

# **INTERACTION REPORT**

**THE PETERSON FIRE  
(CAFKU 008548)**

and

**THE CRESSMAN FUEL MODIFICATION  
ZONE**

**July 12 – 15, 2004**

# Intro

The Peterson Fire was a wildland fire reported at 1205 hours on July 12, 2004 in Eastern Fresno County. As the initial attack Incident Commander, Battalion Chief Jim Smith, arrived at the scene, he found the fire rapidly spreading uphill threatening structures above and on each flank. The fire was burning in a mix of chaparral and timber mid-slope on a south aspect. Fuel moistures from surrounding counties indicate that the current fuel moistures were at least one month ahead of normal and were at or near critical levels. The 1200 hour weather reported at the Mountain Rest RAWS Station approximately 2 miles northwest of the incident at roughly the same elevation was as follows: Temperature 89 degrees Fahrenheit, wind southwest at 5 – 11 mph, relative humidity 17% and fuel moisture 4.7%. The fire was rapidly spreading towards the recently completed Cressman Road Fuel Modification Zone (FMZ).

Battalion Chief Jim Smith had these words to help explain how he considered and incorporated the Cressman Road FMZ into his incident strategy and tactics:

*As Incident Commander on the Peterson Fire, the Cressman Fuel Modification Project provided me with:*

- 1. The confidence that the head of the fire would be stopped or slowed when it reached the FMZ;*
- 2. That it would serve as a safe point of attack for firefighters even at the head of the fire;*
- 3. That firefighters could “anchor-in” at the FMZ and safely make a downhill hoselay along the flank of the fire;*
- 4. It significantly reduced the number of firefighting resources ordered for the incident;*
- 5. Fire intensities and subsequent resource damage was significantly reduced in the FMZ compared to the non-treated areas in the fire perimeter.*

# Background

## **CRESSMAN ROAD FUEL MODIFICATION ZONE**

The California Department of Forestry and Fire Protection (CDF), in cooperation with the Pine Ridge Property Owners Association, the Highway 168 Fire Safe Council and the California Department of Corrections developed the Cressman Road FMZ. A FMZ is also commonly referred to as a shaded fuel break. A FMZ is an area where selected vegetation has been removed in such a way as to break the horizontal and vertical continuity of forest fuels.

The Cressman FMZ project is located along the Cressman Road in the Pine Ridge Area of eastern Fresno County below Shaver Lake. The project elevation ranges from 4,600 to 5,000 feet and is located mid-slope on a mostly southern aspect. The subdivision consists of approximately 75 residences on 113 parcels. The dwellings are a mix of seasonal and year-round use. The Cressman Road FMZ involved 60 parcels and 57 different landowners.

The purpose of this project was to try and increase the level of safety for both residents and firefighters that may be entering and/or leaving the Cressman Road area under wildfire conditions. This increased level of safety has been achieved through the selective removal of vegetation along Cressman Road. The Cressman Road area was selected for this project because of several reasons:

- 1) The Fresno/Kings Unit of the California Department of Forestry and Fire Protection has identified the Pine Ridge area as a priority area for fuel reduction projects. This area was selected as a priority because of its high fuel loading, its potential for a large damaging fire and its high population density intermixed within the wildland.
- 2) The Highway 168 Fire Safe Council has identified the Pine Ridge area as a priority area for fuel reduction projects for similar reasons.
- 3) Cressman Road is a single lane road, open to the public, which accesses approximately 113 parcels and 75 residences.
- 4) At the initial discussion stages of this project, the Pine Ridge Property Owners Association expressed interest in and support of the proposed project.

This project was paid for by funding from the California Department of Forestry and Fire Protection as well as grant funding from the US Forest Service through the National Fire Plan. The Fresno/Kings Unit of the California Department of Forestry and Fire Protection was awarded the funding to complete the multi-year project.

Participation in this project was completely voluntary on the part of landowners. Landowners participating in the project needed to sign an agreement with CDF prior to any work being done on their property. There was no cost to landowners that participated.

Inmate firefighting crews, under the supervision of CDF personnel were utilized to develop the FMZ. These crews utilized chainsaws and hand tools to selectively remove vegetation within the project area. The vegetation that was removed was either piled and burned during safe conditions or chipped by the crews.

The FMZ extends along Cressman Road and Lower Cressman Road from Highway 168 to the National Forest boundary. In addition, it includes approximately the first quarter mile of Upper Cressman Road. Within the FMZ, vegetation was selectively removed within approximately 200 feet of either side of the roadway. This zone width varied

based on topographic features and vegetation conditions. Consideration was given to screening of homes located within and/or adjacent to the zone.

