

A 10-Year Strategy to Reduce Fuels and Restore Watersheds

*San Juan Public Lands
Durango, CO*



March 2004

SAN JUAN PUBLIC LANDS

Accelerated Watershed/Vegetation Restoration Plan

10 - Year Strategy

Introduction

This paper describes a 10-year strategy to accelerate the improvement of vegetation and watershed conditions on the San Juan Public Lands (SJPL), comprising the San Juan National Forest (SJNF) and Bureau of Land Management-San Juan Field Office, in southwest Colorado. It describes the land management agencies' plans to improve vegetation conditions on federal lands through the treatment or removal of hazardous fuels. These actions would reduce the wildfire risks to both public and private lands, thereby increasing both public and firefighter safety. They will also make landscapes more resilient to fire, thus able to handle unplanned wildfires with less severe impacts to downstream resources and public values.

Setting

Southwest Colorado is one of the fastest growing areas of the state. Almost all lower-elevation Forest Service and BLM boundaries now border subdivisions or private land with homes or other developments and these areas also contain the most fire-prone vegetation species. For example, on the Pagosa Field Office/Ranger District (FORD), 80-85% of the wildland-urban interface (WUI) boundaries fall within the pinyon pine, juniper, Gambel oak, ponderosa pine, or warm-dry, mixed-conifer vegetation types that are very fire prone. This vegetation is almost entirely Condition Class 3, with a small percentage in Condition Class 2. With population growth expected to continue increasing, more homes, subdivisions, and communities will lie within the WUI and be susceptible to wildfires.

Southwest Colorado has been in a severe drought for 5-6 years. According to the National Weather Service and university researchers, we may be poised at the beginning of an extended drought period (20+ years). The drought has stressed all vegetation types and made them vulnerable to insect and disease attack and wildfire. On the west side of the SJPL, the pinyon pine/juniper zone is comprised of mostly dense vegetation with a high degree of crown closure. The extended drought has resulted in very low live- and dead-fuel moistures, and a recent *Ips* beetle outbreak has resulted in catastrophic mortality (> 80% kill) in the pinyon pine component. Beetles are also starting to attack the juniper, though at a much slower pace. The drought is also affecting ponderosa pine and oakbrush stands, which are much more densely populated than they were 80 to 100 years ago. Extreme fire weather conditions that are found during a drought, in combination with the beetle kill, can contribute to explosive wildfire situations that make landscapes of 50,000-100,000 acres highly susceptible to intense, fast-moving, crown fires. Many of these beetle-killed stands are in the WUI where the threat to individual homes, subdivisions, and communities from a fast moving wildland fire is high.

Much of the vegetation on the SJPL is in need of some type of treatment or restoration. In addition to timber stands more densely populated than they were 80 to 100 years ago, past timber management and fire suppression have created stand conditions that favor the establishment of shade-tolerant conifers, which persist in the understory of

many warm-dry and cool-moist, mixed conifer, aspen, and ponderosa pine stands. In mixed-conifer stands for instance, dense white fir understories have created ladder fuels and a food source for western spruce budworm. In addition to the abundance to shade-tolerant regeneration, there is a lack of regeneration of shade-intolerant, fire-resistant species such as ponderosa pine and Douglas-fir. These factors have greatly increased the risk of stand-replacement wildfires in mixed conifer, aspen, and ponderosa pine stands, and widespread budworm outbreaks. Such events would be unnatural in terms of scale and intensity.

Over 75% of the SJPL provide critical watersheds in support of drinking water supplies or important fisheries or their habitat in southwest Colorado or northwest New Mexico. The main stems of nine major rivers and many tributaries serve as critical or priority watersheds. They provide drinking water supplies to 14 municipalities, 10 in Colorado, four in New Mexico, and Mesa Verde National Park. Many of these same watersheds support four sensitive fish species and their habitats on the SJPL and four downstream endangered fisheries and their habitats. The treatment of vegetation and management of wildfire in certain watersheds or in key locations will be crucial to reduction of downstream impacts from unplanned ignitions.

In 2002, the SJNF experienced the largest fire in its history. The 70,000-acre Missionary Ridge Fire covered a 25-mile by 12-14 mile area, threatened 36 subdivisions, displaced 2,300 people anywhere from 2 to 24 days, and destroyed 56 homes and 27 outbuildings. The fire clogged and damaged the drinking water systems for Bayfield, Durango, and Ignacio, Colorado with ash, mud, and debris. It redefined the WUI zone and long-term effects of a wildfire on a growing local population, reinforced the effects of drought and extreme fire conditions, and helped prompt development of this vegetation management strategy. The fire also heightened the local awareness of the need for hazardous fuels treatment on both public and private lands.

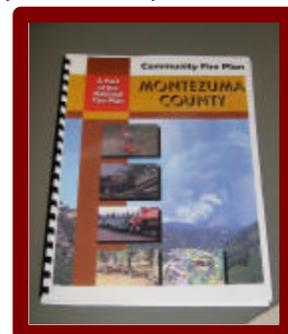
Community Fire Plans

With the creation of the National Fire Plan, the San Juan Public Lands Center entered into a challenge-cost share agreement with the Office of Community Services at Fort Lewis College to develop Community Fire Plans (CFPs) for the five most populated counties sharing boundaries with the SJPL. The fire plans were developed through a collaborative effort of local fire chiefs, sheriffs, city, county, and state officials, and interested citizens.

