

Bluff Mesa Hazardous Fuels Reduction Project

Mountaintop Ranger District, San Bernardino National Forest
San Bernardino County, California
September 15, 2009

Purpose and Need

The Mountaintop Ranger District, San Bernardino National Forest, proposes to reduce fire risk to communities and improve forest health on approximately 1,600 forested acres on the Bluff Mesa area around Bluff Lake. The area lies just south of the west end of Big Bear Lake (which includes extensive shoreline developments) and just west of the Big Bear Lake community, in an area classified as Wildland-Urban Interface (WUI). The Big Bear Lake Valley supports a permanent population of over 20,000 residents and also supports millions of annual visitors. Many of the visitors use the Valley's ski areas, including the Bear Mountain and Snow Summit Ski Resorts, which begin about 2 miles east of the project area. An inholding of private property around Bluff Lake (owned by The Wildlands Conservancy) is completely surrounded by National Forest System (NFS) lands in the project area.

People in adjacent communities and developments are concerned for their safety and about property loss from a possible forest fire that may originate on surrounding public land. The purpose of this project is to provide for firefighter safety in the event of a wildfire, provide additional protection for Big Bear Lake and neighboring communities and developments, and to improve the resiliency of the forest ecosystem by reducing the potential for stand-replacing fires.

Several wildfires have burned around the edges of and into the project area (Figure 2). In 1970, the Bear Fire burned 53,000 acres including the south and west edges of the project area, destroying 53 homes and 11 structures. A 5,000-acre, unnamed fire occurred in 1945 on the south edge of the project area. More recently, in 2007 the Butler #2 and Slide fires burned large areas north of the project area, to the north of Highway 18. The Skyline Shaded Fuelbreak has recently been completed along the entire eastern boundary of the project area. This fuelbreak continues eastward from the southeastern corner of the project area along the ridgeline and Skyline Drive to the ski areas and beyond (Figure 2).

The project area consists of two primary vegetation cover types: it is primarily conifer forest with a small percentage of montane chaparral. The conifer forest is dominated by Jeffrey pine, with a high component of white fir and lesser amounts of sugar pine. Most of the area is covered by an older, relatively open forest consisting of multiple age classes. The shrub layer is relatively dense in many areas, and consists of the same species that occur in the montane chaparral type. Small areas of dense, younger pine forests are also included within the project area. Most of these are 30- to 50-year-old stands and are a result of plantations following the Bear Fire and other disturbance events. Montane chaparral or shrub-dominated areas cover the majority of the southern and western fringes of the project area and result from previous fires (see Figure 1). Dominant species are manzanita, ceanothus, and chinquapin that form almost impenetrable stands in some areas. The process of natural reforestation following crown fire appears to be very slow when the area becomes dominated by chaparral. A large wet meadow occurs on private land within the project boundaries, just east of Bluff Lake. A small portion of



Figure 1. Southern edge of Bluff Mesa showing sparse trees and dense Manzanita and Ceanothus resulting from the Bear Fire (looking west).

this meadow continues onto National Forest System land on the west side of the lake. Lodgepole pines occur along the edges of the meadow, including one specimen that is one of the largest known lodgepole pines in existence.

Research indicates that conifer forests of the type in the project area are self-perpetuating under a regime of periodic surface fires. Historically, ground fires have occurred in this forest type without destroying the overstory, maintaining a stand that has relatively low surface fuel concentrations. Extensive crown fires are now occurring in similar southern California forests because of accumulated surface fuels.

As a result, the probability of stand-replacing wildfire is high in most of the project area. Under the National Fire Plan and the Healthy Forest Initiative, emphasis is to be placed on reducing the risk of wildfire within the WUI around communities at risk. (A community at risk is defined as a WUI community in the vicinity of Federal lands that are at high risk of wildfire, Federal Register/Vol. 66, No. 160/Friday, August 17, 2001).

