



AFTER ACTION REPORT- OCTOBER 2007 WILDFIRES

City of San Diego Response



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PREFACE

Wildfire knows no boundaries. Every citizen in the City of San Diego was impacted in some way by the firestorms of 2007. Twice in the past five years the San Diego region has experienced Santa Ana winds blowing from the east, for an extended number of days, and the conditions being just right to produce firestorms of amazing proportions. When the firestorms occur in San Diego, there will always be multiple fires burning throughout the southern California region, if not the entire state, stretching the state's well developed mutual aid system to the limit. The San Diego region needs to begin today to prepare for the next catastrophic wildfire event. Collectively we need to do everything we can to reduce the potential threat, better prepare our homes to be as fire safe as possible and then secure sufficient ground and aerial resources to respond strategically and effectively to combat large wildfires in the absence of mutual aid assistance. We need to be prepared to protect our citizens for the first 48 to 72 hours when once again we find ourselves on our own.

San Diego is in a unique position to benefit from the increased public awareness created by the 2003 and the 2007 firestorms to initiate significant change within this region. The 2007 firestorms demonstrated that the working relationships and coordination in this region have never been better between the city and the county. The Regional Fire Protection Committee should take a comprehensive look at equipment, personnel, procedures, vegetation management and building codes. This Committee's goal is to build on the many reports and efforts that have already begun.

Following the 2003 firestorms the Cedar Fire After Action Report (AAR) outlined a number of areas that needed to be addressed. Some of those issues were addressed, for example open cab brush engines were replaced, an apparatus replacement program was established to replace frontline engines and increase the number of reserve engines, grant funds were leveraged to purchase mobile data computers for our frontline engines, trucks and ambulances, City/County helicopter programs were established, real time fire progression information was needed to ensure a coordinated and timely response so the 3Cs program was developed, additional radios and batteries were purchased. Lessons learned from the Cedar Fire were applied to pre-planning and engagement efforts and resulted in SDFD being better prepared for this large-scale response than was the case in 2003. Attachment A reflects the recommendation status and impact of the 2007 Firestorm on the Cedar Fire AAR recommendations. Still we did not have enough ground and air resources to successfully combat the firestorm thus reducing the number of structures lost and provide the type of emergency response this community deserves. Although no lives were lost within the City of San Diego the number of structures lost and damaged were very similar to that of the 2003 firestorms. So where do we go from here?

In 2004 the City released a comprehensive Public Safety Needs Assessment and addressed anticipated needs between fiscal years 2005 - 2009. In order to identify funding for this needs assessment, the City Council authorized funding measures for the 2004 primary election and again for the 2004 general election. The first measure, Proposition C on the March primary,

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proposed a 2.5% increase in the existing transit occupancy tax (TOT) with a designated percentage of the new revenue dedicated to the San Diego Fire-Rescue Department. The measure failed to secure the 2/3 vote requirement. Attempting a slightly different approach, the City Council placed Proposition J on the ballot for the November general election. This measure also proposed a 2.5% increase in the existing TOT, but allocated the new revenue to the City's general fund, thereby requiring only simple majority vote to pass. This measure also failed to pass.

Following the Cedar Fire, the San Diego Fire-Rescue Department gathered volumes of information and submitted to the Commission on Fire Accreditation International (CFAI) in February 2005 to be accredited. Unfortunately, the City was not accredited due to the coverage challenges the department faces in trying to deliver day-to-day emergency response services citywide. The City has not kept pace with the growth this region has experienced over the past several decades and as a result has fallen behind with infrastructure needs, capital improvement projects, staffing and other critical resources. The CFAI recommended that the Fire-Rescue Department identify measurable fire service objectives and that the Department strive to achieve National Fire Protection Association Standards.

The Fire-Rescue Department is in the process of developing performance measurements in conjunction with the Business Process Re-engineering effort and developing a Fire Station Master Plan to help prioritize the city-wide needs. Day-to-day coverage issues need to be addressed and a long range plan needs to be developed to begin to incrementally meet that need, but to keep things in perspective....had the twenty-two fire stations been built they would have provided only 4-5 additional strike teams, well short of the 20 strike teams we requested through the Unified Command process set up by following the National Incident Management System (NIMS). No doubt those strike teams would have assisted in saving homes, but much more needs to be done to develop an apparatus surge capacity locally to leverage the off duty workforce that is available, and to reduce the fire potential by developing adequate defensible space and working with our citizens to build fire safe communities.

The following review takes an honest, straight forward look at the City of San Diego's preparedness and response effort, and makes recommendations that we believe is the beginning of our blueprint for the future.

EXECUTIVE SUMMARY

Wildfire knows no boundaries. To many seemingly irrelevant fire suppression activities in remote parts of enormous San Diego County appear to have no bearing on the resources, planning and execution of emergency response and recovery assets belonging this country's eighth largest city nestled in the furthest southwestern reaches of the nation – the City of San Diego, California.

This after action report provides an analysis of the planning, preparedness, response, and recovery efforts of the men and women of the City of San Diego to the Firestorm that began in eastern San Diego County on Sunday, October 21, 2007. It focuses on the municipal responsibility these men and women have; it does not address the additional requirements taken outside of city limits such as mutual aid, unified command, state and federal coordination, defense support to civil authorities, as these are covered under after action reports from other sources.

The people of the City should be commended for the incredible, compassionate, and organized response to the October wildfires. No civilian or emergency personnel lives were lost within the City. While there was significant property damage, amounting to 365 homes destroyed and 79 damaged, and untold trauma and inconvenience, approximately 6,000 homes were saved by the heroic and humble actions of the San Diego Fire-Rescue Department and the San Diego Police Department.

The response itself, however, and the elements of planning and preparedness that are the foundation of response, was not without deficiencies. The complex system of resourcing, planning, training, exercising, outreach and coordination with local governments and nongovernmental organizations, tribal, state and Federal agencies must be constantly nurtured, updated, maintained, adjusted and practiced. The realization must be accepted that because of its location the City of San Diego will be on its own for the first 48 to 72 hours of a catastrophic event and therefore must be self-reliant and self-sufficient. Attachment B provides a map of the burn area.

The San Diego Fire-Rescue Department (SDFD), San Diego Police Department (SDPD), Emergency Operations Center (EOC) and Qualcomm Stadium mega care and shelter facility undertook in-depth analysis of their actions and activities from pre-planning events through post-recovery. By assessing each phase of the disaster and actions taken by first responders and City officials as well as the responses to those actions by emergency managers, other responders, citizens, and the general public, we are able to learn what went well, what worked well, and what corrective actions can and should be taken in order to improve responses in a future disaster.

This same type of self analysis was conducted by the SDFD after the 2003 Cedar Fires. Lessons were learned from that disaster that were implemented into the planning, training, and resourcing element of SDFD. Some of the recommendations were not implemented either because of funding or staffing. The list of the status of the recommendations is provided at Attachment A.

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The 2003 Cedar Fire AAR focused on 15 categories:

- o Command Staff/Incident Management
- o Safety
- o Public Information
- o Staffing and Recall
- o Department Operations Center
- o Operations
- o Air Operations
- o Logistics/Apparatus and Equipment
- o Communications
- o Fire Communications Center
- o Plans
- o Damage Assessment
- o EMS
- o Finance
- o Brush Management

The October 2007 Wildfires AAR followed the guidelines of the 2003 Cedar Fire AAR and added the additional elements of law enforcement, emergency operations and mega care and sheltering to make it a more comprehensive assessment of the overall disaster. This AAR focuses on 17 categories, many which are the same categories as the 2003 Cedar Fire report, and in a manner to highlight what went well, what was learned and recommended changes.

Areas identified in this AAR as lessons learned and recommendations for change include:

- o Fire Apparatus/Equipment Inventory and Logistics
- o Mass Notification Systems for Evacuation
- o Air Operations
- o Prevention
- o Incident Management
- o Operations
- o Mega Care and Shelter Facility Planning
- o Special Needs Considerations
- o Safety
- o Public Information and Media Management
- o Communications
- o Technology
- o Operational Area Coordination
- o Volunteers
- o Citizen Preparedness and Outreach
- o Emergency Medical Services (EMS)
- o Training and Exercise

Recommendations from this AAR are summarized at Attachment C. A list of acronyms used in this AAR is provided at Attachment D.

INCIDENT OVERVIEW

The October 2007 San Diego Wildfires, consisting of seven separate fires within San Diego County, began on October 21, 2007, during a major Santa Ana wind event that lasted for three days. These winds are characterized by warm temperatures, low relative humidity, and increased wind speeds. As the Santa Ana winds are channeled through the mountain passes they can approach hurricane force. The combination of wind, heat and dryness turns the chaparral into explosive fuel.

The Witch Creek Fire, classified as the fourth largest California wildland fire ever in acreage burned (197,990 acres), began at 12:35 PM on October 21, 2007 in the Witch Creek area of San Diego County, east of Ramona. Due to the significant winds, fire behavior was extreme, with rates of spread on occasion in excess of 5 miles per hour, long range spotting over half a mile, and flame lengths often in excess of 80' to 100' high. Locals in the San Pasqual Valley area reported wind gusts of over 100 mph. Strong Santa Ana winds pushed the fire west towards the coast. Ember production and transport was a significant contributor to fire spread and structure losses. A second fire, dubbed Guejito Fire started at 1:30 AM October 22, 2007 with the point of origin located approximately four miles east of the Wild Animal Park. The Witch Creek Fire merged with the Guejito Fire during the daylight morning hours of October 22, 2007.

The City Public Safety departments anxiously monitored the Witch Creek Fire's progress toward the city limits on Sunday October 21, 2007 while already responding to both the Harris and Witch Creek Fire in a mutual aid capacity. San Diego Fire-Rescue Department, San Diego Police Department and the Office of Homeland Security were engaged in timing estimates of the encroaching flames coming into city limits and the required preparation and response early Sunday afternoon, October 21, 2007. Mayor Jerry Sanders and Chief Operating Officer Jay Goldstone were kept apprised of events through direct contact with Deputy Chief Operating Officer for Public Safety and Homeland Security Jill Olen, Fire Chief Tracy Jarman and Police Chief Bill Lansdowne.

Procedures were implemented and preparations initiated to ready the City of San Diego for the encroachment of flames into the San Pasqual and Rancho Bernardo communities. Tactical firefighting operations, mass notification processes, evacuation plans and emergency operations command and control were readied. Responders were identified, notified and briefed. Based on initial projections that night, the Witch Creek Fire was expected to reach the San Diego City limits at approximately 5:00 AM the following morning (Monday, October 22, 2007).

Decisions to evacuate neighborhoods potentially impacted by the Witch Creek Fire began Sunday evening. Messages were developed and map parameters identified for the mass notification system in order to call residents in the event of an evacuation. Geographical trigger points for citizen/neighborhood evacuations were identified so that residents could be evacuated in a calm and orderly manner. Police officers staged in neighborhoods in order to conduct the evacuation as well as notify residents and ensure compliance with the order.

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Later investigation would reveal that a separate fire, the Guejito Fire, began at 1:30 AM in the San Pasqual Valley several miles to the west of the advancing Witch Creek Fire and was later joined by the Witch Creek Fire in its drive to the west.

The Guejito Fire spread rapidly along the river bottom area of the San Pasqual Valley and southwest toward Highland Valley Road. SDFD strike teams engaged in numerous firefights along the Highland Valley Road and Bandy Canyon Road areas, but in many cases were forced to retreat by the wind-driven flames. It took just over two hours from the start of the Guejito Fire for the first homes in northeastern Rancho Bernardo to be destroyed by fire. The Guejito Fire spread west along Highland Valley Road, eventually spotting across Interstate 15 and ultimately destroying hundreds of structures in West Rancho Bernardo. While 365 homes were destroyed and an additional 79 were damaged within the City of San Diego, it is estimated that approximately 6,000 homes in the path of the fire were saved as a result of the aggressive firefighting action taken by the SDFD firefighters.

The start of the Guejito Fire several miles to the west of the advancing Witch Creek Fire caused the anticipated time line for resident evacuations to be significantly moved forward. As San Diego Fire-Rescue assets battled the oncoming blazes into the city, it became apparent that the raging fires across the rest of Southern California and the county consumed all of the regional and State mutual aid assets that might otherwise have been available to assist the city. This included law enforcement (evacuation) and sheltering assistance as well.

At approximately 2:16 AM an immediate threat to the Rancho Bernardo community by the Guejito Fire was identified. The San Diego Fire Chief requested the activation of the City's EOC. Evacuation planning was underway, Neighborhood and door-to-door notifications and evacuations were made by SDPD and other emergency responders. Because of the rapid spread of the Guejito fire, it was not possible to construct and launch a Reverse 911® session to that area prior to the arrival of the flames. At approximately 3:31 AM, the Guejito Fire had reached the Bandy Canyon/Highland Valley Road area where homes were first impinged by fire and began to burn.

At approximately 4:07 AM, the Guejito Fire began to burn the first homes in the Rancho Bernardo community. The Witch Creek Fire entered the northeastern edge of the City of San Diego limits (San Pasqual Valley) at approximately 4:00 AM. A Reverse 911® emergency notification for a mandatory evacuation was launched to 14,738 phones in the area at 4:05 AM.

As in any disaster, San Diego utilized all methods available to notify the public of the need for action. The range of tools varied from very basic to technology based. The notification tools used in combination by the City of San Diego to alert and evacuate citizens in the path of the Witch Creek/Guejito fire include:

- o Door-to-door knocking by first responders and neighbors
- o Police and Fire-Rescue vehicle sirens
- o Police and Fire-Rescue vehicle and helicopter lights

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- o Constant monitoring and information flow to media outlets for dissemination to the public
- o Emergency Alert System via television media
- o Reverse 911® mass notification system
- o AlertSanDiego mass notification system
- o Community Access Phone System
- o 2-1-1 Information Line
- o Individual and community preparedness

The Reverse 911® system distributed 14,738 calls predawn October 22, 2007 to the area notifying residents of mandatory evacuations. For those who received the calls, the process was timely and worked well, but there is room for improvement. The use of web-based technology in the area of mass notification systems has greatly improved the ease and simplicity of these tools for emergency management. The City is now utilizing that technology by adopting AlertSanDiego as its primary mass notification system. This should allow for a new generation, internet accessed, intuitive system to be provided to our citizens in times of crisis.

Two high schools were set up as temporary evacuation sites, Mira Mesa and West View. Police officers were sent to these locations to set them up to receive residents as the American Red Cross was using every resource it had on hand at the dozens of other shelters already set up the day before throughout the county. As the evacuation count became higher, it was evident that a shelter that would be able to hold thousands of city residents was required.

Because of the anticipated number of potential evacuees and the unpredictable path of the fires, the Mayor's Office determined it was in the best interest of city residents to establish a mass evacuation center that was sufficiently out of harm's way that would be operated by City staff and volunteers until the American Red Cross was able to take over. Qualcomm Stadium was selected at approximately 5:40 AM on Monday, October 22, 2007 for a City-run mega care and shelter facility. The City prepared to receive up to 100,000 evacuees from throughout the county as other shelters were being forced to evacuate.

The shelter began taking in evacuees, donations, volunteers and animals of all sizes. The center estimated its population was 7,000-10,000 each day during the first three days of the fires. Various organizations and individuals donated food, blankets, water, children's toys, massages, and live entertainment for those at the Stadium. The site accepted small pets as well as horses and a variety of other animals. A secondary evacuation site at Fiesta Island was initially a spontaneous site for residents with horses and other large animals. The site worked well for this purpose and was allowed to remain as a shelter site. Many schools, civic centers, and churches throughout the area were also stood up as evacuation shelters.