Each plan contains action items for reducing fire hazards on both public and private land. In addition, the plans:

- ?? identify areas of highest priority for fuels-reduction treatments and/or ecological restoration in the wildland-urban interface;
- ?? outline steps for continuing public education regarding fire hazard reduction;
- ?? set priorities for S&PF monies to Fire Departments and Volunteer Fire Departments by identifying equipment and training needs that enhance their capability; and
- ?? suggest funding/technical assistance strategies to help private property owners accelerate the creation of defensible space.

The CFPs not only strengthened the relationships between agencies and communities, but also between partners. The Southwest Colorado Community Action Partnership, comprised of SJPL, Colorado State Forest Service, Office of Community Services, and San Juan Mountains Association personnel, was formed during the development of the CFPs. In cooperation with counties and local fire departments the partnership works to heighten public awareness of the need for fuels-reduction treatments and healthy ecosystems on both public and private lands. The partnership has worked on videos, brochures, open houses, workshops, and other educational materials, and is also supporting the newly formed Southwest Colorado FireWise Council. Both groups will be an integral part of the public involvement efforts related to this strategy.



As a result of the CFPs, some FORDs initiated analysis of 15,000-20,000 acre landscapes and all offices established several demonstration units. The landscape analyses helped identify future restoration and fuels-reduction projects that border private land and many subdivisions. The demonstration units are areas that have been mechanically thinned with hydromowers or chainsaws, are highly visible and well used by the public, and will assist in both external and internal education efforts.

The CFPs helped to mold the overall, integrated management strategy for fire, fuels, timber, wildlife, and other activities for the next 10 years. Since the CFPs are now two years old, plans are in place to verify treatment priorities and examine new issues during 2004.

Vegetation Treatment History

To establish a frame of reference for this 10-Year Strategy, the Forest and BLM lands have about 300,000 acres and 180,000 acres, respectively, within the WUI in Condition Classes 3 or 2 (see support files for analysis procedures and assumptions). For these estimates, 1½ miles from private property (as per the Healthy Forest Restoration Act of 2003) was used to define the WUI. The following resource discussions describe the vegetation treatments on the SJPL since FY90. The SJNF has treated about 105,000 acres mostly in the non-WUI and the BLM about 18,000 acres mostly in the WUI.

- (A) **Hazardous Fuels:** On National Forest lands, about 6-12,000 acres of hazardous fuels are treated annually, primarily through prescribed burning. Mechanical treatments have occurred only in the last several years and have typically been several hundred acres in size. Yearly accomplishments vary depending on the length of the spring and fall burning windows, smoke management conditions, other wildfire activity throughout the West, availability of contingency resources and qualified burning staff, and other priorities. Most of the burning (60% to 80%) has occurred close to the WUI but not within it. All of the acres treated were in Condition Class 3 or 2. Since FY90, the Forest has treated 40-50,000 acres of hazardous fuels, excluding wildlife burns.

Since 1999 the BLM has treated about 2-3,000 acres of hazardous fuels annually, primarily by mechanical means (hydromowing, hydro-axe, some thinning) with small amounts of prescribed burning. All fuels reduction has

occurred within the WUI and Condition Class 3 vegetation. Since FY90, the BLM has treated 13,600 acres of hazardous fuels, excluding wildlife burns.

- (B) **Timber:** The following table displays the Timber Offer Volume and Target, and Acres Harvested since FY90 for the San Juan National Forest.

FY	Timber Offer (MMBF) *	Timber Target (MMBF) *	Total Area Harvested (Acres)
1990	23.1	28.0	3,505
1991	22.6	26.6	4,228
1992	17.0	21.5	5,357
1993	8.1	18.9	2,685
1994	12.4	17.7	1,802
1995	5.5	14.0	1,262
1996	7.9	**	5,566
1997	13.4	**	722
1998	9.5	**	1,120
1999	10.2	**	1,406
2000	11.7	15.0	2,628
2001	9.8	10.0	1,606
2002	2.2	4.6	1,033
2003	2.8	10.7	1,000

* MMBF = Million board feet

**Combined timber target with the Rio Grande National Forest Allowable Sale Quantity (ASQ) = 24 MMBF/Year

The timber program has been primarily focused on forest restoration in ponderosa pine and warm-dry mixed conifer since 1995. Until just recently, almost all harvest activities occurred in the "backcountry" (non-WUI). In the last several years, more WUI acres were treated but the timber program is still predominately located in the non-WUI. The Forest attempts to offer 10-14 million board feet (MMBF) annually. The timber harvest level in 2002 reflects the tremendous fire activity and subsequent fire restrictions in Colorado and on the SJPL and in 2003 it reflects the time spent analyzing and preparing salvage sales associated with the Missionary Ridge Fire. The Forest's offer in FY04 should be more than in previous years. The timber stand improvement program is quite variable (from 0 acres to 1400 acres) but the SJNF averages about 500 acres/year. Since FY90, the SJNF has harvested timber from 33,920 acres.

The BLM does not have a timber program except for occasional post and pole sales or activities to support hazardous fuels (i.e., thinning of isolated BLM parcels in the WUI).

- (C) **Wildlife:** On National Forest lands, treatments to improve vegetation for wildlife have been in the form of prescribed burns ranging from several hundred acres to 9-10,000 acres, and occur sporadically from year to year. These burns are typically a cost-share through the Colorado Division of Wildlife Habitat Partnership Program or other partners like the Rocky Mountain Elk Foundation. Since FY90, the SJNF has burned about 20,000 acres to benefit wildlife.

The BLM program is similar to the Forest Service's but of a lesser scale and more infrequent. The BLM has burned 1,500 acres to benefit wildlife since FY90.

- (D) **Range:** On the SJNF, minimal range vegetation treatment (i.e., removal of invading pinyon pine/juniper and other trees and shrubs through roller chopping and other activities) has occurred in the last 13-15 years.

