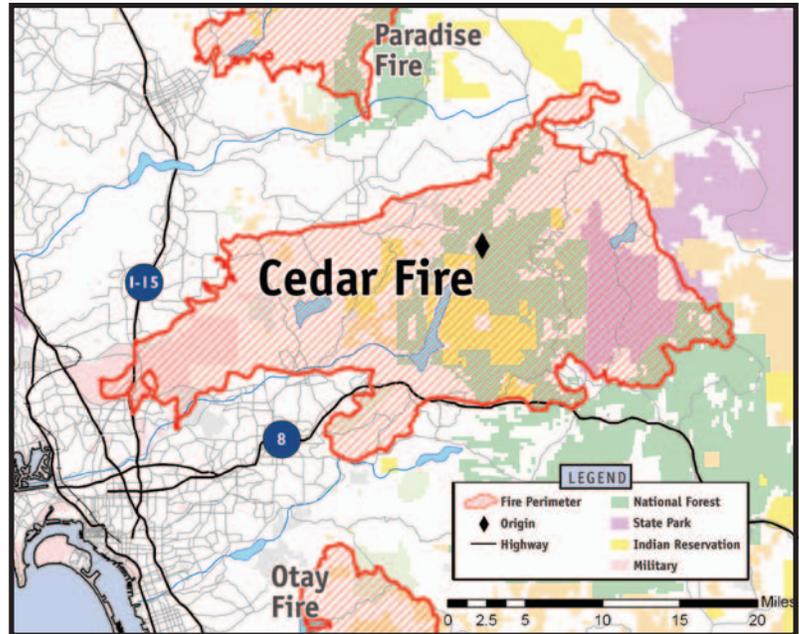


Cedar

Oct. 25–Nov. 4, 2003

- Total Acres: 273,246
- Estimated Suppression Cost: \$29,880,826
- Firefighters assigned at Peak: 4,275
- Residences Destroyed: 2,232
- Commercial Structures Destroyed: 22
- Other Structures Destroyed: 566
- Lives Lost: 14
- Communities Evacuated: Ramona, Pine Hills, Barona Mesa, San Diego Country Estates, Poway, Descano, Flynn Springs, Jamul, Pine Valley, El Cajon, Santee, Lakeside, San Diego, Julian, Mt. Laguna, Escondido, Crest, Cuyamaca, Alpine, Guatay, Santa Isabel, Ranchito, Wynola, Santa Ysabel
- Cause: Human
- Fuel Type: Grass, medium to heavy brush, and timber



Although the entire 2003 Fire Siege was historic, it is the Cedar Fire that will set the benchmark by which southern California fires will be measured for years to come. It was the largest fire to ever burn in California, tragically killing 14 people and destroying thousands of structures. Extreme fire behavior sent walls of flames down upon communities too fast for many people to get out of the way.

The Cedar Fire started at dusk on October 25th, too late to safely use aircraft. By midnight there were 340 firefighters at the Command Post ready to fight the fire which at the time was burning in an inaccessible area. The rugged terrain made conditions too dangerous for firefighters to traverse out to the fire at night. The Incident Commanders, preparing for the next day, immediately ordered additional resources, intending to hit the fire hard with aircraft and ground crews when the sun came up. The Cedar Fire didn't wait. The dreaded Santa Ana wind hit the fire about midnight and any hope of the fire staying within the Cleveland National Forest was lost as the fire raced toward nearby communities at record speeds. In the first few hours thirteen civilians perished as the fire trapped and over ran both civilians and the responding emergency personnel. It would not be stopped.

Prior to the start of the Cedar Fire, San Diego fire agencies had sent many resources north to help with the fires that had started in the previous four days, some of which were growing rapidly and threatening many communities. On the 24th, CDF and the other fire departments of San Diego County recognized that the burning conditions were ripe for a large fire in the San Diego area also, and issued direction that all stations should stay staffed with the remaining resources with no further assignments accepted for fires outside the county. The decision paid off as the need for fire engines escalated rapidly. By 10:00 p.m. on the 26th, the Cedar Fire was estimated to be 182,000 acres with 1,200 firefighters scrambling to evacuate residents and protect what structures they could. When the wind changed direction, the five mile long flank of the fire became the head of the fire. At the peak of the burning, the Cedar Fire grew at a rate of 12,000 acres per hour. Before it was done, the fire would burn into or threaten over 25 communities plus scattered ranches.

The fire was huge. Two Command Teams were ordered. A CDF Incident Command team arrived first followed by a Federal National Team. The CDF Team immediately joined with law enforcement in a unified command, greatly improving the evacuation effort. When the Federal Team arrived, the fire was split, the CDF Team taking the west zone and the Federal Team taking the east zone.

This improved the span of control, safety and logistics of managing the huge workforce that eventually exceeded 4,200 personnel. Initial confusion from responding resources on which zone to report to were quickly resolved.

