

## **Boulder County, Colorado**

### **Introduction and Background**

Boulder County is situated in the north-central part of Colorado, northwest of Denver. The county is diversified, with rural and urban settings; the western border of the county is the Continental Divide, and the eastern side is rolling plains. Elevation ranges from 5,000 feet on the plains to 14,000-foot mountain peaks (Boulder County Government 2003). Vegetation ranges from ponderosa pine, Douglas fir, and lodgepole pine to aspen stands. The county encompasses 753 square miles (Boulder County Government 2003), with about 600 square miles at risk to wildfire (Owen 2004). The population of the county is approximately 297,000 (U.S. Census Bureau 2000), with about 94,600 in the City of Boulder, 71,000 in the City of Longmont, 38,200 in the City of Broomfield (Boulder County, Land Use Department 2003). The population of Boulder County is growing at an average rate of 3% per year, and has increased 29% between 1990 and 2000, with increased mountain development and recreational pressures (Anonymous 2002). Over 154,000 people in the county live in wildfire hazard areas (Owen 2004), and the county experiences an average of 100 fire starts per year. Over the past 15 years the county has seen a number of major wildland fires, and until 2001, held the Colorado record for structural losses from wildland fires. This was due largely to the 1989 Black Tiger fire, which claimed 44 homes and the 1990 Olde Stage fire, which took 10 homes (Anonymous 2002).

Boulder County is comprised of an educated and affluent population, 92.8% have a high school degree or higher, and the median household income is \$55,861. Median home value is \$241,900, with only 1.7% seasonal homes (U.S. Census Bureau 2000). The culture of Boulder County emphasizes environmental values and outdoor recreation. Boulder County has intermixed land ownership. Approximately 60% of the land is owned publicly with 40% owned privately. Public land is divided among a variety of local, state and federal managers including the United States Forest Service, Boulder County Open Space, the City of Boulder and State Parks.

### **Main Participants in Fire Mitigation in Boulder County**

The primary participants involved in fire mitigation in Boulder County are Colorado State Forest Service (CSFS), Boulder County Land Use, Boulder County Open Space & Mountain Parks, Sheriff's Departments, Boulder County Firefighter's Association/various local Fire Protection Districts – specifically Cherryvale Fire District, U.S. Forest Service (USFS), National Park Service (NPS), City of Boulder Fire Department, American Red Cross, forestry contractors and consultants, insurance and real estate industry, and private landowners and home associations.

### **Mitigating Wildfire Risk in Boulder County**

Boulder County has a comparatively longer history than other counties not only in addressing its wildfire risk, but also in working in partnership with various agencies and organizations. Beginning in the late 1970s, several land management agencies and private citizens initiated the Front Range Vegetation Management Pilot Project, that came to be called "The We Commitment." This Agreement was a collaborative, multi-agency, agreement to improve forest health from problems caused by mountain pine beetles and associated general decline in forest health and vigor (Jones 2004c). From 1977-80, forest health issues again were addressed through the Front Range Vegetation Mt. Pilot Project. Forest health issues continued to be addressed during the 1980-83 period with the Allenspark Cooperative Forest Management demonstration

area in northern Boulder County. From 1984-1987 the Lefthand/St. Vrain Cooperative Forest Management Area conducted extensive forest management activities on federal, private and other lands. This was followed briefly by a Memorandum of Understanding between the Colorado State Forest Service and the United States Forest Service that allowed CSFS to work on USFS lands adjacent to private lands. After 1987 much of the vegetation treatment effort stopped due to numerous reasons, one of which was that nothing catastrophic was happening (i.e., Boulder County was not experiencing large wildfires, pine beetle and spruce budworm epidemics were over) (Jones 2004). In 1989, the Black Tiger Creek fire erupted and was the most destructive fire the county has experienced in recent history. This fire resulted in the formation of the Boulder County Wildfire Mitigation Group, the main entity for coordinating wildfire mitigation in the county. In addition to the Black Tiger Fire, Boulder County has witnessed several major wildfires in recent times; most notably the 1988 Lefthand Canyon Fire and Beaver Lake Fire, the 1990 Olde Stage Fire, the 2001 Walker Ranch Fire, and the 2003 Overland Fire. These fires collectively destroyed 66 homes, burned over 10,500 acres, and threatened the lives and properties of thousands of mountain residents (Boulder County, Land Use Department 2003). The continued prevalence of wildfire threat coupled with historical coordinated and cooperative action has allowed Boulder County to create some unique and impressive mitigation responses to its wildfire threat.

### **Strengths and Challenges**

Much of the success in Boulder County stems from having continuous interest in treatment for some 25 years that has contributed to strong relationships built throughout the mitigation and suppression activities. Given Boulder County's fragmented land ownership, interagency cooperation and partnerships are a necessity for wildfire mitigation. They have organized interagency multilateral forums for meeting on both wildfire mitigation (Boulder County Wildfire Mitigation Group) and suppression (Boulder County Fire Fighter's Association). Colorado State Forest Service works closely with the United States Forest Service and coordinates their private property mitigation efforts with adjacent USFS public property mitigation work. CSFS has a strong private property landowner wildfire mitigation treatment focus through defensible space work and fuel breaks. CSFS has good working relationships with homeowners enabling private property hazardous fuels reduction treatment work completed (Jones 2004). Boulder County has been forward thinking in their early land use planning and regulations enacted and enforced. There is strong public outreach and mitigation education through the County Wildfire Mitigation Specialist's position, the Winiger Ridge project, and the effort of the local Red Cross office.

On the suppression side, Boulder County has some of the best-educated, equipped and trained wildland firefighters in the western U.S. (Owen 2004). For 20 years the Boulder County Fire Fighters Association (BCFFA) has been meeting on a monthly basis. This is an interagency group comprised of all the suppression players that provides a forum for local, county, state, and federal agencies and emergency service organizations to share information, coordinate actions, explore grant opportunities, and organize training efforts. Additionally, there is an interagency Task Force for wildfire initial response, the Boulder County Wildland Task Force, which falls under the auspices of the Boulder County Sheriff's Department. The county also has its own Type III helicopter air support, Rocky Mountain Helitack (RMH), which is its own non-profit entity.