## **Treatment Prescription**

As stated above, this project selectively removed un-merchantable vegetation in order to break the horizontal and vertical continuity of forest fuels. The following specifications applied to vegetation removal:

- 1) Trees removed did not exceed a nine (9) inch diameter at breast height (DBH) i.e. 4.5 feet above the ground.
- 2) Trees were removed in order to eliminate fuel ladders and achieve crown separation.
- 3) Trees saved were selected based on the following criteria:
  - Straight trunk with no defects, generally healthy and free of insects or disease.
  - Save trees were selected in the following order of preference: black oak, ponderosa pine, sugar pine, Douglas-fir, white fir, incense cedar.
- 4) Remaining trees were pruned as follows:
  - Trees under a six (6) inch DBH retained a minimum of a 50% live crown.
  - Trees over a six (6) inch DBH were pruned to ten (10) feet above the ground.
- 5) The majority of brush was removed so as to achieve a separation of horizontal fuels.
- 6) Down trees and logs on the ground were removed when feasible.

Removed vegetation was piled and burned and/or chipped. Burn piles were located away from watercourses and residual trees. All pile burning was conducted in accordance with Air Pollution Control District regulations.

Future project maintenance will involve removal of vegetative re-growth, additional thinning and additional pruning. It is anticipated that individual landowners will be able to do the bulk of the project maintenance now that the initial development phase is over.



## Cressman Road FMZ Project Costs

Various funding sources were used to complete the project. The first source of funds was from Fuel Load Reduction funding provided to CDF by the California State Legislature in Fiscal Year 1999. The next source of funds were from two Wildland Urban Interface Grants provided by the National Fire Plan and administered by the U.S. Forest Service.

1999 CDF funds:	\$ 3,000.00
2001 WUI funds:	\$53,548.61
<u>2002 WUI funds:</u>	<u>\$36,660.67</u>
Total:	\$93,209.28

$\$93,209.28 / 151 \text{ acres treated} = \$617.28 \text{ per acre treatment costs}$

These funds do not include budgeted personnel time.

## Cost Effectiveness

Peterson Fire Suppression costs:	\$1.4 million
\$1.4 million / 73 acres =	<b>\$19,178 per acre fire suppression cost</b>
Cressman FMZ Costs:	\$93,209.28
\$93,209 / 151 acres =	<b>\$617 per acre FMZ treatment cost</b>
Estimated Potential Loss w/o Cressman Road FMZ:	\$65 million*

The cost effectiveness of fuel load reduction projects is often questioned. When the cost of a project is compared to the cost of an extended attack wildfire, the initial up-front costs of a project become justifiable.

\*Estimated potential fire size of 1,500 acres. Estimated 200 homes within the 1,500 acres. Conservative average home value of \$325,000. Does not include watershed or infrastructure values.

## Fire Behavior

US Forest Service Battalion Chief, David Cooper observed the fire behavior as the fire approached the FMZ. He stated that the fire was torching in single trees with short crown runs as it approached the FMZ. Once the fire reached the FMZ the fire dropped to the

surface and ground fuels and slowly spread through the FMZ until it reached Cressman Road. Battalion Chief David Cooper also stated that there were in excess of 20 spot fires at the head of the fire. Most of the spot fires occurred in the FMZ and were easily observed and extinguished. One of the spot fires occurred along the left shoulder of the fire, outside of the FMZ. This spot fire grew to approximately one acre in size before it was noticed and extinguished.

The attached photos help document and validate the observed fire behavior. The most noticeable indicator is the lack of torched trees in the FMZ. In the untreated area, single trees and groups of trees torched with short crown runs consuming all of the available fuels. In the FMZ, the surface fuels, primarily bear clover, were consumed and the trees were only scorched.

## **Other Considerations**

The ultimate credit for the success of the Cressman Road FMZ project belongs to citizens of the Pine Ridge Property Owners Association (PRPOA), the Pine Ridge Volunteer Fire Dept. and the Highway 168 Fire Safe Council.

The PRPOA listened to CDF's concern for their area and was receptive of Battalion Chief, Bill Johnson's proposal to create the FMZ. With encouragement from the Highway 168 Fire Safe Council, the PRPOA signed up for the FMZ project and implemented several other Pre-fire actions in their community. The PRPOA made road signs that identified addresses, escape routes and water sources. The PRPOA created an emergency manual that contained plans and information for emergencies in their community. The PRPOA also formed the Pine Ridge Volunteer Fire Department. In 2003 the PRPOA was awarded the National Bronze Smokey Bear Award for their accomplishments in Pre-fire planning and fire prevention.

Battalion Chief David Cooper also added that he observed incredible teamwork by the newly formed Pine Ridge Volunteer Fire Department personnel and the various paid and volunteer fire departments that responded to the fire. He felt that the close working relationship and preparedness training that the Pine Ridge Volunteer fire Department has conducted with CDF and US Forest Service through the Highway 168 Fire Safe Council paid off.