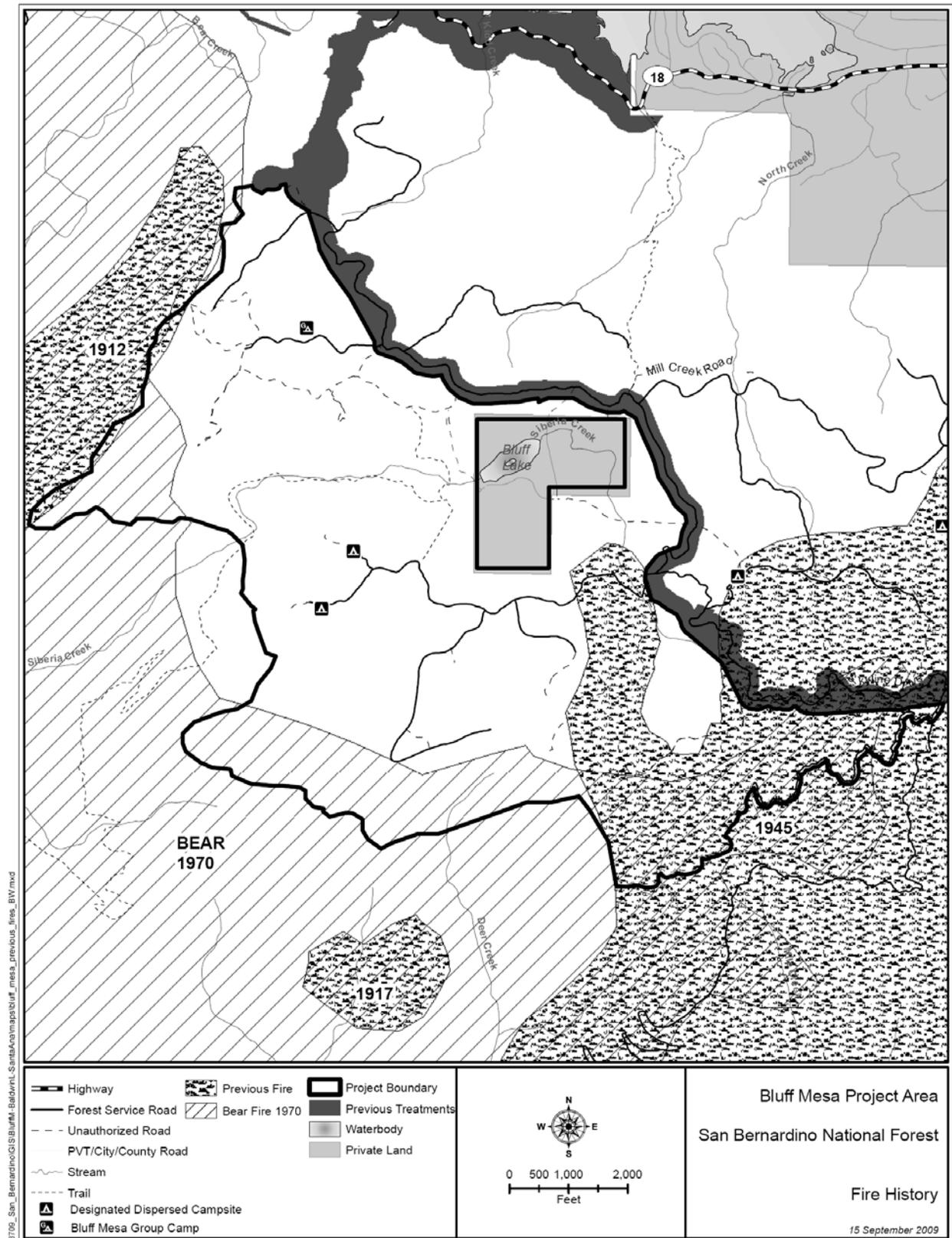


Figure 2. Recent fire history and fuel treatment in the project area and vicinity.