Social and political demands became problematic, reportedly affecting the Incident Commanders' ability to make timely decisions and focus on the task at hand. A congressman's house was destroyed and there was pressure from elected officials and others to immediately use military resources. These demands could not be met due to safety rules, the laws governing the use of military, and the amount of time it takes to train and deploy the military resources for firefighting missions. To relieve political pressure, the U.S. Forest Service ordered a battalion of Marines on the 28th, in spite of a favorable weather forecast and the fact that over 3,000 personnel were already assigned to the fire. This order was cancelled the following day as damp weather entered the area.

Due to the large number of big fires across Southern California, a tremendous workload was being placed on the normal resource ordering system. All fires were experiencing delays in obtaining resources. Likewise, as the Cedar Fire grew, Incident

Commanders had to adjust their suppression objectives to match the available resources and place them in the most critical areas until additional resources arrived. This shortage also resulted in some firefighters working very long shifts and exceeding the maximum work/rest cycles that firefighting agencies use to keep personnel from succumbing to fatigue after long hours of hard work.

Even during the height of the firefight, elected officials and the news media criticized the fire agencies of not fighting the fire aggressively enough. The Incident Commanders and Agency Administrators now had the fire to fight as well as a need to respond to the rapidly growing political and public demand for information and answers. Dividing responsibilities, Agency Administrators tried to handle the large number of interviews, press conferences and the negative media coverage, while the Incident Commanders focused the efforts of their people on the firefight. The negative reaction from outside the fire was widespread and loud.

The fight continued as the wind had shifted to a westerly and the fire headed east towards Cuyamaca and Julian. Firefighters were working long hours, not leaving their posts until relief arrived. The critical public reaction had a negative affect on the morale of the firefighters who were working in extreme conditions and risking their lives to save people and property. Then, one of their own fell. A Novato Engine Company was trapped and overrun while defending homes in the Julian area. One firefighter was killed and the three others were injured. This tragic event could not and did not slow down the fire fight. A special accident review team was brought in to investigate the accident so the Incident Management Team could continue with the firefight itself.

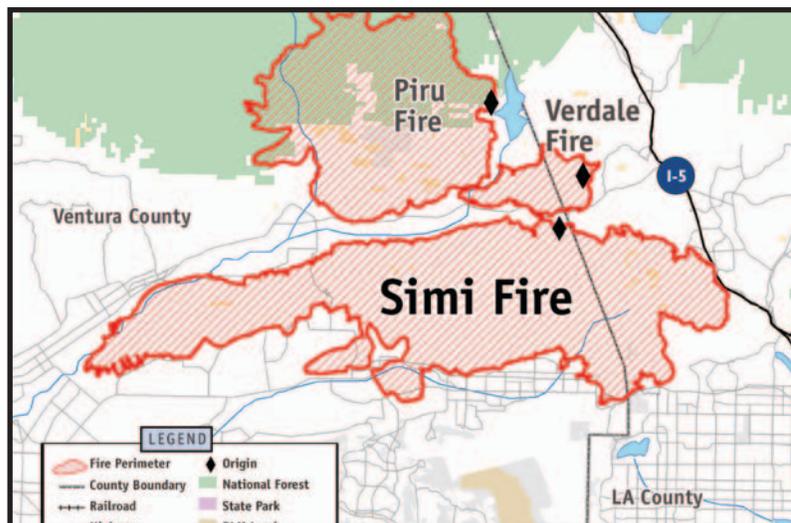
With the wind shift, the fire was now burning toward the old Pines Fire which had burned in 2002. That recent burn area allowed the firefighters to use the lack of heavy fuels as a fire break where the Cedar Fire could be stopped effectively.

The stories of loss, heroic actions, lives and property saved, and the affects across a large area of Southern California are too numerous to put into one document. Lessons learned from big fires during the siege will help shape the policies of fire, law and other public agencies as these events are studied to see how things can be improved. The Cedar Fire will be a significant part of those reviews and will be a case study for firefighters of the future, who always study the past to learn their trade and improve their knowledge of how do the best they can with what they are given.

Simi

Oct. 25–Nov.4, 2003

- **Total Acres:** 108,204
- **Estimated Suppression Cost:** \$10,000,000
- **Firefighters Assigned at Peak:** 1,575
- **Residences Destroyed:** 37
- **Other Structures Lost:** 278
- **Lives Lost:** 0
- **Communities Evacuated:** Chatsworth, Stevenson Ranch
- **Cause:** Spot from Verdale Fire
- **Fuel Type:** Grass and medium to heavy brush

