

## **Introduction**

Flagstaff sits at the base of the San Francisco Peaks in the midst of the largest continuous ponderosa pine forest in the world. The Coconino National Forest surrounds the entire city and the Flagstaff wildland urban interface (WUI) covers approximately 140,000 acres of national forest, state forest, military, national park, Flagstaff city and privately owned lands (Summerfelt 2003). Flagstaff covers approximately 40,000 acres at high risk of a WUI wildfire; 11,400 acres of private land, 8,600 acres of state property and 20,000 acres of federal land (Arizona State Land Division 2000).

According to the 2000 Census, the population of Flagstaff is 52,894 with a median household income of \$48,427. The median home value is \$161,000 with almost 47% of the homes seasonally occupied (U.S Census Bureau 2003). The city is surrounded by several highly urbanized subdivisions, including Doney Park, Timberline, Fernwood, Fort Valley, Kachina Village, Mountaineer and Forest Highlands.

The Flagstaff area experiences nearly 400 wildland fires each year and approximately 60% are caused by lightning (GFFP No date(a)). There is a large transient population that lives in the forest during the months of high fire danger and creates an added risk of human started fires (Western WUI Grant Program 2001a). Most pine forests in the area are overstocked with many sites having as many as 1,500 plus trees per acre (Western WUI Grant Program 2001b).

In June 1996, lightning ignited the Hochderffer Fire that burned 16,115 acres. This was the largest fire on record in the Coconino National Forest. During the same time period the Horseshoe Fire burned 8,650 acres. The fires coincided with the arrival of a new fire chief and served as the turning point in the community for addressing wildfire risk. According to Assistant Fire Chief Jim Wheeler, “Having fires on the edge of the city and fires within the city limits, the community was essentially panic stricken.” Since that time they have been able to expose the “two great lies”. “The two great lies are that every tree is good and every fire is bad. Neither one of those things are true, but that’s been thought for generations” (Wheeler 2003). Changing attitudes within the community have been one of the real successes for Flagstaff. The Flagstaff Fire Department Fuel Manager Paul Summerfelt reflects, “Prior to 1996, it was wrong to cut a tree and who in their right mind would set a fire? Well, next spring [2004] within the city we will cut our one millionth tree. We now light more fires than we put out.” (Summerfelt 2003). Today, cutting trees and setting fires are so common in Flagstaff that people do not question either practice.

While the Flagstaff Fire Department has been the key in changing attitudes, other efforts have complemented these activities. In 1996 while the Fire Department was embarking on the paradigm shift about trees and fire, a coalition was being formed with leadership from the USFS, the Grand Canyon Trust, the City of Flagstaff and Northern Arizona University. This multi-lateral effort became the Greater Flagstaff Forest Partnership (GFFP) (Wheeler 2003). The GFFP is dedicated to testing and adapting new approaches to restoring forest ecosystem health in the forests surrounding Flagstaff. The GFFP is seen as a major asset to the community and has been very successful in pioneering new techniques and approaches to ecosystem restoration. One of the reasons for Flagstaff’s success, “Has been a major university with the scientific and

academic credentialing that comes with that program. The people there are national leaders at restoration work. So there's a lot of attention focused in here. Then you have those people in the community as well. I think it just adds a legitimacy to this whole effort that only the university with their standing in this involvement could bring" (Summerfelt 2003).

## REMAINING CHALLENGES

Utilization is the biggest challenge facing Flagstaff. Savannah Pacific may move the region and holds a lot of promise for utilizing Ponderosa Pine though a Wood Industrial Park in nearby Belmont. Although Savannah Pacific has the support of the GFFP and community, the company has had some set backs from the original plan to start phase one in the first quarter of 2004.

Maintaining a cooperative relationship between the USFS and environmental organizations is another challenge. Taylor McKinnon of Grand Canyon Trust feels the Forest Service is holding the Partnership back in terms of collaboration. The last project they worked on, Woody Ridge, was the least collaborative. "We are either going to agree to agree or we're going to agree to disagree. If we agree to disagree, then the politics are back to what they were 10-15 years ago" (McKinnon 2003).

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

#### **Flagstaff Fire Department and Fuels Management Division**

In Arizona, the county has no suppression responsibility (Summerfelt 2003). Flagstaff has a city fire department and there are fire districts surrounding Flagstaff, but there are areas that have no fire protection. The fire districts are a combination of paid and volunteer staff. Flagstaff Fire Department employs 94 firefighters and since 1996 has required firefighters to be wildland trained. They all are equipped in protective clothes, equipment and trucks (Wheeler 2003). The Fire Department has an annual budget of \$8 million. The Fuel Management Division started with an annual budget of \$100,000 in 1997 and currently is allocated \$300,000 annually (Wheeler 2003).