The biggest challenge the county faces is how to utilize the wood and slash from thinning projects (Krommes 2004). Marketing and utilization of the small diameter wood remains a constant challenge to the entire Front Range area. The biomass in Boulder County has little merchantable value. Some of it can be used for post and pole fencing and firewood, but much is not commercially viable. The bio-energy movement in Nederland and potentially for Boulder County's new Parks and Open Space building has great potential to deal with the slash resulting from the forest mitigation work. There are also a number of other projects aimed at utilizing biomass and residue from forest thinnings that are currently being discussed along the Front Range (Jones 2004c)

### ***Improve Wildfire Prevention and Suppression – Firefighting Readiness & Prevention Through Education***

Most of Boulder County is served by Fire Protection Districts and/or individual municipal Fire Departments. Many of the districts are staffed wholly by volunteers (Boulder County, Land Use Department 2003). Boulder County Dispatch coordinates the first response to a fire. The Annual Operating Plan (AOP) spells out who is responsible for what during a wildfire. The AOP is reviewed every year and changes are made adaptively (Guzman 2004). If the fire is on or near federal lands the USFS has to request assistance. Due to the very mixed ownership, there is often a need for the USFS to respond (Guzman 2004). Previously, the USFS had significantly utilized local Fire Protection Districts and Volunteer Fire Departments for their suppression needs, reimbursing them for their time above the 8 hour mutual aid agreement that the AOP calls for. Now, they have three engines and a hand crew, as well as 30 AmeriCorp trained firefighters in the summer, and fill their own suppression needs. According to the local USFS Fire Management Officer, this has created some dissatisfaction from the local fire departments because they have lost the income they previously generated from those suppression efforts (Guzman 2004). But, local fire districts say that their dissatisfaction is due not to the loss of income but to the lack of reciprocity in the mutual aid agreement. Every piece of land in Boulder County is covered by a fire district, including the public lands. The AOP calls for the appropriate fire district to respond when there is a fire on USFS lands or they have been requested. Any fire that falls within 15 miles of private property must have the local fire district's response, unless the USFS cancels their response. Due to the fragmented land ownership in Boulder County, that effectively means that anytime there is a fire on USFS lands a local fire district/department will also respond. The mutual aid agreement calls for them to provide the first eight hours at no charge. The dissatisfaction comes from the fact that the USFS does not reciprocate this assistance. Their policy dictates that they cannot respond to a fire unless it is on or threatening their lands and in practice do not provide this service to local fire districts/departments. This disparity has led to fire districts not wanting to respond to provide free services without having the same reciprocated (Wood 2004c).

### **Boulder County Sheriff's Department, Boulder County Wildland Task Force, Boulder County Fire Fighter's Association and Office of Emergency Management**

In Boulder County the Sheriff's Department has its own wildfire suppression and mitigation crew the Boulder County Wildland Task Force. The BCWTF is comprised of Cherryvale Fire Protection District, City of Boulder Wildland Division, Boulder Rural Fire Protection District, and Boulder Mountain Fire Authority. These are all paid, well-trained and qualified firefighters

that respond as a unit. They can make up a short to full hand crew at a Type II to Type I level to provide rapid initial attack response for wildfire. Either the fire incident manager or County Emergency Services must request them. The Sheriff's Department of Emergency Services is responsible for the coordination and supervision of the BCWTF (Wood 2004c).

The Boulder County Fire Fighter's Association is an interagency group comprised of 35-40 suppression players including county fire protection districts, fire departments, city fire departments, county emergency services, CSFS and USFS (Owen 2004). For 20 years the BCFFA has been meeting on a monthly basis. The Boulder County Fire Fighter's Association provides training for all agencies. The Boulder County Wildland Fire Cooperators is a subset of the Boulder County Fire Fighters Association and they meet sporadically. They provide National Wildfire Coordination Group (NWCWG) training for all agencies once a year.

Boulder County Office of Emergency Management (OEM), funded and staffed jointly by the Boulder County Sheriff and City of Boulder, coordinates the activities of volunteer, public and private agencies in emergency planning, mobilizing, and direction of emergency preparedness personnel in response to and recovery from disasters or emergencies, including wildfire. OEM obtains assistance and resources from federal, state, local, public and private agencies. OEM develops plans, programs and training for response to emergencies in the City and County of Boulder. The Emergency Operations Plan delineates task assignments and responsibilities for the operational actions that will be taken prior to, during, and following an emergency or disaster affecting local government in order to alleviate suffering, save lives and protect property (Boulder County Emergency Management 2003). OEM has the 911-call back system to notify the public of evacuations or potential threat. They have had this system since 2000 (Stern 2004).

### **Rocky Mountain Helitack**

In August 2001, the City of Boulder Department of Public Works Utilities Division launched a prototype air support program to protect the city's water supplies from significant wildland fire effects. Boulder Fire & Rescue Wildland Fire Division Chief Marc Mullenix and Chief Tomboloto of Cherryvale Fire Protection District recommended a helicopter approach as the only efficient way to overcome problems such as accessibility to difficult terrain, extended response time to remote areas, and the mixture of jurisdictions (Wood 2004d; Whittemore 2004). They explained that there was a critical 30-minute window in which to provide initial attack to wildland fire starts in this area. The City of Boulder agreed to contribute to the proposed air program, but declined to sponsor it. At this time, the initial program was switched to the development of an interagency air support program, available to the entire county and supported by government agencies, business and the private sector. The interagency concept made more sense by broadening the scope of the program available to law enforcement, search and rescue and special projects, as well as fire. A more all-risk philosophy was adopted and it expanded the utility to the community (Whittemore 2004). The program was renamed Rocky Mountain Interagency Helitack (RMIH) in June 2001. Agencies with land management responsibilities were asked to contribute money to the program to cover a portion of the program's daily availability charges, and local fire departments are asked to contribute staff (Anonymous 2002). The program administration was initially headed by the Boulder County Wildland Fire Cooperators subgroup of the Boulder County Firefighter's Association (BCFFA). The first board was a five-member governing board that includes representatives of Boulder County fire

and sheriff's departments, Cherryvale Fire Protection District, the National Park Service, and CSFS. The board was established for developing the program's operational plans, oversight of all program activities, and the approval of requests for projects. The program was established to operate in accordance with the Boulder County Annual Operating Plan, which provides the standard operating procedures, mutual policies, and responsibilities to implement cooperative wildland fire suppression on all lands within the county (Whittemore 2004). In 2003, they moved away from the interagency operation of the program and the City of Boulder and Cherryvale took over the operations and management. They use only paid wildland fire fighters that can be held accountable. Chief Mullenix is the Program and Contracting Coordinator while daily operations, training, qualifications and preparedness is the responsibility of Cherryvale's Chief Tombolato, the Operations Chief of the program (Whittemore 2004). Due to the change in management and partnership, the name was changed in 2004 to the Rocky Mountain Helitack (RMH) and as of May 2004 they have their non-profit status which has allowed them to be completely separate from the BCFFA. With new management came a new board. The current board is comprised of the Boulder County Sheriff's office, City of Boulder Wildland Division, Cherryvale Fire Protection District, a representative from BCFFA, and one member at-large (Wood 2004d). The board is still responsible for developing the program's operations plan, oversight of all program activities, and approval of requests for initial attack or extended availability. The program is still operated in accordance with the Boulder County Annual Operating Plan. Regional requests within Boulder County are made through the Emergency Services division of the Sheriff's Department to the Boulder Regional Communications Center. Resource requests from outside Boulder County are made through the appropriate interagency dispatch center. RMH supplements the federal aviation resources available both within the State of Colorado and the state's single-engine air tanker program (Anonymous 2002). In November 2004, there will be a vote in the county on whether to establish a county-wide tax to financially support the RMH program (Wood 2004d).

