

068432

**"EXHIBIT B"**  
ROLLING HILLS ESTATES

UNITS 1 & 2

STATE RESPONSIBILITY AREA

WILDFIRE SAFETY PLAN

Prepared For:

PULTE HOME CORPORATION

Prepared By:

Registered Professional Forester:

Douglas R. Leisz

Registered Professional Forester:

Eugene E. Murphy

2994 Merrywood Circle  
Cameron Park, CA 95682  
(916) 677-0397

March, 1998

068432

ROLLING HILLS ESTATES  
STATE RESPONSIBILITY AREA WILDFIRE SAFETY PLAN

Dated

March, 1998

SIGNATURE PAGE

=====  
Plan Prepared and Recommended for Approval by:

Douglas R. Leisz, Registered Professional Forester-Lic 249

Date: March 9, 1998

Signature: Douglas R. Leisz

Eugene E. Murphy, Registered Professional Forester Lic-1164

Date: March 9, 1998

Signature: Eugene E. Murphy

Approved: California Department of Forestry and Fire Protection

El Dorado - Amador Ranger Unit

Date: MARCH 16, 1998

Signature: William Smith

Title: William Smith, Fire Captain Specialist

Approved: El Dorado Hills Fire Protection District

Date: 3/12/98

Signature: B.K. Veerkamp A/C

Title: Brian Veerkamp, Assistant Chief

## PURPOSE AND SCOPE

Western Sierra Nevada communities are increasingly concerned about wildfire safety. Recent drought years coupled with dense, flammable vegetation and annual periods of severe fire weather have insured the potential for periodic wildfires.

The purpose of this plan is to assess the wildfire hazards and risks of Rolling Hills Estates project and its environs, and to identify measures to reduce these hazards and risks. Incorporation of these fire hazard reduction measures into the design and maintenance of the future Village should reduce the size and intensity of wildfires and help prevent catastrophic fire losses. State and County regulations provide the basic guidelines and requirements for a safe, defensible space around dwellings. This plan builds on these basic rules and provides additional fire hazard reduction measures customized to the topography and vegetation of the development

The scope of the Rolling Hills Estates Wildfire Safety Plan recognizes the extraordinary natural features of the area and designs wildfire safety measures which are meant to compliment and become part of the community design. The Plan contains; measures for providing and maintaining defensible space along roads and around future homes. Through the Plan implementation measures Fire Hazard Severity for the area should be reduced and should be maintained.

## EXECUTIVE SUMMARY

The Rolling Hills Estates, Planned Development is located on the western slopes of El Dorado County adjacent the unincorporated community of El Dorado Hills. The most notable topographic feature are two intermittent drainages that traverse the project. Vegetation is largely oak woodland and open grass areas.

There is no evidence of recent wildfires.

The area is protected by the California Department of Forestry and Fire Protection and the El Dorado Hills Fire Protection District.

Periodic severe fire weather conditions are normal for El Dorado County. Native vegetation becomes very flammable in the long, hot, dry summers, a normal occurrence on the western slopes of El Dorado County. Wildfires may be expected to occur with increasing frequency as public use and occupancy increase.

The most serious wildland fire problem are potential fire ignitions associated with the many activities that surround the project (Homes on the North, commercial development on the East, Green Valley Road on the South and State Park on the west). A fire starting from activities in these areas could spread rapidly up slope in the existing fuels threatening Village homes.

Summary of the major plan provisions:

1. **Vegetation Fuel Treatment**
  - a. Roadside fuel reduction
  - b. Around structures
2. **Home Fire Safe Requirements**
  - a. Firescaping Zones
  - b. Fire Safe structural features
3. **Other Fire Safe Features**
  - a. Review development plan for conformance with all SRA Fire Safe Regulations (Public Resource Code 4290, 4291) including El Dorado County provisions.
  - b. Provisions for maintenance of Fire Safe features

068432

FIRE PLAN LIMITATIONS

This Wildfire Safety Plan for the proposed Rolling Hills Estates of does not guarantee that wildfire will not threaten, damage or destroy natural resources or future homes or endanger residences. However, the full implementation of the mitigation measures will greatly reduce the exposure of homes to potential loss from wildfire and provide defensible space for firefighters and residents. Specific items are listed for home owner attention to aid in home wildfire safety. Wildfire safety requires the installation and maintenance of all the Wildfire Safety Plan measures.