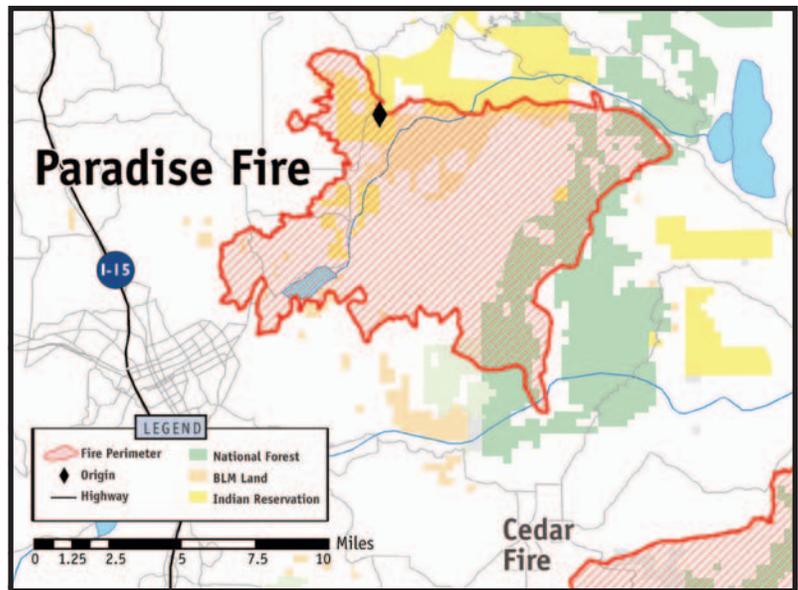


By Oct. 25, Incident Commanders for the Verdale, Piru, and Simi fires coordinated and shared resources among the fires, effectively operating as an area command. As Santa Ana winds pushed the fire through Ventura County, the State Incident Command Team focused on a defensive strategy to protect lives and property. With resources critically short, the Ventura County Fire Chief requested ambulance companies to cover empty fire stations to provide basic EMS services to the public. Fire history for the last eight major fires in this area shows that a fire will run through Rocky Peak Park to Malibu once it crosses Highway 118. The fire was successfully stopped at the 118 Freeway. On the night of October 25 and into the morning hours of the October 26, the rampaging fire burned 300 structures including 22 homes. On October 26, LA city and county chiefs took independent action to launch all air resources within the county's control to stop the eastern progression of the Simi Fire. On Oct. 27, the Incident Command Team requested the closure of Interstate 5 in Santa Clarita for public and firefighter safety knowing that interstate commerce would be severely impacted. During the wind event, firefighters were able to take advantage of the vegetation clearance and construction standards required by county ordinance to save subdivisions and were able to allow citizens to shelter in place rather than evacuate. The defensible space ordinances proved very successful. The Area and Incident Commanders viewed the MACS conference calls as more information sharing than decision-making in nature.

Paradise

Oct. 26–Nov. 4, 2003

- Total Acres: 56,700
- Estimated Suppression Cost: \$13,000,000
- Firefighters Assigned at Peak: 2,222
- Residences Destroyed: 221
- Commercial Structures Destroyed: 2
- Other Structures Destroyed: 192
- Lives Lost: 2
- Communities Evacuated: Valley Center, Lake Wolford, Escondido, Deer Springs, Mesa Verde, Mesa Grande, La Jolla, Mt. Palomar, Scripps Ranch
- Cause: Human
- Fuel Type: Grass, medium to heavy brush

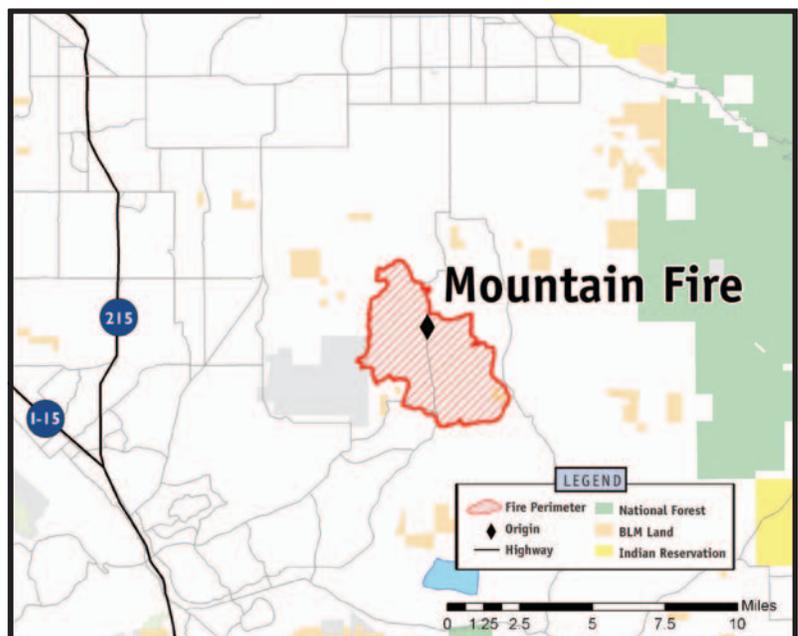


On October 26, the MACS group declared the Paradise fire as the #3 priority fire behind the Cedar and Old fires. The Incident Command Team perceived a significant delay in receiving critical resources. Life safety became the primary focus of all strategic and tactical decisions due to drastically limited resources. Perimeter control was secondary until additional resources became available as the fire burned blocks of homes. The team employed a strategy of going outside of the ordering system to get equipment. Local tribal governments provided resources. The Paradise Fire was included as the San Diego Unified Area Coordination Team was established on October 30. This Area Coordination Team adjusted resource orders for the fires within their area. The pre-existing evacuation plan for Palomar Mountain was implemented smoothly.

