provide and maintain a defensible space around their properties. Enforcement of current 100 foot defensible space laws around structures will greatly reduce losses due to wildfire. Public Resource Code enforcement for standards for fire equipment access, signs identifying roads, street addresses and buildings, minimum private water supply reserves for emergency fire use as well as use of fire resistant construction materials in new construction will also greatly contribute to reducing losses due to wildfire. Fuels along existing roadways should be maintained in order to ensure safe passage for both residents and firefighters during a wildfire. The development and maintenance of strategic fuel breaks throughout the unit should remain a top priority for all stakeholders. The strategic placement of Vegetation Management Projects (VMP), as well as fuel reduction to large tracts of forest land using the California Forest Improvement Program (CFIP) can help reduce loss in WUI areas as well as improve forest health. It is imperative that Cal Fire and our stakeholders continue to seek funding and methods to mitigate the current risk as well as any future risks.

It is important to reemphasize that the MMU Fire Plan is a working document, which will be evaluated on a yearly basis. Many achievements have been made as a result of the prefire planning process. Unit personnel as well as the public are able to refer to this document when creating prefire management projects, coordinating fire prevention activities and participating in inter-agency fuel management activities. The analysis results of this plan will be used to interpret the wildfire threat to stakeholders within MMU. Additionally, wildfire protection beneficiaries will be identified through analyses of the plan, which will allow the beneficiaries to plan and participate in prefire management. The creation and implementation of this plan is an essential part of the success in the fight against destructive wildfire in MMU.

Dale Hutchinson
Madera-Mariposa-Merced
Unit Chief

MMU Fire Plan Collaborators

A collaborator or stakeholder is defined as any person, agency or organization with a particular interest - a stake - in fire safety and protection of assets from wildfires. The Madera-Mariposa-Merced-Ranger Unit has made a considerable attempt at involving stakeholders and many of their interests in the planning of the MMU Fire Plan. The process of identifying stakeholders and their interests is an ongoing process and will be evaluated continuously through the evolution of future fire management plans. It is the goal of the Madera-Mariposa-Merced Unit to participate with as many stakeholders as is possible and to continually update planning efforts involving stakeholder input.

Three primary stakeholder groups within MMU involve the two fire safe councils and the SWIFT group. The Eastern Madera County Fire Safe Council and the Mariposa County Fire Safe Council are instrumental in bringing a conglomeration of stakeholders to "the table". The councils shed light on many concerns within communities and expose information relating to the effectiveness of MMU's fire safe efforts. The Unit is able to respond and adapt activities to address many of the concerns from the different stakeholders involved with the fire safe councils. Through the council's diversity, agencies have been able to develop prefire and fire prevention projects that otherwise may never have developed. MMU, in cooperation with the fire safe councils, have experienced project successes many of which are mentioned throughout this fire plan. This list is dynamic. It includes the stakeholders at one point in time.

Primary Collaborators within MMU

Private

- Residents of the Communities of Madera-Mariposa-Merced Unit
- Pacific Gas and Electric Company
- Mariposa County Fire Safe Council
- Eastern Madera County Fire Safe Council
- North Fork Mono Rancheria
- Picayune Rancheria of the Chukchansi Indians
- The Ponderosa Acres Homeowner Group
- The Lushmeadows Homeowners Group
- Greeley Hill Fire Safe Group
- Central Sierra Watershed Committee
- Oakhurst Action Council
- Yosemite/Sequoia Resource, Conservation & Development Council
- Sierra Nevada Alliance
- Merced County Fire Alliance

Federal

- U.S. Forest Service, Sierra National Forest
- U.S. Forest Service, Stanislaus National Forest
- U.S. Army Corp of Engineers
- Bureau of Land Management, Folsom District
- U.S. Fish and Wildlife Service
- Yosemite National Park, National Park Service
- Bureau Of Indian Affairs
- National Resource Conservation Service

State of California

- California Department Of Forestry and Fire Protection (Cal Fire)
- California Highway Patrol
- California Department Of Transportation (Cal Trans)
- California Department of Fish and Game
- Mariposa Resource Conservation District
- Coarsegold Resource Conservation District
- Sierra Nevada Conservancy
- Office of Emergency Services (OES)

County or Districts

- Madera County
- Madera County Fire Department
- Madera County Sheriffs Department
- Madera County Road Department
- Madera County Environmental Health
- Merced County
- Merced County Fire Department
- Merced County Sheriffs Department
- Merced County Road Department
- Merced Irrigation District
- Mariposa County
- Mariposa County Fire
- Mariposa County Sheriffs Department
- Mariposa County Office of Emergency Services
- Mariposa Public Utility District
- Madera City
- Atwater City
- Atwater City Fire
- San Joaquin Air Pollution Control District

MMU Fire Safe Councils

MARIPOSA COUNTY FIRE SAFE COUNCIL

The Mariposa County Fire Safe Council (MFSC) was established in 1997. It is made up of property owners, businesses, residents, and agencies working together to reduce their vulnerability to the threat of wildfire within Mariposa County. The mission statement of the MFSC is, "…to preserve the Mariposa county's natural and manmade resources by mobilizing all Mariposans to make their homes, neighborhoods and communities fire safe." The efforts of the MFSC help get the word out to the homeowners of Mariposa communities on how to minimize the risk of fire in the Urban Interface. The MFSC has continued to focus on helping communities such as Midpines, LushMeadows, Ponderosa Basin, Hunters Valley, and Greeley Hill with projects like clearing brush, chipping, doing free home inspections and educating the residents about fire safety.

As a Non-profit organization, the MFSC is funded by grants. The MFSC has received grants from the Sierra National Forest, Bureau of Land Management, State of California (Cal Fire, Sierra Nevada Conservancy), Mariposa Resource Conservation District and Mariposa County.

Mariposa County Fire Safe Contacts
www.mariposafiresafe.org

Jan Hamilton
Mariposa Fire Safe Council Chairperson
P. O. Box 1182
Mariposa, CA 95338
(209) 966-7700 Office
(209) 966-7767 Fax
hamjan@sierratel.com

Megan Redding,
(209)966-7700
P.O. Box 1182
Mariposa, CA 95338
meganr@sti.net

EASTERN MADERA COUNTY FIRE SAFE COUNCIL

The Eastern Madera County Fire Safe Council (EMCFSC) was established in 1997 by volunteers devoted to developing and implementing programs to protect area residents and property from wildfire. Many projects were completed under funding provided by National Fire Plan grants from the Bureau of Land Management through the California Fire Safe Council and the Sacramento Regional Foundation. Today the Eastern Madera Fire Safe Council continues its work through grants from the US Forest Service and other public agencies.

Bob Buckles, Chairperson
Phone: 559-877-3772
Fax: 559-877-3326
Mail: PO Box 747 North Fork, CA 93643
Email: fsc@netptc.net

SWIFT (*SouthWest* **I**nterface **T**eam)**

"Since 1999, the Southwest Interface Team has continued to plan and implement wildfire protection activities within the 132,000 acre project area. Cooperatively planning and implementing a strategic fire defense system designed to reduce the threat of loss to life, property, and resources in the Southern Tuolumne & Northern Mariposa county wildland-urban interface (WUI)".

PAST ACCOMPLISHMENTS (May 2008)

Fuel breaks Construction:		49 miles
Mechanical Shredding:		7,039 acres
Prescribed Burning:		4,518 acres
Road Corridor Treatment:		18.5 miles
Other Treatments:		
Animal Grazing		
Piling to Burn		
Hand Clearing		
Thinning/Other		2,737 acres
TOTALS:	67.5 miles	14,294 acres

Tom James, Coordinator
Phone: 209-962-7273
Fax:
Mail:
Email: tejames@inreach.com

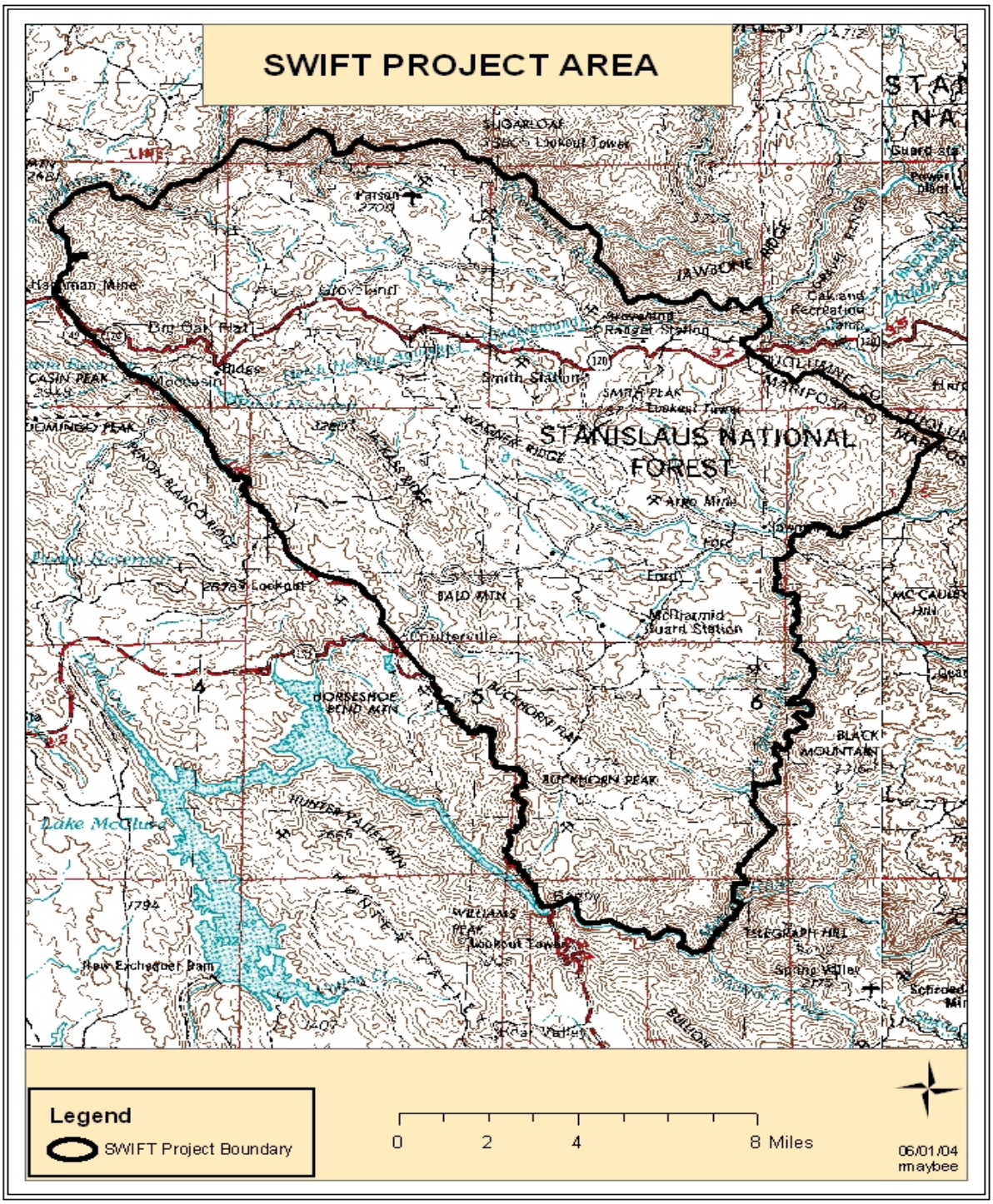

Figure 5 - Southwest Interface Team Map, Mariposa County 2009

NORTH FORK MONO RANCHERIA

The North Fork Mono Rancheria has received grants for education and fuel reduction projects on tribal lands. The results of these grants can be seen from fuel reduction completed in and around the town of North Fork. The Rancheria also works with the Eastern Madera Fire Safe Council to reduce fuels in other areas of North Fork.

fsc@netptc.net

Merced County Fire Alliance

The Merced County Fire Alliance was established in the spring of 2007 between Merced County Fire Department, Cal Fire, and the United States Fish and Wildlife of Los Banos. This group was created to facilitate the development of a Community Wildfire Protection Plan (CWPP) for the county of Merced. The 2007-2008 Madera-Mariposa-Merced Unit Fire Management Plan will act as the Merced County CWPP.

Scott Newman
Division Chief, Merced County Fire Department
735 Martin Luther King Jr. Way
Merced, CA 95340
(209) 385-7344 Office
(209) 725-0174 Fax
Scott.Newman@fire.ca.gov

I. Introduction

The danger of wildfire is a burden borne by every resident of California's mountains. This burden however, is one that we have created. Fire has always been part of our environment; only since Euro-American intervention has altered its natural cycle did it develop into the monster we now fear. In its natural form, wildfire serves to clean the landscape of dead and over mature vegetation, thus aiding in the regeneration of new growth. This process also makes wildfire self limiting, disallowing an unnatural accumulation of fuel that permits fire to grow to destructive proportions. By breaking this cycle we have began a trend of larger, more destructive fires that are both costly and dangerous. Placing our assets, such as homes and businesses, in wildfire's path has only succeeded in compounding the problem. In the last forty years California's losses due to wildfire have grown by 17% each decade. This trend cannot be allowed to continue.

Since we have created the danger of wildfire, we can also mitigate that danger. In 1996, the California Department of Forestry and Fire Protection (CDF) began to take steps to reverse the course we have been on for the past century. CDF's 1996 Fire Plan outlined a strategy to assess the current situations that exist in our state's wildland and identify areas of high hazard. Partnerships with stakeholders, private industry, agencies and organizations that have a vested interest in wildfire, protection/prevention in our communities, would be built and together plans to mitigate those hazards would be developed.

The Madera-Mariposa-Merced Unit protects 3,573,778 acres of watershed in eastern Madera, Mariposa and western Merced Counties. Within this area, four factors considered keys in determining the severity of the wildfire problem were assessed: Assets at risk (values threatened by fire), fuels available to wildfire, level of service and weather. To further assist with solving the wildfire threat, "Fire Councils" were created to facilitate communication among stakeholders and involve everyone in the problem and the search for solutions. Their input is reflected in this report as well as quantitative "on the ground" validation.

The Madera-Mariposa-Merced Unit Fire Plan is broken down into chapters. The first chapter will acquaint the reader with history of fire in our local fire environment. This was done to provide the reader with an insight as to how fire has and should behave in its normal state. The following chapters will present the findings of each individual assessment. Following these are the cumulative results of the assessments, identifying and ranking our hazard areas on State Responsibility Areas (SRA) within MMU. The writing of subsequent chapters will be an ongoing project. Each hazard area will require its own unique prescription to reduce the threat of wildfire. These prescriptions will be the result of the individual characteristics of the problem, funds available to finance mitigation and the input provided by the stakeholders.

As our mountain communities continue to grow, this plan must also grow. Each new resident brings with them the potential for fire ignition as well as values that must be protected. With inevitable population growth, the threat of wildfire in our community is also inevitable. By assessing our risks and incorporating prefire management strategies in our planning, we can develop a community that can survive the impacts of wildfire.

II. The Fire History of Our Community

The Role of Fire and the Ecosystem

To understand the threat of wildfire to our communities, we must first understand wildfire itself and the role it plays in our ecosystem. In ecological terms, wildfire is far from the devastating demon of common perception, ravaging the forest and its inhabitants. Only since the intrusion of present civilization and its altering of the natural cycle have wildfire's undesirable characteristics surfaced.

Fire, as a result of lightning and geological activity, is a natural occurrence in our ecosystem. Charcoal deposits, found in Sierra lakebed sediment samples, indicate that fire has long been an important component of the Sierra Nevada environment, predating the current vegetation types now associated with our landscape. The greatest charcoal concentrations found at one local site appear during the warm period following the end of the Pleistocene period about 10,000 years ago.[i] This same interval is the one in which the Sierra's vegetation types at the middle and lower elevations evolved from the subalpine species of that period to the mixed conifer forests of today. From that point on, charcoal continues to be routinely present in sediment core samples.

The Sierra's fire history of the last several thousand years can be traced through existing vegetation. Growth ring samples taken from the giant sequoias show the period between natural fires, referred to as fire return intervals (FRI), were never longer then 30 years for a period of more than two thousand years. Only during the last 100 years has this pattern been broken and fire excluded from the growth process in many of the groves.[ii] The frequency of fire indicated by these tree ring scars appears to be a product of both the sample's elevation and variations of temperature and moisture. Low precipitation years and lower elevation yielded the highest fire occurrence.

Only two studies are available that reflect fire frequency in the blue oak-gray pine woodlands of the lower elevations. Scott Mensing of the University of California, Berkeley after studying fire scars on blue oaks in the Tehachapi Mountains, found an average FRI of 9.6 to 13.6 years.[iii] In the foothills east of Marysville, McClaren and Bartolome found FRIs from 8 to 49 years for the years prior to 1848.[iv] The reason for this relatively long interval in the latter study is unexplained, especially in light of studies conducted on the nearby black oak-ponderosa pine forests, which generally have a FRI of two to three years[v]. Perhaps the light fuel (grass) coupled with low fire intensities was insufficient to leave detectable scars on the study samples.

The fire return intervals of chaparral, such as the chamise found in the Merced River Canyon of northern Mariposa County, appear to be highly dependent on individual circumstance. Elevation, drought, and slope aspect are among the factors influencing the frequency of fire in this vegetation type. The primary component to determine fire return intervals in chamise, however, seems to be fuel dynamics. This relates to the amount of total fuel available in a stand, the product of the stand's age (dead to live component) and environment. Generally FRIs have been estimated to be from twenty to a hundred years. Large, severe fires tend to occur in brush

stands over thirty years old. The longest fire return intervals, 50 to 100 years, occurred in chaparral stands at elevations above 4000 feet.[vi]

Vegetation Type	Pre-1860 FRI	20th Century FRI
Foothill Hardwood and Grassland	**10**	**78**
Ponderosa Pine	**4**	**192**
Foothill Chaparral	30	**0**

Table 3 - Local Fire Return Intervals

The Historic Use of Fire

It is now generally recognized that Native Californians considerably influenced the fire frequency of California's mountains, especially in the foothills. Native Americans inhabited the Sierra Nevada for at least the last 9,000 years.[vii] By the 1600's, the drainages of the Chowchilla, Fresno, and Merced Rivers had a combined population of 22,500 natives representing at least three tribes. These Indians utilized fire to open up lands for hunting and to promote the regrowth of plants used in various facets of daily life. An October 1774 entry in the diary of Captain Fernando Rivera y Moncada confirms this: "[The Indians] are wont to cause these fires because they have the bad habit, once having harvested their seeds, and not having animals to look after except their stomachs, they set fire to the brush so that new weeds may grow to produce more seeds, and also catch rabbits that get confused and overcome by smoke".[viii] The first fire prevention law in what was to become California was a result of this burning. Issued by Governor Jose Joaquin de Arrillaga in 1793, it read in part:

> "With attention to the widespread damage which results from the burning of fields, customary up to now among Christian and Gentile Indians in this country, whose childishness has been duly tolerated, and as a consequence of various complaints that I have had of such abuse, I see myself required to have the foresight to prohibit burning for the future (availing myself, if it is necessary, of the rigors of the law) all kinds of burning, not only in the vicinity of the towns but even in the most remote and distances, which might cause some detriment, whether it be by Christian Indians or by Gentiles who have some relationship or communication with our missions"[viii].

It is doubtful that this edict had much of an impact on the natives of the Sierra Nevada foothills. Locally, a Culture Element Distribution Survey conducted in 1936 by the University of California found that all three of the tribes (Chuckchansi, Mono and Southern Miwok) in the

Madera and Mariposa County foothills used fire as a tool for hunting and improving crops of native plants.[ix] Jack Rhoan, a local Native American (Chuckchansi and Southern Miwok) recalled in a 1948 interview that when he was a boy in the 1870's, the Indians throughout the region (Eastern Madera and Mariposa counties) set fire to the brush after the seeds had been gathered (approximately July). "The men started the fires and the women watched to see that it did not approach the homes. When it did, it was beaten out. It burned the hills, all over, clean through to the next one." The trees, which were green did not ignite easily, however "dead trees and logs were all cleaned up that way." [x]

Despite the apparent widespread use of fire by the Indians, any references to problems with uncontrolled fires are conspicuously absent. In researching the volumes of information available on the native people of California, no mention of fire being considered a threat was found. From this, one can only deduce that while wildfires did occur with relative frequency, they were not of an intensity to cause the widespread destruction we now associate with them.

The Euro-American settlement in the 1850's began an alteration of the long established wildfire occurrence cycle. The influx of miners as a result of the gold rush brought an increase in fire ignitions. J. Goldborough Bruff, an early miner in California, reported in an October 1849 diary entry that the "woods [are] alight with many crackling fires" and "Fallen pines afire near us, we passed numerous fires of this kind, and the hills are light with them. Prospectors and Indians caused them".[xi] This account is substantiated by scars in the growth rings of the Blue Oaks near Fort Tejon in Kern County, which indicate that fire frequency there peaked in the 1850's.[iii]

The vegetation of California's mountains was changed in other ways as well. The miners also had an insatiable demand for wood. Heating and cooking fires, buildings, mine timbers, and fuel for steam engines all relied on the local vegetation as a wood supply. East of Coulterville, the Red Cloud Mine alone was using 4 ½ cords of wood per day in 1888 to power its stamp mill.[xii] With dozens of similar mines operating in Mariposa and Madera Counties, the changes in the natural vegetation must have been dramatic. Little regard was given to the residual material left after cutting, and this accumulation of limbwood and other unusable material lent itself to more severe wildfire intensity.[xiii] Interestingly, contemporary newspaper accounts give only passing mention to these uncontrolled fires, usually incidental to smoke conditions or the occasional loss of an isolated structure .[xiv] Wildfires seem to have been an accepted and common nuisance during this period, with attention only given to them when they threatened a community or other resource.

The Shift to Fire Suppression

Sheep and cattle grazing after the 1870's also became a major factor influencing fire frequency and intensity. While it is well documented that literally millions of sheep grazed in the upper Sierra meadows from the 1860's to 1900, little information is available regarding impacts on the lower, foothill environments. These areas, considered desirable as rangeland, were often fenced and used for cattle grazing. Mennsing's study of blue oak tree rings in the Tehachapi Mountains found a period of 60 years, from the 1860's to the 1920's with no fire scars.[iii] This period coincided with the introduction of grazing in the area. It is likely that the establishment of these herds at the lower elevations placed a value on forage, which in turn led to the first local attempts at fire suppression. The grazing also removed dry grasses that allowed the spread of fire.

The first state laws concerning wildfire prevention were written in 1872. They made the burning of state or federal land (excluding private land) a misdemeanor punishable by a fine of $1000 or a year in jail, or both. The new laws also deemed that "every person who willfully or negligently sets on fire, or causes or procures to be set on fire any woods, prairies, grasses, or grain on *any* lands is guilty of a misdemeanor."[viii] Conspicuously, this latter law, which applied to private lands, contained no punishment for the offense. Both laws predated the establishment of National Forests and the majority of unowned land in California was in state government's hands. It was not until the 1905 passage of the Forest Protection Act that burning of private lands during the summer season became truly prohibited.

On the federal level, the end of 1800's saw the establishment of "Forest Reserves" which eventually evolved into our present national forest system. Laws to protect these lands from fires were first written in 1897 and amended in 1900. True fire protection on the forests however, began just after the turn of the century with the appointment of Fire Guards to patrol the reserves for fires and fire hazards.[viii] In the event of a fire, private citizens, most often loggers and ranchers, would be pressed into service to extinguish the blaze.

The California Forest Protection Act of March 18, 1905 created a similar protection system for lands outside of the federal reserves. This law allowed the appointment of a State Forester and the creation of *fire districts* encompassing from one to four counties. Each district was to have its own volunteer fire warden appointed by the State Forester. Counties desiring additional protection could fund paid fire wardens. The fire warden was charged with preventing and suppressing all fires in the "woods, brush, prairies, grass, grain, or stubble" lands of the state.[viii] To carry out this task the warden was given all the powers of a peace officer to arrest perpetrators. As with their federal counterparts, they had the right to impress citizens into fire suppression work In fact, many of the federal fire guards were enlisted as county wardens as well, thus gaining them law enforcement power not provided by federal policy.[viii]

Why the shift to fire exclusion after so many centuries of naturally occurring fire? The primary reason was the increased value of standing timber now that a market for lumber was available. It was perceived that fire scarred mature trees and destroyed seedling and young growth.[xiii] A certain amount of truth existed in this belief. By 1900 the residue from earlier logging operations was creating hotter, more destructive fires than the earlier, natural fires. Any regrowth of timber occurring in these harvested areas was likely to be destroyed and scarring of mature trees probably occurred as well. In the lower foothill region, grasslands were becoming increasingly valuable for cattle grazing. In fact a loosely organized group of citizens, The Stockmen's Protective Association was organized in 1904 to "promote the stock and range interest of its members, especially for protection against fire."[viii] This group funded the first state operated lookout station on Mount Oso, west of Patterson in Stanislaus County. That same year, 1904, 800,000 acres of California burned in wildfires adding further impetus to the perceived need for fire protection.

There was, however, local dissension regarding burning restrictions. This came from both ranchers who burned their summer pastures in the forest to prevent the encroachment of brush and timber upon the meadows, and from timbermen, who burned logging slash to eliminate hazards and allow new timber growth. The State Forester's office was not to be swayed however. In his 1912 Biennial Report, Forester G.M. Holmes readily dismissed "light burning". "The forest floor, so necessary for the retention of water is destroyed; seedlings and small trees are

killed and the ground is unsuited for the germination of seeds. The cost is prohibitive. It would cost about $9,000,000 to burn over our forest area once. Such a practice should be prohibited law." [viii]

The exclusion of fire from California's wildland continued, at least on paper, until 1945. Despite the best efforts of the fire wardens and fire guards, uncontrolled fires continued to occur. The Sierra National Forest has maintained a map of these fires since 1908 (Figure 1). Though few of the fires occurring in the lower foothills were mapped, one can get an idea of the scope of the burning that took place. Though it appears fires were widespread, the fire return interval for the region had increased considerably from the eight to nine year intervals common prior to Euro-American civilization.

Government Involvement with Burning

Throughout the 1930's and early 1940's the California Division of Forestry had been heavily lobbied by the cattle industry to conduct range improvement burns for the purpose of converting brush lands into grazing forage. When these lobbying efforts failed ranchers often took it upon themselves to burn outside of the law. To appease the situation, several tests on the effectiveness of brush burning as a land clearing tool were conducted at various locations in California. One of these areas was located in eastern Madera County near Ahwahnee. Burning, chemicals and goats as brush removal agents were all tested. Based on the results of these experiments, the restrictions on large scale controlled burning were gradually loosened. By 1950 range improvement burning was common in the foothills of both Madera and Mariposa counties.

The formal Range Improvement Program was carried out by the cooperative groups of ranchers organized into "Brush Burning" associations. These associations, which met regularly, planned out burns months ahead of time. Through cooperative efforts, control lines were constructed, crews were assembled and logistical needs met. A local rancher was appointed "fire boss" and coordinated the operation. The association to ensure its safety reviewed each proposed burn. The local CDF representative would also participate in this review, and when everything was in order, a permit was issued. The local ranchers completed nearly all the work with CDF's involvement generally limited to providing standby crews in case of an escape.

