

Neighborhood Organization Activities: Evacuation Drills, Clusters, and Fire Safety Awareness¹

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Abstract: Emergency preparedness activities of one Berkeley-Oakland Hills neighborhood at the wildland/urban interface include establishing clusters that reduce fire hazards and fuel loads, setting aside emergency supplies, and identifying evacuation routes; taking emergency preparedness courses from the Offices of Emergency Services of Berkeley and Oakland (the CERT and CORE programs); and setting up and exercising a citizen-band radio network. With the cooperation of the Berkeley and Oakland fire and police departments, on-foot evacuation and earthquake drills have been held. Problems discovered relate to liability, absentee ownership of lots, and response time of the official emergency radio system.

The Story

This is the story of one neighborhood's preparations for responding to a major emergency, whether large fire or severe earthquake.

The Setting: The neighborhood contains roughly 235 dwellings, sited densely on a hill on the urban/wildland interface located nearly atop the Hayward earthquake fault. There is just one road for access to the neighborhood, the streets are steep and full of tight curves, and no street is much wider than 15 feet. The utility lines are carried overhead on old poles. Shrubs and trees abound both inside and just outside of the neighborhood.

Political Landscape: The neighborhood lies partly in Berkeley and partly in Oakland. It abuts University of California land on several sides, and it touches East Bay Regional Park land. A neighborhood association was founded in 1926, reportedly in response to the issue of providing better emergency access for fire-fighting equipment. An additional access road has not been built, and the idea of such a road is not popular with residents because it is believed likely to trigger the development of presently undeveloped lots in the neighborhood.

Cast of Characters: The neighborhood is populated by "team-players" and dedicated individualists, homeowners, landlords, tenants, long-term residents, and absentee owners of undeveloped lots, plus unknown transients who camp occasionally in the adjoining woods.

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Motivations for Emergency Preparedness

Common sense—and the historical record of major fires here—contributed to a background level of concern for engaging in emergency preparations. But most of the activities described here began after the Loma Prieta earthquake of 1989 and were intensified greatly by the occurrence of the Oakland/Berkeley Hills Firestorm in October 1991.

Sources of Information and Help

Although the residents may have conceived of a few novel twists, most of the preparedness actions we have taken were suggested in publications and courses made available by many organizations. Here are some that we have used:

- Berkeley Office of Emergency Services: Disaster First Aid Handbook and Search and Rescue Handbook, plus courses on these topics.
- Oakland Office of Emergency Services: CORE Program (Citizens of Oakland Respond to Emergencies) courses covering individual and group preparations, medical disaster, light search and rescue, and light fire suppression, followed up by a realistic earthquake drill at the Oakland Fire Department Training Center.
- American Red Cross: Your Family Disaster Plan (with FEMA co-sponsorship), and other booklets.
- California Department of Forestry and Fire Protection: Video "Fire Safe — Inside and Out," pamphlet "Fire Safe, California!," and other publications.
- East Bay Municipal Water District: Firescape: Landscaping to Reduce Fire Hazard.
- Others: KTVU Channel 2 Television: Video, "The Oakland/Berkeley Hills Firestorm, October 20, 1991." University of California emergency preparedness fair. Vendor information.

The Three P's: Preparations, Plusses, Problems

In the hope that our experience might be useful to others, here is a summary of what we have done to increase our readiness for responding to emergencies. The emergencies we foresee—through a veil of denial—are two. One is a massive, fast-moving fire coming from any direction of the compass. The other is a major earthquake that severely damages many of our dwellings and roads, disrupts electricity

and water supplies, cripples telephone communications, injures many people, and possibly leaves the neighborhood isolated to take care of itself for at least 72 hours.

While engaging in preparedness activities, we have experienced many positive side benefits—we will refer to them here as “plusses.” And we have identified some problems that we hope can be overcome.

Preparations

We have attempted to learn what needs to be done in case of emergency; we have set up small local groups

(clusters) of five to ten dwellings each to cooperate locally in preparing for and dealing with an emergency, and communicating with the neighborhood as a whole; and we have invested in some means for improving our ability to deal with an emergency (*table 1*).

