

8: VISION FIRE NEIGHBORHOODS ASSESSMENTS & RECOMMENDATIONS

Phoenix Team members Ray Moritz and Tom Gaman are the principal authors of this chapter, with additional information and review contributed by Laurel Collin.



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THIS CHAPTER SURVEYS EACH OF 13 INVERNESS RIDGE NEIGHBORHOODS.

Seven of them, along upper Drakes View Drive where dwellings burned, are discussed in some detail. For each of these seven, we offer a detailed description - the location and aspects, the watershed, human impacts (encroachments due to development), the vegetation and fuel type prior to the Vision Fire, critical fire features, the fire's behavior and effects. We then offer some specific recommendations that may mitigate the threats of future wildfires, erosion, or landslides. Succession within the plant communities in most cases results in an avoidable increase in the fire hazard rating of the natural landscape; to help guide residents in making management decisions, these rating progressions are summarized for each neighborhood in the table on the opposite page.

Readers will find additional information pertinent to a given neighborhood by cross-referencing this chapter with previous parts of this report, particularly the sections in Chapter 6 on Vegetation Types, Fire Hazard Management, and Defensible Space. The Prior Vegetation Type listed here for a given neighborhood (e.g., aging bishop pine forest) will tell the reader where to find the appropriate forest restoration actions in Chapter 6.

Readers interested in geomorphology will find a thorough discussion of this subject in Chapter 5. In addition to watershed information in this chapter, precautions recommended for all Inverness neighborhoods (including unburned areas) are listed on pages 52-53 in Chapter 7.

The Phoenix Team also offers recommended actions, in Chapter 7, that could substantially reduce the threats to Inverness Ridge communities from future wildfires.

Neighborhood Units in our study area were assessed for fire hazard potential based on the topographic conditions, pre-fire fuel type, and succession of fuel types predicted for each. For this purpose, we again employed Marin County's system for fire hazard ratings, explained in Appendix 8.

Fire hazard ratings in recovering plant communities will steadily increase over time to levels approaching pre-fire conditions; careful management of areas around homes is essential. The table opposite summarizes the upward trends in fire hazard in each neighborhood as post-fire natural succession progresses through time. (Units 5 and 7 both have two distinct vegetation types, as explained in the caption.) See also the comparable table and accompanying graph on page 32, showing fire hazard in the four principal plant communities discussed in this report.

UNITS	PRIOR	1st year	3rd year	10th year	LongTerm
1	33	15	22	27	33
2	35	19	24	32	33
3	35	19	24	32	33
4	32	19	22	28	32
Sa	28	10	19	23	28
5b	34	19	22	31	34
6	32	22	24	31	35
7a	32	19	22	28	32
7b	29	15	20	26	29
8	28	20	23	23	28
9	28	15	17	24	28

Table 2: Average Succession of Fire Hazard Ratings by Neighborhood Unit. Assessments were made during the Phoenix study for burned areas within 100 feet of structural envelopes. In neighborhood units in the burn zone, as in the forest/fuel types, fire hazard ratings will increase over time unless vegetation around structures is carefully managed. The ratings shown here correspond with primary forest types found in each neighborhood. Units 5 and 7 are characterized by two distinct plant communities: 5a is coastal scrub; 5b is bishop pine with dense understory; 7a is overmature bishop pine; and 7b is mixed hardwood forest.

WATERSHED

THE GENERAL RECOMMENDATIONS ON PAGE 52-53 apply to all the burned neighborhoods of the Vision Fire zone. If part of your property was affected by fire, learn which vegetation has died, will die, or will recover. Remember that the decaying roots of trees pose a substantial decrease in the strength of soil to resist sliding. Consider the proximity of dead pines to nearby roads and structures. Choose plants and trees for landscaping that are appropriate for soil moisture conditions of a given site, that have low flammability if planted near structures, that have fast and deep growing roots if planted in an areas where slope stability is of concern, or that forms a low ground cover if surface erosion is a problem. If you own property that has large dead tree stems on slopes that have high hazard for debris flow Onto a road, structure or into a stream, consider cutting the tree trunks near their base, cut the trunk into small pieces and remove the large wood from those portions of the slope that have potential for failure. Do not remove or pull our the roots. If abandoned dirt roads are creating surface erosion and landslide problems in the neighborhood, "put them to bed" by recontouring, discing, and planting.