Burns were done each summer throughout the 1950's and 60's. Individual burns ranged from 40 acres to over 12,000 acres. All together, over 137,000 acres in Madera County and 224,000 acres in Mariposa County were burned under the Range Improvement Program (Figure 6). No records are available for burns occurring on the west side of Merced County. Increasing threat of liability coupled with more stringent air pollution control laws eventually led to the programs demise. The last local burn was conducted in 1975 on Schaubach Ranch near Highway 41 and County Road 406.

To circumvent the legal problems that terminated the Range Improvement program, CDF developed the Chaparral Management Program in the 1970's. This program, which became the present day Vegetation Management Program (VMP) placed the responsibility on CDF to prepare environmental review of each burn, assume liability, and perform most of the work associated for the burn. This program has been responsible for burning 17,970 acres in Madera

and Mariposa County (Figure 8). Since the 1930's, fire suppression capabilities have been increasing as well. Effectiveness of these efforts
was limited during the first few decades of the century. The depression however, created an available pool of labor, which was soon harnessed for the task of fighting wildfires. Work camps were established locally by CDF at Coarsegold, Grub Gulch, Mariposa and Coulterville. Civilian Conservation Corp (CCC) camps under the auspices of the U.S. Forest Service were also strategically located throughout the Sierra National Forest. These crews provided the areas first professional organized forces. While World War II brought about the demise of the public work crews, it saw, under the auspice of Civil Defense, the creation of a year round, professional wildland fire fighting force of a sufficient size to accomplish the task. This organization has continued to evolve into our present day wildland fire agencies.

We have eliminated wildfire, as the pre Euro-American ecosystem knew it. The placement of our assets in its path, and the values we have tied to resources, such as timber and aesthetics, have made it too great a risk to live with. Ironically, its exclusion has only served to increase the risk to the values we are trying to protect. Like a dam without an outlet, the flammable vegetation in our environment continues to build up. Eventually a point will be reached at which the intensity of a wildfire will be beyond the ability of our suppression resources to handle. When this dam breaks the loss of assets and resources is inevitable.

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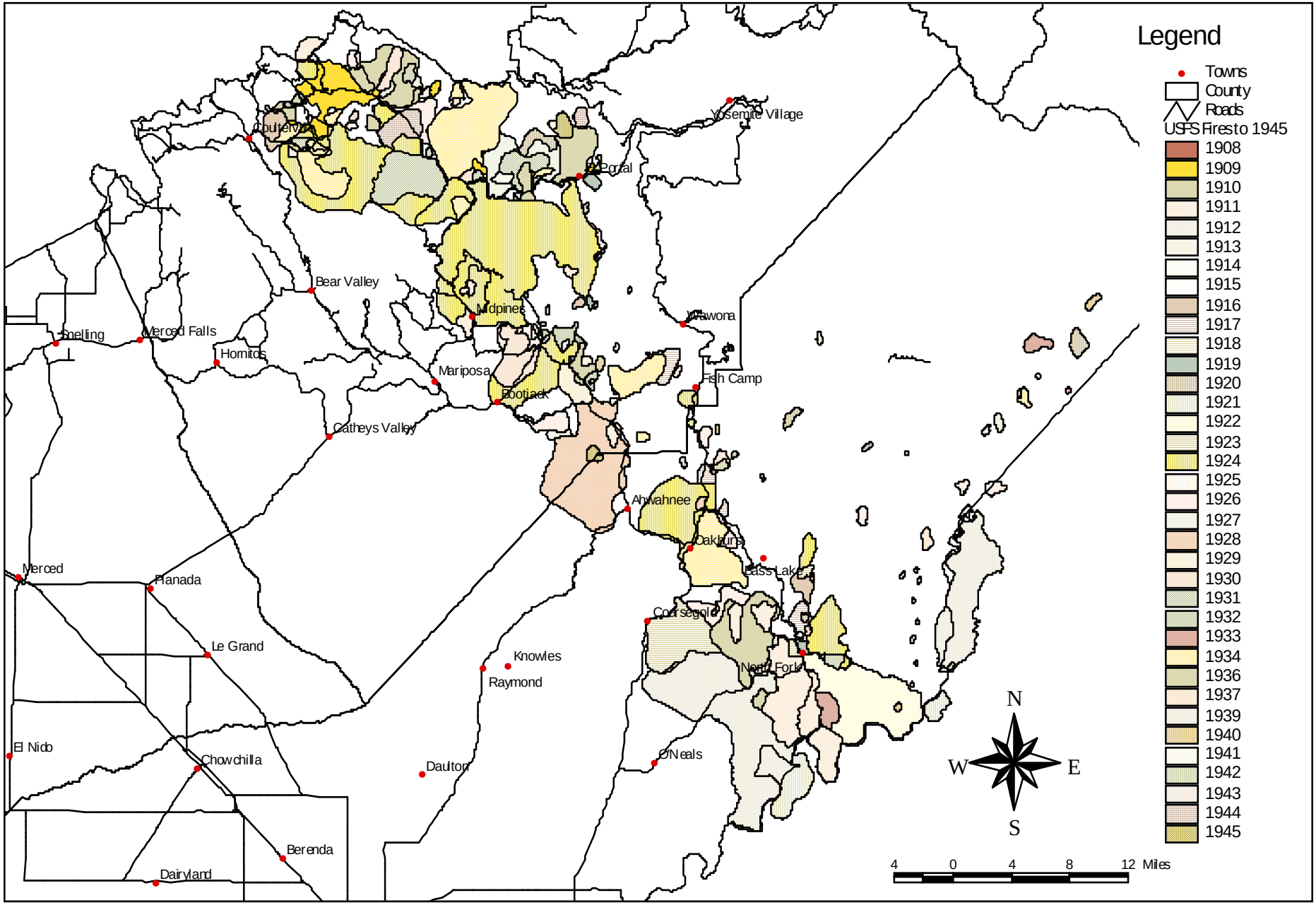

Figure 6 – United States Forest Service Fires 1908-1945, Sierra National Forest

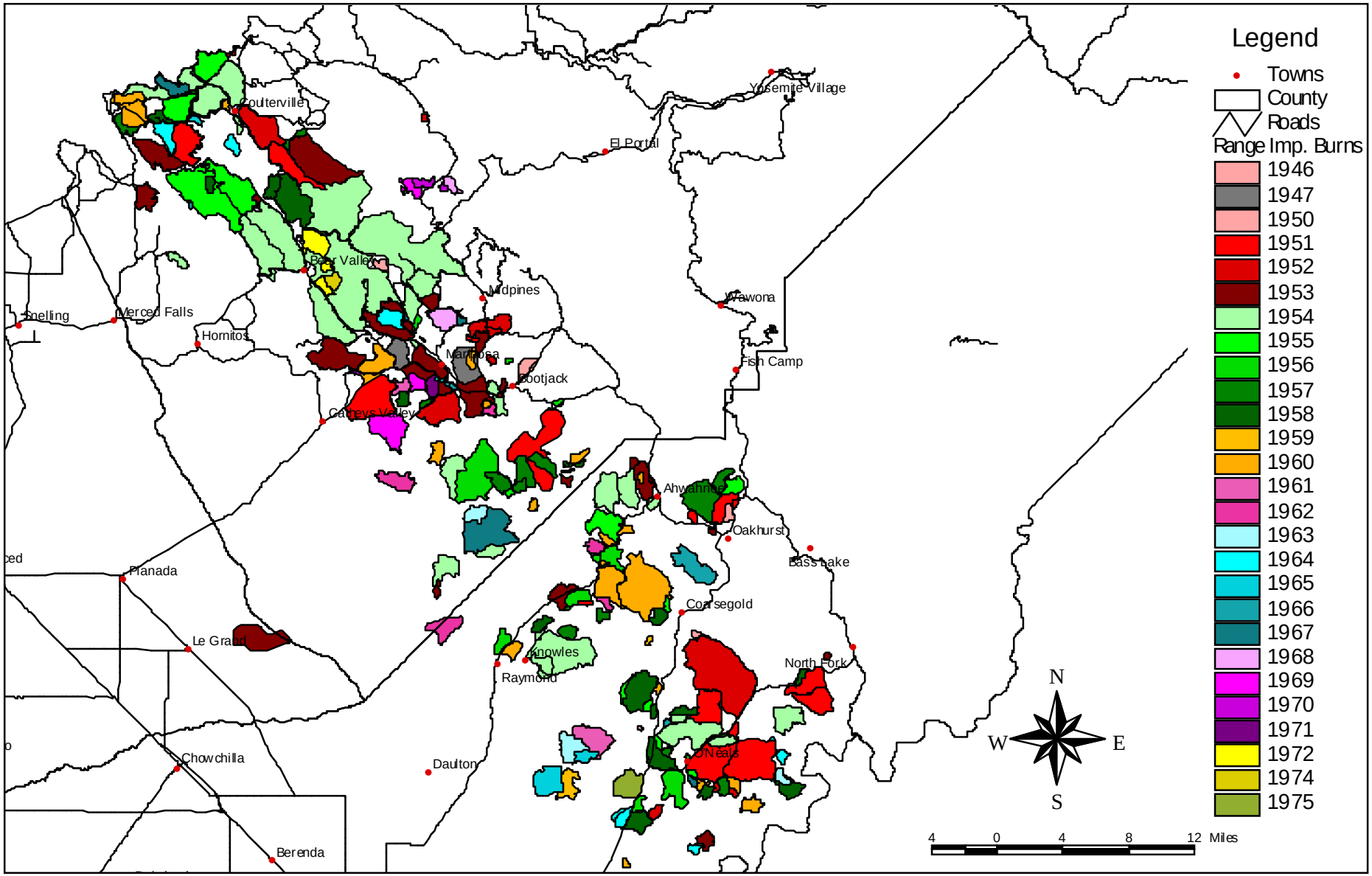

Figure 7 - Range Improvement Burns 1946-1975
Mariposa County and Eastern Madera County

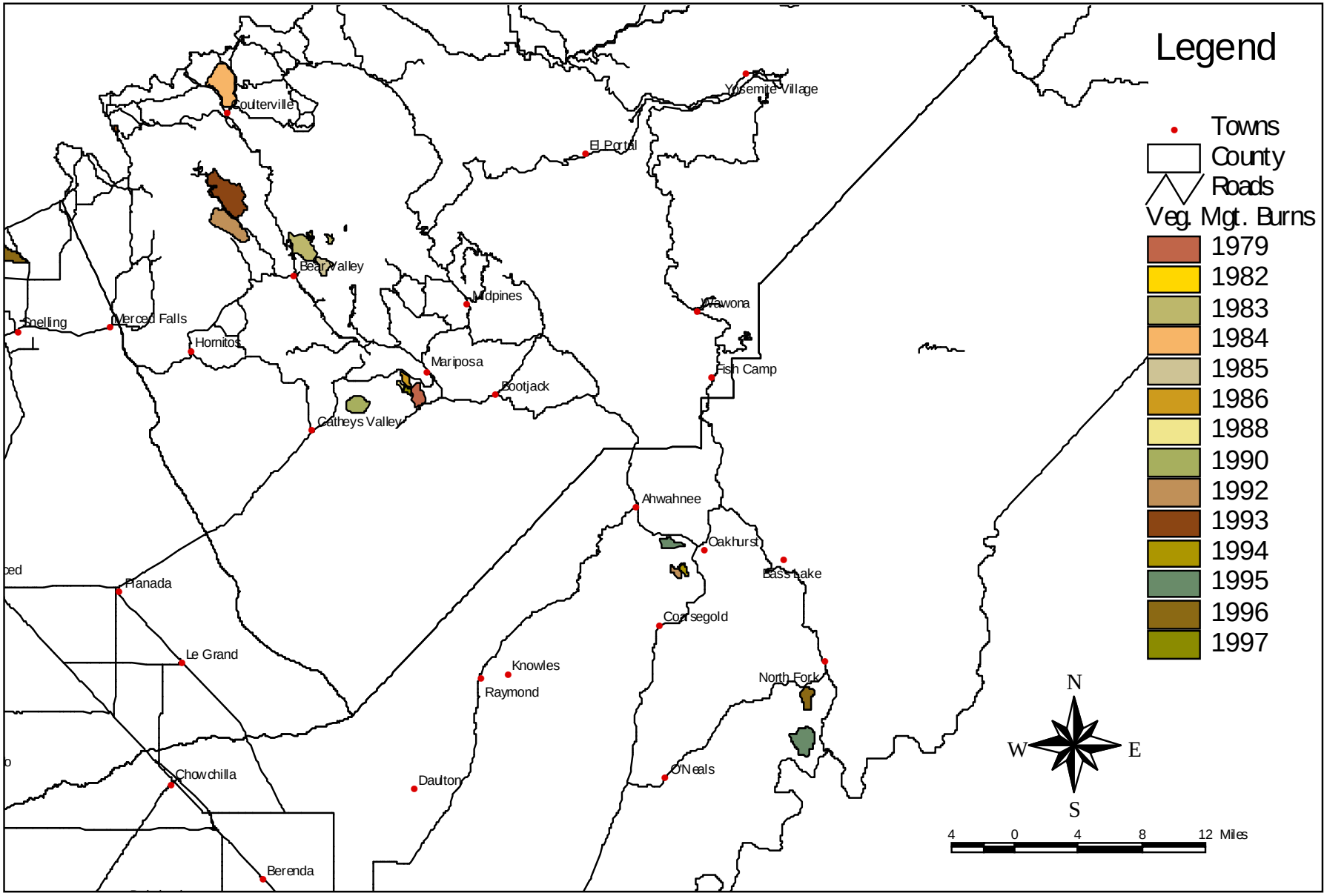

Figure 8 - Vegetation Management Burns 1979-1997
Mariposa County and Eastern Madera County

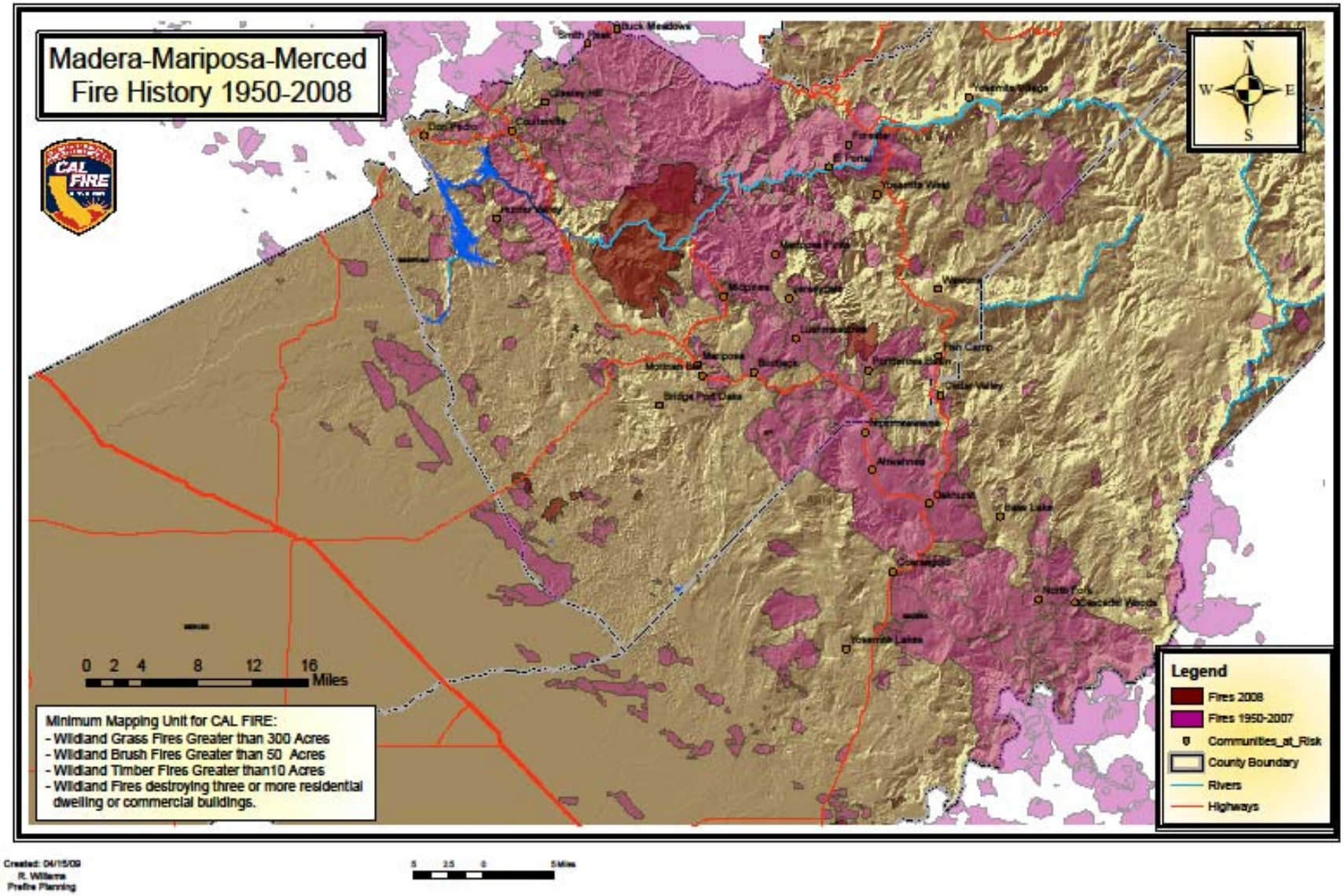

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Figure 9 - Madera-Mariposa-Merced Fire History 1950-2008

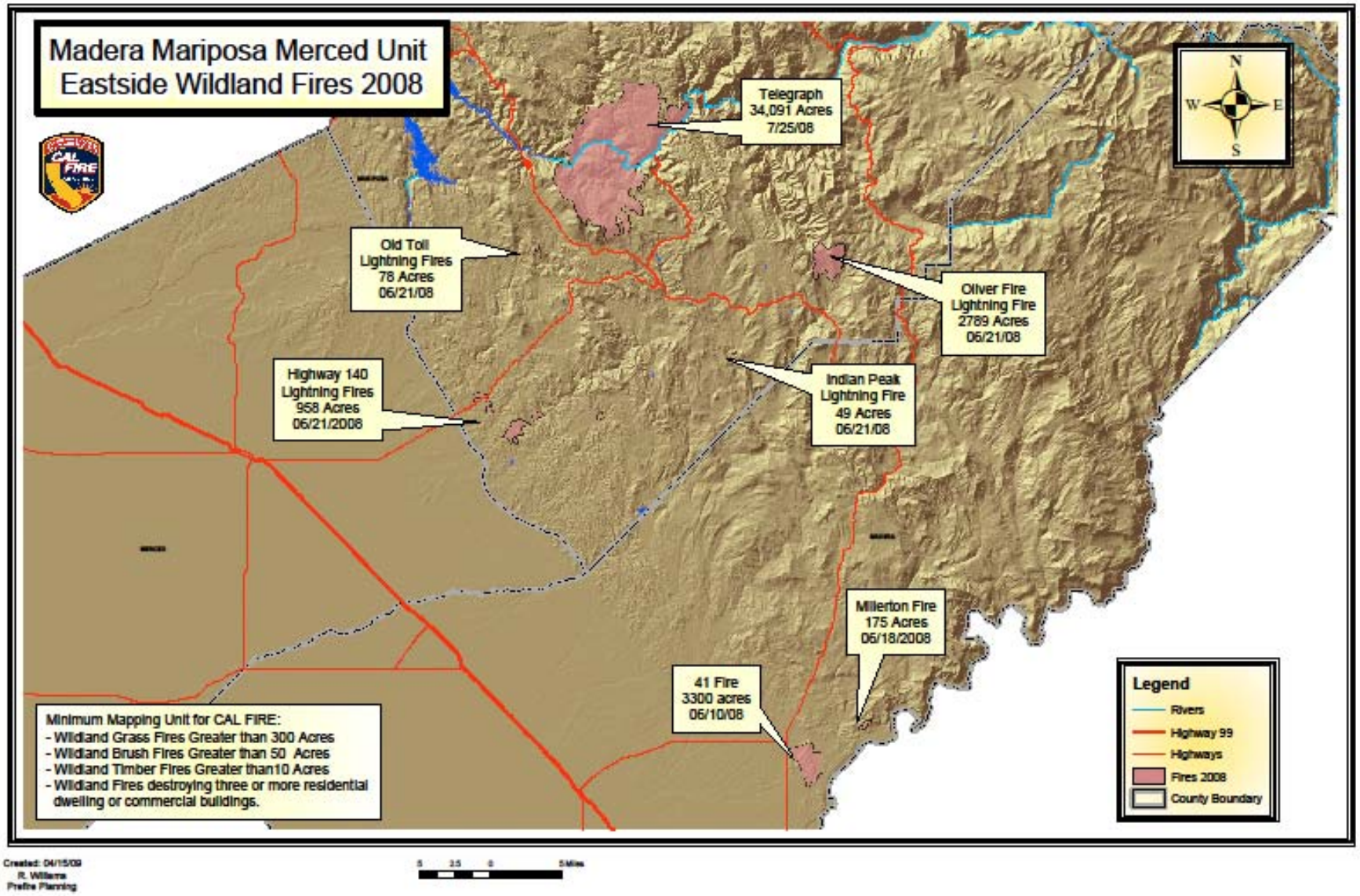

Figure 10 – Madera-Mariposa-Merced Unit Eastside Fires 2008

III. Madera Mariposa-Merced Unit Major Fires

Undoubtedly the most disastrous wildfire to strike the Madera and Mariposa Counties was the Harlow Fire of July 1961. The Harlow burned 43,329 acres in Madera and Mariposa Counties, destroyed 104 structures and claimed two lives. What was truly remarkable about the Harlow was how fast it spread. In two hours it burned 20,000 acres making it one of the fastest burning fires ever recorded in the United States.

Perhaps the largest, modern fire event in Mariposa County occurred in Mid July 1939. That year, an unusually heavy grass crop had dried and then been subject to a late spring rain. This had caused the dried grass to partially decompose, creating a fuel that "carried fire as if it were gasoline" according to one witness. In a ten day period, 5 major fires burned through the county: A fire started on Bear Creek west of Bear Valley and burned over Mt. Bullion before being stopped on Whitlock Road. North of Catheys Valley, on Guadalupe Mountain a fire southwest from Catheys Valley through the Bridgeport district to White Rock Road. In Bootjack another fire burned out the area surrounded by Triangle Road on the north and east, Highway 49 on the south and Highway 140 on the west. Simultaneously, a fire in the Merced River Canyon burned 8,000 acres. All told, in those ten days, nearly 100,000 acres of Mariposa County burned.

Madera County was by no means spared from similar conflagrations. In 1906 a fire started on the Fresno River near the present intersection of Yosemite Springs Parkway and Road 400 and burned to the San Joaquin River near North Fork. A similar fire in 1916 started and burned from the present Hensley Lake to the San Joaquin River south of North Fork.

The conditions that created havoc in Mariposa County in 1939 were also shared with Madera County. A fire started by a construction blast near Picayune south of Coarsegold burned westward to the San Joaquin River, while another fire, the Point Source Fire, started north east of North Fork near Chawanakee and burned to Kaiser Pass. This latter fire destroyed an estimated 61 million board feet of timber on over 20,000 acres of land.

When these fires occurred, our mountains had few residents or suppression resources. Since then, fire fighting capabilities have increased tremendously but so have the number of homes in the wildland. Any of the aforementioned fires, or even a portion of one, would quite easily today claim the infamous title of our communities' most destructive fire.

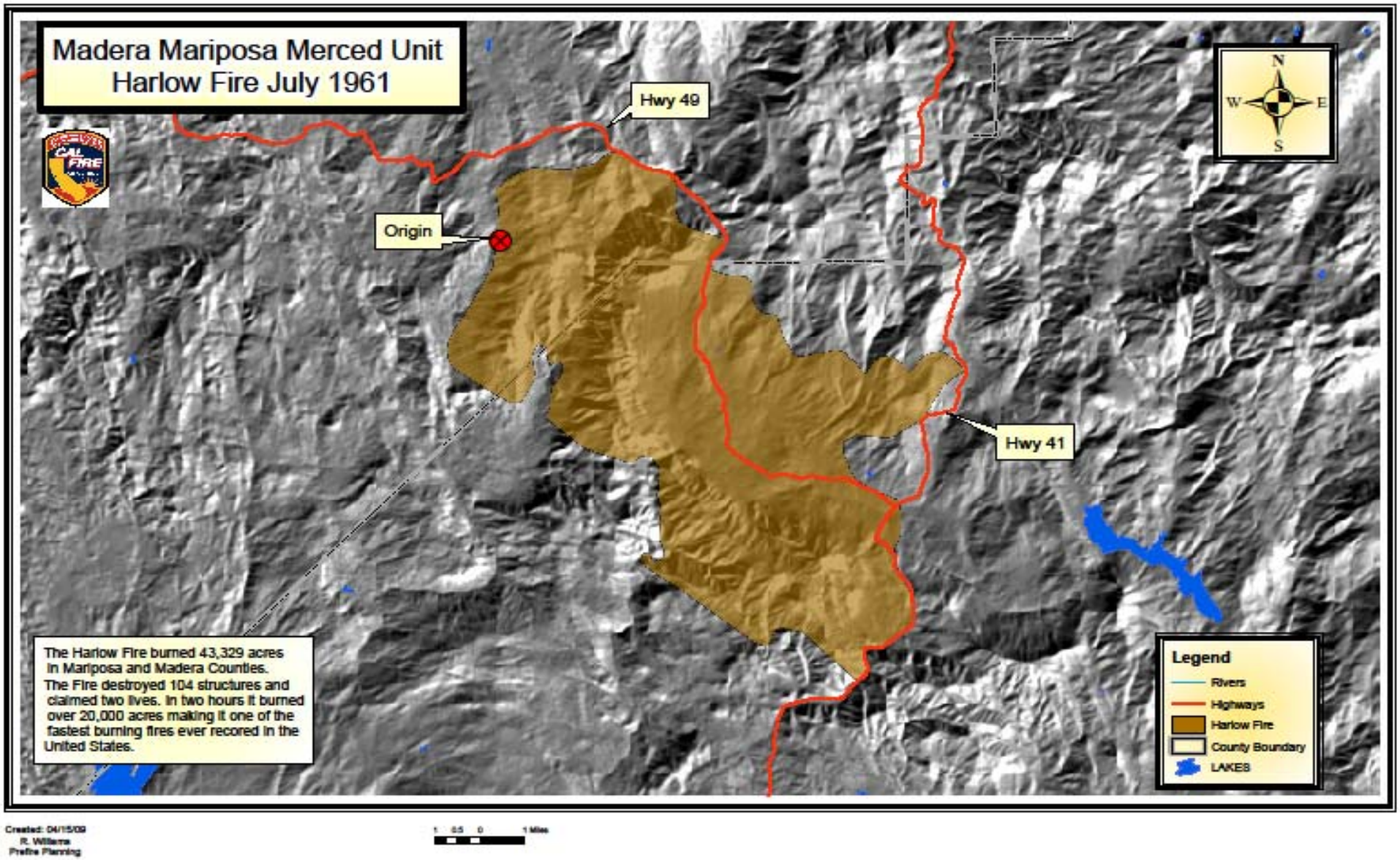

Figure 11 – Madera-Mariposa-Merced Unit Harlow Fire July 1961

Fire Season 2008

The fire season of 2008 proved to be one of the MMU's most active and destructive. The year started off with the lightning event that passed through California on June 21, 2008. The fires stretched the states resources past critical levels. Many fires were left burning around the state because of a lack of firefighting resources. MMU was able to control all the fires within two days except one called the Oliver Fire. The Oliver Fire was on the Sierra National Forest and was threatening the community of Ponderosa Basin. After a team was activated and a Unified Command was in place the fire was brought under control at 2789 acres.