Neighborhood Clusters

We have approximately 15 clusters of five to ten nearby dwellings. Each has a cluster representative and an alternate who help plan activities, such as drills, and communicate to their neighbors about the preparations one should make, the

Table 1—Neighborhood preparedness activities

Fire prevention
Awareness through information dissemination.
City inspections and followup (spark arrestors, clear zones, etc.).
Clearing by individuals (city pickup of clippings, chipper, dumpsters).
Roof replacement and tree removal and trimming by individuals.
Neighborhood organization
Cluster formation (use for two-way information transfer):
5-10 households; identify occupant skills and needs; sketch and tag utility shutoff locations.
Spreadsheet (each address, names, phone numbers, skills, needs)
Neighborhood association
Committees—emergency preparedness, etc.
Entire neighborhood informational meetings.
Communications
Telephone trees (through clusters)
Citizen band radio network
• 40-channel, 5-watt; 24 units purchased by individuals
• Protocols, practice drills, neighborhood maps
• Coverage: “command center” to top and bottom of hill, end-to-end of fire trails, inside house to inside house, AC-DC on standby.
Courses
Berkeley “CERT”:
Medical disaster (3 hour).
Oakland “CORE”
Module 1: individual preparedness (18 people).
Module 2: group preparedness (18 people).
Module 3: Medical emergency; light search and rescue; light fire suppression; “final exam” drill—simulated earthquake (OFD Training Center).
Disaster planning and practice
Command center identified, storage building stocked.
Emergency medical location identified.
On-foot escape routes identified and tested.
Medevac site discussed (?)
Emergency police access paths discussed (?)
Practice drills
Mar. '93: on-foot neighborhood evacuation (emphasis: walking out).
Oct. '93: on-site earthquake response (emphasis: learn your local area).
Mayday '94: on-site earthquake response (emphasis: ready for 72 hours?).
Liaison
Interactions throughout with city and university emergency personnel.

emergency supplies to store, the marking of utility shutoff valves and switches, and so on. The cluster representatives also communicate to the chairmen of the neighborhood-wide emergency preparedness committee relevant local information, such as current names and phone numbers of all residents, which residents are usually at home during the day and are willing to provide timely information about conditions in case of emergency, and the locations of residents having special needs that should be promptly dealt with in case of emergency. This information for the entire neighborhood is entered in a spreadsheet (Excel) by the committee chairmen.

Courses

Some 20 residents completed the three-module CORE courses and survived the final drill held at the Oakland Fire Department Training Center, albeit with receipt of withering but helpful criticism. Others have taken Berkeley CERT courses. Several took other courses on similar topics.

Citizen-Band (CB) Radios

About two dozen residents have purchased 5-watt 40-channel CB radios in order to facilitate communicating over the neighborhood in case of emergency. Costs ranged from \$60 (on sale) to about \$90. A set of protocols has been prepared, and several drills a year are held to familiarize people with the use of this tool — “be brief,” “terminate transmission with ‘over’ even though it seems silly at first,” “start on channel X and move up to channel Y in case of interference,” and so on. We have tested the range of the radio system and located a spot (“Command Central”) to and from which transmissions can be understood regardless of their point of origin.

Some residents also purchased AC-DC converters (\$12) and leave their radios always powered (with “Squelch” control set so they are quiet until a local transmission is made). In several cases where actual structure fires occurred in the neighborhood, the network was activated by a call from an alert CB owner, showing that it is not necessary for a given individual to be present to get the network going.

Maps

Residents prepared a number of different kinds of maps, including the following:

- Map of the streets and the trails in the surrounding hills.
- Map of all properties, obtained from Assessor’s office.
- Map showing location and boundaries of all clusters.
- Detailed map of each cluster showing location of all utility valves and shutoffs.
- Maps showing preferred escape paths.
- Map for use by CB radio users to identify origins of transmissions.

Emergency Supply Shed

At a central location, two clusters assembled an 8-foot by 8-foot prefabricated shed to hold cluster supplies and certain neighborhood-wide supplies (maps, logsheets for use in an emergency, etc.). The shed also holds a 12-volt storage battery, which is trickle-charged by a solar panel, to power CB radios for an extended period.

Paths

In addition to the obvious escape routes, we have identified and marked (with inexpensive reflective 2-inch dots) several additional escape paths. One resident constructed at personal expense a bridge over a small creek and a set of steps to create a safe exit from one difficult area.

Drills

In 1993 two neighborhood-wide drills were held: March 1993: Commencing at noon on a Sunday, about 120 residents walked out of the neighborhood on streets or trails to an assembly point (parking lot of the University of California football stadium). CORE trainees monitored the event, and the CB network was exercised. At the stadium, Berkeley and Oakland Fire and Police Departments had stationed equipment and personnel, providing an instructive and enjoyable social experience for residents who participated.