Over the course of the first two days of the fire, over 200,000 residents in the fire's path were successfully evacuated. Many of the evacuees were able to return to their homes by October 24, 2007; some as early as October 23, 2007. Information sources such as Community Access Phone System (CAPS) and 2-1-1 provided the public updated, live information, as well as Emergency Alert System (EAS) messaging, web sites and local media. By noon Friday, October

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26, 2007 all of the evacuees and their animals from Qualcomm had either returned to their homes, found alternate living arrangements, or were transported to the Del Mar Fair Grounds County Sheltering Facility.

To handle the significant outpouring of corporate as well as individual donations, a Logistics Hub/distribution center was established at Qualcomm Stadium. The volume of donations overwhelmed the center's initial ability to process the deliveries. Heavy traffic from evacuees and tractor trailers delivering supplies caused a major backup into the Stadium. The establishment of a logistical supply hub provided countywide shelters and command posts with needed water, food, and supplies until Friday, October 26, 2007 when the shelter was closed and assets were transferred to the Operational Area and local nonprofit organizations.

The City established its Local Assistance Center at the Rancho Bernardo-Glassman Recreation Center on October 24, 2007, to assist City and County residents and business owners to begin their recovery process. This center was operational through December 21, 2007. A Fire Recovery Center was established on December 22, 2007, at the Rancho Bernardo Library to provide community rebuilding assistance.

Significant Events

1. Mayoral Proclamation of a Local Emergency, ratified by City Council, including a request for a Gubernatorial and Presidential Declaration;
2. Public Information via the dissemination of news releases and/or media advisories and City webpage;
3. Public Emergency Notifications for mass evacuations;
4. Establishment of Qualcomm Stadium as a mega shelter and distribution center;
5. Delivery of resources to the field including medical supplies, heavy equipment, food and water, communications equipment and personnel;
6. Site visits by the President of the United States, Department of Homeland Security Secretary Chertoff, Federal Emergency Management Agency Director Paulison, and Governor Schwarzenegger;
7. Establishment of a City-run Local Assistance Center in Rancho Bernardo.

FIRE APPARATUS/EQUIPMENT INVENTORY AND LOGISTICS

Lessons Learned and Recommendations for Change

1. SDFD's combined front line and reserve apparatus fleet is inadequate to provide equipment for the many available firefighters that can be assigned to the incident. Several structures were destroyed or damaged after initially being saved as a result of not having enough fire engines available to return and patrol all of the areas that were impacted to identify and extinguish rekindled fires.

Recommendation: Additional resources should be procured and alternative methods of conducting patrol activities must be explored to ensure a greater capacity for this mission during future incidents. The acquisition of additional engines would allow for better utilization of available firefighters, but it is unclear what the best method to specify those needs and the strategy for integrating them is. For example, the acquisition of at least 34 additional engines would allow for better utilization of available firefighters not on shift. In order to place one reserve engine at each of the City's 47 fire stations, an additional 34 engines would need to augment the existing 16, allowing for three to be rotated through a scheduled maintenance cycle. This would provide a total of 50 reserve engines within the City of San Diego to increase fire protection levels. Reserve engines at each of the City's 47 fire stations would allow the A Division crews to go to the scene, augmented by the B Division crews on the reserve engines. Protection of the City would be maintained by the B Division crews on the reserve engines as well. The C Division crews would rotate in and replace A Division crews at the end of the shift, taking out fresh crews to battle fires while A Division gets rested. Then A Division replaces B Division while B rests, and so on.

The acquisition of 34 additional engines so that each of the City's 47 fire stations had a reserve engine would allow for the deployment of 124 more firefighters (6 strike teams) and have a positive impact on firefighting operations, but is that a better solution than a larger surge capacity that is not used in a daily fire fighting operations? These questions should be assessed and judgments made as the SDFD's Tactical Plan continues to be developed.

The design, procurement, implementation, and operation of Type 6 brush/patrol engines should also be explored. Type 6 engines are significantly less expensive than the more common Type 1 structure or Type 3 brush engines currently in use by SDFD. They lack the pumping capacity of the larger engines, but still have sufficient capabilities to meet the fire patrol requirement after the main body of fire has passed through a neighborhood. These engines would be off road capable and could also be utilized to support normal vegetation fire operations throughout the fire season.

2. The experiences of the 2003 Cedar Fire and this 2007 Firestorm have confirmed that during periods of high fire activity in southern California, the State fire mutual aid system's ability to fulfill all resource requests during the critical first 48-72 hours of a

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major fire will be severely challenged. Apparatus that had been decommissioned and were awaiting retrieval by the auction company were returned to frontline service through Friday October 26, 2007. The demand for additional support vehicles was recognized and an order for additional General Services vans and pick-ups was placed very early in the incident. Actions were taken to locate all available apparatus and staff vehicles and confirm their operational readiness. A local fire equipment vendor brought four Type 1 engines to the repair facility for use by the Department on the incident. Ground Support personnel inspected the apparatus and were able to field three of the four units.

The callback and usage of the Community Emergency Response Team (CERT) volunteers proved to be a substantial benefit to the provision of logistical services. CERT volunteers served as runners, drivers, and in many other support functions. The callout of CERT volunteers for logistical assignments is truly a benefit to our operations.

Use of academy recruit personnel proved to be most beneficial to overall logistics functioning. These personnel performed all sorts of camp crew functions and were especially effective at cleaning fire equipment and apparatus prior to their return to frontline or reserve status.

Recommendation: In addition to carefully managing its firefighting resources to ensure their availability during periods of high fire danger, the SDFD should consider as part of its Tactical Plan developing a “surge” capacity to mitigate a large fire with little or no outside assistance. This surge capacity should be in the form of additional ground and aerial firefighting equipment.

3. A shortage of portable 800MHz radios hampered the rapid deployment of firefighters on reserve apparatus and required the emergency purchase and borrowing of radios to meet needs.

Recommendation: Additional radios should be purchased to meet the needs of a large-scale incident.

4. The lack of current map books was reported in all areas. Detectives and administrative officers do not have access to or know how to use the mapping software in patrol vehicles. Unmarked vehicles do not have Mobile Computer Terminals with mapping capability.

Recommendation: Current Thomas Brothers map books need to be available to responders who don't use the data base or have access to a computer.

5. Cell phone batteries ran low due to constant and long term use during the incident.

Recommendation: Secure adapters and battery and cell phone chargers at each Operations Center and Incident Command Center for all types of equipment to allow for charging various city cell phones and other equipment during extended shifts.

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6. Logistics personnel have no ready cache of equipment to set up a quick incident base. The new concept of operations plan has identified logistics personnel to use at incidents; however, they have no dedicated, readily accessible equipment to utilize.

Recommendation: Provide a logistical trailer with tables and chairs, a generator, lighting, easy-ups, coolers, re-supply of personal protective equipment etc. for rapid deployment at incidents. Assign logistics personnel pickups or vans as their vehicle.

7. At several fires this summer, engines have not been able to switch out hose and leave in hoselays as there is no replacement hose. Additionally, the hose provided with Type 3 engines two years ago breaks frequently, even without contact with fire. Steps should be taken to remove this hose from service. Further, even more confusion is caused by municipal 1" hose couplings using national standard threads, while CAL FIRE and the U.S. Forest Service (USFS) use national pipe threads. As a result, hose lays are pulled when they should be left in place for safety and tactical reasons just so we can get SDFD hose back. Logistics issued six national standard to national pipe adaptors per each Type 3 engine in September per Occupational Health and Safety Committee request during the September meeting.

Recommendation: Maintain a large cache of spare hose, both at Fire Station 20 and in the fire stations. Use the same Niedner spec hose as the wildland agencies, so that hose can be replaced with ease from fire camp. Utilize the same thread 1" hose or provide multiple adapters to companies.

8. Although shortages of personal protective equipment that occurred during the Cedar Fire have been corrected and were not a significant issue during this incident for SDFD personnel, improvement is needed in the personal protective equipment for police officers responding to fires. Officers had to work without or wait for dust masks, eye goggles, eye wash, nasal spray and heavy work gloves. Some minor injuries were reported during the initial response phase. One officer received a scratched cornea. Several officers reported having dry irritated eyes, dry and bleeding nasal sinuses and some minor breathing issues. In addition, officers reported that when received, some of the eye goggles and dust masks were ineffective.

There was a perception of a lack of replacement safety gear near the incident. Other than the challenges faced with goggles, safety gear was readily provided whenever a request was made to Logistics at Store 42. In fact, 49 Wildland jackets and 37 wildland pants were disbursed. Structure gloves, wildland gloves, and Hot Shields were provided, along with 8 sets of wildland web gear. The storeroom proactively replenished Hot Shields, gloves and goggles from local vendors to prevent possible shortages. As an example purchase: 155 pairs of goggles and 52 headlamps were obtained by utilizing the "P" card system. The primary failing seems to be the availability of these items on apparatus and/or at forward logistical support locations.

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Recommendation: Ensure all personal protective equipment and supplies for all fire responders are available, cached and distributed as necessary. Ensure fire officers conduct regular inspections of personal protective clothing. Equip all reserve battalion chief vehicles with a cache of spare personal protective equipment. Deploy forward re-supply capability.

9. There was no centralized organization for donated supplies. Donations were delivered in excess of what could be consumed by personnel. The incident base became a warehouse. In addition, logistical personnel were distracted from their primary mission in order to accept such donations.

Recommendation: Have a centralized location for donated supplies and distribute what can be consumed. This includes having refrigeration units for perishables. The coordination of this function should be augmented with non-Fire-Rescue resources.

MASS NOTIFICATION SYSTEMS FOR EVACUATION

The City's primary mass notification system to alert residents of impending danger and requisite instructions is AlertSanDiego, a next generation web-based callback system. AlertSanDiego allows for access to the 15,000 line capacity from any web-based system for land line as cell phone calling, as well as email and text messaging. Reverse 911® is a callback system also used by the San Diego Sheriff's Office (SDSO) and will provide redundancy during emergency situations. These systems are designed to augment other mass notification processes used by the City such as:

- o Door-to-door knocking by first responders and neighbors
- o Police and Fire-Rescue vehicle sirens
- o Police and Fire-Rescue vehicle and helicopter lights
- o Constant monitoring and information flow to media outlets for dissemination to the public
- o Emergency Alert System via television media
- o Community Access Phone System
- o 2-1-1 Information Line
- o Individual and community preparedness

Because AlertSanDiego had just been received by the Operational Area and had yet to be tested, the City relied on Reverse 911® for notifying residents of impending evacuations. The October 2007 Wildfires were the first opportunity for the City to use Reverse 911® on a large scale incident. It had preformed adequately during testing and smaller scale incidents such as the Mt. Soledad landslide on October 3, 2007. The system is launched from the SDPD Communications Dispatch Center after following a checks and balances process to ensure accuracy of the information and areas to be called. AlertSanDiego follows the same launching protocols and is done from any available internet terminal.

Lessons Learned and Recommendations for Change

1. The concept of the AlertSanDiego and Reverse 911® system is an excellent way of notifying residents of emergencies; however, the public needs to be educated that the system is only one of many tools and a call should not be depended upon as the only notification. Reverse 911® was viewed as the "answer" to mass notification when it should be regarded as a useful tool to compliment other strategies

Recommendation: Continue emergency training to maximize performance of AlertSanDiego and Reverse 911® mass notification systems and public outreach. The Mayor's Office and Council Districts should work together to provide outreach on testing to the public which should be accomplished quarterly to ensure the effectiveness and accuracy of the mass notification system and the information contained in the database. Continue public outreach efforts to notify the residents of the City of San Diego they

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currently need to self-register their cell phones and emails on both the City's and the County's self-registration page if they desire to be contacted via that medium.

2. Geo-coding the database purchased monthly from AT&T is labor intensive because there is no standard for address names. The data is supplied with the address only, inconsistent names of areas, and no zip code. There are multiple Main Streets in San Diego County. Data must be cross referenced in order to assure accuracy.

Recommendation: Explore seeking zip codes added to the database City purchases from telephone companies to use for emergency call back notifications. Zip codes would narrow down the location of the address into the City of San Diego or else where in the county, which would dramatically improve the success rate on calls (phone number matching address).

AIR OPERATIONS

Lessons Learned and Recommendations for Change

1. Having one firefighting helicopter immediately available during the entire incident was instrumental to successful firefighting and medical evacuation operations and was credited with saving many structures. This was accomplished not just by way of its direct aerial fire suppression efforts, but also due to the aircrew's ability to direct ground resources to areas of the Rancho Bernardo community that needed the most attention.

Recommendation: Increase the number of City fire/rescue medium-lift helicopters and perhaps contract or procure large capacity helicopters so that the SDFD's ability to provide aerial fire suppression can be significantly enhanced. Had Copter 1 experienced a mechanical or unscheduled maintenance problem, there would have been no aerial fire suppression assets directly available over the City when most needed. The acquisition of a second fire-rescue helicopter is essential to ensuring the availability of this resource at all times and to provide for greater aerial firefighting capability.

2. Aerial fire suppression efforts by Copter 1 proved to be extremely effective even during the high wind conditions the first three days of the incident. However, during the period of time that the northeast winds were strongest, Copter 1's aircrews made a critical decision to ground fill the helicopter water drop tank as opposed to the increased risk of hover-filling, due to the wind conditions. While this increased the helicopter "turn-around" time slightly, it was an appropriate decision in terms of risk versus gain.

Recommendation: Continue to train all City and neighboring jurisdiction fire companies in helicopter ground fill operations (day and night). The Planning and Operations Sections need to consider the assignment and rotation of engine companies to helicopter ground fill operations sooner. The helicopter crews had to request engine company support from the Branch Directors which in some cases left a strike team short by one engine.

3. Many of Copter 1's water drop targets were areas where fires were just beginning to freely burn; areas such as fences along property boundaries, patio furniture, ornamental vegetation, firewood piles abutting the structures, trash cans that were standing directly next to structures, structures whose roofs and eaves were in the incipient stages of burning, etc. Water drops were largely ineffective on those structures that were moderately and/or heavily involved with fire, but were effective on structures whose roofs and/or eaves were just beginning to burn.

Recommendation: Consider dropping gel products from Air Operations Division helicopters on structures and on those areas surrounding homes (as mentioned above) that are more likely to ignite in advance of the approaching fire front. The operation of a gel product "batch mixer" at the designated helispot would increase the effectiveness of the helicopter gel dropping operation by reducing helicopter "turn-around" times. Assigning a large capacity water tender at the helispot should also be considered.

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Consider requesting and utilizing Type 1 helicopters and/or the Martin Mars large capacity water/foam/gel fixed-wing seaplane to pre-treat areas of those communities that are likely to become impacted by the fire. The pre-treatment of structures by gel products should occur in advance of the fire's encroachment into a community. The combination of aerial pre-treatment (gel) of the structures and ground based resources pre-treatment (gel) would provide for a reduction of structure loss. Having the immediate availability of the Martin Mars fixed-wing water/foam/gel bomber in San Diego, during the Santa Ana wind prone fire season, should be seriously considered.

4. The utilization of the SDPD helicopter with a qualified and experienced Air Operations Division wildland fire officer proved to be an effective tool in guiding fire companies to areas that need attention and to provide aerial reconnaissance of new fires starting within the City. The SDPD helicopter with the SDFD Air Operations Division fire officer on board responded to reports of new fires and to multiple requests for information by the IMT, the Fire Communications Center and field commanders.

Recommendation: The utilization of the SDPD helicopter combined with an SDFD Air Operations Division fire officer on board proved to be very effective. Consideration should be made to equip one of the SDPD helicopters with state-of-the-art information gathering equipment (television quality camera system, military type mapping and heat-sensing equipment, etc.) in order to provide enhanced situational awareness and an improved common operating picture for the County and City Emergency Operations Centers.