However, for the BLM public lands, 2,900 acres of range vegetation treatment has occurred since FY90.

- (E) **Developed Recreation:** Excluding the usual hazardous tree removal, several campgrounds and overlooks/picnic areas on the SJNF have been treated by thinning or prescribed fire including Vallecito Campground, Junction Creek Campground, Animas Overlook, McPhee Campground, West Fork Campground, and Wolf Creek Campground. The Missionary Ridge Fire affected some timber stands around and inside numerous campgrounds (Florida, Florida Group, Transfer Park, Vallecito, Middle Mountain, Pine Point, North Canyon, Graham Creek, and Old Timers campgrounds), which have subsequently been salvage logged or are undergoing fuels-reduction treatments.

BLM developed recreation facilities have only been treated for specific hazardous tree removal.

Generally, the vegetation treatment history for each agency has occurred independently by resource program. Specific budgets for the hazardous fuels, timber, wildlife, range, and developed recreation programs by agency have been planned, allocated, and spent on high-priority work, but not necessarily in the same general location to achieve overlapping and multiple benefits between programs or between agencies.

The following table displays the budgets that the San Juan Public Lands received for the Fire Preparedness/Suppression, Hazardous Fuels, and Timber Programs in FY02 and FY03 for relative comparisons of programs.

Program	FY02 (Thousands of Dollars)			FY03 (Thousands of Dollars)		
	FS	BLM	Total	FS	BLM	Total
Fire	2,137.1	315.0	2,452.1	2,057.4	178.6	2,236.0
Haz. Fuels	2,431.5	296.7	2,728.2	1,997.6	325.3	2,322.9
Timber*	1,894.3	38.0	1,932.3	1,806.9	11.0	1,817.9

*Includes NFTM and NFVW (Timber Stand Improvement only)

Separate 10-year strategies have been developed for each FORD because of specific fire situations, historic burning programs, access issues, Wilderness and other Congressionally designated areas, RARE II areas, topographic limitations, and vegetation patterns. These separate strategies used Geographic Information Systems (GIS) tools for the above-mentioned items and CFPs to focus their efforts. These individual strategies, along with their corresponding 5-Year Action Plan and Map, have

been tailored to the specific situations that exist in these different areas. The 10-Year Strategy presented here is a consolidated strategy for the SJPL.

10-Year Strategy

Vision

The SJPL encompasses an incredible diversity of natural habitats from high desert country with river canyonlands dominated by pinyon pine, juniper, and sagebrush to high barren mountain peaks over 14,000 feet in elevation. Much of these lands are a forested, mountain environment providing outstanding scenic beauty and heritage resources; expanses of wilderness and undeveloped land; a variety of recreation opportunities; oil/gas, mineral, wood, and forage products; homes for populations of fish and wildlife of all kinds; and abundant clean air and water. The SJPL provide an outdoor experience based on quality and variety in a largely natural mountain setting. Many of the people that live in this area of southwest Colorado and near the public lands do so because of the quality of the environment and associated lifestyles.

To address the issues from the Setting Section, the vision for the SJPL is one in which forested landscapes have healthy, fire-resilient ecosystems that maintain or improve scenic beauty and the other unique attributes discussed in the previous paragraph. A desirable forest vegetative structure would be expected to support a wide range of multiple uses, while being resistant to damage from fire, drought, insects, and disease. This vegetative structure would improve community, public, and firefighter safety, minimize the risk of damage from wildfire, drought, insects, and disease, and improve forest and land health by making watersheds more resilient and less susceptible to the effects of natural disturbances.

Spatial Focus

The overall strategy for the SJPL focuses or prioritizes vegetative treatments to reduce the risk of wildfire to subdivisions, communities, and critical watersheds. Generally, the highest priority treatments occur near subdivisions and communities at the lower elevations in the pinyon pine/juniper, ponderosa pine/Gambel oak, and warm-dry, mixed-conifer vegetation types, or serve to create fuel breaks that are aligned to protect communities or portions of critical watersheds. As one moves away from these areas and gains elevation, the priority of treatments decreases. The lowest priority treatments generally occur at the highest elevations in the cool-moist, mixed conifer, aspen, and spruce-fir vegetation types. These priorities are coarsely divided into outward-spreading zones that align well with certain vegetation types.

(1) Highest Priority Zone

This zone includes National Forest lands primarily south, and a little to the north, of Highway 160 and most of the BLM lands (except San Juan County which is very high elevation), and is found adjacent to the above-mentioned community values (i.e., WUI). The most common vegetation types in this area are pinyon pine and juniper, Ponderosa pine and Gambel oak, and small amounts of warm-dry, mixed conifer. This zone typically has vegetation in Condition Classes 3 or 2 (significantly or moderately altered, outside the historic range) because of stand densities, shade-tolerant conifer invasion, past fire suppression, and other factors.

Our strategy for this zone is to use primarily mechanical treatments to reduce fuels to protect nearby properties and restore ecosystem health. Examples of common treatments in this zone include thinning of ponderosa pine, commercial harvesting in ponderosa pine and mixed conifer, mowing of Gambel oak, and hydromowing of pinyon pine and juniper. If prescribed fire is used in this zone, it will generally be considered a secondary treatment that follows a mechanical treatment to further reduce fuels and increase the vigor of trees and shrubs. Treatment areas will most often be focused within ½ to 1 mile of the target properties with the overriding objective of protecting subdivisions and communities from wildfire, and a secondary objective of ecosystem health. Individual treatment areas will generally be less than 500 acres and typically covered by a Categorical Exclusion (CE) because the effects from the activity are limited and predictable. However, some areas may be analyzed on a 15,000-20,000 acre landscape level and require an Environmental Assessment and Decision Notice (EA/DN). There are several administrative sites and campgrounds located within this zone. Specific vegetation management plans would be developed for each site to meet its unique needs, while providing protection from wildfire and promoting healthy vegetation. Thinning, burning, and planting will be likely activities in and around administrative sites and campgrounds.

