East Fork Fire Management Plan

Prepared for: **Trinity County Resource Conservation District**

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East Fork Fire Management Plan

CHAPTER 1. INTRODUCTION

Purpose

The East Fork (of the Stuart Fork of the Trinity River) Fire Management Plan is a community-based planning effort, which includes Covington Mill, Lake Forest Estates, and the Long Canyon residential area. It is intended to address fire safety and forest health opportunities for 300 rural residential parcels within the lower one-third of the East Fork of Stuart Fork watershed.

This plan was funded by a Forest Stewardship Program grant (Covington Mill Forest Health and Fuels Reduction Project) from the California Department of Forestry and Fire Protection. The fire management plan includes Lake Forest Estates and the Long Canyon residential area, which are all in the East Fork of Stuart Fork drainage. The title reflects this expanded area.

Large fires have occurred in the project area in the past and, despite all efforts, will probably occur again. The mix of residential development, timberlands, hot summer weather and high ignition risk make fire and fuel management an important concern of residents of the area.

The California Department of Forestry and Fire Protection (CDF), U.S. Forest Service (USFS), and private foresters have come to recognize that the expansion of homes into the 'wildland-urban interface' has created a potential for devastating loss of lives, dwellings, and forest resources. Foresters, ecologists, wildlife biologists and fire managers are developing new strategies to allow safer coexistence of people and wild lands. Prescriptions for maintaining healthy, fire resistant forest conditions generally call for reduced tree densities and use of low intensity prescribed fire (Mutch et al., 1993). The desired stands will appear more open and park-like, with increased forage production for deer and other wildlife. These practices also reduce the intensity of wildfire.

Controlled Burn in Trinity County

In Trinity County, a coalition of organizations has formed the Fire Safe Council to promote fire safe communities. The Council is composed of representatives from the Trinity County Resource Conservation District (TCRCD), Hayfork Watershed Research and Training Center, Trinity County Natural Resources Advisory Council, Volunteer Fire Chiefs Association, USFS, CDF, and Bureau of Land Management (BLM). The TCRCD has recently received a grant, funded through the State Water Resources Quality Control Board, Proposition 204, to develop a countywide strategic fire management plan and to implement community fuel reduction projects on both private and public lands. The East Fork Fire Management Plan will become a part of the countywide fire plan.

The East Fork Fire Management Plan contains recommendations that the community and individual landowners can follow to reduce the risk of losing their homes or the landscape they desire to live in should a wildfire occur. Recommendations to establish fuel breaks, reduce ladder fuels, and execute other management projects that reduce fire intensity also will help protect surrounding resource lands. It is anticipated that these projects will allow lower intensity fires to be contained more quickly and prevent them from moving into or out of the settlement areas. In support of these goals, the plan extends into Shasta-Trinity National Forest and Sierra Pacific Industries (SPI) lands that are adjacent to the subdivisions (see Plan Area maps, pgs 4 & 5). The planning process to date has brought together area residents, fire and forestry experts from CDF, SPI, and the private sector, and personnel from the TCRCD and the Trinity River Conservation Camp.

Location

The plan area encompasses approximately 4275 acres in the East Fork of Stuart Fork drainage (portions of Sections 3, 4, 5, 6, 7, 8, 9, 10, 15, and 16, T35N, R8W, MDB&M and portions of Sections 32, 33, and 34, T36N, R8W, MDB&M). The East Fork flows into Trinity (Clair Engle) Lake about one mile south of highway 3. The town of Trinity Center is approximately 7 miles northeast of the planning area.

Ownership

Private land within the planning area is owned by 371 individuals (refer to Appendix F for a list of owners) and SPI. In the Covington Mill subdivision there are 98 private, rural residential lots ranging from less than 1/4 acre to about 44 acres in size, with 75% less than 1/2 acre in size. There are about 31 full-time residents and 85 absentee landowners, some of who may live in the subdivision part time. In the Lake Forest Estates there are 145 lots ranging from a little less than 1/4 acre to 100 acres in size, with 77% less than 1 acre in size. There are about 50 full-time residents and 123 absentee landowners, some of who may live in the subdivision part time. In the Long Canyon subdivision there are 57 parcels, ranging from a little less than 2 acres to about 38 acres in size, with one parcel of about 213 acres and with 65% less than 3 acres in size. There are about 17 full-time residents and 65 absentee landowners, some of who may live in the subdivision part time. Sierra Pacific's lands are zoned Timber Production Zone, which means that they are designated for long-term forest management, including timber harvesting. The U.S. Forest Service, Shasta-Trinity National Forest, administers the public lands.

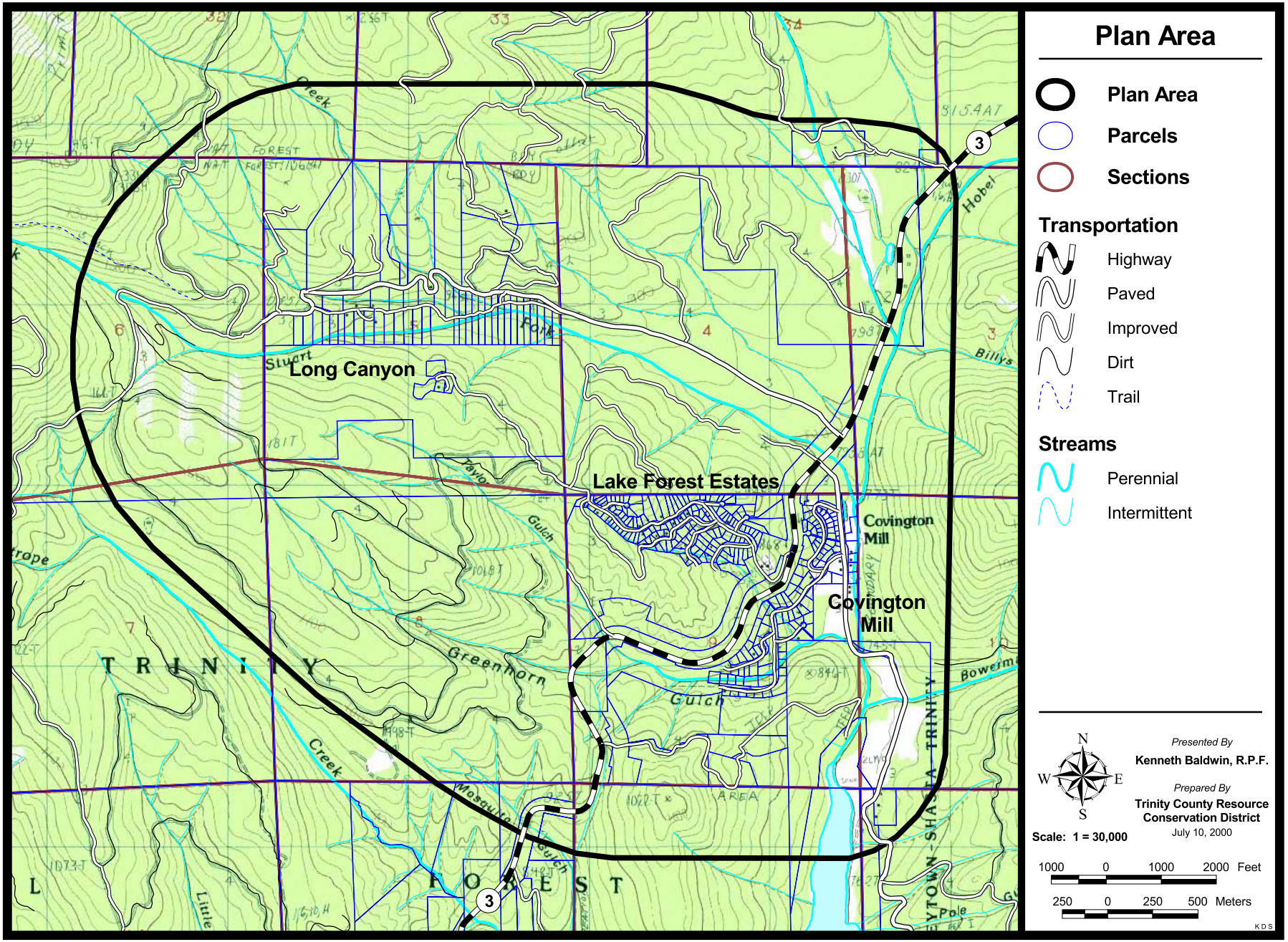
Planning Area Ownerships

Ownership Type	Acres
Rural Residential	1040
Sierra Pacific Industries	1282
Shasta-Trinity National Forest	1954
	4276

Topography

The East Fork of Stuart Fork is in a relatively long, narrow watershed with a northwest-southeast orientation. The headwater of the East Fork is Lake Anna at 7600 feet elevation in the Trinity Alps Wilderness. Within the planning area, elevations range from 2370 feet at Trinity Lake to about 4250 feet at the highest point to the north of the Long Canyon community.

The topography of the watershed is generally characterized by short, moderately steep southwest and northeast facing slopes, with ridges running northwest to southeast. The slopes near the lower third of the East Fork of Stuart Fork are generally gentle and moderately timbered. This gentle valley ranges from a few hundred feet wide at the west end of the plan area to over a quarter mile wide as it nears Trinity Lake. The majority of homes and other improvements are located in, or near, this flatter stream zone.



Plan Area

- Plan Area
- Parcels
- Sections

Transportation

- Highway
- Paved
- Improved
- Dirt
- Trail

Streams

- Perennial
- Intermittent

N
W E
S

Scale: 1 = 30,000

1000 0 1000 2000 Feet

250 0 250 500 Meters

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Kenneth Baldwin, R.P.F.

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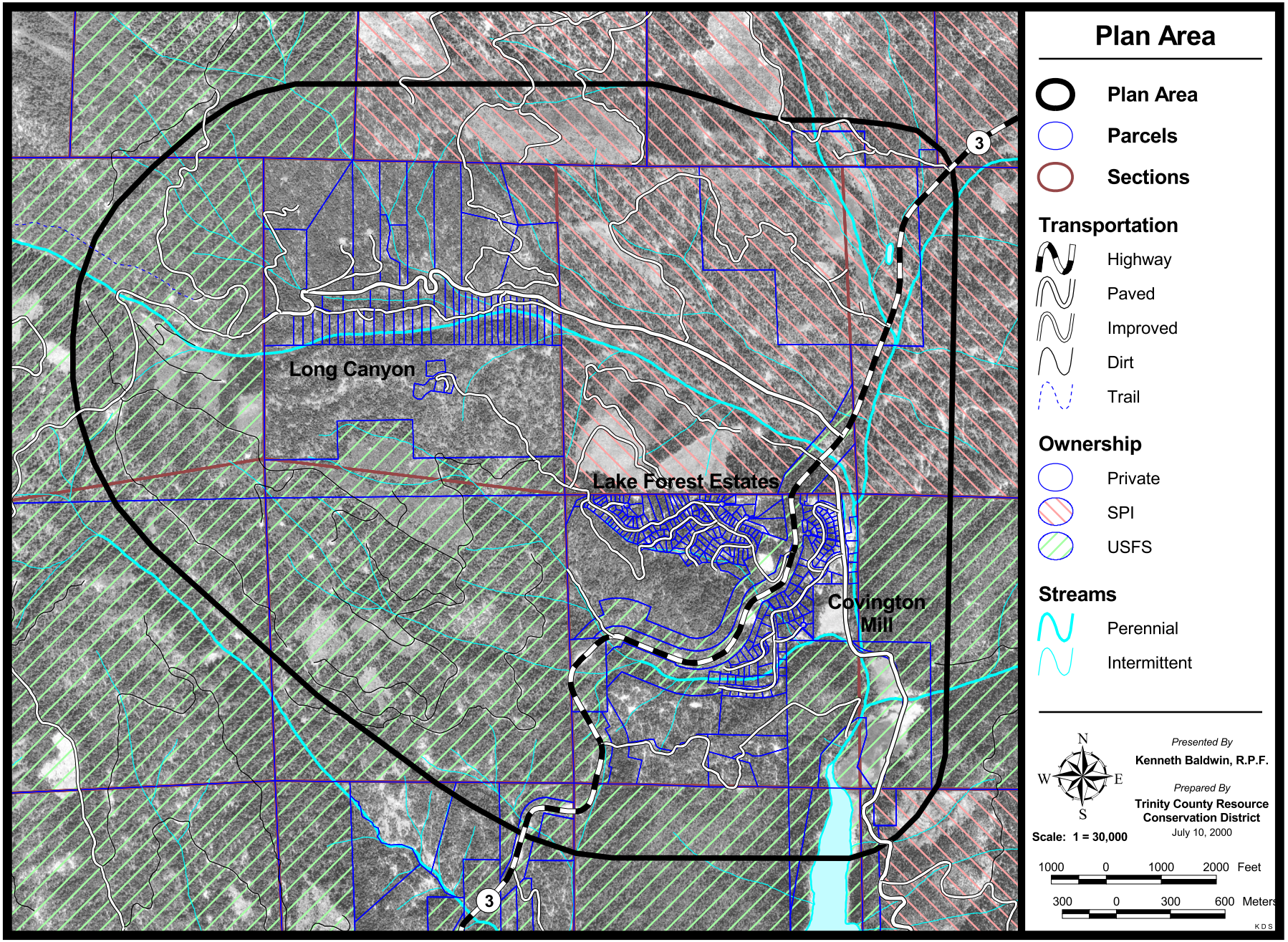
Trinity County Resource Conservation District
July 10, 2000

KDS



Plan Area

Plan Area

Parcels

Sections

Transportation

Highway

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July 10, 2000

1000 0 1000 2000 Feet

300 0 300 600 Meters

KDS

View up Long Canyon from Sierra Pacific Clearcut North of Lake Forest Estates

Climate and Fire Weather

Northern California has a Mediterranean climate characterized by long, dry, hot summers and wet winters. The area averages 60 inches of rain per year, with the Long Canyon community receiving more rain than the Covington Mill area. Most of the rain occurs between October and May, with occasional summer thunderstorms between June and September. In winter, snow falls over the entire planning area, and can accumulate to a depth of 2 feet or more and last 3 months or more. Snowfall accumulations increase in depth and last longer as elevation increases.

During the summer, temperatures may peak in the upper 90's^{0}F for several days at a time, with very low relative humidity and fuel moisture. Extreme fire danger can occur as early as July and is common in August and September. Summer precipitation is negligible, except for occasional thunderstorms.

Light summer upslope winds are common in the plan area during mid-day to afternoon. Mild down canyon winds occur in the plan area in late evenings and at night as cooler, heavier air flows towards Trinity Lake from the Trinity Alps Wilderness. During thunderstorms, strong, erratic winds occur in conjunction with intense rain downpours, especially in the Long Canyon community.

Transportation System:

State Highway 3 crosses the East Fork of Stuart Fork drainage about one mile above Trinity Lake. Lower Covington Mill is accessed from Highway 3 by Guy Covington Drive (County Road 160), which is a paved, two-lane road as far as Alpine View campground, after which it becomes dirt until it dead ends about four miles further south. Three internal roads access the properties in lower Covington Mill. Greenhorn Dr. and Scenic Dr. are paved, two-lane roads with turnarounds at the ends and are well maintained. Millview Drive is paved for 100 yards on the west end and gravel and dirt for the rest of the loop road. It is mostly two-lane, except for about 300 yards in the upper portion, which is 1½ lanes. All roads are maintained and plowed of snow by the County Road Department, which has a 50-foot easement, with an additional 15-foot easement on either side of the road for snow storage. A private, gated, one-lane road with turnouts accesses upper Covington Mill.

Road 35N24 is a 1½-lane road with turnouts, which connects Road 160 with the Bowerman Ridge Road (36N35) through Section 15 (SPI). This road is in fair condition and is gravel for the first 1.4 miles and dirt for the next 1.5 miles. It is gated on the lower end from September 15 until May 15.

Road 36N35, the Bowerman Ridge Road, is a 1½ to 2-lane dirt road for the first 3.8 miles from its junction with Road 35N24 and gravel for the next 2.6 miles to its junction with Highway 3. This road is in good to fair condition.

Lake Forest Estates is accessed from Highway 3 by a county road, Lake Forest Drive, a paved, double lane road. This road becomes dirt surfaced and crosses 400 feet of SPI property to the west of the subdivision before entering USFS lands, where it is designated 35N24YB. A spur off of this road into an SPI plantation is gated and a spur further up is gated where it enters private property. From the private road on west, 35N24YB is a single-lane dirt road impassable to passenger cars due to rutting, rocks, and a berm ("tank trap") at the Taylor Gulch crossing. One-half mile past Taylor Gulch, 35N24YB connects with 35N24Y, the Taylor Gulch loop road, which eventually connects with 35N23Y, where it is gated from September 15 through May 15.