This specially equipped information gathering helicopter could be operated by both SDFD and SDPD pilots. SDFD and SDPD information technology staff could be trained and would be considered additional "crew" to the pilot and on board SDFD fire officer. This information gathering helicopter would be assigned to specific incident and would provide for a continuous information flow to the Emergency/Department Operations Center (DOC) without concerns for other mission assignments for the duration of the crisis.

5. Utilizing U.S. Navy, U.S. Marine Corps and Coast Guard helicopters may have been useful in terms of their water dropping and information gathering capabilities. The local military operate large helicopters that are not affected to as great an extent during high wind conditions as local government fire helicopters. The utilization of these aviation assets may have provided the IMT with an improved operational picture during the early stages of the fire. Additionally, and as was proven during the 2003 Cedar Fire, the U.S. Navy helicopters are capable of safely flying water drop missions alongside the City's helicopter(s) without a need for on board helicopter managers (spotters).

Recommendation: The availability of U.S. Navy and Marine helicopters available for use during a local disaster based at North Island Naval Air Station and other locations should be established early into an incident. The establishment of a "local" agreement with the Navy, Marine Corps and Coast Guard should be explored. Emergency and military officials should train together in order to improve the understanding of and procedures for defense support to

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civil authorities' requests for assistance. The City would participate at a minimum in one annual joint training session to ensure that all parties understand each other's capabilities and how to best operate when involved in City of San Diego emergencies.

The existing process for ordering military aircraft requires that all requests be routed through the CAL FIRE Area Fire Coordination Command Center. The City should pursue improvements in processing these requests through the Area Fire Coordination Center and/or enter into separate agreements with local military commands to allow for more timely access to local military resources for deployment within the City of San Diego.

PREVENTION

Lessons Learned and Recommendations for Change

Brush Management

There are a number of wildland/urban interface areas within the City of San Diego. These areas are considered a high hazard fire environment because they possess all the ingredients necessary to support large, intense, and uncontrollable wildfires. Within this hazardous environment, there are individual houses, subdivisions, and entire communities. Many homes, however, would be unable to survive an intense wildfire. Because these wildfires will continue to occur, the likelihood of human life and property loss is great and growing.

The ability to live more safely in this fire environment greatly depends upon the use of “pre-fire activities.” Pre-fire activities are actions taken before a wildfire occurs which improve the survivability of people and homes. They include proper vegetation management around the home, known as defensible space, use of fire resistant building materials and appropriate subdivision design. How a house is designed, where it is built, material used in its construction, landscaping and access all influence survivability during a wildfire.

As a result of the Witch Creek/Guejito Fires, staff researched reports from the 2003 Cedar Fire, reviewed codes, and contacted other agencies in order to provide recommendations that would enhance fire protection. Presented below are recommended regulatory revisions for consideration.

1. Short-term - develop policy in coordination with Development Services and Park and Recreation staff to address immediate issues relative to the City’s Brush Management Regulations. Policy should include:
 - o More description/guidance, including diagrams relative to thinning requirements, spacing and language to specifically include trees where appropriate to ensure consistent code interpretations.
 - o Identify specific alternate equivalencies where defensible space requirements cannot be met.
 - o Address slope as fire intensity and spread are directly related to severity of slope.
2. Long-term - a comprehensive code evaluation needs to occur in collaboration with Development Services and Park and Recreation staff to determine requirements for the wildland/urban interface areas and should include building design and construction, fire protection and brush management. This evaluation should include the City’s Brush Management Regulations, 2006 International Wildland/Urban Interface Code, California Building Code, Chapter 7A, and California Fire Code, Chapter 47.

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Construction Requirements

1. The City of San Diego implemented an extensive list of construction requirements developed in response to the 2003 Cedar Fire. The Building Regulations were approved by the City Council in September of 2005 and have been in effect since October 20, 2005. The approved regulations enhance the fire resistance of construction within proximity of native or naturalized hazardous vegetation.
2. The Building Regulations were developed in collaboration with various stakeholder groups as well as in coordination with other jurisdictions within the County of San Diego. Several recommendations made following the Cedar Fire were not implemented and should be reconsidered. These include adopting the following regulatory requirements:
 - o Residential sprinklers in high hazard areas
 - o Non-combustible roof coverings
 - o Boxing of eaves
 - o Non-combustible exterior wall coverings
3. Recent adoption of the 2007 California Building Code, effective for all projects submitted on or after January 1, 2008, will result in more restrictive exterior wall and opening protection requirements for One and Two family dwellings. Additionally, Chapter 7-A of the 2007 California Building Code will be implemented when the State very high fire hazard severity zones maps are published by CAL FIRE and adopted on July 1, 2008.
4. In the short term Development Services should reconvene a working group of stakeholders to evaluate the adequacy of the regulations as well as soon to be implemented State regulations for construction in “very high fire hazard severity zones”. The working group should continue the past focus of balancing protection with the cost and effectiveness of the various regulations under consideration. Items that require further study include:
 - o Whether Accessory Buildings and Accessory Structures should continue to be exempted in Section 145.0503 of the Municipal Code.
 - o Whether the glazing requirements in subsection c of Section 145.0504 should apply on a City wide basis.
 - o Whether requirements soon to be implemented in Chapter 7-A of the 2007 California Building Code adequately address the additional risks or damage caused by the recent wildfires. Clarify exterior glazed opening protection (windows).
 - o Identify more fire resistive attic vent assemblies.
 - o Review of requirement for the wildland/urban interface areas to include building design and construction, fire protection and brush management.

Staffing

1. Under ideal circumstances, a total of 14 positions are required for Fire-Rescue to conduct annual brush management inspections of all private parcels in the wildland/urban interface within the City of San Diego. The Department currently has 4 positions dedicated to these inspections. To meet the annual inspection requirement, 10 additional positions would need to be budgeted. If the inspection frequency were increased to a two-year cycle, the staffing level could be cut by 50%.

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Recommendation: Explore additional brush management inspectors in combination with a regional approach to brush management in the SDFD Tactical Plan.

INCIDENT MANAGEMENT

Lessons Learned and Recommendations for Change

1. Following the initial attack period of the fire, it became apparent that activation of the full Incident Management Team (IMT) would have benefited command, control and support of the firefighting effort.

Recommendation: Whenever it can be reasonably anticipated that an incident will likely extend beyond initial attack (one operational period), the full IMT should be activated.

2. Lack of a pre-determined maximum number of fire apparatus that would be assigned to this large fire resulted in too few units being left to handle all other incidents that might occur in the City during the height of the fire. Setting a maximum number of fire apparatus that would be made available for responses outside the City and restricting the types of missions Copter 1 would accept outside the City ensured the Department could appropriately participate in supporting the resource needs of other jurisdictions while concurrently ensuring that as many resources as possible remained in the City of San Diego to address the severe fire threat.

Recommendation: Continue coordination with the Unified Command to ensure that City of San Diego resources working in the San Pasqual Valley and Rancho Bernardo areas remain available for use within the City.

3. Early deployment of multiple teams of trained Field Observers and the Department's fire-rescue helicopter to track the fire provided incident managers with valuable situational awareness about the fire's location and rate of advancement toward the City of San Diego that was not available during the Cedar Fire. Pre-designation of evacuation areas and establishment and monitoring of remote trigger points permitted the rapid and relatively orderly evacuation of approximately 200,000 residents in the fire's path. Consequently, no lives were lost and no serious injuries occurred as a result of this fire.

Recommendation: Continue to incorporate these practices in Emergency Operational Planning by all impacted departments.

4. Geographical Information Systems (GIS) support proved to be invaluable for map production throughout the incident. The ability to create and frequently update incident maps used to track fire spread, evacuations and unit assignments was key to the City's successes. However, because the Department has only one GIS technician available to provide data to the entire City, at times the position was severely over-tasked. In addition, due to the lack of a replacement, this technician was required to work without relief for the duration of the incident on limited rest.

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Recommendation: An additional GIS technician should be added to the Fire-Rescue budget to ensure future availability, increased capacity and provide for appropriate work/rest cycles during major incidents.

5. The lack of a designated Medical Unit Leader during this incident hampered coordination of firefighter medical care and tracking of firefighter injuries.

Recommendation: A Medical Unit Leader position should be added to the IMT.

6. The position of Recovery Liaison is important to staff early in the incident. If the IMT gets activated there is a good chance that there will be a recovery operation.

Recommendation: A Recovery Liaison position should be added to the IMT.

7. The position of Volunteer Manager is critical to oversee functions of volunteer and disaster service worker management that emerged as a result of the mega care and sheltering facility requirement taken on by the City.

Recommendation: A Volunteer Management position should be added to the EOC.

8. The position of Donations Manager is critical to oversee functions of individual and corporate donations and regional distribution management that emerged as a result of the mega care and sheltering facility and regional distribution facility requirement taken on by the City.

Recommendation: A Donations Management position should be added to the EOC.

9. While the SDFD, SDPD, EOC and Qualcomm Incident Command Post (ICP) effectively managed this challenging incident, the overall incident management can be improved. A lack of trained Command and General staff personnel led to a delay in getting organized, prioritizing objectives and assigning officers. The ICS chain of command was not followed by some Incident Commanders.

Recommendation: Additional Incident Command System training for sworn and non-sworn personnel is needed and should be provided. This training should consist of more practical application. Tabletop exercises are very useful. To become more familiar and use ICS effectively officers need to practice using it on a regular basis. Low cost opportunities for additional training, participation in exercises, and deployments to maintain and improve upon individual and team skills and capabilities should be explored.

Develop a policy that assigns EOC positions as a collateral assignment to designated City positions, requires response to the EOC when called, and requires attendance at scheduled training and exercises.

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10. Accounting for firefighters, officers, employees and volunteers at a disaster site is a safety issue. A manual check in/check out process is utilized and could be greatly improved through existing technology. This would also give the resource tracking officer the ability to quickly identify officers available to respond to a request.

Recommendation: An electronic check in/check out system for the Incident Command Posts and Staging locations should be implemented. This system would utilize officers' and EOC/DOC personnel's City/Department identification cards, a card swipe or bar code reader connected to a laptop. Specific information on the cards would populate a database when swiped or scanned. This process would allow for officers and emergency personnel to check in and check out quickly.

11. While suppression units had been pre-staged in the San Pasqual Valley in anticipation of the Witch Fire's advance from the east, the starting of the Guejito Fire to the west of the staged units complicated the situation, caused the redeployment of resources, and significantly accelerated the pre-planned evacuations.

Recommendation: Contingency plans for unanticipated events must be considered for every incident. In this case, the assignment of units to patrol for spot fires and/or provide a secondary line of defense was compromised by a lack of resources.

12. Fire control objectives were not met due to high wind velocities and a lack of sufficient ground and aerial firefighting resources. The State of California fire mutual aid system's inability to fill resource orders placed by the City during the critical first two days of the fire due to resource exhaustion and competing needs in the region resulted in an inability to address all fire control objectives with the limited number of SDFD engines available for deployment.

Recommendation: The experiences of the 2003 Cedar Fire and this 2007 Firestorm have confirmed that during periods of high fire activity in southern California, the State fire mutual aid system's ability to fulfill all resource requests during the critical first 48-72 hours will be severely challenged. Consequently, the SDFD should consider as part of its Tactical Plan developing a "surge" capacity to mitigate a large fire with little or no outside assistance. This surge capacity should be in the form of additional ground and aerial firefighting equipment.

13. The Department has the ability to seat up to six personnel on some apparatus. The perception is that the opportunity to be more effective by fully staffing the apparatus was not considered by the Incident Management Team.

Recommendation: Whenever an apparatus can safely accommodate more than the normal assignment of four personnel and their required personal protective equipment during a large-scale incident, it should be fully staffed to provide for enhanced capability of the crew. However, accountability procedures must be maintained to ensure safety of all personnel.

OPERATIONS

Lessons Learned and Recommendations for Change

Once the main fire burned through the involved areas of the City, control objectives were to:

- o Keep the fire within the existing perimeter already involved
 - o Patrol and attack fires developing within the existing perimeter
 - o Monitor the progression of the fire as it advanced west through the adjacent jurisdictions of Rancho Santa Fe, Poway, Escondido and unincorporated areas to ensure units were in place and evacuation trigger points established in the event the fire re-entered the City of San Diego further to the west
 - o Employ direct attack tactics to the fire perimeter along the south flank, including areas outside the City of San Diego, to reduce lateral spread
 - o Redeploy resources as necessary based on identified trigger points
 - o Identify and mitigate, to extent possible, other hazards consequential to the fire (natural gas leaks, water leaks, tree snags, etc.).
1. Field Observers (FOBS) deployed as two-person teams and operated within the scope that is expected for this position. They provided ongoing and accurate intelligence to the Planning and Operations Sections.

Recommendation: Continue to utilize FOBS on incidents in the future and have the trained and certified FOBS train others firefighters for this position.

2. The SDPD DOC, Eastern Command, Traffic Command, Southern Command, Northeastern Command, and Headquarters Staging were involved in extensive management and resource allocation for scene security, crowd control, traffic control and evacuations in several communities. One of the major strengths of these City department was the commitment of its officers to getting the job done. Exposed to flames driven by high winds, toxic ash, smoke and working long hours they managed to evacuate and save the lives and property of thousands including special needs citizens.

Recommendation: Continue to train and exercise emergency procedures with SDFD, SDPD, EOC and others.

3. The use of Rapid Intervention Crew (RIC)-like elements (“Rescue Group”) was effective during the structure protection phase of the initial operation. Many citizens were rescued and removed from areas of danger by the RICs. The integration and use of SDFD Lifeguard Service members assigned to shut down the utilities to affected areas and monitoring the reestablishment of power was positive, as was the organized coordination and collaboration between SDFD and the utility companies, which was unseen during the 2003 Cedar Fire.

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Recommendation: Continue to utilize RIC on incidents in the future and foster the integration and coordination achieved between the City and outside organizations.

4. Engines with redlines and a foam pro system were quicker and more efficient in overhaul operations.

Recommendation: Consider including this equipment in future fire engine specifications.

5. Both “bump and run” and “anchor and hold” tactics were effective when executed appropriately and when applied during the correct environmental conditions.

Recommendation: Continue to train all firefighters in both “bump and run” and “anchor and hold” tactics. Consider assigning water tenders to each strike team and task force.

6. Problems were noted with hydrant visibility in Rancho Bernardo. Hydrants not painted yellow were difficult to identify at night. In many cases, the blue reflective street markers dots were not visible as a result of age and the repaving of streets.

Recommendation: Coordinate the implementation of a fire hydrant inspection program with the Water Department so that fire hydrants needing to be repainted are identified and then painted. The missing and/or damaged reflective blue street markers would also be identified and replaced through the inspection process.

MEGA CARE AND SHELTER FACILITY PLANNING

The American Red Cross (ARC) plays a primary role in the establishment, support and management of care and shelter operations both at the local level and regionally. There is no intention to intercede with the responsibility of the ARC, rather only to learn how best to augment and support them as early as possible in a manner that is as professional. Government agencies must be aware of the limitations on resources and capabilities at the local level in the initial response phase. Strong coordination and communication with the ARC is vital to facilitate early movement of national resources that are remotely located.

The local ARC was severely taxed during the initial days of the fires. They did not have sufficient staff for the large number of shelters required in the region. Once that information was relayed to the EOC, as well as that the anticipated number of evacuees was expected to exceed the capacity of Mira Mesa and West View High Schools in Rancho Bernardo, it was determined that Qualcomm Stadium would serve as a mega shelter site and that the City would need to provide Disaster Service Workers (DSWs) to support the operations.

The City of San Diego utilized Qualcomm Stadium as a centralized mega care and shelter facility. Close coordination and communication between on scene management and the City's EOC provided collaborative decision making at all levels of operations. Activation of the mega care and shelter facility required both EOC and field staff to manage significant numbers of volunteers, donations and citizens requiring immediate care.