## BACKGROUND

Wildfires respond to their environment of climate, topography, and fuel (the wildland vegetation and structures.) Wildfire behavior is subject to complex variables that are not fully understood. The management and control of wildfire is not an exact science; more needs to be discovered about the behavior of wildland fires and their management. Under extreme burning conditions, a wildfire can be so powerful and unpredictable that fire protection agencies can only wait until fire conditions moderate before suppression can be successful.

The Wildfire Situation on the Western Slopes  
of El Dorado County and the Project Area

1. Climate

The western slopes of El Dorado County have a Mediterranean climate that features hot, dry, summers and cool moist winters. Precipitation comes generally from the Pacific Ocean storms that usually begin in October and end in May. The long hot, dry, summers produce ideal conditions for wildfires. Annual plants die and dry while perennial plants lose much of their moisture content and become highly flammable. Fires burning under these conditions threaten lives, property, and natural resources, especially toward the end of the dry season. Two additional climatic conditions aggravate this already serious wildfire problem. Periodically, every year, the Pacific high pressure system moves eastward over California and brings very hot, dry weather with low humidity as warm air aloft subsides and dries the vegetation even more. This condition is known as a "heat wave" and can occur at any time during the late spring, summer and fall. During this condition wildfires start easily and are difficult to extinguish. The other extreme wildfire conditions usually occur in the late summer or fall when north winds blow down the Sacramento Valley or east winds subside from the Great Basin. Under these conditions a wildfire can quickly escape control and create great damage before the wind stops blowing. It is this latter climatic condition which made the 1991 Oakland Hills fire so difficult to control and produced a an explosive rate of fire spread, a "firestorm".

2. Fire History From The Gold Rush Until 1950

For half a century after the Gold Rush, settlers, miners, stockmen, loggers, and other users of California's wildlands burned California foothill lands indiscriminately. These wildfires seriously damaged forests and rangelands and contributed to flooding in the valleys. Until the early 1900's the prevailing attitude toward wildfires in most of the state was to protect life and property and let the wildlands take care of themselves. Thus, wildfires probably continued to occur in El Dorado County on a regular basis for many years. After 1905, with the creation of the United States Forest

Service and the California Division of Forestry (early 1920's) indiscriminate burning was gradually reduced and controlled.

### 3. Fire History Since 1950

As population increased in California, the threat to structures from wildfires has sharply increased. A catastrophic loss of homes due to wildfires occurred in Berkeley in 1923 when a strong north wind carried fire from Wildcat Canyon, across the Berkeley Hills and into the city, destroying 584 structures. Since then, disastrous losses of structures to wildfires have occurred with increasing frequency throughout much of California, sometimes in unlikely and unexpected locations. In the same general location of the 1923 Berkeley Fire, the disastrous 1991 Oakland Hills Fire burned more than 3,000 structures. A partial list of some destructive wildfires in recent years is shown in Table 1 on page 8.

These fires alone destroyed almost 7,000 homes. Hundreds more were lost in many other wildfires. In recent years, homes were lost where few thought there was danger from wildfire. One of the best examples of this situation was the Morse Fire that destroyed 31 homes in May 1987 near Pebble Beach CA, an area shrouded in fog much of the year. The problems in most of these fires are similar to those experienced in El Dorado County today: flashy fuels (vegetation), rugged topography intermixed with homes with wood roofs. In all wildfires with heavy loss of structures, the main culprits were wind, wood roofs, and flammable vegetation too close to homes.

### 4. Fire History - Project Area

There is little evidence of recent wildfires on the property. The existing fuel conditions on the Project, oak overstory with grass ground cover and "thickets" of Live Oak combined with the broken topography present a moderate wildfire hazard. The slopes with a southwestern exposure can dry quickly and become quite flammable in early summer setting up favorable conditions for high fire spread rates. Without fire safe measures a small fire in or adjacent to the project area could rapidly spread and threaten homes.