The largest fire of the year and most destructive in recent unit history was the Telegraph fire. The Telegraph Fire started July 25, 2008, at approximately 1510 hours near the banks of the Merced River two miles west of Telegraph Hill in Mariposa County. The fire was started in such a remote inaccessible area that fire crews were unable to make access to the fire. Burning in steep, rugged terrain in a remote part of the county, the fire consumed over 18,000 acres in the first day and a half alone. The Telegraph Fire was a 50-year fire event for Mariposa County. Not since the early 1960's were so many acres burned in such a short period of time. In addition to the topography, other significant environmental factors that influenced the extreme intensity and spread of this fire were low humidity's, heavy fuel loads and historically low live and dead fuel moistures resulting from 2 consecutive years of record drought. One week later, the fire was contained at 34,091 acres. It was started by individuals target shooting along the Merced River at the end of Mosher Road. The final cost of the Telegraph is still being determined, but the number was between 35 and 40 million dollars.

TELEGRAPH DAMAGE ASSESSMENT

Within the fire perimeter, 105 Sites were located, inspected and documented for damage, structure construction type, defensible space, and driveway access. The Telegraph Fire directly threatened over 349 structures. Of these, 130 were destroyed, 5 received partial damage and 214 were not damaged (see figure below for number of structure types destroyed)

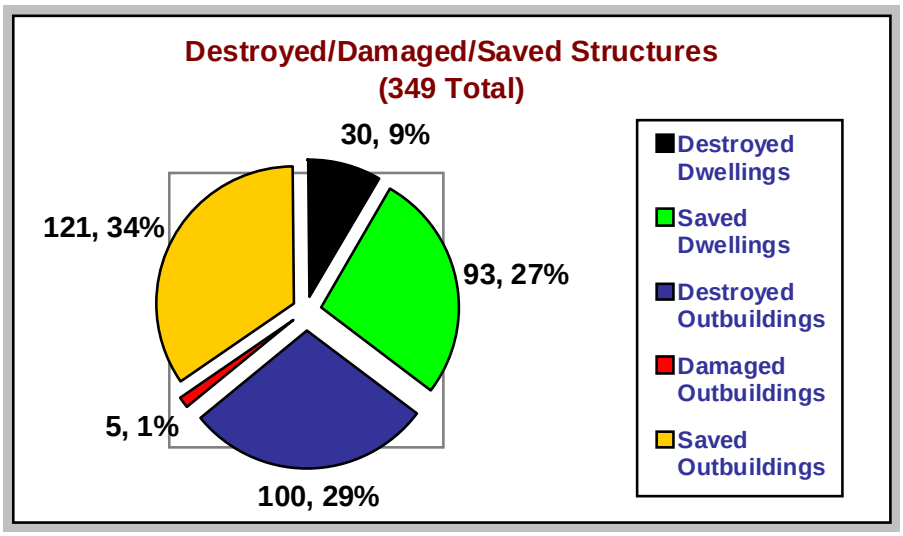

Figure 12 – Telegraph Fire Damage Property Type (Destroyed, Damaged, Saved)

The data shows that within the area inspected 40% of dwellings (a total of 49) exposed to the fire had appropriate defensible space as required by PRC 4291. Defensible space was lacking on all but 1 of the 30 dwellings destroyed in the fire.

The remainder of the data presents property type and construction materials information in a tabular format, from which the reader can make comparisons.

PROPERTY TYPE	DESTROYED	DAMAGED	SAVED
Dwellings (123)	**30** (24%)	**0**	**93** (76%)
Outbuildings (226)	**100** (44%)	**5** (2%)	**121** (54%)
Vehicles (68)	**60** (88%)	**8** (12%)	N/A

Table 4 – Telegraph Fire Damage Property Type (Destroyed, Damaged, Saved)

DWELLING CONSTRUCTION (SIDING MATERIALS)					
	Wood (W)	Metal (Me)	Masonry (Ma)	Other (O)	Unknown (U)
DESTROYED (30)	**17** (57%)	**2** (7%)	**6** (20%)	**1** (3%)	**4** (13%)
SAVED (93)	**79** (85%)	**6** (6%)	**6 (6%)**	**2** (2%)	**0**

DWELLING CONSTRUCTION (ROOFING MATERIALS)						
	Composition (C)	Metal (Me)	Wood (W)	Masonry (Ma)	Other (O)	Unknown (U)
DESTROYED (30)	**16** (53%)	**6** (20%)	**0**	**2** (7%)	**0**	**6** (20%)
SAVED (93)	**60** (65%)	**28** (30%)	**1** (1%)	**3** (3%)	**0**	**1** (1%)

Table 5 – Telegraph Fire Dwelling Construction (Destroyed, Saved)

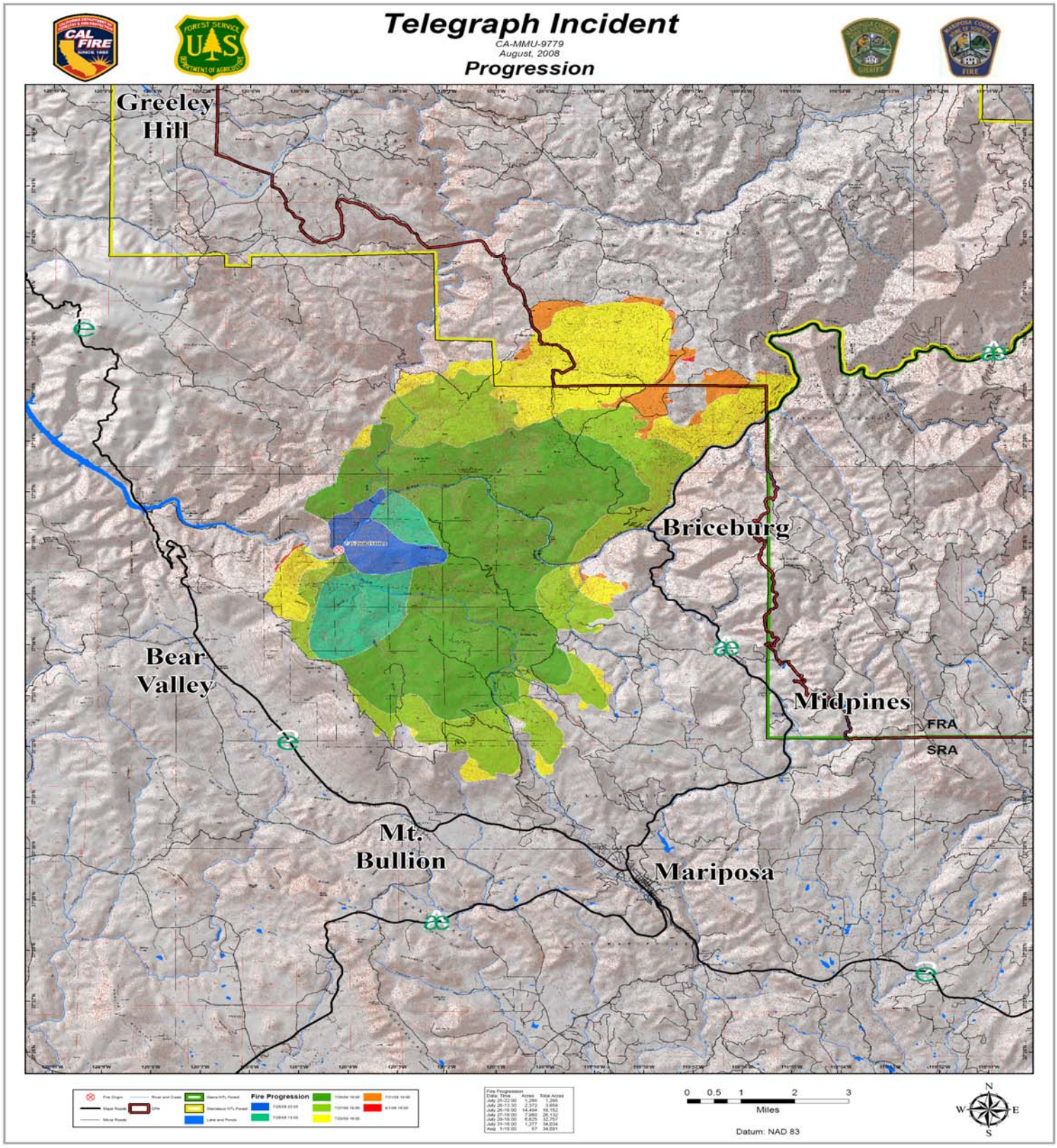

Figure 13 – Telegraph Incident, Progression Map August 2008

IV. Community Wildfire Protection Plans (CWPP)

In 2008, both Madera County and Mariposa County worked on completing Community Wildfire Protection Plans (CWPP). These plans were developed in response to the Healthy Forest Restoration Act of 2003 (HFRA). These plans where written by private contractors paid for by grants specifically earmarked for development of CWPP's. Madera County Community Wildfire Protection Plan was adopted by the Madera County Board of Supervisors on September 30th 2008. Mariposa County has completion their CWPP and was expected to be adopted by July 2009. The communities of Yosemite West and Foresta both located in Mariposa County have developed their own CWPP and can be seen from their respective websites.

Madera County Community Wildfire Protection Plan:
http://www.madera-county.com/rma/archives/uploads/1221781245_Document_upload_mccwppfinaldocument.pdf

Mariposa County Community Wildfire Protection Plan:
http://www.mariposafiresafe.org/

Yosemite West Homeowners Organization:
http://www.yosemitewest.org/ywcwpp.pdf

Foresta Community Wildfire Protection Plan:
http://www.wildlandfireassociates.com

V. Madera-Mariposa-Merced Unit Fire Plan Assessments

The fire plan process involves analyzing of:

- Ignition Workload Assessment (Level of Service)
- Assets at Risk
- Fuels
- Frequency of Severe Fire Weather

Ignition Workload Assessment (Level of Service)

The legislature has charged the Board of Forestry and CDF with delivering a fire protection system that provides an equal level of protection to lands of similar type (PRC 4130). To do this, Cal Fire needs an analysis process that will define a level of service rating that can be applied to the wildland areas in California to compare to the level of fire protection being provided. The rating is expressed as the percentage of fires that are successfully attacked. Success is defined as those fires that are controlled before unacceptable damage and cost are incurred.

The Level of Service (LOS) rating is a ratio of successful fire suppression efforts to the total fire starts, a method to measure initial attack success and failure rates throughout the Unit and is based on fire sizes. The LOS uses a Geographic Information System (GIS) that overlays a 10 year history of wildfires onto a map and derives the average annual number of fires by size, severity of burning and assets lost. This data provides a LOS rating, in terms of a success and failure calculation.

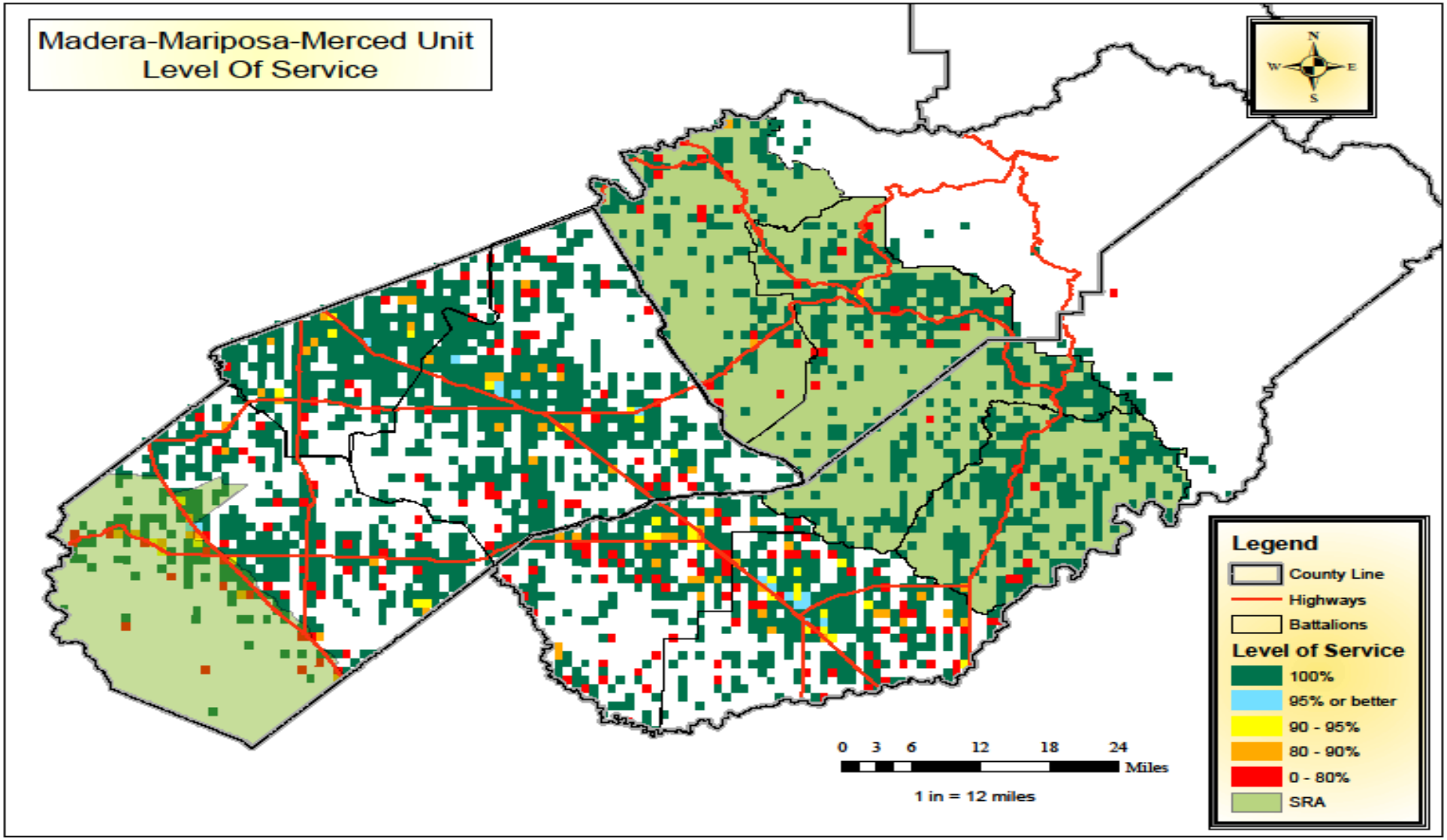

Figure 14 – Madera-Mariposa-Merced Unit Level of Service

Assets at Risk

Assets at risk refers to real and societal values that have the potential to be burned or damaged by wildfire. Sixteen assets have been identified and ranked as to their risk from wildfire. The table below provides a description of the assets evaluated.

Table 6. Assets at Risk

Asset at Risk	Public Issue Category	Location and ranking methodology
Hydroelectric power	Public welfare	1) Watersheds that feed run of the river power plants, ranked based on plant capacity; 2) cells adjacent to reservoir based plants (Low rank); and 3) cells containing canals and flumes (High rank)
Fire-flood watersheds	Public safety Public welfare	Watersheds with a history of problems or proper conditions for future problems (South Coastal Plain, field/stakeholder input), ranked based on affected downstream population
Soil erosion	Environment	Watersheds ranked based on erosion potential
Water storage	Public welfare	Watershed area up to 20 miles upstream from water storage facility, ranked based on water value and dead storage capacity of facility
Water supply	Public health	1) Watershed area up to 20 miles upstream from water supply facility (High rank); 2) grid cells containing domestic water diversions, ranked based on number of connections; and 3) cells containing ditches that contribute to the water supply system (High rank)
Scenic	Public welfare	Four mile viewshed around Scenic Highways and 1/4 mile viewshed around Wild and Scenic Rivers, ranked based on potential impacts to vegetation types (tree versus non-tree types)
Timber	Public welfare	Timberlands ranked based on value/susceptibility to damage
Range	Public welfare	Rangeland ranked based on potential replacement feed cost by region/owner/vegetation type
Air quality	Public health Environment Public welfare	Potential damages to health, materials, vegetation, and visibility; ranking based on vegetation type and air basin
Historic buildings	Public welfare	Historic buildings ranked based on fire susceptibility
Recreation	Public welfare	Unique recreation areas or areas with potential damage to facilities, ranked based on fire susceptibility
Structures	Public safety Public welfare	Ranking based on housing density and fire susceptibility
Non-game wildlife	Environment Public welfare	Critical habitats and species locations based on input from California Department of Fish and Game and other stakeholders
Game wildlife	Public welfare Environment	Critical habitats and species locations based on input from California Department of Fish and Game and other stakeholders
Infrastructure	Public safety Public welfare	Infrastructure for delivery of emergency and other critical services (e.g. repeater sites, transmission lines)
Ecosystem Health	Environment	Ranking based vegetation type/fuel characteristics

Knowledge of the type, magnitude, and location of assets at risk is critical to fire protection planning. Fire protection resources are limited, therefore, these resources should be allocated partly based on the value of the assets at risk. The assets have been ranked, high, medium and low, as to their susceptibility to wildfire. (For more information regarding the evaluation of asset susceptibility, refer to the California Fire Plan.) The areas with the highest combined asset value and fire risk were considered for projects. (See Target Areas in the MMU Fire Plan) The areas with the highest combined asset values and fire risk were considered for projects. See Figures 16 & 17 for the assets at risk maps.

The following table represents the weights (1-5), 1 being low and 5 being high. The weighted number is applied to each asset and use to compute the overall Asset Rank within the Unit.

Asset	Weight	Asset	Weight	Asset	Weight
Infrastructure	3	Timber	3	Storage (Water)	3
Water Supply	4	Range	1	Fire-Flood	2
Historic	2	Soil	1	Air	4
Scenic	2	Hydroelectric	3	Recreation	2
Housing	5	Non-Game Wildlife	1	Game (Wildlife)	1
Ecosystem	3				

Table 7 - Weighted numbers used for Computation of Assets at Risk.

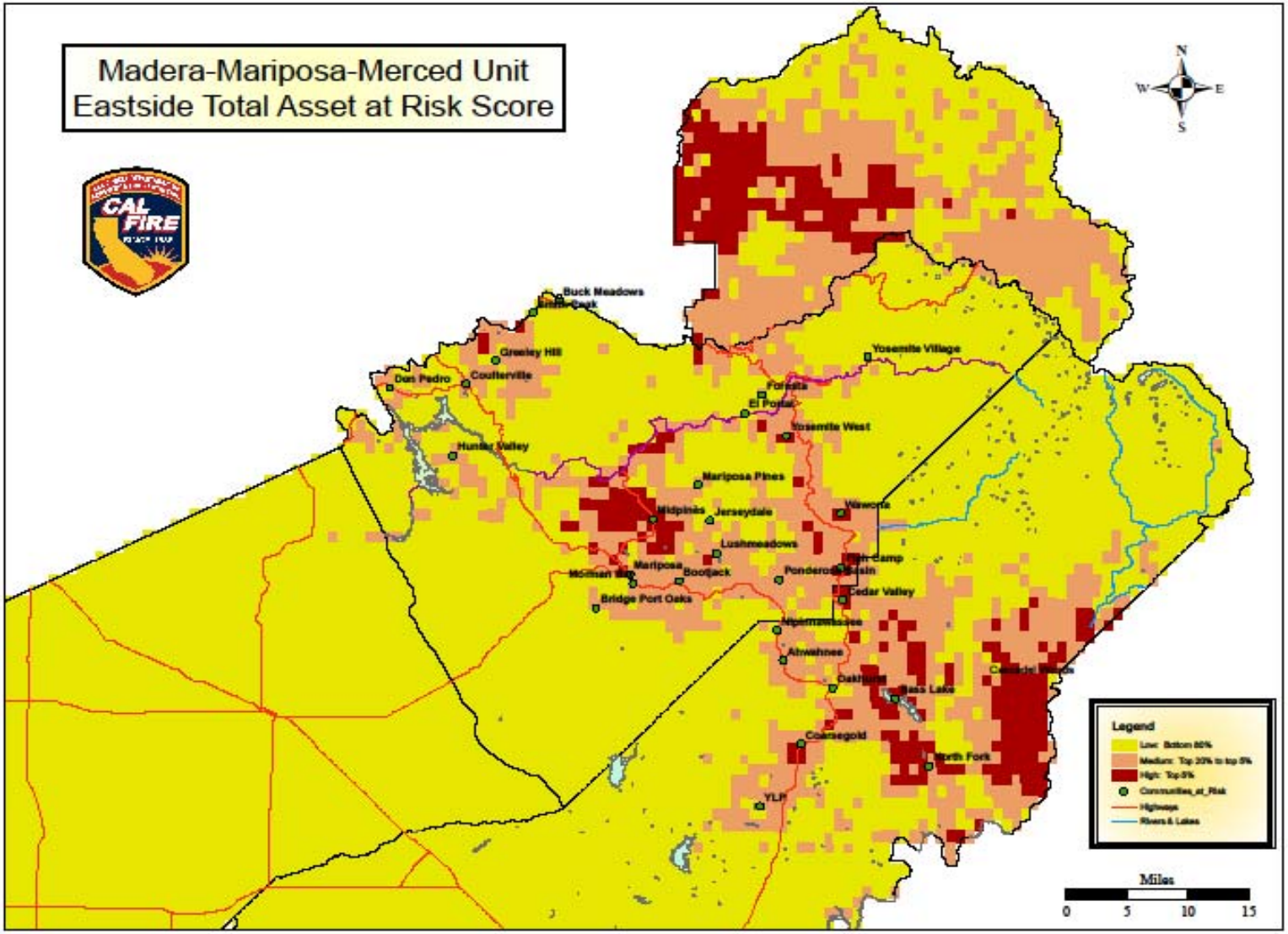

Figure 15 – Madera-Mariposa-Merced Unit Eastside Total Asset at Risk Score

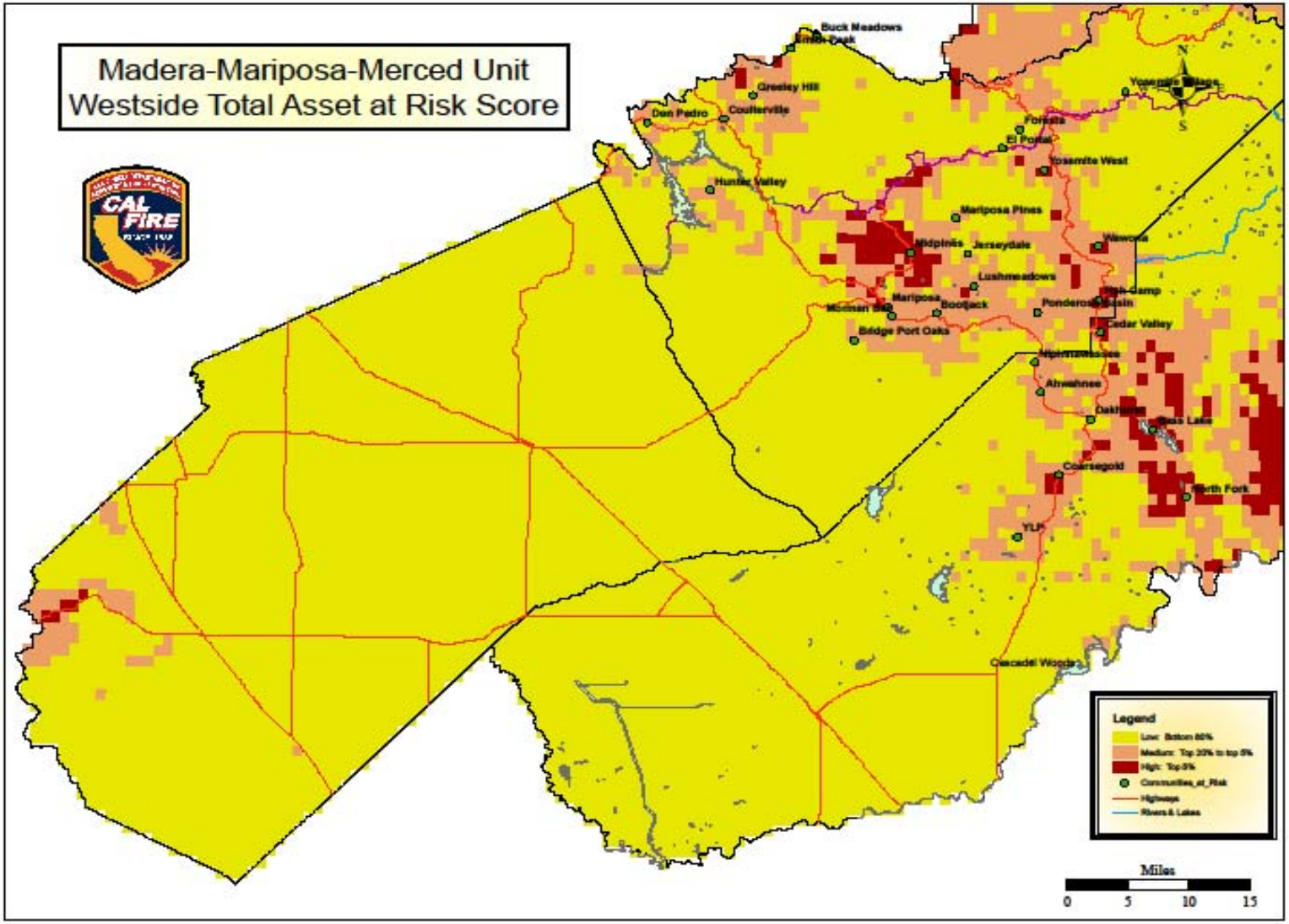

Figure 16 – Madera-Mariposa-Merced Unit Westside Total Asset at Risk Score

FUELS

Fuel, in the context of wildland fire, refers to all combustible material available to burn on an area of land. Grass, brush and timber are the most common fuels found in our mountain ecosystem. Each fuel has its own burning characteristics based on several inherent factors. These factors include its moisture content, volume, arrangement and the plant's genetic make up. All of these contribute to how a fire spreads, its intensity, and ultimately, its threat to assets.

Fuel loading is measured in tons per acre. Grass is considered a light fuel with approximately ¾ tons per acre. On the other end of the spectrum, thick brush, a heavy fuel, can have a volume of over 21 tons per acre. The intensity of the fire is directly related to fuel loading. Grass burns rapidly with a short period of intense, maximum heat output; brush on the other hand has a long sustained high heat output making it more difficult to control. Therefore, it is necessary to identify areas containing the more hazardous fuels in order to better manage the hazardous conditions by high fuel loads.