### **Colorado State Forest Service Suppression Efforts**

Allen Owen, District Forester with Colorado State Forest Service (CSFS), is the local fire management officer and grant administrator for various suppression efforts and activities. Within Boulder County, Owen has at his disposal 600 red carded fire fighters, 19 fire departments that have cooperative resource agreements and 11 fire engines (Owen 2004). "I think we have some of the best educated, well-equipped wildland firefighters in the western U.S. right here in Boulder County," says Owen. With the expertise in Boulder County alone they have many personnel qualified at the Type II level, and are able to field a Type III incident management team (Wood 2004c). There is great cooperation among all agencies including the county and federal entities (Owen 2004). "We play well together, better than most" (Owen 2004). CSFS involvement in suppression includes fire fighting, interagency fire training, firefighter certification, and fire vehicle replacement and inspections. Owen has developed National Wildfire Coordinating Group (NWCG) training programs for all the fire departments and the Boulder Fire Academy that trains 80-100 fire fighters every year (Owen 2004). All of the red-carded fire fighters have full PPE (personal protective equipment). Owen acts like a mini dispatch center during fire season with the 19 fire departments. All of the fire departments are trained for local responses, as well as out of area responses and they will do cooperative resource agreements with other areas. Owen ends up doing a lot of cooperator reimbursement in his district due to the cooperative activity. The CSFS Fire Equipment Shop provides mechanical

support to rural fire departments, local, county, state and federal cooperators by developing, fabricating, repairing, and maintaining fire equipment. Excess military equipment is converted by the Fire Equipment Shop into fire engines that provide fire departments with fire protection they would not otherwise be able to afford (CSFS 2003).

### **Cherryvale Fire Protection District**

Cherryvale Fire Protection District began in 1958 and services about 55 square miles around the City of Boulder, Superior/Rock Creek and Flagstaff Mountain. The district is comprised of geographically different areas ranging from commercial and light industrial to residential and mountainous terrain with significant wildland-urban interface. They are staffed by a combination of career and volunteer members who are state certified to handle diverse emergency calls. The district is unique in that it has its own Wildland Crew and a Wildland Fire Coordinator. Cherryvale Fire was the first fire (non-Fed or State) agency in Colorado to initiate, dedicate funds, and actually conduct a full time Wildland Fire Mitigation Program. Other agencies now have these, but Cherryvale was the first to have a crew in 1997, and at the time were one of a handful fire districts/departments in the country to do this type of work at no additional cost to the homeowners other than the taxes they already paid (Wood 2004b). They currently cut more board feet of timber a year than the USFS Boulder Ranger District, and the City of Boulder OP&MP and come close to prescription fire acres burned annually. Their limiting factor is they burn around homes on residential parcels, which are inherently smaller but are much higher in complexity. All of the major mitigation organizations in Boulder County have needed to use Cherryvale's mitigation crew in order to complete their own projects. Chief Mike Tomboloto previously worked for the USFS Boulder Ranger District as the Fire Management Officer, was the Wildland Fire Mitigation Officer for Boulder County Land Use, was the assistant Wildland Fire Manager for the City of Boulder, and was on the Board of Directors for the BCFFA prior to coming to Cherryvale Fire (Tomboloto 2004). In 1984, Cherryvale adopted its first fire code. The primary interest was to evaluate fire and life safety hazards within the district. Primarily the code enforcement revolves around new construction, commercial, retail, and school occupancies. The Fire Marshall must approve all new commercial, multi-family, and new residential development plans. Adherence to all fire and safety measures is required before construction commences (Cherryvale 2003).

Cherryvale has designed and built three wildland engines, bringing their total to five wildland specific vehicles. These vehicles were specifically designed to meet the needs of their wildland urban interface. They have compiled vast amounts of information on the wild lands and forests within the district and have maps that detail the fuel types and densities. These maps coupled with the Wildfire Hazards Identification and Mitigation Survey, WHIMS, maps help them decide which homes are defensible, based on current and predicted fire conditions (Cherryvale 2003; Wood 2004b).

Cherryvale has a mountain properties wildfire mitigation program. The goal of the Cherryvale Fire Protection District's Mitigation Crew is to provide rapid and effective initial structural and wildland fire suppression, emergency medical service, and reduce wildfire exposure to the citizens and their property through mitigation techniques. Cherryvale Fire, in conjunction with CSFS and Boulder County Land Use Department, has conducted studies on each home in the Flagstaff area. Each home was analyzed for its ability to resist ignition from a wildfire.

Additionally, every acre of wildland was surveyed and mapped to determine specific composition, forest litter orientation, and total volume of forest floor residue. The Wildland Crew and the property owner together develop a plan to mitigate homes of wildfire hazards. Cherryvale also does public education and outreach efforts regarding wildfire (Cherryvale 2003; Wood 2004b). Because of Cherryvale's mitigation efforts, Flagstaff Mountain has been the most proactive community in Boulder County with wildfire mitigation efforts (Stern 2004).

The fire district is supported solely through a special 8.326-mil tax assessed to the constituents of the district. This equates to \$100 per \$100,000 assessed property value (Wood 2004). The taxing district was created in 1978 and the mitigation crew started in 1997. Because all property owners are assessed, any property owner in their mountain communities can request defensible space work as well as prescribed fire work on their properties at no additional cost. Since 1997 they have created approximately 80 defensible spaces out of 210 homes in the Flagstaff mountain community (Wood 2004). The mitigation crew has evolved into a wildland fire crew that concentrates on suppression during fire season and mitigation work during the other months. While their work is dedicated to their district, they also play an integral role in most of the prescribed fire activities in the county. Since 1997, Cherryvale has treated between 200-300 acres in the Cherryvale Fire District with the majority of the work being prescribed fire. Average cost per acres ranges from \$700-800 (Wood 2004). In addition to the fire response in Boulder County, the Cherryvale wildland crew and equipment travels nationwide as a suppression resource as well. They can be assigned as an engine crews, helicopter personnel, and/or overhead as needed. Like all other Colorado state organizations that respond to these national fires, Cherryvale is reimbursed for all associated costs of these assignments. (Wood 2004d).

### *Expand outreach and education to homeowners*

#### **Boulder County Wildfire Mitigation Specialist**

In 1994, Boulder County Board of County Commissioners created the Wildfire Mitigation Specialist position. The position is located in the County Land Use Department as a result of advocacy by the Long Range Planner and the Boulder County Chief Building Official, both of whom were located in the Land Use Department (Philips 2004). The position is designed to function as an interagency liaison between Boulder County and various local, state and nationwide entities with local interest in wildfire mitigation. The main duties for the position are public outreach and wildfire mitigation education, including working with homeowner associations and fire districts doing mitigation education programs, and running the chipping and slash programs (Billingsley 2004). Other official duties include providing information to County staff on wildfire mitigation matters, assist county staff, coordinating the Boulder County Wildfire Mitigation Group, and the local fire protection districts in the coordination and implementation of wildland fire education programs, forest management, building code adoption and enforcement, and the Land Use Site Plan Review processes with respect to wildfire considerations (Boulder County Land Use n.d.). The Wildfire Mitigation Specialist also coordinates the quarterly meetings of the Boulder County Wildfire Mitigation Group.

### **Boulder County Wildfire Mitigation Group**

The Boulder County Wildfire Mitigation Group (BCWMG) was formed in 1989, shortly after the Black Tiger Fire destroyed 44 homes and burned 2,100 mountain forest acres in the Sugarloaf area just five miles from the city of Boulder (CSFS 2003). In 1990, under a mandate from the Federal Emergency Management Agency (FEMA), the agencies and individuals involved in the Black Tiger Fire produced a report through the National Fire Protection Association that became the wildfire portion of the Colorado Natural Hazards Mitigation Plan. Soon after, at the directive of the Board of County Commissioners, those same agencies and individuals formed the BCWMG. Its mission was to facilitate communication between all parties with an interest in wildfire mitigation; to coordinate actions amongst the parties that could help minimize loss of life and property from future wildfires; and to act cooperatively in addressing the issues by working together in effective partnerships (Boulder County, Land Use Department 2003).