Five internal roads, Trinity Lake Dr., Pine Cone Ct., Sugar Pine Dr., Lower Lake Dr., and Fir Tree Ct. access the properties in Lake Forest Estates. All roads are paved, two-lane (with turnarounds where dead ended) and in good shape except for Pine Cone Ct., which is unpaved, and Trinity Lake Dr., which has some pavement failure and vegetation encroachment. Lower Lake Dr. is gated at both ends where it enters the 100-acre parcel to the south of the main development. All roads in the subdivision are maintained and plowed of snow by the County Road Department, which has a 50-foot easement, with an additional 15-foot easement on either side of the road for snow storage.

The Long Canyon community is accessed from Highway 3 by County Road 115, which is a paved, 1½ to 2-lane road with turnouts as far as 35N10, the spur road to the Long Canyon trailhead. This section of road is maintained and plowed of snow by the County Road Department, which has a 50-foot easement, with an additional 15-foot easement on either side of the road for snow storage. Mountain Aire Lane, which accesses the upper subdivision, is a gated (at two places), chip sealed, one-lane road with turnouts maintained by the residents. Other internal roads are mostly dirt, one-lane roads with turnouts maintained by the landowners. Most of the internal roads are gated.

County Road 115 becomes USFS 35N23Y from the western boundary of the Long Canyon residential area west. This section of road is maintained by the USFS. For a mile, to the Taylor Gulch loop road (35N24Y), the road is gravel and chip sealed, 1½-lanes with turnouts, and in fair condition. For the next 4.7 miles, until it connects with Rainer Road, it is a 1½-lane gravel road with turnouts, in good condition. The final 1.8 miles of Rainer Road, to its junction with Highway 3 at the Mule Creek Guard Station, is a paved two-lane road in good condition. Except when snowed in during the winter, the portion of the road past the County maintained section provides an alternate escape route from the Long Canyon subdivision.

All Forest Service roads have rocks and logs removed in the spring and are bladed with a grader about every four years. If a timber sale is active in the area, roads are maintained more often.

Present Fire Threats

Large, fast moving fires can, and do, occur in the general area of this plan. Two large human-caused fires were started in 1959, the Pole Gulch Fire north of Alpine Campground (203 acres) and the Freethy Fire south of Trinity Center (2850 acres). Further south, the Barker Fire, an arson fire, burned approximately 5600 acres between Hayfork and Douglas City in a matter of two days. The suppression costs for this fire were approximately $1,479,000. The Browns Fire, visible from

Weaverville, started on July 15th, 1994 and burned almost 1600 acres in a matter of hours, threatening dozens of homes in its first day. The Lowden Fire, started on July 2, 1999 from a controlled burn near Lewiston, burned about 2000 acres in 3 days and destroyed 23 homes, an estimated loss of $2,790,000 ($3-5.4 million by some estimates). The suppression costs for this fire were approximately $3,500,000.

Four immediate concerns face fire fighters if a rapidly moving fire started in, or around, the East Fork area. First, fire fighters would need to concentrate on accessing the fire scene while allowing residents to evacuate. Second, protection of homes and evacuation of residents would be a priority over containing a rapidly building fire. Third, the relatively dense home site development would limit the fire fighters' ability to burn out, or 'back fire', the area between the on-coming fire and natural fuel breaks without risking homes and other property. Fourth, the limited safety zones and escape routes could put residents and fire fighters at risk, if they are over run by fire. In the worst case scenario, fire fighters would concentrate on evacuation and not try to protect structures, and thus be unable to take effective action on the fire.

A fire that moves northwest (up canyon) out of the Covington Mill or Lake Forest Estates settlement area could carry into nearby SPI plantations and eventually into the residential area of Long Canyon. The Long Canyon residential area is a remote area with scattered houses and limited water and access routes. A fire burning west or south from the Covington Mill area could spread to Forest Service and private lands containing homes, resorts, and campgrounds. A fire burning to the north or east could carry into nearby SPI plantations and Forest Service timberlands. In addition, a rapidly moving upslope fire could burn through industrial and National Forest timberlands and enter the Trinity Alps Wilderness, where limitations on equipment could greatly slow fire-fighting efforts. The same is true for fires starting in any of these other areas and burning into the East Fork area.

Wildfire Hazard, Risk and Values at Risk

Wildfire threat is the combination of three inter-related factors: hazard, risk, and values.

Fire hazard is the interaction of fuels (vegetation, buildings, and other flammables), topography (fires burn more intensely on south and west slopes, up slopes, in narrow draws, and on upper slopes), and weather (temperature, wind speed and direction, and humidity). The interaction of these factors affects the rate of spread and intensity of a fire.

Fire risk is the chance that a fire will start in a particular area. Although lightning is an important cause of forest fires, human starts are the most common source of ignition. The greatest number of human activities with fire starting potential is found close to home. Common causes of fire include children experimenting with fire, chain saws, grass mowers, yard debris burning, improperly disposed of barbecue coals and wood stove ashes, and smoking. House fires also sometimes spread to the forest. Power lines, roads, hiking trails, campgrounds and picnic areas are other areas of high fire risk.

Value is the life, property and natural resources that either cannot be replaced or require substantial costs to replace. The highest value threatened by wildfire in the planning area is human life. Approximately 100 people live permanently in the East Fork communities (31 in Covington Mill, 50 in Lake Forest Estates, and 17 in Long Canyon) and another 271 people are absentee landowners, some of whom live there on a seasonal basis.

Review of Trinity County Assessor's Office records indicates that the total value of the land and improvements in the East Fork communities are approximately $10.6 million (Covington Mill land $1.4 million, improvements $2.3 million; Lake Forest Estates land $1.8 million, improvements $2.1 million; Long Canyon land $1.4 million, improvements $1.6 million). This is probably a conservative estimate. Adding the value of home contents, vehicles, boats, and other valuables, the overall monetary value within the communities is probably closer to $14 million.

East Fork Fire Risk Potential

Wildfire hazard is rated moderate to high because:

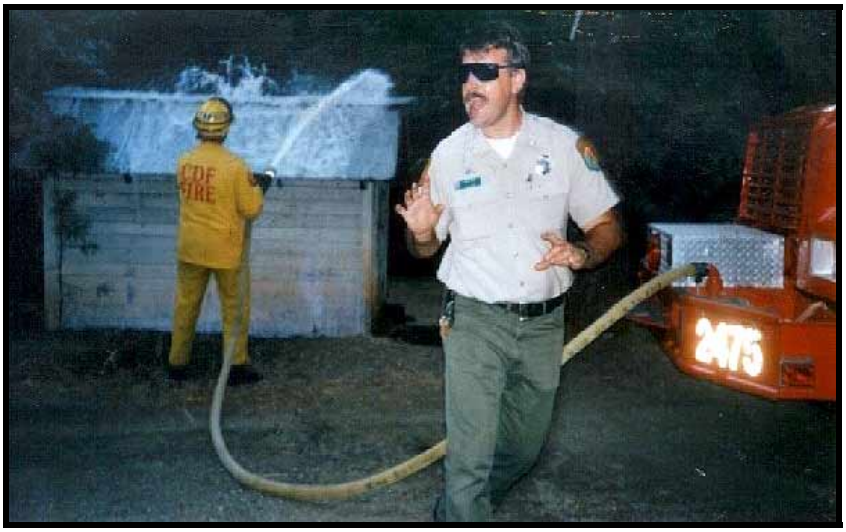
- Flammable structures are interspersed throughout the forest
- Roads into some homes are not adequate to accommodate 2-way traffic
- Highway 3, Long Canyon Road, and Guy Covington Drive (the access road to Alpine Campground) are heavily used during the summer months.
- Summer conditions include hot, dry and sometimes windy weather
- Some of the residential areas are on, or bordered by, steep, flammable slopes
- Wildland vegetation is often dense, with areas of continuous fuels, including dead fuel on the ground
- Fire ladders exist in many areas

The combination of fire risk and hazard provide the fire planner with the ability to predict fire starts, rates of spread, intensity, and other fire behavior. However, it is values at risk that are of primary concern.

Management of Hazard and Risk

Hazard management involves changing the amount, kind, and arrangement of both natural vegetation and human constructed fuels, altering topography where possible, and influencing microclimates to affect fire behavior in desirable ways.

Human behavior, including behavior that creates a high fire risk, is the result of motivation, knowledge, situation, and opportunity. Managing behavior, which leads to a high fire risk, involves education, communication, and enforcement of regulations and laws. It also involves the identification and removal of barriers to appropriate action and provision of incentives. All of these are part of an effective wildfire risk management program.



CDF Fire Captain Mark Mack and Crew Demonstrate the Use of Foam

Fire Fighting Resources

The East Fork of Stuart Fork area is served by a variety of fire control resources. The Forest Service lookout on Bonanza King provides early fire detection and is generally staffed from the first week in June (depending upon snow conditions) to late October or mid November (depending on budget constraints). Bonanza King lookout is located about 14 miles to the northeast of the plan area and looks directly into the East Fork area. On a clear day the lookout can spot a fire in the area while it is still relatively small. Bully Choop, a State lookout located 25 miles south of the plan area, looks directly into the Covington Mill and Lake Forest Estates area. On a clear day the lookout can spot a fire in the area while it is still relatively small. It is generally staffed from the first week in June (depending upon fire weather conditions) to late September or mid October (depending on budget constraints and fire weather).

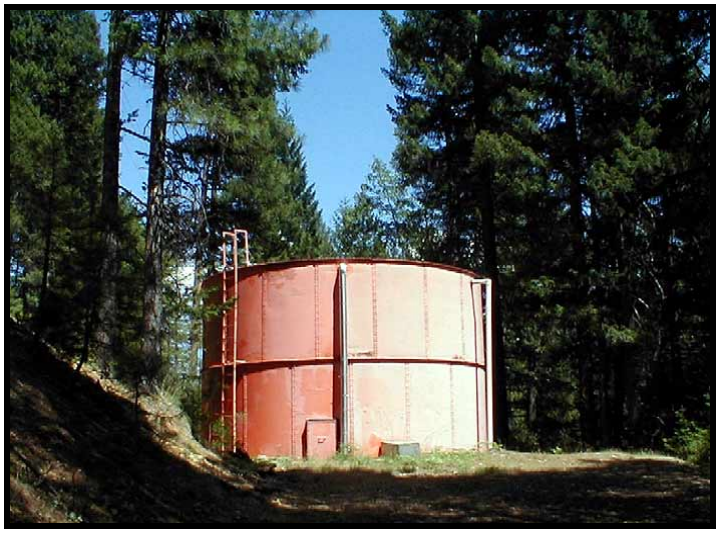
Initial responders to a fire in the East Fork area are the Trinity Center Volunteer Fire Department (TCVFD), the USFS, and CDF. The TCVFD, located 7 miles northeast in Trinity Center, has a structural fire engine. Although none of the subdivisions are within the Trinity Center Community Services District, nor contribute to this district, the TCVFD has historically responded to structural fires in these subdivisions.

The USFS has a division chief, battalion chief, and chief fire prevention technician stationed 25 miles southwest in Weaverville, a Model 62 engine with a 500 gallon tank stationed 7 miles south at Mule Creek Guard Station and a Model 61 engine with a 500 gallon tank stationed 14 miles north at Coffee Creek Work Station. Both stations with engines have a 7-person crew on duty 7 days a week from June 1st to mid October, with a minimum of 5 people required for each engine. A Model 42 engine with a 500-gallon tank is stationed at Junction City and has a 5-person crew on duty 7 days a week, with a minimum of 3 people required for the engine. There is also a USFS water tender at Big Bar that can respond if needed. The USFS has an agreement with CDF to respond only to wildland fires on private lands north of Slate Creek divide, but they have historically responded to structural fires, if needed to protect wildlands.

CDF maintains a battalion chief, fire prevention officer, and two foresters at their Weaverville Station on Washington Street. During fire season a 500-gallon engine with a 3-4-person crew is stationed there, with 2 engines 34 miles south at Fawn Lodge and one in Hayfork. The CDF Trinity River Conservation Camp at Trinity Mountain, has five 15-17 person crews that can cut fire line and mop-up fire. They are also available year round to do project work. If needed, CDF will respond to structural fires north of Slate Divide to assist the USFS in protecting wildlands. Technically CDF engines are only for use on wildland fires on private lands, but they have historically responded to structural fires if needed to protect wildlands.

Hugh Tucker, a resident of the Long Canyon community, owns a surplus USFS diesel, 4x4 fire engine with a 400-gallon tank and pump, which could respond to a small fire in the area. Four 2500-gallon tanks provide water for the subdivision. A 10,000-gallon redwood tank will supplement these during the year 2000. Fire hydrants continue to be added to the water system in the subdivision.

Lake Forest Estates has a 17,000-gallon steel water storage tank, which is fed by four wells, located at the highest elevation in the community. This tank supplies the water system for the residents, including fire hydrants, throughout the community. There is also a generator and water pump, mounted on a trailer, which can be used to pump water for fire fighting. There are also many swimming pools, another source of emergency water.



Lake Forest Estates Water Supply Tank

The lower Covington Mill residents have a community water system, with a system of fire hydrants along the roads. Water from two infiltration wells along the East Fork of Stuart Fork is pumped to a 54,000-gallon steel tank located to the northeast of Lake Forest Drive. Water is then distributed by gravity flow. The two electrical pumps are supplied through an underground cable. The residents living in upper Covington Mill have individual water systems supplied by tanks of varying capacities fed by either springs or wells.

Aerial resources include the Forest Service' 'Helitack 506', Forest Service and CDF retardant bombers, USFS lead plane and CDF air attack, CDF helicopters based in Tehama and Humboldt Counties, and the Forest Service's elite smoke jumper corps. The Forest Service helicopter, located at Pettijohn Mountain, can be on a fire in the East Fork area within 5-10 minutes of detection. This helicopter can deploy 2-5 fire fighters on scene and begin water bucket drops almost immediately. The retardant bombers, lead plane, air attack and smoke jumper planes are all stationed at Redding Airport and can be on scene within 20-25 minutes of dispatch. Additional retardant planes are located at Rohnerville Airport, in Humboldt County, and Chico Airport. Planes from both of these airfields can respond within 35-45 minutes to this area.

Automatic Dispatch – Fire Season

During high fire danger dispatch periods (i.e. average summer days), any fire report in the East Fork (or any other USFS responsibility area) triggers the following series of automatic fire equipment dispatches:

- TCVFD and WVFD
- USFS engine 41 (Mule Creek)
- USFS engine 42 (Coffee Creek)
- USFS engine 32 (Junction City)
- CDF engine 2475 (Weaverville)
- CDF engine 2466 & 2481 (Fawn Lodge)
- CDF engine 2468 (Hayfork)
- CDF engine 2478 or 2464 (Shasta)
- CDF bulldozers 2441 & 2440 (Redding)
- Helitack 506 or CDF helicopter
- 1 air attack and 2 retardant bombers
- 1 water tender (Big Bar)
- 2- CDF Trinity River Fire Crews

If the fire cannot be contained with these resources additional resources are sent, if available. If a fire can be contained with fewer resources, resources are to return to their stations.

The smoke jumpers would not normally be used in a fire where road access is readily available, such as the settlement area of East Fork, but they will jump into fires in the upper, less accessible portions of the East Fork of Stuart Fork drainage. The Forest Service reconnaissance flights occur during periods of critical fire potential, such as after a lightning storm has passed through the area or active fires are burning.

Aerial Retardant Drop to Slow the Spread of a Wildfire

CHAPTER 2. LANDOWNERS' VALUES AND GOALS

Landowners and residents in the area are a diverse group with unique values and goals regarding land management. In order to assure a comprehensive plan, a general set of concerns was identified that were used to develop community goals and guide project implementation.

Community Issues, Concerns and Guidelines

Resource management issues, concerns and guidelines were identified by conducting community meetings, individual discussions between area residents and resource professionals, and as a result of community work projects. Community issues, concerns and guidelines are general in nature and are not intended to reflect any specific landowner's values. Landowners will apply their own values and goals to the management activities on their properties.

Landowner and Resource Professionals Discuss Fuels Project

Voluntary Participation and Independence

Many residents value freedom from government regulations regarding the use of their lands. The greatest concern expressed about fire safe projects has been that they will require people to cut trees or clear vegetation beyond what they desire for aesthetics, visual screening, or other objectives. Nevertheless, residents value neighborhood voluntary action. Fire education and community meetings were well attended. The willingness to cooperate is demonstrated by the high degree of participation in the neighborhood fire hazard reduction projects.