Mountain

Oct. 26–Nov. 2, 2003

- Total Acres: 10,331
- Estimated Suppression Cost: \$2,230,000
- Firefighters Assigned at Peak: 697
- Residences Destroyed: 21
- Other Structures Destroyed: 40
- Lives Lost: 0
- Communities Evacuated: Sage, Glen Oak Hills
- Cause: Under Investigation
- Fuel Type: Grass and medium to heavy brush

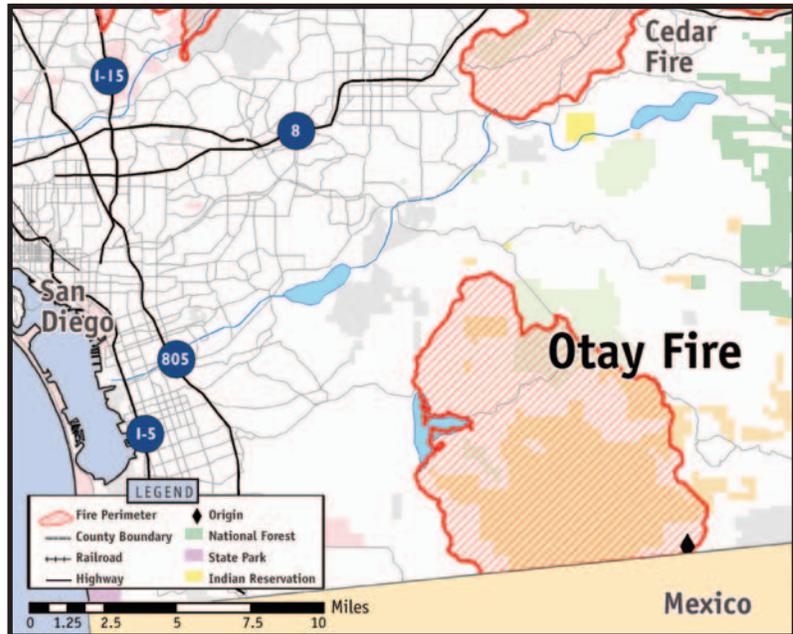


Chief Officers supported a strategy of aggressive initial attack for the Mountain Fire. Thirty fire stations in Riverside County were emptied to support the initial attack on the fire. The CDF Riverside Chief requested private sector ambulance companies to cover the open fire stations and maintain a basic level of emergency medical service to the public. Evacuations were completed successfully. A State Incident Command Team was assigned. The local sheriff was able to re-open roads within 36 hours of the closure and evacuation.

Otay

Oct. 26–Oct. 28, 2003

- Total Acres: 45,971
- Estimated Suppression Cost: \$350,000
- Firefighters Assigned at Peak : 138
- Residences Destroyed: 1
- Other Structures Destroyed: 5
- Lives Lost: 0
- Communities Evacuated: None
- Cause: Under Investigation
- Fuel Type: Medium to heavy brush

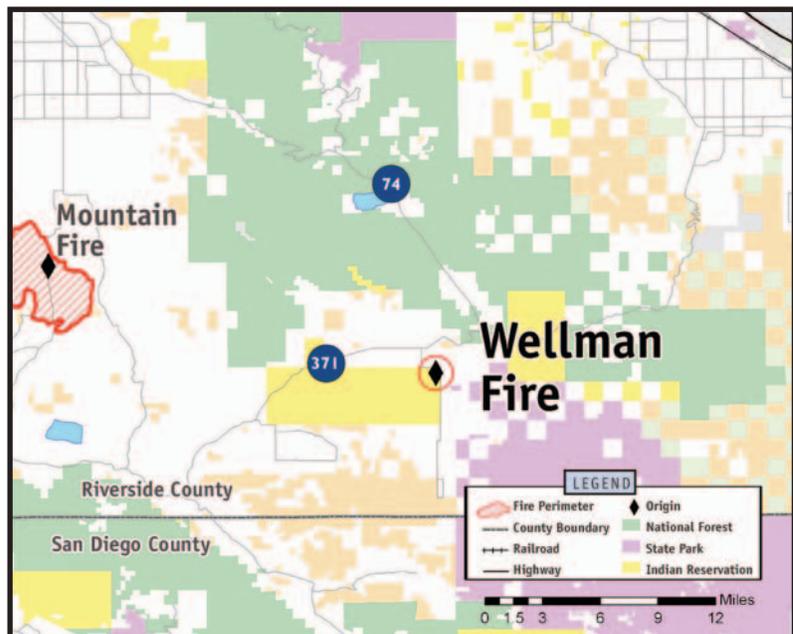


The Otay Fire started during the Santa Ana wind event. The initial attack CDF incident commander recognized the value of an existing BLM International fuel break and used a major burnout strategy to successfully suppress the fire with very limited resources. The fire was successfully contained and major resource releases were completed by October 28.