(2) High Priority Zone

The second zone is still primarily in the ponderosa pine and Gambel oak vegetation type with a variable percentage of warm-dry, mixed conifer. Generally, this zone is on National Forest lands north of the communities of Dolores, Mancos, Durango, Bayfield, Ignacio, and Pagosa Springs at slightly higher elevations and may be both inside and outside the WUI. This zone typically has vegetation in Condition Classes 3 or 2 because of stand densities, shade-tolerant conifer invasion, past fire suppression, and other factors.

There are three goals for this zone: 1) increasing community, public, and firefighter safety related to wildland fire, 2) maintaining or reestablishing forest structure and composition leading to long-term health and function of forest ecosystems, and 3) creating fuel breaks that are positioned considering the prevailing winds, Condition Class, and expected wildfire spread, to protect communities and important watersheds. Associated benefits would include resistance to damage by natural or human-caused disturbance (e.g., wildfire, insect or disease outbreaks), wildlife habitat enhancement, protection of administrative sites such as campgrounds, work centers, bunkhouses, recreation sites and range improvements, and maintenance or enhancement of watershed health and function, particularly high value and/or municipal watersheds, and critical fish populations and habitats.

Restoration forestry (via mowing, pre-commercial and commercial thinning, commercial timber sales) and prescribed burning will be the primary management tools used in this zone. Mowing of oakbrush and pre-commercial thinning will be used to increase the burning windows and to accomplish an immediate reduction in ladder fuels prior to prescribed burning in subsequent years. Prescribed fire is cost effective and has restoration benefits that exceed mechanical treatments; however, the window of opportunity is brief. In some areas where we have historically burned, we cannot accomplish further fuel reduction or restoration without altering the structural characteristics of the stand. A prescribed fire maintenance burn program will be an additional outcome of activities in this zone. In terms of departure from the historic range of variation for forest characteristics such as fuel loadings, stand density,

susceptibility to insects and disease, and Gambel oak/white fir encroachment, this is the zone that needs the most work and contains the largest number of acres to be treated over time. Topographic and access limitations on some of the FORDs, however, will limit the number of acres that can be effectively treated mechanically. CEs can be used for some of the projects in this zone but EAs/DNs will be used as project size and impacts increase. Landscape-level analysis on the order of 15,000 to 50,000 acres, and treatments of several thousand acres, will occur predominately in this zone. Because of this, a combination of mechanical and burning treatments will be staged in large acreages over time for the most effective long-range accomplishment of our goals. Administrative sites and campgrounds would be treated the same as in the Highest Priority Zone.

(3) Moderate to Low Priority Zone

This zone is found in upper elevation in the cool-moist, mixed conifer, aspen, and spruce-fir vegetation types and includes the BLM lands in San Juan County and National Forest lands not found in the other two zones. Most lands in this zone are non-WUI, except for Silverton, Rico, the Durango Mountain Resort area, and isolated subdivisions. This zone generally includes vegetation that exhibits Condition Class 1 or 2 characteristics (within the historic range, not significantly altered), but some vegetation at the lower elevations in this zone may be Condition Class 2 or 3.

This zone is a moderate to low priority for management activities because the vegetation may not have yet missed a natural fire cycle and is within the range of historic variation. Because fire cycles are infrequent in the high elevations, it is important that we take advantage of all opportunities to use natural ignitions in this area. Wildland Fire Use (WFU) will be the primary tool for fire and fuels management in this zone. This is especially true in Wilderness where allowing natural processes to occur is the primary management philosophy. However, for areas like the congressionally designated Piedra Area, we intend to use prescribed fire to first reestablish vegetation with a fire resilience that will permit us to allow WFU. Currently, WFU is not used in large portions of the Piedra Area because of stand densities, shade-tolerant conifer invasion, and concerns about downstream effects on fishery habitat and municipal drinking water supplies from a wildfire. There will be a need to take limited action in specific areas to protect high elevation communities, isolated homes and subdivisions, administrative sites, and campgrounds from insect and disease outbreaks and wildfire. Fire suppression will still be used near high-value properties or in times of abnormal risk, and certainly to protect higher elevation municipal watersheds and key fishery streams from stand-replacement wildfire.

Temporal Focus: 2004 - 2006

Assuming a corresponding increase in funding, we will begin to gradually ramp-up the vegetation treatment program on National Forest lands from a 10,000-acre target in 2003 to a 17,000-acre target in 2006 (see Goals for Key Point 3). For BLM lands, we will achieve the existing 2-3,000 acre target or increase it slightly to 4,000 acres/year by 2006. The BLM goals will be achieved by the three Field Offices until the Canyons of the Ancients National Monument (CANM) Resource Management Plan Revision is completed in 2006.

To increase the probability of achieving the proposed target, we will increase the number of mechanical acres on National Forest lands to about 40% to 50% of the

Forest's overall hazardous fuels program by using CEs and existing EAs/DNs. The majority of the BLM's program will continue to be via mechanical means. We will also shift the majority of the Forest Service timber program (60-70%) to support the hazardous fuels program at the lower elevation vegetation types. We will continue to take advantage of burning windows at different elevational zones on the Forest to implement the 14-15,000 acres of burns currently "on-the-shelf."