> ***Implication:*** *Community forest management, particularly wildfire defense programs, should be built around education, information, and recommendations rather than inspection and enforcement. Residents are willing to contribute to fire hazard reduction, but prefer to do so directly rather than through regulation. Programs should be designed to include a large component of direct involvement by residents in the decision-making and actual work, rather than to provide the service through public means. This does not mean that public support is not useful as a supplement to the community effort.*

Road Improvements

The main access road to the Long Canyon Subdivision is Long Canyon Road (County Road 115), which is maintained by the Trinity County Road Department. Access during the winter is occasionally restricted due to accumulations of snow, although the road crew plows snow up to 35N10, the turnoff to Long Canyon trailhead. A road association that operates by cooperation and with limited funds maintains mountain Aire Lane, in the subdivision. The association concentrates

its efforts on maintenance and snow removal. Other internal roads are plowed and maintained by individual landowners.

Lake Forest Drive, the only access road to Lake Forest Estates, and the roads internal to the subdivision are maintained by the Trinity County Road Department. It plows snow up to the SPI property line and on all internal roads, except for Upper Lake Drive. Portions of the road include a 50-foot wide easement, while other portions appear to be prescriptive easements limited to the existing road width. Residents prefer to limit access to the area and to discourage traffic that has no good reason to be in the area.

Guy Covington Drive (County 160), the main access road to lower Covington Mill, and all internal roads, are maintained and snow plowed by the County Road Department. Access during the winter is occasionally restricted due to accumulations of snow. These roads have a 50-foot wide easement with an additional 15-foot easement for snow storage. Residents prefer to limit access to the area and to discourage traffic that has no good reason to be in the area. The gated access road to upper Covington Mill is maintained by the residents in that area.

> ***Implication:*** *Road improvements should be limited only to those necessary to provide safe travel and fire access. Some improvements to facilitate snow removal are desirable in some areas.*

Scenic Views

Retaining the forest view from homes is identified as an important value. Throughout the area, retaining forest views from homes and access roads is desired for aesthetics and as a visual screen to provide privacy from neighbors and tourists.

Some owners are concerned that removal of trees to construct the fuelbreak along Long Canyon Road on SPI lands may be excessive. They are concerned about the visual effect on this scenic road. Other owners are concerned that not enough trees will be removed along the same road on private lands, and an opportunity to take out trees to develop fuel breaks will be hampered.

Fuel Management

Residents are aware of the potential for a large, high intensity fire and the impacts to the environment that would result. They also understand that fuel modification (thinning dense trees, pruning tree limbs, and cutting dense brush) can help to create fuelbreaks, provide safer evacuation corridors, prevent rapid crown-to-crown fire spread, improve wildlife habitat for many species, and improve forest health.

However, some residents are concerned that wildfire defense projects, such as tree removal along Long Canyon Road, will substantially affect views, remove excessive numbers of trees, or disrupt wildlife habitat. Several landowners protect deer and hunting is generally discouraged in the residential area. Protection of important wildlife habitat and travel corridors is desired in any forest management on private or National Forest lands.

Implication: *All timber and forest management projects on private land should consider both the desires of the landowner and the positive and negative effects to the community.*

Implication: *Most residents will support some timber harvesting and fuel modification projects on National Forest or SPI lands when these activities will:*

- *improve forest health, reduce the potential for stand replacing wildfires, and provide safe travel for residents and fire fighters*
- *maintain and/or enhance critical or limited wildlife habitat.*
- *maintain and/or enhance water quality.*
- *protect forest views through design of fuelbreaks, hazard reduction projects, and other fire defense preparations to high aesthetic standards.*

Goals

Based on the guidelines and values above, the following community-wide goals were developed:

***Fuel Management*:** Encourage management activities for forest stands and protective measures for homes and other structures to reduce the potential for intense, fast moving, and destructive wildfires and provide for the safe evacuation of residents. Elements of the plan should identify locations for shaded fuel breaks and other fuel treatments and prescribe actions to increase the fire safety of identified areas. The long-term result would be a forest that is less susceptible to catastrophic fire while providing wildlife habitat, scenic variety and protection of water quality.

***Fire Management*:** Fire management practices should minimize losses as well as keep the costs of fire prevention and suppression as low as possible. Prescribed fire should be used on the National Forest lands and in designated fuel breaks as a management tool to economically create and maintain desirable forest conditions. Attainment of fire management goals requires the management of hazard and risk prior to a fire, as well as fire management, which would include suppression, once a fire has started.

***Ecosystem Maintenance and Enhancement*:** In general, landowners want to develop their own fire/fuel reduction projects, but the following objectives should be designed into all projects:

- Maintain aesthetics
- Maintain and/or enhance the plant and animal diversity of the area
- Maintain and/or enhance wildlife habitat
- Maintain and/or enhance forest health
- Maintain and/or enhance water quality
- Maintain soil stability, fertility, and productivity

CHAPTER 3. EAST FORK NATURAL RESOURCES

Foresters have begun incorporating both ecological and economic principles when developing management practices for integrated fire protection strategies. Probably the greatest single advancement in ecosystem management is the recognition of the need to plan projects on a landscape, or ecosystem level. Managing forests over a landscape that includes residential areas, industrial timberlands, and National Forest can help maintain long-term soil productivity, provide for wildlife and plant diversity, maintain aesthetics, and reduce fire, disease and insect risks while providing greater fire safety.

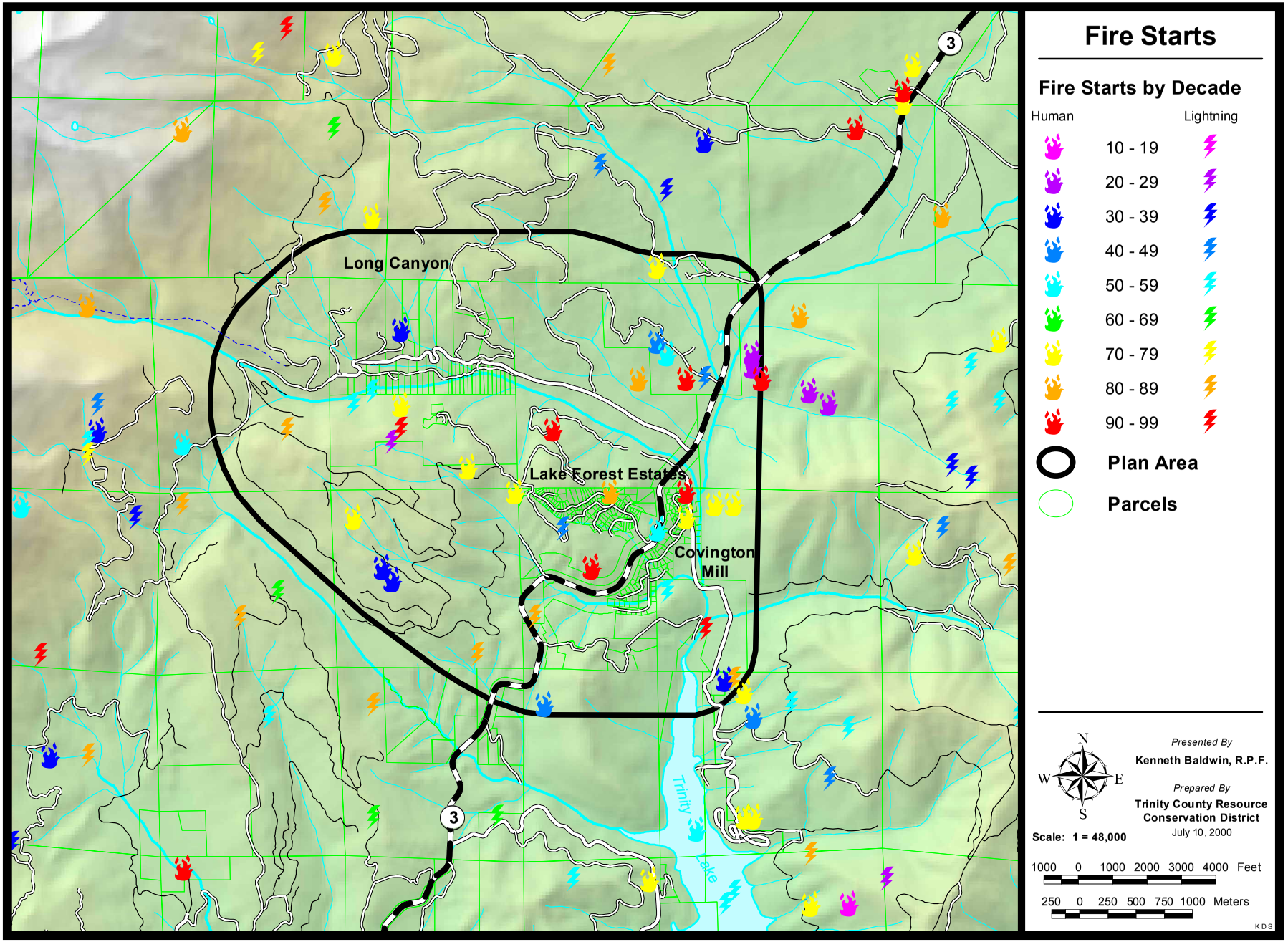
Fire Ecology and History

Native Americans have probably been the most important influence on the timing and location of fires for the past several thousand years. Evidence suggests that the Wintu people used fire in the Trinity Lake area to maintain open, park-like forests, allowing easy and safe travel. In addition, regular burning provided browse for game, controlled oak acorn insect pests, and supplied materials for basket making, arrows, medicine, and food. The park-like forests encountered by the early explorers and miners are generally accepted as resulting from this human use of fire.

The forests began to change shortly after the arrival of the first Euro-American miners in Trinity County. Evidence of placer mining along Strope Creek dating from the 1860-1880's indicates that the East Fork area was developed by mining during the early settlement of the County. Large Douglas-fir, sugar pine and ponderosa pine trees were felled by these early settlers to be used for firewood, lumber, shingles, ditch flumes, and mine support timbers. This timber harvesting, and the resulting slash fires, probably resulted in the establishment of some of the stands that occur in the area today. Fire scars on scattered old growth trees bear testament to fire in these early days.

Fire suppression was officially initiated in the area in the 1910's by the USFS. Fire start records, which are incomplete, date back to this time and indicate a total of 63 fires started within one mile of the residential areas (see Fire Starts map, pg 17). Twenty-nine fires started in the past three decades, as follow: 7 fires between '90-'99, 5 human and 2 lightning caused; 10 fires between '80-'89, 2 human and 8 lightning caused; 12 fires between '70-'79, all human caused. This is an average of almost one fire per year, with two-thirds of the fires caused by humans. Twenty-one percent of these fires were caused by smoking, 16% by debris burning, 16% by campfires, 10% by equipment, 5% by arson, and 32% by other causes. In general, human caused fires were associated with roads and residential developments.

The suppression of all wildland fires and the elimination of regular low intensity fires over the past 75-80 years have generally resulted in denser forests, with greater amounts of dead and dry fuels then previously existed. These heavier fuel conditions have been reduced in some of the plan area through logging, slash disposal, and clearing around home sites.



Fire Starts

Fire Starts by Decade

Human		Lightning
	10 - 19	
	20 - 29	
	30 - 39	
	40 - 49	
	50 - 59	
	60 - 69	
	70 - 79	
	80 - 89	
	90 - 99	

Plan Area

Parcels

N
W E
S

Scale: 1 = 48,000

Presented By
Kenneth Baldwin, R.P.F.

Prepared By
Trinity County Resource Conservation District
July 10, 2000

1000 0 1000 2000 3000 4000 Feet

250 0 250 500 750 1000 Meters

KDS

Geology, Soils and Slope Stability

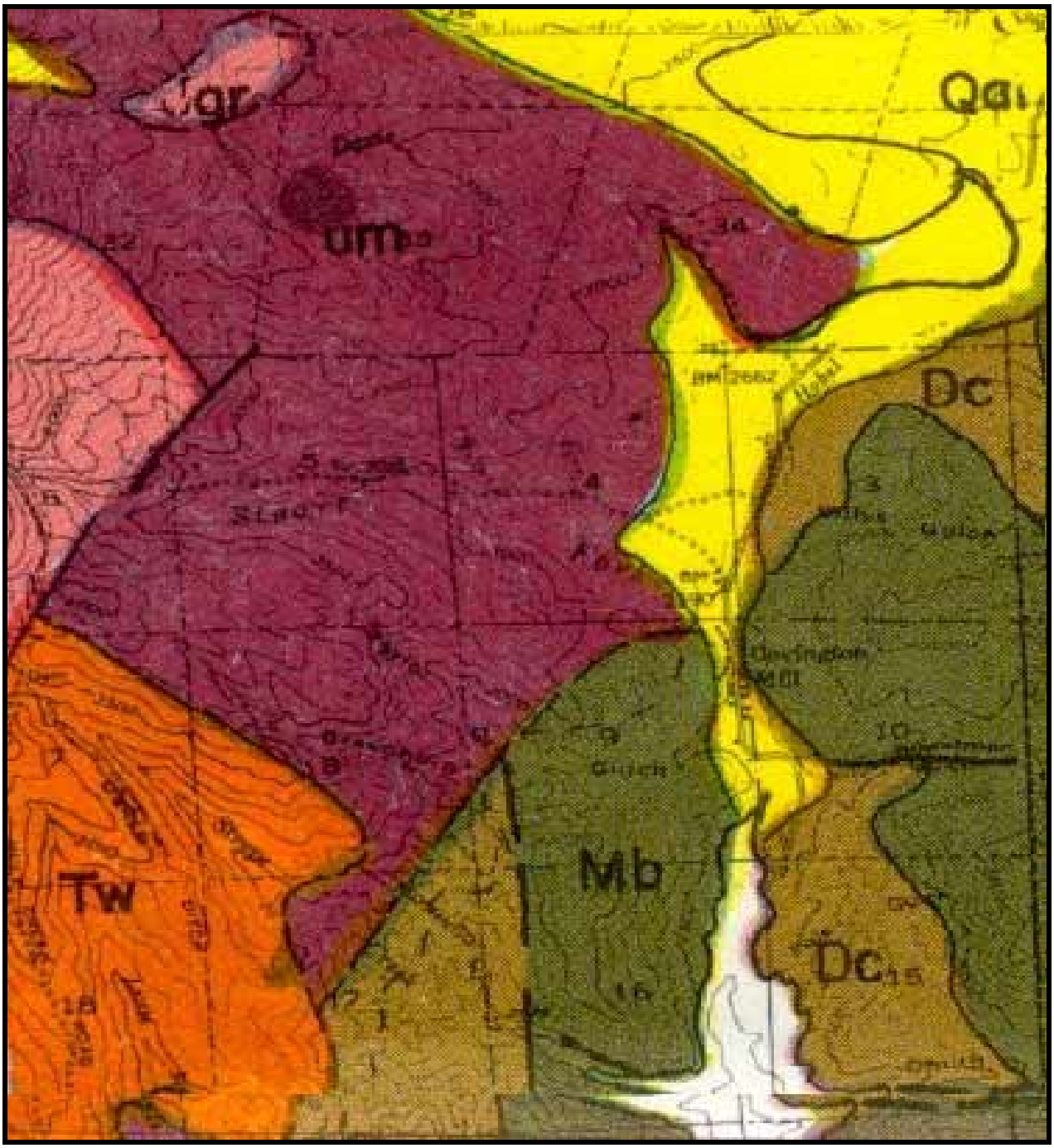
The majority of the planning area is underlain by plutonic ultramafic rocks, mostly serpentine, which date from the Cretaceous and earlier ages (see Geology Map, pg. 19)(Trinity River Basin, Main Stem Watershed Study, Department of Water Resources, 1979). The area along Guy Covington Drive is primarily underlain by sedimentary and metamorphic alluvium from the Quaternary age. Most of the remaining area in Covington Mill is underlain by rocks of the Eastern Klamath Subprovince, which are sedimentary and metamorphic rocks of the Bragdon formation. There are also small areas underlain by sedimentary and metamorphic rocks of Copley greenstone, Tertiary sedimentary and metamorphic rocks of the Weaverville formation, and plutonic undivided granitic rocks that date from the Cretaceous and earlier ages.

Geologic contact zones found within the planning area are expected to have extensive shearing, folding, and weathering. These features in turn increase the risk of slope instability, however there are few obvious indications of active landslides in the planning area.

The main soil types found in the residential areas within the planning area are the Dunsmuir family, the Forbes family, and the Xerofluvents-Riverwash association (see Soils Map, pg. 20). The Long Canyon subdivision is primarily underlain by the Dunsmuir family (map symbols 50 and 51) soils derived from ultramafic rock (refer to soils map and soil description in Appendix C), with smaller areas in Dunsmuir-Ishi Pishi, deep families complex (53), and Chawanakee-Chaix families complex (24) soils. About twenty acres are in either Chaix family (18), Forbes family (67), or Holland family (116) soils. The Dunsmuir family soils are moderately erodible, deep to very deep reddish brown, light sandy clay loam to gravelly clay loam soils that are moderately acidic. They are well suited to growing mixed-conifer forests and have high soil available water holding capacity, but the tree species and growth may be limited due to a Ca/Mg imbalance. Tree seedling plantability and survival potential is high on these soils (USFS, 3rd Order Soil Survey).