The lack of recent thinning and fires in the project area has resulted in a forest condition where the vegetation is denser and ladder fuels are present; conditions are such that a crown fire could easily occur. In addition, there are unnaturally high levels of surface woody material in some parts of the project area. Making the situation worse, the San Bernardino National Forest is experiencing drought conditions. A drought is a natural phenomenon; however, when vegetation is unnaturally dense, many trees and shrubs are unable to withstand drought conditions. This leads to tree and shrub mortality resulting in the current forest conditions with unnaturally high levels of fuel loading. When trees are stressed due to the lack of moisture, they are also killed by insects and disease. The combination of these stressors has killed many thousands of trees and more will die as drought conditions continue. The best defense against drought and pathogens is to improve the health of the forest. Reducing the number of green trees by thinning the less vigorous trees and making more moisture available will allow the residual trees to defend themselves better against insect attack, root disease, and other drought effects.



Figure 3. Old road and relatively dense patches of White Fir inside the northern portion of project area.

This proposed project is based on guidance in the San Bernardino Land Management Plan, which identifies community protection needs as the top management priority (Part 2, Pages 44 and 48; Part 3, Page 5). Community protection strategies, including the definition of WUI Defense and Threat Zones, are located in Appendix K of the Land Management Plan.

Treatments in the WUI Defense and Threat zones and resource protection areas may include the following vegetation management activities or combination of these vegetation management activities (as described in Part 2, pgs. 26-27 of the San Bernardino Land Management Plan):

- **Mortality Removal** – Removal of dead or dying vegetation to reduce fire hazard.
- **Thinning** – Removal, mastication, shredding, or cutting of living trees from dense, overgrown stands. This treatment type usually includes follow-up removal of slash (small and medium diameter pieces of downed wood created from removal of trees) and is proven to move forests to more fire resistant conditions. Thinning is usually required prior to prescribed fire treatments.
- **Shaded Fuelbreaks** – Planned shaded fuelbreaks are along roads and ridge-tops. Most fuelbreaks are constructed with hand or machine removal of vegetation and tree thinning, with follow-up maintenance using mechanical treatments or prescribed fire to kill re-sprouting vegetation. Fuelbreaks are designed to limit wildfire size by strategically removing fuels to limit fire spread at key topographical areas and to keep fires from spreading onto private lands.
- **Prescribed Fire** – Prescribed fire may be implemented by burning piles of downed woody debris or broadcast burning (burning woody debris within a contained area across the forest floor) to reduce fuels such as downed woody debris and small trees, and remove low-lying branches of larger trees. Prescribed fire is a useful tool for maintaining the fire resistance and resilience of forested areas and may be applied to treatment areas as often as every 2 to 5 years.

Fuel treatment in special resource protection areas, such as sensitive species habitat or archeological or historical sites, may be modified or withheld to avoid or minimize impacts. In these situations Land Management Plan Standards (as described in Part 3 of the San Bernardino Land Management Plan) will be considered in conjunction with sensitive species guidance documents and involvement of the appropriate resource specialist(s) for site specific planning to avoid, minimize, or mitigate negative long-term effects on threatened, endangered, proposed, candidate or sensitive species habitat and potential heritage resource sites.

Proposed Action

To meet the primary purposes of providing for firefighter safety and community protection, we propose to create shaded fuelbreaks at the top of the ridge along roads and the edge of Bluff Mesa near the western and southern project area boundaries. These fuelbreaks would create strategic defensible fire-fighting zones to prevent wildfires to the south and west of the project area from burning rapidly up the ridge in the montane chaparral and then gaining a foothold as a crown fire in the conifer forest on top of the mesa. In addition, narrower shaded fuelbreaks

would be created along several internal roads within the project area. These roads would provide secondary fire-fighting zones and escape routes for fire-fighters and residents of the private property inside the project area. Outside of these shaded fuelbreaks, we propose to reduce the potential for stand-replacing wildfire by reducing tree densities and removing excess fuels, while at the same time maintaining essential forest structure required by wildlife. Mechanical treatment within riparian management areas would not occur unless treatment is essential to meet the primary purposes.

When trees are thinned the residual slash (limbs, tops, etc) would be treated either by chipping, direct removal, or through hand or machine piling and burning. Wood slash piles would be burned under controlled conditions that minimize smoke within nearby communities once the wood has dried.

Prescribed broadcast burning may also be used after thinning has been conducted and shaded fuelbreaks have been developed. A prescribed burn is defined as a managed burn that is conducted only when weather conditions cause a fire to remain mostly on the forest floor and the smoke is carried away from the surrounding communities. Broadcast burns would only occur when weather conditions provide for safe burning around adjacent private property.

