Incident Summary Page for the 100 Fires Project

Incident Name: Oakland Hills Fire Sometimes referred to as the Tunnel Fire	**Incident Date & Time:** 10/20/1991 @ 10:45
Incident Location: Oakland, California	**Incident Size:** 1,600 acres
Types of resources involved: Municipal, state, federal, volunteer firefighters	**# of Fatalities/injuries:** 25 fatalities (including 2 first responder officers) 150 injured

Reason this fire was selected for the 100 Fires list:

- Fire made a notable impact within the wildfire service
- Civilian mass casualty event

Conditions leading up to the event:

Previous Fire History - Several fires had occurred in the Oakland and Berkley hills areas before the 1991 burn that also caused numerous structure losses: a September 1923 fire east of Berkley burned 130 acres spreading rapidly burning 584 buildings; the September 1970 East Bay Hills Fire, 38 homes lost and 7 damaged; and the December 1980 Wildcat Canyon Fire, 6 homes lost, injuring three individuals in a time span of 20 minutes. A clear trend of fall fires influenced by Diablo winds within the urban interface causing monetary damages (Diablo winds are a local foehn type wind in the same category as Santa Ana winds).

Population - Rural areas around the urban city centers became popular in the late 1800s as more people moving to the area wanted to get away from the busy city life and take advantage of the views that the hills surrounding the cities provided. The growth developed into large rural communities with densely developed homes built on steep slopes with narrow winding roads. Homes were built with timbered construction and wood shake roofs. After the 1923 fire, legislation was passed by city council requiring fire resistant roofs but was rescinded before taking effect. In June 1991, Berkley passed an ordinance requiring Class A fire resistant roofing but did not include the area of Oakland Hills as this community was not considered to be unsafe due to having paved road access.

Fuels - In the area of the Oakland Hills Fire, fuels consisted of non-native Eucalyptus, Monterey pine, chaparral, grasses and an assortment of ornamental vegetation which included Western juniper and Incense cedar. Most fuels were arranged in close proximity to the structures in the community with no fuels reduction or defensible space.

Climate and Weather - The Bay Area for the previous five years experienced moderate to severe drought, with only a few small rainfall events, one occurring in March 1991, which spurred an increase in the fine fuels. In December of 1990 a hard cold snap, developed frost kill in the canopies of Eucalyptus and the ornamental vegetation surrounding the houses. The summer of 1991 was hot and dry with days of near record temperatures for the area.

Brief description of the event:

On October 19, 1991, a small three acre fire was reported and contained in the backyard of a house on Buckingham Boulevard. It was quickly contained by Oakland City fire fighters and mutual aid from East Bay Regional Parks, but the terrain at night was deemed to be unsafe to continue thorough mop up. Throughout the night Oakland Fire companies checked the fire and found no issues keeping containment. The morning of October 20, Oakland Fire and East Bay Regional Parks personnel had returned to complete mop-up and pull hose. As mop up took place, a few flare ups within the burn area arose and were quickly knocked down. At 10:45 a strong hot northeast wind began to set-up and a flare up on the west side of the fire on the perimeter became quickly unmanageable. The blaze burned up the slope while simultaneously burning down slope with the wind. Within the first fifteen minutes the first houses ignited, adding to the intensity described by the aerial observer as having tornado like qualities. At the height of the incident the fire ignited a house every eleven seconds and crossed an eight lane freeway. By 21:00 hours the same evening the fire had been halted on all fronts and by Wednesday morning October 23 it had been declared controlled. The fire had scorched 1,600 acres, caused 25 deaths including Oakland Fire Department Battalion Chief James Riley and Oakland Police Officer John Grubensky, 150 injuries, burned 3354 homes 456 apartments and caused 1.5 billion dollars in damage.

Fire behavior factors that were present during the event:

The flare ups initially ran uphill, before east winds drove the fire rapidly downhill. Strong and erratic winds continued to push rapid spread in all directions. Fire was observed spreading 100 yards in 15 seconds. According to firefighters, the column looked and behaved like a tornado. The fire quickly became a structure conflagration not spread or driven by a wildland fire. An estimated 790 structures ignited in the first hour of the fire breaking containment. The fire spotted over an 8 lane freeway and resisted all attempts to contain it.

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Operational lessons available for learning from this incident:

The wind driven fires which happen on an annual basis throughout the fall and early winter months in California offer little to no operational opportunities for suppression on the head of the fire. Success in these situations amounts to little more than "survivability" for firefighters, civilians and manmade infrastructure. When fires in these types of conditions escape initial attack, protection of lives, civilian and firefighters, becomes the only real opportunity for "aggressive" operations. Fireline leaders in these situations need to provide clear unambiguous commands which keep both their firefighting resources and the civilians caught in the fires path calm and out of harm's way. Given the circumstances surrounding these fires, bringing order to chaos and providing survivability to those involved should be considered "successful" operations whether any fireline is constructed or not.

Notable impact or historical significance for the wildland fire service from this incident:

The notable impact of the Oakland Hills Fire was the findings in the US Fire Administration/Technical Report Series titled *The East Bay Hills Fire* published by the Federal Emergency Management Agency. This report identified several factors in WUI that greatly mitigated risk such as:

- Use of drought-tolerant and fire-resistant landscaping.
- Fuel control measures including controlled burns, clearing of dead wood, cutting tall grass and brush, grazing to thin vegetation in particular areas and similar measures.
- Brush clearance areas around structures and fuel breaks in strategic locations.
- Use of fire resistant roof and exterior wall materials.
- Adequate access roadways for emergency vehicles and exit roadways for residents.
- Water storage and distribution systems adequate for fire protection purposes.
- Development of exposure protection systems, incorporating technologies such as Class A foam.

Links to more information on this incident:

https://www.ggweather.com/firestorm/Firewise%20-Oakland-Berkeley%20Hills%20Fire.pdf
https://www.ebparks.org/about-us/stories/oakland-hills-firestorm-forward
https://docs.wixstatic.com/ugd/d44451_376d77de0a1444179c4b94615c0c6f32.pdf
https://wlfalwaysremember.net/1991/10/20/oakland-berkeley-hills-tunnel/

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