

Summary

The Kaibab National Forest, Williams Ranger District proposes to carry out forest thinning, prescribed burning and individual tree selection (removal) activities under the Bill Williams Cap Fuels Reduction project. The proposed project area encompasses approximately 10 acres of National Forest System lands atop Bill Williams Mountain, just south of Williams, Arizona. The proposed action has identified 6 of these acres for thinning, burning, and individual tree removal activities. Only individual trees, adjacent to facilities, would be removed on the remaining 4 acres (no thinning or burning).

The project area surrounds multiple existing infrastructure developments including a fire lookout, radio towers, utility transmission lines and out buildings. The combination of slope, aspect and forest fuels (tree density, “ladder” and ground fuels) at the site pose an elevated risk for high intensity, stand replacing wildfire. High intensity wildfire within the project area would damage and/or destroy critical infrastructure, costing millions of dollars in repairs and replacement.

Reducing the risk of fire impacts to the infrastructure is the central objective of the Bill Williams Fuels Reduction project. The proposed action addresses this objective by creating a “buffer” around the facilities to support fire suppression activities; and by removing individual hazard trees that pose a threat of spreading fire directly onto structures or damaging structures from tree failure. The proposal also addresses the objectives of providing for fire fighter and public safety during a wildfire. Improvement in forest health and resiliency would be associated with the project activities through an overall reduction in competition at the site.

Implementation of the proposed action may cause some short-term, small scale impacts to soils, visual quality, air quality and wildlife habitat, though no significant, long term adverse effects are anticipated. A non-significant, site specific amendment to the Forest Plan's Regionally Consistent Standards and Guidelines would be necessary to thin trees up to 12 inches in diameter, and remove a small number greater than 12 inches from within a Mexican spotted owl (MSO) Protected Activity Center (PAC) (approximately 4 acres of the treatment area). Thinning prescriptions would remove all trees up to 12 inches in diameter from 6 acres of the treatment area. A small number of trees greater than 10 inches in diameter would be removed from adjacent to structures. Thinning treatments would remove approximately 175 trees per acre that are less than 5 inches in diameter and approximately 20 trees per acre between 5 and 12 inches, predominately Douglas and white fir. Only approximately 17 trees greater than 10 inches would be removed to protect structures. Under the proposed action, basal area across the project area would be reduced from 170 to 140 ft² per acre.

The Williams Ranger District has prepared this document to describe the purpose and need for the project and to discuss the details of the proposed action. The Kaibab National Forest Supervisor will decide if, and to what extent, to implement the proposed action or one of the action alternatives, the mitigation measures required for resource protection, or if further analysis in an Environmental Impact Statement will be required.

Chapter 1 – Purpose and Need

Introduction

The Bill Williams Cap Fuels Reduction project area encompasses approximately 10 acres of National Forest System (NFS) lands at the summit of Bill Williams Mountain in northern Arizona. The project area surrounds multiple existing infrastructure developments including a U.S. Forest Service fire lookout, radio towers, utility transmission lines and out buildings. The combination of slope, aspect and forest fuels (tree density, “ladder” and ground fuels) currently exhibited at the site pose an elevated risk for high intensity, stand replacing wildfire. High intensity wildfire within the project area would damage and/or destroy critical infrastructure, costing millions of dollars in repairs and replacement. To address this risk, the project planning team has proposed to create a “buffer” around the facilities to support fire suppression activities; and to remove individual trees that pose a threat of spreading fire directly onto structures or damaging the structures from tree failure. The proposed action would apply thinning, hand piling and burning prescriptions to 6 of the 10 acres in the project area. Hazard trees would be removed from adjacent to structures. No thinning or burning would occur in the southern 4 acres of the project area (see Figure 2).