Erosion control guidelines for reconstruction efforts will soon be available to homeowners within the Vision Fire area from the Marin County Department of Public Works (MCDPW). According to Liz Lewis, MCDPW Creek Naturalist:

"Erosion control measures should be completed no later than September 15, 1996. Every effort should be made to minimize the area disturbed. This includes areas to be graded, equipment parking areas, vegetation removal zones, and stock piling areas. By minimizing the extent of disturbed land, erosion potential as well as the cost of its control is minimized.

“All disturbed areas that are not paved or otherwise covered should be stabilized as soon as possible. Depending upon the size of the disturbed area and its location, several choices exist: hand seeding, jute or fiber netting Curlex T.I.I., straw mulch, silt fences, Straw bales and sand bags, are just a few examples. Diversion of surface runoff through the proper placement of berms and ditches may also be used in tandem with ground protection measures. *

"An erosion control plan should be included in the initial building application package. The decision to implement particular measures should be made after evaluating each site and will depend on the specific characteristics of each site, as well as the timing of construction. For advice on preparing your erosion control plan contact either John Wooley (Associate Civil Engineer) or Liz Lewis at the MCDPW Land Use and Water Resources Section (phone 415-499-6549)."

Unit 1 - Pine Crest

DESCRIPTION

Location & Slope: See Map 2 (map insert section). Located along the north to northeast slope of the watershed immediately north of the Drakes View Drive ridge, this unit is bounded by Pine Crest Road, Drakes View Drive, and Buck Point Road. It also includes the parcels below (to the north of) Pine Crest. Topography ranges from almost level on the parcels along Drakes View Drive to steeply sloping on the parcels above and below Pine Crest and below Buck Point. The general slope is to the northwest. A major north to northeast drainage cuts through the west end of the unit up toward the intersection of Buck Point and Drakes View. A secondary drainage enters at the east end, at the intersection of Drakes View Drive and Pine Crest. This unit has poor to very poor road access because of its location toward the end of Drakes View Drive and the dead-end secondary roads Pine Crest and Buck Point. It was in the high intensity fire zone of the Vision Fire.

Watershed: This unit includes the uppermost ridge and moderate to steep slopes that drain into Units 13 and 9 of the Vallejo Creek watershed.

Human Impacts: This neighborhood has high-moderate development density. Three active roads, a number of active driveways, and several abandoned roads enter the unit. An automotive junkyard was present prior to the fire. Before the fire, the areas around structures were sparsely landscaped. The introduction of exotic vegetation was insignificant. Following the fire, building demolition, logging, debris disposal, chipping, mulching, and seeding activities and the installation of straw-bale sedimentation dams have taken place.

Prior Vegetation Type: The unit was dominated by an opening stand of mature to over-mature bishop pine forest. At the east end there was more mixed evergreen forest (pine, red oak, coast live oak, bay, and chinquapin), but bishop pine dominated the over-story or forest cover. The canopy was 70 to 80 feet tall, and the canopy cover was in the 61-100% class.

Critical Fire Features: The unit possessed all the features for extreme fire behavior: excessively drained, droughty soils; steep slopes; two major "chimney" drainages; ridge-top exposure to prevailing westerlies or dry northeasterly ("Santa Anna") winds; a highly flammable, aging forest cover; heavy undergrowth dominated by pyrophytic plants; and heavy down and dead debris.

*For example, see the illustrations on pages 27 and 29, and also their source, Malcolm Margolin's *The Earth Manual: How to Work on Wild Land Without Taming It* (Heyday Books 1975), among other references.

Adjacent wildlands are also a threat. This unit had the highest Marin County Fire Department (MCFD) fuel class rating, nine out of a possible nine points.

Fire Behavior: The Vision Fire entered the unit from the north out of the drainage and from the south over the Drakes View Drive ridge, with extreme fire behavior. More than 90% of the unit burned. Crowning fire engulfed most of the unit and reached extreme intensities and fuel consumption. All but two of the homes were consumed.