October 1993: A supposed earthquake brought residents out to interact within their clusters (talking about preparedness, walking from house to house to show where utility valves and shutoffs were located). Simulated problems had been distributed among the clusters: several mannequins (loaned by the Oakland Fire Department Training Center) represented injured people; portable gas shutoff demonstration units (from the Berkeley and Oakland Offices of Emergency Services) were available for practice; and a number of “downed utility wires” were scattered about for residents to find and report using the CBs. About 20 residents later attended a street demonstration and description by an Oakland firefighter of the emergency supplies that he always carries in his personal auto. Afterwards, some clusters held a potluck or picnic.

Plusses

While the goals of these activities were serious, the activities had unexpected positive side benefits. People became much better acquainted with their neighbors. Several residents agreed formally to allow parts of their property to be used for emergency purposes. Residents met emergency personnel for the first time, in relaxed circumstances.

Cooperation among the constituencies involved has been notable. The University of California has funded brush reduction by a herd of 600 goats on land that adjoins the neighborhood; a grass fire that occurred was reportedly much less dangerous than it would otherwise have been. The University also installed two solar-powered emergency call boxes on its lands quite close to the neighborhood. These could be used to relay to the 911 emergency system early warning of a fire, and (being cellular phones) might serve as a needed communication link for the neighborhood after a

major earthquake. The East Bay Regional Parks and the University cooperatively used a brush hog to clear fire trails in the area.

In the courses offered, whether a given resident lived in the Berkeley or Oakland part of the neighborhood was of no relevance. Stimulated by prodding from residents, city offices have taken legal means to encourage various property owners to reduce fuel loads on their lots. Another example of cooperation was the completion of one city's installation of reflective blue hydrant markers ("Bott's dots") by the other city, when the first city ran out of reflectors.

Problems

Though we are encouraged by what has happened thus far, we cannot ignore some important problems that we see:

Fuel Loads Remain High

In spite of more vigorous action by city agencies and urging by neighbors, the fuel load in the neighborhood and in the lands immediately adjacent to it remains dangerously high.

Contradictory Advice

Residents have been told that bamboo groves are, and are not, a fire hazard; only fuel on the ground matters, and that the limbs are unimportant; and foam is good for fighting structure fires generally, and that it is not. Most worrisome, some emergency personnel recommend privately that residents obtain fire hose and be ready to use it, but official policy forbids it.

Volunteer Labor Is Not Allowed

Ostensibly because of the fear of legal liability in case of an on-site injury, residents have been unable as yet to find persons in authority willing to let them volunteer their labor to help reduce fuel loads in the lands that surround the neighborhood. At the same time, budget limitations have severely restricted fuel reduction programs that use paid laborers.

Slow Response of Official Emergency Radio Station

The local 1610AM emergency radio station is slow to mount and remove announcements that residents might need to rely upon. For example, the March 1993 drill was supposed to have been started by a broadcast announcement, upon notification by the Berkeley Police, but the announcement was first broadcast twenty minutes after the drill started. Announcement of the October 1993 drill, which was supposed to have been taken off the air at the end of the drill, was still being broadcast two days later. And description of a wildland fire 5 days earlier was still being broadcast 5 days later when another wildland fire in a nearby area occurred. (Our reason for concern about having prompt response of the station will be made clear below.)

Waning Interest

With the fading of memories of Loma Prieta and the firestorm of 1991, the sensed urgency of making emergency preparations fades, and some residents lose interest.

Suggested Solutions

Here are some suggestions regarding these problems. The issue of cost is also discussed below.

Prevention

- To guide residents on what is dangerous, and particularly what conditions on lots under absentee ownership should be corrected, ask high-ranking firefighters from both cities involved to give a 1- to 2-hour walking tour of the neighborhood. City offices that issue citations for cleaning up should also be represented, along with the neighborhood's emergency preparedness committee.
- To reduce fuel loads on adjoining lands, organize a few work parties of volunteers from the neighborhood. This might also help our problem of waning interest. In addition, since the estimated costs of crucial clearing are relatively low (see below), an effort should be made to fund these projects from a source other than the University, in view of their wide benefits.
- The goat brush-clearing program is threatened for budgetary reasons. Its effectiveness has been demonstrated, and it should be continued.
- Provision of dumpsters and the visit of a chipper have convinced many residents to clear their properties, and both should continue to be made available.