Project Location

The legal description of the project area is: Township 21 North, Range 2 East, Section 17 (Gila and Salt River Base Meridian). The project site sits at the top of Bill Williams Mountain approximately 3.5 miles south of the town of Williams, in Coconino County, Arizona (see Figure 1). The project area is bound by the service road that spurs off Forest Route 111 at the summit and wraps around the west, north and east sides of the facilities site. The project area extends to the south approximately 500 feet from the site to where the slope drastically drops off (see Figure 2). The Kaibab Forest Plan identifies this land as part of Ecosystem Management Area (EMA) 5, within the larger Geographic Area 2. Elevation in the project area ranges from approximately 9,100 to approximately 9,250 feet above sea level.

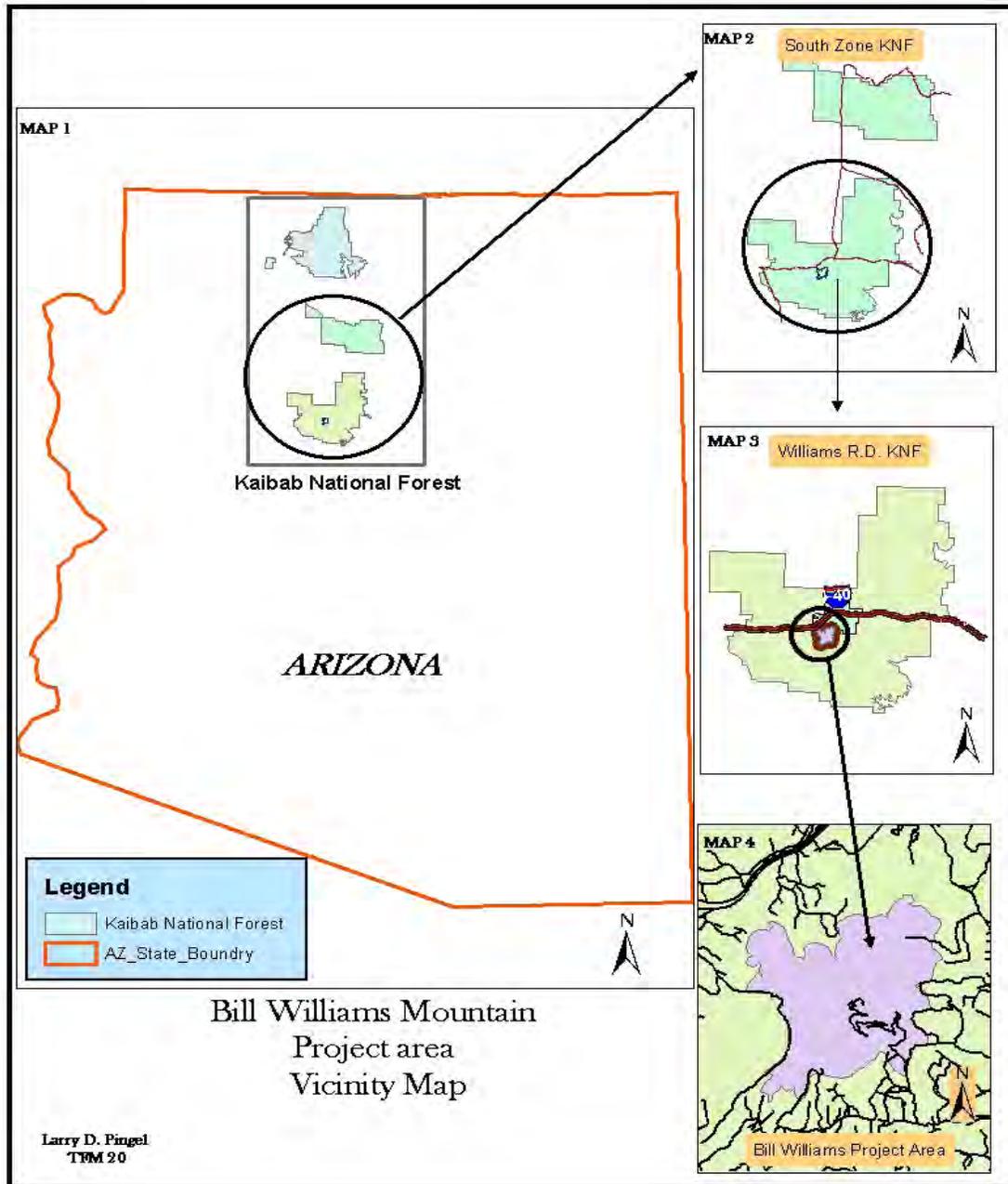


Figure 1. Vicinity map showing general location of the Bill Williams Cap Fuels Reduction Project area.