## **Conclusion**

The Cressman Road FMZ has now been tested and was a success. The project was designed to provide safe ingress of fire suppression personnel and equipment while allowing for the safe egress of residents. The project was not designed to stop a fast moving high intensity fire but to provide for the opportunity to stop a low to moderate intensity fire. Many have asked if the Cressman Road FMZ stopped the Peterson Fire.

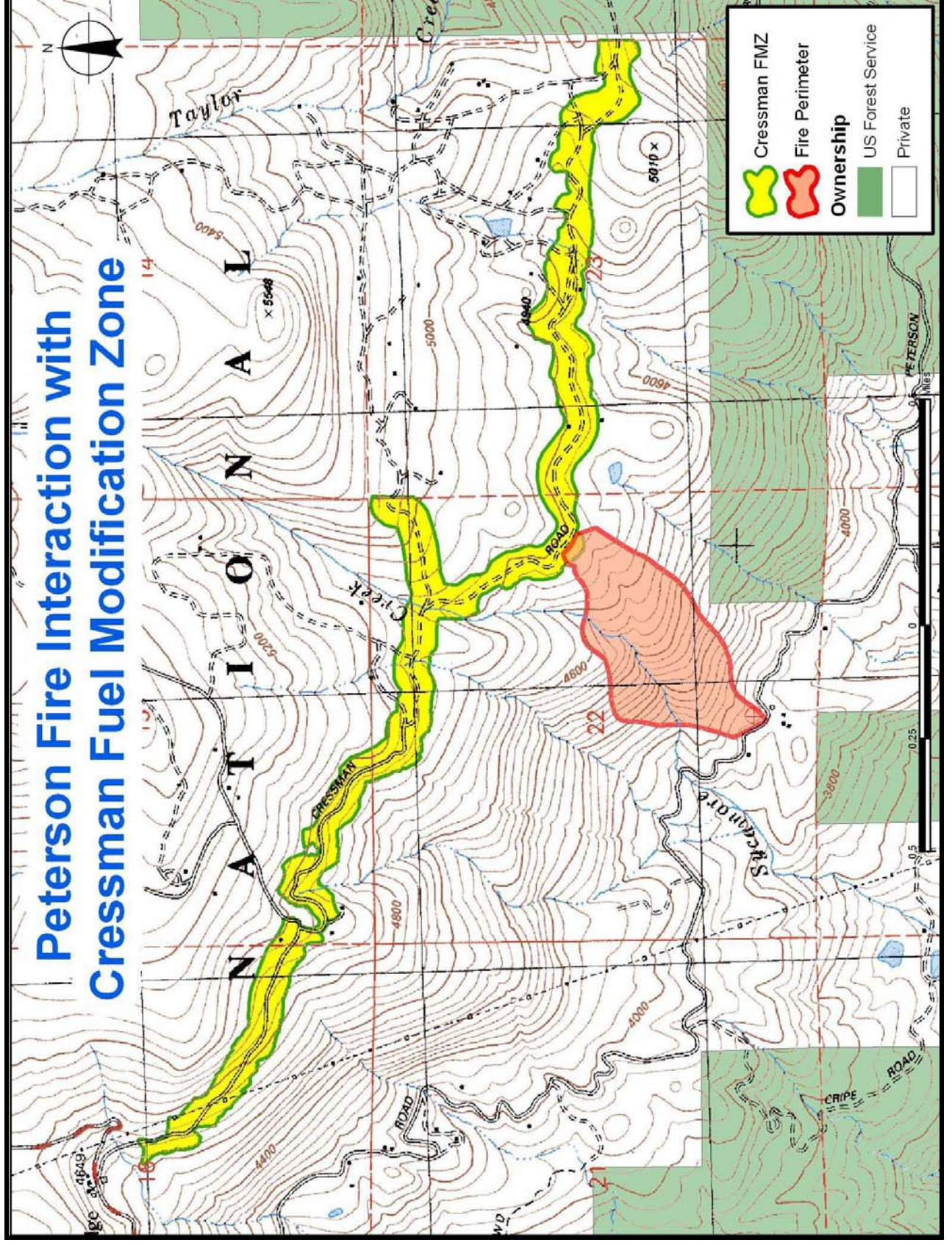
The answer is that it did exactly what it was designed to do and that is allow for the opportunity to stop the fire by providing a relatively safe area to work from. The Cressman Road FMZ did not stop the Peterson Fire by itself, but became a tool that the Incident Commander was able to utilize to help stop the fire.