Wellman

Oct. 26–Oct. 27, 2003

- Total Acres: 100
- Estimated Suppression Cost: \$100,000
- Firefighters Assigned at Peak: 150
- Residences Destroyed: 0
- Lives Lost: 0
- Communities Evacuated: None
- Cause: Under Investigation
- Fuel Type: Grass, and light to medium brush



Chief Officers supported a strategy of aggressive initial attack for the Wellman Fire. This fire, burning under general Santa Ana wind conditions, was contained in 10 hours at 100 acres. Resources were available for release the next day.

Appendix 3

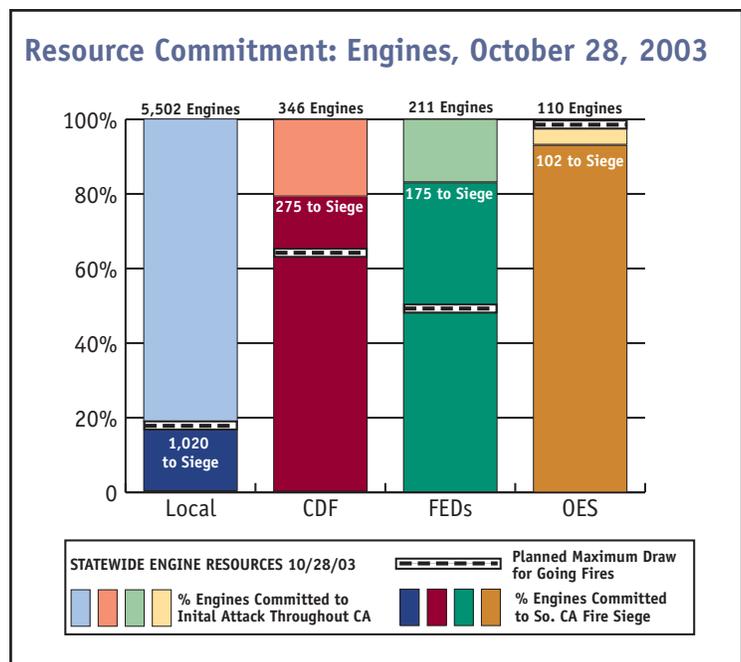
Resource Commitment

Agency administrators make many strategic decisions during fire events such as the 2003 fire siege in southern California. Many of these decisions involve a balancing of demand for resources with the available supply. Several factors must be considered as multiple incidents compete for scarce resources. These factors include threat to human life and property, threat to critical natural resources, and the growing demand of existing fires. Agency administrators must also consider the potential for new fires. The general strategy is to maintain sufficient initial attack strength in reserve to contain new fire starts before the fires grow to be major fires. Agency administrators maintain a tremendous amount of information about the current status of the wildland fire response system. It is difficult to display this information in sufficient detail yet summarized succinctly to convey the agency administrator's dilemma of balancing resource commitment to going fires while maintaining reserve strength for new fires. During this siege, the wildland fire agencies retained sufficient initial attack strength from San Luis Obispo County north to the Oregon border to respond to hundreds of initial attack fires. As the map indicates, 16 of these fires posed a significant threat and required an extended commitment to keep them from becoming major conflagrations. As fire weather conditions abated in the north, additional wildland resources were quickly sent south to assist with the southern California fire problem.



The authors of this report developed graphical summaries of fire engine and air tanker use to serve as indicators of this complex decision process. Fire engine use is summarized by level of government by commitment per day. All local government engines are grouped in the category of "Local Engines". All federal agency resources are grouped in the category of "Federal Engines". The California Department of Forestry and Fire Protection wildland engines are shown in the category of "CDF Engines" and Office of Emergency Services (OES) engines that are staffed by local government are shown as "OES Engines. This is a highly simplified grouping of fire engines by level of government and it is likely that some engines may be counted in the wrong category. For example, engines staffed by CDF under contract to local government may be inadvertently counted as a CDF wildland engine. These data difficulties should not be significant enough to detract from this report.