The City's EOC Care and Shelter Branch Director utilized on site city staff to facilitate the necessary communication and coordination required by the EOC to support on scene operations. Care and Shelter personnel from the field communicated jointly to the EOC for required resources and support. Newly established positions of a Volunteer Coordinator and Donations Manager were established which significantly assisted EOC support to coordinate City DSWs, ensure spontaneous volunteer management, and solicit/coordinate both monetary and non-monetary donations. An American Red Cross Liaison in the EOC is an absolute requirement for multiple operational periods.

Assigning Special Events staff to the temporary evacuation shelter at Qualcomm Stadium was instrumental. Staff knowledgeable on Stadium operations assisted in the timely planning and operations that occurred between city departments.

From the start, large donations of food, tents, cots, bedding, and personal hygiene items starting arriving at the Stadium. The donations came from a variety of sources including the American Red Cross, Boy Scouts of America, local military commands, dozens of national and local retailers, as well as private donations from citizens – to name a few. City employees and volunteers helped build the mini city that would host thousands of evacuees from all walks of San Diego life. There were nine primary operational areas at Qualcomm:

- o Food Management
- o Donations Management

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- o Comfort Services
- o Health and Special Needs
- o Volunteer Management
- o Animal Services
- o Distribution Management
- o Facilities Management
- o Security

Because of the positive association of Qualcomm with successful evacuations and sheltering during the 2007 wildfires, Qualcomm Stadium is a natural meeting area for those displaced by the next firestorm, if mega care and shelter facilities once again become necessary. To that end, planning should begin to establish Qualcomm Stadium as a mega care and shelter facility for future firestorms within the City of San Diego. This should include continued partnering with American Red Cross, VOAD (Voluntary Organizations Active in Disasters) and other appropriate organizations to develop programs addressing spontaneous volunteer management and training, credentialing, donations management, crisis counseling, alternative communications, care and shelter, hygiene and sanitation, medical response teams, disaster supplies storage, victim support and family assistance centers, and special needs.

Lessons Learned and Recommendations for Change

1. The Wildfires of 2007 affected nearly everyone in San Diego County in some way. Qualcomm stadium was opened by the City of San Diego and took in thousands of people affected by the firestorm, either directly or indirectly. No person was denied access or services and few questions were asked of the people coming to seek shelter.

The safety and security of the people who seek the City's protection is our Number One priority. This is for all people seeking protection from the firestorm, irrespective of unknown or questionable residential, immigration or other status. Everyone had the opportunity to be safe.

In order to provide for the safety and security owed to all of the people, it is imperative for the shelter managers to have situational awareness of who is in the shelter. It is essential for the management of a shelter to know how many people are there, what needs they have, how they can best be served, what dangers they may potentially be facing, and what opportunities they can take advantage of.

None of this is possible without a minimum of data gathering. Data gathering is an essential element of any care and shelter operation. Accountability for victims of disaster is absolutely necessary for notification, reunification of families, assistance qualification and so on. Data gathering also dissuades those who would do the citizens harm from entering the last bit of sanctuary during a crisis. People who prey on the vulnerable, who wish to harm a child, take the few precious items that were evacuated from a now lost home, or offer unlicensed advice where that last bit of trust has been placed.

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The ARC has a comprehensive system of registering and credentialing guests and volunteers coming on to shelter property. This is imperative for the aforementioned reasons, but was unavailable at Qualcomm at the time. The ARC process should be explored to determine potential viability for use at a mega care and shelter facility that may be initially stood up by the City. There was no formal registration process at the Qualcomm mega care and shelter facility; the entire entry was very ad hoc. This resulted in not knowing who was in the Stadium (evacuees, volunteers, vendors, entertainers, etc.), any contact information or any way to count or manage in any methodical way for logistical or statistical reporting purposes. Volunteers were there, but with no guidance or management. It was chaotic, and only grew worse as more people flooded in without the City having a reliable and tested set up system of registration, process flow, etc. A meeting was held with ARC for assistance on Tuesday, October 22, 2007. ARC had a comprehensive system they use for shelter registration, but didn't feel it would be useful to the City at this point. By Wednesday, October 23, 2007, City staff developed an independent registration form in order to gain control of who was inside the Stadium and who legitimately required City-provided evacuation services.

Recommendation: Registration of evacuees and volunteers, as well as the logistics plan should be established by City personnel immediately upon determining an evacuation or shelter site. Evacuee and volunteer registration system are necessary in order to provide accountability and ensure safety is essential and must be established prior to admitting any persons into the evacuation site. The City needs to develop a non-threatening checkin and wrist banding procedure for evacuees, volunteers and others who enter the evacuation and shelter site. Identification isn't required for evacuee registration. However, volunteers entering the mega care and shelter facility must provide sufficient identification and information sufficient for credentialing. Qualified staff must deploy to the Stadium for implementation in a timely manner.

2. During the five days at Qualcomm, there were approximately 500-1,000 Skilled Nursing Facility/Assisted Living patients relocated to the shelter and countless other walk-in evacuee/patients from the parking lots. The Club Level became the medical floor complete with a Triage/Acute Care area, a Pharmacy, and various units such as Diabetes, Respiratory Therapy, and Pediatrics. A Medical Supply Area was established. Qualcomm was a stabilization and transfer point. Approximately 500 patients were treated on-site and there were 62 transports to the emergency room. Using the Club Level as the Medical/Hospital level proved to be an efficient decision. The four lounges worked well because they could be kept private and they afforded the largest square footage for beds. In addition, the Clubs are climate controlled and the Club Concourse had plenty of restrooms.

Recommendation: Diaper/undergarment bins should be put into all restrooms to make sure that sewer lines aren't clogged by the flushing of these items.

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3. A layout of service locations was essential for health, safety, security and traffic flow. This is essential prior to the admission of volunteers and evacuees into the care and shelter facility. It was difficult to relocate services after establishment of food, donations, commissary, children's area, sleeping quarters, personal hygiene area. Most everything crowded around the one access point which added unnecessary congestion and confusion to the area.

Recommendation: Dedicated entry points for evacuees, volunteers and donations would have benefited the logistics, management, security and business flow of the operation. A separate area for City employees reporting to duty and separate sign-in sheets for each City department and division would have also assisted in the time management of City employees working at the evacuation site. A separate receiving area for medical and special needs supplies is also essential for efficient management of potentially controlled items.

4. Once the mega shelter site was publicized, a massive influx of donations began to arrive spontaneously at the facility. This initially overwhelmed EOC's ability to receive and inventory the sheer volume of equipment and supplies. Traffic backups from the large volume of freight trucks compounded by the massive influx of evacuee and volunteer vehicles resulted in considerable backups of main arterials leading into the facility. The California National Guard was deployed to assist the SDPD with site security. To facilitate the deliveries as quickly as possible, the EOC established a Logistics Hub in a designated area of the site parking lot. The hub area was fenced off to establish a security zone. Three site managers on rotating shifts were assigned to oversee the logistics field operations and to maintain communications and coordination of needs with Qualcomm Incident Command Post and the EOC.

Wal-Mart provided two staff members to cover 24 hour operations and manage the inventory. The City's Community Services staff was sent to assist in the initial inventorying of all supplies so that a baseline could be established. The inventory was provided to the OA.

The Logistics Hub provided needed supplies to other regional shelters as requests came in. To ensure that those requesting supplies were legitimate shelter operations, only those sites that were ARC approved or could prove their status as a nonprofit agency with a health permit were provided supplies. When the Qualcomm site was closed as a shelter, the EOC coordinated with the OA, ARC and other nonprofit social service organizations to distribute the remaining donated assets.

Recommendation: Pre-positioning of assets and setting up an inventory and distribution management system would have been helpful in order to inventory and organize items as they came in. Inventory management should be established prior to accepting donations. A distribution management system that ties in with the regional resource management system is important as well if the City is expected to take on the role of a regional distribution center.

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5. From the aftermath of Hurricane Katrina it became evident that evacuees include animals. Because Qualcomm Stadium served as a mega care and shelter facility large animals were accepted and many owners did not want to be separated from their pets even inside the stadium. Not all evacuees welcomed the animals in such close proximity.

Recommendation: Animal owners staying inside Qualcomm should have a separate area with animal provisions nearby. This would also keep animals away from evacuees who do not wish to be around the animals.

6. Unfortunately there will always be a small number of people who take advantage of crisis victims and situations.

Recommendation: Any person suspected of stealing donations or otherwise breaking the law will be processed in a uniform way in accordance with existing law and Department policy.

SPECIAL NEEDS CONSIDERATIONS

Lessons Learned and Recommendations for Change

1. During this incident there was a chronic lack of translators, which hindered the ability to evacuate and/or provide other emergency services. Translation services help many people stay informed and in turn remain calm, seek additional assistance, and feel cared for.

Recommendation: A ready reserve of pre-identified and vetted translators and bilingual professionals (medical, legal, social services) would enhance all other relief efforts.

2. Segments of the local population are under represented in emergency planning and preparedness. The communities need to be included into the planning and preparedness process. Leaders need to be identified and trained on preparing for and responding to disasters.

Recommendation: These programs should be developed and disseminated for the under represented communities within the City. Use of volunteer organizations and customized citizen emergency response team (CERT) training would enhance the culture of preparedness. Plans are necessary to reach those residents with special needs or living with special circumstances, such as non-English speaking, multi-family units, itinerants, and homeless.

3. Follow-on aid and assistance for overlooked populations is important as the effects of a disaster can linger for months after the responders return home.

Recommendation: Coordinating and leveraging volunteer resources pre-existing within the community not only results in the creation of reserve resources during a crisis but in improved community relations in non-crisis times as well.

4. Special needs were identified at Qualcomm outside of the established medical facility, such as evacuees with dietary or mobilization restrictions in the parking lot and other areas of the stadium.

Recommendation: Volunteers should constantly monitor the care and shelter facility in an effort to maintain situational awareness of persons with special needs.

PUBLIC INFORMATION AND MEDIA MANAGEMENT

Public information and warning was critical to maintaining public safety during this incident. The media was utilized for the delivery of timely information and critical public warning messages. Regularly scheduled briefings were conducted from the Operational Area (OA) EOC and included elected officials from the City and County, emergency managers, and law enforcement and fire officials. Both the City and the County web pages were updated with critical information on evacuations, shelters, road closures, repopulation, and health issues. Regular briefings and joint press conferences being conducted at the OA ensured a clear and unified message was given out to the public.

Lessons Learned and Recommendations for Change

1. The coordination of City/County/CAL FIRE news briefs at the County EOC was good and provided for improved information accuracy, flow and timeliness over that of the Cedar Fire. This ensured a clear and unified message was provided routinely to the public from City and other involved officials. Activation of the “modified” OA Joint Information Center (JIC) was not formally communicated to the City’s EOC. Through discussions with the OA, we’ve determined that the OA EOC establishes a JIC automatically every time it activates, and a City PIO should automatically go to the JIC.

Recommendation: A trained City PIO should report to the JIC and coordinate with the City EOC whenever a large incident occurs. Training and exercising the use of the JIC with City PIOs and Emergency Operations Center leaders should obviate this shortfall in the future. The OA and the City should coordinate so information on the establishment of a Joint Information Center is shared and representation is provided.

2. It was difficult at times to meet the intense demand for information generated by this incident with the limited PIO staff available. The magnitude, duration and newsworthiness of the incident justified the assignment of additional PIOs to handle the volume and frequency of requests. PIOs were needed at the Joint Information Center, CAL FIRE, the Rancho Bernardo staging area, County EOC, Fire Communications Center and in the field. These needs could have been partially filled by assigning the three PIOs assigned to the Department’s Incident Management Team; however, not all members were requested to assist. The use of firefighters with public information training to augment the two-person Public Information Office’s efforts resulted in greater access for the media and improved responsiveness to media, public and political inquiries.

Recommendation: The City’s Director of Communications should serve as the lead PIO and coordinate all PIO needs, assignments and activities with the PIOs assigned to the IMT (including JIC liaison) to ensure adequate coverage and a consistent message are

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provided. Additional personnel should also be trained as PIOs assigned for use during large-scale incidents where a greater PIO force is needed.

3. Some first responders were unsure of the City's/Department's expectations for their role in providing interviews and information requested by the media. While a majority performed admirably, others provided inaccurate information or comments that were in conflict with positions taken by the City or Department.

Recommendation: City/Department personnel should be provided additional media relations training to improve performance and clearly communicate departmental expectations. This training should reinforce that questions related to City/Department policy should be referred to incident command personnel or the PIOs. In addition, distribution of an incident fact sheet can assist personnel in providing accurate and consistent information to requestors.

4. Availability of information needs to be constant, current, and easily obtained by the citizens, evacuees and volunteers. Information must be simple and reliable, preferably coming in from the original source. The availability of the multi-communications vehicle from Department of Homeland Security was instrumental in providing this information at Qualcomm.

Recommendation: Additional information that could be provided that would improve service level at shelter and evacuation sites include:

- o A general map of the site including information is provided
- o List of repatriations as they occur
- o Information on bus and trolley times
- o A list of Frequently Asked Questions
- o Announcements and Updates
- o Maps

COMMUNICATIONS

Communications equipment employed in this incident include telephones (landline and cellular), 800MHz radios (mobile and portable), VHF radios (mobile and portable), Mobile Data Computers (MDCs), Pagers, Personal Digital Assistants (PDAs), and the region's 3Cs video conferencing equipment.

Lessons Learned and Recommendations for Change

1. A shortage of portable 800MHz radios hampered the rapid deployment of firefighters on reserve apparatus and required the emergency purchase and borrowing of radios to meet needs. The region maintains a cache of deployable radios programmed to operate on the 800MHz public safety radio systems. However, issues arose regarding the quantity and availability of portable radios and the deployment procedure. The City of San Diego met the demand for additional public safety portable radios by requisitioning 100 radios from Motorola and borrowing 80 radios from the County of San Diego. These portable radios were mainly deployed by SDFD and were critical for establishing and maintaining communications amongst various incident support teams. Additional radio batteries that had been purchased since the Cedar Fire were useful in ensuring sustained portable radio operability.

Recommendation: Additional portable radios should be purchased to ensure their availability during large-scale incidents. This can be accomplished by providing each firefighter with a personal radio or acquiring a sufficient number of radios and caching them at the mobilization point. Consideration should be given to additional radio caches located at strategic points throughout the City and the establishment of a procedure for deploying the radios.

2. Despite the use of multiple tactical channels for unit-to-unit communications, because of the size of this incident up to ten units were assigned to a single channel. This over-crowding led to communications delays as units had to compete for air time.

Recommendation: Consider assigning the individual structure protection groups their own tactical channel as opposed to managing all of the assigned units on the assigned Branch tactical channel. Field commanders should monitor radio channel assignments and usage to ensure effective radio communications. Additional tactical channels must be requested when assigned channels become over-used. Company officers must communicate difficulties in radio use to Strike Team Leaders to trigger their consideration of a request for the assignment of additional channels.

3. Overall SDPD communications were identified as an area needing improvement. The Department Operations Center, Incident Command Posts, Headquarters Staging, Communications Division and the Watch Commander lacked adequate overall situational awareness. Some officers reported poor 800 MHz portable radio reception and

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transmissions. Additionally, it was reported that too many officers were using the same talk group causing communication delays.

Recommendation: Train first responders on the use of mutual aid radio channels and radio interoperability. From an infrastructure standpoint, the level of radio interoperability between the City of San Diego and the Regional Communications System (RCS) is high. Training on the features and functionality of the radio systems is needed throughout the region.

4. The concurrent use of both VHF and 800MHz radios by some Strike Team Leaders for communications with assigned units was found by some personnel to be distracting, especially in firestorm conditions. This practice can lead to missed communications and serious safety issues, as has been found in some firefighter fatality investigations. However, during this incident, since units were operating under the direction of the City of San Diego commanders during the first two days of the fire, the use of 800MHz radios was appropriate as it provided a greater margin of safety since all firefighters are equipped with 800MHz radios, but not VHF radios.