HAZARDOUS FUELS ASSESSMENT

Arrangement is critical in wildland fire behavior for it dictates how a fire spreads. Uncompacted fuels, such as grass, spread fire rapidly since more of its surface can be heated at one time. Compacted fuels such as pine litter burn slower because heat and air only reaches the top of the fuel. Vertical arrangement refers to a fuel's ability to spread upward into treetops. These are called *ladder* fuels and are influential factors on fire spread. The ignition of ladder fuels allows the fire to spread from the ground into the tree tops. *Crown* or *canopy* refers to the tops of trees and is very important in stands of burning timber. A fire once introduced by ladder fuels to the tops of dry conifers can spread as rapidly as a grass fire from treetop to treetop.

In an attempt to predict fire spread, the U.S. Forest Service has developed 13 fuel models that categorize fuels by their burn characteristics (Table 5). Four groups are used to classify fuels: grass, brush, timber and logging slash. The fuel model characteristics have been utilized to determine planning belts in the unit. The following is a brief description of the fuel models commonly found in CDF's wildland protection area of Madera, Mariposa and Merced Counties:[xv]

Model 1: This model is used for dry grass with an average depth of 1 foot and a fuel loading of .75 tons per acre. Fires in fuel model 1 burn rapidly with flame length averages of 4 feet. This is probably the most common model in our area and it reflects nearly all of the grasslands found in the foothills below an elevation of approximately 1000 feet, including the west side of Merced County.

Model 2: Like fuel model 1, fires in fuel model 2 spreads primarily in dry grass but with shrubs, pine or oak stands covering between one third and two thirds of the area. The material from these plants contributes to the fire intensity. Four tons of fuel is found per acre and the fuel bed depth is 1 foot. Fires in fuel model 2 burn slower but more intensely than fuel model 1. Indian Lakes in Madera County, Highway 140 just north of Catheys Valley and the top of Pacheco Pass are examples of this fuel type.

Model 4: This is a brush model and is characterized by stands of mature brush, 6 feet or more in height with more then 16 tons of fuel per acre. Fires in this fuel model burn intensely (19 foot flame lengths) and spread relatively quickly. This fuel type is found in some areas of the Merced River Canyon and in the Coulterville-Greely Hill area.

Model 5: Litter cast by shrubs in the understory carries fire in this brush model. The fires do not burn intensely (4 foot flame lengths), nor rapidly since the young shrubs are green and the foliage does not burn. This fuel type is common at about the 2000 to 3000 feet elevation range of the Sierra, especially in the early months of summer while moisture is abundant.

Model 6: Unlike model 5, fires in this model will burn in the foliage of standing vegetation, but only when wind speeds are greater than 8 mph. Fires burn with an average flame length of 6 feet and spread at a rate of 2,112 feet/hour. Interior live oak, young chamise and manzanita are all associated with this fuel model. In many instances a fuel model 5 will evolve into this model by the latter part of summer.

Model 8: This model reflects slow burning, low intensity fires burning in the leaf or needle litter under a conifer or hardwood canopy. These fires do not pose a threat unless low fuel moisture or high winds allow the fire to spread into the foliage. This model is found locally in areas treated for fuel reduction. It represents the ideal fire behavior to maintain low fuel buildups.

Model 9: Fires in this model also burn in needle or leaf fall under a conifer or hardwood canopy, but at a faster rate than fuel model 8 and more intensely. Concentrations of heavier dead material add to the possibility of the fire spreading to the crowns of trees. This model is found in very limited areas under timber stands which have been treated for fuel reduction, or have seen low intensity fires over the last decade.

Model 10: Fires in this timber model burn with greater intensity (4.8 feet flame lengths) due to the quantities of dead and down fuel accumulations in the form of large limbs and fallen trees (12 tons/acre) than the other timber models. Fire burns at a moderate rate but “torching” of individual trees is common and can cause embers to start fires ahead of the main fire. Crown fires are also a threat in this fuel type. In dry conditions, or with high winds, fires in fuel model 10 can be very difficult to control. This model is found in many areas of Madera and Mariposa Counties where stands of ponderosa pines or other conifers are present.

Table 8 - National Wildfire Coordinating Group Fuel Models

Fuel Model #	Fuel bed depth (feet)	Tons per acre (live)	Tons per Acre (dead)	Flame Length (feet)	Spread Rate (feet/hour)	Comments
1	1	0	.74	4	5195	Dry grass. Common in areas under 1000' elevation.
2	1	.5	4	6	2331	Dry grass with 1/3 to 2/3 brush or tree canopy. Very common above 1000'.
3	2.5	2.5	3.01	12	6926	Grass model, not found locally.
4	6	5.01	16.03	19	4995	Thick brush with heavy dead component.
5	2	2	3.5	4	1199	Young or green brush with fire in the litter only.
6	2.5	2.5	6	6	2131	Mature or dry brush with foliage that will burn when exposed to wind.
7	2.5	2.5	4.87	5	1332	Brush model, not found locally.
8	.2	.2	5	1	107	Timber or hardwood with fire burning in light litter underneath.
9	.2	.2	3.48	2.6	499	Timber with fire in slightly heavier litter then model 8
10	1	1	12.02	4.8	526	Timber with heavy dead material underneath.
11	1	1	11.52	3.5	400	Light logging slash from a partial thinning operation
12	2.3	2.3	34.57	8	866	Moderate logging slash
13	3	3	58.1	10.5	899	Heavy logging slash

Table 9 - National Wildfire Coordination Group Fuel Models

The local distribution of the fuel models is illustrated in Table 5. It can be seen that the density of combustible material increases with elevation. Models 1 and 2 (grass) are found at lower elevations, progressing into brush and from brush to timber at the National Forest boundary. Local conditions also affect distribution. North facing slopes tend to get slightly more rainfall and less sun, thus heavier vegetation grows on the north side of the mountain. Soil conditions can also preclude the growth of heavy fuels allowing only hardier species such as chamise to sprout. MMU has a wide variety of fuel types requiring a variety of fuel management prescriptions.

The first step in defining hazardous fuels is development of a vegetation coverage for MMU. Vegetation coverages are described as planning belts as described earlier. The vegetation within the planning belts is categorized into the Fire Behavior Prediction System (FPBS) fuel model coverage as shown in table 5.1. After vegetation coverages were identified, the past fire history for the MMU unit was overlain on the vegetation coverages. Through analysis, surface fuel characteristics that result from past fires were factored into the creation of a final map, which displays a more accurate account of vegetation coverages, and thus, FPBS fuel characteristics.

The final phases of determining fuel hazard ratings for the MMU involves the combining of crown fuel characteristics and surface fuel characteristics. The method ascribes additional ladder and crown fuel indices to surface fuels on a given area. If the vegetation data provide sufficient structural detail, the method imputes these additional indices from those data. If the vegetation data lack structural detail, the method imputes indices based on the fuel model. In MMU the majority of indices were based on the FPBS fuel models.

In areas where applicable, the ladder and crown fuel indices convey the relative abundance of these types of fuels. The indices take values ranging from 0 to 2, with 0 indicating “absent”, 1 representing “present but spatially limited”, and 2 indicating “widespread”. These indices indicate the probability that torching and crown fire would occur if the stand were subjected to a wildfire under adverse environmental conditions.

The assessment method calculates fire behavior to be expected for unique combinations of topography and fuels under a given weather condition. BEHAVE (Andrews 1986) provides estimates of fire behavior under severe fire weather conditions for FPBS fuel models located on six slope classes. Each fuel model combined with each slope class receives a surface hazard rank.

The total hazard rating includes not only hazard posed by surface fire, but also hazard by involvement of canopy fuels. The hazard ranking method includes this additional hazard component by adjusting the surface hazard rank according to the value of the ladder and crown fuel indices. Specifically, the surface hazard rank increases a maximum of one class in all situations where the sum of the ladder and crown fuel indices is greater than or equal to two.

The potential fire behavior drives the hazard ranking. A rank is attributed to each Q81st in SRA within the unit. The ranking method portrays hazard ratings as moderate, high or very high. The final map displaying the fuel hazard ranks for Cal Fire’s Direct Protection Area (DPA) in MMU is used as another factor for determining prefire management target areas, fire size potentials and information for stakeholders with interests in ecosystem management, fuels management, and prefire management.

Knowledge of fire behavior in a given fuel type is essential for designing a defense plan against wildfire. Fires in grass burn rapidly but can be stopped by a roadway or plowed fire breaks. Fires in brush often burn with an intensity that prevents fire crews from safely applying water to the flame front. Timber fires can ignite new fires (called spot fires) miles ahead of the main blaze, making control efforts nearly useless. Only wide scale prefire management programs can prevent a potential wildfire catastrophe.

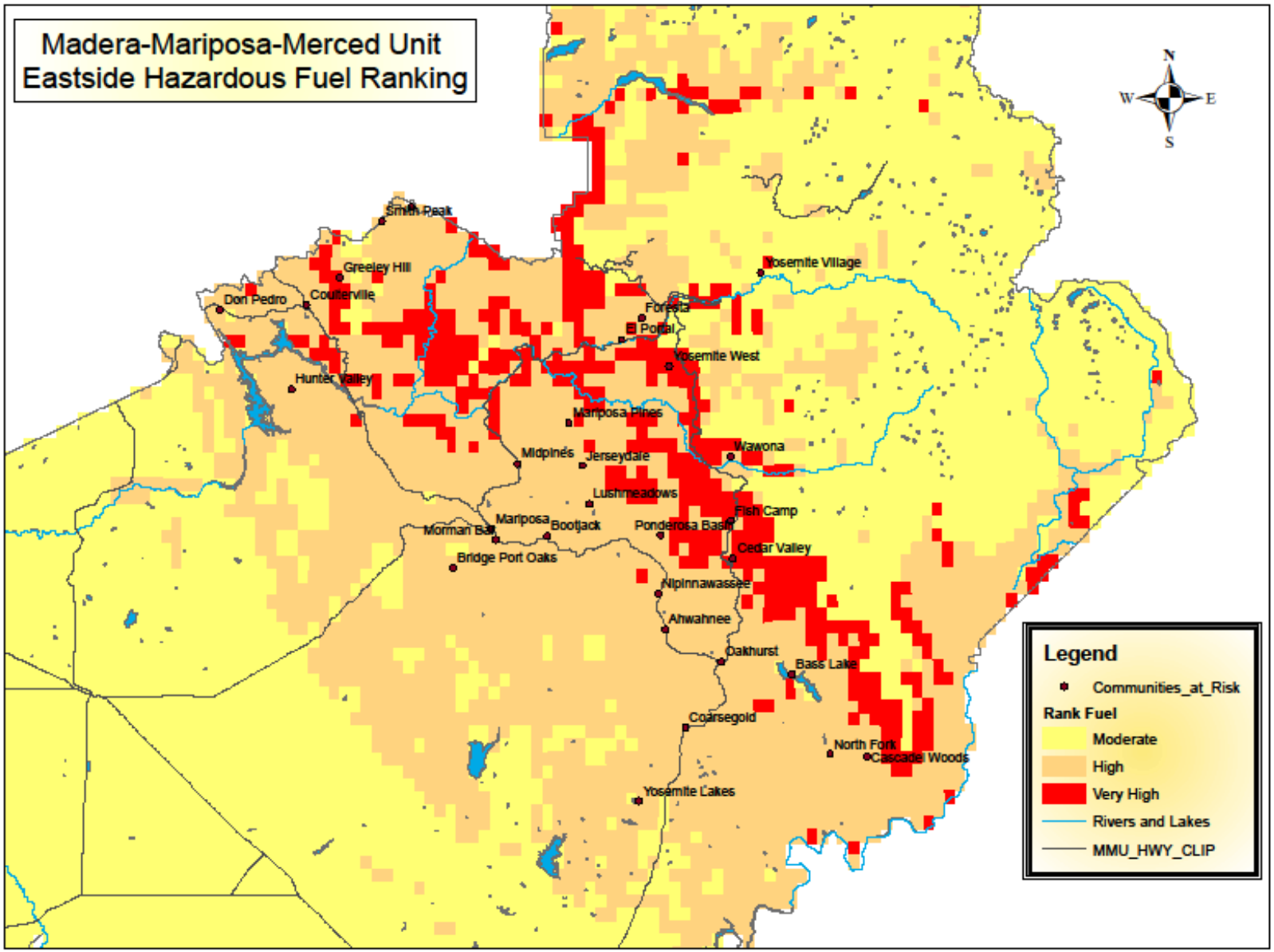

Figure 17 – Madera-Mariposa-Merced Unit Eastside Hazardous Fuel Ranking

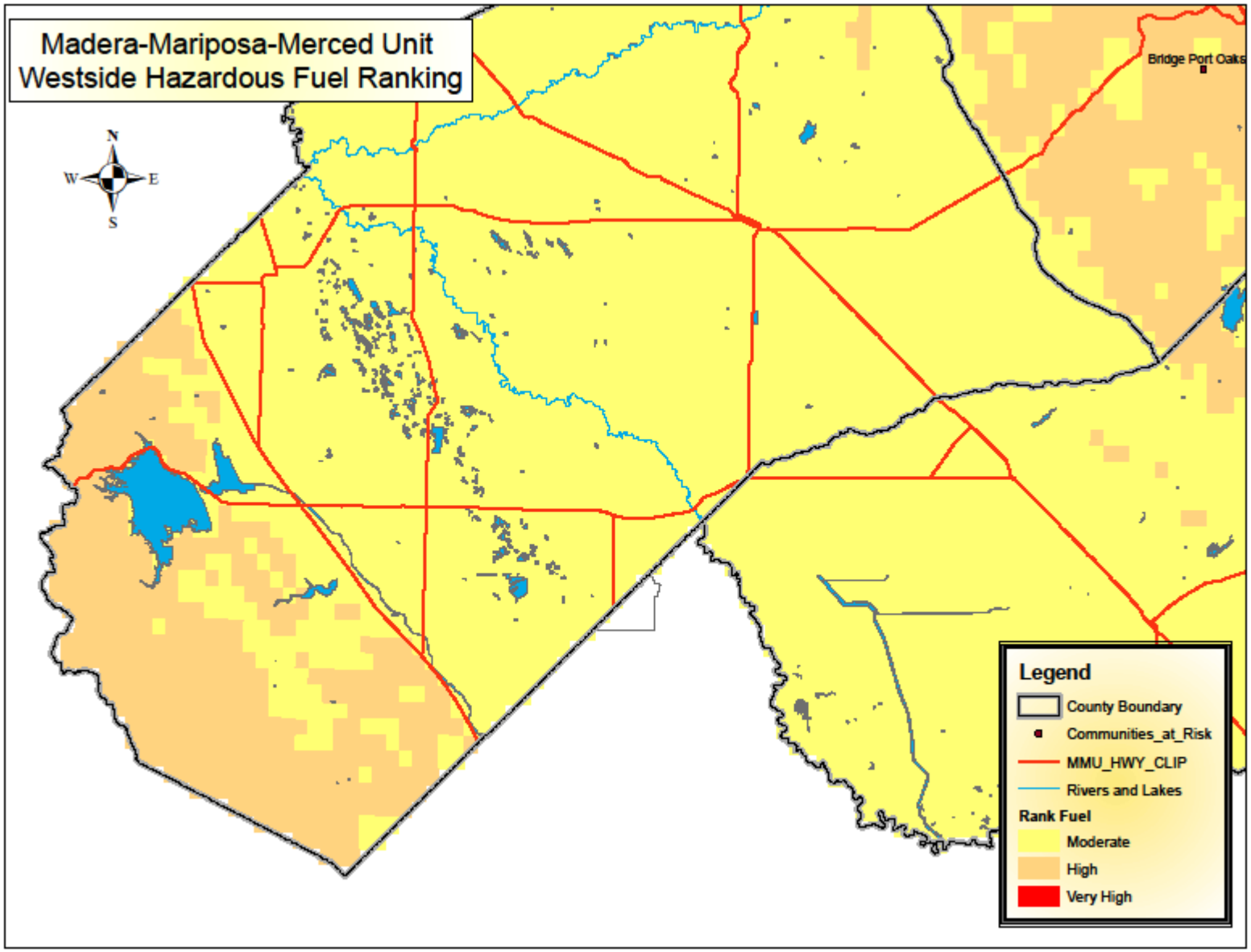

Figure 18 – Madera-Mariposa-Merced Unit Westside Hazardous Fuel Ranking

Fire Weather History

Wildfire behavior is influenced by three factors known as the fire environment. The fire environment involves environmental factors: fuel, weather and topography. Of these factors, weather is the most influential factor on fire behavior. Identifying patterns and locations of extreme wildfire behavior provides yet another tool for prefire management planners to use when attempting to reduce the costs and losses of wildfire.

In MMU the severe fire weather assessment has been calculated at the Q81st level through the collection of data from weather stations throughout the ranger unit. The average number of days that each Q81st experiences severe fire weather has been calculated and displayed on a GIS map. This map is utilized in the planning process by overlaying the map on fire history maps, fire ignition maps and level of service maps. Fire weather history has been incorporated into the level of service ratings for MMU which provides a more accurate depiction of the wildfire protection level of service within the unit during severe weather conditions.

Severe fire weather is defined using the Fire Weather Index (FWI) developed by the USDA Forest Service Riverside Fire Lab. The FWI combines air temperature, relative humidity, and wind speed into a single score. The FWI gives wild land fire managers an index that indicates relative changes in fire behavior due to weather (fuel and topography conditions are not included in the calculation). Severe fire weather occurs when the FWI , calculated from the hourly weather measurement, exceeds a predetermined threshold. The FWI threshold is derived from the average bad fire weather of (approximately) 95° F, 20% relative humidity, and a 7 mph eye level wind speed. Frequency of severe fire weather is defined as the percent of time during the budgeted fire season that the weather station records severe fire weather. Individual weather stations are ranked as low, medium, or high frequency of severe fire weather. This ranking can be applied to the area on the ground represented by the weather station. See Figure 20 for the severe fire weather map.

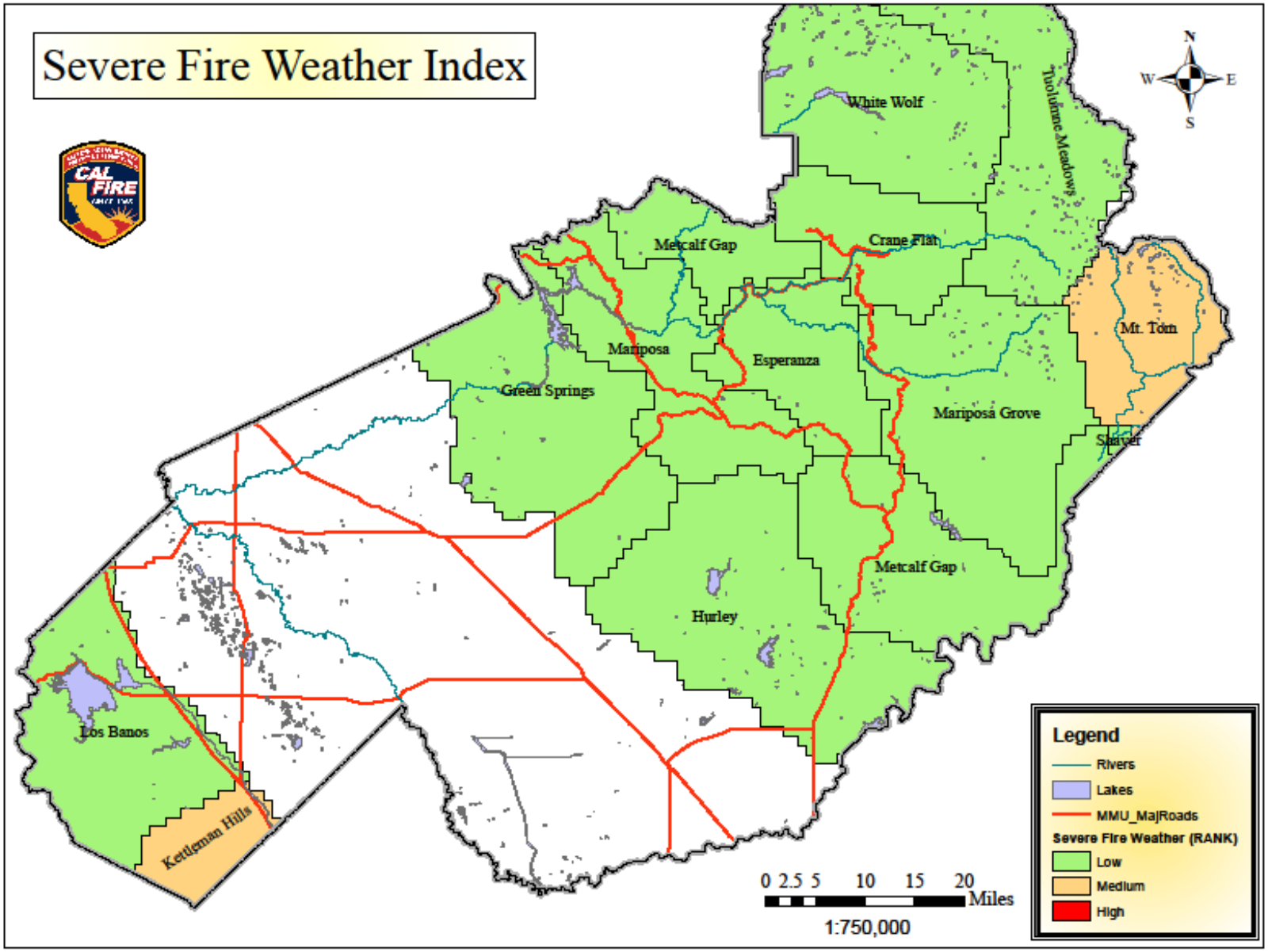

Figure 19 – Madera-Mariposa-Merced Unit Severe Fire Weather Index

WAFL Calculator

Though it's not an assessment by itself, the WAFL Calculator (part of the Fire Plan Tools) is an important tool used to aggregate results from the four assessments: Weather, Assets at Risk, Fuels, and Level of Service. The WAFL Calculator combines the rankings for each of the four assessments into a single ranking. This allows Prefire Engineer personnel to get an overall view to determine potential areas for prefire projects. Weighting scenarios can be applied that emphasize one assessment over the others to allow fine-tuning of results. There are two operating modes for the WAFL Calculator: *Total Score* summarizes all ranks (low, medium, and high) to develop overall ranking categories. *Number of High Ranks* develops similar ranking categories based only on assets ranked at *high* risk.

Weather, Assets at Risk, Fuels, and Level of Service.

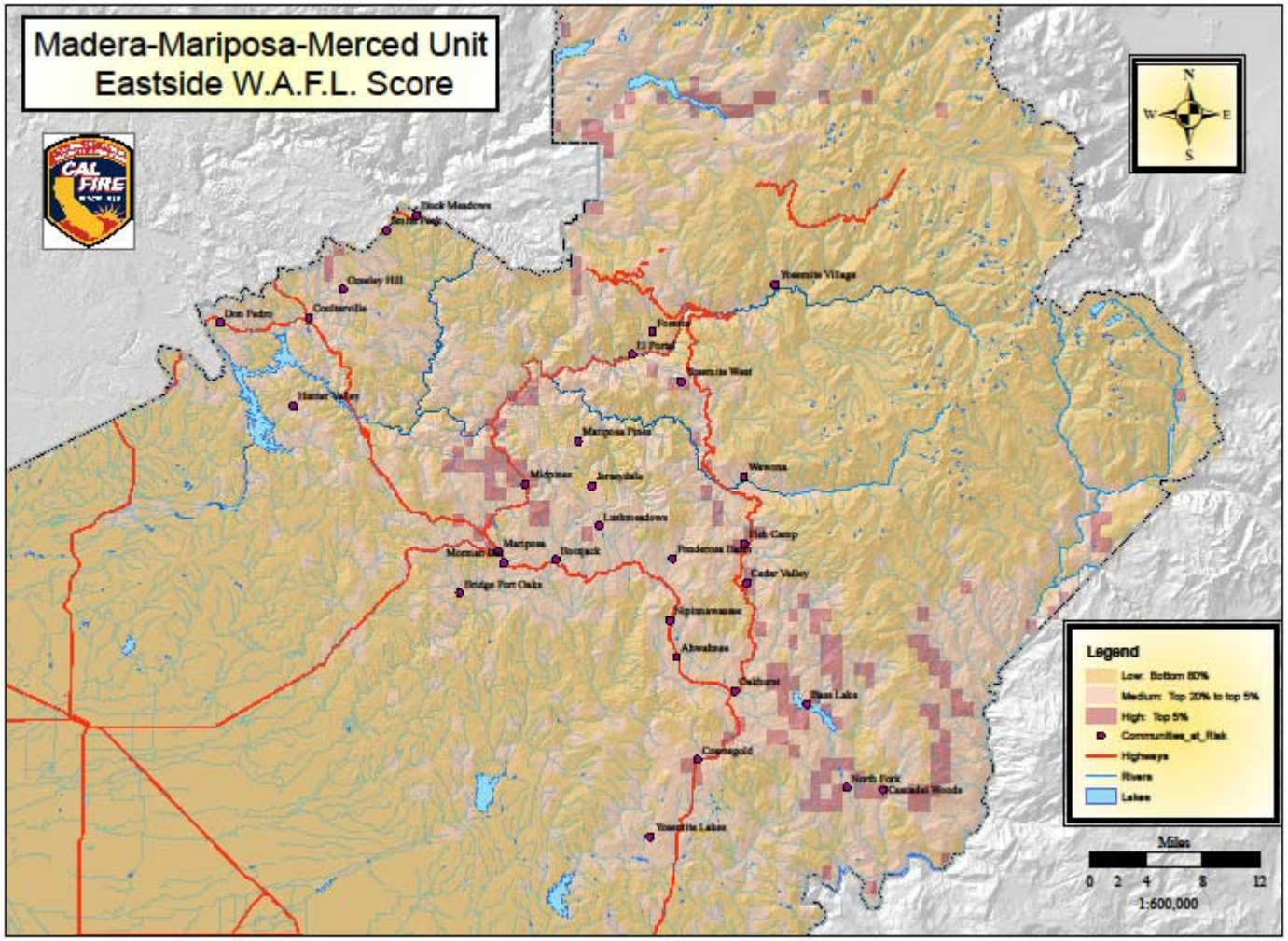

Figure 20 – Madera-Mariposa-Merced Unit Eastside W.A.F.L. Score

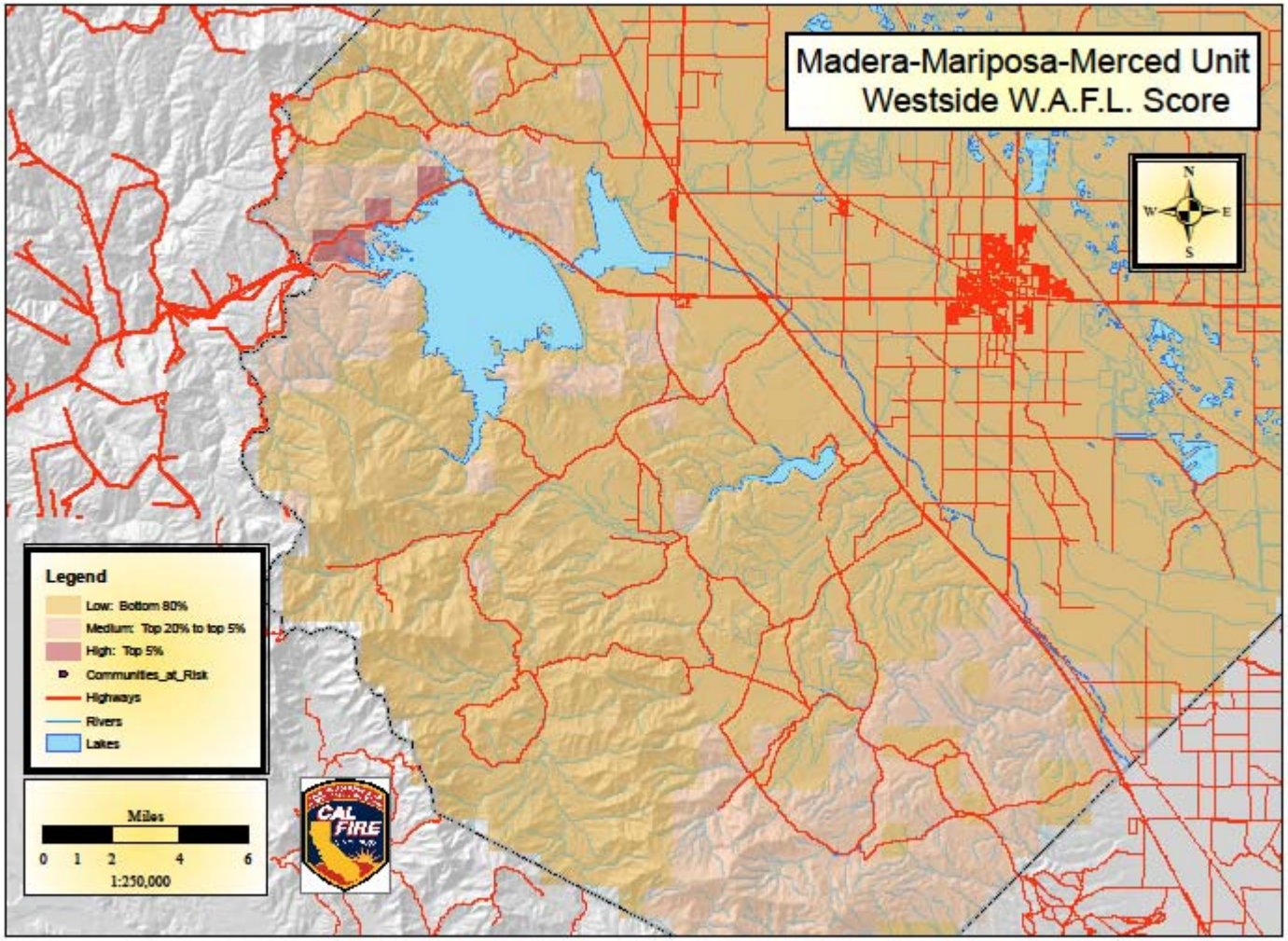

Figure 21 – Madera-Mariposa-Merced Unit Westside W.A.F.L. Score

VI. Ignition Management Plan 2008

Fire Prevention Bureau - Battalion Chief Don Stein

The graphs displayed in this section of the Madera-Mariposa-Merced Unit Management Plan are to be utilized as tools to reduce future ignitions where prevention activities may be effective. Many charts and tables are presented to illustrate fire ignitions by causes for the years of 2007, 2008 and over the last ten years.