In the Fire Engine Use graph, the height of the bar indicates 100% of the total capacity for fire fighting statewide. The dark colored bar indicates the percentage of engines committed to the major fires in southern California. The light colored portion at the top of the bar represents the remaining engines committed to fight new initial attack fires across the state. The dotted line through the bar represents the planned level of maximum draw for going fires with prudent reserves maintained for new fires. This graphic changes day by day, reflecting the dynamic response to the changing fire situation. During the historic events of the 2003 southern California fire siege, agency administrators made critical decisions to deploy as many California resources as deemed prudent based on fire weather conditions and to activate reserve and out-of-service resources as quickly as possible to add to capacity. As the siege evolved and critical fire weather moderated in northern California, agency administrators were able to send additional resources south. This becomes evident on the daily use statistics for CDF and U.S. Forest Service engines.



Aircraft use is another indicator of scarce resource commitment. Agency aircraft, private sector contractors, and military resources are tapped during large sieges such as this event. Helicopters are assigned to specific incidents and the incident management team maintains use records. Airtankers operate out of fixed bases and records are maintained at those bases. These airtanker base records are more quickly available for inclusion in a report such as this so the airtanker records are used as an indicator of aircraft use during the siege. Airtankers are a mobile resource covering large areas. Fire managers routinely

adjust assignments as the fire situation changes. For example, airtankers are often diverted from going fires to new initial attack fires to assist with early containment.

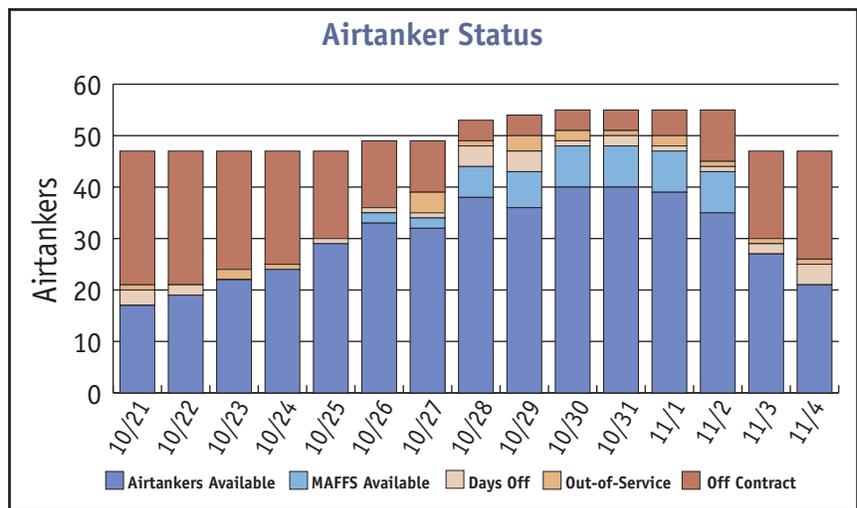
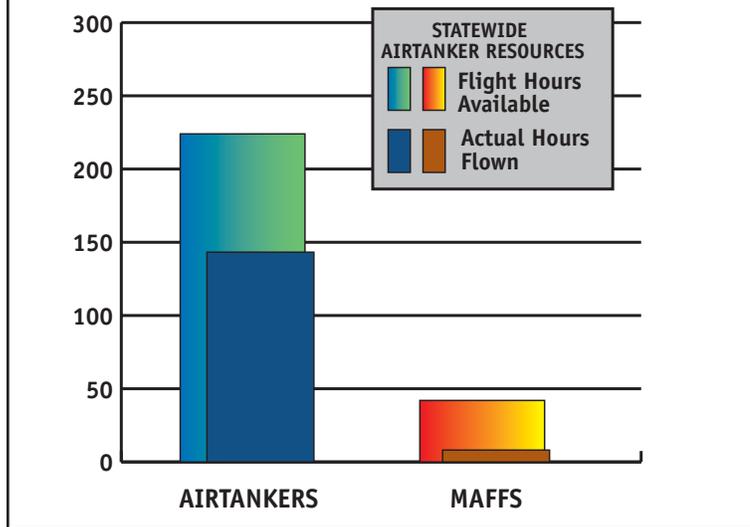
Weather, fire behavior, topography, smoke and daylight also influence tactical decisions on the use of airtankers. Retardant drop pattern effectiveness is greatly reduced as ground level winds exceed 35 miles per hour. The wind disperses the retardant before it hits the fire's edge. High winds can make flying low level drops in mountainous terrain unacceptably dangerous. In these situations, conditions require highly trained pilots to recognize dynamic microclimate changes that influence flying conditions. Aircraft operations in mountainous terrain are also exceedingly dangerous as dusk or early dawn cast long shadows and obscure the topography. Smoke further obscures the terrain and the intensity of the fire itself can influence canyon winds. Flight characteristics of the aircraft itself are also factored into decisions on airtanker usage. Safety rules require that Fire Commanders stop using airtankers when conditions become too dangerous.

Military aircraft use was an issue during this fire siege so the availability and use of the military C130 MAFFS fleet is summarized and included with the regular airtanker fleet in this report.