Recommendation: On incidents where units are operating under the direction of CAL FIRE or USFS, mandate that Strike Team Leaders use only the assigned incident VHF frequency when on the fire line. 800MHz talk groups may be used when in travel or camp status only. Provide additional and recurring training to all personnel on the use of the VHF radios to ensure familiarity. Provide VHF radios to all firefighters on an incident.

5. An obstacle during this disaster was the lack of mapping layers that identify the location of critical radio communications infrastructure. Radio sites integral to maintaining radio communication continuity were threatened by the fires.

Recommendation: Mapping these critical resources and making this information readily available to incident commanders would help to plan and mitigate potential impacts based on the fire threat. In addition, this information could be used to prioritize the restoration of primary power to critical infrastructure in the event of an outage.

6. The Mobile Communications Unit (COM-1) was not assigned to the Rancho Bernardo staging area until later in the incident. Although this vehicle is viewed as obsolete, it proved to be a very valuable resource for command activities at this location. Additionally, the assignment of personnel to receive incoming dispatches and serve as field dispatchers for the Group Supervisor was very valuable.

Recommendation: Clarify Department policy for when and how the Communications Unit should be deployed, staffed and utilized. The existing COM-1 has served as a combined Communications and Command vehicle. Consideration should be given to how these two functions should be managed with the advent of the new communications trailer being developed.

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7. As a large-scale fire approaches the City, the Fire Communications Center is inundated with calls. The Mobile Data Computers (MDCs) for field units become call-saturated, and individual incidents become masked within the volume of data on the screen. In addition, a large volume of information is rapidly transmitted via radio or cell phone. With all the verbal communication traffic, there is a risk that critical information (e.g., call regarding trapped persons) will be lost.

Recommendation: Develop the ability on the MDC to clearly separate out and display critical dispatches such as those involving rescue situations from all other non-critical information. Consideration should also be given to providing the ability to quickly distribute critical information in printed format.

8. While the Department has a large inventory of spare radio batteries and radio harnesses issued to all supervisors, spot shortages of radio batteries and a desire by some non-supervisory personnel to be provided with radio harnesses were reported.

Recommendation: Logistics must ensure that a cache of portable radio batteries are provided at all staging and camp locations. Strike Team Leaders must also ensure they maintain a cache of spare batteries in their vehicle for field replacement, as needed. The Occupational Safety and Health Committee should be tasked with evaluating the need for providing radio harnesses to non-supervisory personnel.

9. Public safety radio systems are generally built with emergency backup power sufficient to maintain operations for four to five days after loss of primary power. Of the seven 800MHz voice radio system locations, two locations lost primary power during the firestorm. In both cases the emergency generator provided backup power for continued operation. The generators required refueling at about four day intervals until primary power was restored.

Recommendation: Since many of the City of San Diego locations are shared with other regional entities with emergency generators, an opportunity exists to explore joint refueling, particularly during an emergency event such as the firestorm. Consider installing remote generator monitoring equipment which provides readings for both initial start time and remaining fuel levels and increasing size of fuel tanks to allow for extended operations. Identify critical infrastructure and key resources within the City that utilize backup generator systems and assure fuel storage capacities allow for extended operations.

10. Telecommunications vendor resources could be better utilized by documenting the type and availability of services offered. During an emergency event, contact could be made with the vendors to mobilize the resources in a more coordinated fashion.

Recommendation: Work with telecommunications vendors to document the type and availability of services that could be offered during an emergency.

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Community Access Phone System (CAPS)

The San Diego Police Department operates a Community Access Phone System to provide a direct information line to the public during a major incident or event. This system is staffed with police volunteers. CAPS was activated as the "Fire Information Line" at 7:15 PM on Sunday, October 21, 2007. The public was informed of the availability of the CAPS number via a Media Advisory from the San Diego Police Department PIO.

A total of 20 incoming lines was available during this incident, which is an increase from the 12 lines used during the Cedar Fire in 2003. The line was in continuous operation for 90.75 operational hours within a 96 hour period. During this operational period, 164 different volunteers that included SDPD Crisis Interventionists, SDPD Retired Senior Volunteer Patrol (RSVP) members, SDPD Volunteers in Policing (VIP), and other individuals answered over 12,322 calls. This does not reflect the number of calls that were attempted into CAPS, but not answered due to the caller receiving either a line-busy or circuit-busy signal.

1. The major challenge during CAPS operation was receiving information that needed validating prior to dissemination to the public. Calls came in from not only the City of San Diego and the San Diego region, but also from throughout California, other states and foreign countries. Often, the majority of information was in conflict and the level of conflicting information did not diminish once the event reached a less critical stage over the passing days. CAPS Supervisors generally gave priority to providing information to the public that was relayed first-hand by a reliable source (such as on scene personnel). Often CAPS Supervisors had to make their best estimation to the validity of the information regardless of the source.

This information overload was not nearly as much of an issue during the Cedar Fire. With this most recent incident, a much larger number of individuals in the field and at command centers had access to multiple information sources (e.g., internet) that were taken at face value. This actually hindered CAPS operations.

Recommendation: A procedure should be added to the EOC PIO checklist to ensure information flows to the CAPS supervisor in order to assure the most accurate information is provided to the public. As a result of this incident, SDPD Crisis Intervention will begin a CAPS certification process to identify and pre-train those police volunteers who have a desire and aptitude to work CAPS. With over 800 volunteers within the Police Department, a range of operational experience exists that can be easily used to augment CAPS staff.

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2-1-1

2-1-1 is a free national dialing code for 24-hour community, health and disaster information. Like 9-1-1 for emergency service, 2-1-1 has been set aside by the Federal Communications Commission for the public to easily access community information. Callers receive personalized information from a live phone specialist who can answer questions about a variety of nonprofit services and agencies.

According to information provided by 2-1-1 San Diego, they answered over 110,000 fire-related calls by utilizing more than 1,400 volunteers.

1. During the initial stages of the fire on Sunday, October 21, 2007, an attempt was made between CAPS and 2-1-1 to share information regarding this event. As the magnitude of the event increased, 2-1-1 and CAPS focused on their respective missions which clearly overlapped.

Recommendation: A procedure should be added to the EOC PIO checklist to ensure information flows to 2-1-1. Information needs to be consistently shared with the Police Department's CAPS line, Fire Dispatch, and 2-1-1 to ensure accurate and timely information is provided to the public.

TECHNOLOGY

Lessons Learned and Recommendations for Change

Geographical Information Systems (GIS)

1. A key to the success of SDFD's response to this large-scale incident was the ability to create and frequently update incident maps used to track fire spread, evacuations and unit assignments. As there is only one GIS mapping technician in the Department, it was fortunate that this highly skilled employee was available to respond. However, because of lack of depth at this position, this employee was required to work the entire incident without relief. Lack of depth in the GIS technician position is a significant vulnerability during a large-scale emergency.

Recommendation: An additional GIS technician should be added to the Fire-Rescue budget to address an increasing routine workload and ensure availability during emergency incidents. The addition of a second GIS technician would also serve to lessen the impacts of being required to be on constant callback status and to work without relief during large incidents. Both technicians should be rostered to the IMT along with additional personnel to assist with Display Processing (DSPRO).

2. During the height of the incident, the GIS technician was temporarily unable to access the ArcGIS application due to a SanGIS power outage and a slowdown of the City network caused by too many users accessing live data streams of new updates. ArcCatalog was looking at all mapped drives and ArcMap would not start due to this. These problems resulted in a delay in providing maps.

Recommendation: Develop a Standard Operating Procedure (SOP) to train and instruct GIS technicians regarding potential computer network conditions to ensure continual mapping support.

3. During the evacuation and repopulation processes, it was necessary to be very specific as to the boundaries of areas being impacted. Clearly communicating these boundaries can be improved by using GIS technology.

Recommendation: Evacuation areas should be generated as mapped data files (GIS layer) and delivered for importing into the AlertSanDiego and Reverse 911® systems for evacuation calls. The GIS layer would include information regarding the time of an evacuation request, subsequent time calls implemented and repopulation. This data can also be provided to the County EOC to analyze the full extent of evacuations at the time they are occurring.

4. The GIS Tech Support Unit Leader in the EOC was responsible for generating maps of the incident that would assist with situational awareness. Mapping information originated from a variety of sources in the field and was routed to the OA then to the City

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EOC in PDF format along with the shape files. The GIS Tech Support Unit Leader would recreate the maps on the City system focusing on the areas of interest to the City. This protocol placed the City in a dependent position for mapping information. The delay in mapping information and content lowered its value in the development of situational awareness. It was noted that the fire perimeter layer was not a source upon which to base decisions.

The GIS Tech Support Leader did not have access to shape files (layers) that contained critical infrastructure. It was also determined that accurate perimeters of the evacuation areas as defined by the AlertSanDiego and Reverse 911® calls would have been useful in that it could provide a correlation between the evacuation calls and the progress of the fire.

Recommendation: Coordinate with the regional GIS group to establish regional mapping protocols that utilize and coordinate the GIS resources of the region in a manner that generates unified, timely and accurate situational awareness, to include update of current mapping data to ensure accuracy of high hazard/risk areas. Obtain shape files depicting critical infrastructures within the City. Establish protocols to capture the perimeters of an evacuation as defined by Reverse 911® and furnish those boundaries to the EOC GIS position. Coordinate with the OA to develop a regional GIS info sharing plan.

Command Control and Communications (3Cs)

The San Diego regional Command Control and Communications (3Cs) project provides video conferencing and video streaming capabilities to a few regional Emergency Operations Centers. The system is still in the pilot phase of build out with limited connectivity within the region. The system was used as a briefing tool throughout the incident. The video teleconferencing, video downlink, and wide screen TV displays for monitoring media feeds are extremely beneficial in providing real time situational awareness.

The SDPD Operations Center used the 3Cs video conference briefings to coordinate with the San Diego Sheriff's Office regarding evacuation and repopulation. CAL FIRE Operations Center staff and SDPD DOC staff who were unable to participate in a set briefing provided the conference moderator with an advance copy of their brief to be shared with the group. At various times during the week, there were information gaps among the agencies. The frequent briefings allowed agencies to compare notes and confirm information directly from the source, which saved time and ensured that resources were tasked appropriately.

1. 3Cs is maturing at a pace that exceeds the capacity of a contracted project manager.

Recommendation: Formalize the program manager position for 3Cs under the City's Deputy Chief Operating Officer for Public Safety and Homeland Security in order to maintain maximum oversight and management over funding and contractual issues.

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2. Incident commanders and area command teams are interested in aerial video feeds, but often do not have ready access to a 3Cs monitor. When video streams are available from the helicopters, incident command staff should be provided advance warning so they can be positioned near a monitor. A means to save footage for future viewing should also be implemented. The briefing schedule and protocols lacked organization which interfered with conferences starting on time and best utilizing the reserved time. Lengthy delays in standby mode resulted in loss of interest and shifting to resolving higher priority issues

Recommendation: All 3Cs participating agencies should agree on a Communications Plan for incidents. The EOC Strategic Communications Plan should be drafted by the 3Cs User Group and then submitted to the 3Cs Steering Committee for approval. Each EOC should be encouraged to establish a standard for using 3Cs as part of their activation.

3. Regionally, a conference bridge was assigned for the incident and participants were contacted via email daily with briefing information. EMS Medical Operations Center, County Environmental Health, and the Office of the Governor called into 3Cs using ISDN. ISDN is currently the only means to access 3Cs video conferences from outside the network, and is not a viable solution for conferences with staff in the field.

Recommendation: Video conferencing with sites outside of 3Cs using IP should be implemented. This solution was offered to all 3Cs participants, but only SDPD requested to use the equipment. It was utilized at the SDPD Northern Command Post one day during the event to allow their participation in the interagency conferences.

4. The location of the fires seriously hampered the ability of the existing 3Cs regional antennas to receive transmissions from City of San Diego helicopters. Because video from the helicopters was considered critical, 3Cs staff worked with City Communications and used 3Cs equipment not yet in service to develop a downlink receiver site at SDFD Fire Communications Center.

This downlink site differed from existing 3Cs regional receiver sites because it used a directional rather than an omni-directional antenna. City Communications manufactured an antenna mount in their shop, and SDPD Video Productions provided a tripod. The benefit of this solution was that the City was able to receive clear pictures from the City helicopters at distances up to 20 miles (existing 3Cs antennas average 8 miles). The downside was it required a person to constantly realign the antenna whenever helicopters were transmitting. Staff from 3Cs and City Communications manually operated this receiver site from 8:00 AM to 4:00 PM Monday through Friday during the event.

Recommendation: The stop gap equipment assembled and used on this incident should be a model for the development of two kits that 3Cs should have available for future incident support.

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5. Video streams from helicopters were available only on a limited basis. There were many contributing factors including weather, wind, distance from receiver sites and helicopter tasking for other assignments (both fire and law enforcement). Video quality was limited by air quality and quality of the camera systems installed on all four ABLE helicopters and Fire Copter 1. A camera system with stronger zoom would have allowed for the helicopters to get a sharper picture even at higher altitudes. 3Cs staff investigated purchasing Cineflex HD cameras, but found it cost prohibitive in the past. During the heavy winds the first three days of the event, Technical Flight Officers did not feel comfortable deploying the antenna arms for fear they would break off.

Recommendation: 3Cs should improve receiver sites on the network, either by installing more sites in diverse geographical areas of the county or by utilizing directional antennas more. Transmitting antennas on the helicopters need to be evaluated. The 3Cs subcommittee should continue to work with project vendors to research existing video downlink solutions and engineer new products to meet the unique needs of 3Cs.

OPERATIONAL AREA COORDINATION

Lessons Learned and Recommendations for Change

1. There were several areas where communication and coordination difficulties between the City and the Operational Area impacted the City's response to this incident. Information posted to the regional WebEOC application was often not acted upon and required follow up via telephone for status checks. At many levels in the EOC, staff found it difficult to contact the OA EOC. We identified that during a major disaster communications between the two EOCs will be challenging, and so a liaison from the City to the OA EOC and a liaison from the OA to the City EOC is essential.

The City of San Diego faced many operational challenges surrounding Care and Shelter, Spontaneous Volunteer Management, and Donations Management. Establishment of a mega care and shelter facility within the city limits of San Diego and assignment of a Volunteer Coordinator and a Donations Manager to handle the overwhelming level of volunteers and donations were successful by utilizing city resources and local cooperation.

Recommendation: Provide mutual liaisons between the City and OA EOCs during a major incident. Foster continued communications coordination and between the City EOC positions and the OA EOC positions to enhance City EOC Operations. The City and OA need to further train and exercise communications and coordination to improve operations. Include EOC/OA communications coordination and as a component for all exercises and related training. An EOC communications plan should be developed and shared between both the OA and the City's EOC as early as possible in the response phase of the incident.

2. The Resource Manager board was not detailed enough to be used for the donations inventory. WebEOC does not provide any confirmation if items such as requests for resources or mutual aid have been accepted, read or assigned. EOC staff often had to follow up with the OA's EOC Liaison and/or place a phone call to the OA to check on the status of requests.

Recommendation: Coordinate with the OA to develop and utilize a resource tracking database which can be made available to all area EOCs. Coordinate with the OA to develop procedures for the dissemination of the OA's incident action plan for each operational period to local area EOCs to keep everyone abreast of pertinent regional issues. Conduct joint EOC training with the OA.