Table 1. Major destructive wildfires in California since 1950

<u>Year</u>	<u>Name of Fire</u>	<u>County of Origin</u>	<u>Dwellings Destroyed</u>
1956	Newton	Los Angeles	50
1961	Harlow	Mariposa	106
1961	Bel Air	Los Angeles	484
1964	Hanley	Napa	101
1964	Coyote	Santa Barbara	94
1967	Paseo Grande	Riverside	61
1970	Laguna	San Diego	382

068432

1970	Wright	Los Angeles	103
1977	Sycamore	Santa Barbara	256
1978	Creighton	Sonoma	64
1978	Kannan	Los Angeles	224
1980	Panorama	San Bernardino	325
1981	Atlas Peak	Napa	69
1987	Morse	Monterey	31
1988	Forty-Niner	Nevada	148
1990	Paint	Santa Barbara	599
1991	Oakland, Berkeley Hills	Alameda	3810

Major destructive wildfires in El Dorado County

1985	Eight Mile	El Dorado	14
1992	Cleveland	El Dorado	26
1994	Kelsey	El Dorado	14

ROLLING HILLS ESTATES, UNITS 1, & 2, STATE RESPONSIBILITY  
AREA WILDFIRE SAFETY PLAN

The plan consists of:

1. A description of Project area and location.
2. A description of Project vegetation and fuels.
3. Problem statements and analyses.
4. Fire behavior and analysis.
5. Goals.
6. Implementation of fire hazard reduction
7. Responsibilities for implementation.

**1. PROJECT LOCATION AND AREA**

The Rolling Hills Estates project of 52 acres and 75 Lots lies in western El Dorado County adjacent the unincorporated community of El Dorado Hills. Immediately North of Green Valley Road and West of Francisco Drive. The property is drained by the upper reaches of an unnamed creek that terminates in Folsom Reservoir. Elevations range from 480 to 630 feet. The 52 acres is located in the SE1/4 of the NW1/4 of Section 22, T.10 N., R.8 E. MDM. Longitude is 121° - 5' West and Latitude is 38° - 43' North. The nearest fire station is Station 84 adjacent the eastern project property line. The area will be served by a fire hydrant system. Topography consists of two intermittent drainages and portions of two minor ridges. Slopes run from 10% to 26%.

**2. PROJECT VEGETATION (FUELS)**

A. Vegetation - The vegetation type within the Project area is oak woodland and grass savannas with a few small islands of Deer Brush. The overstory is Live Oak (60%), Blue Oak (20%), Gray Pine (15%) and brush 5% with a crown closure of 50%. The ridge on the West property line has a dense stand of multi stem Live Oaks that with a fuel ladder into the tree crowns. These Live Oak "thickets" present the greatest fuel hazard in the Project area. Without modification of this fuel type a small fire could present a serious threat to future homes.

The fuel hazard rating was conducted by Leisz and Murphy during February, 1998 while on the subject property. The California Department of Forestry and Fire Protection (CDF&FP) maps show the general area as Moderate Fire Hazard Severity. The consultants concur with this rating.

**3. PROBLEM STATEMENTS**

A. The continuity of the fuels West of and on the property will allow fires to develop quickly.

Cured grasses and forbs fuels on the State Park lands to the West are extremely flammable and burn with great intensity.

This combined with the topography and west exposure presents the most serious fire protection problem.

B. Portions of the Project area have moderately steep side slopes which can cause a fast rate of wildfire spread..

C. The risks of fire starts will increase with development.

The greatest risk fire ignitions is from activities on all sides of the proposed project: backyards of homes along the North property line, commercial development on the East boundary, Green Valley Road on the South and the State Park and EID facilities on the west boundary.

D. Provisions must be made to maintain all Fuel Treatment Zones.

The wildfire protection values of fuel modification areas are rapidly lost if they are not maintained.

E. Typical home design and siting often does not recognize adequate wildfire mitigation features.

A review of many wildfires has conclusively shown that most homes losses occur when: (1) there is inadequate clearing of flammable vegetation around the house, (2) roofs are not fire resistant, (3) homes are sited in hazardous locations, (4) firebrand ignition points and heat traps are not adequately protected and (5) there is lack of water for fire suppression.

F. Building envelopes that have heavy fuel loads combined with dangerous topographic features place future homes at high risk.