RECOMMENDATIONS

Defensible Space: In this unit, defensible space should be established around structures to a distance of 50 feet upslope by 50 feet cross-slope by 100 feet down slope.

Fire Hazard Management: With its poor to very poor road access, the unit is essentially one way in and one way out. Fire moving up across the shoulder of land supporting Drakes View Drive, or up the east chimney drainages, could prevent evacuation and/or emergency response in the entire unit. Fire moving up the main drainage could cut off evacuation from and fire response to Unit 3 as well as the Buck Point parcels of Unit 1. Better turn-arounds, back-arounds, or hammerheads should be provided at the ends of the two secondary access roads; there should be a turnout near the midpoint of each road. Turnouts (weather-surfaced parking spaces with adequate roadside fuel management; a minimum of 30 feet long and 8 feet wide) should be located along Drakes View Drive at least every 400 feet. Parking in these spaces should be prohibited.

Geomorphology: Numerous colluvial hollows of low to moderate slide hazard exist in this unit (Map 4, map insert section). One particularly steep, north-facing slope in the middle of the unit is particularly prone to raveling, and there is a large active debris slide scar just below one of the abandoned spurs of Pine Crest Road. Tension cracks above the crown scarp are active. An estimated 1,000 cubic yards of soil could be dislodged above the existing crown scarp. If failure should occur instantaneously during an intense storm event, rather than slowly or sequentially, there is potential hazard to downstream properties along Vallejo Creek and along Sir Francis Drake Boulevard. Continued slope failure could also be triggered by seismic shaking from a moderate earthquake event. Between Buck Point Road and the end of Pine Crest Road, runoff and erosion from abandoned road surfaces have caused some of the straw bale dams to fill with sediment. These roads should be "put to bed" or should have appropriate erosion control measures in place. All general recommendations (page #) apply.

Forest Restoration: This unit needs particular attention to sword fern transplanting. See also general recommendations in Chapter 6 beginning on page 39.

Unit 2 - Drakes View

DESCRIPTION

Location & Slope: This unit is bordered by Upper Sunnyside, Drakes View Drive, Sunnyside, and the center of the major drainage that connects with the intersection of Drakes View Drive and Elizabeth and drops off to the southeast. Varying from almost level to steeply sloped, the unit drops off from Drakes View Drive down to Sunnyside. One major drainage borders the unit boundary at the west end. Road access is poor to very poor because of the location at the end of a long slow climb up the dead-end roads of Drakes View Drive and Sunnyside. This unit was in the high intensity fire zone of the Vision Fire.

Watershed: This is an upper ridge area of Fish Hatchery Creek, which drains into Units 8 and 13.

Human Impacts: This unit has moderate development density, with three active roads and a number of active driveways. No abandoned roads were observed. Before the fire, areas around structures were sparsely landscaped. The introduction of exotic vegetation was insignificant. After the fire a considerable amount of logging and tree removal has occurred in the unit, along with debris disposal, chipping, mulching, and seeding activities.

Prior Vegetation Type: The unit was dominated by an opening stand of mature to over-mature bishop pine forest. At the north end it grades to mixed evergreen forest.

Critical Fire Features: The unit possessed all the features for extreme fire behavior: excessively drained droughty soils; steep slopes; a major "chimney" drainage; ridge-top exposure to prevailing westerlies or dry northeasterly ("Santa Anna") winds; a highly flammable, aging forest cover; heavy undergrowth dominated by pyrophytic plants; and heavy down and dead debris. This unit had the highest MCFD fuel class rating, nine out of a possible nine points.

Fire Behavior: The Vision Fire entered the unit from the west along the Drakes View Drive ridge and from the south, with extreme fire behavior. More than 90% of the unit burned. Crowning fire engulfed most of the unit and reached extreme intensities and fuel consumption. All but one of the homes were consumed.

RECOMMENDATIONS

Defensible Space: In this unit, defensible space should be established around structures to a distance of 50 feet upslope by 50 feet cross-slope by 100 feet downslope.