Lake Forest Estates is primarily underlain by the Forbes family (67) soils, with less than twenty acres in the northeast and southwest corners in Dunsmuir family (51), Holland family (117), or Marpa-Neuns families (187) soils. The Forbes family soils are moderately erodible, deep to very deep, reddish brown to yellowish red loam, clay, and gravelly sandy clay loam soils that are slightly to strongly acidic. They are well suited to growing mixed-conifer forests and have high soil available water holding capacity. Tree seedling plantability and survival potential is high on these soils.

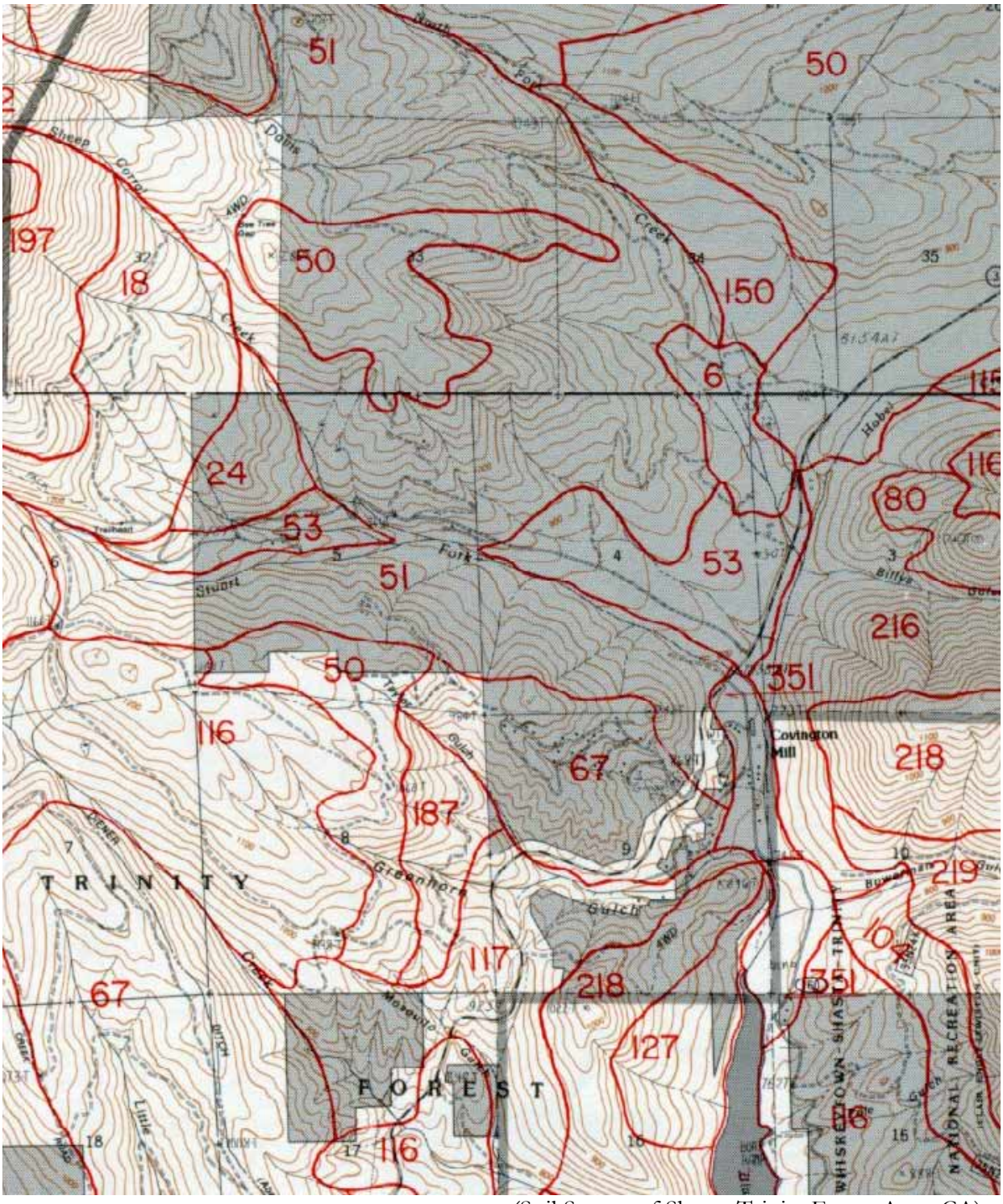
In the area along Guy Covington Drive, Covington Mill Estates is primarily underlain by the Xerofluvents-Riverwash association (351) of soils and near Highway 3 it is within the Dunsmuir family (51) and Forbes family (67) of soils. The southern half is in Holland family (117), Holland-deep-Neuns families complex (127), and Neuns-Marpa families complex (218) soils. The Xerofluvents-Riverwash association soils are slightly to very erodible, deep, pale brown to brown to yellowish brown gravelly to very gravelly sandy loams that are slightly acidic. They are poorly to well suited for growing mixed-conifer and riparian forests and have variable soil available water holding capacity. Tree seedling plantability potential is very low to high on these soils and survival potential is very low.



(CA Dept of Water Resources, 1979)

East Fork Fire Management Plan Geology Map

um – plutonic ultramafic rocks, mostly serpentine
Mb – sedimentary and metamorphic rocks of the Bragdon formation
Qal – sedimentary and metamorphic alluvium
Dc – sedimentary and metamorphic rocks of Copley greenstone
Tw – sedimentary and metamorphic rocks of the Weaverville formation
gr – plutonic undivided granitic rocks



(Soil Survey of Shasta-Trinity Forest Area, CA)

East Fork Fire Management Plan Soils Map

(Refer to Appendix D for soils descriptions)

Vegetation/Habitat Types

Vegetation in the plan area is influenced by aspect, slope, soil depth, harvesting, and wildfire (refer to the WHR Vegetation Map, pg 25). Stand typing was done using USFS vegetation type maps, aerial photographs, and field reconnaissance to verify the mapping. Wildlife-Habitat Relationships (WHR) types were mapped by Kelly Sheen at the Trinity County Resource Conservation District, Weaverville, CA, using a geographic information system (GIS). The GIS was also used to determine past fire activity, areas of high fire hazard, and other information.

Acres By WHR Vegetation Type

Habitat Type	Acres
Klamath Mixed Conifer	3797
Riparian	51
Plantations & Misc.	328
Grass	81
Non-forested	3
Water Body	16
	4276

South and west facing slopes/soils tend to be hotter and drier than on north facing slopes. On these aspects, species that can tolerate less soil moisture and hotter summer temperatures, such as ponderosa and sugar pine and California black oak tend to form a larger component of the stands. In stream canyon bottoms and north and east facing slopes, soils are deeper and have greater soil moisture holding capacity, supporting dense Klamath mixed-conifer stands dominated by Douglas-fir, ponderosa pine, and sugar pine. Riparian vegetation occurs as narrow bands at the stream edges along the East Fork of Stuart Fork and tributary streams. Each habitat type in the planning area is briefly described below, with more detailed descriptions in Appendix E.

Klamath Mixed-Conifer (KMC) Forest - This forest type occupies most of the planning area, except for the SPI plantations, which are primarily ponderosa pine. Nearly all of the homes are located in this vegetation type. Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) are the most abundant overstory species. Incidental overstory species include sugar pine (*Pinus lambertiana*), incense cedar (*Calocedrus decurrens*) and white fir *(Abies concolor)*. California black oak (*Quercus kelloggii*) and Pacific madrone *(Arbutus menziesii)* are common hardwoods found in this forest, with a minor component of Oregon white oak (*Quercus garryana*), canyon live oak (*Quercus chrysolepsis*), and Pacific dogwood (*Cornus nuttallii*). The Klamath mixed-conifer type exhibits stability in spite of frequent natural fires and is a fire-adapted vegetation complex in a dry summer climate.

Historic logging practices and fire exclusion have resulted in a diversity of stands. The forests on the residential lands were logged in the 1950's by clearcutting or selective harvesting. This has left stands that vary from even-aged to multi-aged. The stands in Covington Mill Estates and the Long Canyon community characteristically have a dense to moderately open overstory of pole to small sawtimber-size trees with a variable density understory of seedlings and saplings. The stands in the Lake Forest Estates tend to be composed of densely stocked, pole-size trees, except on the 100-acre parcel that was logged recently. On that parcel stands tend to consist of clumps of sapling, pole, and small sawtimber-size trees with openings between the clumps.

Fire and other disturbances continually act on the forest environment of the East Fork area to perpetuate a diverse ecosystem.

The forest type on SPI lands varies depending upon the type and year of harvest. Most of the stands within the plan area have been harvested at least once. There is a large clearcut just north of

Lake Forest Estates that has a stand of primarily sapling-size ponderosa pine, with areas of a mix of ponderosa pine, Douglas-fir, sugar pine, and white fir. Between Long Canyon Road and the East Fork of Stuart Fork, and north of the road, the forest has been selectively logged and has a scattered overstory of small to medium-size sawtimber with scattered seedlings, saplings, and poles. Further to the north, in sections 33 through 36 and the sections north and south of Swift Creek, there are a number of clearcuts that were made in the past decade, and extensive clearcuts that will be harvested in the next decade. These will likely be planted primarily with ponderosa pine. Within one-half mile of the north and east boundary of the Long Canyon residential area, about 70% of the forest on SPI will have been clearcut and planted, primarily to ponderosa pine, by the mid 2000's.

On National Forest lands, the forest tends to be moderately dense to dense, with large old-growth trees and smaller understory trees scattered throughout the forest. Southwest of the planning area, in the Taylor Gulch and Strope Creek drainages, are a number of clearcuts that were made in the '80's and planted primarily to ponderosa pine.

The Klamath mixed-conifer type is generally classified as Dunning Site Class II-III (productive timberlands), moderately to well-stocked, with a 40-100 percent crown closure. Refer to the discussion under **Forestry** for specific stand information.

Old Growth Klamath Mixed-Conifer Forest on National Forest North of Covington Mill

Ponderosa Pine (PP) Plantations – As noted above, there are extensive existing and/or planned clearcuts on USFS and SPI lands in, and around, the planning area. These clearcuts have been planted primarily with ponderosa pine, with some planted with a mix of ponderosa pine and Douglas-fir. The USFS plantations date from the '80's and the SPI plantations date mostly from the '90's.

SPI Ponderosa Pine Plantation North of Lake Forest Estates. View to East Down Long Canyon.

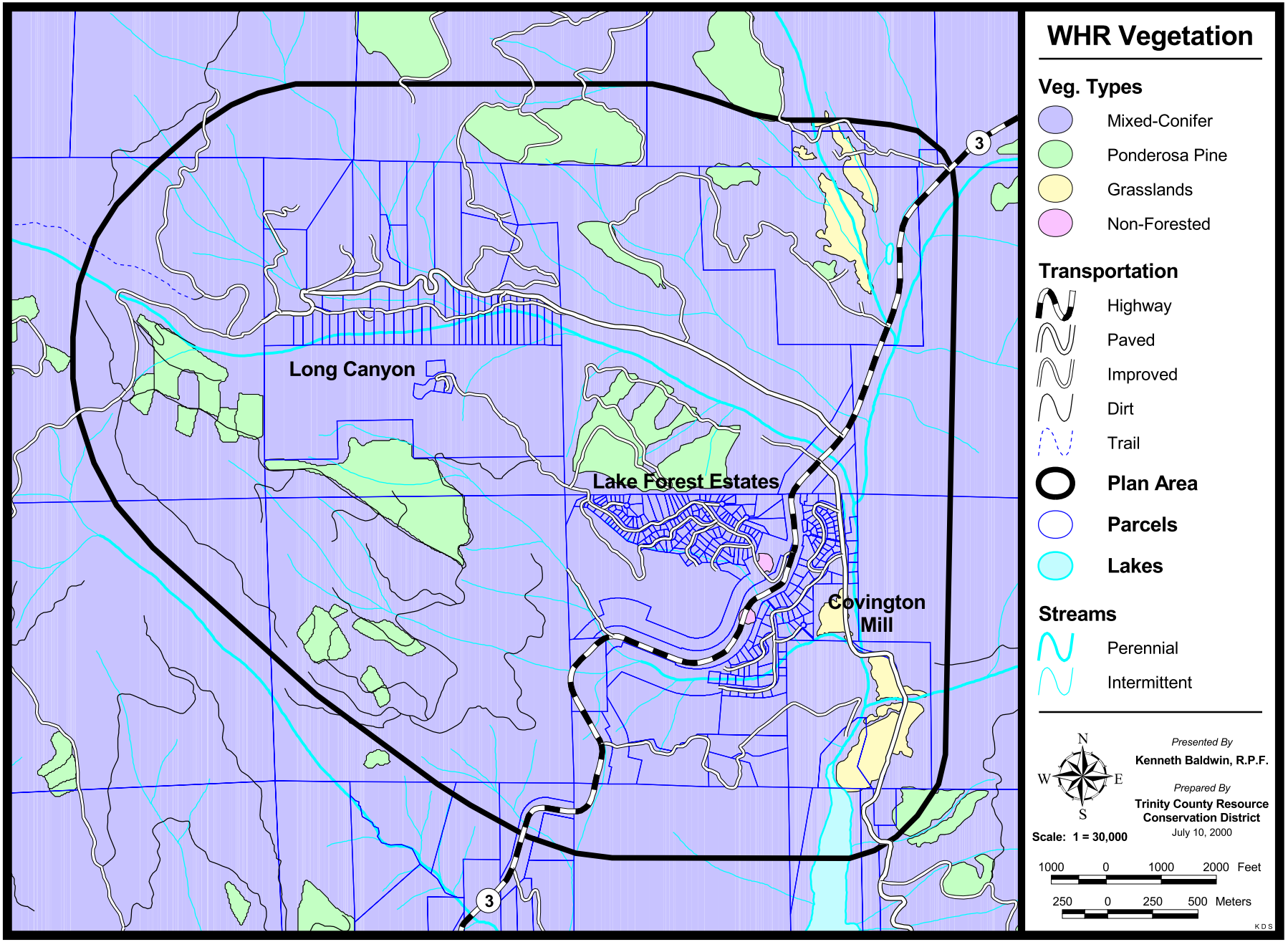
Montane Riparian Forest **-** Montane riparian habitat is the narrow band of riparian trees, and other species, growing along the East Fork of Stuart Fork and other perennial and seasonal streams. These stands have a structure similar to the mixed-conifer stands, but include

Montane Riparian Forest on the East Fork of Stuart Fork West of Long Canyon Residential Area

Pacific yew (*Taxus brevifolia*), white alder (*Alnus rhombifolia*), Oregon bigleaf maple (*Acer macrophyllum*), Pacific dogwood (*Cornus nuttallii*), creek dogwood (*Cornus californica*), willow (*Salix spp.*), California hazel (*Corylus cornuta californica)* and in some places, Oregon ash (*Fraxinus latifolia*), black cottonwood (*Populus tricocarpa*), and poison oak (*Toxicodendron diversilobum*).

Tree Species	**WHR Habitat Type (% by species)**					
	KMC		**PP**		**R**	
	U	**O**	**U**	**O**	**U**	**O**
Douglas-fir	57%	49%		~10%		~5%
ponderosa pine	21%	14%		~80%		~5%
sugar pine	3%	14%		~5%		~5%
incense cedar	13%	10%				~5%
white fir	3%	9%		~5%		
CA black oak	3%	4%				
OR white oak						
canyon live oak						
Pacific madrone					~5%	~5%
OR bigleaf maple					~20%	~20%
Pacific dogwood					~10%	
creek dogwood					~5%	
black cottonwood					~10%	~10%
willow					~30%	
Pacific yew					~5%	
white alder					~10%	~40%
Oregon ash					~5%	~5%

KMC - Klamath Mixed-Conifer **PP** – Ponderosa Pine Plantations **R –** Riparian **U –** understory tree **O** – overstory trees



WHR Vegetation

Veg. Types

- Mixed-Conifer
- Ponderosa Pine
- Grasslands
- Non-Forested

Transportation

- Highway
- Paved
- Improved
- Dirt
- Trail
- **Plan Area**
- **Parcels**
- **Lakes**

Streams

- Perennial
- Intermittent

N
W E
S

Presented By
Kenneth Baldwin, R.P.F.

Prepared By
Trinity County Resource Conservation District
July 10, 2000

Scale: 1 = 30,000

1000 0 1000 2000 Feet

250 0 250 500 Meters

KDS

Fish and Wildlife

Wildlife

With its variety of habitats, there are numerous wildlife species known or suspected to occur in the area, including elk, blacktail deer, black bear, coyote, grey fox, weasel, bobcat, mountain lion, Pacific fisher, pine marten, skunks, raccoon, gray squirrel, ground squirrel, northern flying squirrel, yellow-pine chipmunk, dusky footed wood rat, gophers, shrews, moles, voles, mice, and bats. The USFS has designated a black bear management area to the southwest of the residential areas in the upper drainage of Stoney, Mule, and Little Mule Creeks. In 1997, twenty-five elk were released northeast of the planning area at Norwegian Meadows.