Our treatment efforts will be predominately focused on areas next to or intermixed along the SJPL's southern boundary (Highest Priority or High Priority Zones from the previous section) that were identified in the Community Fire Plans and are found in the WUI. We will take advantage of WFU opportunities across the SJPL. A constant supply of wildlife burns, fuels reductions around campgrounds and administrative sites, and vegetation treatments with multiple resource benefits will be developed.

Additionally, an overall monitoring and evaluation plan to coordinate efforts between resource program areas and FORDs, and a corresponding adaptive management mechanism, including trigger points, will be assembled. During this period, we will make decisions on landscape-level analyses (15-20,000+ acre analysis areas) to create a pipeline of activities for later in the decade.

The San Juan and the Grand Mesa, Uncompahgre, and Gunnison National Forests will complete a mill capacity and timber demand study for southwest Colorado that explores opportunities for emerging markets for small-diameter materials as well as current mill capacities. We will continue to work with local governments, mill owners, and entrepreneurs to develop markets for wood material or other means of disposal.

Temporal Focus: 2007 - 2010

Assuming a corresponding increase in funding, we will increase from a 19,500-acre target/year to a 25,000-acre target/year (see Goals for Key Point 3) for the vegetation treatment program on National Forest lands. On BLM lands with the help of CANM, we will increase the program from 4,000 acres annually to 6,000 acres annually. We will begin implementing the larger-scale treatments (several thousand acres/project) on National Forest lands from the several landscape-level analyses completed earlier in the decade. We will maintain 40% to 50% of the program for both agencies in mechanical treatments. Besides WUI, we will also focus our efforts on creating defensible areas (i.e., fuel breaks) to contain or cut-off likely fire starts before they get too large (Highest Priority and High Priority Zones from the previous section). We will begin implementing wildlife burns and other vegetation treatments with multiple resource benefits annually. We will begin to implement secondary maintenance burns more frequently. These burns are intended to re-treat past project areas to begin to mimic the natural fire cycles and begin to allow WFU fires. We will continue to make decisions on landscape-level analyses to provide a full pipeline of future vegetation treatment activities. We will continuously have discussions with local governments and entrepreneurs on wood disposal and market issues. We will strive to develop new markets while utilizing existing ones.

Temporal Focus: 2011-2013

Assuming a corresponding increase in funding, we will continue planning and implementation for a possible 28-30,000-acre program on the Forest (see Goals for Key Point 3). We will increase to a 7-8,000-acre/year program on BLM lands. In addition to

WUI, we will focus our efforts on creating defensible fuel breaks and achieving vegetation projects with multiple resource benefits in the Highest Priority and High Priority Zones. We will plan and implement re-entry activities and maintenance burns. We will utilize existing timber- and wood-disposal markets and develop new markets.

Guiding Principles

We will assess and implement mechanical treatments and prescribed fire projects and opportunities at both the project level (several hundred to several thousand acres) and landscape scale (15,000-20,000 acres). Wherever possible, treatment goals will combine reduction of hazardous fuels with forest restoration. We will approach restoration as the long-term solution to the current forest health problems. We recognize that often several restoration treatment actions will need to occur before areas are in a condition to allow fire to play more of its natural disturbance role. Restoration treatments need to occur within the next 20-30 years. Mechanical treatments will occur year-round. The restoration and fuels-reduction programs for both the Forest Service and BLM will occur concurrently. The majority of the Forest Service's timber program (60% - 70%) will support the hazardous-fuels program at the lower elevation vegetative types (Ponderosa pine and warm-dry, mixed- conifer types). The remainder of the Forest Service's timber program (30% - 40%) will be focused on aspen and spruce fir at higher elevations. Timber production will be a consistent and predictable outcome of the treatments.

We will attempt to achieve multiple resource benefits on a given acre of treatment. We will develop integrated vegetation treatments on the same acreage and pool the individual resource budget allocations, to attain a synergistic beneficial effect between multiple resources and get the "biggest bang for the buck." We will also examine issues and concerns, for example, critical wildlife or fishery habitat needs, range management impacts, etc., modify proposals as necessary, and develop appropriate mitigation for noxious weed control and other issues for application before, during, and after vegetation treatments.

The SJPL has a very strong and proactive fire education and information program. Public outreach will be aggressive and will occur in cooperation with the Southwest Colorado Wildfire Community Action Partnership (comprised of FS/BLM, Colorado State Forest Service, Office of Community Services, and San Juan Mountains Association) and the Southwest Colorado FireWise Council, two community education efforts, which the Forest Service and BLM are a part of. These entities will help promote demonstration sites, emphasize the need for hazardous-fuel removal, and involve affected communities and subdivisions in planning of future treatments on public lands. They will also continue to promote April as Fire Prevention and Education Month, providing speakers, activities, workshops, tours, and other informative material throughout the month.

Neighbors will be encouraged to conduct fuel-removal activities on adjacent private lands. We will be responsive to neighbors making such efforts, and try to reduce the fuel build-up on "our side of the fence," even if these activities are small scale and less cost-efficient than larger treatments. We will utilize Good Neighbor Agreements as opportunities arise.

We will continue to work in partnership with researchers from Colorado State University, Northern Arizona University Ecological Restoration Institute, Fort Lewis College, Rocky Mountain Research Station, and with State and Private Forestry experts in pest management to develop treatments that apply the best science available.

Monitoring projects and adapting our management is fundamental to our approach. We will continuously evaluate our management and adjust emphasis and project design as needed in order to maintain effectiveness, obtain the desired consequences of our actions, and prioritize future projects. This monitoring and adaptive management will occur at both a FORD level and a Forest/BLM level. The private sector's response to our strategy will be evaluated every two to three years to determine if adjustments in acres or treatments are needed in the strategy's second or third phases.