Bill Williams Cap Fuels Reduction Project

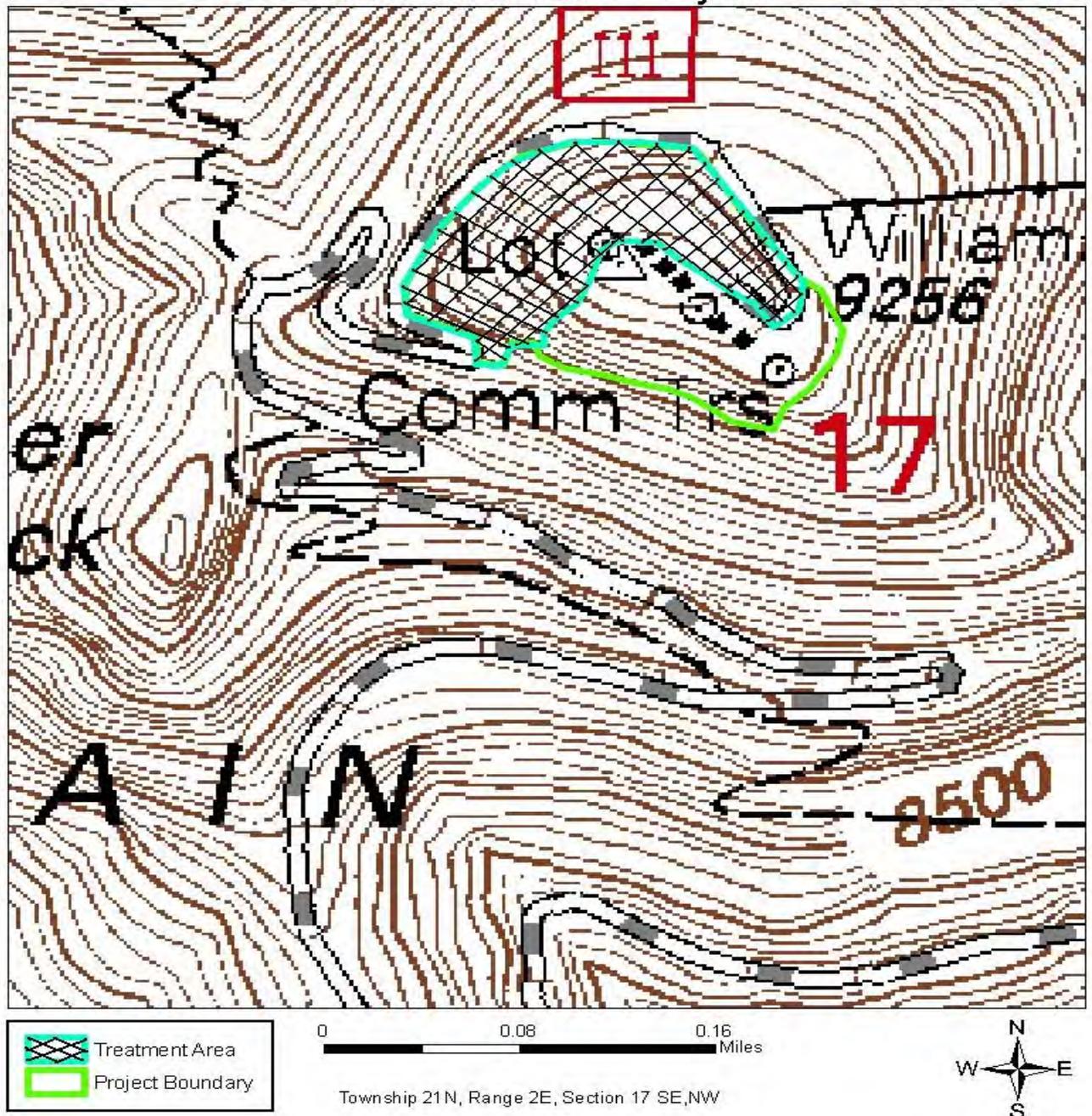


Figure 2. Bill Williams Cap Fuels Reduction Project Boundary. Cross hatched area represents the 6 acres of thinning, burning, and individual tree selection treatment on north side; while only individual trees would be removed from the remaining 4 acres to protect facilities.