Failure to create and maintain a defensible space around homes is the major contributor to loss of homes by wildfire.

#### 4. FIRE BEHAVIOR ANALYSIS

Proper planning requires an estimate of how wildfire would behave within the Project area. This was accomplished through use of a standard computer program called BEHAVE which projects fire spread in different vegetation types.

The vegetation was classified in the Fire Behavior Fuel Model 6, Shrubs.

Fire spread models using the BEHAVE program demonstrated that, prior to development and vegetation treatment, wildfires could spread rapidly under the worst burning conditions. For example, fire in the Live Oak fuels (Model 6) with a 6 mph midflame wind could spread at the rate of 60 chains/hr (4000 feet per hour) with

a flame length of 8.7 feet. The consultants incorporated the model outputs in the design of the Wildfire Safety Plan for the project. (See Appendix B. for more details on BEHAVE runs.)

## 5. GOALS

- A. Provide Fuel Treatment measures within the project that provide Defensible Space for people and structures.
  - 1. Modify the high hazard vegetation fuels through a combination of treatments which also considers visual, wildlife and soil values.
  - 2. Reduce the size and intensity of wildfires that may start either within or outside the development.
  - 3. Ensure defensible space is provided around all structures.
  - 4. Ensure fuel treatment zones are maintained.
  - 5. Design fuel treatments so that a minimum of tree removal is necessary.
- B. Identify Fire Safe structural features.
- C. Help homeowners protect their homes from wildfire.
- D. Promote land management practices that will maintain a healthy stand of native vegetation, consider wildlife habitat, protect the basic soil and water resource and encourage utilization of the natural resources.

## 6. IMPLEMENTATION OF FIRE HAZARD REDUCTION

Fire hazard reduction measures are designed to accomplish the Goals by providing and maintaining Defensible Space. Project fire hazard severity is reduced through these mitigation measures.

### A. Fuel Treatment

#### 1. Roadside Fuel Modification

The main access road will have a paralleling landscape zone. Plants in this zone should be fire resistant. (See Appendix C for suggested plant list)

##### a. All Project Roads Will:

- 1. Have a vertical clearance of 15 feet (tree branches).
- 2. All trees for 5 feet, outward, from the landscape zone slope, where practical, will be pruned up to 10 feet but not more than 1/3 of the crown.
- 3. The main access road in Lots K and L will have a fuel treatment zone of 10 feet outward from the landscape zone. The "T" junction road in Lot M will have a treatment zone of 25 feet outward from the



landscaping zone. The fuel treatment specifications are:

- a. The grass fuels will be reduced to a 4 inch stubble by June 1, annually.
- b. All trees will be pruned of all branches for 10 feet but not more than 1/3 of the crown.
- c. All brush and dead ground fuel over 1 inch in diameter will be removed.

2. Hiking Trail Fuel Modification

- a. Grasses will be reduced to a 4 inch stubble for 5 feet on each side of the trail tread by June 1 annually.
- b. Trees, within 5 feet of the trail tread will be pruned up to 10 feet, but not more than 1/3 of the crown.
- c. All dead material, branches logs etc., over 1 inch in diameter will be removed for 5 feet each side of the trail.

3. Home Area Fuel Modification

All Lots in Unit 1 (1-59) will be mass graded with very little residual vegetation requiring treatment.

Fuel modification is required around all structures. Three Firescaping Zones of treatment are provided; Zone I - 30 feet, Zone II - 80 feet and Zone III - 130 feet. Treatments are outward, in all directions, from structures or to the property line. These Firescaping treatment zones are dependent upon vegetation, topography and indicated risk. Specifications are provide in Appendix A.

Lots identified by Firescaping Zones are listed below.

- a. Zone I (30 feet), Lots 1 - 59
- b. Zone II (80 feet) Lots 68 - 75
- c. Zone III (130 feet) Lots 60 - 67

4. Driveways

- a. All driveways over 150 feet shall provide a turn out near the midpoint of the driveway (1273.10).