Some birds known or suspected to occur in the area include bald and golden eagle, osprey, red-tailed hawk, Cooper's hawk, northern goshawk, northern spotted owl, great horned owl, pygmy owl, hairy woodpecker, pileated woodpecker, raven, stellars jay, California and mountain quail, blue grouse, great blue heron, belted kingfisher, merganser, hummingbirds, flycatchers, swallows, chickadees, nuthatches, warblers, towhees, sparrows, finches, blackbirds and numerous other species.

Amphibians include the western toad, bullfrog, Pacific tree frog, tailed frog, southern seep salamander, and Olympic salamander. Among the reptiles are the western pond turtle, racer snake, gopher snake, garter snake, common and mountain king snake, and the western rattlesnake.

Fish and Water Quality

Class I, fish bearing streams in the area are the East Fork of Stuart Fork, Hobel Creek, Davis Creek, and Strope Creek. These streams support resident trout (CDF&G, 2000). The East Fork was planted with trout as early as the '40's, the oldest recorded planting of fish in the area. The lower one to one and a half miles is suitable for fish and may support a kokanee run. In general, these streams have good water quality, with cool temperatures (49-54^{0}F in late May 2000 at the lower

ends), and a moderate to dense overstory canopy, except for portions of the East Fork where the shade canopy was removed in the floods of '97. Numerous invertebrate aquatic species, such as May fly and catahis fly larvae, were observed when rocks in the stream channel were examined. These insects provide important food for fish.

Greenhorn Gulch, Taylor Gulch, Billy's Gulch, Sheep Corral Creek and various unnamed streams are Class II streams, which do not support fish but do support aquatic life. In general these streams have good water quality, with cool temperatures (52-55^{0}F in late May 2000 at the lower end), and a moderate to dense overstory canopy, except for portions of Sheep Corral Creek where the shade canopy was removed in the floods of '97. Numerous invertebrate aquatic species, such as May fly and catahis fly larvae, were observed when rocks in the stream channel were examined.

Threatened and Endangered Species

The northern spotted owl is a federally listed endangered species. Review of the California Department of Fish and Game's Natural Diversity Database shows that two northern spotted owl activity centers (TR156 & TR244) were located in the areas of Little Mule and Strope Creeks in 1990. Another nest was found at the same time by SPI in the Preacher Meadows area, but it has since been abandoned. The USFS has designated a spotted owl management area in sections 9, 10, 11, 12, 16, 17, 18, 20, and 21 to the south and west of the East Fork communities. The planning area is within the USFS Clear Creek Late Successional Reserve (LSR, RC-334).

Bald eagles, a Federal and State listed endangered species, probably use the area near the lake incidentally. Suitable habitat for wolverine, a Federally listed endangered species, exits in the planning area. Habitat suitable for the Pacific fisher and northern goshawk, USFS sensitive species and California species of special concern, and for the Olympic and southern seep salamanders and the tailed frog, California species of special concern, exist in the planning area. Tailed frogs and a northern goshawk nest have been reported on USFS lands in the East Fork watershed. Great blue herons, golden eagles, and ospreys, species of concern, probably use the planning area as well.

Cultural Resources

The planning area has probably been occupied, or used by humans, for a thousand years or more. Evidence of placer mining from the 1860-1880's is apparent in the Strope Creek drainage. Confidential archaeological reports have been prepared for timber harvest plans (THP's) in the planning area during preparation of THP's 90-473, 98-280, 98-295, and 99-020.

It is possible that other historic and pre-historic resources occur in the area. Prior to any project work using state or federal funds, a field reconnaissance must be made to determine if important cultural resources exist.

Forestry

In recent years, foresters and ecologists have recognized that forest conditions are the result of complex interactions between social, biotic, and abiotic factors. Altering these factors may directly affect forest health, vegetation diversity, and fire danger. The main task of foresters is to control the composition, stocking levels, and vigor of trees and other forest vegetation.

The East Fork area can be divided into three forest management categories: rural residential forests, industrial forest, and National Forest.

Rural Residential Forests

Residential development occurs mainly in the Klamath mixed-conifer habitat type. Parcel sizes in this type range from about 0.25 to 213 acres. Residential timberlands have, for the most part, been managed for personal, aesthetic and wildlife values, which has generally resulted in forest stand conditions similar to those that were present at the time of development. Many landowners have begun fuel treatment projects, and thinning of stands has been done on some ownerships in Covington Mill and along Long Canyon Road. Others are waiting to see how their neighbors' fuel reduction operations look before deciding how to proceed on their own land.

Klamath Mixed-Conifer Forest in Lake Forest Estates

Limited forest inventory information was collected within the rural residential areas to assess general forest conditions (refer to the Stand Characteristics table, pg. 29). This information is useful in identifying stand conditions and recommended treatments. In general, mixed conifer stands are multi-storied, with an average of 771 trees and 178 ft^2 basal area per acre. The understory varies from moderately dense to dense, with 679 trees per acre (tpa), of which 2% are hardwoods (mostly California black oak). Douglas-fir and ponderosa pine saplings and poles are the predominant conifers in the understory. Trees in the understory range from 1-9 inches in diameter at breast height (dbh). Under these conditions, competition for sunlight, soil nutrients and water between the individual trees is significant and weaker trees are experiencing decreasing sunlight, reduced growth

and higher mortality. Over the next 10-30 years many of these trees will die and contribute to the accumulation of forest floor litter.

The overstory and understory composition in the residential areas is substantially different. The overstory is generally moderately dense, mostly Douglas-fir and sugar pine, with fewer (92 tpa) but larger diameter trees (10-32 inches dbh). Black oak represents about 9% of the stand and ponderosa pine, white fir, and incense cedar represent 28% of the stand.

Industrial Forest

The remaining private land is owned by Sierra Pacific Industries. The primary goals of SPI foresters and land managers is intensive timber management using primarily even-aged silviculture, with limited uneven-aged silviculture, while maintaining forest and watershed resources and a limited harvest buffer along Highway 3. An additional goal is to create a fire-safe forest. On-going timber management and harvesting, control of spacing and density of conifers, and planting under-stocked timberlands are meeting these goals.

Klamath Mixed-Conifer Stand Characteristics

Rural Residential Stands

Characteristic	Understory	Overstory
Trees/Ac	679	92
Avg. DBH	6.1 in	18 in
Basal Area	62 ft^2	116 ft^2

National Forest Stands

Characteristic	Understory	Overstory
Trees/Ac	236	73
Avg. DBH	8.7 in	29.6 in
Basal Area	60 ft^2	196 ft^2

Sierra Pacific Stands

Characteristic	Understory	Overstory
Trees/Ac	154	60
Avg. DBH	10.4 in	23.7 in
Basal Area	63 ft^2	140 ft^2

Ponderosa Pine Plantation on Sierra Pacific Industries Land North of Lake Forest Estates.

Timber harvest plans have been approved by CDF for SPI lands in the Billy's Gulch area (THP 2-98-295-TRI(4) in Secs. 3 & 4, T35N, R8W, MDB&M) and in the Davis and Swift Creek watersheds (THP 2-98-280-TRI(4) in Sec. 4, T35N, R8W and in Secs. 33, 34, 35, 13, 21-23, 26-28, T36N, R8W, MDB&M). These plans will result in a substantial area in primarily ponderosa pine plantations (with some Douglas-fir), with some area in uneven-aged stands. The residual stands should have an open overstory canopy, and coupled with plantations, should slow fire spread and crowning. In some areas this will provide a degree of fire protection to residential areas.

After the Triple Play THP (2-98-280-TRI(4) is harvested, for one mile to the north and northeast of the Long Canyon community the mixed-conifer forest in SPI Sections 33 and 34 will consist of about 70% pine plantations under 15 years old. It is likely that eventually all of the mixed-conifer forest, except for stream corridors, will be converted to pine plantations. To the east of the community, Section 4 is currently about 30% occupied by pine plantations under 15 years old, but again the forest is likely to eventually be converted to mostly pine plantations.

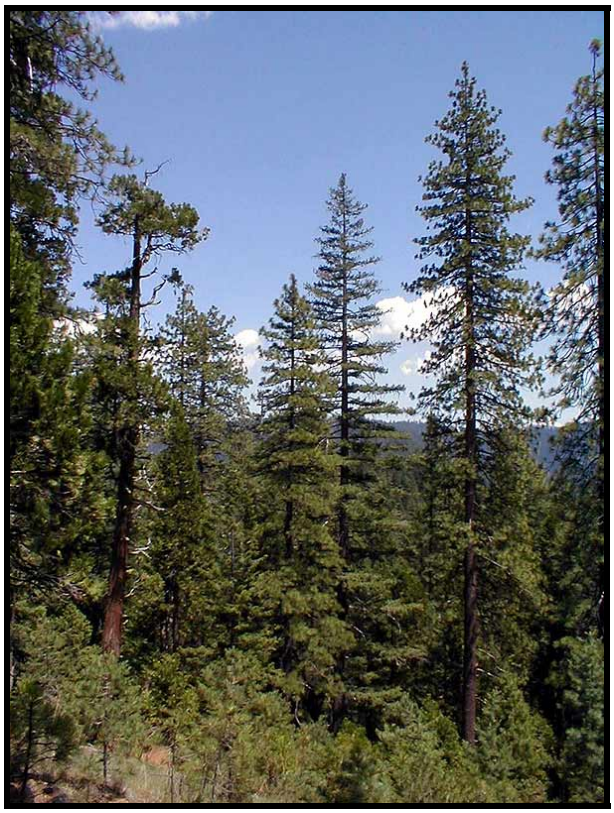
Klamath Mixed-Conifer Forest on Sierra Pacific Industries Land

Presently, based on limited forest inventory information (refer to the Stand Characteristics table on pg 29), on average, stands on similar sites on SPI lands tend to have fewer trees and more basal area per acre (214 trees and 203 ft^2) than on residential lands (771 trees and 178ft^2). The average overstory trees on the SPI plots were larger (23.7" dbh) than on private plots (18" dbh) as well. The difference in the stands is attributable to the lightness of harvests on SPI lands where plots were taken, as contrasted with the greater amount of past harvesting on private lands.

National Forest

The National Forest lands in the planning area are in Management Units 7 and 8 (NRA) (S-T National Forest Land and Resource Management Plan). The majority of the area is in the Clear Creek Late Successional Reserve (LSR), with areas near or adjacent t, both perennial and ephemeral streams designated as Riparian Reserve. A portion of the area near Trinity Lake is within the Whiskeytown-Shasta-Trinity National Recreation Area (NRA).

As with the other ownerships, limited forest inventory information was collected to assess general forest conditions (refer to the Stand Characteristics table, pg. 29). Stands on similar sites on National Forest lands, on average, tend to have fewer trees and more basal area per acre (309 trees and 256 ft^2) than on residential lands (771 trees and 178ft^2). The average overstory trees on the National Forest plots were larger (29.6" dbh) than on private plots (18" dbh) as well. The difference in the stands is attributable to the lack, or lightness, of harvests on National Forest lands where plots were taken (all in LSR) as contrasted with the greater amount of past harvesting on private lands (i.e. homes, roads, other openings, and extensive logging removed larger trees, opened the stands, and encouraged establishment of denser, second-growth stands).



Klamath Mixed-Conifer Forest on National Forest West of Lake Forest Estates

The LSR is managed to enhance late successional forests for the benefit of old-growth dependent species. Management recommendations in the 1997 Management Assessment include thinning from below, plantation thinning, release from grass, forb, and shrub competition, fire suppression, and prescribed fire to maintain stand health and diversity. Fuelbreaks were not recommended due

to the long-term loss of vertical structure and closed canopy conditions and because there were doubts as to the long term funding for fuelbreak maintenance. The visual quality objective (VQO) for the portion of the LSR in the lower Greenhorn Gulch area is retention, where the existing visual landscape will remain unchanged to the eye.

Within the Riparian Reserves, permitted uses are only those that maintain, or improve, the riparian ecosystem and protect stream courses and water quality. Riparian Reserves in general are removed from scheduled timber harvesting and other stand disturbance activities within 300 feet of the high water mark on fish bearing streams, such as East Fork of Stuart Fork, Hobel Creek, Davis Creek, and Strope Creek, 150 feet on streams with no fish, such as Sheep Corral Creek, Greenhorn Gulch, Taylor Gulch, Bowerman Gulch, and Mosquito Gulch, and 100 feet on seasonal or intermittent streams. The only timber harvesting in Riparian Reserves will be salvage and fuelwood cutting, when that will meet aquatic conservation objectives of the Northwest Forest Plan.

As the NRA is also in the LSR, timber harvesting must meet the requirements for harvesting in the LSR, as well as meet stricter visual quality standards. The (VQO) for the NRA is retention, where the existing visual landscape will remain unchanged to the eye, although minor salvage and sanitation cutting can occur.

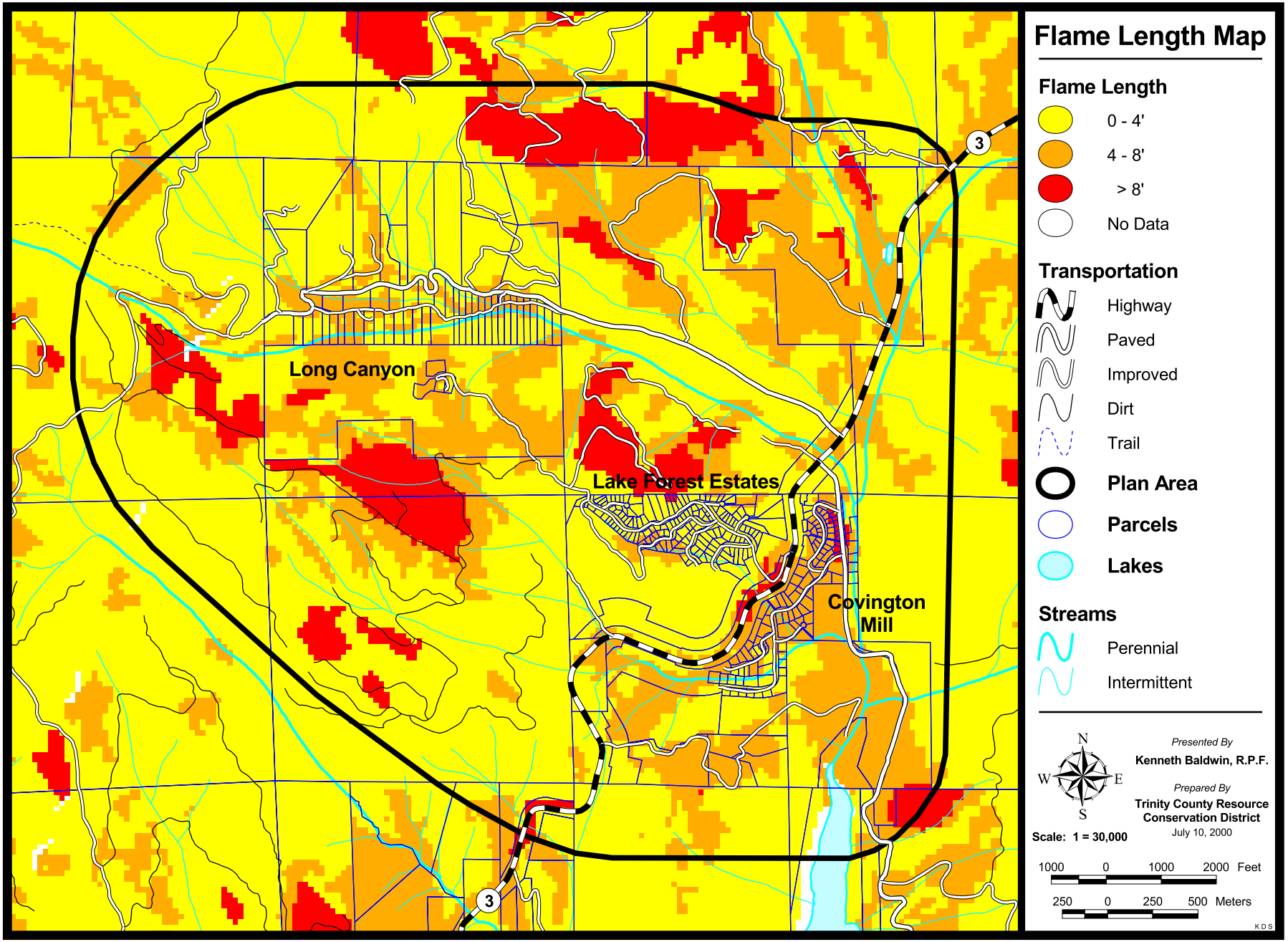
The USFS has retained a scenic corridor with a VQO of retention along both sides of Highway 3, within which harvesting is limited to sanitation and salvage of dead and hazardous trees. The VQO for most of the rest of the planning area is partial retention, where landscape modifications are visible, but are in harmony with the natural setting.