The Boulder County Wildfire Mitigation Coordinator, in the County Land Use Department, heads BCWMG. The other partners are members from the County Commissioners, Boulder County Open Space & Mountain Parks, Sheriff's Department, Boulder County Firefighters Association/various local Fire Protection Districts, CSFS, USFS, National Park Service (NPS), City of Boulder Fire Department, American Red Cross, forestry contractors and consultants, representatives from the insurance and real estate industry, and private landowners and home associations. BCWMG meets every three months to discuss, strategize and plan wildfire mitigation efforts. It is a local working group of several larger statewide organizations and efforts (Boulder County, Land Use Department 2003). The main focus is on information sharing and the members will discuss grant opportunities, projects, new opportunities, planning and generally catch up with what each other is doing (Owen 2004).

Since its inception, BCWMG and its various committees and work groups have been recognized for its interagency approach. Projects that BCWMG have undertaken include: development of a Wildfire Hazard Identification and Mitigation System (WHIMS) for mapping fire hazards; support for the Boulder County Ecosystem Cooperative fire mitigation/forest health/restoration projects, such as the Winiger Ridge Ecosystem Pilot Project; developing mitigation grants to assist homeowner associations and fire districts with their fire mitigation efforts; creation of the Boulder County Chipping Program to subsidize costs of chipping and to aid in slash collection and disposal; coordinating prescribed fire programs amongst the various fire management entities within Boulder County (Boulder County Wildfire Cooperators); education and outreach programs; supporting fuel reduction work through the use of fire mitigation crews and AmeriCorps crews; assists in Land Use Reviews and Urban/Wildland Interface Code development to encourage FireWise development; installation of Fire Danger Rating Signs at the entrance of major canyons (Boulder County, Land Use Department 2003).

### **Boulder Fire Education Forum**

The Boulder Fire Education Forum, held on January 21, 2004, was a two hour presentation by local environmental groups, local, state and federal land management agencies and the scientific community to educate citizens about wildfire, its natural role in the ecosystem and how people can help to restore fire as part of a healthy forest regime (Smith 2004). They had approximately 125 citizens attend the forum in Boulder County and have held a similar forum in neighboring Larimer County that attracted about 150 people (Smith 2004b). The Boulder Fire Education

Forum was sponsored by the Southern Rockies Conservation Alliance (SRCA), which is a coalition of over 25 conservation and recreation groups in Colorado and southern Wyoming and funded from a grassroots effort of some 20 sponsoring organizations (BFEF 2004).

### **Red Cross**

Since August 2003, Red Cross has completed 205 home wildfire risk assessments in Boulder County. The Red Cross is working with CSFS, the Student Conservation Association, and Boulder County Land Use in a partnership effort to educate homeowners regarding wildfire mitigation. Sometimes this is setting up a table at an event to talk to people, other times they organize community meetings. They also go door-to-door in neighborhoods in the interface to talk to people and offer to do a homesite assessment. CSFS, SCA, USFS and others helped Red Cross train the volunteers to assist with this project (Crawford 2004).

### ***Hazardous Fuel Reduction – Prioritize hazardous fuels reduction where negative impacts are greatest***

#### **Wildfire Hazard Identification and Mitigation System**

In 1991 BCWGM formed a technical team to begin development of a hazard rating system to identify and rate areas of Boulder County for their relative wildfire hazard. By 1992 this had evolved into the geographic information system (GIS) Wildfire Hazard Identification and Mitigation System (WHIMS). WHIMS identifies local wildfire hazards and assesses the risks to communities. It is used to assist land managers and planners in making appropriate decisions about land management and development in fire prone areas, to assist local fire protection districts in pre-attack planning, to assist local emergency management and disaster relief agencies with disaster assessment and emergency response, and to educate and motivate homeowners and private landowners to increase community involvement with wildfire awareness and preparation (Boulder County, Land Use Department 2003).

#### **City of Boulder Wildland Fire Mitigation Program**

The City of Boulder oversees 50,000 acres of various lands including open space, mountain parks and all city owned properties (Toll 2004b). Consequently the city has a wildland fire mitigation crew to reduce hazardous fuels on these properties. The crew consists of a crew boss plus 4-5 members. They undertake mechanical thinning and prescribed fire. On average, they will burn 100 acres in forested areas, 200-300 acres in grassland and 100 acres of mechanical treatment per year (Toll 2004). When doing prescribed burning, they notify the public via the newspaper first and then will follow up with neighborhood meetings and open houses. A week before the actual burn, they will distribute leaflets to each house in the burn area, letting residents know about the approximate date of the planned burn (Toll 2004).

#### **Boulder County Parks and Open Space**

Boulder County Parks and Open Space manages 80,000 acres of land in the county, including 20,000-forested acres and some 60,000 acres in grasslands (Coombs 2004). Boulder Open Space began its prescribed burning program in the mid 1990s and has used fire as one of their main hazardous fuel reduction tools. On average, they mechanically treat 80-120 acres and burn 100-

250 acres per year (Coombs 2004). They treat their high priority areas that are most accessible, close to subdivision or homes, have high wildlife habitat value or are in watersheds. They have three foresters and use volunteer crews, the sheriff's office and jail crews. AmeriCorps also helps in the summer. They also contract out some work and receive about \$75,000-100,000 a year from Boulder County to assist in contracting out. Burning is getting tougher in the area due to air quality issues, so increasingly they have to chip more, which is also creating problems. One of the biggest challenges is to find something to do with the slash (Coombs 2004).

### **Colorado State Forest Service (CSFS)**

The communities at greatest risk in Boulder County are Pinebrook Hills, Boulder Heights and Carriage Hills, based on topography, housing density, water available, and access. The bulk of hazardous fuels reduction takes place on private lands and so CSFS leans toward individual defensible space treatments to address this threat (Owen 2004). In addition to the communities where they are focusing their defensible space work, they are also engaged in the Winiger Ridge landscape project, which has been on going since 1998 (Owen 2004). Money for hazardous fuel reduction comes from three pools—the wildland urban interface pool (private property defensible space), the competitive grants (private property defensible space, fuel breaks, chipping and slash disposal) and the Forest Land Enhancement Program (private property defensible space) (Owen 2004). In FY 2001 Owen acquired \$376,000 in National Fire Plan money to work on hazardous fuel reduction. In FY 2002 he acquired \$521,000 (Owen 2004). The National Fire Plan money has been helping fund full time mitigation crews in three different fire protection districts (City of Boulder, Cherryvale Fire and Boulder Mountain Fire) (Owen 2004). Some money also goes to slash disposal sites and a chipping cost share program. In 2003, some money went to fund preplanning for wildfire hazard assessments through the Student Conservation Association. This is a program that does individual home assessments throughout the county. Keeping up with demand for defensible space and fuel breaks has been a challenge. In 2002, CSFS had \$900,000 in requests and were able to fund \$400,000. In 2003, they had \$939,000 in requests and were able to fund \$502,000 (Owen 2004). In addition to the National Fire Plan monies CSFS also had Forest Land Enhancement Program (FLEP) monies. In 2003, CSFS treated 128 acres with \$15,000 worth of FLEP money (Owen 2004).