Emergency Response

Our CB radio network has already proven useful in emergencies, but we are unable to communicate via that means with the most relevant emergency service, the Berkeley Police Department (BPD). Acquisition of a CB base station for use in BPD headquarters has been requested, but no money has been allocated. Can this small amount of funding (\$250) be found elsewhere if necessary?

Telephone trees have proven useful, but they are clearly too cumbersome for use in communicating the urgent need to take a particular emergency action (for example, to evacuate on foot to the south because an as-yet-unseen major fire is approaching from the north). A suggested approach that could provide an early neighborhood-wide warning is outlined in *figure 1*. It relies on the ability of the emergency broadcast station to transmit quickly detailed emergency advice. A modest amount of equipment is also needed. If we can solve the "people" problems associated with getting the radio station to carry really current information and obtain the modest amount of funding required for equipment (around \$250), this system could be functioning within weeks.

Financial Issues

Here are the estimated costs of the possible solutions just described:

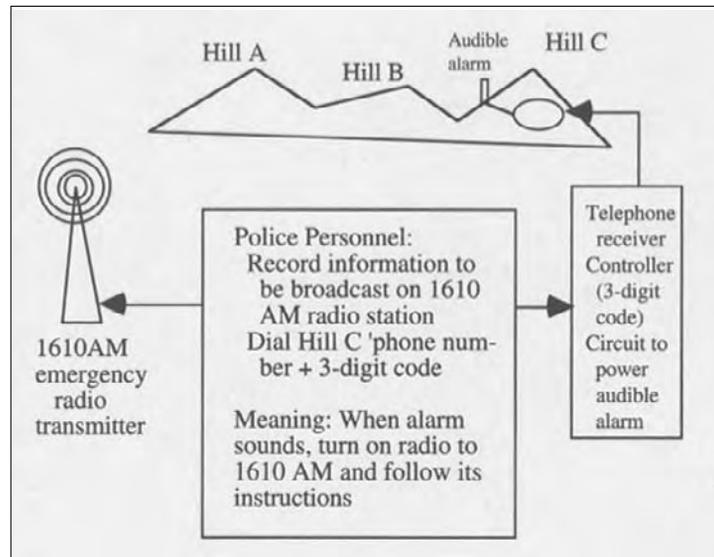


Figure 1– Proposed warning system for neighborhoods: If a specific warning regarding evacuation or the like is to be made to a given neighborhood (Hill C), the police would record the message for broadcast on the emergency radio station, and then dial a telephone located on Hill C. After the phone is “answered” (by the commercially available device), police personnel use their push-button phone keypad to send a 3-digit code that triggers sounding of an audible alarm. The meaning of the alarm is “tune in to the emergency radio station for instructions.”

- Acquire and install CB base station at BPD so residents can communicate with police when landlines are down: \$250.
- For the local police-activated alarm system, acquire necessary equipment (\$200), install at one location (\$150), and pay cost of telephone service for one year (\$150). Non-recurring costs: \$350. Recurring cost: \$150 annually.
- Thin the University of California wildland north of neighborhood, leaving it amenable to periodic “touch-ups”: \$3,000.
- Similarly, thin the University of California wildland east of neighborhood: \$4,000.

We have not been able to estimate the costs of some of the other items referred to above. In addition to the items discussed, there are more expensive problems that need correcting. One is the repair of a washout in one of the fire access trails near our neighborhood. Another is replacing old, heavily laden utility poles in neighborhood areas, to which access during an emergency would be vital, with underground utilities. (There is a program for gradual replacement of overhead lines, but the replacement schedule is reportedly “booked up” through the next decade. Emergency considerations should be given priority.)

One may well ask, should not individual residents bear the costs of fire prevention and emergency response? The answer is, to a large measure they have. Many residents have replaced wooden roofs with fire-resistant roofs, have had trees taken down and other growth removed. In addition,

in taking the other emergency response steps described above, residents have spent in excess of \$5,000 during the past 2 years. In view of this, allocation of public funds for some of the projects listed above seems equitable in view of the enormous cost that would be avoided if another major conflagration were prevented.

Conclusions

We look forward to continuing to work with emergency organizations in order to reduce the seriousness of the emergencies that will inevitably arise in the future. We hope that we can keep our neighborhood actively involved in this effort, through focussed periodic drills, the stimulation of volunteer work to reduce surrounding fuel loads, and through being further trained in emergency procedures.

Acknowledgments

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