Actual flight time flown on the 14 fires tracked during this siege is recorded daily. Available flight time for California is estimated by multiplying seven hours per day of flight time by the number of airtankers available in California. A similar calculation is made for the military C130 MAFFS aircraft. The aircraft use graph then displays daily use with daily availability.

Much of the available time may result from aircraft assigned in an area that does not experience a large fire that day. Airtankers, as well as helicopters, on major fires are routinely timed-out while aircraft assigned to initial attack will still have available flight time as they are on stand-by for new fires. The difference between the top of the committed airtanker bar and the available bar gives an indication of reserves for responding to new fires statewide. This graphic changes day by day, reflecting the dynamic response to the changing fire situation. For example, airtanker use and reserve capacity for one day is displayed in the graph at right. The California Department of Forestry and Fire Protection contracts with a private vendor for the operation and maintenance of its airtanker fleet. The length of the contract period varies from the northern counties to the southern counties based on the length of the budgeted fire season. Based on this contract, several airtankers are placed in an off-contract status during October of each year. As the siege developed, these aircraft were returned to service. As the siege abated and cool wet weather returned, many aircraft were returned to the off-contract status. The following graphic also shows out-of-service status. The high number of out-of-service aircraft on Oct. 27 is a result of flying debris striking aircraft during extreme fire behavior.

Resource Commitment: Airtankers, October 28, 2003



Date	10/21	10/22	10/23	10/24	10/25	10/26	10/27	10/28	10/29	10/30	10/31	11/1	11/2	11/3	11/4
Off-contract	26	26	23	22	17	13	10	4	4	4	4	5	10	17	21
Out-of-Service	1	0	2	1	0	0	4	1	3	2	1	2	1	1	1
Days Off	3	2	0	0	1	1	1	4	4	1	2	1	1	2	4
MAFFS	0	0	0	0	0	2	2	6	7	8	8	8	8	0	0
Available	17	19	22	24	29	33	32	38	36	40	40	39	35	27	21
Total	47	47	47	47	47	49	49	53	54	55	55	55	55	47	47

Appendix 4

The Fire Environment

Primarily because the Mediterranean climate and a distinctive complex of topography and fuel create conditions favorable to major fires during every month of the year. The winters are mild, with infrequent short rainy periods. A long period without rain often extends from early spring to late fall or early winter. Steep and rugged mountains, cut by numerous canyons, border most of the major cities. Much of the mountain land is covered with a dense growth of flammable chaparral shrubs, such as chamise, manzanita, ceanothus, and scrub oak. On the lower slopes and foothills, this heavy growth gives way to lighter, but extremely flammable vegetation, such as sage, buckwheat, and various grasses and forbs. Some of the higher ridges are covered with conifers -mostly pine- interspersed with chaparral and grass. During the late winter and early spring growing season, the vegetation usually contains large amounts of moisture -providing there has been enough rain to start growth at all. But with the onset of the long rainless season, the annual plants die, and the shrubs lose much of their moisture. By September, some of the living plants, such as chamise, can be ignited with a match, and the dead and dry annuals can be touched off by a spark. After a fire, many of the plant species sprout prolifically, and others re-generate from seed left in the soil. Within 10 to 20 years, enough standing fuel has developed and dead material accumulated to permit the area to burn hot and fast again.

(Clive M. Countryman, "Can Southern California Wildland Conflagrations be Stopped ?" 1974)

Fuels and Vegetation

In January of 2001, there was increasing concern within the various fire agencies in southern California about fuel conditions in the region. Southern California mountain conifer forests had been exhibiting symptoms of severe drought stress. Drought weakened trees continued to be attacked by the western pine beetle, red turpentine beetle and the pine engraver. Whole stands of conifer trees are dying.

In addition to the tree mortality, it was also noted that native oaks and chaparral (brush, mainly chamise and manzanita) were dying. By August of 2003, approximately 360,000 acres of dead, highly volatile fuels were ready to explode if combined with specific weather conditions and an ignition source. Several mountain communities were surrounded by literally thousands of acres of dead standing timber, dead brush and oak placing significant numbers of lives and homes at risk to a catastrophic fire event.

Four years of drought is not the only factor leading to the unhealthy state of the southern California vegetation. Extreme vegetation density combined with disease and insect populations are natural phenomenon that have interacted to effect conditions in southern California.

Chaparral typically does not burn until it reaches about 25 years of age, however in southern California all but the very youngest age classes will burn at times of low fuel moisture and extreme fire weather (Keeley and others. 1999). Live fuel moistures in many southern California counties were at or below 60% when the fires started thus contributing to extreme fire behavior and rates of spread when combined with Santa Ana winds. These fuel conditions combined with Santa Ana winds make fire fighting extremely dangerous to fire fighters and puts public and firefighters at risk.