Background

The top of Bill Williams has been used as a fire lookout and communication site since the 1950's and serves as a critical link in the communication and utility distribution networks of a wide variety of public safety, industrial and commercial users, as well as residents of Williams and Northern Arizona. Current development includes 11 buildings and 14 towers. The buildings and towers are owned by various entities including Niles Radio, Black Mesa Pipeline, AAT Communications, Burlington Northern and Santa Fe Railway, KTVK Channel 10, Arizona Public Service, Qwest Communications, Arizona Department of Public Safety and the United States Government, which includes the Forest Service, the Federal Bureau of Investigation, the U.S. Customs and Border Protection and the Federal Aviation Administration. All of the building and tower owners belong to the Bill Williams Mountain Improvement Association. Each building and tower owner places a replacement value of over \$1 million dollars on each facility.

There are electrical power lines and a fiber optic phone line located within a 20 foot wide corridor servicing the project area from the east side. The fiber optic line is very susceptible to damage from fire and heat.

The non-Forest Service owned facilities on Bill Williams Mountain operate under "commercial use lease" agreements issued by the Kaibab National Forest. While ownership and maintenance responsibility for the actual structures fall upon the authorized lessee, the Kaibab National Forest (KNF) manages and maintains responsibility for the land and surrounding vegetation. The combination of high value facilities and fuels conditions have led to the site being deemed a District priority for fuels reduction treatments.

For more than a decade since the 1996 wildfire season, there has been heightened interest at all levels in reducing wildfire risk within the Wildland Urban Interface (WUI) areas across the West. The District completed the Williams/Chalendar WUI Assessment in 1997. All WUI areas (as defined then) were analyzed under several factors and given one of four risk ratings varying from low to extreme. Fifteen treatment "opportunity areas" (OA) were then identified across the District and prioritized for treatment based on risk rating and other criteria. The Clover High OA (in which Bill Williams Mountain is located) was identified as priority #2 out of 15. The Clover High OA primarily includes the area directly south and west of the City of Williams, as well as the north slopes of Bill Williams Mountain. Thus far, two fuels reduction projects have been planned and implemented – Clover High and City. These two projects focused treatments around the City of Williams, but did not include the slopes of Bill Williams Mountain.

In September 2005, the Bill Williams Fuels Reduction Feasibility Assessment Report was created to document the potential for implementing fuel reduction treatments on Bill Williams Mountain. An interdisciplinary team met to discuss resource considerations, concerns, and constraints, and to make a determination of implementation feasibility. The team considered the environmental, technical, economic and social components of fuels management on Bill Williams Mountain. Ultimately, the team concluded that

management activities would be feasible in each of these arenas, with certain caveats (e.g. supplemental funding, involvement of stakeholders, etc.).

Purpose and Need for Action

The Bill Williams Cap Interdisciplinary (ID) Team has identified the need to protect the infrastructure developments from high intensity wildfire that would damage or destroy these valuable facilities. The project site is currently at high risk for the initiation and propagation of these stand replacing wildfires due to its location at the top of the mountain, terrain, large concentrations of dead and downed woody debris, unnaturally high tree density (up to 10 times historic conditions) and increased tree mortality. The proximity of trees to the structures also puts these facilities at risk of being damaged from fire and/or tree failure. Management action is necessary to establish a “buffer” surrounding the facilities to support fire suppression tactics, improve public and firefighter safety, reduce the likelihood of trees spreading fire directly onto structures or damaging the structures from failure, and improving overall forest health at the site.