The selection of implementation tools will be guided by effectiveness, cost-efficiency, and protection and enhancement of forest and land resources. We are going to maintain a consistent amount of projects appropriate for private sector contracts. Private contracting will be used as much as possible, especially for on-the-ground mechanical treatments (hydromowing, hydroaxe, thinning, etc.) and landscape-level analysis. Fire line installation and other burn preparation work will be considered for private contractors. We will maintain a balance between prescribed fire and mechanical treatment both within and outside the WUI and important watersheds.

All proposed projects will be in compliance with both the SJNF Forest Plan and the BLM's Resource Management Plan (RMP). In 2004, we will complete a programmatic Environmental Assessment which will address the cumulative impacts of proposed hazardous fuels treatments on BLM lands, as well as the mitigation measures that will address those impacts. The EA will amend the San Juan/San Miguel RMP and allow us to make better use of the Categorical Exclusion authority.

We will continue to use Interagency Teams to streamline Endangered Species Act (ESA) consultation with US Fish and Wildlife Service. All analysis, regardless of documentation level, will be developed with the full involvement of our interdisciplinary team. In general, our planning efforts and subsequent implementation will be on priority areas. However, lower priority projects may be prepared and ready should a higher priority suffer delay.

We will coordinate our strategy with the Colorado State Forest Service, Mesa Verde National Park, Southern Ute Tribe, Ute Mountain Ute Tribe, and other appropriate agencies annually.

Goals by Key Point

Key Point 1 (Firefighting)

We will attempt to staff permanent positions at 100% of the Most Efficient Level (MEL) based on the National Fire Management Analysis System (NFMAS) spreadsheets for both agencies. In 2004, we will fill the Pagosa FORD Assistant Fire Management Officer and Forest/BLM Center Fire Management Officer positions. Commensurate with fire preparedness and suppression funding from the Forest Service and BLM, we will staff temporary positions at the corresponding MEL. We will continue to undertake fire protection and suppression activities that provide for public and firefighter safety, and

are reasonable when compared to the resources and values at risk. We will examine the opportunity to conduct a joint NFMAS analysis for the Forest Service and BLM fire organization in southwest Colorado in the future.

Key Point 2 (Rehabilitation and Restoration)

We will continue to monitor and evaluate the success of rehabilitation treatments in the Missionary Ridge Burned Area and other areas. In the first two to three years of the decade, we will complete the remaining long-term rehabilitation and restoration of the Missionary Ridge burn area (weed treatments, range improvements, etc.). Until the important watersheds affected by the Missionary Ridge Fire are stabilized, we will continue to operate the Early Warning Rain Gauge System for the health and safety of the public. In the last half of the decade, weed infestations, insect/disease activity, soil erosion, mass wasting, and water quality effects will be assessed and appropriate responses applied.

Key Point 3 (Hazardous Fuels Management)

Given a corresponding level of funding, the following table displays the proposed levels of vegetation treatment for the San Juan Public Lands (Forest Service and BLM) for the next decade.

Proposed Treatment Acres by Fiscal Year										
	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
FS	15,200	15,200	17,000	19,500	22,000	23,500	25,000	26,500	28,000	30,000
BLM	3,000	3,000	4,000	4,000	5,000	5,000	6,000	6,000	7,000	8,000
Total	18,200	18,200	21,000	23,500	27,000	28,500	31,000	32,500	35,000	38,000

In the first half of the decade, we will treat 14-15 Forest Service developed campgrounds or administrative sites, and conduct numerous wildlife burns or prescribed burns where the terrestrial wildlife resource will receive substantial benefits. In the last half of the decade, we will conduct at least one wildlife burn and two campground or administrative site thinning projects per year on National Forest lands. To help achieve these goals, a SJPL Hazardous Fuels Specialist and six fuels positions on FORDs will be filled in 2004.

The expected total vegetation treatment for the decade should be about 222,000 acres for the Forest and 51,000 acres for the BLM. In conjunction with treatments over the last 15 years (105,000 acres for the Forest Service and 18,000 acres for the BLM), we will have treated 327,000 acres on the Forest (not including the 70,000-acre Missionary Ridge Fire) and 69,000 acres on the BLM, predominately in the Highest or High Priority Zones. We expect the following timber volumes to be offered for the next 5 years - from the Timber 5-Year Action Plan (see table below).

Projected Timber Harvest by Fiscal Year				
FY04	FY05	FY06	FY07	FY08
10.1 MMBF	14.8 MMBF	17.2 MMBF	12.8 MMBF	13.2 MMBF

We will collaborate more with adjacent Forests and Field Offices on our vegetation treatment efforts in future years. The first decade's efforts on the SJPL will be focused predominately on our southern boundaries and away from adjacent Urts.

Key Point 4 (Community Assistance)

We will continue to update and refine the five Community Fire Plans (CFPs) in cooperation and partnership with local counties, Colorado State Forest Service, fire protection districts, private property owners, and community leaders. We will seek grants and funding to help these communities do supplemental CFPs for private lands and other subdivisions, similar to the Montezuma County Supplement. We will complete CFPs for an additional six counties that are predominately related to other National Forests and BLM units, but share limited contiguity with the SJPL.

We will continue to support the Southwest Colorado Fire Information Clearinghouse Web site and the newly formed Southwest Colorado Fire Council in their efforts to provide fire prevention and education, defensible space messages, "Firewise" workshops, and other education efforts. We will continue to provide "demonstration areas" to increase the public's awareness of hazardous-fuels management.