Wild land fire ignition statistics were compiled for the entire 2007 and 2008 year. The MMU Unit experienced 215 fires in 2007 and 176 fires in 2008 within its State Responsibility Area (SRA).

The seven largest fires in the MMU during the 2008 Fire Season were:

1. **Telegraph Fire** at 34,091 acres. Thirty homes were lost.
   Cost to suppress the fire $35,000,000 - $40,000,000.
   Cause is Miscellaneous (target shooting).

2. **Oliver Fire** at 2,789 acres.
   Cost to suppress the fire is estimated to be $12,457,889.
   Caused by Lightning.

3. **41 Fire** at 3300 acres.
   The cause is Undetermined.

4. **Highway 140 Fire** at 958 acres.
   Caused by Lightning.

5. **Romero Fire** at 766 acres.
   Cause is Vehicle.

6. **Cottonwood Fire** at 179 acres.
   Cause is Vehicle.

7. **Millerton Fire** at 175 acres.
   Cause is Undetermined.

Cause Analysis Summary

The subsequent description of fire ignition causes is a result of fire reporting information within MMU on SRA. This information is essential for determining the types of fire prevention activities may be emphasized in areas of the unit.

Undetermined: Undetermined fires are those where no specific causal factor was discovered after investigation. In 2007 and again in 2008 this category involves the highest percentage of use by fire personnel. There were 65 fires in 2007 or 30% of fires in SRA that had causes that were unable to be identified. There were 55 fires in 2008 or 31% of fires in SRA that had causes that were unable to be identified.

Miscellaneous: Miscellaneous fire causes are those fires started by events or activities that cannot be logically placed in any other cause classes. This category was second highest in 2008 with 26 fires or 15% of total SRA fires.

Equipment Use: Equipment use continues to be a leading cause of ignitions. Over the last ten years there were 372 fires (24%) caused by equipment use. The majority of equipment use caused fires are from lawn mowers cutting dry grass. Fires resulted from sparks when a mower blade struck a rock. Other fires resulted from both faulty exhaust systems and exhaust contact with vegetation.

Playing with Fire: Playing with fire is a fire caused by children or adults with diminished mental capacity and do not understand the consequences of their actions. Involved children are counseled following Juvenile Fire Setters / Arson Prevention Program guidelines.
In 2008 the number of fires caused by children increased from 11 to 18 fires.

Debris Burning: Debris burning ignitions had little change from 17 in 2007 to 18 in 2008. Debris burning escapes usually results from inadequate clearance, weather conditions, a lack of attendance or a combination of those factors.

Arson: Arson historically may experience a high number of arson caused fires and the following years have minimal arson activity due to prevention efforts including arrest and conviction of arsonists. SRA arson fires increased from 9 in 2007 to 14 in 2008. The 2008 arson fires (7%) running near the ten year average at about 6%.

Lightning: Lightning caused fire are usually contained while small, but some that have severe weather and access problems can grow quickly into large fires. The number of lightning fires reported and the actual amount of fires can be under reported due assigning incident numbers to several lightning fires.

Campfires: Campfire caused fires were not a major cause of vegetation fires with one fire in 2007 and 0 in 2008. Over the last ten years there has been 18 campfire caused fires.

Vehicle: Vehicle caused fires are the result of the vehicle burning and spreading to the wild land or fires caused by the operation or some mechanical failure of vehicles. These fires usually start on the roads edge.
Vehicle caused fires could be responsible for many of the undetermined causes since ignitions dealing with vehicle exhaust starts are difficult to determine

Smoking: Ignitions resulting from smoking remained low.

Electric Power: Powerline caused fires may be started by vegetation touching the powerline, fallen wires, animals or other objects coming in contact with the wires or mechanical failure of transmission connectors and equipment. Utility companies clear the vegetation near the powerlines in accordance with Public Resource Code 4293-4296.
Fires resulting from electrical sources amounted to 5 fires in 2007 and 2 in 2008.

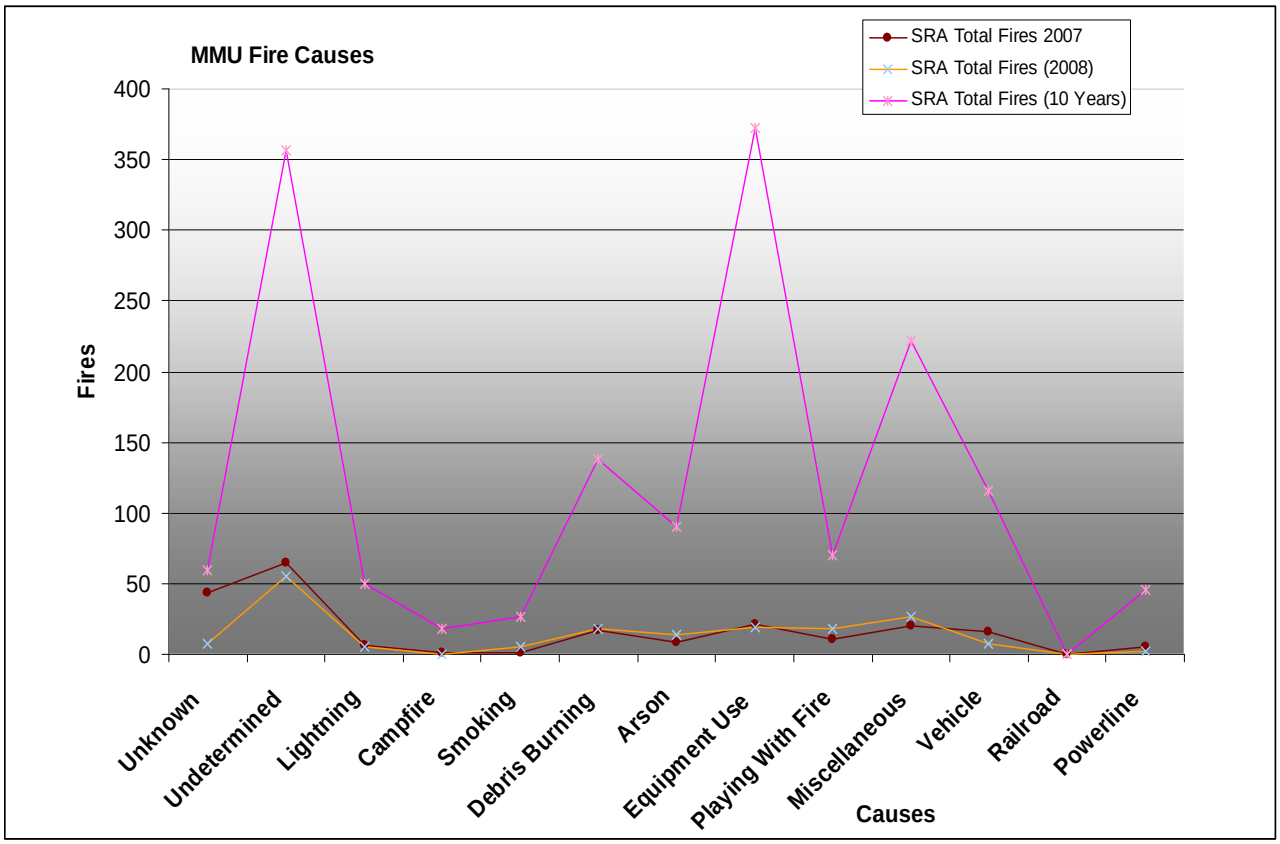

Figure 22 - Madera-Mariposa-Merced Unit Fire Causes

Cause	Battalion 17 2007 SRA	Battalion 4211 (2007)	Battalion 4212 (2007)	Battalion 4214 (2007)	Battalion 4215 (2007)	SRA Total Fires 2007
Unknown	5	6	10	13	9	43
Undetermined	13	6	6	9	31	65
Lightning	0	1	3	0	2	6
Campfire	0	0	0	0	1	1
Smoking	0	0	0	0	1	1
Debris Burning	2	4	5	5	1	17
Arson	1	1	4	2	1	9
Equipment Use	3	1	1	5	11	21
Playing With Fire	0	0	0	2	9	11
Miscellaneous	0	0	4	0	16	20
Vehicle	3	3	0	1	9	16
Railroad	0	0	0	0	0	0
Power line	1	1	0	1	2	5
Total	28	23	33	38	93	215

Table 10 - Fires Causes for Madera –Mariposa-Merced State Responsibility Area (SRA) for 2007

Cause	Battalion 4211 (2008)	Battalion 4212 (2008)	Battalion 4214 (2008)	Battalion 4215 (2008)	Battalion 17 (2008 SRA)	SRA Total Fires (2008)
Unknown	0	0	2	4	1	7
Undetermined	4	4	7	17	23	55
Lightning	1	1	3	0	0	5
Campfire	0	0	0	0	0	0
Smoking	0	1	1	2	1	5
Debris Burning	4	8	3	3	0	18
Arson	0	6	3	5	0	14
Equipment Use	6	1	4	6	2	19
Playing With Fire	2	1	2	12	1	18
Miscellaneous	4	8	3	6	5	26
Vehicle	4	1	0	2	0	7
Railroad	0	0	0	0	0	0
Power line	1	1	0	0	0	2
Total	26	32	28	57	33	176

Table 11 - Fires Causes for Madera –Mariposa-Merced Unit State Responsibility Area (SRA) for 2008

Cause	Battalion 4211 (10 Year)	Battalion 4212 (10 Year)	Battalion 4214 (10 Year)	Battalion 4215 (10 Year)	Battalion 17 SRA (10 Year)	SRA Total Fires (10 Years)
Unknown	7	12	16	18	6	59
Undetermined	48	58	57	58	136	357
Lightning	10	19	12	5	4	50
Campfire	2	5	6	2	3	18
Smoking	2	4	8	4	9	27
Debris Burning	27	67	31	8	5	138
Arson	13	27	24	13	13	90
Equipment Use	80	72	66	45	109	372
Playing With Fire	11	13	21	21	4	70
Miscellaneous	28	37	46	68	43	222
Vehicle	20	11	12	24	49	116
Railroad	0	0	0	0	0	0
Power line	10	9	9	2	16	46
Total	258	334	308	268	397	1565

Table 12 - Fires Causes for Madera –Mariposa-Merced Unit State Responsibility Area for 10 Years