Fire Hazard Management: This unit has poor to very poor road access because of its location at the end of a long slow climb up Drakes View Drive and the narrow, unpaved, dead-end road, Sunnyside. It is essentially one way in and one way out. There is a road leading our through the National Seashore from the end of Sunnyside, but this exit is not available to private vehicles. Fire moving up across the shoulder of land supporting Drakes View Drive or up either lower Drakes View Drive or the south drainage could prevent evacuation and/or emergency response. Better turn-a-rounds, back-a-rounds, or hammerheads should be provided at the ends of the access roads and drives. Turnouts should be located along Drakes View Drive and Sunnyside at least every 400 feet. Parking in these spaces should be prohibited.

Geomorphology: Slopes in this unit are of relatively gentle gradient. Landslide and erosion hazards are minimal.

Forest Restoration: General recommendations beginning on page 39 apply in Unit 2.

Unit 3 - Ridge Unit.

DESCRIPTION

Location & Slope: This unit is located along the north-south ridge at the top of and perpendicular to Drakes View Drive. It includes the ridgetop parcels at the end of Drakes View Drive, the parcels accessed from Elizabeth Road, and the parcels above Buck Point road. Varying from almost level to steeply sloped, the unit drops off to the northeast and the southwest. At the south end it drops steeply into a saddle in the ridge. The general slope is to the southwest. Two

major drainages converge at the unit boundary from the northeast and the southeast. This unit was in the high intensity fire zone of the Vision Fire.

Watershed: This upper ridge area drains into Muddy Hollow Creek (Point Reyes National Seashore) and Fish Hatchery Creek. Below the latter are Neighborhood Units 5, 8, and 13.

Human Impacts: This unit has moderate development density. Three active roads, a number of active driveways, and seven abandoned roads enter the unit. A National Seashore road borders the southwest perimeter of the unit. A North Marin Water District facility including two tanks occurs in the middle of the unit. The areas around structures were sparsely landscaped. The introduction of exotic vegetation was insignificant. After the fire a considerable amount of logging and tree removal has occurred in the unit, along with debris disposal, chipping, mulching, and seeding activities.

Prior Vegetation Type: This unit was dominated by an opening stand of mature TO over-mature bishop pine forest, grading at the north end to mixed evergreen forest (pine, tan oak, coast live oak, and bay) with hardwoods dominating the (forest cover).

Critical Fire Features: The unit possessed all the features for extreme fire behavior: excessively drained droughty soils; steep slopes; two major "chimney" drainages; ridgetop exposure to prevailing westerlies or dry northeasterly ("Santa Anna") winds; a highly flammable, aging forest cover; heavy undergrowth dominated by pyrophytic plants; and heavy down and dead debris.

Fire Behavior: The Vision Fire entered the unit from the north along the ridge and from the northeast and southeast with extreme fire behavior. More than 90 % of the unit burned. Crowning fire engulfed most of the unit and reached extreme intensities and fuel consumption. All but one of the homes were consumed.

RECOMMENDATIONS:

Defensible Space: In this unit, defensible space should be established around structures to a distance of 50 feet upslope by 50 feet cross-slope by 100 feet down slope.

Fire Hazard Management: This unit has poor TO very poor road access because of its location at the end of a long slow climb up Drakes View Drive and the narrow, unpaved, dead-end roads Elizabeth and Buck Point. It is essentially one way in and one way out. There is a road leading out through the National Seashore from the end of Drakes View Drive, but this exit is not available to private vehicles. Fire moving up across the shoulder of land supporting Drakes View Drive, or up either of the chimney drainages, could prevent evacuation and/or emergency response. Better turnarounds, back-arounds or hammerheads should be provided at the ends of the three access roads or drives over 150 feet in length and should have a turnout near the midpoint. Turnouts should be located along Drakes View Drive at least every 400 feet. Parking in these spaces should be prohibited.

Geomorphology: This unit has mostly low to moderate slide hazard (Map 4, map insert section). Substantial amounts of road runoff from abandoned dirt roads have contributed to active gullying below the neighborhood. Abandoned dirt roads that are creating surface erosion problems could be "put to bed" by recontouring, discing, and planting.