According to the Flagstaff Fire Department Fuel Management Division, the at risk acres around Flagstaff total 140,000 (Summerfelt 2003). The Flagstaff wildland urban interface (WUI) is much larger than ½ mile normally attributed to the WUI. "We look at it from the standpoint of watershed damage. Every fire that we've had or ever will, will burn from the southwest to the northeast because of the wind. The secondary effects from the fire, which would be the flooding, would cause far more damage than a fire. The other part of it is just the recreational opportunities. Wildfire habitats are very important for some folks, scenic vistas, Native American sites. If you start to look at public safety and public health, then the interface of Flagstaff is way bigger than the half mile. We could have a catastrophic fire north of town that never burns into the city limits, but is destructive of our community" (Summerfelt 2003). The economic liability to the town would be enormous if a fire were to occur. A fire in the first part or middle part of May when people are planning their vacations could cost Flagstaff in excess of

\$65 million from just lost revenues from motels, restaurants, and tourism related activities (Summerfelt 2003).

The Flagstaff wildland urban interface encompasses several jurisdictions and ownerships. The goal of the Flagstaff Fire Department is to protect all values at risk and reduce wildfire threat across jurisdictions and ownerships and at considerable distances from structures. The program has five core areas: land use planning, hazard mitigation, outreach, public education and response training (Flagstaff Fire Department 2004). To accomplish their various activities the Fire Department has received more than \$900,000 from a diverse pool of funders including AZ State Land Department, US Forest Service (USFS), Northern Arizona University, WalMart and State Farm Insurance, in addition to the City's on-going budget commitment (Flagstaff Fire Department 2004). Partners to accomplish their activities include individual home and property owners, private business, Flagstaff Unified School Districts, Coconino County Rural Environment Corps, Ponderosa Fire Advisory Council, Greater Flagstaff Forest Partnership, Northern Arizona University, Arizona State Land Department, AZ Department of Transportation, AZ Department of Corrections, AZ Army National Guard, the USFS and the US Naval Observatory (Flagstaff Fire Department 2004).

Since 1996 the city of Flagstaff has worked to reduce the wildfire threat and ensure a sustainable community. In 1996 they created their first demonstration project. In 1997 they hired their first Fuel Management Officer (FMO)—Paul Summerfelt. In 1999 the city fire department hired a seasonal fuel reduction crew and created a student intern program. They also initiated their first public education campaign. In 2000 they hired an Assistant Fuel Management Officer and in 2001 they hired a Crew Boss. In 2002 they began a volunteer program and in 2003 they hired two Fire Technicians (Flagstaff Fire Department 2004).

Since efforts to address the wildfire risk were initiated, Flagstaff has experienced a community-wide paradigm shift that includes enthusiastic public support for the Fire Department's effort. The Fire Department has growing requests for its services. They are a cadre member of the National Prescribed Fire Training Center in Tallahassee, Florida. They have Interagency Incident Management Team Command and General staff duties on regional Type II and Type I team. They provide assistance to other at-risk community and have received recognition as a national model (Flagstaff Fire Department 2004).

#### *Education and Outreach*

In 1999 the City of Flagstaff and Coconino County encouraged homeowners to assist in the prevention of loss from wildfire. The Flagstaff Fire Department launched the "Be Prepared" program, which educates home owners about safety education and homeowner responsibility for wildfire prevention. In 2002 Flagstaff started a FIREWISE program to recognize communities and neighborhoods that were doing significant work. Flagstaff Fire Department wanted to create an incentive for existing communities to reduce their risks (Summerfelt 2003). In 2003 they created a public education plan that outlines the groups they wanted to address and the presentations they wanted to make. They engaged in a variety of activities including group presentations and door-to-door distribution. They also created a web site funded by a State Farm Insurance grant. Wal-Mart also donated money to create outdoor bulletin boards for each of Flagstaff's fire stations (Summerfelt 2003). In 2003 a large community meeting was organized,

but with little success. Only eight people showed up. Summerfelt believes the low number was because everyone the community was already well-aware of the wildfire risks (Summerfelt 2003). In 2004 the fire department created an education CD, targeting developers, real estate people, the insurance industry, homeowner groups with video clips, still photos and basics for educating homeowners about protection of their house (Summerfelt 2003). The CD will also tell people where to go for more information.