Battalion One Ignition Causes

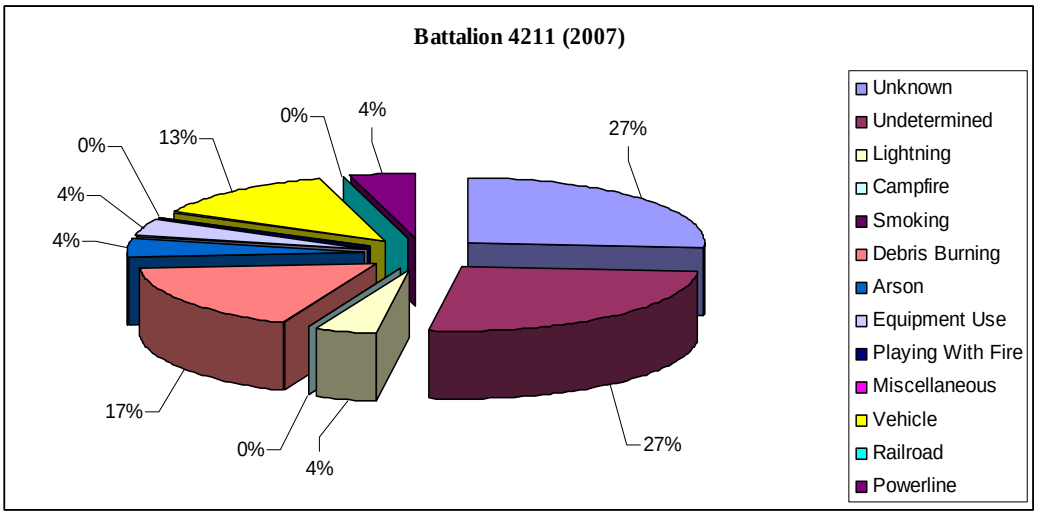

Figure 23 - Battalion 1 Ignitions Cause for 2007

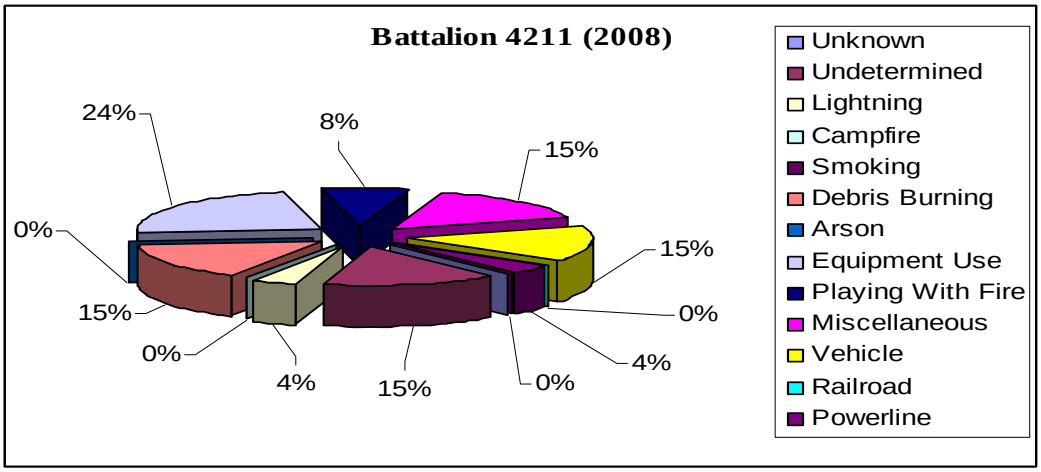

Figure 24 - Battalion 1 Ignitions Cause for 2008

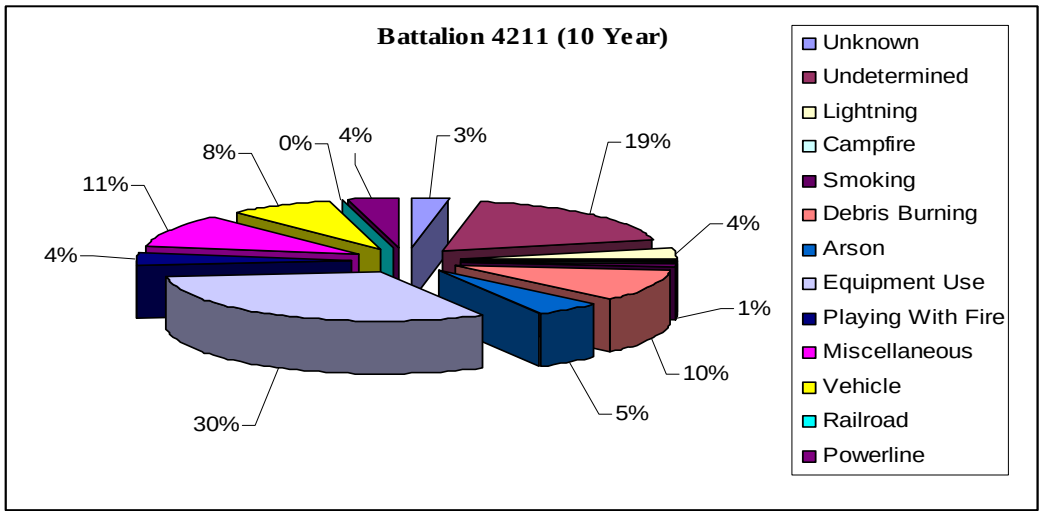

Figure 25- Battalion 1 Ignitions Cause for last 10 years

Battalion Two Ignition Causes

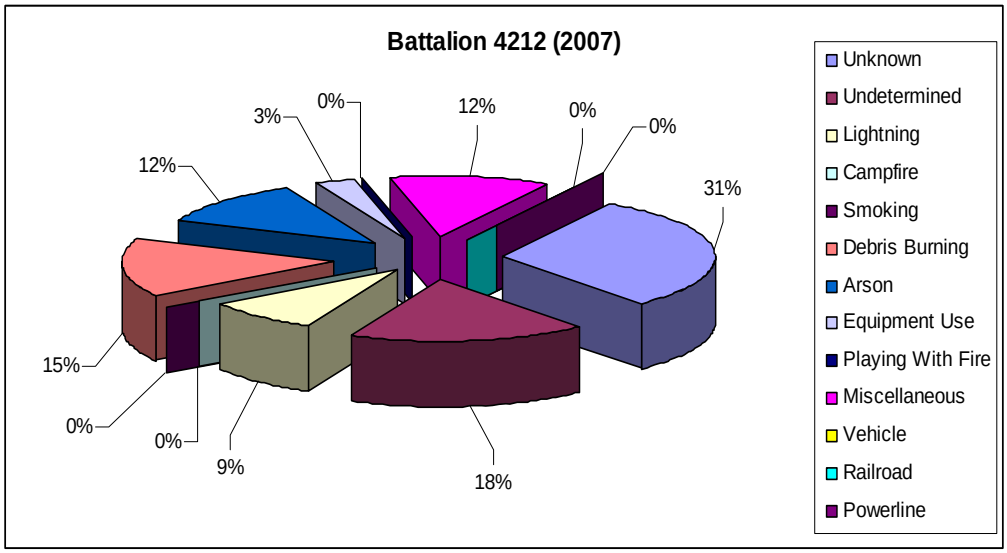

Figure 26 - Battalion 2 Ignitions Cause for 2007

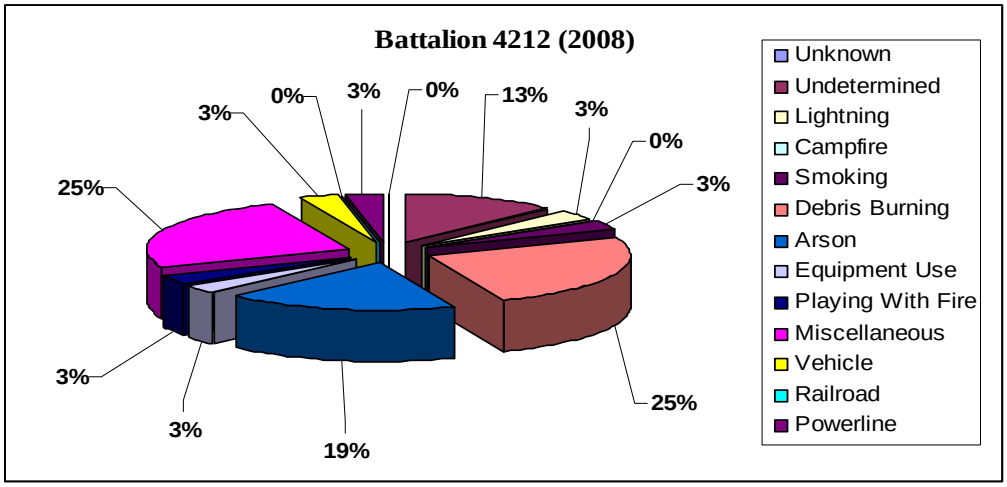

Figure 27 - Battalion 2 Ignitions Cause for 2008

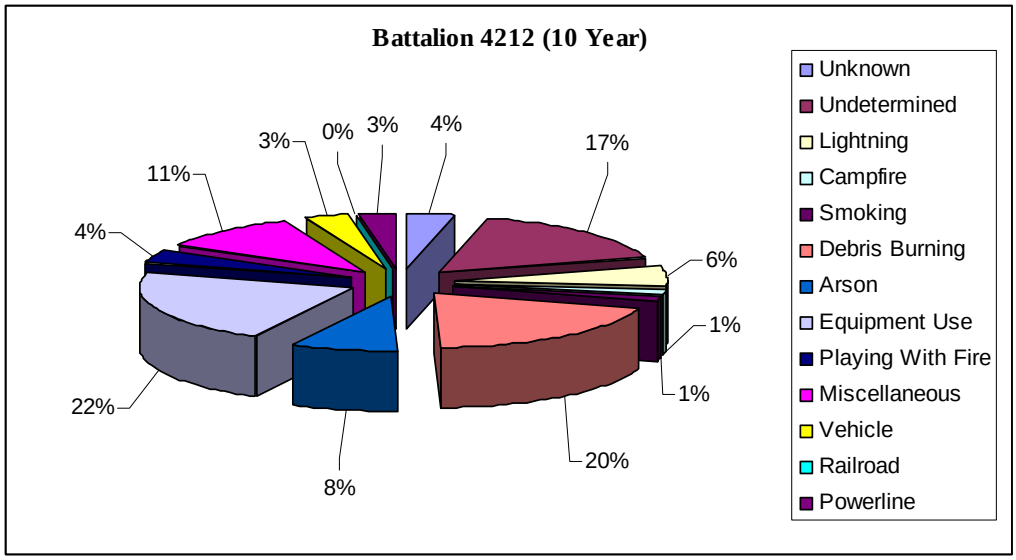

Figure 28- Battalion 2 Ignitions Cause for last 10 years

Battalion Four Ignition Causes

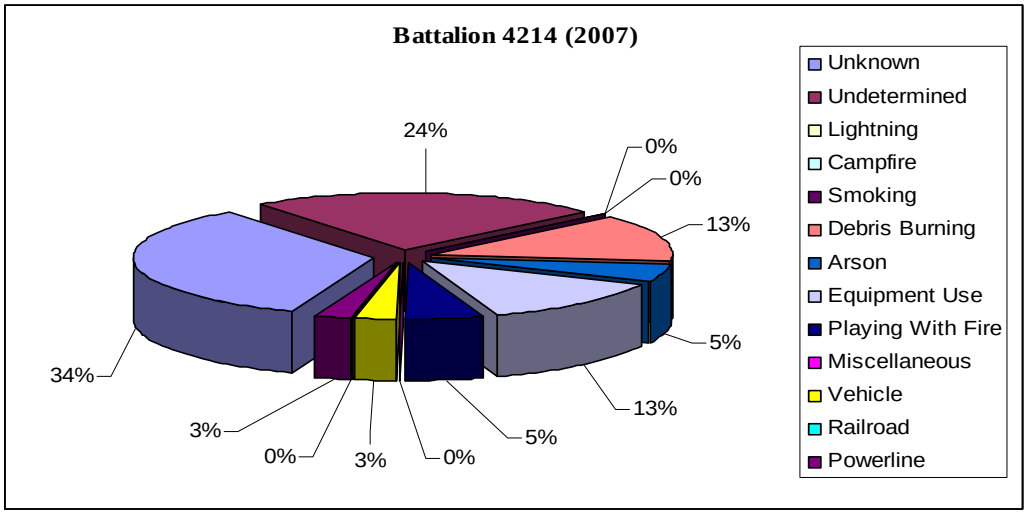

Figure 29 - Battalion 14 Ignitions Cause for 2007

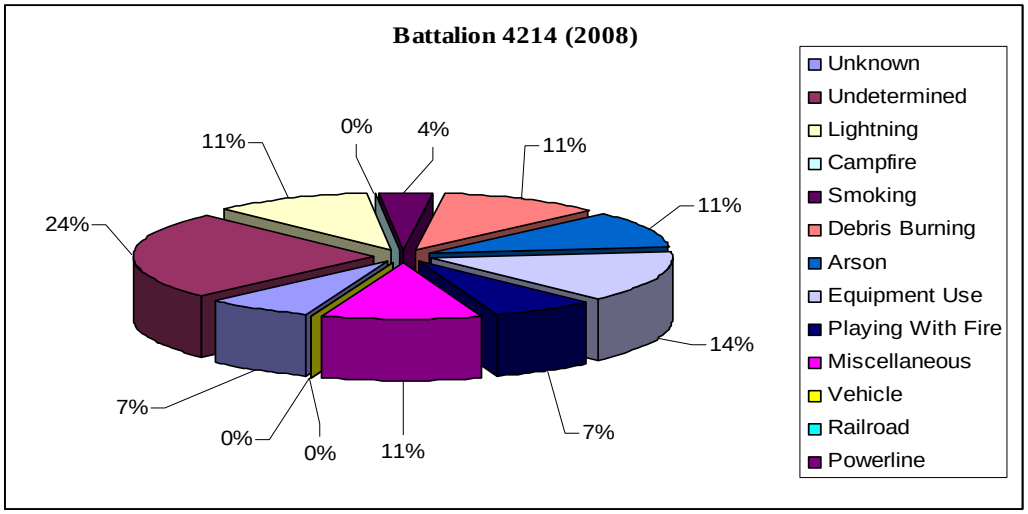

Figure 30 - Battalion 14 Ignitions Cause for 2008

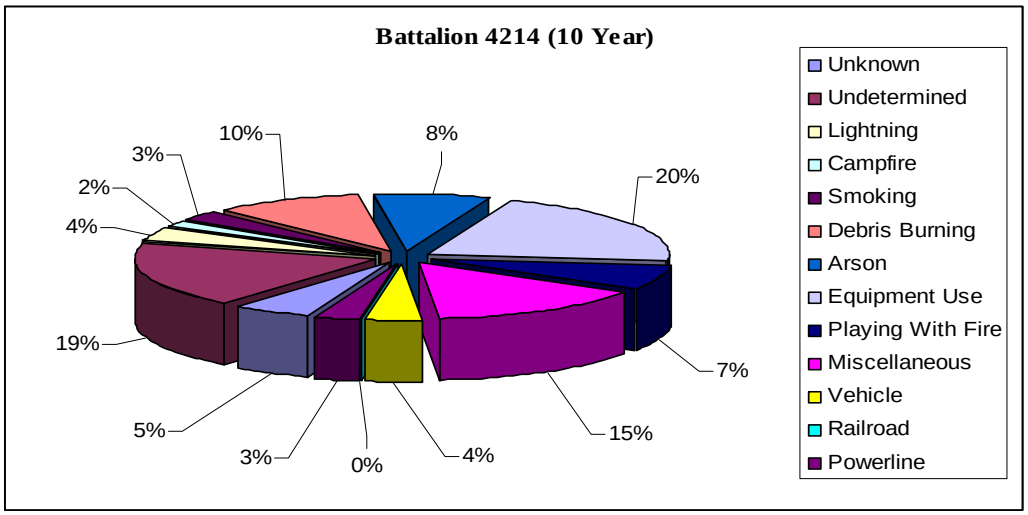

Figure 31- Battalion 14 Ignitions Cause for last 10 years

Battalion Five Ignition Causes

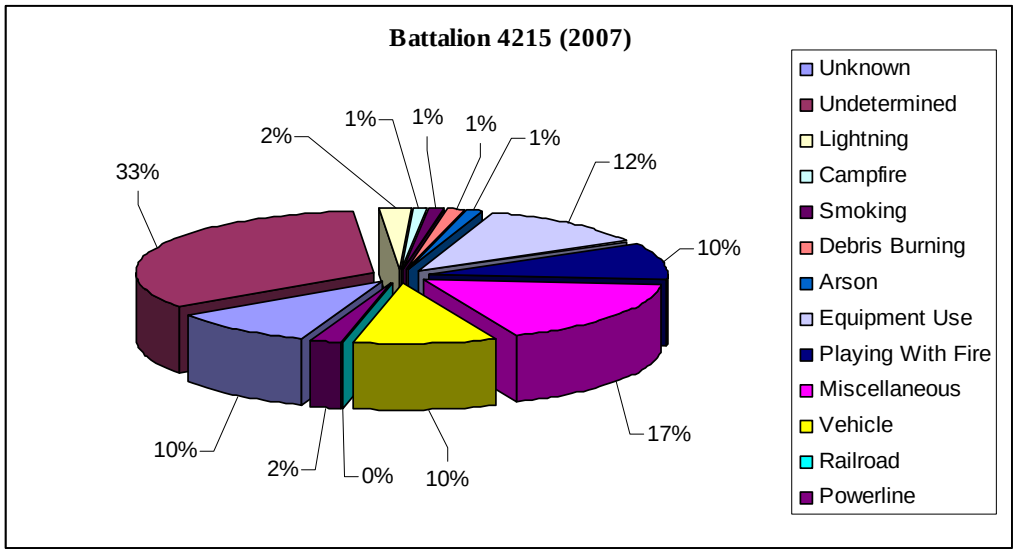

Figure 32 - Battalion 15 Ignitions Cause for 2007

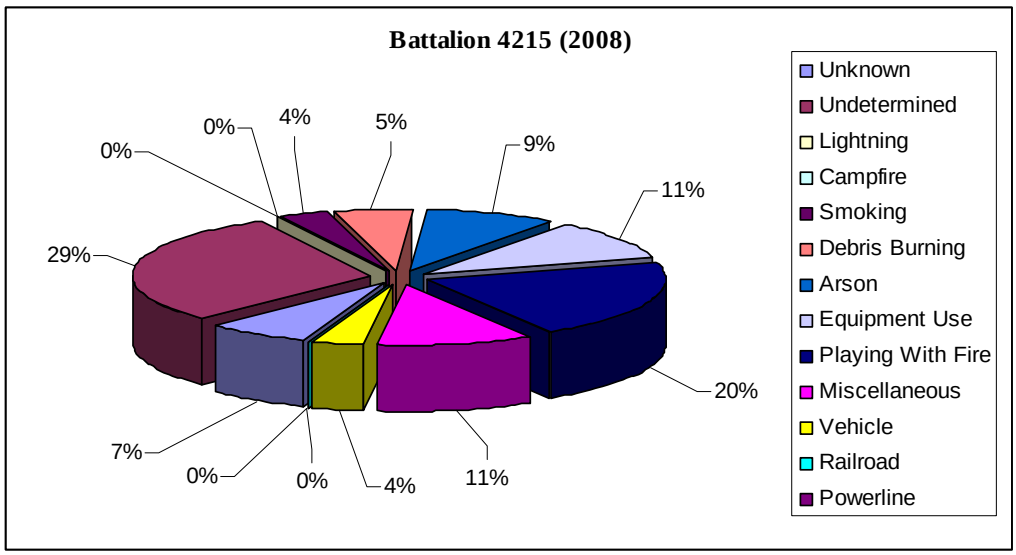

Figure 33 - Battalion 15 Ignitions Cause for 2008

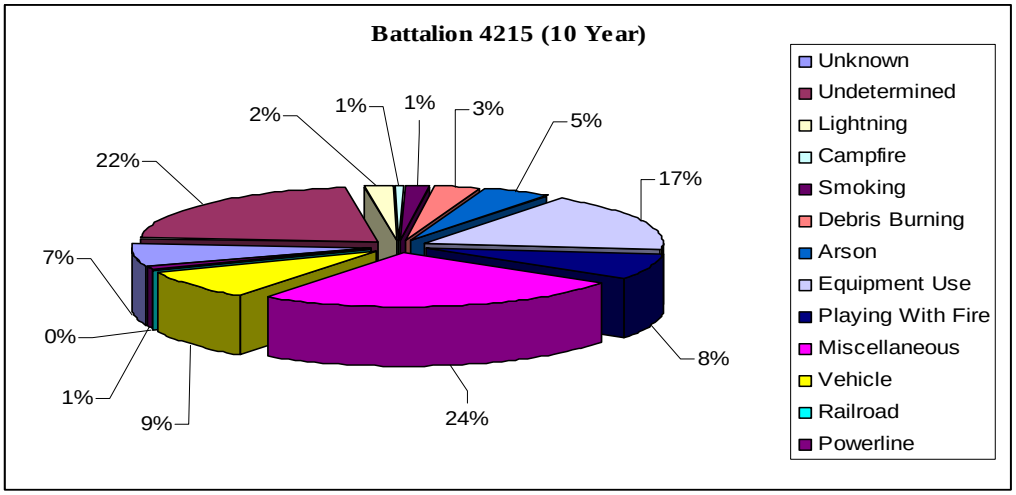

Figure 34 - Battalion 15 Ignitions Cause for last 10 years

Battalion 17 Ignition Causes

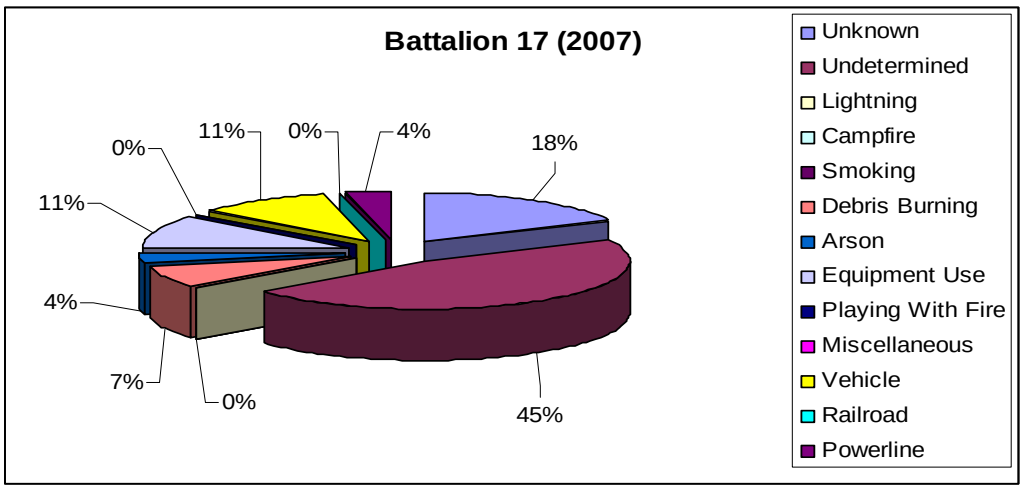

Figure 35 - Battalion 17 (SRA) Ignitions Cause for 2007

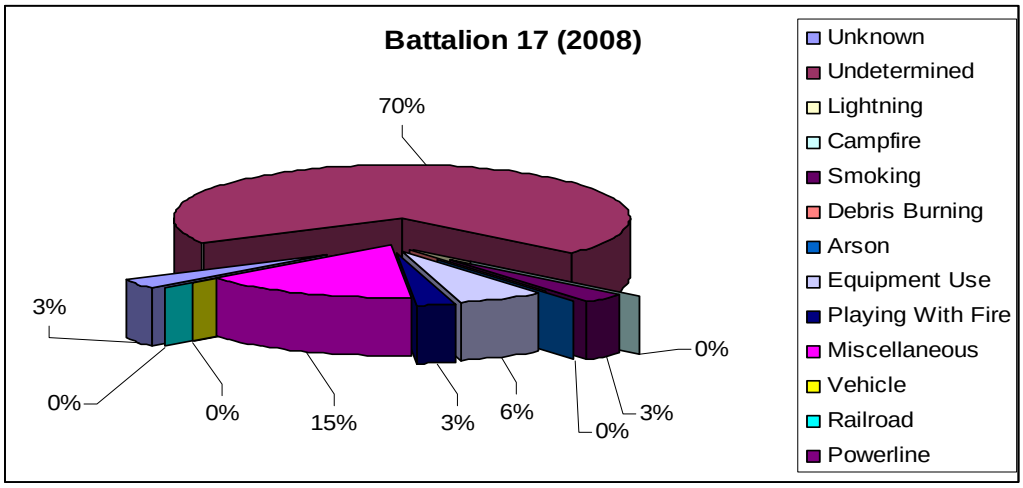

Figure 36 - Battalion 17 (SRA) Ignitions Cause for 2008

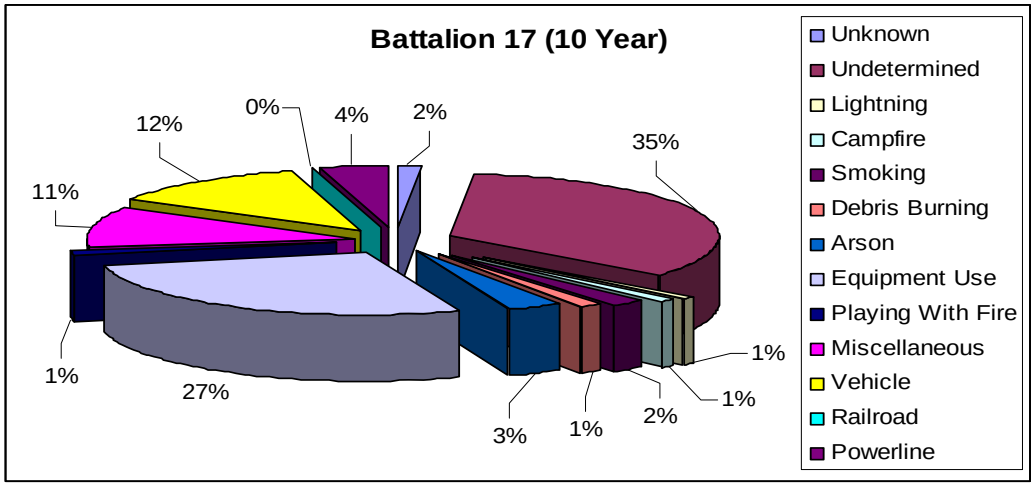

Figure 37 - Battalion 17 (SRA) Ignitions Cause for last 10 years

VII. Resource Management

Forester Guy Anderson

Resource Management in MMU consists of administration and enforcement of Forest Practice Act, administration of California Forest Improvement Program (CFIP), administration of Prop 40 fuel reduction fund, California Environmental Quality Act (CEQA) compliance for unit projects and general service forestry.

The Forest Practice Act and Forest Practice Rules govern the harvest of timber from private lands in California. The Rules require a landowner who harvests timber for commercial purposes (i.e. you sell, barter or trade logs or milled lumber to another party) to submit an exemption notice or timber harvesting plan document with the California Department of Forestry and Fire Protection. Some of the notices or plans that are required may require the services of a Registered Professional Forester. Listed below are the most common documents required by the state and the conditions under which each is appropriate.

1. **Less than 3 acre Conversion Exemption** - For the harvesting of trees which is a single conversion to a non-timber growing use (orchard, house, pasture ect.) on parcels less than 3 acres. The conversion requires that 100% of the slash be removed; these strict slash removal requirements were designed to minimize fuels in and around residences.

2. **Emergency Notice of Operations** - This emergency allows for the harvest of dead and dying trees to capture fire salvage in addition to insect and disease killed trees.

3. **Fuel Hazard Reduction Emergency** - This emergency, adopted in 2004, allows for the immediate harvest of trees where high, very high or extreme fuel hazard conditions, the combination combustible fuel quantity, type, condition, configuration and terrain positioning, pose a significant fire threat on private timberlands. Cutting and removal of hazardous fuels, including trees, shrubs and other woody material, is needed to eliminate the vertical and horizontal continuity of understory fuels and surface fuels for the purpose of reducing the rate of fire spread, fire duration and intensity, fuel ignitability and to achieve a flame length under average severe fire weather conditions that is less than 4 feet in the treated areas.

4. **10% Dead & Dying Exemption** - This exemption allows for the immediate harvest of dead, dying or diseased trees of any size, fuel wood or split wood products, in amounts less than 10% of the average volume per acre.

5. **Fire Safe Exemption** - This exemption allows for the removal of ladder fuels and thinning of trees within 150 feet of a permitted structure. All slash be treated within 45 days. This activity is encouraged to further the intent of Public Resource Code (PRC) 4290.

6. **Modified Timber Harvest Plan** - This plan allows for the harvest of trees on an ownership 100 acres or less.

7. **Timber Harvest Plan (THP) -** A plan addressing the harvest of timber on more than 3 acres that is beyond the scope of a modified THP. An approved THP acts as the functional equivalent of an Environmental Impact Report as required by the California Environmental Quality Act (CEQA).

8. **Non-industrial Timber Management Plan (NTMP) -** A long-term timber harvesting plan with no termination date for a timberland owner with less than 2,500 acres.

There are several active THPs, NTMPs and exemptions in the unit. To achieve compliance of the Forest Practice act public education is the tool of choice and then enforcement action.

California Forest Improvement Project (CFIP)
There were 3 CFIP projects funded this year: two fuel break maintenance projects and thinning and pruning project. The Unit encourages fuel reduction CFIP projects. There are 8 CFIP projects waiting funding. Most are fuel reduction projects, with one being a reforestation fire rehabilitation project.

PROPOSITION 40

There are three Prop 40 funded projects in the unit: Stumpfield/Watts Shaded Fuel Break Phase II, Lushmeadows Shaded Fuel Break and Road 620 Shaded Fuel Break. Stumpfield/Watts Shaded Fuel Break Phase II and Road 620 are both currently active with completion in the spring of 2010. The Lushmeadows Shaded Fuel Break is currently in the environmental review process (CEQA).

California Environmental Quality Act (CEQA) Compliance

The unit seeks 100% CEQA compliance on all projects. Some of units projects requiring CEQA documents included: Bark Beetle tree removal at Usona Fire Station, tree planting at Usona Fire Station and road repair at Mount Bullion Conservation Camp.

Service Forestry

The Area Foresters are also required to provide forestry advice upon request to private landowners. This advice includes, but is not limited to, recommendations for fuel management and fire safe activities that can be applied to residents. Many times service forestry calls are related to bark beetle activity in pine trees. Landowners are encouraged to immediately remove the bark beetle killed trees and treat the slash.

VIII. Madera-Mariposa-Merced Unit Battalion Fire Prevention Plans

Emastication Equipment on the Stumpfield-Watt Fuel Break

Battalion 4211 Fire Management Plan
Year 2009
Battalion Chief Steve Leonard

Overview

Areas in Battalion One that have communities at risk include the Greeley Hill area, Coulterville area and Hunters Valley area. The influencing factors involve housing density, timber, fire history, range and fuel hazard ratings. Past large fires include the Creek Fire in 2001, multiple Hunter Fires and the Telegraph Fire. In July and August of 2008 the Telegraph Fire burned 34,091 acres mainly in the Merced River drainage of Mariposa County. Fuel breaks were identified and used in the suppression planning and protection phase of the fire. Established fuel break south of Greely Hill (Bandarita Fuel Break) were used as a defense system on contingency maps and helped prove the value of preplanning strategic fuel breaks in this case protecting the community of Greeley Hill as well as Yosemite National Park.
The historic ignitions are difficult to manage; therefore, the emphasis of efforts will involve fuel management activities and protection of asset exposures.

Objectives

1. Support the Southwest Interface Team (SWIFT) and Mariposa Fire Safe Council on current and future fuels treatment projects and public outreach.
2. Complete current projects and identify future projects.
3. Maintain an aggressive LE-100 program within the battalion.
4. Support local and unit fire prevention activities.

Accomplishing the Objectives

1. Designate personnel to provide winter time support for ongoing fuels treatment projects being conducted within the battalion.
2. Educate the community within the battalion on proper fire hazard reduction through face to face contact during annual LE-100 inspections.
3. Participate with local stakeholders in annual community public education events.
4. Provide monthly statistics to fire prevention on activities.

Current Projects

Greeley Hill VMP

Vegetation Management Project, prescribed burn of approximately 1600 acres. The project is a high priority to reduced the threat of a devastating wildland fire to the community of Greely Hill. Cal Fire Mt. Bullion CDC Crews are actively working on enlarging the Ponderosa Fuelbreak on the east side of the project. Hand crews are establishing control lines on the north side of the project isolating the two steep drainages as separate smaller burn units. A possible project burn may occur in the fall of 2010 or 2011.

Ponderosa Fuelbreak

There are four specific sections of the fuel break within the Ponderosa system. The fuel break is approximately 26 miles in length. Two Sections are in MMU.

(Greeley Hill Section)

From Tuolumne/Mariposa County line south and easterly to County Road J132 (Smith Station Road). Approximately 5 miles of shaded fuel break which needs field review based on maintenance needs. Periodic work is being completed by Cal Fire CDC Crews from Mt. Bullion.

(Bandarita Section)

From County Road J132 south and easterly to the North Fork of the Merced River. It is approximately 9 miles in length with about two miles needing construction. From the Date Flat area to the east above the North Fork of the Merced River.

Wagner Ridge Fuel Break

Portions of this established fuel break to the south and southeast of Hells Hollow requires maintenance.

Buckhorn and Timbrush Fuelbreak

On going Mariposa Fire Safe Council project coordinating with Bureau of Land Management, Forest Service and Cal Fire. Fuel break project to establish, improve and maintain established fire defense system that were constructed or reopened by the Telegraph Fire in 2008.

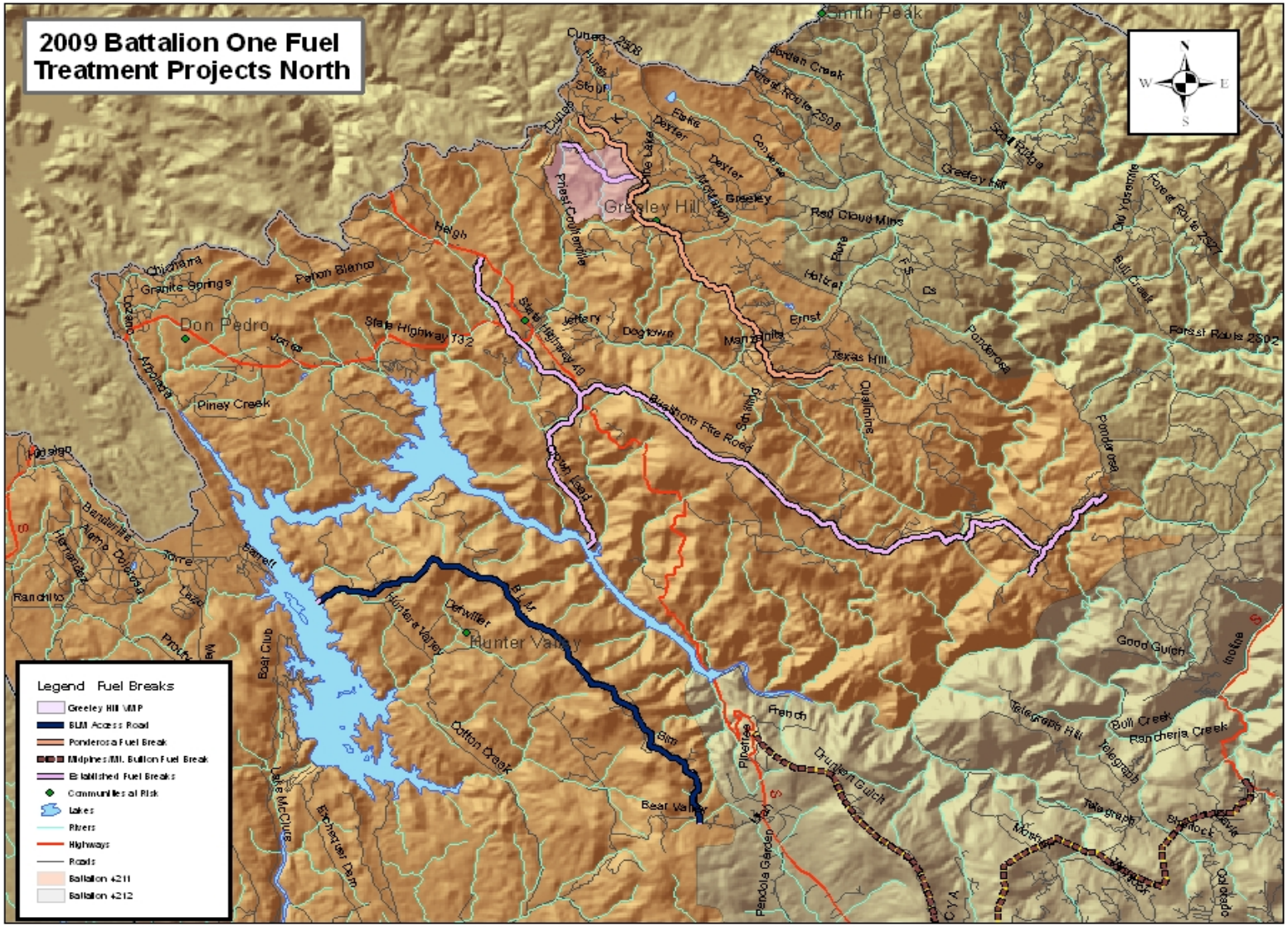

Figure 38 – Battalion One (4211) Fuel Treatment Projects

Battalion 4212 Fire Management Plan
Year 2009
Battalion Chief Kevin Smith

Overview

Areas in Battalion 12 that have communities at risk include Ponderosa Basin, the Woodland, Bootjack area, the Midpines area and the Mariposa area. The influencing factors involved housing density, timber, fire history, range and fuel hazard ratings. Most of MMU's large damaging fires have originated within these areas. The fires that start in these areas immediately threaten high value/ high-risk exposures. The historic ignitions are difficult to manage; therefore, the emphasis of efforts will involve fuel management activities and protection of asset exposures.

Objectives

1. Support the Mariposa Fire Safe Council on current and future fuels treatment projects and public outreach.
2. Complete current projects and identify future targets.
3. Maintain an aggressive LE-100 program within target areas.
4. Support local and unit fire prevention activities.

Accomplishing the Objectives

1. Designate personnel to provide winter time support for ongoing fuels treatment projects being conducted within the battalion.
2. Educate the community within the battalion on proper fire hazard reduction through face to face contact during annual LE-100 inspections.
3. Participate with local stakeholders in annual community public education events.
4. Provide monthly statistics to fire prevention on activities.

Current Projects

Stumpfield Road Fuel Break

- A 6 Mile long, 300 feet wide shaded fuel break along Stumpfield Mountain Road South of Mariposa adjacent to the Chowchilla River Drainage.
- Facilitated by the Mariposa Fire Safe Council through funding from Prop 40 Community Action Grant.
- Environmental Compliance review was conducted in spring 2007 and 2008.
- Project was started during spring of 2008 with emastication equipment working in specific areas that were considered suitable for mechanized equipment.
- Private hand crews were used to identify and create buffers around endangered elderberry bushes. These crews also achieved fuel reduction in the sensitive riparian areas.
- Project was temporarily stopped due to a Proposition 40 funding freeze by the State of California.
- Funding Restored Fall of 2009.
- Project restarted October 2009 using Cal Fire CDC hand crews.

Watt Road Fuel Break

- A 1.5 Mile long, 300 feet wide shaded fuel break along Watt Road South of Mariposa and East of the Stumpfield Mountain Road fuels treatment area, adjacent to the Chowchilla River Drainage.
- Facilitated by the Mariposa Fire Safe Council through funding by Prop 40 Community Action Grant. Environmental Compliance review was conducted in spring 2007 and 2008.
- Project was started during spring of 2008 with emastication equipment working in specific areas that were considered suitable for mechanized equipment.
- Private hand crews were used to identify and create buffers around endangered elderberry bushes. These crews also achieved fuel reduction in the sensitive riparian areas.
- Project was temporarily stopped due to a Proposition 40 funding freeze by the State of California.
- Funding Restored Fall of 2009.
- Project restarted October 2009 using Cal Fire CDC hand crews.