Forest Restoration: General recommendations beginning on page 39 apply in Unit 3.

Unit 4 - Sunshine

DESCRIPTION

Location & Slope: This unit is bounded by Drakes View Drive, Upper Sunnyside, Sunnyside, and Lower Sunnyside (the northeast burn perimeter). It is almost level to moderately sloped and drops off to the northeast at the north end of the unit and to the southeast over most of the unit. This unit was in the extreme intensity fire zone of the Vision Fire except for the three most northeasterly parcels.

Watershed: This upper ridge drains into Neighborhood Units 13 and 8 of Fish Hatchery Creek and an unnamed watershed to the north. Only the burned portion of this watershed was assessed in detail (see Map 4, map insert section).

Human Impacts: This unit has moderate development density, with three active roads and a number of active driveways. Before the fire, areas around structures were sparsely landscaped. The introduction of exotic vegetation, especially blackberries, is a problem. Debris disposal, chipping, mulching, and seeding activities have followed the fire.

Prior Vegetation Type: The unit was dominated by an opening stand of mature to over-mature bishop pine forest, grading at the northeast end to a greater presence of mixed hardwoods (tan oak, coast live oak, bay, and some alder).

Critical Fire Features: The unit possessed all the features for extreme fire behavior: excessively drained droughty soils; moderate south-facing slopes; ridge-top exposure to prevailing westerlies or dry northeasterly ("Santa Anna") winds; a highly flammable, aging forest cover, heavy undergrowth dominated by pyrophytic plants; and attached and detached fuels, particularly heavy down and dead debris. It had the highest MCFD fuel class rating, nine out of a possible nine points.

Fire Behavior: The Vision Fire entered the unit from the north along the ridge and from the northeast and southeast, with extreme fire behavior. More than 90% of the unit burned. Crowning fire engulfed most of the unit and reached extreme intensities and fuel consumption. The fire died where hardwoods dominated on the northeast slope, and there a number of homes were saved.

RECOMMENDATIONS

Defensible Space: In this unit, defensible space should be established around structures to a distance of 50 feet upslope by 50 feet cross-slope by 100 feet down slope.

Fire Hazard Management: This unit has poor to very poor road access because of its location at the end of a long slow climb up Drakes View Drive and the winding, narrow access on Sunnyside. It is essentially one way in and one way out. Sunshine Court is a dead-end cul-de-sac penetrating the center of the unit. Drive access is moderate. There is a road leading out through the National Seashore from the end of Drakes View Drive and Sunnyside, but this exit is not available to private vehicles. Fire moving up across the shoulder of land supporting Drakes View Drive or up the ridge could prevent evacuation and/or emergency response. Better turn-arounds, back-arounds, or hammerheads should be provided at the ends of the three access roads. Drives over 150 feet in length should have a turnout near the midpoint. Turnouts should be located along Drakes View Drive and Sunnyside at least every 400 feet. Parking in these spaces should be prohibited.

Geomorphology: This unit includes relatively gentle slopes of low landslide hazard and minimal surface erosion problems.

Forest Restoration: At the northeast end of the unit hardwoods should be favored over brush and pine. General recommendations beginning on page 39 also apply in Unit 4.

Unit 5 - Saddle

DESCRIPTION

Location & Slope: This unit is bounded by the National Park road extending off the end of Sunnyside and includes the developed portion of the "chimney" drainage rising from the Vallejo watershed up to Lower Sunnyside. It ranges from almost level at the top of the ridge, at the southeast end, to moderately sloped. The west end of the unit is east-facing; the east half is south-facing. This unit was in the extreme intensity fire zone of the Vision Fire.

Watershed: Unit 5 drains into the Fish Hatchery Creek watershed that includes downstream neighborhoods 8 and 13. It includes side slopes just below Neighborhood Unit 3.

Human Impacts: This unit has light development density, with two active roads, one active driveway, and two abandoned roads. Before the fire, areas around structures were sparsely landscaped. The introduction of exotic vegetation (Monterey pine, thistle, and blackberries) was a problem. Timber felling and skidding, debris disposal, chipping, mulching and seeding activities have followed the fire.