The proposed treatments are described in Table 1 by treatment objective and desired condition. Figure 4 shows the distribution of proposed treatment levels within the project area and Table 2 displays the approximate acreage of each treatment type that would be implemented to achieve the treatment objectives. Hand clearing and mechanical fuel reduction treatments would begin implementation as early as summer of 2010.

Table 1. Proposed Treatment Levels with Objectives and Descriptions.

Treatment Level and Objective	Vegetation Type	Hard Snags (How many hard snags will be retained after treatment?)	Down Wood (How much down wood will be retained after treatment?)	Desired Condition (What will the Forest look like after treatment?)
<p>1 – Intensive fuels reduction within a shaded fuel break corridor up to 600 feet wide following roads and the edge of the mesa near the west and south boundaries.</p> <p>Objective: Reduce flame length to 4 feet or less under 90th percentile¹ weather conditions.</p>	Conifer Forest	All recent dead standing trees (hard snags) will be removed in the first 1/3 of the fuel break from the centerline. Within the next 2/3 of the fuel break from the centerline, at least 5 of the largest hard snags per 5 acres will be retained.	All downed logs (except soft and rotting logs) will be removed within the first 1/3 of the fuel break. Within the next 2/3, about 3 downed logs (minimum 12 inches diameter, or the largest available, and 60 linear feet) per acre will be retained.	Resulting stand will have an open structure with a canopy cover of 40% or less; lower branches will be limbed up to at least 12 feet or to 50% of tree height, whichever is less; 10% or less shrub cover will remain.
	Montane Chaparral	All recent dead standing trees (hard snags) will be removed in the first 1/3 of the fuel break from the centerline. Within the next 2/3 of the fuel break from the centerline, at least 5 of the largest hard snags per 5 acres will be retained, if available.	All downed logs (except soft and rotting logs) will be removed within the first 1/3 of the fuel break. Within the next 2/3, about 3 downed logs (minimum 12 inches diameter, or the largest available, and 60 linear feet) per acre will be retained, if available.	Only scattered trees exist at present and these will be retained; lower branches of existing trees will be removed at least 12 feet up or to 50% of the tree height, whichever is less; 10% or less shrub cover will remain.
<p>2 – Intensive fuels reduction within shaded fuel breaks up to 100 feet wide along both sides of designated strategic internal roads, judged important as secondary fire-fighting zones and as escape routes.</p> <p>Objective: Reduce flame length to 4 feet or less under 90th percentile¹ weather conditions.</p>	Conifer Forest	At least 5 of the largest hard snags per 5 acres will be retained. All other hard snags will be removed, including all hazard trees along roads.	At least 3 downed logs (in addition to soft and rotting logs) per acre (minimum 12 inches diameter, or the largest available, and 60 linear feet) will be retained.	Resulting stand will have an open structure with a canopy cover of 40% or less; lower branches will be limbed up to at least 12 feet or to 50% of tree height, whichever is less; 10% or less shrub cover will remain. Canopy base height averages 10-15 feet.

Table 1 (continued). Proposed Treatment Levels with Objectives and Descriptions.