Lushmeadows Fuel Break

- A 5 mile long, 300 feet wide shaded fuel break starting at Clouds Rest area of the Lushmeadows Subdivision following the ridge line and ending at Tip Top Road and highway 49. The project will protect the communities of Lushmeadows, Usona, and Ponderosa Basin.
- Facilitated by the Mariposa Fire Safe Council through funding by Prop 40 Community Action Grant. Environmental Compliance review is being conducted in fall of 2009.
- Project will begin during spring of 2010 with mastication equipment working in specific areas that were considered suitable for mechanized equipment.
- Cal Fire CDC hand crews will be used to establish the 300 foot shaded fuel break in areas unsuitable for mastication equipment. These crews will establish the desired fuel reduction in the sensitive riparian areas and in steep terrain.

Grist Fire Road

- Improvement of existing fire road that runs 2.5 miles along Grist Road, south of Mariposa.
- Facilitated by local property owners working in conjunction with battalion personnel and Cal Fire Sacramento.
- Project is approximately 60% complete with additional crew days needed.
- Project work is ongoing.

Mount Ophir Fuels Reduction Project

- 1300 acres near Old Toll Road and Hwy. 49 North, northwest of Mariposa.
- Fuels reduction will be accomplished through mechanized equipment and hand crew work.
- Cal Fire MMU hand crews and engine crews, under the permission of the property owner, have been utilizing this property for a training area and have contributed to the fuels being reduced within the area.
- Project work is ongoing.

Future Projects

Colorado Road Fuel Break

- Mariposa Fire Safe Council Project
- A 300 foot wide shaded fuel break along Colorado Road between Hwy. 140 and Whitlock Road.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, handcrews and winter time pile burning.
- This project would protect residents along Colorado Road, Rancheria Creek Road and Davis Road.
- Awaiting a funding source.

Dubberke Fuel Reduction Project

- A proposed fuels break on the east side of the town of Mariposa starting at the Stockton Creek Watershed running north to Highway 140.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- In the conceptual phase at this time.

Feliciana Strategic Fuel Treatment

- A proposed fuels break from U.S. Forest Service fuel break on Feliciana Mountain to Highway 140 at Bear Creek Bridge.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- The project would protect the east side of Midpines from a fire that is coming up out of the Merced River Canyon and/or Bear Creek drainage.
- Property ownership is almost entirely Bureau Of Land Management.
- Mariposa Fire Safe Council Project
- Contingent on funding with a Sierra Nevada Conservancy Grant ($200,000).

Fish Camp Strategic Fuel Reduction Project

- A proposed fuels reduction project to include State Responsibility Area in and around the Community of Fish Camp in Mariposa County.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- Use of California Forest Improvement Project (CFIP) funding on parcels meeting requirements.
- In the conceptual phase at this time.

Mariposa Fuel Reduction Project

- A proposed fuels break on the west side of the town of Mariposa starting at Highway 140 running north to Highway 49. (Phase 1).
- A proposed fuels break on the north side of the town of Mariposa starting at Highway 49 running east to Highway 140. (Phase 2).
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- In the conceptual phase at this time.

Midpines / Mt. Bullion Fuel Break

- A 400-500 acre proposed shaded fuel break to follow a path of ridge tops and established fire line from Midpines to Mt. Bullion.
- Will use fire control and contingency fire lines used during the Telegraph Fire were strategically appropriate.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- In the conceptual phase at this time.

Midpines Interior Strategic Fuel Reduction Project

- A proposed fuels reduction project bounded by Colorado Road, Rumley Mine Road, Telegraph Road, Sherlock Road, East Whitlock Road, and Highway 140.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- Use of California Forest Improvement Project (CFIP) funding on parcels meeting requirements.
- Use of Fuel Hazard Reduction Emergency funding on parcels meeting requirements.
- In the conceptual phase at this time.

Silver Bar Fuel Break

- A 120 acre proposed shaded fuel break to follow Silver Bar Road in Mariposa County.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- In the conceptual phase at this time.

Past Projects

Vanderau VMP

- A fuels reduction project on 180 acres of a 429 acre parcel located north east of Mariposa adjacent to the Stockton Creek Watershed area. This area had a high dead to live fuel ratio present due to chemical treatment from property owner.
- Fuels reduction completed through mechanized equipment, crew brush clearance and pile burning.
- Wood for Seniors Program established.

Long VMP

- A 4000 acre ranch southwest of Mariposa adjacent to the Stockton Creek Drainage.
- Several VMP burns have been conducted over the years with the last one in 2004.

Stockton Creek Fuels Reduction

- Several acres of brush clearing and piling along the Stockton Creek Watershed north and east of Mariposa.
- Project was facilitated by the Mariposa Resource Conservation District (RCD) for $300,000.
- Project was completed in 2003 and is in need of maintenance.

Basin VMP

- A 400 acre fuels reduction project in Ponderosa Basin Subdivision south of Mariposa.
- Fuels reduction was accomplished through crew brush clearance/pile burning.
- Project was completed in 2003 and is in need of maintenance.

Ponderosa Basin Strategic Fuel Treatment

- A 300 foot shaded fuel break approximately 1 ¼ miles long.
- Total treatment area is 105 acres.
- The treatment will be along a strategic ridge line adjacent to the community of Ponderosa Basin.
- Fuel Break ties in with Cal Fires Ponderosa Basin VMP and U.S Forest Service Sonny Meadows Project.
- Treatment types will include mechanical mastication and hand brushing and tree limbing.
- The Mariposa County Fire Safe Council facilitated work through a 2008 U.S. Forest Service Grand of $131,670.
- Completed 2009

Guadalupe Fire Road

- A shaded fuel break following Guadalupe Fire Road
- The treatment is along the strategic ridge line of Guadalupe Mountain.
- Needs Maintenance.

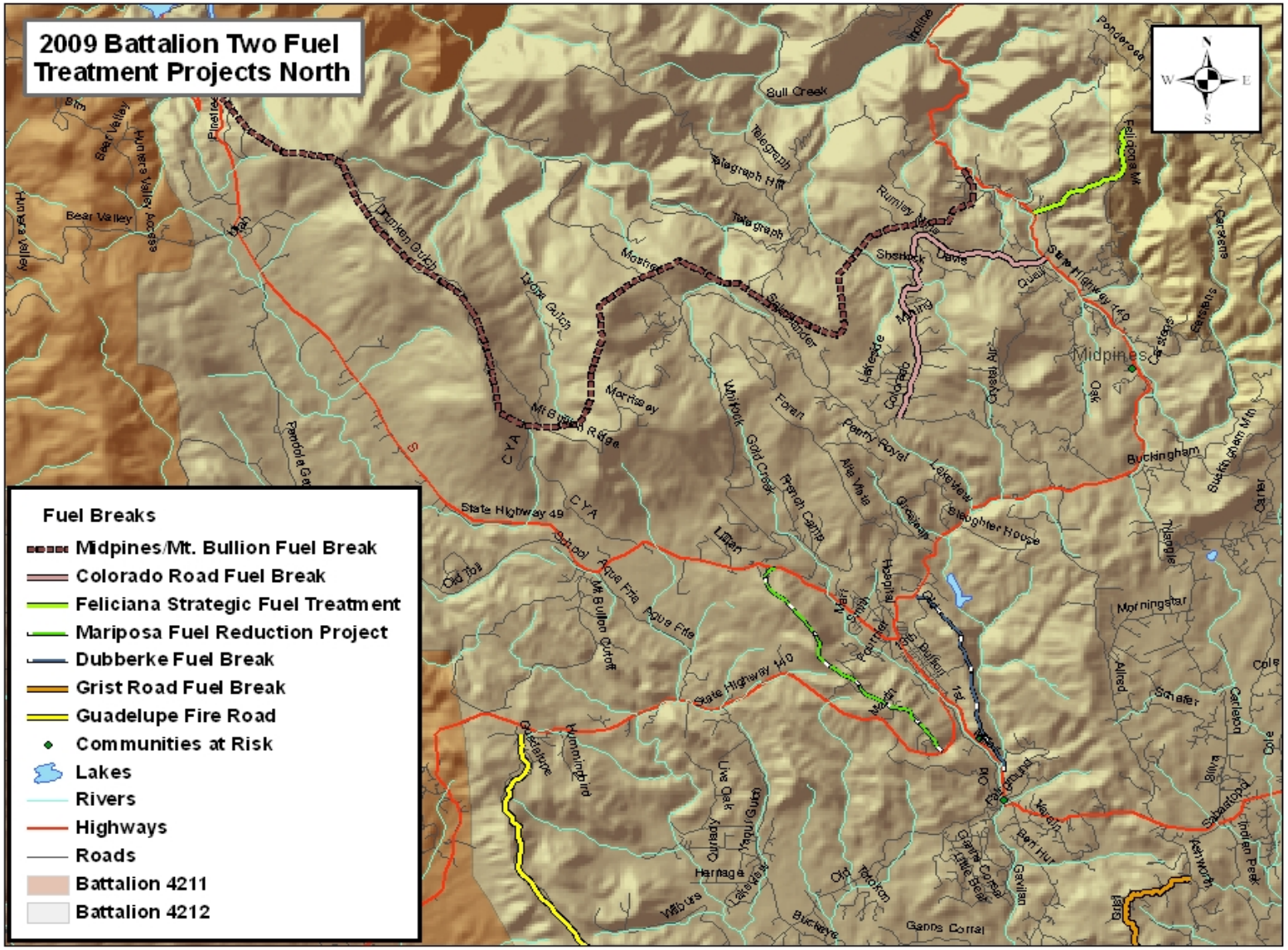

Figure 39 – Battalion Two (4212) Fuel Treatment Projects North

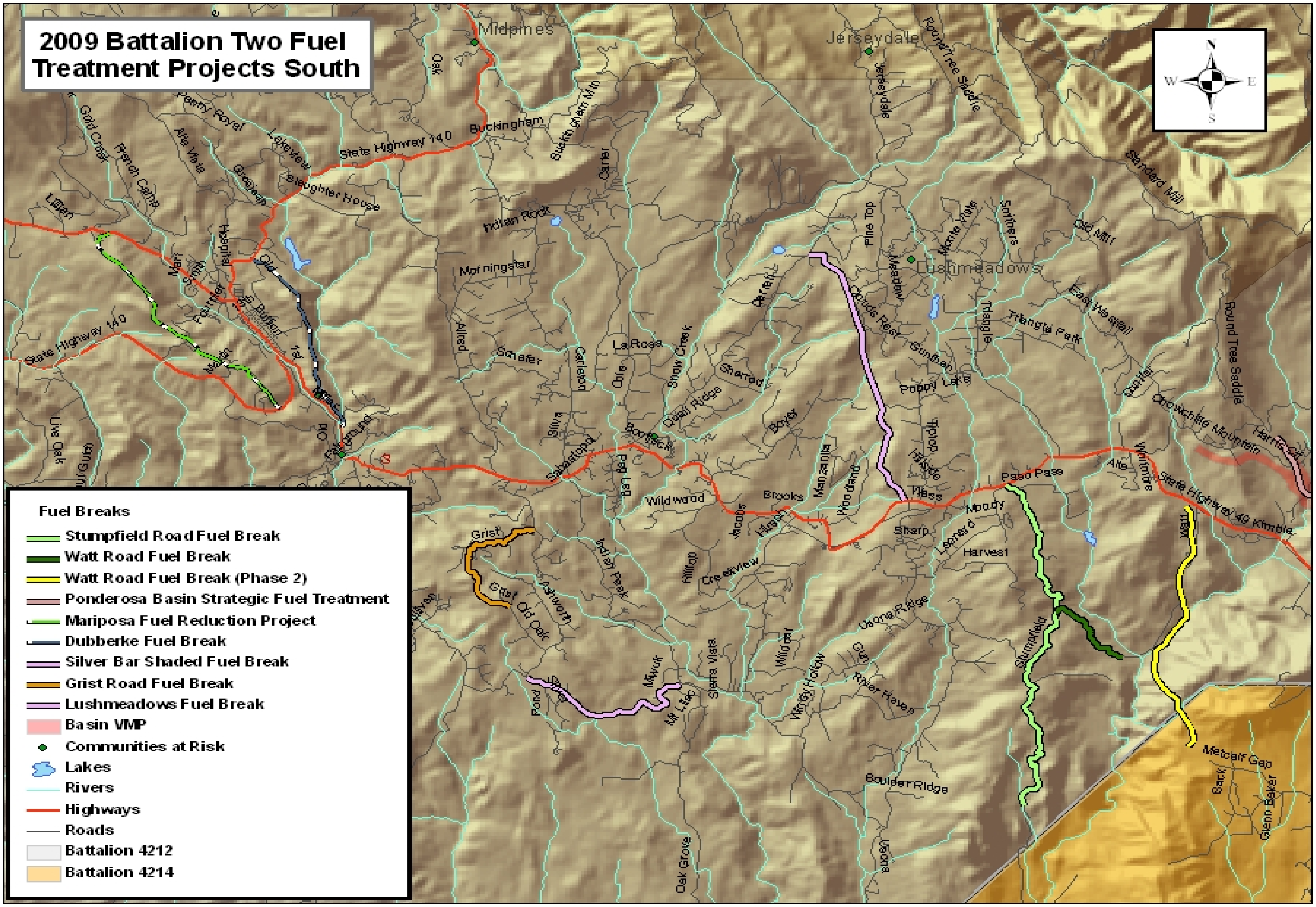

Figure 40 – Battalion Two (4212) Fuel Treatment Projects South

Battalion 4214 Fire Management Plan
Year 2009
Battalion Chief Rich Drozen

Overview

Communities at Risk in Battalion four include the areas of Oakhurst, Nipinnawasee, Ahwahnee and Miami Saddle (Figure - 42). The influencing factors involved in identifying fuel reduction projects include: Fire history, housing density, fuel hazard, timber values and range. Fire ignitions have traditionally, not been a problem in these areas, however, these areas are directly threatened by fires starting in the Chowchilla and Fresno River drainages. Past fire's that have threatened or in one case destroyed these communities loom forever in the historic record. The Harlow Fire devastated the area in 1961. The Stumpfield Fire in 1996 was almost a repeat of the Harlow Fire, but fortunately was stopped in the Chowchilla River drainage by an aggressive firefighting effort.

Additional Communities at Risk in Battalion four include Cedar Valley, the John West Road area, Sugar Pine, the Bass Lake area and Oakhurst. These areas were identified as having significant asset values with medium and high fuel hazard ranks. Fire prevention efforts will emphasize structure clearance and fuel management to mitigate the wildfire hazard in the area.

Objectives

1. Support the Eastern Madera Fire Safe Council with current and future fuel treatment projects.
2. Educate the public on fire safety and hazard reduction.
3. Implement an aggressive LE-100 inspection program.
4. Support Unit and local fire prevention activities.

Accomplishing the Objectives

1. Designate personnel to provide winter time support for ongoing fuels treatment projects being conducted within the battalion.
2. Educate the community within the battalion on proper fire hazard reduction through face to face contact during annual LE-100 inspections.
3. Participate with local stakeholders in annual community public education events.
4. Provide monthly statistics to fire prevention on activities.

Current Projects

Mudge Ranch (Road 420) Fuel Break

- A three mile long, 300' wide shaded fuel break south of Oakhurst.
- Facilitated by the Eastern Madera County Fire Safe Council through funding by the United States Forest Service, (USFS).

Road 620 Phase 1 Fuel Break (Roundhouse 1 & 2)

- A seven mile long, 300' wide shaded fuel break northeast of Ahwahnee.
- Facilitated by the Eastern Madera County Fire Safe Council through funding by Prop-40 Community Action Grant, (CAG).

New Road 620 Phase 2 Fuel Break (Old Nip)

- A three mile long, 300' wide shaded fuel break north of Ahwahnee.
- Project starts at the intersection of Road 620 & Road 628 and ends at Worman Road and Highway 49.
- Facilitated by the Eastern Madera County Fire Safe Council and funded by Prop-40 Community Action Grant (CAG).

Future Projects

Cedar Valley Fuel Reduction Project

- Eastern Madera County Fire Safe Council Project
- A 300 foot wide shaded fuel break along Cedar Valley Road.
- A 300 foot shaded fuel break located strategically around the community of Cedar Valley.
- The fuel breaks will be on State Responsibility Area (SRA) and enhance existing U.S. Forest Service fuel reduction projects in the Cedar Valley area.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- In the conceptual phase at this time.

Sugar Pine Strategic Fuel Reduction Project

- A proposed fuels reduction project to include State Responsibility Area (SRA) in and around the Community of Sugar Pine in Madera County.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- Use of California Forest Improvement Project (CFIP) funding on parcels meeting requirements.
- In the conceptual phase at this time.

Bass Lake Interior Strategic Fuel Reduction Project

- A proposed fuels reduction project bounded by Road 274 (Crane Valley Road) and the Bass Lake Shoreline.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- Use of California Forest Improvement Project (CFIP) funding on parcels meeting requirements.
- Use of Fuel Hazard Reduction Emergency funding on parcels meeting requirements.
- In the conceptual phase at this time.

Past Projects

Crook's Mountain Fuel Break

- A twelve mile long, 300' wide shaded fuel break northwest of Oakhurst, (See Figure_).
- Completed in the spring of 2007.
- Facilitated by the Eastern Madera County Fire Safe Council through Prop-40 Community Action Grant Funds.
- Is currently undergoing maintenance.

Massetti Range Improvement (RI) Burns

- A series of eight (8) RI burns starting in the mid 1990's through 2007.
- Area south west of the town of Oakhurst, (See Figure_).
- Funded through Prop-40 California Forest Improvement Program (CFIP).

Rososco Range Improvement (RI) Burn

- RI Burn of 350 acres done in 1995.
- Area is north of Oakhurst.

Bona-Frietas Range Improvement (RI) Burn

- RI Burn done in 1984.
- Area is located west of Oakhurst, in the Buckskin Flat area Sec. 20, Township. 7S, Range 21E.

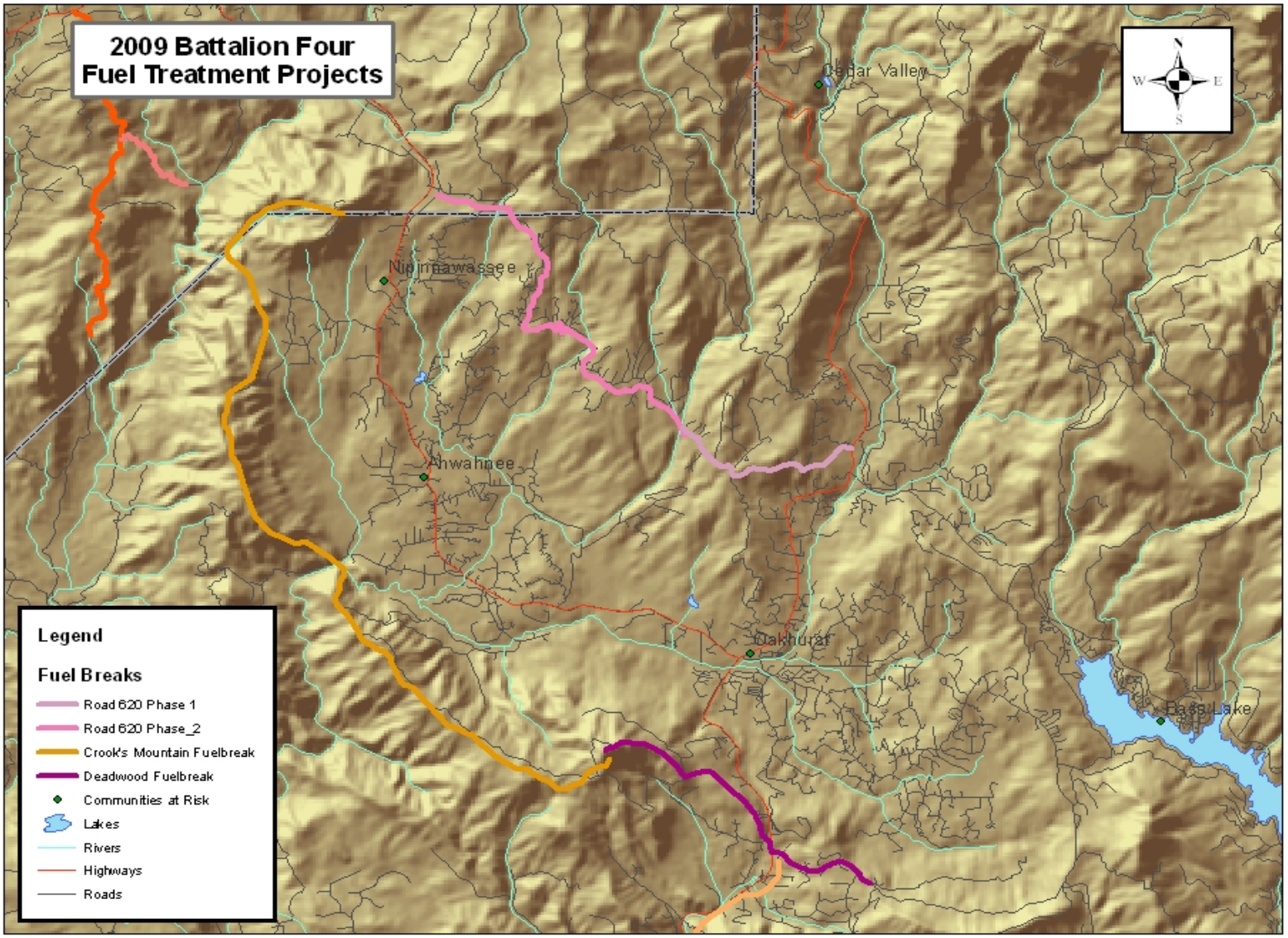

Figure 41 – Battalion Four (4214) Fuel Treatment Projects

Battalion 4215 Fire Management Plan
Year 2009
Battalion Chief Bernie Quinn

Overview

Communities at Risk in Battalion Five include the areas of Cascadel Woods, Bass Lake Annex, North Fork, Yosemite Lakes Park, Quartz Mountain, Coarsegold and Indian Lakes (Figure – 42 & 43). The influencing factors involved in identifying fuel reduction projects include: Fire history, housing density, fuel hazard, timber values and range. Fire prevention efforts will emphasize structure clearance and fuel management to mitigate the wildfire hazard in these areas. Fuel projects in the Battalion are designed to help protect these communities.

The two main fire roads in Battalion Five that tie Hwy 41 into Rd 200 are the Waterloo Fire Road and the Quartz Mountain Fire Road. Unfortunately they have not been maintained for at least 10 years. With the development of Indian Lakes subdivision, the Chukchansi Casino, and the Flying "O" subdivision these fire roads have become a critical holding point for fires that originate out of these three structurally dense areas. The 550 acre Quartz fire of 2005 was the latest fire to threaten this communities. The need to reduce fuels on the ridge top behind Indian Lakes and the Flying "O" are a high priority. Local land owners have taken some steps to reduce this fuel but a fire that runs out of the Indian Lakes subdivision will need to be held to the West by Highway 41, to the North and East by the Waterloo Fire Road, and the South by Quartz Mountain Fire Road. The last place to stop a fire before it runs to Thornberry Ridge, the Church Ranch, and Sierra Highlands will be the Waterloo Fire Road. At that point Road 223 will be the next east holding road and it has a much higher residential population. Road 420 (Thornberry Road) will be the next north holding road.

The Eastern Madera County Fire Safe Council has received grant funding for the Cascadel Woods Fuel Reduction Project and the Quartz Mountain Fuel Reduction Project. These two projects will help protect the communities of Cascadel Woods, Quartz Mountain and Indian Lakes.

The Waterloo fire road is also a high priority for Battalion Five. The first agreement for a CDF Fire Road was with the Veater family in 1945. At that time several property owners gave permission to maintain the Waterloo Road which ran from Hwy 41 to Rd. 200. It was originally the stage road that ran from O'neals to Coarsegold. Waterloo Road was renamed Veater Ranch Road and is paved from Hwy 41 to the Veater Ranch. At the Veater Ranch the road has been named Arena Way. Arena Way runs across the top of the ridge on the east side of Indian Lakes. The Waterloo Fire Road drops off of Arena Way and drops into the North Fork of Fine Gold Creek.

Objectives

1. Support the Eastern Madera Fire Safe Council, the Coarsegold Resource Conservation District (CRCD) with current and future fuel treatment projects.
2. Facilitate fuel reduction projects that will open up roads that effect ingress and egress of the public and emergency equipment.
3. Educate the public on fire safety and hazard reduction.
4. Implement an aggressive LE-100 inspection program.
5. Support Unit and local fire prevention activities.

Accomplishing the Objectives

1. Designate personnel to provide winter time support for ongoing fuels treatment projects being conducted within the battalion.
2. Educate the community within the battalion on proper fire hazard reduction through face to face contact during annual LE-100 inspections.
3. Participate with local stakeholders in annual community public education events.
4. Provide monthly statistics to fire prevention on activities.

Current Projects

Cascadel Woods Fuel Reduction / Shaded Fuel Break

- Eastern Madera County Fire Safe Council Project
- Phase 1 – Fuel reduction on 160 acres located strategically around the community of Cascadel Woods.
- Phase 2 - A 300 foot shaded fuel break on Cascadel Road (Road 233) from Mammoth Pool Road to Cascadel Woods.
- The fuel breaks will be on State Responsibility Area (SRA) and enhance existing U.S. Forest Service fuel reduction projects in the Cascadel Woods area.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning.
- Environmental Compliance review is being conducted in fall of 2009.

Quartz Mountain Fuel Break

- A nine mile long, 300’ wide shaded fuel break under P.G.& E. high voltage powerlines.
- Project increases the current 90 foot P.G.& E. fuel break.
- Project starts west of Indian Lakes and ends at Highway 41 and the Deadwood Fuel Break.
- Facilitated by the Eastern Madera County Fire Safe Council and funded by Prop-40 Community Action Grant (CAG).

Future Projects

The Waterloo Fire Road

- The Waterloo Fire Road (Veater Ranch Road) is paved from Hwy 41 to the Veater Ranch. At the Veater Ranch the road has been named Arena Way. Arena Way runs across the top of the ridge on the east side of Indian Lakes. The Waterloo Fire Road drops off of Arena Way and drops into the North Fork (NF) of Fine Gold Creek. The Waterloo Fire Road goes midslope after it crosses the Northfork of Fine Gold Creek on the north side. It crosses the Northfork of Fine Gold Creek again on the south end of the Veater Ranch.
- Treatment types will include mechanical mastication, hand brushing and tree limbing.
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning. Utilize engine crews, CDC hand crews, and State dozers (where applicable) to reduce fuels along the fire road. Modify the fuel to make the west side of the fire road more receptive

for light fuel growth. This will assist if back firing tactics are utilized to hold fire at the road. Maintain the finished product to an acceptable level for the landowners and Cal Fire.

- Environmental Compliance review is being conducted in Winter of 2010.

CDF Fire Rd 20, CDF Fire Rd 21, AKA Fish Creek Fire Road

- These two CDF fire roads (CDF Fire Rd 20, CDF Fire Rd 21, AKA Fish Creek Fire Road) were established to contain a fire that comes out of the San Joaquin River drainage and threatens the town of North Fork, the residence of Leisure Acres, and the many homes that sit on the south side of Road 200. Historically these fire roads ran through large ranches and were maintained annually. Today, these fire roads have either grown over, been abandoned, or are on smaller parcels that belong to several different land owners.
- Obtain landowner buy-in for the projects
- Fuels reduction to be accomplished through the use of mechanized equipment, hand crews and winter time pile burning. Utilize engine crews, CDC hand crews, and State dozers (where applicable) to reduce fuels along the fire road.
- This project would include funding for gates, culverts, and gravel to repair and maintain the fire roads.
- State dozer, backhoe, dump trucks, and grader work would be the main emphasis to repair and maintain the fire roads.
- Environmental Compliance review is being conducted in Winter of 2010.