Flagstaff Fire Department has an active program of notifying people when prescribed fire is scheduled. For approaching fires the Flagstaff Fire Department relies heavily on law enforcement and radio/TV outreach. Summerfelt credits the success of the prescribed fire program to the outreach with the public. “If we’re in an area and we know we’re going to impact the neighborhood with smoke, then before the ignition, we’ll go door to door with a flyer”. They have handed out as many as 1,000 flyers on a burn project so residents know it is going to occur. The Fire Department maintains a list of people that have smoke health related issues and have explicitly asked the Department to call when they burn in their neighborhood. “Not only does the door-to-door deal get the word out, but it helps us find those kinds of people” (Summerfelt 2003). In every case, people have not been opposed to the burn. They may have some smoke issues but they can leave, seal the house or turn on an air purifier. The Fire Department has money budgeted every year to relocate people in a motel for a night but they have had to do that only twice in six years (Summerfelt 2003).

Flagstaff Fire Department has been successful in securing funds through AZ State Land Department and the National Fire Plan to support these various education and outreach activities including a 2001 Grant for \$30,000 for multi-media campaign to increase public awareness and recruit for at risk programs, a 2002 Grant for \$27,500 for a multi media campaign to increase public awareness about private land treatments in city and a 2003 grant for \$7,000 for community outreach and recruitment the development, production, display and dissemination of FIREWISE material and presentations at various public events (Western WUI Grant Program 2001a, Western WUI Grant Program 2002 and Western WUI Grant Program 2003).

#### *Fire Codes, Planning and Zoning Regulations*

In 1996 the roof construction ordinance was changed to adopt a class B roof—essentially a limited combustible roof-- and water requirements sufficient for fire protection (Wheeler 2003; GFFP No date(a)). In 1997 and 1998 the Fire Department started including FIREWISE construction elements into the development process. In other words if a new subdivision came in, it would be a FIREWISE community—limited combustible siding, closed eaves and soffits, wire mesh screen all over venting, in addition to the roof being safe and thinning the property (Wheeler 2003). Flagstaff adopted the 1997 version of the Uniform Fire Code in 2000 and they feel there is sufficient language in that code to support and enforce their efforts on hazardous vegetation mitigation, roofing material, driveway access and other aspects related to wildland fire concerns. Consequently, there have not been any major changes in Flagstaff to the zoning, planning or fire codes (Wheeler 2003). They are currently looking into adopting the 2003 version of the International Wildfire Code (Summerfelt 2004).

Codes are implemented and enforced through the permit and building process. Fire inspectors are part of that process. The Fire Department signs off on specific items for the permits and

occupancy of site permission (Summerfelt 2003). From an enforcement standpoint, if mitigation is not completed on a new project, fire inspectors can stop the project. If mitigation is needed at an existing site, and an individual chooses not to correct it, then the Fire Department will take them to court. The Fire Department will act through the city attorney who has authority under the Uniform Fire Code (Summerfelt 2003). The approach has been very effective and successful. According to Assistant Fire Chief Jim Wheeler, “No one to whom we’ve applied these conditions have ever complained, much less appealed. We have an appeals process. No appeals, none. Not even a complaint”.

#### *Ponderosa Fire Advisory Council and Interagency Cooperation*

The Ponderosa Fire Advisory Council (PFAC) was formed in 1989 as a consortium of local fire agencies, fire districts, municipal fire people, USFS, AZ State Land, and National Park Service. The Ponderosa Fire Advisory Council is a 16-member group that includes all fire agencies within the greater Flagstaff area, along with Coconino County, Northern Arizona University, and the National Weather Service. PFAC meets once a month to discuss and act upon a variety of wildfire issues. These include joint training sessions, public education activities, hazard assessment and response needs, general information sharing, special activities and projects, development of standard operating procedures, and purchase of specialized equipment (Cityscape magazine No date). While their principal mission is sharing information, over time that has evolved to include response planning to emergencies and coordination of response to emergencies and sharing of resources (Wheeler 2003). It has also evolved to include some fuel management work on each other’s properties (Wheeler 2003). Through PFAC and other partnerships there is good interagency cooperation (Summerfelt 2003). For instance, the Fuels Management Division works closely with the Forest Service. They trade personnel on prescribed burns and work together on join burns. They have also worked on contracts for Forest Service thinning. USFS will respond to fires within the city and the city responds to fires for USFS.

#### *Deck Material Testing*

Flagstaff Fire Department tests deck material for flammability by running their own tests on them to help developers and homeowners decide what will work best for their homes.

#### **United States Forest Service**

The USFS is engaged in outreach to the Flagstaff area primarily through the GFFP. Heather Green is the USFS’s full time liaison with GFFP, according to her, “We are actively engaged in outreach to homeowners in several ways. We are sharing information regarding a cost share project that the GFFP is promoting with the City of Flagstaff for fuels reduction on private land. Our fire prevention staff is actively engaged with the local communities and forest users on a regular basis. We also host, co-host and participate in community meetings” (Green 2004).