Non-Monetary Donations and Operational Area Coordination

1. The City was faced with the potential of having to provide food, care and sheltering for an estimated 100,000 evacuees. Resources to support this operation relied heavily on non-monetary donations. To effectively manage the volume of donations enroute and arriving at Qualcomm, a Donations Manager was activated within the City EOC. The successful management of supply needs and the management of donations could not have been done effectively without the establishment of this critical position. Working closely with major retailers, corporations, volunteers, CERT and the VOAD (Volunteers Organized to Assist in Disasters) community provided the expertise to effectively take delivery of, inventory, store and disperse donated goods to support logistical needs and requests within Qualcomm and area shelters. The outpouring of generosity from the community, corporate sponsors, nonprofit organizations and volunteers was extraordinary.

Recommendation: Expand the City's capability to conduct Donations Management, including further development of roles and responsibilities of the Donations Management Leader position within the City's EOC. Donated goods policy needs to be clearly articulated at the beginning of a disaster so that potential donors, and recipients, know what to expect.

2. Donations Management should be better coordinated to benefit the region.

Recommendation: Develop a City Donations Management Plan to build on the OA Annex. Develop checklists, job aids, and a description of roles and responsibilities for the Donations Management Leader position. Incorporate Donations Management into local and regional training exercises and drills. There should be a single phone number and email for donation information to provide and track donor information.

VOLUNTEERS

Lessons Learned and Recommendations for Change

The City of San Diego complies with Section 3100-3109 of the California State Law which designates public employees as Disaster Service Workers (DSWs). Once it was determined that ARC resources were depleted and they could not support shelter operations at Qualcomm Stadium, the EOC quickly reacted and developed a plan using DSWs. As a workable solution, the City requested that ARC provide leaders for conducting shelter efforts and the City would provide DSWs to work under their leadership. This was approved by ARC.

City Disaster Service Workers

1. It is important to note that in a major disaster which displaces a large segment of the City's population, the local chapter of the American Red Cross (ARC) initially may not have adequate resources to operate all the shelter sites that may be required. Until such time as the national resources of ARC arrive on the local scene, City of San Diego personnel may have to fill the gap by staffing and running the necessary care and shelter services with both local and mutual aid resources, if necessary. After a number of days, once ARC's national disaster response program is fully mobilized, ARC can begin to take over the staffing and lead role for many of these functions. The City of San Diego can then transition to supporting the sheltering and mass care efforts of ARC and other support agencies.

City staff needs to be maximized in their capacity as DSWs through a comprehensive training and scheduling program which includes volunteer management and the unique requirements of managing masses of volunteers. Communication and training on roles and responsibilities of City employees as DSWs are needed to facilitate a better response and increase the level of participation. This should include a policy on work hours, expectations, scheduling, compensation, call out and uniform/identification.

Recommendation: Clear policies and training are needed to identify, establish and practice requirements of City employees during disasters in their role as Disaster Service Workers. A skills matrix database should be developed and maintained, including ARC and other certifications. Emergency positions need to be pre-identified, including those in the Emergency Operations Center, and regular training and exercises should support those positions. Analyze and update Annex G of the Emergency Operations Plan to address gaps revealed by this incident.

Establishing a City CERT (Community Emergency Response Team) would provide an augmented cache of trained volunteers as back-up to Police and Fire first responders. These individuals would be trained through the normal CERT process and have pre-identified responsibilities, if practical, during an emergency. Qualcomm provides this training to their employees through San Diego Fire-Rescue Department's Business Emergency Response Team program.

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Volunteer Management

1. The outpouring of support and kindness from area volunteers was overwhelming. The number of volunteers already inside the Stadium before the ICP was in place was extremely high however, and this contributed to initial confusion and disorder.

Recommendation: The Volunteer Coordinator established for this incident should be a permanent position on the EOC roster in order to coordinate all volunteer interface with City personnel such as:

- o Multiple sign-in rosters kiosks
- o Volunteer assignments with a City staff group leader
- o Better use of small teams
- o Improved scheduling
- o More coverage during the nights
- o Limiting the number of volunteers from each organization per shift
- o Better coordination between organizations on roles
- o Credentialing and badging
- o Outlining expectations of volunteers

Spontaneous Volunteers

The use of volunteers was integral to the effective establishment of care and shelter operations within the City. Management of Qualcomm as a mega care and shelter facility required the use of nonprofit organizations and their staff as well as the utilization of City Disaster Service Workers and spontaneous volunteers. City employees were utilized to help in managing the many volunteers required to sustain shelter operations, and were placed in teams to manage volunteers on site.

The City attempted to obtain volunteers and the management of volunteers through the contractual agreement between the OA and "Volunteer San Diego." There was some confusion as to how to integrate and obtain volunteer resources through the established OA plan and agreement with "Volunteer San Diego."

Recommendation: Refine and strengthen the process for requesting volunteer management resources during a crisis. This would include exercising, training, reviewing and updating this function regularly. Utilize the expertise of VOAD leaders to work jointly with the City to develop a solid volunteer management program. Utilize nonprofit group resources as well as grants to obtain needed funding for disaster volunteer training programs. Develop a regional approach to the issue of volunteer utilization during times of disaster and crisis.

CITIZEN PREPAREDNESS AND OUTREACH

Lessons Learned and Recommendations for Change

1. Preparedness of the community allowed first responders to assist those in the most dire need of services or resources first. Brush management practices, building material selection familiarity, fire awareness, the ability to stay informed and be prepared to quickly evacuate with essential items are all elements of individual preparedness.

Recommendation: Comprehensive community outreach and education programs should be developed to raise public awareness of the importance of personal and family preparedness, thereby affording first responders the opportunity to focus on assisting those in dire need first. Comprehensive community outreach and education programs should be developed to raise public awareness of wildfire and promote fire safety and prevention to create survivable communities. Under represented communities must also be integrated into these outreach efforts.

2. CERT teams were a substantial benefit to the provision of logistical services. CERT volunteers served as runners, drivers and in many other support functions.

Recommendation: More CERT teams should be trained within the City, especially in under represented communities.

3. Many people relied solely on “getting a call” before preparing or evacuating their homes. The AlertSanDiego and Reverse 911® systems are part of the overall public notification process and should not be solely depended upon for situational awareness.

Recommendation: Perform better outreach and council supported district training for mass notification system in order to manage public expectations of capabilities.

EMERGENCY MEDICAL SERVICES

Lessons Learned and Recommendations for Change

1. Access to a large nursing staff (within the division as well as call-back Critical Care Transport Nurses) was a major benefit to the effort. Nursing staff played a role in the smooth evacuation of Pomerado Hospital (first ever in San Diego County), the setup and maintenance of an extended care shelter at Qualcomm and the staffing of rehabilitation facilities for firefighters on the line.

Recommendation: Continue to train and exercise this role.

2. The experience of the Cedar Fire again provided valuable experience concerning the initiation of a dispatch emergency rule altering the response configuration to free engine companies for firefighting efforts. The early implantation of the “emergency dispatch protocol” that relieved fire engines from responding to emergency medical incidents freed firefighters for immediate assignment to suppression activities.

Recommendation: Continue to plan for early implementation of the “emergency dispatch protocol” during a large event.

3. There was a need for personal care and hygiene supplies (feminine hygiene, moleskin, eyewash, aspirin, etc.) within the first 24 hours of the incident. Based on experience from the Cedar Fire, these materials will always be required on any incident lasting more than one operational period.

Recommendation: Develop a list of these items. Stock sufficient non-perishable items and ensure that perishables can be ordered and delivered in a more rapid fashion.

4. The evacuation to Qualcomm Stadium of approximately 400 nursing home patients created medical and logistical needs not previously experienced. The overall management was successful, however planned coordination for large resource needs (medical overhead, pharmaceuticals, additional nursing staff, etc.) through the County was lacking.

Recommendation: Continue efforts to improve medical coordination between the County and City EMS.

5. EMS Division staff was tasked with non-EMS roles (dispatcher, communications related roles, liaisons) during the fire. While it is evident that rotation of experience of overhead personnel is valuable, there was no anticipation of overhead needs for these roles and it resulted in the utilization of staff willing to assume these roles.

Recommendation: Single resource communications roles (Communications Unit Leader/Technician, Dispatcher) should be ordered when ordering a communications van rather than recruiting other staff. Dispatch should consider availability of internal and

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external overhead resources, pre-plan and train appropriately to staff the next communications unit.

TRAINING AND EXERCISE

Lessons Learned and Recommendations for Change

1. The SDFD's ability to concurrently staff the Incident Management Team, Department Operations Center, Emergency Operations Center and critical command positions in the field, as well as the City's difficulty in staffing the EOC, is hampered by a lack of trained and qualified (certified) personnel to fill all positions.

Recommendation: Additional personnel should be trained to fill these positions to a minimum three-deep roster to enhance command and control during large-scale incidents.

2. The SDFD's investments in Leadership and Wildland Firefighting training played an important role in improving its overall performance during this fire as compared to the 2003 Cedar Fire.

Recommendation: Continued investment in this training is critical for the growth and constancy of high level performance in areas of leadership and operational readiness.

3. With the advent of the California Incident Command Certification System (CICCS), there is a growing expectation and requirement that qualified Strike Team Leaders and Division/Group Supervisors be provided to incidents – whether inside or outside the City of San Diego. A lack of qualified Strike Team Leaders and Division/Group Supervisors resulted in a delay in deploying certain strike teams and an inability to provide relief for personnel staffing these key positions.

Recommendation: Additional uniformed personnel at the ranks of battalion chief and captain must be trained as Strike Team Leaders and Division/Group Supervisors. Completion of required coursework should be set as a minimum qualification for promotion. The Department should periodically provide for this training.

4. Adequate code training should be provided to all City staff responsible for interpreting/enforcing the City's Brush Management Regulations.

SAFETY

Lessons Learned and Recommendations for Change

1. A fire of this size and complexity requires the assignment of multiple, fully trained and qualified safety officers to effectively monitor activities, identify safety issues and correct deficiencies.

Recommendation: Fully trained California Incident Command Certification System (CICCS) or National Wildfire Coordinating Group (NWCG) qualified Safety Officers must be rostered to the SDFD Incident Management Team. These positions will be responsible to determine and recommend to the Incident Commander the number of safety officers required to manage the safety issues of the incident. This position would be responsible for coordinating the activities of all Department safety officers assigned to the incident and coordinating with the Unified Command Safety Officer, if one has been assigned.

2. The Department lacks a sufficient number of fully trained and qualified safety officers to handle anything more than routine day-to-day operations. This deficiency compromises the safety of personnel engaged in large-scale incidents by resulting in the need to assign lesser qualified, or in some cases unqualified personnel, to the safety officer function.

Recommendation: The Department should develop a plan and provide funding to increase the number of fully trained and qualified safety officers to ensure adequate numbers are available to provide this critical focus on safety concerns at large-scale incidents.

3. During mobilization, it was found that some firefighters anxious to join those on the front lines self-dispatched to the incident in their personal vehicles or attempted to join existing fully-staffed crews that had already been assembled. This latter tactic resulted in some apparatus carrying more personnel than they were designed to accommodate. These “independent actions” severely compromised long-standing personnel accountability procedures and negatively impacted both safety and resource management.

Recommendation: The Department must reinforce its expectation that all personnel accountability and mobilization procedures will be followed. Deliberate attempts to circumvent these procedures through “independent action” in an effort to expedite one’s personal assignment to the incident must be immediately addressed by supervisors and management personnel.

4. Some personnel were engaged in firefighting and incident command operations for more than 36 hours without relief. Often, these personnel resisted attempts to be relieved so that they could remain engaged in their assignments. As fatigue is a known contributor to decreased performance and increased risk of injury, this situation poses a threat to personal/crew safety and attainment of incident objectives.

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Recommendation: A comprehensive crew/position rotation plan must be developed in advance for incidents that extend beyond initial attack operations. This plan must provide adequate work/rest cycles for all involved personnel. An expectation must be set that all personnel will abide by the plan with exception requests requiring approval by the Section Chief level of the incident command team.

5. Due to a lack of aides/trainees or the desire to use a specific aide/trainee, some Strike Team Leaders selected the company officer of a unit assigned to their strike team to serve in this role. This resulted in the creation of “short crew” under the command of an engineer assuming the OCA (Out-of-Class Assignment) role of captain. An under-staffed crew under the direction of an inexperienced OCA officer is not a desirable situation. To further illustrate this issue, the SDFD Safety Officer was pressed into to service as a Strike Team Leader early into the fire.

Recommendation: Aides/trainees must be provided to all Strike Team Leaders at the time of assignment to assist them and provide training opportunities for personnel. To facilitate these assignments, the names of available aides/trainees should be added to and maintained in the Emergency Resource Directory. In no case shall a crew be shorted or allowed to operate under an OCA officer unless no other options exist. In cases where this occurs, the situation must be corrected as soon as possible.

6. The lack of a Medical Unit dedicated to treating and tracking firefighting injuries weakened this aspect of incident operations. While highly experienced Department nursing staff were deployed to the Rancho Bernardo staging area to provide treatment services to firefighters, and provided exceptional care, failure to formalize operations by designation of a Medical Unit Leader resulted in a loss of accountability.

Recommendation: All components of the Medical Unit should be activated as part of the Incident Management Team’s response to any emergency. A Medical Unit Leader must be assigned to ensure accountability for all required functions and operations.

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ACKNOWLEDGEMENTS

We wish to thank and acknowledge all of the dedicated employees and volunteers of the San Diego Fire-Rescue Department, San Diego Police Department, Office of Homeland Security, and City departments who worked tirelessly to provide exceptional service throughout the fire disaster to citizens of San Diego, including those at the Emergency Operations Center and Qualcomm Mega Care and Shelter facility. Special thanks are extended to the following who contributed to the writing of this After Action Report:

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Brian Fennessy, Deputy Chief
Jeff Frazier, Deputy Chief
Lorraine Hutchinson, Deputy Chief
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Roger Fisher, EMS Administrative Manager
Dena Sickels, Captain
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Laura Brenner, ISA II/GIS Specialist

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Guy Swanger, Captain
Bill Edwards, Captain
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Miguel Rosario, Captain
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Qualcomm Stadium

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Emergency Operations Center (continued)

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ATTACHMENT A

CEDAR FIRE RECOMMENDATIONS

		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
A.	Command Staff and Incident Management						
	1. Fund, develop and train to National Wildfire Coordinating Group (NWCG) standards for command positions	Training	No	Funding	Yes		
	2. Fund the staffing and resource needs for extended duration incidents	Operations	No	Funding	Yes		Though there was no dedicated funding, overtime was used to staff needed positions. Procurement cards and emergency purchase orders were used to acquire needed supplies and services.
	3. Develop a Community Emergency Response Team (CERT) program	Operations	Yes			Yes	CERT was used in many capacities during the 2007 wildfires including security, logistics, shelters, etc. Use of CERT personnel freed firefighters to engage in emergency operations.