## **Questions and/or Further Information**

For further information on the Peterson Incident, the Cressman FMZ Project or to clarify information, please contact:

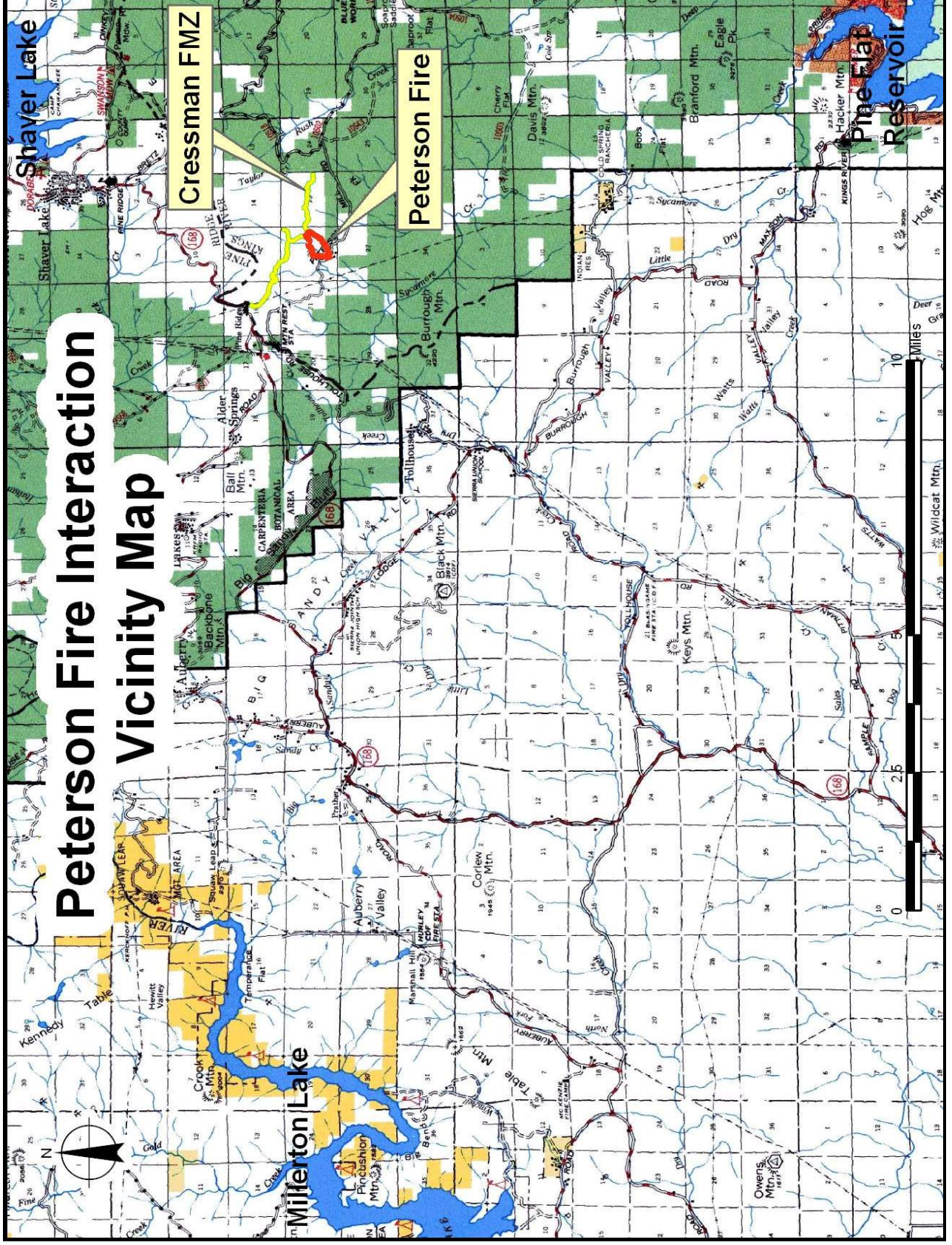
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# Peterson Fire Interaction with Cressman Fuel Modification Zone





# Peterson Fire Interaction Vicinity Map





**Fire Area looking North**



**Unburned fuels next to fire line**





**Burned fuels next to fire perimeter**



**Burned fuels next to fire perimeter**







**Untreated fuels (torched trees) in foreground. FMZ in background. Divided by visible dirt road.**





**Example of burned ladder fuels in untreated area.**





**Scorch height in FMZ. No trees torched in FMZ**





**Scorch height in untreated area. Many trees torched in untreated area, a contributing factor to over 20 spot fires at the head of the fire.**



**Before FMZ treatment**



**After FMZ treatment**





**Before FMZ treatment**



**After FMZ treatment**





**Before FMZ treatment**



**After FMZ treatment**





**Before FMZ treatment**



**After FMZ treatment**