Fuel and Fire Hazard Severity

Fuel loading in the area ranges from low to high, with much of the residential areas having moderate (8-13 tons per acre) to high (20 tons per acre) fuel loads. A measure of fuel loading and vegetation type is indicated by the Flame Length map (see pg. 33). Higher flame lengths generally indicate denser, taller and/or more flammable fuels.

The Fire Starts map (pg. 17), which does not include all fires, shows that 7 fires have started within a one-mile radius of the communities in the past decade, 2 of these caused by lightning and 5 by humans. In the '80's, 10 fires were started, 8 by lightning and 2 by humans, and in the '70's, 12 fires were started, all by humans. So in the past 30 years, there have been at least 29 fire starts, two-thirds of them by people. Within a two-mile radius of the communities, there have been at least 45 fire starts during this same time period.

The combination of moderate to high fuel hazard and high risk, and the physical and aesthetic values of the residents, gives the area a high fire hazard severity rating overall (refer to Chapter 1 for a discussion of risk, hazard and value). The USFS map for fire risk potential in the Clear Creek LSR shows a moderate risk for most USFS lands in the planning area, except for areas of high risk along Highway 3 and in selected areas near the lake, and high risk for all private lands.



Flame Length Map

Flame Length

- 0 - 4'
- 4 - 8'
- > 8'
- No Data

Transportation

- Highway
- Paved
- Improved
- Dirt
- Trail
- **Plan Area**
- **Parcels**
- **Lakes**

Streams

- Perennial
- Intermittent

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Presented By
Kenneth Baldwin, R.P.F.

Prepared By
Trinity County Resource Conservation District
July 10, 2000

Scale: 1 = 30,000

1000 0 1000 2000 Feet

250 0 250 500 Meters

KDS

Recommended Rural Residential Forest Treatments

This plan is a product of the goals and objectives of the community in general. No site-specific projects will occur that do not meet the individual landowner's personal goals.

The potential for fuel/fire hazard reduction, sanitation-salvage harvesting, and/or commercial thinning treatments are high throughout the residential areas. Some of these treatments may produce commercial quality logs, while others may produce no marketable products. Timber harvesting, even for safety reasons, will be constrained on some parcels because of visual, soil, wildlife, tree-felling hazard, and/or philosophical concerns of the owners. Objectives for, and definitions of, a healthy forest, value, and fire risk will invariably differ between owners.

A heel boom loader is used to load logs on a narrow road, similar to roads found on the plan area. Specialized equipment such as this can be used to eliminate landings and reduce other impacts of logging.

In general, landowners wanting to modify their stands (refer to Chapter 4 for additional discussion) should consider thinning from below. Thinning from below is intended to remove suppressed and intermediate trees that are likely to die in the near future, thereby adding fuel to the forest floor and attracting insects. These are also the trees that act as fire ladders, carrying fire from the fuels on the ground to the crowns of the overstory trees. Suppressed trees are those that are growing under the overstory canopy, are receiving no direct light, generally have sparse crowns, and are growing quite slowly. Intermediate trees are those that are growing mid-level in the canopy, are receiving direct light only from above, have relatively poorly developed crowns, and are growing slowly. Patches of younger conifer trees exhibiting good growth characteristics (i.e. 6 inches or more of leader growth per year, full crowns on at least 40% of the trunks of the trees, and needles with vibrant green color) may be retained. Larger hardwood trees provide important wildlife habitat and are more fire resistant than conifers, and should be evenly distributed in the stand. Co-dominant and dominant trees should be thinned where the crown canopy is dense and closing. Co-dominant trees are those that comprise the bulk of the upper canopy, generally have adequate crowns that receive light from above and from at least one side, and are growing adequately. Dominant trees are those which stand above the general level of the upper canopy, generally have well-developed crowns that receive light from all sides, and are growing well. Favor retaining larger conifer trees with 40% or more live crown, which lack defect or disease. Removing trees from around homes must be done carefully to avoid increasing the potential for wind throw or snow breakage of the residual trees, a common occurrence in heavily thinned stands.

CHAPTER 4. RECOMMENDED COMMUNITY DEFENSE PROJECTS

This chapter recommends specific treatments, with project descriptions and maps, which are consistent with community goals.

Community-Wide Projects

Community wide projects are those that benefit not only individual landowners, but also area residents, and even people living well away from the project area. Community wide projects are an opportunity to bring together resource agencies, industrial land managers, and area residents for a common purpose. Benefits include reduced fire danger, leading to potentially lower suppression costs with less resource loss, improved wildlife habitat, improved community coordination, and public education on the benefits of fire planning. For example, construction of fuelbreaks can result in substantial savings in the event of a fire. The homes that survived the Lowden Fire, which cost $3,500,000 to suppress, generally had some form of fuelbreak around them. Non-monetary losses in wildland fires include temporary and permanent changes in wildlife habitat, water quality, growing site productivity, view, and recreational opportunities.

Project 1 – Provide Emergency Access, Lake Forest Estates - Lake Forest Drive is currently the only access road into Lake Forest Estates. Should a fire enter the estates along the lower portion of this road, the fire could block access by fire engines, as well as egress from the area by residents. There are currently two possible options for developing alternate access routes into the community. One of these is over existing USFS roads to the west and one is over existing SPI roads to the west and north (see Project #2 below). In some cases these roads lack adequate width and sight visibility to safely accommodate vehicles traveling opposite directions, especially wider vehicle like fire engines. In an emergency, rapid response and evacuation will be delayed without road grading and/or widening, construction or reconstruction of turnouts, pruning, and/or brush and tree removal. The following projects are intended to improve access and safety for vehicles.

1.1 Obtain emergency access through USFS - Enter into an agreement with the USFS to use roads 35N24YB and 35N24Y for emergency access. The agreement should include a provision to maintain the road surfaces so that two-wheel drive and fire emergency vehicles can safely travel over them. It should also have a provision for fuel reduction along each side of the road, as specified in 1.2 and 1.3 below.

Road 35N24YB is a single-lane dirt road currently impassable to passenger cars due to rutting, rocks, and a berm ("tank trap") at the Taylor Gulch crossing. The impassable section of road

"Tank Trap" at Taylor Gulch on USFS 35N24YB

is in the first one-half mile past the private road into R and R Timber Co. land in the lower half of Section 5. The surface of this road will need to be graded and the berm removed at Taylor Gulch to provide access to the Taylor Gulch loop road (35N24Y), and eventually to USFS 35N23Y.

Rutting on Taylor Gulch Road, USFS 35N24YB

Road 35N24Y is a single lane dirt road, with turnouts, currently passable to passenger cars and two-wheel drive and low clearance trucks, although there is some rutting which slows travel. The gate at the junction of 35N24Y and 35N23Y should be left unlocked during fire season to facilitate emergency traffic. During the winter season, when the gate is locked (Sept. 15 to May 15), keys should be held by two or more responsible, full time residents of Lake Forest Estates who are generally at home. The names, locations, and phone numbers of these residents should be on file with CDF, USFS, and TCVFD fire captains.

1.2 Remove trees and brush - Trees along road edges that constrict views, prevent two vehicles from safely passing each other, or act as fire ladders should be removed. In addition to improving line of sight, fuel reduction along roads may improve the chances of evacuating the area if a fire is burning near, or across roads. Commercial tree removal may be done under a THP exemption on SPI land or a Federal timber sale on National Forest. Brush and small trees, which are dense and encroaching on the road along many sections, should be removed within 10-20 feet of roadway edges.

Fuelbreak On Private Land Along Long Canyon Road

1.3 Prune trees - Dominant and co-dominant trees should be pruned up to 16 feet above the ground, but always leaving at least 40% of the bole in live crown. Provide at least 200 feet of sight distance along roads. In places with limited turnouts, longer sight distances are necessary to assure safety of fire vehicle traffic and to minimize delays.

1.4 Sign roads with 'emergency access' signs - Signs provide residents and fire fighters unfamiliar with the area with landmarks. They should clearly designate the route at all road junctions. In addition, they allow for improved response, not only for fire fighters, but for all emergency responders. Signs should be of different types or colors for each route, should be metal, and should be painted with reflective paint.

Project 2 - Alternative Emergency Access, Lake Forest Estates – Currently, there is only one access route into, and out of, Lake Forest Estates. In the event emergency access cannot be obtained through National Forest as described in Project #1 above, it is recommended that emergency access be negotiated through Sierra Pacific Industries lands. SPI has an all weather road that accesses a landing at the bottom of the clearcut north of the community. Were this road connected to the road that accesses Highway 3 near the bus stop (across from Guy Covington Dr.), as it appears to have been at one time, it could provide a looped emergency access in the event of a fire. This access would be most valuable for the landowners in the upper portion of the settlement if Lake Forest Drive were blocked. Access to the road would have to be controlled to prevent wood theft, resource damage, and liability to SPI. If an agreement could be arranged, SPI could provide area residents with the appropriate lock to assure that the road is controlled but accessible. Signs to assist residents leaving the area and fire fighters entering it would improve access as well.

2.1 Looped Road System - Lake Forest Estates residents should work with SPI's area forester to develop an emergency access route to Highway 3.

2.2 Signs – Should an emergency access route be developed, a series of signs should be placed at Highway 3 and at any intersections on the SPI road to facilitate rapid ingress and egress to Lake Forest Estates (see 1.4 above).

2.3 Remove trees and brush and prune trees – Treatment of trees and brush should be as specified in 1.2 and 1.3 above.

Project 3 – Improve Emergency Access, Long Canyon Road and Internal Roads - County Road 115 is the only access road into the Long Canyon community and there is only one road (Mountain Aire Drive) into the subdivision south of County Road 115. A fire along these roads could potentially block access by fire engines as well as egress from the area by residents. County Road 115 is bordered by mixed-conifer stands with dense and well-developed fuel ladders, although a shaded fuelbreak was created in the spring of 2000 along much of the road through the residential area.

Fuel reduction project along Long Canyon Road, with private residential land on left, SPI industrial forest on right.

Mountain Aire Drive, and sections of the other internal roads in the subdivision, also have dense forest along their borders. Sections of Mountain Aire Drive and other internal roads are gated and lack adequate width and sight visibility to safely accommodate vehicles traveling opposite directions, especially wider fire engines. In an emergency, rapid response and evacuation will be delayed without road widening, turnouts, pruning and thinning of trees. The lack of opportunities for pullouts or turn arounds means that initial fire vehicle placement may be critical to allow additional vehicles in and out of the area. The following projects are intended to improve access and safety for vehicles.

3.1 Remove trees and brush - Trees along road edges that constrict views, prevent two vehicles from safely passing each other, or act as fire ladders should be removed. Brush and small trees should be removed within 50 feet of the edge of County Road 115 and within 10-20 feet of the edge of other roads. Minimum tree removal should include those marked by a forester or fire professional. Additional tree removal should be determined by each landowner. Commercial tree removal may be done under a THP fuel hazard exemption on SPI and private land.

3.2 Prune trees - Dominant and co-dominant trees should be pruned up to 16 feet above the ground, but always leaving at least 40% of the bole in live crown. Provide at least 200 feet of sight distance along roads. In places with limited turnouts, longer sight distances are necessary to assure fire vehicle traffic safety and to minimize delays.

Fuel Reduction Project Along Long Canyon Road

3.3 Construct turnouts - In the Long Canyon community, construct 10x30 foot turnouts approximately every 400 feet along Mountain Aire Drive and other internal roads where visibility or terrain act as bottlenecks to safe travel. Some turnouts already exist and minor tree removal and grading will allow other locations to be quickly developed into turnouts. Use existing flats and natural turnouts whenever possible rather than constructing new turnouts that require excavation into slopes. Obtain landowner permission for all turnouts.

3.4 Provide Gate Access – In the event of a fire, locked gates will hamper access. Either provide emergency response organizations with keys and combinations or have them add their own locks to the gates.

Project 4 - Develop Access to Emergency Water Sources - The ability to refill fire engine water tanks quickly and efficiently can mean the difference between losing or saving a home. The East Fork of Stuart Fork and some of its tributaries are perennial streams that can provide critical water during a fire. In addition, numerous homes have ponds, pools or water systems that can be used to quickly refill fire engine tanks. Withdrawing water in swimming pools or other stored water sources will reduce the potential for draining pools in streams, thus protecting fish and other aquatic life.

4.1 Sign the existing access points to the East Fork of Stuart Fork and tributaries There are at least five access points for engines to obtain water from the East Fork of Stuart Fork and

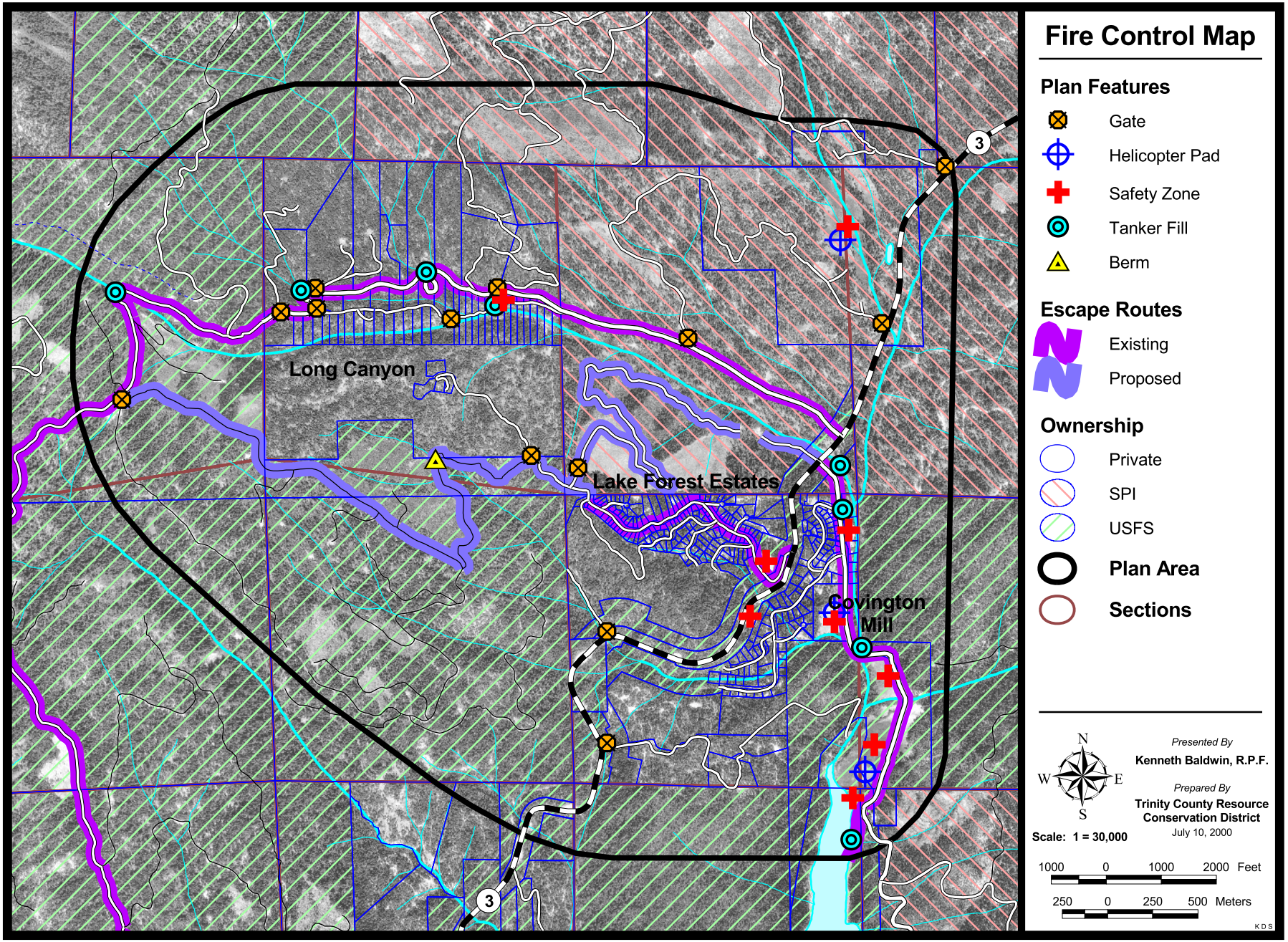
its tributaries. Signing these points will help fire fighters unfamiliar with the area to find them. Signs should be metal, painted with reflective paint, and be clearly visible from the road.

4.2 Develop water sources on the East Fork of Stuart Fork and tributaries – At all water access points identified in 4.1, improve access roads as necessary to allow emergency vehicle access to the stream. If boards, sandbags, and/or plastic sheeting will be needed to impound water to allow pumping, provide these at either the specific location or at a site known to one or more permanent residents who are actively involved in community fire protection, and to all agency and volunteer fire response captains.