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	4. Fund, develop, and equip the Department Operations Center (DOC)	Special Operations	Yes				Due to lack of trained personnel to concurrently staff the IMT, DOC and field command positions, DOC functions were integrated into command operations at the Fire Communications Center.
B.	Safety						
	1. Fund, develop and train to National Wildfire Coordinating Group (NWCG) standards qualified personnel to perform the role of Incident Safety Officer	Operations	No	Funding	Yes		
	2. Review safety procedures to address fighting fires in the wildland/urban interface	Training	Yes			Yes	Annually through In-Service Training
	3. Fund and develop staffing to ensure the timely implementation of an Incident Safety Officer	Training	No	Funding	Yes		
	4. All Personnel must be trained in the following areas:	Training	No	Funding	Yes		
	• Risk/benefit analyses						
	• Fatigue						
	• Personal Protective Equipment						
	• Span of Control						

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	5. Open cab apparatus should be removed from service	Logistics	Partial		Yes		No open cab Type 1 engines will be in service by April 2008 (exceptions include: fire training and potential reserving of apparatus for surge demands).
C.	Public Information						
	1. Fund additional staffing and training for the Public Information Officer (PIO). The staffing would include: support staff, uniformed personnel	Operations	No	Funding	Yes		
	2. Recall PIOs early in incidents	Operations	Yes			Yes	PIOs were called in early which had a positive impact in getting infor to media and coordinating the acceptance of donations and contributions.
	3. Train Department Operations Center (DOC) participants in the media plan	PIO	No	Funding, time and staffing	No		
	4. Assist in developing a countywide media workshop/drill during Summer/2004 to ensure readiness	PIO	No	Funding, time and staffing	No		

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	5. Develop a policy to utilize recently retired command staff officers to act as PIO/fire department subject matter experts	PIO	No	Funding, time and staffing	No		Feasibility of concept under review
D.	Staffing and Recall						
	1. Review recall procedures and revise as necessary.	Operations	Partial	Staffing	Yes		The Cedar fire used a personnel "all call" via the media, bypassing the staffing desk and complicating the tracking of personnel assignments. The 2007 fires used selective personnel "all calls" over the Department paging system directed by command staff. This was an improvement, but personnel tracking still proved challenging. Further refinement of recall procedures is needed to ensure accountability.
	2. Fund, develop and train National Wildfire Coordinating Group (NWCG) qualified Status/Check-in Recorders	Training	Partial	Funding	Yes		Staff turnover has negatively impacted trained cadre.

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	3. Create process to allow recalled personnel access to facilities	Logistics	Yes			Yes	Key boxes are in place at all facilities and a process by which to quickly obtain access codes is in place.
	4. Change policy on emergency staffing during "Red Flag" alerts, and when to backfill for out of city strike team deployments	Operations	In Process		No		Additional emergency response units were staffed in 2007 based on fire weather predictions and fire starts in adjacent jurisdictions.
E.	Department Operations Center						
	1. Funding must be provided and maintained for a dedicated and well equipped Department Operations Center (DOC)	Special Operations	Yes				Due to lack of trained personnel to concurrently staff the IMT, DOC and field command positions, DOC functions were integrated into command operations at the Fire Communications Center
	2. Fund, develop and train personnel to fill the roles of a functional Department Operations Center (DOC)	Spec Ops	In Process		Yes		Due to lack of trained personnel to concurrently staff the IMT, DOC and field command positions, DOC functions were integrated into command operations at the Fire Communications Center
F.	Operations						

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	1. All personnel should be trained in the following National Wildfire Coordinating Group (NWCG) courses: Wildland Fire Behavior, Incident Command, Fire Operations in Urban Interface	Training	Partial	Funding	Yes		
	2. Captains should be trained in the following National Wildfire Coordinating Group (NWCG) courses: Intermediate Incident Command System, Strike Team Leader Engine, Basic Air Operations, Division/Group Supervisor	Training	Partial	Funding	Yes		
	3. Captains should be National Wildfire Coordinating Group (NWCG) qualified in the following positions: Staging Area Manager, Strike Team Leader Engine (trainee)	Training	No	Funding	Yes		

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	4. Battalion Chiefs should be trained to the following National Wildfire Coordinating Group (NWCG) courses: Advanced ICS, Command & General Staff, Operations Section Chief	Training	No	Funding	Yes		
	5. Battalion Chiefs should be National Wildfire Coordinating Group (NWCG) qualified in the following positions: Strike Team Leader/Engine, Division Group Supervisor, Agency Representative	Training	In process	Funding	Yes		All BC's are required to be Strike Team Leader certified. The Operations Division is developing a task book for Agency Rep.
	6. Apparatus inventories should be reviewed and updated as needed for fighting wildland/urban interface fires	Logistics	In Process	Funding	Yes		Inventories have been reviewed. Added I-Zone packs to all Type 1 engines. Upgraded wildland PPE: issued web gear with fire shelter, wildland helmet, wildland goggles, and Hotshield facemasks to all firefighters.

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	7. Fund and develop complete Strike Team Leader kits for all Battalion Chiefs; spare kits should also be maintained at each battalion headquarters	Operations	Yes			Yes	
	8. Fund and develop Strike Team Engine kits for all apparatus.	Operations	Yes			Yes	
G.	Logistics						
	1. Fund, develop and train adequate personnel to function at all Logistics Section Unit Leader levels	Training	No	Funding	Yes		
	2. Fund the development of Logistics Section Chief Kits to be stored at the Department Operations Center (DOC)	Special Operations	Yes			Yes	

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	3. Develop logistical plans and organization charts for storage at the Department Operations Center (DOC). The Logistics Section Chief should be located in the DOC to coordinate incident needs with the Planning, Operations and Finance Section Chiefs. The functional units of the Logistics Section could be located in the vicinity of the Repair Facility.	Special Operations	No	Funding	Yes		
	4. All Firefighters should prepare themselves for minimal logistical support for the first 24 hours of an incident (Initial Attack). Strike Team bags and required support items should be provided for all personnel. This includes:	Operations	Yes			Yes	
	• Personal Protective Equipment (PPE)						
	• Water						
	• Food						
	• Uniforms						

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	5. All Battalion and Deputy Chiefs should be issued a credit card for necessary first responder support	Administrative Services	Partial	Lack of staff for policy development	Yes		
H. Apparatus and Equipment							
	1. A thorough review of the SDFDs engine fleet should be performed to address the following issues:	Logisitics					
	Amount of reserve engines to support the SDFD		Yes			Yes	Conducted survey of 50 fire departments for reserve engine ratios. Went from 14 Type 1 engines to 18 in current pool. Fleet recommends this number increase until we have at least one reserve engine for every frontline engine.
	Location of reserve engines		Yes			Yes	Has been reviewed and updated. Currently estimate space for 12 additional reserve engines.
	Equipment inventory on reserve and frontline engines for safe firefighting operations		Yes			Yes	Inventory procedures have been reviewed, updated and compliance is now actively tracked with feedback to Operations on performance. Loss data is now tracked.

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	• Inventory to equip stripped reserve engines		Partial	Funding	Yes		All 18 Type 1 reserve engines and 5 of the 6 reserve aerials now have all equipment. (Exceptions: EMS, Portable Radios, MDC and Thermal imagers.
	• Equipment inventory on reserve and frontline engines for safe firefighting operations		In Process	Funding	Yes		
	• Safe operating features		Yes			Yes	Post Business Process Reengineering General Services Fleet Division efforts are to be commended. However, the allocation of mechanics, infrastructure, and replacement fleet remains a priority.
	2. A review of storeroom inventory should be performed to ensure proper levels to emergency equip firefighters at an incident	Logistics	No	Funding	Yes		Supply review has been completed. Budget allocation does not allow adequate store stock of most PPE items and other costly inventory items.

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	3. Through attrition, all staff sedans should be replaced with command Sport Utility Vehicles (SUVs)	Logistics	Partial	Funding	Yes		Not completed. Significant progress is anticipated in FY08 and FY09
	4. A review of the SDFD's water application capabilities should be performed to determine the need for additional apparatus	Logistics	No	Funding	Yes		Recommendations for additional large diameter pumping, drafting, and hoselay capability requested and not funded. However, two replacement water tenders are on the FY08 replacement plan and 3 ultra XT Type 3 engines have enhanced water tender service.
	5. Funding should be identified to :	Logistics					
	Meet the ongoing apparatus/equipment replacement program		Yes			Yes	Completed. Plans in place to attain 15 year lifecycle for heavy fire apparatus and 7 year for light and support functions.

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	• Appropriate staffing levels of the Repair Facility		No	Funding	Yes		Both staffing levels and facility size must be reviewed to ensure adequate capacity for emergency vehicle repair.
I.	Communications						
	1. Fund, develop and train personnel to function as National Wildfire Coordinating Group (NWCG) qualified Communication Unit Leaders	Training	No	Funding	Yes		
	2. Incorporate radio usage drills into the regular In-Service Training objectives	Training	Yes			Yes	Ongoing
	3. Fund the purchase of portable radio accessories, which includes: Clamshells, Spare batteries, Radio chest harnesses capable of carrying (2) portable radios	FCC	Yes			Yes	
J. Fire Communications Center							

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	1. Inform field personnel of the capabilities and functions of the newly organized Fire Communications Center (FCC)	FCC	Yes			Yes	
	2. Establish a telephone plan in the Department Operations Center (DOC) manual to ensure full usage of telephone resources at the Fire Communications Center (FCC)	Special Operations	No	Funding	No		City issued cell phones used for effective communications.

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	3. Fund and develop training for Fire Communications Center (FCC) and Department Operations Center (DOC) personnel to ensure the smooth transition and coordination of a large scale incident. National Wildfire Coordinating Group (NWCG) training should be obtained for personnel working in the Expanded Dispatch of the DOC. This training includes:	Special Operations	No	Funding	Yes		
	• Basic Incident Command System		Yes			Yes	
	• Expanded Dispatch Recorder		No		Yes		
	• Expanded Dispatch Support Dispatcher		No		Yes		
	• Expanded Dispatch Supervisor		No		Yes		

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	4. Develop Fire Communications Center (FCC) security plans; include these plans in the Department Operations Center (DOC) Operations manual	Special Operations	No	Funding			
	5. Develop plans for the rapid assignment of unit identifiers to improve resource/personnel tracking at the FCC	FCC	No	Staffing	Yes		
	6. Fund the development of a Fire Communications Center to meet the needs of the City of San Diego	Administrative Services	Yes			Yes	Uniformed Emergency Resource Officers added to Fire Communications Center.
K. Plans							

1. Fund, develop and train personnel to functional National Wildfire Coordinating Group (NWCG) qualified levels. These positions should include:

- Unit Leaders

Training

No

Funding

Yes

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	Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
• Field Observers		Partial	Funding	Yes		Inadequate number have been trained to meet the needs of a large incident.
• Display Processors		No	Funding	Yes		
• Check-in/Status Recorders		Partial	Funding	Yes		Staff turnover has negatively impacted trained cadre.
2. Train all personnel to the I-200, Basic Incident Command System level	Training	Yes			Yes	All personnel have a greater than basic knowledge of the ICS system which helps overall coordination and operations.
3. Fund the development of a Planning Section Chief kit to be stored at the Department Operations Center (DOC)	Special Operations	Yes			Yes	
4. Fund the procurement of necessary Planning Section equipment to be stored at the DOC. This equipment includes:	Special Operations	On-going	Funding			Due to lack of trained personnel to concurrently staff the IMT, DOC and field command positions, DOC functions were integrated into command operations at the Fire Communications Center
• Additional telephones		No	Funding			

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	• High speed copiers		Yes			No	
	• High speed plotter printers		No	Funding			
	• Computers with network access		Yes				
	5. Incorporate and utilize a Demobilization Plan for all state or federal reimbursement incidents	Operations Administrative Services	No	Funding/Staffing	Yes		
L. Damage Assessment							
	1. Fund, develop and train a formalized Damage Assessment Team.	FPB	Partial	Funding/Staffing		Yes	While initial training was provided, due to staff turnover, ongoing training must be developed.
M. EMS							

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	1. Fund and develop a Department Operations Center (DOC) which does not disrupt the daily function of EMS dispatching. Specifically, BLS dispatching should not be displaced or impacted by the function of the DOC.	Special Operations	Yes				Due to lack of trained personnel to concurrently staff the IMT, DOC and field command positions, DOC functions were integrated into command operations at the Fire Communications Center
	2. Develop Logistics Section's plan to include a functional Supply Unit that does not disrupt the daily function of the storerooms	EMS/Logistics	Yes			Yes	Policies have been implemented and the impact to Medical Supply was well-coordinated and did not disrupt the daily operations. However, additional staffing is needed to meet the day-to-day and large incident needs of Storeroom 42.
	3. Design and develop a central operations center for the coordination of ambulance resources	EMS	Yes			Yes	

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	4. Participate in the working group to develop a County Medical Operations Center	EMS	Yes			Yes	SDMSE has supported the County in their development of their Medical Operations Center. The MOC was operational in 2007 and was in place in 2003
N. Finance							
	1. Fund, develop and train an National Wildfire Coordinating Group (NWCG) qualified Finance/Administration Section Chief	Training	No	Funding	Yes		
	2. Fund and develop a Finance/Administration section Chief's Kit to be stored at the Department Operations Center (DOC)	Special Operations	Yes			Yes	

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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	3. The Department Operations Center (DOC) plan should identify Finance and Logistics Section Chiefs	Special Operations	Yes				Due to lack of trained personnel to concurrently staff the IMT, DOC and field command positions, DOC functions were integrated into command operations at the Fire Communications Center
	4. An Emergency Operations Center (EOC) activation always should identify Finance and Logistics Section Chief positions	Special Operations	Yes			Yes	
O. Air Operations							
	1. Fund Copter One and develop standard response criteria for City of San Diego portion of the Regional Fire-Rescue helicopter program.	Special Operations	Yes			Yes	
	2. Continue participation in the various helicopter working groups and committees.	Special Operations	Yes			Yes	Ongoing

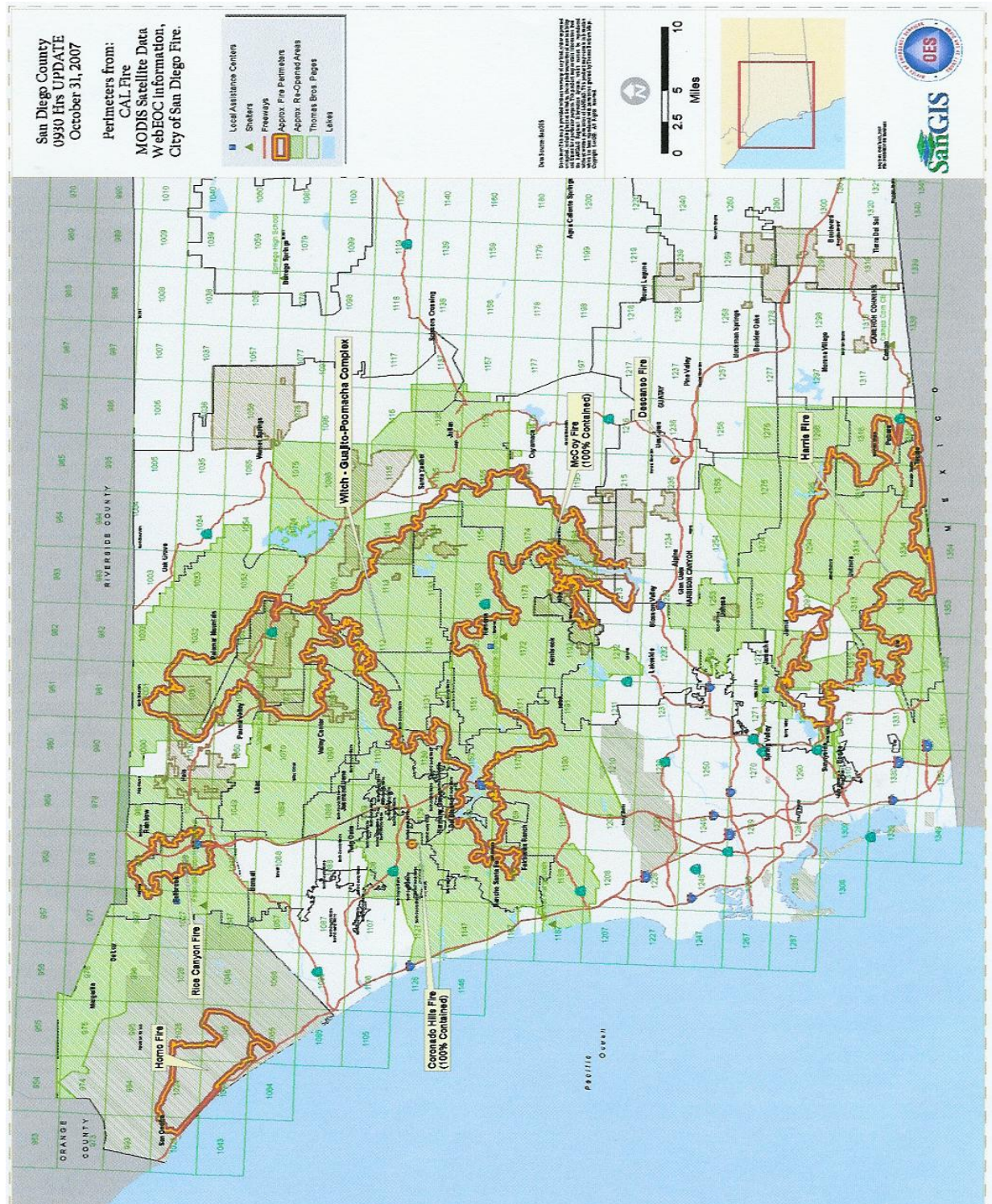
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		Division Assignment	Completed	If not completed, Why?	If not completed, was it an issue in 2007	If completed, did it have a positive impact in 2007?	Additional Comments
	3. Develop and review the capabilities of local military air resources. Incorporate appropriately into local response plans (thru Firescope).	Special Operations	No		Yes		Review completed. Incorporation into local response plans has proved challenging due to need to coordinate through state and federal government.
	4. Develop and implement a plan to establish a fleet of three fire-rescue helicopters under a regional program (ongoing).	Special Operations	Partial		Yes		2nd Helicopter to be delivered Aug. 2008