CSFS in Boulder County tries to take a dual approach of looking at the landscape as well as the individual homeowners. Fragmented homeownership patterns mean they need to work with individual property owners, while also trying to address the landscape level challenges. Consequently, CSFS works with USFS to coordinate their work at more of a landscape and individual level. The Winiger Ridge (40,000 acres), Sugarloaf (23,000 acres) and James Creek (40,000) projects are examples of this landscape approach. As the USFS is doing Environmental Assessments, CSFS identifies the communities that fall within those landscapes to coordinate treatment and work across the public-private property boundaries (Owen 2004). Consequently, landscape level treatment means they still have to meet with people one-on-one. “We meet with the community as a whole and try to educate, but when we go to mark trees on the ground and do a layout... it's one-on-one” (Owen 2004).

### **Winiger Ridge Ecosystem Management Project**

An important project for hazardous fuel reduction in Boulder County has been the Winiger Ridge Ecosystem Management Project. Winiger Ridge is a collaborative effort designed to manage

natural resources across boundaries on a landscape-scale in southern Boulder County. The 40,000-acre landscape of the Winiger Ridge project is dominated by rich ecosystems of ponderosa pine, lodgepole pine, Douglas fir, mixed conifer, aspen, mountain meadows, wetlands, and riparian areas (Winiger Ridge n.d.). Elevation ranges from 5,600 feet near Boulder to 8,600 feet at the town of Nederland on the project's western boundary. The partners include: USFS, CSFS, Boulder County, City of Boulder, Denver Water, Eldorado Canyon State Park, local fire protection districts, and private landowners. Their motto is "Stewardship Across Boundaries" (Project brochure March 2003). One of the original 28 Stewardship Contracting Pilot Projects, landscape-scale and cross-boundary treatment, partnerships and an interagency approach, and ecosystem management are key project components (Jones 2004c).

In 1996, a sub group of the Boulder County Wildfire Mitigation Group, the Boulder County Ecosystem Cooperative, was formed to begin looking at a strategy to deal with the risk area assessment, wildfire hazards associated with the wildland-urban interface, forest health, communities at risk and public/firefighter safety. Beyond wildfire, other critical issues included: forest insect and disease cycles, wildlife habitat, watershed and water quality, and land use. The subgroup proposed a pilot project to incorporate hazardous fuel reduction with ecosystem improvement efforts. The Winiger Ridge landscape was chosen due to its land ownership mix, an active community group, and a range of forest types and conditions (Winiger Ridge n.d.). The land ownership mix is 29% private, 25% federal, 22% city, 14% county, 2% state, and 8% other (such as Denver Water Board) (Project brochure March 2003). Private land ownership includes mountain subdivisions, small ranchettes of 60 acres and less, and patented mining claims for a total human population of about 2,500 people (Winiger Ridge n.d.). The project area serves approximately 4 million recreationists annually. The watersheds provide drinking water to hundreds of thousands of metro-Denver area residents (USDA 2003).

The Winiger Ridge project focuses on reducing wildfire danger through a variety of forestry applications, including thinning and prescribed burns, while maintaining a holistic and ecosystem-based approach to the overall forest health of the area (Winiger Ridge n.d.). Reducing the risk of catastrophic wildfire at the landscape scale is implemented by strategically placing the treatment units across the landscape with the consideration of other agencies' treatments (USDA 2001). Of the almost 40,000 project acres, USFS analyzed 9,500 acres of national forest lands. Of the acres analyzed, 2,475 were cleared for treatment by the USFS. Within the 2,475 acres, 1,800 acres were planned to be mechanically thinned with the remaining 600-700 acres prescribed burned (Krommes 2004). An additional 2,000 acres were planned to be treated by other participating agencies. NEPA work was completed in July 2000 when the Decision Notice and Finding of No Significant Impact were signed (Krommes 2004). Project work began on partnership lands in 1997 and on USFS lands in 1999 (Jones 2004c). Winiger Ridge will be completed in 2007, when the last piles will be burned and the roads will be slashed over. Most of the major work is completed now (Jones 2004).

Monitoring and evaluation (M&E) are key components of the project and of adaptive management. The USFS nationally contracted out the administration and oversight of the M&E program for all of the pilot projects to the Pinchot Institute, a non-profit conservation group dealing with forestry and natural resource management. There is a national team, regional team and local monitoring and evaluation teams for each pilot project. The local monitoring team for

the Winiger Ridge project includes USFS and CSFS personnel, Rocky Smith of Colorado WILD, Pete Morton of the Wilderness Society and Scott Reuman of Preserve Upper Magnolia Association (PUMA) a local homeowner's association. The four components being monitored are the biologic, economic, social and administrative aspects of the project (Project newsletter 2003). To date over 28 field tours have been conducted (USDA 2003).

From the outset of the Winiger Ridge Project, information and education has been a significant component of the cooperative effort. Numerous tools have been used to keep cooperators, publics and stakeholders informed. Some of these include: a yearly newsletter, informational workshops and tours, informational kiosks, projects signs, self-guided tours, information and demonstration fairs, information packets for landowners, news releases, and an interactive and informational web site (Project brochure 2003). A project newsletter gets mailed to everyone in the Winiger Ridge landscape—approximately 2,600 people and the information kiosk is updated 2 or 3 times a year (Jones 2004).

Citizen participation during the formative stages of the program was extremely high and spirited, and assisted by existing homeowner associations, concerned stakeholders and an interested citizenry in the Magnolia and Flagstaff areas (Winiger Ridge n.d.). During the 30-day scoping period in July and August of 1999, five open houses were held, two in the City of Boulder and three in the Town of Nederland. The comment period ended January 30, 2000. The Boulder Ranger District received 68 letters from individuals and organizations involved and interested in the project. As a result of the comments received, the EA was modified (USFS 2000). The Final EA was appealed but the Notice of Decision was upheld by the Regional Forester (Jones 2004c; Krommes 2004).

Several tools and participants contribute to hazardous fuel reduction on the Winiger Ridge project. Federal contracts, stewardship contracts, cooperative and Good Neighbor agreements between the USFS and CSFS, fire crews, forest service employees and CSFS all contribute to accomplishing the goals for Winiger Ridge (Krommes 2004). These tools and participants have been necessary to deal with the various situations in which hazardous fuel reduction projects occur. For instance, since the Winiger project forest area is overstocked with trees ranging from 1-12" diameter, treatment can be labor intensive with few merchantable goods. Consequently, the USFS selected Winiger Ridge as a "goods for services" stewardship contracting pilot program to allow removal of biomass (goods), while still paying for the service. In addition to the goods for services contracting, the USFS is testing best value contracting and multi-year contracting. They have also employed retention of receipts contracting (Krommes 2004). Altogether, four stewardship contracts were used to treat 609 acres. These stewardship contract pilot projects are part of the original 28 projects to be funded by the U.S. Forest Service. There are now 58 projects nationally (Project newsletter 2003). Mark Morgan, Morgan Timber Products near Ft. Collins, was awarded Stewardship contracts 1, 2 and 3. Mr. Morgan used a number of harvesting methods with much of the small diameter materials used for posts, poles and fencing materials. Stewardship contract 4 was awarded to Lumber Jacks in Pinecliffe (Gilpin County).