Prior vegetation Type: At the west end this unit was dominated by coastal scrub (5a on the chart on page 55) with scattered pine (Monterey pine was planted around the two homes). To the east, the south-facing slope was dominated by bishop pine with dense undergrowth (5b on the chart).

Critical Fire Features: The unit possessed all the features for extreme fire behavior: excessively drained droughty soils; moderate south-facing slopes; ridge-top exposure to prevailing westerlies or dry northeasterly ("Santa Anna") winds; a highly flammable, aging forest cover; heavy undergrowth dominated by pyrophytic plants and attached and detached fuels; and particularly heavy down and dead debris. Most of this unit had the highest MCFD fuel class rating, nine out of a possible nine points. Two chimney drainages enter the unit, one at the east end and one at the west end. Fire could quickly isolate the unit. Steep slopes (40 to 65%) below the homes would accelerate fire and hinder fire suppression.

Fire Behavior: The Vision Fire entered the unit from the west over the ridge. At least one reburn came from the south, with extreme fire behavior. Almost 100% of the unit burned. Crowning fire engulfed most of the unit and reached extreme intensities and fuel consumption. All of the homes in this unit were consumed.

RECOMMENDATIONS

Defensible Space: In this unit, defensible space should be established around structures to a distance of 50 feet up slope by 50 feet cross slope by 100 feet down slope.

Fire Hazard Management: The unit has poor to very poor road access because of its location at the end of a long slow climb up Drakes View Drive and the winding, narrow access to the west end of Sunnyside. Drive access is very poor. Several drives below Sunnyside traverse an unstable slope back to the east. The unit is essentially one way in and one way out, with a road leading out through the National Seashore from the end of Sunnyside that is not available to 10 private vehicles. Better turn-arounds, back-arounds, or hammerheads should be provided at the end of the three

access roads. Drives over 150 feet in length should have a turnout near the midpoint and turn-arounds at the terminus. Turnouts should be located along Drakes View Drive and Sunnyside at least every 400 feet. Parking in these spaces should be prohibited.

Geomorphology: Several active landslides occur on the lower elevation slopes of Unit 5, where abandoned roads are contributing to slope failure along the inner gorge of the creek drainage. They could be "put to bed" by recontouring, discing, and planting. Surface erosion from two dead-end spur roads could be solved by better road design and runoff control, particularly on the lower spur road.

Forest Restoration: General recommendations beginning on page 39 apply in unit 5.

Unit 6 - Sunnyside

DESCRIPTION

Location & Slope: This unit is bordered above by Sunnyside - west to the major drainage that connects with the intersection of Drakes View Drive and Elizabeth and east to the major drainage off the end of Douglas. It is steeply sloped and drops off from Sunnyside down past Dover. One major drainage borders the unit boundary at the west end, one at the east end, and one in the middle. The unit has poor to very poor road access because of its location at the end of a long slow climb up Drakes View Drive and down Sunnyside and Dover. It was in the high intensity fire zone of the Vision Fire.

Watershed: This unit has steep side slopes just below Neighborhood Units 2 and 4. It drains into the Fish Hatchery Creek watershed including Neighborhood Units 8 and 13.

Human Impacts: This unit has moderate development density, with three active roads and a number of active driveways. No abandoned roads were observed. Before the fire, areas around structures were sparsely landscaped. The introduction of exotic vegetation was insignificant. After the fire a considerable amount of logging and tree removal has occurred in the unit, along with debris disposal, chipping, mulching, and seeding activities.

Prior vegetation Type: The unit was dominated by a stand of mature to over-mature bishop pine forest.

Critical Fire Features: The unit possessed all the features for extreme fire behavior: excessively drained droughty soils; steep slopes; three major "chimney" drainages; a steep (40 to 90%) mid-slope location; a highly flammable aging forest cover; heavy undergrowth dominated by pyrophytic plants; and heavy down and dead debris. This unit had the highest MCFD fuel class rating, nine out of a possible nine points.