Treatment Level and Objective	Vegetation Type	Hard Snags (How many hard snags will be retained after treatment?)	Down Wood (How much down wood will be retained after treatment?)	Desired Condition (What will the Forest look like after treatment?)
<p>3a – Moderate fuels reduction on steep slope areas west and south of Treatment Level 1 shaded fuel break. Treatments may include mechanical treatment, hand clearing, and prescribed broadcast burning.</p> <p>Objective: Limited passive crown fire and no active crown fire in conifer forest under 90th percentile¹ weather conditions.</p>	Conifer Forest (patches inside Montane Chaparral)	At least 15 of the largest hard snags per 5 acres will be retained.	At least 6 downed logs (in addition to soft and rotting logs) per acre (minimum 12 inches diameter, or the largest available, and 120 linear feet) will be retained.	Produce more open stand by thinning to break up the continuity of fuels that now exist in some areas. Shrubs will be cleared from inside the drip lines of trees, and up to 20% of the existing shrub cover will be removed elsewhere. Tree canopy base height averages 10-15 feet.
	Montane Chaparral	At least 15 of the largest hard snags per 5 acres will be retained, if available.	At least 6 downed logs per acre (minimum 12 inches diameter, or the largest available, and 120 linear feet) will be retained, if available.	Only scattered trees exist at present and these will be retained; up to 50% of the existing shrub cover will be removed in a patchy or mosaic pattern.
	Conifer Forest	At least 15 of the largest hard snags per 5 acres will be retained.	At least 6 downed logs (in addition to soft and rotting logs) per acre (minimum 12 inches diameter, or the largest available, and 120 linear feet) will be retained.	Produce more open stand by thinning to break up the continuity of fuels that now exist in some areas. Shrubs will be cleared from inside the drip lines of trees, and up to 20% of the shrub cover will be removed elsewhere. Canopy base height averages 10-15 feet. In young pine plantations, create more open stands with vigorous young trees and lower fuel levels.

Table 1 (continued). Proposed Treatment Levels with Objectives and Descriptions.

Treatment Level and Objective	Vegetation Type	Hard Snags (How many hard snags will be retained after treatment?)	Down Wood (How much down wood will be retained after treatment?)	Desired Condition (What will the Forest look like after treatment?)
<p>4 – Low fuels reduction or special treatment in areas with sensitive biological (e.g., spotted owl PAC, HRC, or suitable habitat, willow flycatcher habitat, sensitive plant habitat, etc.) and/or cultural resources.</p> <p>Objective: Limited passive crown fire and no active crown fire in conifer forest under 90th percentile¹ weather conditions.</p>	Conifer Forest – Spotted Owl PAC (Treatment Level: Conifer Forest 4a)	40 of the largest hard snags per 5 acres will be retained.	9 downed logs (in addition to soft and rotting logs) per acre (minimum 12 inches diameter, or the largest available, and 180 linear feet) will be retained.	Maintain moderate to dense structure. Retain existing overstory and midstory canopy closure, while thinning the understory to remove ladder fuels. Canopy base height averages 10-15 feet. Shrub canopy cover will be maintained at or reduced to 30% or less.
	Conifer Forest – Spotted Owl HRC, Suitable Habitat, and other areas (Treatment Level: Conifer Forest 4b)	40 of the largest hard snags per 5 acres will be retained.	9 downed logs (in addition to soft and rotting logs) per acre (minimum 12 inches diameter, or the largest available, and 180 linear feet) will be retained.	Maintain moderate to dense structure. Retain existing overstory canopy closure, while thinning the midstory and understory to remove ladder fuels. Maintain a minimum of 70% average canopy closure. Canopy base height averages 10-15 feet. Shrub canopy cover will be maintained at or reduced to 30% or less.
<p>4 – Encroaching tree removal and prescribed burning in specific meadow areas.</p> <p>Objective: Meadow restoration.</p>	Meadow	Existing hard snags will be retained, where available.	Existing downed logs will be retained, where available.	Conifer encroachment is minimal, but encroaching trees will be cut and removed and prescribed burning will be used to restore the with grass/forb complex to young and vigorous growth stage.

¹The 90th percentile weather from the most representative weather station is used to model fire behavior during late summer and fall afternoons. Under 90th percentile weather conditions, 10% of the days, or about 15 days will be hotter, drier, and windier.