Cooperative agreements between the USFS and CSFS have been another tool to facilitate treatment. The fragmentation of land ownership has necessitated getting access to adjacent

National Forest lands through the use of Rights-of-Ways across private roads. CSFS has been instrumental in contacting local landowners, and working out cooperative agreements with the USFS and “access agreements” with local landowners to allow limited use of private roads for removal of products such as firewood, or for crews to drive and park along their road for access to the treatment unit (USDA 2003). 366 acres were treated through two cooperative agreements between the USFS and CSFS (Krommes 2004). In addition to working through cooperative agreements, CSFS also works with homeowners to create defensible space. CSFS will target subdivisions with an evening FireWise presentation to encourage the creation of defensible space, while also catering to individuals that seek them out.

Other projects demonstrate unique mixes of participants and approaches to accomplish the end goal of landscape scale protection. For instance, the USFS, Denver Water, CSFS, private landowners are all working together to make a difference on the Lake Shore Good Neighbor project. In spring 2004, the Cherryvale Wildland Crew was to begin thinning approximately 20 acres of USFS lands just west of the Lake Shore subdivision near Gross Reservoir. Bureaucratic red tape has slowed this down, but approval has come and they will begin in May 2004 (Wood 2004b; Wood 2004c). This was the first Good Neighbor Project conducted on Boulder Ranger District, although there have been a history of similar cooperative contracts between USFS and CSFS.

The Tungsten Mountain Project seeks to create a 10-acre fuel break with multiple partners involved. The partners include: Freeman-Emkhe Homeowner’s Association, USFS, CSFS, Boulder County Parks and Open Space, USFS Boulder Ranger District Fire Crew and AmeriCorps, private contractors, and the City of Boulder Wildfire Mitigation Crew (Project brochure 2003). In 1999 and 2000, residents of the Freeman-Emkhe subdivision began implementing wildfire mitigation activities around homes after several meetings and site visits with CSFS. Thinning then occurred on adjacent USFS lands in 2002. In order to complement the work occurring on the private land side of the fence, USFS fire and AmeriCorps crews thinned around homes on the public lands. In spring 2003, similar work was done on the north side of the subdivision utilizing the City of Boulder Wildfire Mitigation Crew. In March 2003, a private contractor, St. Vrain Arbor Care, thinned about eight acres on the west side of the mountain subdivision on Boulder County lands. This completed a fuelbreak on three sides of the community. This project also demonstrated an important small diameter marketing and utilization piece of the puzzle. In summer 2003, the Boulder Ranger District needed a considerable amount of buck n’ rail fencing material for numerous project throughout the district (e.g.: road closures, parking areas, riparian protection, and trailheads). Instead of purchasing this material from the local hardware stores, USFS and CSFS crews used a small ATV and log arch system to pull the lodgepole pine to the road where the material was loaded onto trailers and hauled to the USFS work station near Nederland. There, the pieces were made into sections used for fencing projects. This saved the USFS thousands of dollars and utilized a product resulting from local mitigation work (Project newsletter 2003).

The Porter Ranch Project Units are located five miles up and north of Magnolia Road on the ridge above Boulder Canyon. Adjacent to the 160 acres of private land (approximately 20 separate parcels) lies a narrow stretch of USFS lands covering approximately 300 acres. Due to the smaller diameter material in the area, access constraints and fragmented ownership pattern, a

number of methods were used to complete the management work. One of the methods was to use local landowners as contractors. There were three contractors working on 80 acres, two of these were local landowners and the third has in-laws in the area. Several other local residents expressed interest in assisting in the forest improvement effort. “This is important in several ways” says Craig Jones and Amy Krommes, project coordinators for CSFS and USFS. “It allows us to get work done in areas not suitable for larger contractors and allows the local community to get involved” says Jones. “It also allows us to implement cooperative projects with the State Forest Service. And it really gives them [the community] buy-in to the overall effort” says Krommes (Project newsletter 2003). Total thinning was done on about 140 acres.

As of January 2004, the USFS has treated, or has in contract, 1,556 acres. The USFS has contracted out all four of the stewardship contracts. Stewardship contracts 1, 2 and 3 have been completed, 4 is in progress, with 609 acres treated (150 hand thinned and over 450 mechanical thinned). The USFS Fire Crew has mechanically treated 141 acres. USFS has cooperative agreement contracts with CSFS to treat 366 acres (150 acres of that have been treated, and this includes 100 acres proposed for FY04). 440 acres have been prescribe burned: 340 in 1998 at Winiger Gulch, and in 2003 100 acres at Gross Reservoir. There was also 112 acres of pile burning done in 2003. The USFS acres treated are almost at project completion. There are 36 more acres planned for FY04: the Lake Shore Good Neighbor project of 26 acres, and 10 acres proposed for the Fire Crew (Krommes 2004).

The mechanical thinning costs between \$400-\$800 (one 17 acre unit cost \$1500) per acre (Jones 2004c). Estimated total cost to implement the USFS portion of the project is \$2,150,000, with a timeframe of 3-6 years, from 2002 to 2005/2008. \$1.8 million has been spent to date, which includes almost \$1 million for the planning and NEPA that came from special funding because it is a pilot project. The funding for 2001, 2002 and 2003, for the USFS portion of the project, has come from the NFP (USDA 2003).

In addition to the work completed or in progress by the USFS, other agency partners began treatment work in 1997 and have completed treatments on 829 acres in the Winiger Ridge project area (Jones 2004c). Boulder County has treated 343 acres: 248 acres thinned, 85 prescribe burned, and 10 acres of a fuelbreak. Additionally they have done noxious weed control on 25 acres, mountain pine beetle control property-wide, and Walker Ranch Fire Rehabilitation on 450 acres. The City of Boulder has treated 285 acres: 145 acres thinned and 140 prescribe burned, with an additional 25 acres of noxious weed control. Denver Water Board has treated 95 acres: 50 of which are two fuelbreaks and 45 acres are thinned. Additionally, they have done mountain pine beetle control property-wide, noxious weed control on 20 acres, and Walker Ranch fire rehabilitation on 20 acres. Eldorado Canyon State Park has treated 43 acres: 35 acres prescribe burned and 8 acres of a fuelbreak. They have also done noxious weed control on 16 acres and trail dwarf mistletoe control on 4 acres. Cherryvale Fire Protection District is in the process of treating 20 acres on Denver Water land and 27 acres for the Lake Shore Good Neighbor agreement. Cherryvale has completed defensible space around 54 homes, and has assisted on all prescribed burns on the project land. CSFS has implemented thinning on 63 acres, defensible spaces on 25 properties, prepared three stewardship plans for 1,800 acres, administered 14 agricultural tax properties, held six homeowner association meetings, and made 57 site visits (Jones 2004; CSFS 2004). Additionally, CSFS has assisted with implementation of

250-acre fuel break thinning on Denver Water Board, El Dorado State Park, and private land (USDA 2003). The treatments by all agencies have made a difference. During the 2000 Walker Ranch fire, firefighters used Winiger Ridge project treated forest area to protect homes. The Walker Ranch/Eldorado fire charred 1,062 acres of primarily county open space just west of the city and could have been a lot worse without the forest thinning that had been completed. "During that fire a lot of areas we thinned really saved the day," said Randy Coombs, senior resource specialist for Boulder County Parks and Open Space Department (Anonymous 2002).