5. Fire Trails

Four fire trails will be constructed and maintained; (1.) from the temporary turn-around near Lot 1 through Lot K to the main access road, (2.) along the West property line from Lot 67 to the "T" junction road in Lot M, (3.) along the East property line in Lot L and (4.) from the SE corner of Lot 10 to the cul-de-sac that serves Lot 42. See schematic location on map in Appendix. Treatment will be to the following specifications:

- a. Trail will be 10 feet wide.
- b. Grass fuels will be reduced to a 2 inch stubble by June 1, annually for the trail width.
- c. Trees, within the trail width, will be pruned of all branches for 10 feet above the ground. Dead trees and dead tree stems are removed, and all ground fuels over 1 inch in diameter will be removed.

- d. All brush will be removed within the fire trail width.

#### B. Road System

The Village will be accessed by extending the existing Schooner Drive to a "T" junction in Lot M. This main road will be gated and two gated emergency exits will be provide; on the East boundary from Lot 4 the fire station and between Lots 47 and 48 to Green Valley Road.

- 1. Both emergency road exit gates must meet be of a "fail safe" design satisfactory to the fire agencies.

#### C. Home Fire Safe Requirements

Homes can be located and designed to be both architecturally pleasing and reasonably fire safe.

- 1. All structure must have Class A roofing.
- 2. If homes and decks are cantilevered out over the natural slope the vertical open sides must be enclosed with lattice work and wire screen.
- 3. Structures on Lots 60, 61, 62 and 67 will have a 30 foot set back, where feasible, from the property lines.

#### D. Other Fire Safe Practices

- 1. The project must meet all the Public Resource Code 4290 {the 1991 SRA Fire Safe Regulations-Article 2. Access, Article 3. Signing, Article 4. Water, Article 5, Fuels} as well as the fire laws, rules, regulations and codes of the Fire Districts, California Department of Forestry and Fire Protection and El Dorado County.
- 2. A legal entity must be created to provide for the maintenance of fuel treatment areas and home owners Firescaping Zones should owners fail to meet annual maintenance requirements.  
Covenants, Conditions and Restrictions must be developed for the enforcement of the structural and Defensible Space Fire Safe standards for individual lots.
- 3. A "Notice of Restriction" for the prescribed fuel treatment measures be recorded or attached to the CC&Rs so that future Lot owners will be knowledgeable of the required fuel treatments and maintenance.

### 7. RESPONSIBILITIES FOR IMPLEMENTATION SUMMARY

#### A. Developer

- a. Roadside landscaping
- b. Initial road side fuel treatment areas.

- c. Formation of legal entity for maintenance of fuel treatment areas.
  - d. Prepare Fire Safe Covenants, Conditions and Restrictions including Class A roofs.
  - e. Initial hiking and fire trail fuel reduction
- B. Lot Owner
- a. Class A roofs, enclosed cantilevered decks and buildings.
  - b. Firescaping Zone construction and maintenance.
  - c. House signing
- C. Home Owners Entity
- a. Enforcement of Fire Safe CC&R,s
  - b. Maintenance of roadside, walking and fire trail fuel treatment areas.
  - c. Enforcement of annual maintenance of lot firescaping Zones and maintenance.
  - d. Lots L, K & M fire trail maintenance.

## Appendix A.

**FIRESCAPING STANDARDS FOR ROLLING HILLS ESTATES**

Firescaping is an approach to landscaping to help protect homes from wildland fires. The goal is to create a landscape that will slow the advance of a wildfire and create a Defensible Space that provides the key point for fire fighting agencies to defend the home. This approach calls for a system of landscape zones surrounding the home. Each zone may contain a balance of native and exotic plants that are fire and drought resistant, will control erosion, and are visually pleasing.

**ZONE I**

This zone extends to not less than 30 feet from the house in all directions (or to property line on graded lots) and has a traditional look of irrigated shrubs, flower gardens, trees and lawns. All dead trees, brush, concentrations of dead ground fuels (tree limbs, logs etc. exceeding 1 inch in diameter) are removed. The plants in this zone are generally less than 18 inches in height, must be slow to ignite from wind blown sparks and flames. Such plants produce only small amounts of litter and retain high levels of moisture in their foliage year around. Native oaks are permitted inside the Zone, but may not be within 10 feet of the roof or chimney. Grass growth within this zone must be irrigated or if left to cure must be mowed to a 2 inch stubble, disked, chemically treated or removed. Such treatment must be accomplished by June 1, annually. This zone has built in fire breaks created by driveways, sidewalks etc.