Weather

The climate in this region is best described as Mediterranean, characterized by wet winters and dry summers, with mild seasonal changes. It is cyclic in nature, with years of consecutive low rainfall and extended droughts, as well as years with high rainfall and associated flooding. Average annual precipitation varies



dramatically with latitude, longitude and elevation, ranging from 2-3 inches in the eastern deserts, 40-42 inches in the coastal redwoods and 60 inches or more on the higher mountain peaks, usually in the form of snow. The southern California climate is naturally arid with little or no precipitation occurring during much of the year.

While most days in southern California consist of sea breezes and mountain upslope winds, the late summer and fall are typically the times for Santa Ana winds. Massive fires in southern California typically coincide with offshore Santa Ana winds (relative humidity, 20-40%, winds, 20-50 miles per hour).

Weather for the period during the fire siege was hot and dry, temperatures where at record levels 10-20 degrees above normal. Humidity's were extremely low with afternoon readings below 10 percent in most areas and winds relatively light from the northeast 5-15 over the mountains and shifting southerly each afternoon. When winds increased around the 25th becoming 15-25 mph with local gusts up to 40 mph or stronger is when fire behavior becomes extremely difficult to impossible to fight safely.

Local flood peaks generally occur during major rainfall events, which threaten life and property during these periods. Large scale and high return interval floods are associated with major sub-tropical events in the southern part of the state and with northern pacific frontal systems in the northern portion of the planning



area. Wildfire flood related events are exacerbated by the large amounts of sediment released by the wildfires that "bulk" the flood flow volumes to double or triple their average volumes

Topography

The topography of southern California is diverse. From the coastal plains to the steep rugged mountains this diverse topography creates a complex fire environment. The topography creates local weather phenomenon as air moves through passes and over mountains. The battle between the marine influence and the deserts and valleys is a daily occurrence. The steep mountains add to the complexity as fires spread faster up hill. Fighting fire in the steep mountains is difficult and sometimes impossible. The transverse ranges of the San Bernardino, San Gabriel, San Jacinto and the Southern Los Padres mountains further complicates the problems as the ridges run in an east/west direction which aligns them with the prevailing west winds

Appendix 5

Fire Safe Councils

The Fire Safe Council idea surfaced in 1993 to inform and encourage Californians to prepare for wildfires before they happen. Fire Safe Councils mobilize community members to take action to reduce the risk to their communities, their homes, and their property. The Council has united the diverse membership to speak with one voice when it comes to community fire safety. The Council has distributed fire prevention education materials to industry leaders and their constituents, evaluated legislation pertaining to fire safety, and empowered grassroots organizations to spearhead fire safety programs.

The 61 public and private organizations listed here are members of the statewide Fire Safe Council:

• Allstate Insurance • American Red Cross • American Society of Landscape Architects • Association of Contract Counties • Bureau of Land Management • California Air Resources Board • California Association of Nurserymen • California Association of Realtors® • California Association of Resource Conservation Districts • California Board of Forestry • California Building Industry Association • California Cattlemen's Association • California Department of Conservation • California State Association of Counties • California Department of Fish and Game • California Department of Forestry and Fire Protection • California Department of Insurance • Firefighters Association • California Department of Parks and Recreation • California Fair Plan Association • California Farm Bureau Federation • California Fire Chiefs Association • California Forest Products Commission • California Integrated Waste Management Board • California Landscape Contractors Association • California Sod Producers • California State Association of Counties • California State Automobile Association • California State Fire Marshal's Office • California State Firefighters Association • California Urban Forests Council • Chubb Insurance • Committee for Firesafe Dwellings • Council for a Green Environment • Farmer's Insurance Group of Companies • Federal Emergency Management Agency • Fire Districts Association of California • Firewise: What you can do to protect your home • Fireman's Fund Insurance • Governor's Office of Emergency Services • Insurance Information Network of California • Insurance Services Office, Inc. • League of California Cities Fire Chiefs • Los Padres Forest Association • The Nature Conservancy • National Audubon Society • National Fire Protection Association • Orange County Fire Authority • Pacific Gas & Electric • Personal Insurance Federation • Planning and Conservation League • Roundup • Safeco Insurance • San Diego Gas & Electric • Society of American Foresters • South Coast Air Quality Management District • Southern California Edison • State Farm Insurance Companies • Twentieth Century Insurance • USAA Property and Casualty Insurance • U.S.D.A. Forest Service

The California Board of Forestry and Fire Protection, in their 1996 California Fire Plan framework policy, asked the Department of Forestry and Fire Protection to include more community involvement in their strategic fire planning effort. The southern California fire agencies, including CDF, the U.S. Forest Service, local fire service, and others helped many community groups become established as Fire Safe Councils. By October, 2003, the Fire Safe Council idea had spread to over 50 communities in southern California. Many of these local councils had taken direct action to prepare for and reduce the risk of wildfire in their communities. Some of the actions had a direct strategic impact on the fire fighting effort during the 2003 fire siege.