Key Point 5 (Accountability)

Since the San Juan is an Emphasis Forest, we will provide updates to the Regional Office on accomplishments and progress at mid-year and year-end. For the BLM, progress reports are provided almost weekly to the Colorado State Office beginning in late spring. This 10-Year Strategy, and the corresponding 5-Year Action Plan and Maps, are dynamic, "living" documents. The 5-Year Action Plan will be revised yearly, and the 10-Year Strategy will be revisited annually for changes in assumptions and overall strategic thinking.

Key Point 6 (Research)

Researchers (from Rocky Mountain Research Station, Fort Lewis College, and others) will continue to monitor and evaluate the ecological changes and the effectiveness of the long-term rehabilitation treatments in the Missionary Ridge Burned Area. We will continue to conduct ecological assessments throughout the SJPL of our mechanical treatments and prescribed fire, and use those findings to adapt and modify future management actions. We will continue to monitor the air quality impacts of certain prescribed burns on critical receptors and population centers, and monitor the overall air quality effects for all burns at permanent stations on Molas, Coal Bank, and Wolf Creek Passes. We will continue to map, monitor, and treat noxious weeds.

The Rocky Mountain Research Station is considering research on the ecological effects of hydromowing and we will support that effort if it is undertaken. Approximately 10% of all Forest Service and BLM vegetation treatments will be monitored and evaluated using scientific design criteria. The SJPL's fire history and fire ecology will continue to be studied by university researchers and our own staff. Assistance will be sought from researchers and ecologists (possibly from Northern Arizona University) to define a desired future condition for the pinyon pine and juniper vegetation type in southwest Colorado. Given the *ips* beetle epidemic in pinyon pine, the susceptibility of this vegetation type to wildfire due to drought and insects/disease, and the close intermix of this vegetation and WUI treatments, we need to better understand what forest health and/or restoration "looks like" in pinyon pine/juniper.

Issues

The following issues and/or stumbling blocks need to be addressed to ensure the success of this strategy.

- ?? Timber industry lacks the capacity to handle the large volumes of small diameter, wood fiber or the poor quality of wood fiber that would be produced under this strategy. The market for small diameter pine and white fir is almost non-existent. In southwest Colorado, the problem is exacerbated by the Missionary Ridge Burned Area salvage sales. Some of our sales that are currently under contract stand idle, and we are adding to the backlog through this strategy. Although products can be manufactured from this material, the cost of harvest more than likely will exceed the potential profit.
- ?? The Forest Service's merchantability and cruise standards and valuation methods are all based on the premise of selling high-value sawlogs. These three items need to be reviewed in light of our need to remove vegetation that will have very low values or may actually cost more to remove than what they are worth (negative value). We are currently spending too much time, effort, and funding in determining volume and value for this wood material. This situation will get more cumbersome as we implement this strategy. We may need to consider modification of these standards and methods, or possibly use of other options, such as initiation of a large-scale, free-use firewood program.
- ?? Stewardship contracting, as currently practiced, is not very efficient or streamlined.
- ?? The contract authority of a procurement contractor for a timber sale contract (2400-2) imbedded within a service contract is 1000 hundred cubic feet (CCF). If the volume produced by the timber sale is over 1000 CCF, we are curious to know as to how to proceed (i.e., avoid the service contract and use a timber sale contract strictly?). We need to have the ability to use service contracts to remove large volumes of biomass, despite this 1000 CCF signing limit. We may need the option of using a 2400-3 in place of the 2400-2, or have the timber contracting officer sign the 2400-2 when it exceeds 1000 CCF.
- ?? It may be difficult to find analysis contractors (for landscape-level planning) with both fire and timber experience.
- ?? Skills and numbers of personnel in contracting will need to be increased over current staffing to keep up with workloads.
- ?? Balancing employee's time:
 - The FS/BLM have other equally high priority tasks/projects that spread many of our specialists (archaeologists, wildlife biologists, timber specialists, and NEPA specialists) thin.
 - The personnel that are most involved in the planning and execution of fuels-reduction projects are some of the same people with advanced fire

suppression skills that are frequently in high demand during active fire seasons.

- We count on using fire suppression personnel for hazardous fuels assistance from May through October, but this can be difficult during active fire years.

- ?? Since the early 1990s on the San Juan Public Lands, we have been working with numerous partners and local governments to identify and develop markets for small-diameter biomass produced by restoration forestry. However, the situation has actually worsened due to the Olathe mill closure. If biomass treatment cannot be resolved with the use of centrally located disposal sites to process or generate other uses (energy from co-generation), we may be forced to chip, shred, grind, or pile and burn on-site. These methods will likely severely limit our ability to treat the land and may have some unintended consequences (i.e., we would be just trading biomass in one form for biomass in another, and need to consider the effects of large-scale mulching). We are assuming that the wood-disposal issues are resolved by 2006 or else the SJPL's treatment goals (in Key Point 3) will need to be adjusted.
- ?? Although we are integrating the Forest Service and BLM fire, timber, and hazardous fuels programs, there is a certain amount of cultural and historic bias that we need to overcome to avoid hindering the strategy.
- ?? Both agencies, especially the Forest Service, may be underestimating the timeframes needed to deal with the problems and issues associated with access on WUI projects.
- ?? Unit costs for mechanical treatments will be highly variable, difficult to standardize, and several orders of magnitude higher than prescribed burning. They are a function of the particular treatment, topographic and access limitations, whether in the WUI or not, and other local factors. They may be on the order of \$200 to \$1000/acre, versus \$90 to \$150/acre for burning.
- ?? Both agencies will need to assist the State with smoke-dispersion modeling, which is used for their smoke management decision-making criteria. Otherwise, days that we could conduct prescribed burns will be foregone. Due to a limited number of fair or good smoke dispersal days, we have been severely restricted in our ability to conduct burns. Smoke permits are not issued by the State when smoke-dispersal conditions are poor, as dictated by their modeling. Personal observations of agricultural burns on those poor smoke-dispersal days suggest that the State's modeling and/or criteria may be invalid or suspect.
- ?? As both agencies treat more and more acres of hazardous fuels, the cumulative effects on watershed and wildlife values and other resources will become more critical, at times approaching key thresholds for some resource values.
- ?? To minimize additional new areas of invasive species and cheatgrass, in particular, time will be needed in the planning process to address the potential adverse effects of hazardous fuels treatments on our vegetative communities.