**ZONE II (Zones I & II)**

This zone adds 50 feet to Zone I and extends to a minimum of 80 feet from the house in all directions and is a wide band of low growing succulents and ground covers designed to reduce the intensity, flame length and rate of spread before a wildfire reaches Zone I. Native trees are preserved but are pruned of dead material, grasses are mowed, disked or chemically treated, shrubs are not to exceed 24 inches in height and placed to create a pleasing look yet slow a fires progress. All dead trees, brush, concentrations of dead ground fuels (tree limbs, logs etc.) exceeding 1 inch in diameter are removed. Irrigation may be necessary to maintain a quality appearance and to retain the retardant ability of the plants. Treatment of herbaceous vegetation must be completed by June 1, annually.

**ZONE III (Zones I, II & III)**

This Zone adds 50 feet to Zones I and II and extends to a minimum of 130 feet from the house and is a transition area to the outlying native vegetation. All dead trees, brush, concentrations of dead ground fuels (tree limbs, logs etc.) exceeding 1 inch in diameter

## Appendix B. BEHAVE Program Runs

BEHAVE: Fire Behavior Predication and Fuel Modeling System  
BURN Subsystem, Part 1

The BEHAVE fire behavior predication and fuel modeling system is a set of interactive computer programs that can be adapted to a variety of specific wildland fire needs. BEHAVE can predict: rate of spread, flame length, intensity, area perimeter, attack forces requirements and spotting distances.

The consultants use this computer program as a "check" on their experienced judgement in assessing the fire environment based on their many years of experience.

Run 1 is in the oak shrub fuels and topography on the East facing slopes of Phase 3, B Court of Schooner PointeT (Fuel Model 6 on 22% slopes.) Rates of spread could be up to 60 chains per hour (3/4 of a mile) with 8.7 foot flame lengths with a 6 mph midflame wind speed.

<u>Flame length feet</u>	<u>Interpretation</u>
<4	Fire can generally be attacked at the head or flanks by persons using handtools.
<4-8	Fire are too intense for direct attack on the head by persons using handtools. Equipment can be effective.
8-11	Fires may present serious control problems. Control efforts at the head of the fire will be ineffective.
>11	Crowning, spotting and major fire runs are probable.

068432

SIERRA LAND DESIGN  
383 Main Street, Placerville, CA 95667  
916 622-0560 Fax 622-6943



FIRESCAPE PLANTS  
ZONE 7

The following is a short list of plants with some fire-resistance within Sunset's Zone 7. This list is only a starting point, and not the final word. Growing conditions in your yard and maintenance techniques and timing affect the relative fire-resistance of plants. (Spp. indicates more than one species is commonly grown.)

Genus Species	Common Name
<u>Shrubs</u>	
Agapanthus spp.	Lily of the Nile
Arctostaphylos spp.	Manzanita (select low growing only)
Artemisia spp.	Wormwood
Atriplex spp.	Saltbush
Berberis spp.	Barberry
Buxus microphylla var. japonica	Japanese Boxwood
Callistemon spp.	Bottlebrush
Ceanothus spp.	California Lilac (select low growing only)
Cercis occidentalis	Western Redbud
Cistus spp.	Rockrose
Convolvulus cneorum	Bush Morning Glory
Cotoneaster spp.	Cotoneaster
Escallonia spp.	Escallonia
Feijoa sellowiana	Pineapple guava
Hemerocallis spp.	Daylily
Mimulus aurantiacus	Sticky Monkeyflower
Penstemon spp.	Penstemon
Prunus spp.	Short Cherry and Plum
Punica granatum 'Mona'	Dwarf Pomegranate
Raphiolepis spp.	India Hawthorne
Rhamnus spp.	Coffee Berry
Ribes spp.	Currants & Gooseberries
Romneya coulteri	Matilija Poppy
Salvia spp.	Sage
Senecio cinerea	Dusty Miller
Spiraea spp.	Spiraea
Symphoricarpos albus	Common Snowberry
Trachelospermum jasminoides	Star Jasmine
Zantedeschia spp.	Calla Lily

FIRESCAPING - PLANTING FOR FIRE SAFETY