4.3 Provide a map and list of water sources to fire fighting agencies - Maps and lists of the types, capacities, refill rates, and locations of community water sources, including hydrant locations, would be helpful should fire engines need to refill their tanks. A copy of these maps and lists should be provided to the TCVFD, the USFS fire stations at Mule Creek and Coffee Creek, the CDF fire station in Weaverville, and to one or more permanent residents in each community who are actively involved in community fire protection.

4.4 Sign readily accessible water sources (pools, ponds, fire hydrants, water tanks) - A simple sign can be posted on driveways indicating that a water source, including type and capacity, is available for emergency fire fighting and refilling of engines. Signs should be metal, painted with reflective paint, and be clearly visible from the road.

Mill Pond on Private Property at Covington Mill



Fire Control Map

Plan Features

- Gate
- Helicopter Pad
- Safety Zone
- Tanker Fill
- Berm

Escape Routes

- Existing
- Proposed

Ownership

- Private
- SPI
- USFS
- **Plan Area**
- **Sections**

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1000 0 1000 2000 Feet

250 0 250 500 Meters

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Project 5 – Establish Community-Wide Fuelbreaks - A series of shaded fuelbreaks are recommended to protect the residential areas from fires burning in from surrounding USFS or SPI lands, and to protect the resources on those lands from fires burning out from the residential areas. Ideally, fuelbreaks should be wide enough to stop a crown fire and allow it to drop to the ground, where control efforts would be more effective. Fuelbreak specifications will vary depending upon landowner objectives, and in the case of the USFS, management plan direction. Once community wide fuelbreaks are established, it is expected that periodic prescribed burning of the fuelbreaks would be a quick and inexpensive method to maintain them. Burning could be done using crews from the Trinity County Resource Conservation District, CDF, USFS and/or Trinity River Conservation Camp. Fuelbreaks are recommended in the following locations (refer to Shaded Fuelbreaks map, pg. 44):

A. Lake Forest Estates

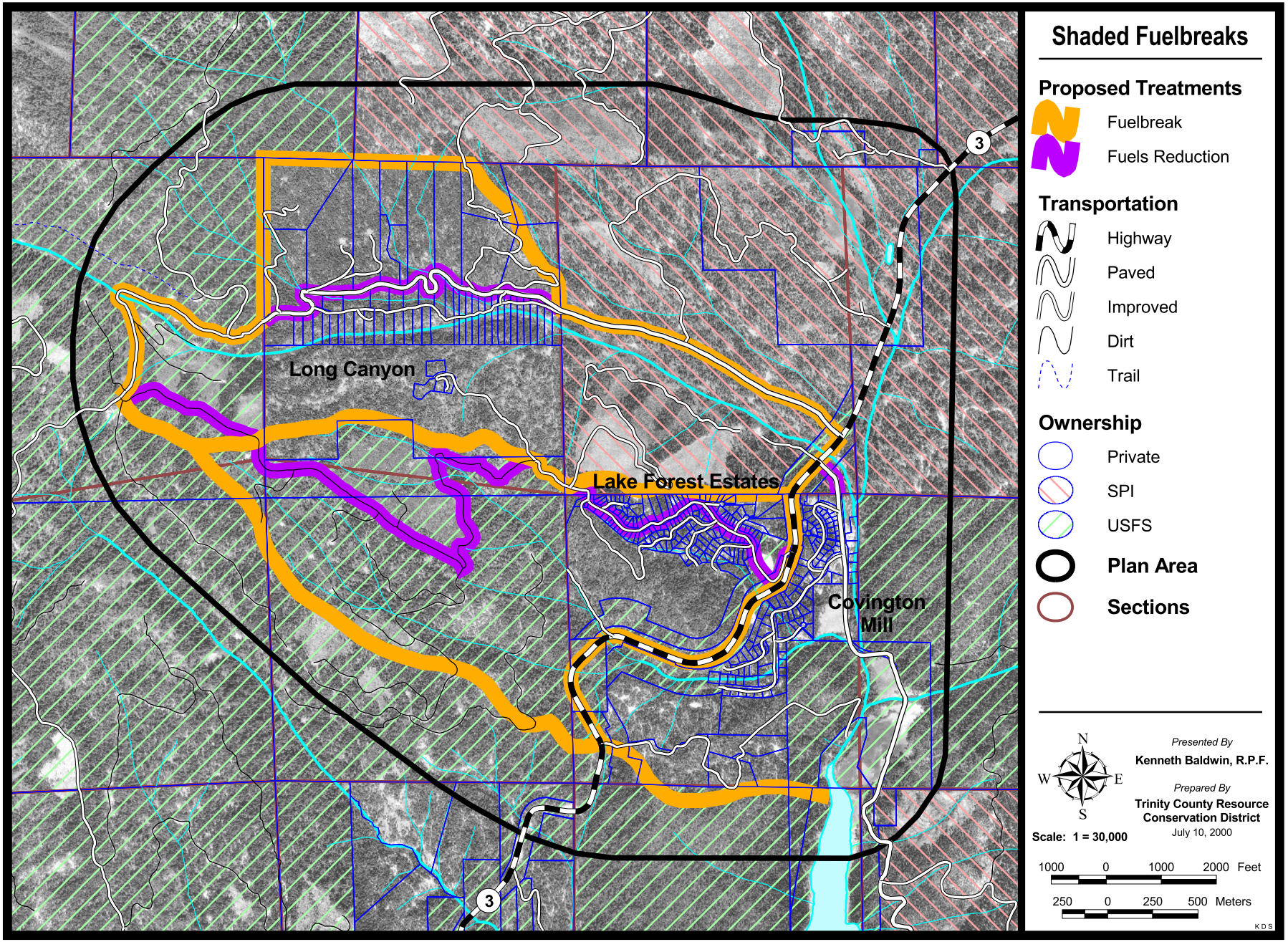
1) along Long Canyon Road through SPI land from Highway 3 to the eastern boundary of the Long Canyon Community
2) through SPI lands in Section 4 along the ridge to the north of the community from Highway 3 to the USFS boundary
3) through National Forest and private lands in Sections 5 and 6 from the southeast corner of Section 5, along road 35N24YB and the ridge north of Taylor Gulch to the knob in the southeast corner of Section 6, then southeast along the ridge between Greenhorn Gulch and Strope Creek to Highway 3
4) along Highway 3 from the southwest corner of upper Covington Mill to Long Canyon Road

B. Covington Mill

1) along Highway 3 from Long Canyon Road to the access road to upper Covington Mill
2) from the junction of Highway 3 and the access road to upper Covington Mill, southeast along the ridge through private land to the unnamed peak in Section 16 on the USFS boundary
3) from the peak, east through National Forest lands along the south boundary of upper Covington Mill to Trinity Lake

C. Long Canyon Community

1) through SPI lands in Section 4 along the ridge to the north of Lake Forest Estates from Highway 3 to the USFS boundary
2) through National Forest and private lands in Sections 5 and 6 from the southeast corner of Section 5, along road 35N24YB and the ridge north of Taylor Gulch to the junction of 35N24 and 35N23Y.
2) through National Forest in Section 6 along 35N23Y to road 35N10
3) through National Forest in Sections 6 from 35N10 east on County Road 115 to the western boundary of the Long Canyon community
4) north, east, and south in Section 5 through private properties along the border with USFS and SPI.
5) east on County Road 115 from the eastern boundary of the Long Canyon community to Highway 3



Shaded Fuelbreaks

Proposed Treatments

- Fuelbreak
- Fuels Reduction

Transportation

- Highway
- Paved
- Improved
- Dirt
- Trail

Ownership

- Private
- SPI
- USFS
- **Plan Area**
- **Sections**

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1000 0 1000 2000 Feet

250 0 250 500 Meters

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Construct Community-Wide Fuel Breaks - Objectives and guidelines for fuelbreaks are as follow:

a) Fuelbreaks should be located to take advantage of existing fire barriers, such as Long Canyon Road, Highway 3, Trinity Lake, timber harvest units, meadows and streams (refer to Shaded Fuelbreaks map, pg. 44). Where needed, timber stand improvements, timber harvests, slash disposal, and/or prescribed fire should be used to reduce the fuel hazard on lands bordering the fuelbreaks.

b) Fuelbreak corridors should be at least 200-300 feet wide. Fuelbreaks visible from the road or homes should be visibly pleasing.

c) Fuelbreaks should be easily accessible by fire crews and equipment at many points.

d) Fuelbreaks should be designed so that they incorporate and imitate the forms of natural openings in the forest.

e) Ground cover (duff, needles and low grasses) should be retained to keep soil disturbance to a minimum.

f) Low growing vegetation (shrubs and suppressed trees) should be removed, except as in g) 5) below.

g) Emphasize retention of tree species that are adapted to fire and beneficial to wildlife. Retain California black oak, Oregon white oak, Pacific madrone, Douglas-fir, ponderosa pine, sugar pine and incense cedar. Oaks and madrone are more resistant to crown fire then conifers. Although these hardwoods can be killed by relatively low intensity surface fires, they will resprout. Oaks and madrone also provide acorns or berries as well as habitat for a variety of wildlife.

   The conifer species listed in h), when mature, have thick bark and can survive low to moderate intensity fires, although white fir tends to be more susceptible to damage from fire and resultant disease infections.

h) Thin residual trees to encourage open stands. Spacing between residual trees depends on a number of factors, including the size and species of trees, the amount, size, and species of understory vegetation retained, steepness of slope, position of the fuelbreak in relation to the topography, aspect, the characteristics of the adjacent forest and landscape, and landowner objectives.

   For maximum protection from crown fires, the crowns of mature conifers (single trees or clusters of several trees) should be 20 feet apart, with an average canopy closure of from 30-50%. Where slash and low growing fuels are minimal in and adjacent to the fuelbreak, a spacing of 10-15 feet is adequate and will increase shading, thereby reducing the regrowth of low growing vegetation. In this case, an average canopy closure of from 40-60% should be adequate.

   Intermediate trees should be thinned so that crowns are about 6 feet apart. The spacing between crowns should not be uniform. Many spaces will be larger but few should be smaller than the recommended distances. Favor retaining Douglas-fir,

ponderosa pine and sugar pine over incense cedar. Always favor trees, regardless of species, with full, healthy crowns on at least 40% of the bole.

i) Retain snags. A minimum of 2 snags (>20 inches dbh and 20 feet tall) per acre should be retained if no safety or fire control conflict exists.

j) Retain large woody debris. Retain a minimum of 5-6 logs (greater than 10 inches in diameter and 10 feet long) per acre, except in fire safety areas. Logs should be scattered rather than concentrated together.

k) Provide wildlife cover. Provide islands of preferred browse species (up to 30 percent by area) within fuelbreak areas. Trees within these islands should be pruned at least three times the height of the browse species which are left.

l) Fuelbreaks should be designed to allow for the use of prescribed fire or disking, in order to provide long-term maintenance of the area. Seedlings and brush will rapidly appear in an open forest stand and must be removed periodically. Prescribed fire, and/or disking on flatter slopes, are perhaps the best ways to kill the excess reproduction, while maintaining ecosystem conditions which promote healthy, large trees and a sustainable open forest stand.

m) On Sierra Pacific Industries lands, the proposed fuelbreak treatment will vary depending upon the location of the fuelbreak, as follows:

1) When the Blackpipe THP (2-90-473) was harvested in the early '90's, a narrow buffer strip of 100 feet on each side of Long Canyon Road was harvested by sanitation-salvage, leaving a relatively dense stand of trees as a visual screen. There is now a relatively dense understory of sapling and intermediate size trees. To reduce the chance of human fire starts in the understory, it should be cut and chipped, except where the overstory is sparse or lacking, in which case it should be thinned. As overstory tree stocking, ladder fuels, and dead fuels have been much reduced to the north and south of the road buffer strip, it is highly unlikely that a crown fire could be sustained in those stands. Therefore it is unnecessary to open up the overstory stand to create a fuelbreak that would stop a crown fire. Nevertheless, in selected areas it would be desirable to thin the overstory for optimum stand health.

2) Between Lake Forest Estates and the SPI pine plantation to the north is a strip of uneven-aged mixed conifer forest, which has some well-developed fuel ladders and concentrations of dead fuels. Overstory spacing in this strip is generally wide, although there are areas of closed canopy. Fire damage studies have shown that damage to forest stands is greatest on upper, south facing, and steeper slopes. Damage in plantations is greatest where adjacent stands have concentrations of slash and/or when the plantation has a grass cover, both of which exist in this area (although the pines will eventually grow to a height where a grass fire will not adversely effect them).

For maximum protection from crown fires, the crowns of mature conifers (single trees or clusters of several trees) should be 20 feet apart. Intermediate trees should be thinned so that crowns are about 6 feet apart. Fuel ladders

should be eliminated by cutting intermediate and suppressed trees. Concentrations of dead fuels should be burned.

3) Prune post harvest conifer trees to 16-24 feet above ground (but do not in any case reduce live crown to less than 40% of the bole).

4) Remove all hardwoods under 6 inches dbh and thin larger hardwoods to 10 ft^2 basal area per acre, favoring retention of California black oak, Oregon white oak, and Oregon bigleaf maple. Prune remaining hardwoods to 16-24 feet. If there is less than 10 ft^2 basal area per acre of hardwoods, retain the largest and healthiest trees in the stand.

5) Burn all down woody material under 8 inches in diameter and 6 feet long.

6) Protect clumps of young, vigorous conifer saplings and poles by removing hardwoods, downed woody debris and other materials for a 5-10 foot radius around clumps.

7) Construct tractor or hand fire lines on the upper sides of fuelbreaks.

Project 6 – Establish Fire Safety Areas - While incident commanders will keep their engines and crews in an area as long as they safely can, their first responsibility is to the safety of their crews. The East Fork of Stuart Fork area presents several concerns to fire fighters: homes are located in areas with moderate to dense fuels, there are many dead ends, and some narrow roads, where escape routes could be cut off, and there are few safe retreat areas. Fire fighters rely on safety areas to retreat to in the event that they are overrun by fire. Safety areas typically are landings, roads, rock outcrops, meadows, marshes or wet areas. In the worst-case scenario, a fire fighter must 'deploy' a 'fire shelter', a thin aluminum fire tent and wait out the passing firestorm. In addition, engines and other equipment can be lost if the retreat area is too small. Advance planning can be used to identify and create safe retreat areas:

6.1 Construct safety areas as shown on map – Several adequate safety areas exist in the area, as shown on the Fire Control Map, pg. 42. There is a large shale pit near the base of Lake Forest Drive, and a bare area just south of the drive on Highway 3, that are quickly reached from Lake Forest Estates

Safety Area at Lake Forest Estates

Four safety areas are quickly accessible from Covington Mill; the old mill pond area along Guy Covington Drive, the large meadows just to the northwest and southeast of the Guy Covington Drive bridge across the East Fork, and the large meadow to the west of the Bowerman barn. A fifth area, which would be suitable when Trinity Lake is low and the bank is exposed, is accessed by the dirt road south of Bowerman barn.

Safety Area at Trinity Lake

Safety Area at Bowerman Barn

There are no adequate safety zones near the Long Canyon residential area. If escape routes are closed due to fire, the open areas around the confluence of Sheep Corral and East Fork of Stuart Fork Creeks (near the Drake's cabin) and at the road crossing of Sheep Corral Creek are presently the best places to congregate. There is also a large meadow on SPI on Davis Creek about one-quarter mile east of Highway 3, that can be accessed by foot (it's behind a locked gate), although it is just as close to go to the Covington Mill safety zones.

Safety areas should be improved so as to meet the following conditions:

a) Be located to take advantage of fuelbreaks and existing fire barriers, such as Guy Covington Drive, Lake Forest Drive, Highway 3, Trinity Lake, meadows, landings, and streams.
b) Be a minimum of 10,000 ft^2 (100x100 ft., 0.25 acre) in size
c) Have a way for vehicles to enter and exit the area
d) Have all understory fuels removed within the safety area
e) Within 100 feet of the safety area have all snags, dead top trees, and trees with heart rot or heavy mistletoe that can fall into the safety area removed (ex. a 40 foot snag within 40 feet of the safe area would be removed, but retained if it occurred 60 feet from the safety area perimeter.

6.2 Sign safety areas with 'Safety Area' signs - Signs provide residents and fire fighters unfamiliar with the area with landmarks. They should clearly designate the route to and the location of each safety area. Signs should be of different types or colors for each route, should be metal, and should be painted with reflective paint.

6.3 Provide maps to fire fighting agencies – Maps showing the locations, sizes, and types of route markings to safety areas should be provided to all agencies responsible for fire suppression in the plan area. These maps should also be provided to all homeowners in the residential areas.