Fire Behavior: The Vision Fire entered the unit from the west with extreme fire behavior. More than 95% of the unit burned. Crowning fire engulfed most of the unit reached extreme intensities and fuel consumption. All of the homes were consumed in the fire.

RECOMMENDATIONS

Defensible Space: In this unit, defensible space should be established around structures to a distance of 100 feet up slope by 100 feet cross slope by 200 feet down slope.

Fire Hazard Management: With poor to very poor road access because of a location at the end of a long slow climb up Drakes View Drive and the narrow, unpaved, dead-end road, Sunnyside, this unit is essentially one way in and one way out. There is a road leading out through the

National Seashore from the end of Sunnyside, but this exit is not available to private vehicles. Fire moving up across the shoulder of land supporting Drakes View Drive, or up either lower Drakes View Drive or the south drainage, could prevent evacuation and/or emergency response. Better run-arounds, back-arounds, or hammerheads should be provided at the ends of the access roads and drives. Turnouts should be located along Drakes View Drive and Sunnyside at least every 400 feet. Parking in these spaces should be prohibited.

Geomorphology: This unit has the highest density of active landslides of all the Paradise Estates neighborhoods surveyed. Dover Road Traverses slide features that have a range of low to high slide potential. Road runoff is contributing to destabilization of the road and hillslopes. Deteriorated culverts along Dover Road and Sunnyside Drive should be replaced, and outfalls should have adequate dissipation devices. A watchful eye should be kept for new depressions or tension cracks that may indicate incipient failure.

Forest Restoration: Remove Monterey pine seedlings at the end of Sunnyside. General recommendations beginning on page 39 also apply in Unit 6.

Unit 7 - Douglas

DESCRIPTION

Location 6- Slope: This unit includes the east end of Sunnyside and Dover and all of Douglas (the northeast burn perimeter). It varies from almost level to moderately to steeply (30-50%) sloped, dropping off to the east at the north end of the unit and to the south at the south end. The unit has poor to very poor road access because of its location at the end of a long slow climb up Drakes View Drive and the winding, narrow access on Sunnyside, Dover, and Douglas. At the west end, the unit was in the extreme intensity fire zone of the Vision Fire; at the east and south ends, it was in the moderate intensity fire zone.

Watershed: This unit has steep side slopes just below Neighborhood Unit 4. It drains into the Fish Hatchery watershed and small unnamed water shed to the north that includes downstream neighborhoods 8 and 13. Only the portion of this unit within the fire zone was mapped in detail for the Phoenix Report.

Human Impacts: This unit has moderate development density, with three active roads and a number of active driveways. The areas around structures were sparsely landscaped. The introduction of exotic vegetation is a problem. Debris disposal, chipping, mulching and seeding activities followed the fire.

Prior Vegetation / Fuel Type: The unit was dominated by an opening stand of mature to over mature bishop pine forest (7a on the chart on page 55). At the northeast end, the unit grades to a greater presence of hardwoods (7b on the chart).

Critical Fire Features: The unit possessed all the features for extreme fire behavior: excessively drained droughty soils; moderate south-facing slopes; ridge top exposure to prevailing westerlies or dry northeasterly ("Santa Anna") winds; a highly flammable, aging forest cover; heavy undergrowth dominated by pyrophytic plants and attached and detached fuels; and particularly heavy down and dead debris. This unit had the highest MCFD fuel class rating, nine out of a possible nine.

Fire Behavior: The Vision Fire entered the unit from the northwest and west, with low to moderate fire intensity. The fire perimeter was west of Sunnyside, west of the intersection of Dover

and Sunnyside, and west of the homes along Dover. Along the fire perimeter, the forest transitioned to hardwood-dominated. All of the homes were saved.

RECOMMENDATIONS

Defensible Space: In this unit, defensible space should be established around structures to a distance of 50 feet upslope by 50 feet cross-slope by 100 feet downslope.