Some areas may be excluded from treatment or different, more expensive methods chosen to reduce the potential adverse vegetative responses.

?? On BLM lands, we will need to carefully consider the structure of sagebrush stands prior to treatment in order to retain potential habitat for the sage grouse.

Glossary of Terms

Categorical Exclusion: A category of actions which do not individually or cumulatively have a significant effect on the human environment and, therefore, does not require either an environmental assessment or an environmental impact statement.

Community at Risk: An area that is comprised of a group of homes or other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land in which conditions are conducive to a large-scale wildland fire disturbance event and for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

Condition Class: The departure from historical fire regimes vegetation conditions, possibly resulting from alterations of key ecosystem components. Referred to as Class I, II, or III, they categorize and describe vegetation composition and structure conditions that currently exist inside the Fire Regime Groups. Based on the coarse-scale national data, they serve as generalized wildfire risk rankings. The risk of loss of key ecosystem components from wildfires increases from Condition Class 1 (lowest risk) to Condition Class 3 (highest risk). Based on coarse-scale national data, Fire Condition Classes measure general wildfire risk as follows:

Condition Class 1: For the most part, fire regimes in this Fire Condition Class are within historical ranges. Vegetation composition and structure are intact. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low.

Condition Class 2: Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands.

Condition Class 3: Fire regimes on these lands have been significantly altered from their historical return interval. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical ranges by multiple return intervals. Vegetation composition, structure and diversity have been significantly altered. Consequently, these lands verge on the greatest risk of ecological collapse. (*Cohesive Strategy, 2002, in draft*).

Contingency Resources: Firefighting resources, including aircraft, that would be available to help on a prescribed fire or wildland use fire in the event that the fire were to get out of control.

Crown Fire: Wildfire that jumps between treetops, independent of the ground.

Cumulative Impact: The impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Epidemic: An outbreak of a disease or condition that spreads rapidly and widely and affects many individuals in an area or a population at the same time, such as with the mountain pine beetle and *Ips* beetle.

Fire Regime: A generalized description of the role fire plays in an ecosystem that is characterized by fire frequency, predictability, seasonality, intensity, duration, scale (patch size), as well as regularity or variability.

Good Neighbor Agreement: A pilot program in Colorado that allows the U.S. Forest Service to enter into an agreement with the Colorado State Forest Service to treat USFS lands that are adjacent to private lands that the CSFS is treating.

Hazardous Fuels: Combustible materials, such as dry grass, leaves, ground litter, plants, shrubs, and trees, that feed a fire.

Healthy Forest Restoration Act of 2003: An Act to improve the capacity of the Secretary of Agriculture and Secretary of Interior to conduct hazardous fuels reduction projects on National Forest System and Bureau of Land Management lands aimed at protecting communities, watersheds, and other at-risk lands from catastrophic wildfire, to enhance efforts to protect watersheds, and address threats to forest and rangeland health, including catastrophic wildfire, across the landscape, and for other purposes.

Historic Range of Variability: A range of conditions that existed before human influences played a role; generally described as conditions prior to European settlement around 1870.

Hydromower or Hydroaxe: A large rubber-tired articulated tractor with an 8-10 foot lawnmower-like blade that can cut and mulch shrubs or trees up to about 12 inches in diameter. A hydroaxe is a mower/mulcher attachment that can be mounted on the front of a rubber-tired articulated tractor. The tractors have rubber flotation-type tires that create little disturbance to the surface of the ground.

NFMAS: National Fire Management Analysis System. A strategic fire management and budget planning tool that provides a cost-benefit analysis of firefighting activities to support fire program budget requests.

Prescribed Burning or Fire: Controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions which allow the fire to be confined to a predetermined area, and produce the fire behavior and characteristics required to attain planned fire treatment and resource management objectives. A prescribed fire reduces fuel build-up, prepares the land for new growth, helps certain plants and trees germinate, naturally thins overcrowded forests, and creates diversity.

Stewardship Contracting: Authorized by Congress in 1999, land stewardship contracting includes natural resource management practices seeking to promote a closer working relationship with local communities in a broad range of activities that improve land conditions, consistent with a community's ecological, social, and economic objectives. Stewardship contracting shifts the focus of federal forest and

rangeland management towards a desired resource condition, rather than meeting targets or predetermined resource outputs.

Watershed: The area drained by a river or river system.

Wildland-Urban Interface (WUI): Area where structures and human development intermingle with undeveloped wildlands. An area where wildland fuels threaten to ignite homes and structures.

The Healthy Forests Restoration Act of 2003 has defined the term WILDLAND-URBAN INTERFACE to mean the following:

- (A) an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or
- (B) in the case of any area for which a community wildfire protection plan is not in effect--
 - (i) an area extending 1/2 -mile from the boundary of an at-risk community;
 - (ii) an area within 1 1/2 miles of the boundary of an at-risk community, including any land that--
 - (I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;
 - (II) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or
 - (III) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and
 - (iii) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.