In addition to private (and other) lands adjacent to the National Forest, the Williams/Chalender WUI Assessment (1997) described the WUI as “lands of government ownership where there is privately owned improvements on the land. This would include special use areas such as electronic sites...” Though the Bill Williams Cap Fuels Reduction project focuses on a relatively small acreage, significant reductions in fire risk to the site can be realized by implementing the proposed action.

The Proposed Action addresses the goals and objectives of the National Fire Plan (2001) as well as the Kaibab National Forest Plan (1987, as amended); specific management direction is outlined later in this chapter. Further, it would treat a portion of the area identified in the Williams/Chalender WUI Assessment (1997) as second in priority of treatment areas; as well as accomplish portions of the 110,000 acre KNF WUI treatment priorities, established through Regional planning efforts. Finally, the proposed action is a first step in treating hazardous fuels on Bill Williams Mountain, providing insight into treatment feasibilities and outcomes. This would support and guide further management action in the area, should it be pursued in the future.

Current Condition

The southern portion of the project area, totaling approximately 4 acres, is dominated by aspen, with scattered Douglas and white fir ranging from 10 to 40 ft² of Basal Area (BA) per acre. Slopes in this area range from 15 to 40% with slopes in the far south approaching 100%; large rocks and boulders are also present in the area. Fire risk in this area is moderate, as trees are less dense and “ladder” fuels are not as well developed.

The northern portion of the Bill Williams Fuels Reduction project area (approximately 6 acres) is a mixed conifer stand that includes Douglas-fir, white fir and a small percentage of quaking aspen. The understory is thick with a diverse community of shrubs, forbs, and grasses. Dominant plants include: willow, snowberry, gooseberry, rose, Oregon-grape, honeysuckle, columbine, mountain goldenbanner (*Thermopsis*), lupine, and meadowrue (*Thalictrum*).

This portion of the project area is composed of moderate to high tree densities, with BA ranging from 100 to 180 ft² per acre. Approximately 50% of the total BA can be attributed to white fir, with Douglas-fir and a small portion of aspen contributing the balance. This area shows a well developed overstory with trees (predominately Douglas and white fir) ranging from 14 to 24 inches in Diameter at Breast Height (DBH). The mid-story is composed of a fair amount of 8 to 12 inch DBH firs; while greater than 100 small white firs per acre make up the understory. Aspen trees range from 2 to 14 inches in diameter and occupy the mid and understory levels, though recent mortality has left many aspen snags at the site. The tree canopy in this area is fairly closed, with very few small openings. Slopes in this portion of the project area range from 20 to 50 percent.

High risk for severe wildfire: The 6 acres in the northern portion of the project area currently show an elevated risk for high intensity, stand replacing wildfire that would be difficult, if not impossible, to control using conventional suppression methods.

The fire regime for high altitude mixed conifer stands is characterized by high intensity, stand replacing events with relatively long return intervals (when compared to the frequent, low intensity fires of ponderosa pine types). However, it has been noted that frequent, small scale, low intensity fires occurred in these stands as well. Current heavy concentrations of downed logs, branches and duff, combined with a very well developed fuel “ladder” in the understory would move a surface fire into the tree canopy where it can become highly destructive and significantly constrain suppression options. This type of fire behavior is not desirable in the project area as it would damage or destroy critical facilities. Table 1 below displays the relative risk (as a percentage) of fire spread into the tree canopy (Crown Fire Initiation Rating – CFIR) for the vegetation found in the project area:

Table 1. Crown Fire Initiation Rating (CFIR) for vegetation within the Bill Williams Cap Fuels Reduction project (90th percentile weather). Percentages reflect the probability of a fire moving from ground level into tree canopy given stand conditions and assumed fire weather parameters (temperature, humidity, wind speed and direction).