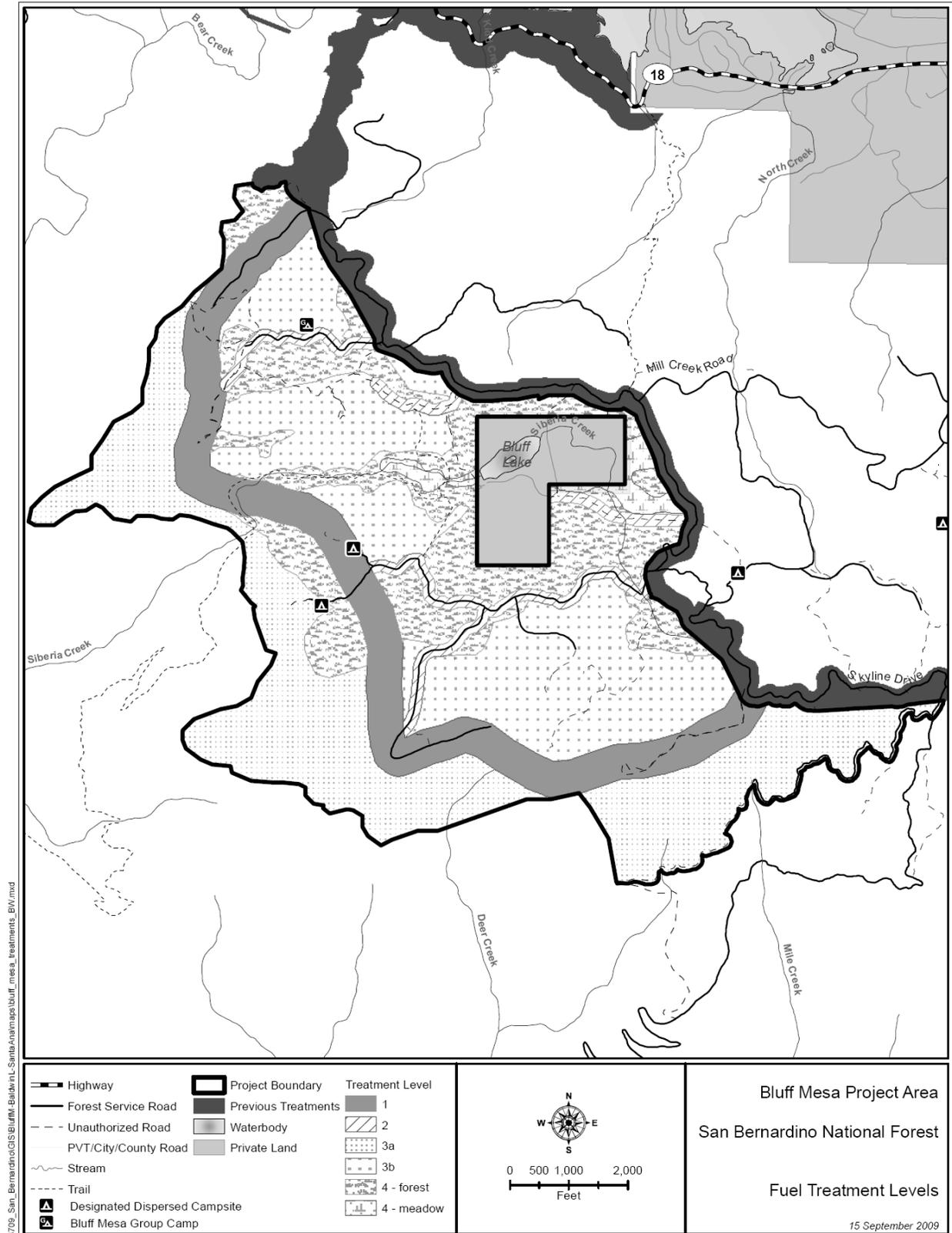


Figure 4. Proposed fuel treatments within the project area (refer to Table 1 for descriptions).

Fuelbreaks

Shaded fuelbreaks would be constructed on about 21 percent of the area. These would be located on top of the ridge along the west and south project area boundaries, as well as along several internal roads within the project area. Fuelbreaks are generally, but not always, associated with a road network. They provide firefighters a defensible space from which to carry out firefighting operations.

The type of treatment used to achieve fuelbreak objectives is mechanical thinning from below (low thinning), that favors leaving the larger diameter trees. This type of thinning would result in an open forest structure that facilitates keeping a fire on the ground and out of the tree crowns. Trees would either be left individually spaced apart from each other, or may be in small clumps of two or three trees, where the clump is separated from other trees. In addition to mechanized thinning to remove trees, slash and shrubs would be chipped, masticated, or piled and burned. Prescribed burning may be used to clean up fine fuels. Lower limbs would be pruned from trees.