### **Sugarloaf Fuel Reduction Project**

The next landscape level project for Boulder County is the Sugarloaf Fuel Reduction Project. The project area contains approximately 25,000 acres of public and private land. Of this amount, approximately 14,000 acres is in the Arapaho and Roosevelt National Forests and 11,000 acres are privately owned or managed by the city or county of Boulder (USFS n.d.). The primary objective of the project is to reduce the risk of crown fire initiation and spread by thinning forest and reducing the amount of surface fuels and ladder fuels necessary for ground fire to reach the tops of trees (USFS n.d.). The Sugarloaf Project began with a landscape assessment in the summer of 2002 to provide general information about the existing conditions of the project area. In November 2002, letters providing information and seeking public comment were mailed to approximately 2,500 individuals. Announcements also were made in local news media outlets. Public meetings were held in December 2002 and February 2003. Over 100 people attended the meetings (USFS n.d.). Additional targeted meetings were held with agencies, communities, native groups and others. The project area is located in the Boulder Creek and Four-Mile Creek watershed to the west of the City of Boulder. The project will support objectives of the National Fire Plan and the Front Range Fuels Treatment Partnership (USFS n.d.). In January 2004, the Sugarloaf EA comment period closed. The Sugarloaf Fuel Reduction Project Decision Notice was signed on January 30, 2004. The appeal period ended on March 22, 2004. No appeals were filed. They are in the implementation phase with unit layout and marking of trees currently underway. On-the-ground treatments will begin this spring and summer. The decision is to implement Alternative B with a few modifications. This decision will apply mechanical vegetation treatments to approximately 4,234 acres, prescribed fire on approximately 569 acres and a combination of thinning and prescribed fire on another 172 acres. The modification to alternative B converted prescribed fire acres to thinning treatments to address the public concern with the use of prescribed fire. It is expected to take between 3 and 5 years to complete the entire project (Martin 2004). The project is estimated to take 5-8 years to complete. The funding for the project planning and implementation is from fuels reduction (Krommes 2004).

### ***Restore Fire Adapted Ecosystems – Rehabilitation, Restoration, Using Science and Information, Monitoring***

There are no current restoration measures in Boulder County.

## ***Promote Community Assistance – Increase Local Capacity, Incentives, Biomass Utilization***

### **Boulder County Wildfire Codes**

Boulder County has wildfire mitigation regulations for any new building. Since 1993, a Wildfire Mitigation Plan must be submitted to, and be approved by, the Wildfire Mitigation Coordinator in the Boulder County Land Use Department, before a building permit is issued. Any new structure requires a Site Plan Review, which triggers the Wildfire Mitigation Plan. A foundation inspection will not be done until the mitigation work is completed. Prior to the final inspection, all remaining items of the Wildfire Mitigation Plan must be addressed (Land Use (a)). Any homeowner or private contractor can write a mitigation plan for the builder, but the final check off has to come from either CSFS or the Land Use Department (Owen 2004). Additionally, since 1993, the County requires that any new structure of 1000 square feet or more must have defensible space, and since 1990, all new roofs must be class A fire retardant. This is for all new buildings as well as any new roof covering 30% or more. Since 1992, sprinklers are required in houses of 3,600+ square feet (Billingsley 2004).

### **Colorado State Forest Service (CSFS)**

CSFS works cooperatively with federal, state, and local fire agencies on defensible space plans and marking, wildfire mitigation thinning, prescribed fire, fire information and education, and Boulder County Wildfire Mitigation Group participation (Winiger Ridge n.d.). CSFS prioritizes individual defensible space treatment work. The bulk of their mitigation efforts are geared toward individual defensible space treatments, especially one-on-one work at the subdivision level. Demand typically outstrips what they can fund by 2-to-1 (Owen 2004). CSFS also funds three fire departments that have mitigation crews to do wildfire mitigation treatment: City of Boulder, Cherryvale and Boulder Mountain Authority (Owen 2004).

### **State Forestry Mitigation Grants**

In FY03 the Boulder District had three separate grant programs for interface mitigation projects: Wildland Urban Interface (WUI) which were the individual private property treatment grants; the Competitive WUI (competitive SFA grants), that were larger grants to fire districts and homeowners associations for mitigation treatment work, and the Forest Land Enhancement Program (FLEP) which is also for individuals to do mitigation work. In FY03 defensible space grants were capped at \$50,000 for each CSFS district by CSFS HQ. The Boulder District received \$50,000, of which Boulder County received \$42,317.50 in FY03 for private property individual defensible space, forest thinning and fuel breaks. In FY03, under the WUI grant, 29.5 acres of defensible space were done, 34.5 acres were thinned, and two fuel breaks were done on 4 acres. Although defensible-space grants were capped by HQ, the Boulder District implemented private property mitigation work via their other competitive State Fire Assistance (SFA) grants and FLEP. In addition to the \$42,317.50, Boulder County had \$306,000 worth of SFA grants and \$9,075 FLEP grants that focus on wildfire mitigation, the majority going toward private property fuels reduction treatment. The SFA grants did defensible space and thinning on 183 acres. For instance, the three fire districts mentioned previously that have mitigation crews were funded under the SFA grants: Boulder Mountain Authority received \$60,000, City of Boulder \$25,000, and Cherryvale \$25,000. These grants funded these fire departments fuels mitigation crews to do

private property treatment work in their districts. The FLEP grants treated 112 acres from defensible space work, forest thinning, and chipping.

In FY02, CSFS three separate grant programs for interface mitigation projects: Wildland Urban Interface (WUI) which were the individual private property treatment grants; the Competitive WUI (competitive SFA grants), that were larger grants to fire districts and homeowners associations for mitigation treatment work, and the Stewardship Incentive Program (SIP) for individuals to do insect/disease mitigation work. The WUI grant funded \$96,681.85 accomplishing 29 acres treated for individual defensible space, 52 acres thinned and 70 acres of fuel breaks. The competitive SFA grant funded \$273,986 accomplishing 559 acres treated, defensible space and/or forest thinning, and 11 fuel break acres treated. The SIP funded \$7,075 treating 15 acres for insect and disease management.

### **Boulder County Chipping Reimbursement Program**

Boulder County has a Chipping Reimbursement Program that offers financial assistance to mountain communities to conduct community-chipping projects. The program is designed to help offset costs associated with the creation of defensible space and complements other wildfire mitigation activities happening in communities. The County must approve of project funding before the project takes place. Acceptable projects will generally serve at least 30 property owners. Each community must hire their own chipping contractor, and be responsible for all coordination efforts, local distribution of wood chips and payment, the County will reimburse the homeowner after project completion. Each community's contribution will be 60% (if there are more than 12 homeowners, 70% if less than 12) of daily chipping costs for four days, and 100% of any additional chipping costs incurred. The County will generally support only one chipping project, per community, per year (Land Use (b)). This program is somewhat cumbersome to use (Owen 2004). The chipping program addresses the slash issue only minimally and not as effectively as it could if it were expanded to a program similar to Jefferson County's slash disposal sites.