Vegetation type	Crown fire initiation rating (CFIR) (%)				
	Extreme	Very-High	High	Medium	Low
Aspen	100%				
Douglas Fir		82%			18%
White fir	48%	33%		19%	

Diminished Forest Health: High tree densities in the northern part of the project area increase competition for resources, thereby decreasing growth, vigor and resiliency to insects and disease. These stands show an increase in susceptibility to mortality from bark beetles and other disturbance agents. Increased mortality in the project area further exacerbates fire risk by adding to fuel loading. The closed canopy allows little light to reach the understory and therefore growth of

aspen is limited. Below average precipitation levels over the last decade, combined with unnaturally high stand densities, have reduced forest growth and vigor, contributing to conifer mortality at all elevations of Bill Williams Mountain.

There are no streams, springs or wetlands within the project area, though snowmelt contributes to ephemeral stream flow outside the project area.

Desired Condition

Entire Project Area

The desired condition for the whole of the project area is one where ground and ladder fuels are at levels such that ground fire can occur in the project area with minimal damage to improvements and the ecosystem. Maintenance burning would mimic the frequent, small scale and low intensity fires that naturally occur, while helping to avoid the large scale, stand replacing fire events characteristic of mixed conifer fire regimes. The canopy would be opened as much as possible with thinning from below in order to remove ladder fuels and reduce the risk of crown fire initiation. Fire management would be able to safely ignite a backing fire in the area in an effort to head off advancing flame fronts in the event of a wildland fire near the project area.

As defined by the 1997 Williams/Chalender WUI Assessment, the “intensive” treatment zone is the area within 1/8 mile of private land. This zone is considered the last line of defense against an advancing fire threatening private property. In the case of this project, the facilities atop Bill Williams Mountain are private property, and therefore the project area will be considered as an intensive treatment zone.

The desired condition for the intensive zone includes individual trees or small groups of trees that are widely spaced so crowns are separated (open canopy). There are low levels of “ground fuels” such as dead and down woody material, including needles, and an absence of “ladder fuels” which consist of small logs, low branches, dwarf mistletoe-created witches’ brooms, saplings, and pole-sized trees. The objectives of this zone are to increase firefighter and public safety, reduce the threat of an advancing high intensity wildfire, and reduce impacts to adjacent private property.

Though prescriptions will be modeled after the desired intensive zone conditions, open canopy objectives cannot be fully implemented due to the following considerations: 1) the project area is located at the cap of Bill Williams Mountain which poses operability constraints; and 2) the project area contains four acres of MSO PAC habitat, limiting the extent of thinning in the area. However, ground and ladder fuels objectives can be met using thinning and burning prescriptions and would provide a significant reduction of high intensity fire risk.

Kaibab Forest Plan Management Direction

The Kaibab Forest Plan contains the following direction relating to the proposed project:

- Encourage prescribed fire (management-ignited) to reduce hazardous fuel accumulation. Thinning from below may be desirable or necessary before burning to reduce ladder fuels and the risk of crown fire.
- Treat fuel accumulations to abate fire risk.
- Protect human life and improvements.
- Minimize acreage burned by high-intensity fires.
- Maintain soil productivity and watershed condition.
- Use prescribed fire as a resource tool where it can effectively accomplish resource objectives.

A non-significant, site specific amendment to the Forest Plan's Regionally Consistent Standards and Guidelines would be necessary to thin trees up to 12 inches in diameter, and remove a small number of trees larger than 12 inches from within the Bill Williams MSO PAC. Approximately 4 acres of the treatment area are located within the PAC boundary. Forest Plan MSO Guidelines limit tree removals from within a PAC to 9 inches DBH. Thinning prescriptions would remove all trees up to 12 inches in diameter across 6 acres, while approximately 17 hazard trees, ranging from 10 to 30 inches DBH, would be removed from adjacent to structures. Of these hazard trees, 6 are located within the PAC boundary.

National Fire Plan Direction

- Reduce the total number of acres at risk to severe wildland fire.
- Ensure communities at risk in the wildland-urban interface receive priority for hazardous fuels treatment.
- Expand and improve integration of hazardous fuels management program to reduce severe wildland fires to protect communities and the environment.