Project 7 – Enhance Wildlife Habitat - Based on limited forest sampling, the mixed conifer stands in portions of the plan area lack snags and large woody debris. Enhancement of these features as part of fuel modification projects may be appropriate, especially if snags and woody debris are reduced in fuelbreak and safety areas.

7.1 Create/retain large woody debris - Large logs on the forest floor play an important role in re-establishing forest biota after intense fires have passed. In addition to being a reservoir for important soil fungi, large logs are often too wet to burn when a fire passes through an area. Logs provide shelter, cover and even food for numerous wildlife species, such as insects, amphibians, chipmunks, squirrels, voles, and moles. Without the cover provided by logs following an intense fire, these species would become easier prey for predators such as hawks, foxes and snakes. Opportunities may exist to import large cull logs, from USFS annual spring clearing of trees that have fallen across roads.

Logs Retained in a Fuelbreak Along Long Canyon Road

7.2 Create snags or tree platforms - Standing and fallen dead trees have different ecological roles. Snags are particularly important to birds and bats. Hawks and owls use them for perches during hunting and as plucking platforms after hunting. Many birds use them for courtship, display, nesting, feeding, roosting and cover during wet or cold storms. Cavities in the base of snags serve as dens for numerous mammals. Within residential areas there are a limited number of snags. Retention of these should be weighed against landowner concerns for safety. Where snags are removed, consider placing cavity nesting boxes and platforms in green trees.

Project 8 – Educate the Community - The East Fork Fire Management Plan is a synthesis of information from community meetings, individual landowner consultations, on-site reviews, and recommendations from fire experts from the TCVFD, CDF, USFS, and the RCD. Annual or semi-annual community fire planning meetings, with fire professionals from TCVFD, CDF, USFS, RCD, and/or SPI, may be beneficial for residents to establish and update a phone list of neighbors to warn in the event of a fire, to remind landowners of the danger of fuel build up around homes, to encourage maintenance of fuelbreaks along roads and water access points, to allow new residents to become familiar with the fire planning project, and to plan the periodic maintenance of community fuel breaks.

8.1 Develop a phone list- An 'early warning system' between neighbors can be useful to inform other residents of potential danger in the event of a fire in, or potentially affecting, the planning area. Residents at either end of the planning area may not be aware of a fire in the other area. Early warning can facilitate orderly actions by residents further back in the settlement area. This system can also be used to determine if a fire, or other event, even requires action by landowners well away from the incident.

8.2 Establish an annual fire meeting - Annually or semi-annually meet as a community with fire professionals from TCVFD, CDF, USFS, RCD, and/or SPI to update a phone list of

neighbors to warn in the event of a fire, to remind landowners of the danger of fuel build up around homes, to encourage maintenance of fuelbreaks along roads and water access points, to allow new residents to become familiar with the fire planning project, and to plan the periodic maintenance of community fuelbreaks.

8.3 Develop usable educational materials for other neighborhoods - An interpretative slide program and fuel model readily useable in other demonstrations should be completed as part of the East Fork Fire Plan.

Project 9 – Consider Establishing a Volunteer Fire Department – There is currently only a limited volunteer fire department in the communities. The nearest volunteer fire department is in Trinity Center, 7 miles to the northeast, but the communities are not in the fire district. The USFS maintains a fire station at Mule Creek, 7 miles to the south. It is generally known that if a house fire has been burning for 20 minutes, the structure will be lost. It is unlikely that fire fighters could mobilize and get to a house fire within 20 minutes.

9.1 Form a volunteer fire department – Either form a volunteer fire department or join the Trinity Center VFD. The latter option would have the advantage of joining with an established organization with updated equipment and training and equipment supply and funding sources.

Residential Projects

Project 1 – Establish Residential Fuelbreaks - Within the residential areas moderate, and in some cases heavy, overstocking of small diameter hardwood and conifer trees occurs. Overstocked stands favor shade tolerant species and reduce tree growth, often resulting in trees taking 7-15 years to gain one inch in diameter. Stress in overstocked stands increases the likelihood of disease or tree mortality, which can lead to an increase in dead fuels. In addition, fuel ladders occur that can rapidly carry a fire into tree crowns, hampering control.

1.1 Defensible Space - Defensible landscape designs should be built into areas around homes. Clear flammable vegetation and dead fuels within 30 feet of homes and other buildings. Use irrigation, fire resistant plants and other techniques shown in Appendix B.

Defensible Space Around Rural Residential Home

1.2 Fuel modification – Landowners should consider modifying fuels within 100-150 feet of homes. Treatments should be similar to those done in fuelbreak areas, except that irrigated areas and the use of fire resistant landscaping allows greater vegetative cover (refer to Appendix B). Slash created during treatments needs to be disposed of. Depending upon the size of the slash created, it could be sold as logs or fuelwood, cut for home use fuelwood, piled and burned during the winter, or chipped in place.

Reduce ladder fuels around homes, by breaking up the vertical and horizontal continuity of fuels, and improve forest health and safety (refer to Chapter 3). The residential area, in general, has one or more of the following general stand treatment needs:

Chipper Being Used to Dispose of Trees from Fuels Reduction Project

a) Understory thinning/fuel reduction - Tree crowns in some yards are overlapping, and there are numerous small trees in the understory. This fuel condition presents a risk of rapid movement of fire into the crowns of overstory trees, as well as rapid horizontal fire spread through the crowns. These stands should be thinned to remove ladder fuels, favoring the larger trees with better crowns, and to create breaks between individual trees or clumps of trees, while protecting wildlife and other resource values.

b) Overstory thinning - In many areas, stand basal area is 200 ft^2 or more, and averages 178 ft^2 per acre, which indicates a dense to moderately dense stand. Thinning could be done in these stands to remove suppressed or intermediate trees, in order to favor the healthy dominant and co-dominant trees. This treatment would improve growth on the residual trees, and reduce fire danger by breaking up the continuity of crowns, while removing potential ladder fuels in the form of intermediate and suppressed trees. Commercial timber harvesting, however, would have to met landowner objectives for visual quality, wildlife and other values. Clean up of logging slash would be necessary to achieve improved fire protection. Any sale of wood products from a timber harvest will require filing of a timber harvest plan with CDF. If trees are harvested within 150 feet of permitted structures, a simple timber harvest plan exemption may be filed. An exemption may also be filed to remove dead, dying, and diseased trees anywhere on the property in amounts of less than 10% of the average volume per acre.

Project 2 – Provide Emergency Fire Vehicle Access - In some cases roads will need to be signed and upgraded to expedite access by emergency fire engines. If access to homes is unsafe for fire engines, firefighters may have to leave them unprotected.

2.1 Sign driveways with resident's 911 addresses and name(s) - Signs provide fire fighters unfamiliar with the area with landmarks. In addition, they allow for improved response, not only for fire fighters, but for all emergency responses. County ordinance #1124-2 requires 911 addresses to be placed at all residences so that they are legible and easily visible from the road upon which the premises front. Numbers are required to be at least three inches in height, and preferably made from reflective material for ease of night viewing. Although not required, signs could also include the resident(s) last name.

2.2 Sign culverts, septic tanks, or other sensitive areas to indicate weight capacity. Engine operators can more quickly and safely drive to homes when bridges, culverts and other crossings are clearly marked as being capable of supporting the weight of the engines. Fire engines weigh between 17 ½ to 20 tons, water tenders more. Consult the Department of Transportation, Highway Design Manual, "Minimum Thickness of Cover for Culverts" table (Appendix C) to determine adequacy for engine crossing. Any soft ground, septic tanks, buried water lines or other hazards to equipment should be marked to protect them and the equipment.

2.3 Construct turnarounds in driveways. Most modern fire engines require a minimum of 27-35 feet radius to be able to turn around, although a smaller distance can be provided if there is a turning space to back into. If an engine cannot safely enter and exit a driveway, it may have to leave a home unprotected, or set up a hose lay from the road. However, setting up a hose lay from some of the narrower internal roads might inordinately restrict other emergency traffic.

Funding Sources

There are four programs available to forest landowners to cost share stewardship and forest improvement projects. These are cooperative programs that assist landowners through technical and financial assistance for planning, reforestation, thinning, wildlife habitat improvement and other investments that enhance forest resources such as soils, water quality, recreation and timber growth and quality. Three federal programs are the Environmental Quality Incentives Program (EQIP), the Forestry Incentive Program (FIP), and the Stewardship Incentive Program (SIP), and the fourth is the state's California Forest Improvement Program (CFIP).

These programs can assist in development of shaded fuelbreaks, fuel modification, and defensible zones around homes and other buildings, improving water quality, and other projects as determined on a site-specific basis.

EQIP **-** Is a program administered by the Natural Resources Conservation Service (NRCS). This program has two parts to it, one that funds geographic priority areas (GPA) and one that funds natural resource concerns (NRC). The South Fork of the Trinity River is currently the only targeted GPA in Trinity County, but landowners in the East Fork of Stuart Fork drainage are eligible for Forestry/Range and Salmon/Steelhead NRC cost share funding. Forest practices funded by this

program are firebreaks, fuelbreaks, thinning, slash disposal, tree/shrub pruning, site preparation, prescribed burning, and tree/shrub planting. The majority of federal funds for small forest landowners will be allocated through this program, rather than through FIP or SIP programs. EQIP has been funded for $565,000 statewide for 2000. The signup period for this program is every spring.

FIP **-** Is administered by CDF and the NRCS. FIP has been funded for the year 2000. A landowner can apply for a practice at any time of year on a minimum of 10 acres and must develop a management plan and project specifications. Under FIP a landowner can receive 75% of project costs, up to a maximum allowable cost, with a maximum of $10,000 per year. The emphasis for this program is on planting and timber stand improvement on higher site commercial timberlands.

SIP **-** CDF and the USDA, Farm Services Administration (FSA) administer SIP. It has not been funded for 2000, but generally has funds available for ownerships of 20 to 1,000 acres. Individual landowners with a minimum of 10 acres of non-industrial forestland (areas with 10 percent tree cover or capable of growing 10 cubic feet of wood per acre per year under natural conditions) can combine to meet the SIP requirements. SIP requires a management plan. Landowners must agree to a 10-year land use agreement, which will protect the investment in stewardship projects from incompatible land uses. The program will cost share the management plan, technical assistance, and projects for up to 75% of costs, up to a maximum allowable cost shares.

CFIP **-** To qualify for CFIP, administered by CDF, requires a minimum of 20 acres of forested land zoned to allow forest resource management, although two or more contiguous landowners can cooperate to meet the 20-acre minimum size requirement. The minimum project size is 5 acres, with no minimum acreage requirements for land and resource conservation projects. A landowner may apply for a practice at any time of year. The CFIP requires a management plan and a 10-year land use agreement. Project boundaries, cost estimates, prescriptions for proposed practices and a work schedule are included in the plans. The program will cost share the management plan and projects for up to 75% of costs, up to a maximum allowable cost share. This program, which was not funded for a few years, has been recently funded.

APPENDIX A

RECOMMENDED PROJECT MITIGATION MEASURES

Project Mitigation Measures

Mitigation Measure	Fuelbreak Areas	Watercourse Zones	Homes & Roads	Other Treatment Areas
FB#1	All areas of disturbance			
FB#2	□	□		□
FB#3	All areas of disturbance			
FB#4		□		
FB#5 & 6	All areas of disturbance			
T&E#1, 2, & 3	All areas of disturbance			
S#1	□	No Tractor Operations	□	□
S#2	□		□	□
S#3	□		□	□
S#4		□		
S#5	□		□	□
S#6	□		□	□
S#7	All areas of disturbance			
WLPZ#1		□		
WLPZ#2		□		
WLPZ#3	□	□	□	□
WLPZ#4		□		
WLPZ#5		□		
WLPZ#6		□		
CR#1, 2 & 3	All areas of disturbance			
FH#1 & 2	All areas of disturbance			
FH#3				□
FH#4				□
FH #5	Locations as appropriate			

Project Mitigation Measures

Fuelbreaks

FB# 1 - Maintain stand diversity by retaining a minimum of 5-10 ft^2 basal area per acre of hardwoods as well as conifers.

FB# 2 - Protect large diameter snags (20" dbh & 20' tall) and large downed logs (10" diameter and 8' long), consistent with landowner and safety objectives, by clearing away light fuels within 10' of such snags/logs.

FB# 3 - If snag and cavity nesting trees must be removed, consider placement of wildlife structures, such as roost poles, platforms, artificial cavities and nest boxes, and placement of large logs within treated areas.

FB# 4 - Emphasize retaining canopy closure and concentrate treatments on pruning ladder fuels and ground fuels.

FB# 5 - Prepare SIP's for individual landowners, or groups of landowners, which will incorporate the same protection measures as above.

FB# 6- Trees should not be pruned to less than 40% live crown.

Threatened and Endangered Species

T&E # 1 - Consult the California Department of Fish and Game Natural Diversity Database for known occurrences of rare, endangered or sensitive species habitat in, and adjacent to, areas where site disturbing activities are to occur.

T&E # 2 - If occurrences of rare, endangered or sensitive species habitat is likely, survey prior to ground disturbing operations. If present, designate Special Treatment Areas, projects, and timing of operations to benefit, or at least not adversely affect, the protected species.

T&E # 3 - Inspect the area for live trees and snags with visual evidence of use as nesting and roosting sites for rare, endangered, or threatened species. Such snags must be retained, unless they are a safety or fire hazard. Snags that are a safety or fire hazards must be felled. Retain other snags, especially where found within watercourse and lake protection zones.

Soils

Soil # 1 - Limit tractor operations to less than 45 percent slopes, with contour windrowing of slash on slopes over 25 percent. Leave effective berms of residual soil to impede surface water flow.

Soil # 2 - Tractor piling of slash should only be done by equipment with a brush rake.

Soil # 3 - Tractor operations should only be done when the soil is dry.

Soil # 4 - Flag an equipment exclusion zone (using the CA Forest Practice Act Rules setbacks) to prohibit equipment operations near perennial and ephemeral streams, or the bottoms of drainages.

Soil # 5 - Water breaks (waterbars) should be constructed in treated areas, using the spacing guidelines in the CA Forest Practice Act Rules, to minimize surface runoff.

Soil # 6 - Flag or otherwise delineate potential landslide prone and other unstable areas, and prohibit heavy equipment operations on these areas.

Soil # 7 - Evaluate and describe any unusual circumstances, or project site conditions (e.g. soil type, slope, size of project, soil moisture) that could result in surface erosion effects not adequately mitigated by the above mitigation measures. Provide for additional environmental evaluation of these areas as needed.

Water Resources, Wetlands and Riparian Areas

WLPZ # 1 – Flag, or otherwise designate, watercourse and lake protection zones where ground-disturbing equipment will be precluded.

WLPZ # 2 - Prevent slash and debris deposition within watercourse and lake protection zones. Accidental depositions should be cleaned up immediately.

WLPZ # 3 - No machinery should be serviced adjacent to streams, lakes, within wet meadows, marshes and other wet areas, or in other areas where such servicing will permit grease, oil, fuel, or other toxic substances to enter lakes, streams or wet areas.

WLPZ # 4 - Flag any domestic water supply sources within operation areas to protect water quality.

WLPZ # 5 - Discuss how activities in the vicinity of the protection area will be carried out to prevent water quality degradation.

WLPZ # 6 - Flag, or otherwise delineate, equipment exclusion zones around wet meadows, marshes, and other wet or sensitive areas.

Prehistoric, Historic and Cultural Resource Values

CR # 1 - An archeological records search and project review should be made by the Northeast Information Center at Chico State University for projects on private lands that have not been previously reviewed.

CR # 2 - Survey project areas for pre-historic and/or historic resources, and if sites are located, flag equipment exclusion zones and prepare other appropriate mitigation measures necessary to protect the site.

CR # 3 - If any archeological or historical resources are inadvertently encountered during or after operations, contact CDF immediately to arrange for an evaluation by a professional archaeologist, if necessary. Cease all project activities near the discovered site until appropriate protection measures are developed.

Forest Health Recommended Actions

FH # 1 - Treat all slash and other fine fuels generated from project activities. To prevent the infestation of residual stands of three-needle pines with ***Ips*** and ***Dendroctonus*** beetles, slash created between November 1-May 15 should be immediately treated by chipping, burning, lopping, or hauling off-site.

FH # 2 - To prevent the infestation of pine stands with root rot pathogens after pre-commercial thinning, apply borax on thinned stumps.

FH # 3 - Encourage residential landowners to plant understocked areas, thin overstocked areas, and prune trees to improve form, aesthetics and reduce fire hazard.

FH # 4 - Encourage residential landowners to salvage dead, damaged, dying and diseased trees where it is a hazard to residents.

FH # 5 - Enhance wildlife habitat through habitat modification and construction of nesting boxes, platforms, wildlife piles, guzzlers etc.

APPENDIX B

"WILDFIRE PROTECTION FOR HOMEOWNERS AND DEVELOPERS"