### ***Promote markets for traditionally underutilized wood***

One of the critical challenges facing natural resource managers in Boulder County and the Front Range of Colorado is how to utilize the vast amount of small diameter material that will be removed as fuel reduction projects, forest restoration efforts and landscape-scale watershed protection projects move forward over the next several decades. The Boulder County Ecosystem Cooperative identified this issue when it first organized in 1995 to address issues involving Colorado's Red Zone. In 2000, the Winiger Ridge Project received an Economic Action Grant from USFS to address marketing and utilization (M&U) at the project level. A number of activities have been identified and progress is being made. To date several items have been initiated or completed, including: local and regional assessment of acres available for thinning; small diameter marketing and utilization information session and tour; bio-energy task force formed, projects identified and undertaken; opportunities for small diameter M&U workshop; cost analysis of burning slash piles verses chipping for biomass use; and Christmas tree tagging initiative and sales implemented (Project brochure 2003).

### **City of Nederland's Biofuel-Energy Plant**

The Bio-energy Task Force of the Winiger Ridge Project is working with the town of Nederland and a partnership involving the U.S. Forest Service, Governor's Office of Energy Management and Conservation, Delta Dynamics, State Health Department has developed a biofuels project in Nederland where wood chips and related biomass from local fuels reduction efforts are heating and providing power to the Nederland Community Center (Jones 2004c). The plan was for a 20 horsepower boiler that produces 5,000,000 BTUs per hour (Bruntjen 2004). In January 2004, the heating plant began operating and the community center is now being heated with wood chips produced locally from wildfire mitigation and forest improvement activities. The plant produces steam and electricity that will enable the community center to be taken off the electricity grid. The project started in the summer of 2002 after the Hayman Fire (Bruntjen 2004). Nederland sought funding from the USFS (\$40,000), EPA (\$35,000) and the governor's office (\$40,000), in addition to \$250,000 from their own coffers (Bruntjen 2004). The project resulted in a full-time position, which is paid for out of the savings from natural gas. Nederland has an agreement with the USFS to get the woodchips from the Winiger Ridge and Sugarloaf projects; and therefore, has at least a 10-year supply of chips in the pipeline. Gilpin County also has slash they need to dispose of and had been paying a private contractor \$70,000 to landfill it. By hauling the slash to Nederland, Gilpin County is saving \$35,000 (Bruntjen 2004).

In addition to the work in Nederland, other projects involving heat or energy production are being discussed by the three-county/ten-member task force. The task force is made up of agency personnel, community officials, the Nederland Fire Mitigation and Forest Management Committee, the Governor's Office of Energy Management and Conservation, McNeil Technology and interested citizens. Finding niche markets will be one key to success in this overall strategy (Project brochure 2003, Jones 2004). Boulder County has conducted a feasibility study and just approved using a commercial wood-chip heating system for their new natural resource building at the County Fairground facility. A number of potential entrepreneurs have come forward to look into using small diameter material for animal bedding, pellets or other uses.

### **High Timber Firewood & Logging Co.**

Phil and Jane Pitzer run High Timber Firewood and Logging Company. Their services include: Services: firewood (split, blocked, and custom cuts), timber management consultation, pine beetle removal and treatment, slash chipping, forest management and logging, fire mitigation (plans written and work implemented), difficult tree removal, hauling, and snowplowing. They run a crew of 3-5 depending on the season. High Timber started out 25 years ago as a firewood producer, but as air quality regulations prohibited burning of wood and fewer people wanted to deal with the mess of a fire, their firewood business declined (P. Pitzer 2004). Consequently, they put their skills to use in the fire mitigation business. They work in Boulder, Jefferson and Gilpin Counties, but got their start in Boulder. Boulder requires fire mitigation plans to build a new house. High Timber can write plans and do the mitigation work. About 80% of their work is for private individuals on small plots of land from 1-60 acres; about 20% of their work is for local and state government (P. Pitzer 2004). They use heavy equipment including log skidders, chippers, and skid steerers rubber tracked to tread lightly. They also use lighter equipment when appropriate, especially on the smaller parcels of land. In general, they chip the slash and small diameter timber, and either haul it or leave it for the homeowner to spread. They take larger

diameter timber to their own sorting yard (P. Pitzer 2004). In 2002, they treated 75 acres and in 2003 they treated 80 acres for private landowners. The work is very labor intensive, which means they don't treat a lot of acres. For instance, they do a lot of hand work and pruning with pruning rods and then clean everything up. Treatments include spacing trees, making sure crown tops don't touch, taking out weaker diseased trees and leaving the healthier, bigger trees. High Timber treats about 10 acres of public land a year (P. Pitzer 2004). On private land they charge \$2,500-3,000 per acre, while work on public land garners \$800-1000 per acre (P. Pitzer 2004). The biggest challenge High Timber faces is dealing with worker's compensation, which is 28% in the logging business.

### **Lumber Jacks**

Lumber Jacks is the contractor for Winiger Ridge Stewardship Contract #4, which began work in November 2003. They have completed 50 acres of approximately 200. The cost for fuel reduction treatments range from \$120/acre to \$1,000/acre. Federal contracting makes up only a small portion of their work. Lumber Jacks clients are mainly private landowners, approximately 80-95% of the business. Most of their work is done on the Front Range in elevations greater than 6,000 feet (Davidson 2004).

In addition to Lumber Jacks and High Timber Firewood & Logging, Boulder County and the vicinity has many other thriving utilization businesses, notable are Morgan Timber Products out of Larimer County, Fire Ready out of Nederland, and Jessie James Timber in Boulder County.

### **Anchor Point**

Anchor Point's services include wildland urban interface hazard and risk assessments, ecosystem management including planning and implementation of prescribed fire, and education and training in wildland fire and incident management. Wildfire hazard and risk assessments comprise 60% of the work and include parcel level (individual home surveys), mid-level (jurisdiction/subdivision), comprehensive (parcel and mid-level assessments with recommendations), and community-wide FireWise planning and mitigation projects. Ecosystem management includes complete burn development: smoke assessment, fire behavior analysis, permitting, community outreach and public education; and implementation of prescribed burns: wildlife habitat enhancement, forest fuels reduction, range and forage improvement. Education and training via fire training, is about 30% of Anchor Point's work and includes National Wildfire Coordination Group (NWCG), certification training, and custom series training. Prescribed burns and forestry practices are about 10% of the work and the prescribed burns are done for private ranches in Colorado and New Mexico. About 65% of Anchor Point's work is in Colorado, with the majority being in Jefferson and Boulder Counties. (White 2004). Anchor Point employs four full time staff and several contractors (McDonald 2004). In Boulder County early in 2004, Anchor Point completed the Four Mile Canyon Fire Protection District Wildfire Hazard-Risk Assessment. Four Mile Canyon is a fire protection district that wanted to prioritize their mitigation efforts; Anchor Point's analysis helps accomplish this (McDonald 2004). Anchor Point also is working with the Boulder County to help identify individual parcels on their western border for wildfire mitigation treatment.

Boulder County, Colorado case study, January 4-10, 2004, Toddi Steelman and Devona Bell

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