Proposed Action

The Kaibab National Forest, Williams Ranger District proposes to conduct a fuels reduction treatment within the Bill Williams Cap Fuels Reduction Project area. The planning area encompasses 10 total acres, 6 of which would be treated with thinning, hand piling, burning, and individual tree removal, including approximately 4 acres of a MSO PAC. The remaining 4 acres of the project area would have trees individually selected for removal to protect structures. The District ID Team has identified the following overall objectives for the Bill Williams Cap Fuel Reduction project:

- Reduce the risk of wildfire impacts to the infrastructure within the project area, including the establishment of a “buffer” around the site from which fire suppression activities can be initiated, and the removal of trees close enough to structures to avoid spreading fire directly onto structures and damage from tree failure.

- Enhance forest health and resiliency to insects/disease.
- Provide for public and firefighter safety during wildfires

To accomplish these objectives, the proposed action would apply thinning, individual tree selection, and pile and broadcast burning prescriptions to 6 acres within the project area; the proposed action would also individually select trees for removal within the remaining 4 acres. Activities included in the Proposed Action are:

- Thin live fir and snags less than 12” DBH to develop open canopy and remove fuel ladders (remove approximately 175 TPA less than 5 inches DBH and 20 TPA between 5 and 12 inches) in the northern 6 acre portion of the project area;
- Fell and remove fir and aspen trees that are adjacent to structures (within tree height or ~130 ft, as needed) to prevent damage or flame impingement to structure (approximately 17 fir greater than 10 inches, and a few aspen trees);
- Hand-pile and burn at least 80% of slash associated with activity;
- Retain felled trees and activity slash to protect soil resources in the western and southern portions of the project area where there are steep slopes or a lack of existing ground cover;
- Maintain surface fuel loading at desirable levels using broadcast and maintenance burning;

Table 2 represents the dense mixed conifer stand to the north of the communications site. It is approximately 6 acres in size, 4 of which are within the MSO PAC. Tree removal data is based on a preliminary site inspection in 2007 and estimates the extent of thinning and individual tree removal activities.

Table 2. Estimated tree removals per acre (TPA) under the Proposed Action for the Bill Williams Cap Fuels Reduction Project for Douglas and white fir (a), aspen (b) and all species (c).

(a) Douglas and white fir

Diameter Class	Existing TPA	TPA Removed	TPA Post Treatment
<5"	167	167	0
5" -12"	20	20	0
12"+	83	3*	80
TOTAL	270	190	80

** Approximately 17 trees total, in this size class, would be removed due to their proximity to structures.*

(b) Aspen

Diameter Class	Existing TPA	TPA Removed	TPA Post Treatment
< 5"	1167	~17	1150
5"-12"	12	0	12
12+	0	0	0
Total	1262	~17	1245

(c) All Species

	Existing	Post Thinning
Ave BA, > 5" DBH	170	140
TPA, Snags > 12" DBH	5.7	5.7
TPA, Snags > 18" DBH	3.0	3.0
Stand VSS	4BMS	4BMS
% Group VSS 1 & 2**	5	7
3	12	5
4	33	35
5	35	37
6	15	16

Individual tree selection to protect facilities is the only treatment that is proposed for the southern 4 acre portion of the project area due to steep and rocky terrain, a more open existing canopy and less existing fuel loading (see Figure 2).

Decision Framework

Given the purpose and need, the deciding official will review the Proposed Action and other alternatives in order to decide:

- Whether the proposed activities would accomplish Forest Plan objectives and meet the purpose and need for the project;
- Whether to implement the activities as proposed, portions of the proposed action or any alternative that may be developed;
- What design features or mitigation measures would be required for resource protection during implementation;
- What monitoring is required, and;
- Whether further analysis in an environmental impact statement (EIS) is needed.

Public Involvement

Public participation has been ongoing since 2006 and has included formal consultation with area tribes and the Arizona State Historic Preservation Officer, local governments, the Bill Williams Improvement Association, etcetera. Public involvement will be solicited throughout the planning and development of the Bill Williams Cap Fuels Reduction project. Public input will assist the planning team in identifying issues and/or concerns with the proposed action, refining environmental effects analysis to address those concerns, and developing alternatives to the proposed action as needed (as well as developing mitigation/monitoring strategies). This will be an ongoing process and will be documented throughout project.