Two levels of fuelbreak treatments would occur. **Treatment Level 1** would be used for the ridgetop fuelbreak. This fuelbreak would create a strategic, defensible fire-fighting zone to prevent wildfires to the south and west of the project area from burning rapidly up the ridge in the montane chaparral and then gaining a foothold as a crown fire in the conifer forests on top of Bluff Mesa. This fuelbreak would be partially developed along roads and would include a corridor up to 600 feet wide (300 feet on either side of the roads). It would appear as an open forest with no standing dead trees, down logs, or other fuels on the ground in the inner 1/3 of the fuelbreak corridor (see Fig. 5). In the outer 2/3 of the corridor, scattered hard snags and down logs would remain. The fuelbreaks would be developed by removing surface, ladder, and canopy fuels such that there would be spacing between the canopies (drip lines) of the Jeffrey pines and other conifers. The resultant forest would have a canopy cover of less than 40 percent. Lower branches would generally be limbed up to at least 12 feet. Understory shrubs would be removed by mastication and/or chipping, leaving only scattered individual shrubs outside the tree drip lines; shrub cover would be less than 10 percent.

Treatment Level 2 would be implemented along strategic, internal project area roads and would provide secondary fire-fighting zones, as well as escape routes for firefighters and residents of the private inholding around Bluff Lake. The fuelbreaks would be very similar to those with Treatment Level 1, except that the fuelbreaks would be narrower; they would be approximately 100 feet wide on each side of the roads.

Forest Health Treatment

Outside of shaded fuelbreaks, where special needs for wildlife or recreation are not a primary concern, forest health and the potential of stand-replacing fires would be reduced through **Treatment Level 3**. This treatment level is proposed for about 57 percent of the treatment area and is subdivided into two treatments. The focus of this treatment is to break up the continuity of the canopy fuels that now exists and change fire behavior under the 90th percentile weather conditions, so that flame length and rates of spread are reduced. In the Bluff Mesa project area, this means the removal of dead and dying trees and thinning (from below) groups of trees that are too dense, favoring the larger, older trees. Some limbing up of lower branches would also occur in conifer stands. Sufficient down wood and snags would be retained to meet Forest Plan standards. Prescribed broadcast burning would occur in some treatment areas, following



Figure 5. A portion of the Skyline Shaded Fuelbreak on the north edge of the Bluff Mesa project area.

thinning and the removal of ladder fuels, in order to reduce surface fuels and reintroduce surface fire into the ecosystem.

The treatment areas and objectives include moderate fuel reduction in the montane chaparral and patches of conifer forest on the steep slopes west and south of the main Treatment Level 1 fuelbreak (Treatment Level 3a) and moderate to low fuel reduction on flat to rolling topography east and north of the Treatment Level 1 shaded fuelbreak (Treatment Level 3b).

Treatment Level 3 also includes thinning of young pine plantations that were initiated after the Bear Fire and other disturbances. Thinning of these young stands would improve the growth rate of the dominant trees, in addition to reducing fuels.

Sensitive Areas

Several threatened, endangered and sensitive plants occur within or adjacent to the project area; they are mostly associated with wet meadow and riparian habitats. Habitat is also present for the

spotted owl, willow flycatcher, mountain yellow-legged frog, several sensitive or watch list snakes, and bats. Bald eagle perching and roosting sites occur in the northern portion of the project area. Limited treatments within these habitats may be beneficial for long-term habitat maintenance (**Treatment Level 4**). No treatments are proposed for some habitat areas, and mechanical treatments or burning would not be allowed in most areas. Strategically, the proposed treatments would provide defensible zones for firefighting within WUI defense zones, and would break up fuel continuity in WUI threat zones. Where treatments are proposed, they would be limited within riparian conservation areas and would be designed to avoid or minimize effects on target species. Areas suitable as spotted owl protected activity centers (PAC) are given a high degree of protection (Treatment Level Conifer Forest 4a). Additional mitigation measures may be prescribed after future analyses, based on individual plant, fish, or wildlife species needs.

Table 2 displays preliminary treatment acres by treatment type. All proposed thinning would be from below, which would select the smaller understory trees and favor the larger dominant trees.