Fire hazard management: The unit has poor TO very poor road access because of its location at the end of a long slow climb up Drakes View Drive and the winding, narrow access on Sunnyside,

Dover, and Douglas (dead-end roads). It is essentially one way in and one way out. Sunshine Court is a dead end cul-de-sac penetrating the center of the unit. Drive access is moderate. Better turnarounds, back-grounds, or hammerheads should be provided at the ends of the three access roads or drives over 150 feet in length, which should also have a turnout near the midpoint. Turnouts should be located along Sunnyside, Dover, and Douglas at least every 400 feet. Parking in these spaces should be prohibited.

Geomorphology: This unit was only mapped in detail within the fire zone. It has a zigzag roadway that traverses between active landslides and across a couple of slides that have a moderate hazard rating (Map 4, Geomorphology).

Forest Restoration: See general recommendations beginning on page 39 for forest types found in Unit 7.

Summary: Neighborhood Units 8-13

Unit 8 - Drakes Summit. We evaluated the burn in the Douglas fir forests in the Vallejo watershed. These areas burned but with less intensity and less tree mortality. No dwellings were lost, because the fire was controllable on the north-facing slope. We expect the area to recover quickly and the fuels to return. Many of the Douglas fir in the neighborhood were observed to have root rot. We recommend that all landowners maintain defensible space and monitor the Douglas fir around their houses for hazard.

Unit 9 - Dream Farm. This neighborhood sustained intense fire in its bishop pine forests on north-facing slopes, but housing was spared because of the intense efforts of firefighters. It is notable that the fire was ultimately controllable in the hardwood forests around the housing area at the top of Highland. Also, a fuels modification corridor exists along the ridge at the top of highland, and so the area presented an opportunity for firefighters to rake a final stand against the fire and to save Inverness. The existing fuels modification corridor should be extended along the wood road which now connects to Upper Perth.

Unit 10 - Tomales Bay State Park Annex is comprised of cover of unburned bishop pine forests in various states of decay. and also bay forests. Ladder and dead fuels build-up is as heavy in these forests as anywhere in the western United States. Fuels modification corridors and possible controlled burning under safe conditions are recommended

Unit 11 - Vision Road Corridor. This is mostly private land along Vision Road. There is an opportunity to secure the cooperation of a number of landowners and to proceed with creation of a fuels modification corridor. State VMP (see page #) and other cost-share funds are available to help to reduce the expense.

Unit 12 - Ottingers Hill. The bishop pine forests of the Tomales Bay State Park are rapidly dying out. Heavy fuel loading in the State Park is threatening Seahaven. A fuels modification corridor should be located and developed to protect that Inverness neighborhood from a winddriven fire coming from the north or from Ottingers Hill. Prescribed fire should be considered as an alternative.

Unit 13 - Roberts. The neighborhood on Drakes View Drive immediately below the fire area is less threatened from future fire due to the decreased fuel loads to the north and west. Also, this neighborhood is in a less flammable hardwood forest type. The facts remain that access is very poor and the hillside is steep. A fire originating along Sir Francis Drake Boulevard could threaten this neighborhood. All homeowners should work to develop defensible space.

Watershed summary: The general watershed recommendations on page 52-53 apply to all the outer neighborhoods of the Vision Fire zone (Units 8-13), particularly in light of the disastrous landslides and debris torrents that affected nearly all these Neighborhood *Units* during the 1982 winter. Residents who did not live in Inverness during 1982 should talk to long-term residents to find out where there were problems in the past. Residents who live along alluvial fans should be particularly aware of debris flow potential upcanyon. .

Also see the advice from Marin County Creek Naturalist Liz Lewis on page 55-56.

Since the Phoenix Team did not map the landscape in detail as we did for the Paradise Ranch Estates burn area, we did not make detailed watershed assessments of these neighborhoods. However, we offer an observation regarding neighborhood 13, Roberts, because stream surveying and research are continuing in this portion of Fish Hatchery Creek. Channel capacity is quite limited along some portions of Vallejo Road, particularly along some of the channel segments that have had bank revetment work and that flow beneath driveways and small bridges. The best solution is to size these structures so that high flows will not be obstructed. Meanwhile, culvert inflows should be kept free of debris that could clog the conveyance, back up water, and cause flooding.

Additional information and resources are found in the Appendix Section, which follows.