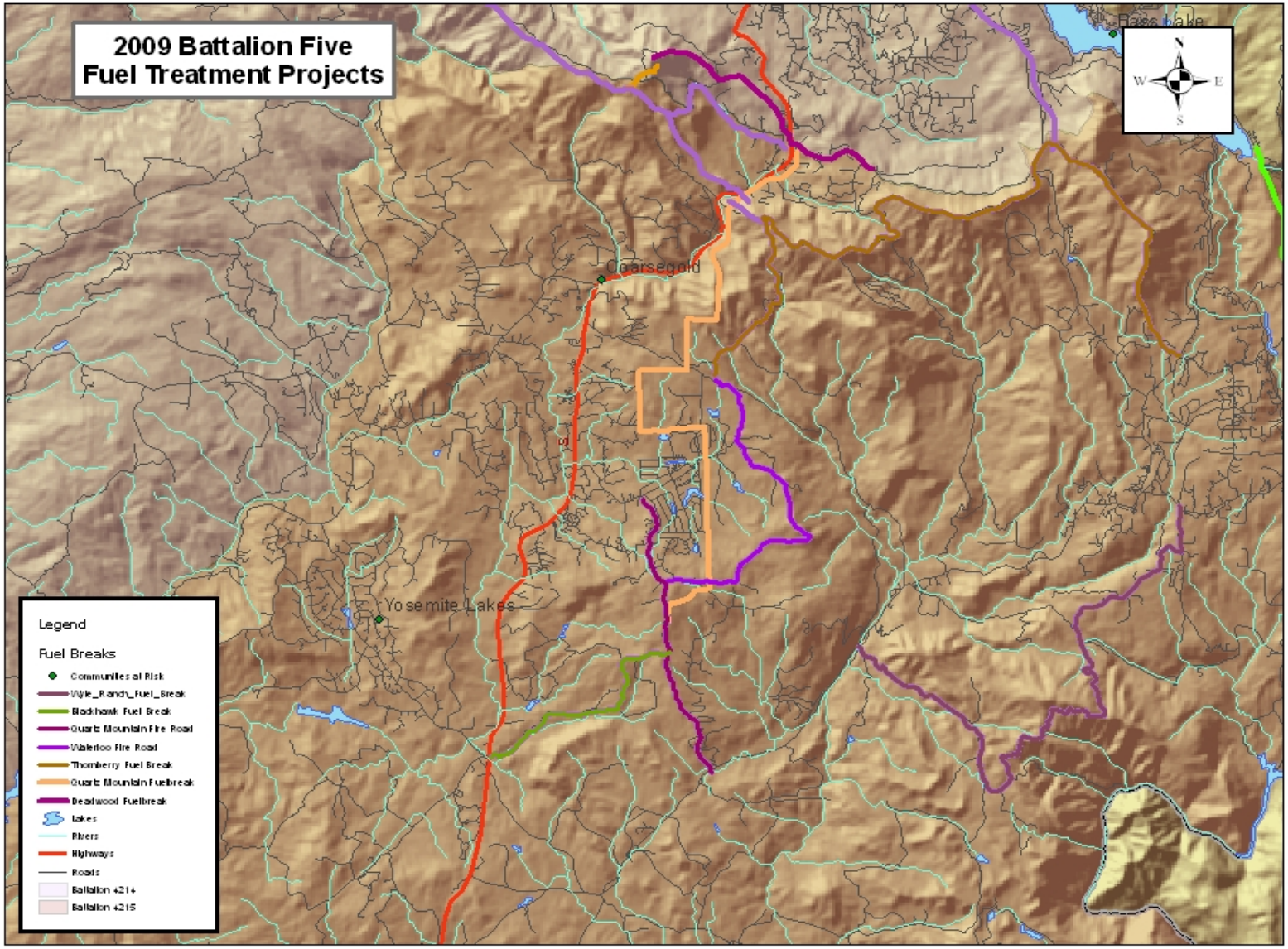

Figure 42 – Battalion Five (4215) Fuel Treatment Projects North

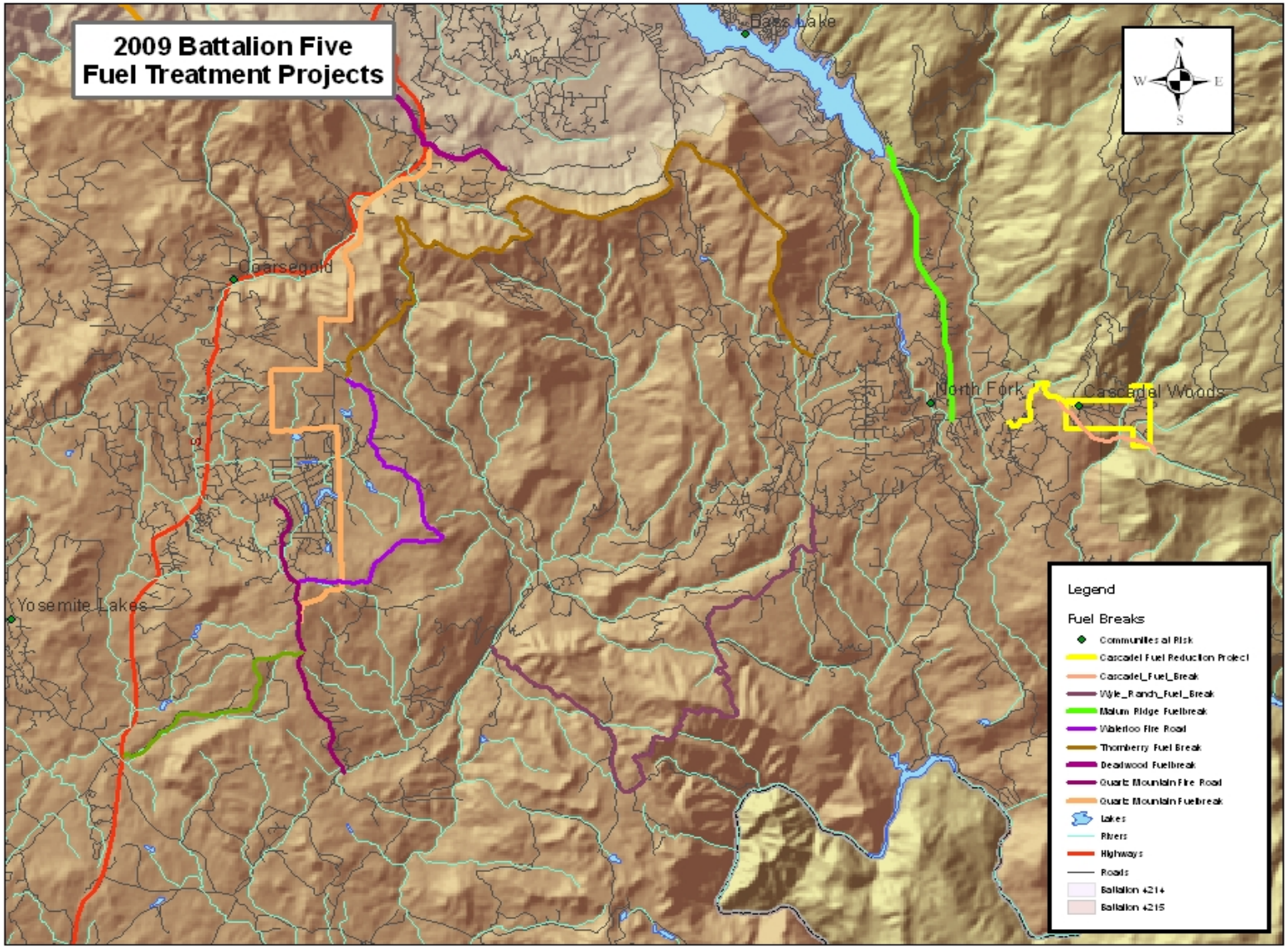

Figure 43 – Battalion Five (4215) Fuel Treatment Projects South

Madera County Community Wildfire Protection Plan
Priority Fuel Treatment Projects (September 2008)

The Final Community Assessment list (Table 13) identifies prioritized fuel reduction projects for communities at risk for Madera County. Eleven out of the thirty-five communities assessed were classified as having a “high” rating. The communities with “high” ratings will be prioritized by their rankings and projects identified to alleviate the most severe problems associated with each community. The communities with ratings in the “moderate” or “low” classifications have fire preparedness needs as well, but with limited dollars and resources the emphasis must be on the communities identified most at risk.

When analyzing fire mitigation projects, a collaborative approach must be utilized. All Federal, State, and Local fire agencies as well as citizen groups and homeowners, should have input into developing the fire mitigation strategies. A plan should be formulated that is understood and agreeable to all parties affected by the outcome.

The following is a prioritized list of communities at risk and some potential actions that could reduce the fire risk.

Priority	Name	Total	Hazard	Ignition Risk	Values	Protecn	CatPtl	Fire
1	**Cascadel Woods**	**HIGH**	**HIGH**	**MOD**	**HIGH**	**HIGH**	**HIGH**	**HIGH**
2	**Cedar Valley**	**HIGH**	**HIGH**	**MOD**	**HIGH**	**HIGH**	**HIGH**	**MOD**
3	**Road 620**	**HIGH**	**HIGH**	**LOW**	**MOD**	**HIGH**	**HIGH**	**HIGH**
4	**Nipinnawasee**	**HIGH**	**MOD**	**HIGH**	**MOD**	**MOD**	**HIGH**	**HIGH**
5	**John West Rd.**	**HIGH**	**HIGH**	**LOW**	**MOD**	**HIGH**	**HIGH**	**HIGH**
6	**Sugar Pine**	**HIGH**	**HIGH**	**MOD**	**HIGH**	**HIGH**	**HIGH**	**LOW**
7	**North Fork**	**HIGH**	**MOD**	**HIGH**	**MOD**	**MOD**	**MOD**	**HIGH**
8	**Oakhurst**	**HIGH**	**MOD**	**HIGH**	**MOD**	**MOD**	**MOD**	**HIGH**
9	**Bass Lake Annex**	**HIGH**	**MOD**	**LOW**	**HIGH**	**MOD**	**HIGH**	**HIGH**
10	**Bass Lake**	**HIGH**	**MOD**	**HIGH**	**HIGH**	**MOD**	**HIGH**	**LOW**
11	**Sky Acres**	**HIGH**	**HIGH**	**MOD**	**MOD**	**MOD**	**HIGH**	**MOD**
12	**Marina View**	**MOD**	**HIGH**	**MOD**	**HIGH**	**LOW**	**MOD**	**MOD**
13	**Bass Lake Heights**	**MOD**	**MOD**	**MOD**	**MOD**	**MOD**	**HIGH**	**MOD**
14	**Yosemite Lakes Park**	**MOD**	**LOW**	**HIGH**	**MOD**	**HIGH**	**MOD**	**MOD**
15	**Quartz Mtn**	**MOD**	**MOD**	**HIGH**	**MOD**	**MOD**	**MOD**	**MOD**
16	**Sierra Lakes**	**MOD**	**MOD**	**MOD**	**MOD**	**MOD**	**MOD**	**HIGH**
17	**Ahwahnee**	**MOD**	**LOW**	**HIGH**	**MOD**	**MOD**	**MOD**	**HIGH**
18	**Beasore Mead**	**MOD**	**MOD**	**LOW**	**HIGH**	**HIGH**	**MOD**	**MOD**
19	**Teaford Meadows**	**MOD**	**MOD**	**LOW**	**MOD**	**MOD**	**HIGH**	**HIGH**
20	**Mudge Ranch**	**MOD**	**MOD**	**HIGH**	**HIGH**	**LOW**	**HIGH**	**LOW**
21	**Arnold Mead**	**MOD**	**MOD**	**LOW**	**MOD**	**HIGH**	**MOD**	**MOD**
22	**Wells/Trabuco**	**MOD**	**MOD**	**MOD**	**MOD**	**MOD**	**MOD**	**MOD**
23	**Central Camp**	**MOD**	**MOD**	**LOW**	**MOD**	**HIGH**	**MOD**	**MOD**
24	**Wishon**	**MOD**	**MOD**	**MOD**	**HIGH**	**LOW**	**HIGH**	**LOW**
25	**Miami Highlands**	**MOD**	**MOD**	**LOW**	**MOD**	**MOD**	**MOD**	**HIGH**
26	**Coarsegold**	**LOW**	**LOW**	**HIGH**	**MOD**	**MOD**	**MOD**	**LOW**
27	**Hidden View**	**LOW**	**LOW**	**MOD**	**MOD**	**HIGH**	**MOD**	**LOW**
28	**Yosemite Forks**	**LOW**	**MOD**	**MOD**	**LOW**	**MOD**	**MOD**	**MOD**
29	**Sierra Highlands**	**LOW**	**MOD**	**LOW**	**MOD**	**MOD**	**MOD**	**LOW**
30	**Goldside**	**LOW**	**LOW**	**MOD**	**LOW**	**LOW**	**LOW**	**MOD**
31	**Raymond**	**LOW**	**LOW**	**HIGH**	**LOW**	**LOW**	**LOW**	**MOD**
32	**Meadow Springs**	**LOW**	**MOD**	**LOW**	**LOW**	**MOD**	**MOD**	**LOW**
33	**Indian Lakes**	**LOW**	**LOW**	**HIGH**	**MOD**	**LOW**	**LOW**	**LOW**
34	**O'Neals**	**LOW**	**LOW**	**HIGH**	**LOW**	**MOD**	**LOW**	**LOW**
35	**Leisure Acres**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**LOW**	**MOD**

Table 13 – Madera-Mariposa-Merced Unit Priority Fuel Reduction Projects 2009

PRIORITY #1

Community: **Cascadel Woods**

Location: Section 16, T8S, R23E

Population: 106 dwelling units plus numerous outbuildings

Specific problems:

(1) A large amount of timber fuels interspersed with heavy volumes of brush within and surrounding the community

(2) An approximate 3 mile narrow, windy two-lane road (Cascadel Road/Road 233) with contiguous trees and brush serves as the only reliable road in and out of the community

(3) Steep brush covered slopes south and east of the community

(4) Narrow roads with a bridge incapable of handling heavy equipment within the community

(5) Many older homes and cabins in close proximity to one another, some with wood shake roofs and combustible exterior construction

(6) A larger percentage of retired and absentee homeowners

Evacuation routes:

West on Cascadel Road(Road 233), then east or west on Road 225

Past actions:

(1) Roadside fuel reduction and fuel-break construction along Cascadel Road by USFS

(2) Fuel reduction projects conducted by joint efforts of USFS, Fire Safe Council and Coarsegold Resource Conservation District in areas near the community

(3) Intermittent compliance inspections for PRC 4291 regulations by fire officials

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Identify and construct safety zones that can be used as temporary shelter-in-place areas for residents as well as fire personnel

(3) A 200’ to 300’ wide shaded fuel-break surrounding the community

(4) Continued construction and maintenance of the fuel-break along Cascadel Road

(5) Fuel reduction on Sierra National Forest land adjacent to community assets by the use of harvesting or thinning projects

(6) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #2

Community: **Cedar Valley**

Location: Sections 13 & 24, T6S, R21E

Population: 97 dwelling units plus numerous outbuildings

Specific problems:

(1) A large amount of timber fuels interspersed with heavy volumes of brush within and surrounding the community

(2) A 1-1/2 mile narrow, windy two-lane road (Cedar Valley Drive) with contiguous forest fuel on both sides that serves as the only road in and out of the community

(3) Narrow roads within the community

(4) Older homes and cabins in close proximity to one another, some with wood shake roofs and combustible exterior construction

(5) A large percentage of retired and absentee homeowners

Evacuation routes:

Southwest on Cedar Valley Drive to Highway 41

Past actions:

(1) Roadside fuel reduction and fuel-break construction along Cedar Valley drive by USFS and Cal Fire

(2) Roadside fuel reduction by Cal Fire and Madera County Road Department on roads within the community

(3) Intermittent compliance inspections for PRC 4291 regulations by fire officials

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Identify and construct safety zones that can be used as temporary shelter-in-place areas for residents as well as fire personnel

(3) A 200' to 300' wide shaded fuel-break surrounding the community

(4) The elimination or reduction of fuels 100' on both sides of Cedar Valley Drive from Highway 41 to Cedar Brook Rd.

(5) Fuel reduction on Sierra National Forest land down canyon in the Lewis Creek drainage between Sky Ranch and Cedar Valley (possible timber harvesting or plantation thinning)

(6) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #3

Community: **Road 620 (BISSETT STATION ROAD)**

Location*:* Sections 20, 21, 27, 28, 29, 34, 35, 36, T6S, R21E

Population: 41 dwelling units with numerous outbuildings

Specific problems:

(1) Road 620 is a mid-slope road with large concentrations of heavy brush on steep slopes immediately below it to the south

(2) Homes are built along and adjacent to Road 620, a five mile long narrow, winding road with heavy volumes of trees and brush on both sides

Evacuation routes:

(1) East on Road 620 (Bissett Station Road) to Highway 41

(2) West on Road 620 (Bissett Station Road) to Road 628 (Round House Road)

(3) South on Road 628 to Highway 49

***Past actions*:**

(1) Intermittent compliance inspections for PRC 4291 regulations by fire officials

(2) Fuel reduction by timber harvest, mechanical treatment and prescribed fire by the USFS in the general area but not immediately adjacent to the populated area

***Priority mitigation needs*:**

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(3) The reduction or elimination of fuel for 150' on both sides Road 620 (Bissett Station Road) from Highway 41 to Road 628

(4) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #4

Community: **Nipinnawasee**

Location: Sections 13, 24, R20E, T6S

Population: 112 dwelling units with numerous outbuildings

Specific problems:

(1) Large areas of heavy concentrations of grass and brush mingled amongst structures

(2) Narrow winding roads with hazardous fuels encroaching one or both sides of the road

Evacuation routes:

(1) Highway 49 north towards Mariposa

(2) Highway 49 south towards Oakhurst

Past actions:

(1) Roadside fuel reduction by Cal Fire, P. G. & E. and Madera County Road Department on roads within the community

(2) Intermittent compliance inspections for PRC 4291 regulations by fire officials

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Continued roadside fuel elimination or reduction along roads within the community

(3) Fuel reduction on Sierra National Forest land adjacent to the community on the east side by the use of harvesting or thinning projects

(4) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #5

Community: **John West Road**

Location: Section 7, 18, R22E, T7S

Population: 44 dwelling units with numerous outbuildings

Specific problems:

(1) A two mile narrow, winding two-lane road (John West Road) with contiguous forest fuels on both sides that serve as the only road in and out of the community

(2) A large amount of timber fuels interspersed with heavy volumes of brush within and surrounding the community

(3) Narrow roads within the community

Evacuation routes:

South on John West Road to Road 426, then west on 426 towards Oakhurst or east towards North Fork

Past actions:

(1) Roadside fuel reduction by Cal Fire and Madera County Road Department on roads within the community

(2) Intermittent compliance inspections for PRC 4291 regulations by fire officials

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Identify and construct safety zones that can be used as temporary shelter-in-place areas for residents as well as fire personnel

(3) Continued roadside fuel elimination or reduction along roads within the community

(4) Fuel reduction on Sierra National Forest land adjacent to the community on the east side by the use of harvesting or thinning projects

(5) Completion of Emergency Access route from Taylor Mountain Road to Indian Springs Road, therefore providing an alternate escape route

(6) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #6

Community: **Sugar Pine**

Location: Section 1, R21E, T6S

Population: 54 dwelling units with numerous outbuildings, a large private camp complex; many of the structures within the community are old with historical value.

Specific problems:

(1) A large amount of timber fuels interspersed with heavy volumes of brush within and surrounding the community

(2) A 1 mile narrow two-lane road (Road 630/Sugar Pine Road) with contiguous forest fuels on both sides that serves as the only road in and out of the community

(3) Narrow roads within the community

(4) Older homes and cabins in close proximity to one another, some with wood shake roofs and combustible exterior construction

(5) A large percentage of retired and absentee homeowners

Evacuation routes:

South on Road 630 (Sugar Pine Road) to Highway 41

Past actions:

(1) Roadside fuel reduction and fuel-break construction along Road 630/Sugar Pine Road by USFS

(2) Intermittent compliance inspections for PRC 4291 regulations by fire officials

(3) Fuel reduction projects including timber harvesting, prescribed burns, and mechanical and hand treatment near the community

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Identify and construct safety zones that can be used as temporary shelter-in-place areas for residents as well as fire personnel

(3) A 200' to 300' wide shaded fuel-break surrounding the community

(4) Continued construction and maintenance of the fuel-break along Road 630/Sugar Pine Road

(5) Continued fuel reduction on Sierra National Forest land within one mile of the community by the use of harvesting, thinning projects, and prescribed burns

(6) Implement a PRC 4291 compliance inspection program within the community

Education*:* Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #7

Community: **North Fork**

Location: Sections 13, 24 R22E, T8S; Sections 17, 18, 19, 20 R23E, T8S

Population: 76 dwelling units plus numerous outbuildings; commercial and light industrial buildings; governmental facilities; churches and schools

Specific problems:

(1) Large areas of heavy concentrations of grass and brush mingled amongst structures

(2) Many narrow roads with hazardous fuels encroaching one or both sides of the road within the community

Evacuation routes:

(1) West on Road 225 to Road 200 then southwest on Road 200 towards Highway 41

(2) West on Road 225 to Road 274 then north on Road 274 towards Bass Lake

Past actions:

(1) Roadside fuel reduction by, Cal Fire and Madera County Road Department with support from the Madera County Fire Safe Council and the Coarsegold Resource Conservation District on roads within and accessing the community

(2) Intermittent compliance inspections for PRC 4291 regulations by fire officials

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Identify and construct safety zones that can be used as temporary shelter-in-place areas for residents as well as fire personnel

(3) Continued roadside fuel elimination or reduction along roads within the community

(4) Construction of a fuel-break around the community utilizing past fuels reduction programs, prescribed burns, and parts of past fuel-breaks

(5) Implementation of a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #8

Community: **Oakhurst**

Location: Sections 1, 2, 3, 10, 11, 12, 13, 14, 15, 22, 23, 24, R21E, T7S

Sections 18, 19, 30, R22E, T7S

Population: 1071 dwelling units plus numerous outbuildings; commercial and light industrial buildings; governmental, utility and medical facilities; churches and schools

Specific problems:

(1) Large areas of heavy concentrations of grass and brush mingled amongst structures

(2) Many narrow winding roads with hazardous fuels encroaching one or both sides of the road

(3) Inadequate water supply to support fire fighting operations in many areas of the community

Evacuation routes:

(1) East on Road 426 (Crane Valley Road) to Road 223 towards North Fork

(2) West on Road 426 to Highway 41

(3) Highway 49 south towards Oakhurst or north towards Mariposa

***Past actions*:**

(1) Roadside fuel reduction by Cal Fire and Madera County Road Department of some roads within the community

(2) Fuel reduction projects including fuel-breaks, prescribed burns, and mechanical and hand treatment adjacent to the community; primarily concentrated on ridge tops around the Oakhurst Basin

(3) Intermittent compliance inspections for PRC 4291 regulations by fire officials

(4) In 2007 a Fire Safe Council fuel-break project was completed around the Oakhurst Basin along the ridge tops of Miami Mountain, Crooks Mountain, and Potter Ridge

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Roadside fuel elimination or reduction along county roads

(3) Completion and maintenance of a fuel break system surrounding the community

(4) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #9

Community: **Bass Lake Annex**

Location: Section 35, R22E, T7S; Section 2 R22E T8S

Population: 89 dwelling units with numerous outbuildings

Specific problems:

(1) A large amount of timber fuels interspersed with heavy volumes of brush within and surrounding the community

(2) Narrow roads within the community

(3) Older homes and cabins in close proximity to one another

Evacuation routes:

North on Road 222/Crane Valley Road towards Bass Lake or south on Road 222/Crane Valley Road towards North Fork

Past actions:

(1) Proposed roadside fuel reduction and fuel-break construction along Road 222/Crane Valley Road

(2) Intermittent compliance inspections for PRC 4291 regulations by fire officials

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) A 200’ to 300’ wide shaded fuel-break surrounding the community

(3) The elimination or reduction of fuels 100” on both sides of Road 222/Crane Valley Road from Bass Lake to North Fork

(4) Continued fuel reduction on Sierra National Forest land adjacent to the community by the use of harvesting and thinning projects

(5) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #10

Community: **Bass Lake**

Location: Sections 8, 9, 14, 15, 16, R22E, T7S

Population: 775 dwelling units plus numerous outbuildings; commercial and light industrial buildings; governmental facilities; churches, schools and camps and other recreational facilities

Specific problems:

(1) A large amount of timber fuels interspersed with heavy volumes of brush within and surrounding the community

(2) Narrow, winding roads within the community

(3) Older homes and cabins in close proximity to one another, some with wood shake roofs and combustible exterior construction

(4) A large percentage of retired and absentee homeowners

(5) A large number of summertime visitors, campers and recreationalists

Evacuation routes:

(1) Northwest on Road 274 (Malum Ridge Road) or Road 432 (North Shore Road) to Road 222, then northwest on Road 222 to Highway 41

(2) Southeast on Road 274 (Malum Ridge Road) toward North Fork

Past actions:

(1) Intermittent compliance inspections for PRC 4291 regulations by fire Officials

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Identify and construct safety zones that can be used as temporary shelter-in-place areas for residents as well as fire personnel

(3) A 300' wide shaded fuel-break on the south side of Road 274 (Malum Ridge Road) from the intersection of Road 274 and Road 222 to Central Camp Road

(4) Fuel reduction on Sierra National Forest land adjacent to the community by the use of harvesting or thinning projects

(5) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.

PRIORITY #11

Community: **Sky Acres**

Location: Section 30, 31, T6S, R22E

Population: 62 dwelling units with numerous outbuildings

Specific problems:

(1) A large amount of timber fuels interspersed with heavy volumes of brush within and surrounding the community

(2) Narrow roads within the community

(3) Older homes and cabins in close proximity to one another, some with wood shake roofs and combustible exterior construction

Evacuation routes:

West on Road 632 (Sky Ranch Road) to Highway 41

Past actions:

(1) Intermittent compliance inspections for PRC 4291 regulations by fire officials

(2) Some roadside fuel reduction by Madera County Road Department on roads within the community

Priority mitigation needs:

(1) Citizen involvement to reduce fuels on their property and to utilize fire-wise construction techniques to improve structure survivability

(2) Roadside fuel elimination or reduction along county roads within the community

(3) Fuel reduction on Sierra National Forest land adjacent to the community by the use of harvesting or thinning projects

(4) Completion and maintenance of a fuel break system surrounding the community

(5) Implement a PRC 4291 compliance inspection program within the community

Education: Through homeowner association or town hall type meetings, develop and promote community specific programs designed to inform and involve the community on wildfire mitigation plans, escape routes, potential shelter-in-place locations, and activities that could reduce the risk to citizens, property and community assets.