Table 2: Treatments prescribed to meet treatment objectives.

Treatment Type	Approximate Acres
Fuel Break – Treatment Level 1	256
Fuel Break – Treatment Level 2	74
Forest Health – Treatment Level 3a	491
Forest Health – Treatment Level 3b	425 ¹
Sensitive Areas – Treatment Level 4: Conifer Forest	327 ¹
Sensitive Areas – Treatment Level 4: Meadow	26
TOTAL	1600

¹ Included within this acreage would be small pine plantation treatment areas.

Roads, Landings, and Skid Trails

Ground-based equipment would primarily use existing NFS roads and existing unauthorized road routes, or rubber-tired vehicles would use overland travel without creating new roads. No mechanical equipment would be used in wetlands and wet meadows. In some instances, it may be necessary to develop new temporary roads to access treatment areas. It is estimated that less than 5 miles of temporary access roads would be used to implement treatments across the entire project area. These temporary roads, landings, and skid trails would be strategically placed to minimize disturbed areas and impacts to soils. Any temporary roads, landings, and skid trails developed for this project, would be rehabilitated and blocked after project completion. A roads analysis will be performed and unauthorized routes will be considered for restoration and incorporation into the transportation system as NFS roads or for permanent closure and rehabilitation. Rehabilitation would include returning the ground to natural contours, implementing de-compaction and erosion control measures as needed, and covering bare soil with slash, chips, or pine needles.

A combination of natural barriers (rocks, logs, etc.), screening, fencing, etc. may be used to prevent/discourage illegal vehicle activity during and after the project treatment. Fire Prevention Technicians and other staff would monitor the area, and if/when problem areas arise, remedial

and preventative actions would be taken as appropriate. Coordination with adjacent landowners, public education, and signing would be used as appropriate.

Mitigation Measures and Design Criteria

A wide array of mitigation measures and design criteria would be implemented in order to lessen the environmental effects. These measures and criteria are summarized in this section (some of these have already been mentioned above, but are also summarized here for completeness).

Best management practices described in the San Bernardino Land and Resource Management Plan would be followed to minimize soil erosion. Heavy equipment, such as tractors and skidders, would only be used on flatter ground with slopes less than 35 percent, with the exception of short pitches. Cable or helicopter logging technology may be used to yard trees when the slopes exceed 35 percent.

Plantings would occur in areas of high Jeffrey pine or white fir mortality, where relatively extensive clearing is needed. A limited amount of planting is proposed in other larger cleared areas such as landings.

No new permanent roads would be established (although some existing unauthorized roads may be converted to NFS roads) and no landings or cable corridors would occur in riparian conservation areas. Ground-based equipment would primarily use existing NFS roads and existing unauthorized roads, or rubber-tired vehicles would use overland travel without creating new roads. In some instances new temporary roads may be required to access treatment areas.

A combination of natural barriers (rocks, logs, etc.), screening, fencing, etc. may be used to prevent/discourage illegal vehicle activity during and after the project treatment. Fire Prevention Technicians and other staff would monitor the area and if/when problem areas arise, remedial and preventative actions would be taken as appropriate. Coordination with adjacent landowners, public education, and signing would be used as appropriate.

In addition to the treatments described above, additional mitigation measures or design criteria would assure that treatment levels protect resources as defined in the Forest Plan, including threatened, endangered, and sensitive plants and wildlife. These additional measures and criteria will be defined based on additional environmental analyses.

Decision To Be Made

The decision to be made is whether or not to implement this project as proposed or modify the project to address any unresolved conflicts. This proposed project would be consistent with the San Bernardino National Forest Land and Resource Management Plan and Record of Decision.

Public concerns and comments regarding this proposed action are important. Issues and concerns will be considered to refine the proposed action. All public concerns will be taken into consideration prior to an environmental assessment and final decision. The preference for receiving comments is by email. Please send comments to: Comments-pacificsouthwest-san-

bernardino-big-bear@fs.fed.us by October 19, 2009 with the words “Bluff Mesa Hazardous Fuels Reduction Project” in the subject line. If you are unable to send comments electronically, you can mail them to the following address:

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