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ATTACHMENT B

BURN AREA



ATTACHMENT C

SUMMARY OF RECOMMENDATIONS

SUMMARY OF RECOMMENDATIONS
FIRE APPARATUS/EQUIPMENT INVENTORY AND LOGISTICS
1. Additional apparatus should be procured and alternative methods of conducting patrol activities must be explored to ensure a greater capacity for this mission during future incidents.
2. In addition to carefully managing its firefighting resources to ensure their availability during periods of high fire danger, the SDFD should consider as part of its Tactical Plan developing a “surge” capacity to mitigate a large fire with little or no outside assistance. This surge capacity should be in the form of additional ground and aerial firefighting equipment.
3. Additional radios should be purchased to meet the needs of a large-scale incident.
4. Current Thomas Brothers map books need to be available to responders who don’t use the data base or have access to a computer.
5. Secure adapters and battery and cell phone chargers at each Operations Center and Incident Command Center for all types of equipment to allow for charging various city cell phones and other equipment during extended shifts.
6. Provide a logistical trailer with tables and chairs, a generator, lighting, easy-ups, coolers, re-supply of personal protective equipment etc. for rapid deployment at incidents.
7. Maintain a large cache of spare hose, both at Fire Station 20 and in the fire stations.
8. Ensure all personal protective equipment and supplies for all fire responders are available, cached and distributed as necessary.
9. Have a centralized location for donated supplies and distribute what can be consumed.
MASS NOTIFICATION SYSTEMS FOR EVACUATIONS
10. Continue emergency training to maximize performance of AlertSanDiego and Reverse 911® mass notification systems and public outreach.
11. Explore seeking zip codes added to the database City purchases from telephone companies to use for emergency call back notifications.
AIR OPERATIONS
12. Increase the number of City fire/rescue medium-lift helicopters and perhaps contract or procure large capacity helicopters so that the SDFD’s ability to provide aerial fire suppression can be significantly enhanced.
13. Continue to train all City and neighboring jurisdiction fire companies in helicopter ground fill operations (day and night).
14. Consider dropping gel products from Air Operations Division helicopters on structures and on those areas surrounding homes that are more likely to ignite in advance of the approaching fire front.
15. Consideration should be made to equip one of the SDPD helicopters with state-of-the-art

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information gathering equipment (television quality camera system, military type mapping and heat-sensing equipment, etc.) in order to provide enhanced situational awareness and an improved common operating picture for the County and City Emergency Operations Centers.
16. The availability of U.S. Navy and Marine helicopters available for use during a local disaster based at North Island Naval Air Station and other locations should be established early into an incident.
17. The existing process for ordering military aircraft that requires all requests be routed through the CAL FIRE Area Fire Coordination Command Center needs improvement.
PREVENTION
18. Explore additional brush management inspectors in combination with a regional approach to brush management in the SDFD Tactical Plan.
INCIDENT MANAGEMENT
19. Whenever it can be reasonably anticipated that an incident will likely extend beyond initial attack (one operational period), the full IMT should be activated.
20. Continue coordination with the Unified Command to ensure that City of San Diego resources working in the San Pasqual Valley and Rancho Bernardo areas remain available for use within the City.
21. Continue to incorporate deployment of multiple teams of train Field Observers and the fire-rescue helicopter to provide situational awareness in Emergency Operational Planning by all impacted departments.
22. An additional GIS technician should be added to the Fire-Rescue budget to ensure future availability, increased capacity and provide for appropriate work/rest cycles during major incidents.
23. A Medical Unit Leader position should be added to the IMT.
24. A Recovery Liaison position should be added to the IMT.
25. A Volunteer Management position should be added to the EOC.
26. A Donations Management position should be added to the EOC.
27. Additional Incident Command System training for sworn and non-sworn personnel is needed and should be provided.
28. An electronic check in/check out system for the Incident Command Posts and Staging locations should be implemented.
29. Contingency plans for unanticipated events must be considered for every incident.
30. The SDFD should consider as part of its Tactical Plan developing a “surge” capacity to mitigate a large fire with little or no outside assistance. This surge capacity should be in the form of additional ground and aerial firefighting equipment.
31. Whenever an apparatus can safely accommodate more than the normal assignment of four personnel and their required personal protective equipment during a large-scale Incident, it should be fully staffed to provide for enhanced capability of the crew.
OPERATIONS
32. Continue to utilize FOBS on incidents in the future and have the trained and certified

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FOBS train others firefighters for this position.
33. Continue to train and exercise emergency procedures with SDFD, SDPD, EOC and others.
34. Continue to utilize RIC on incidents in the future and foster the integration and coordination achieved between the City and outside organizations.
35. Consider including redlines and foam pro systems in future fire engine specifications.
36. Continue to train all firefighters in both “bump and run” and “anchor and hold” tactics.
37. Coordinate the implementation of a fire hydrant inspection program with the Water Department so that fire hydrants needing to be repainted are identified and then painted, and missing and/or damaged reflective blue street markers are identified and replaced through the inspection process.
MEGA CARE AND SHELTER FACILITY PLANNING
38. Registration of evacuees and volunteers, as well as the logistics plan should be established by City personnel immediately upon determining an evacuation or shelter site.
39. Diaper/undergarment bins should be put into all restrooms to make sure that sewer lines aren’t clogged by the flushing of these items.
40. Dedicated entry points for evacuees, volunteers and donations would benefit the logistics, management, security and business flow of the operation.
41. Pre-positioning of assets and setting up an inventory and distribution management system in order to inventory and organize items as they come in.
42. Animal owners staying inside Qualcomm should have a separate area with animal provisions nearby
43. Any person suspected of stealing donations or otherwise breaking the law will be processed in a uniform way in accordance with existing law.
SPECIAL NEEDS CONSIDERATIONS
44. A ready reserve of pre-identified and vetted translators and bilingual professionals (medical, legal, social services) would enhance all other relief efforts.
45. Emergency planning and preparedness programs should be developed and disseminated for the under represented communities within the City.
46. Coordinating and leveraging volunteer resources pre-existing within the community not only results in the creation of reserve resources during a crisis but in improved community relations in non-crisis times as well.
47. Volunteers should constantly monitor the care and shelter facility in an effort to maintain situational awareness of persons with special needs.
PUBLIC INFORMATION AND MEDIA MANAGEMENT
48. A trained City PIO should report to the JIC and coordinate with the City EOC whenever a large incident occurs.
49. The City’s Director of Communications should serve as the lead PIO and coordinate all PIO needs, assignments and activities with the PIOs assigned to the IMT (including JIC liaison) to ensure adequate coverage and a consistent message are provided. Additional

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personnel should also be trained as PIOs assigned for use during large-scale incidents where a greater PIO force is needed.
50. City/Department personnel should be provided additional media relations training to improve performance and clearly communicate departmental expectations.
51. Additional information could be provided that would improve the service levels at shelter and evacuation sites include: - o A general map of the site including what information is provided - o List of repatriations as they occur - o Information on bus and trolley times - o A list of Frequently Asked Questions - o Announcements and Updates - o Maps
COMMUNICATIONS
52. Additional portable radios should be purchased to ensure their availability during large-scale incidents.
53. Consider assigning the individual structure protection groups their own tactical channel as opposed to managing all of the assigned units on the assigned Branch tactical channel.
54. Train first responders on the use of mutual aid radio channels and radio interoperability.
55. On incidents where units are operating under the direction of CAL FIRE or USFS, mandate that Strike Team Leaders use only the assigned incident VHF frequency when on the fire line.
56. Mapping the location of critical radio communications infrastructure and making this information readily available to incident commanders would help to plan and mitigate potential impacts based on the fire threat.
57. Clarify Department policy for when and how the Communications Unit should be deployed, staffed and utilized.
58. Develop the ability on the MDC to clearly separate out and display critical dispatches such as those involving rescue situations from all other non-critical information.
59. Logistics must ensure that a cache of portable radio batteries are provided at all staging and camp locations.
60. Since many of the City of San Diego locations are shared with other regional entities with emergency generators, an opportunity exists to explore joint refueling, particularly during an emergency event such as the firestorm.
61. Work with telecommunications vendors to document the type and availability of services that could be offered during an emergency.
62. A procedure should be added to the EOC PIO checklist to ensure information flows to the CAPS supervisor in order to assure the most accurate information is provided to the public.
63. A procedure should be added to the EOC PIO checklist to ensure information flows to 2-1-1. Information needs to be consistently shared with the Police Department's CAPS line, Fire Dispatch, and 2-1-1 to ensure accurate and timely information is provided to the

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public.	
TECHNOLOGY	
64. An additional GIS technician should be added to the Fire-Rescue budget to address an increasing routine workload and ensure availability during emergency incidents.	
65. Develop a Standard Operating Procedure (SOP) to train and instruct GIS technicians regarding potential computer network conditions to ensure continual mapping support.	
66. Evacuation areas must be generated as mapped data files (GIS layer) and delivered for importing into the AlertSanDiego and Reverse 911® systems for evacuation calls.	
67. Coordinate with the regional GIS group to establish regional mapping protocols that utilize and coordinate the GIS resources of the region in a manner that generates unified, timely and accurate situational awareness, to include update of current mapping data to ensure accuracy of high hazard/risk areas.	
68. Formalize the program manager position for 3Cs under the City's Deputy Chief Operating Officer for Public Safety and Homeland Security in order to maintain maximum oversight and management over funding and contractual issues.	
69. All 3Cs participating agencies should agree on a Communications Plan for incidents.	
70. Video conferencing with sites outside of 3Cs using IP should be implemented.	
71. The stop gap equipment assembled and used on this incident should be a model for the development of two kits that 3Cs should have available for future incident support.	
72. 3Cs should improve receiver sites on the network, either by installing more sites in diverse geographical areas of the county or by utilizing directional antennas more.	
OPERATIONAL AREA COORDINATION	
73. Provide mutual liaisons between the City and OA EOCs during a major incident.	
74. Coordinate with the OA to develop and utilize a resource tracking database which can be made available to all area EOCs.	
75. Expand the City's capability to conduct Donations Management, including further development of roles and responsibilities of the Donations Management Leader position within the City's EOC.	
76. Develop a City Donations Management Plan to build on the OA Annex.	
77. Clear policies and training are needed to identify, establish and practice requirements of City employees during disasters in their role as Disaster Service Workers.	
78. The Volunteer Coordinator established for this incident should be a permanent position on the EOC roster in order to coordinate all volunteer interface with City personnel such as:	
o Multiple sign-in rosters kiosks	
o Volunteer assignments with a City staff group leader	
o Better use of small teams	
o Improved scheduling	
o More coverage during the nights	
o Limiting the number of volunteers from each organization per shift	
o Better coordination between organizations on roles	

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- o Credentialing and badging - o Outlining expectations of volunteers
79. Refine and strengthen the process for requesting volunteer management resources during a crisis.
CITIZEN PREPAREDNESS AND OUTREACH
80. Comprehensive community outreach and education programs should be developed to raise public awareness of the importance of personal and family preparedness, thereby affording first responders the opportunity to focus on assisting those in dire need first.
81. More CERT teams should be trained within the City, especially in under represented communities.
82. Perform better outreach and council supported district training for mass notification system in order to manage public expectations of capabilities.
EMERGENCY MEDICAL SERVICES
83. Continue to train and exercise access to a large nursing staff.
84. Continue to plan for early implementation of the “emergency dispatch protocol” during a large event.
85. Develop a list of personal care and hygiene items needed within the first 24 hours of the incident.
86. Continue efforts to improve medical coordination between the County and City EMS.
87. Single resource communications roles (Communications Unit Leader/Technician, Dispatcher) should be ordered when ordering a communications van rather than recruiting other staff.
TRAINING AND EXERCISE
88. Additional personnel should be trained to fill these positions to a minimum three-deep roster to enhance command and control during large-scale incidents.
89. Continued investment in this training is critical for the growth and constancy of high level performance in areas of leadership and operational readiness.
90. Additional uniformed personnel at the ranks of battalion chief and captain must be trained as Strike Team Leaders and Division/Group Supervisors. Completion of required coursework should be set as a minimum qualification for promotion. The Department should periodically provide for this training.
91. Adequate code training should be provided to all City staff responsible for interpreting/enforcing the City’s Brush Management Regulations.
SAFETY
92. Fully trained California Incident Command Certification System (CICCS) or National Wildfire Coordinating Group (NWCG) qualified Safety Officers must be rostered to the SDFD Incident Management Team.
93. The Department should develop a plan and provide funding to increase the number of fully trained and qualified safety officers to ensure adequate numbers are available to provide this critical focus on safety concerns at large-scale incidents.

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94. The Department must reinforce its expectation that all personnel accountability and mobilization procedures will be followed.
95. A comprehensive crew/position rotation plan must be developed in advance for incidents that extend beyond initial attack operations.
96. Aides/trainees must be provided to all Strike Team Leaders at the time of assignment to assist them and provide training opportunities for personnel.
97. All components of the Medical Unit should be activated as part of the Incident Management Team's response to any emergency.

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ATTACHMENT D

LIST OF ACRONYMS USED

ARC – American Red Cross

AAR – After Action Report

CAL FIRE (formerly CDF) – California Department of Forestry and Fire Protection

CAPS – Community Access Phone System

CFAI – Commission on Fire Accreditation International

CERT – Community Emergency Response Team

CICCS – California Incident Command Certification System

DOC – Department Operations Center

DSPRO – Display Processing

DSW – Disaster Service Worker

EAS – Emergency Alert System

EMS – Emergency Medical Service

EOC – Emergency Operations Center

FCC – Fire Communications Center

FOBS – Field Observers

GIS – Geographical Information Systems

HQ - Headquarters

JIC – Joint Information Center

ICP – Incident Command Post

ICS – Incident Command System

IMT – Incident Management Team

MDC – Mobile Data Computer

MRE – Meals Ready to Eat

NIMS – National Incident Management System

NWCG – National Wildfire Coordinating Group

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OA – Operational Area

OCA – Out-of-Class Assignment

“P” Card – Procurement Card

PIO – Public Information Officer

RCS – Regional Communications System

RIC – Rapid Intervention Crew

RSVP – Retired Senior Volunteer Patrol

SDFD – San Diego Fire-Rescue Department

SDPD – San Diego Police Department

SDSO – San Diego Sheriff’s Office

SOP – Standard Operating Procedure

USFS – US Forest Service

VIP – Volunteers in Policing

VOAD – Voluntary Organizations Active in Disasters