#### **The Greater Flagstaff Wildfire Community Plan (GFWCP)**

In December 2003, President Bush authorized the Healthy Forest Restoration Act (HFRA). HFRA requires communities to develop a Community Wildfire Protection Plan (CWPP) in order to receive priority funding for fuels reduction projects in their area. The Greater Flagstaff Wildfire Community Plan is currently in draft form, waiting to be signed by city, county, state and federal agencies. The plan outlines response of organizations, as well as identifies risk level

of WUI land (high-med-low) and prioritization of treatments with a blind eye to who owns the land. In addition, the CWPP can be used by land managers to justify grants and receiving money in addressing their wildfire threat (Pajkos 2004b).

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

**City of Flagstaff**

*Fuels Reduction Program*

The Flagstaff Fire Department is currently engaged in thinning and prescribed fire activities throughout the city. There are not a lot of fire departments that can say they light more fires than they put out, but the Fuels Management Division has a very active prescribed fire program. They conduct 30-50 burns a year (Summerfelt 2003). Since 1996 they have thinned 4,840 acres, while prescribed burning 3,026 acres (Flagstaff Fire Department 2004). Their biggest frustration is the weather, which prohibits more prescribed burning. Most of the acres burned by prescribed fire are on private property, approximately 65% , with the remainder on a variety of public lands-- 5% county, 15% city, 10% state and 5% federal (Summerfelt 2004).

The City of Flagstaff is unique because it has its own Fuel Management Division within the Fire Department. The Fuel Management Division has been engaged in an active fuel reduction and education program since 1996. In 1996 the city started its first demonstration project behind one of the fire stations in the middle of town, very close to where one of the 300 acre wildfires had occurred in the spring (Wheeler 2003). This 20-acre parcel was overstocked at about 350 stems an acre. A one acre plot was initially treated so people could clearly see the difference between 120 stems an acre and 350 stems an acre (Wheeler 2003). This first demonstration project was costly, about \$30,000 for the single acre because of all the scrutiny and preparation it received (Summerfelt 2003). Hundreds of hours of time were spent on it. The City Council was nervous and there were multiple visits to the site. It was marked multiple times. People watched every tree come down. When the demo area was burned, the Fire Department with engines was in full recall. “It was money very well spent because everybody got their say, everybody watched, everybody had an input” (Summerfelt 2003). In 1999 an additional 30 acres around the original one acre site were treated. Then in 2001 additional acres across the street were treated for a total of 200 hundred acres (Summerfelt 2003). Today the original demonstration site is indistinguishable because of on-going treatments within the city.

In 1997, the city hired their first Fuel Management Officer (FMO), Paul Summerfelt. In 1999 City Council allocated seasonal crew money, which brings in 6-9 crew members a year. The crew members arrive in early May and work until mid-November. The crews are made up of students, locals and some people from the Hopi reservation (Summerfelt 2003). The city also started an intern program in 1999, through Northern Arizona University. Interns need 15-18 contact hours for credit. At the end of the semester the interns write a paper for their course outlining what they accomplished. In 2000 the Fire Department hired an Assistant Fuel Manager, Mark Shiery and in 2001 they hired three squad bosses. Every year a few hundred people from sororities, fraternities, church groups, boy scouts, etc., volunteer their time. They help clean up treated site and remove wood.

With the additional labor and support, the Fuels Management Division has been able to increase its treatment of fuels over time. The Fuels Management Division began with treating 1 acre in 1996 and today treats in excess of 1,500 acres per year. In 1996 the city thinned 230 acres and burned 80 acres. In 1998 they thinned 100 acres and prescribed burned 110 acres. In 1999 they thinned 620 acres and burned 330 acres. In 2000 they thinned 830 acres and burned 440 acres. In 2001 they thinned 1,250 acres and burned 510 acres. In 2002 they thinned 1,126 acres and burned 538 acres. They have supported this work with funding from AZ State Land Department through the National Fire Plan. In 2001 the city received a grant for \$150,000 for 1,000 acres of thinning throughout the city to develop stewardship plans and mark the property for treatment. In 2002 the Fire Department received a grant \$123,750 for hazardous fuel reduction on 750 acres within the City. In 2003 they received a grant for \$120,000 for hazardous fuel reduction on 600 acres within and adjacent to City (Waterbury 2003).

### *Stewardship Plans*

The Fuel Management Division works with homeowners to reduce hazardous fuels on their property in a variety of ways. They carry out everything from providing advice to preparing a stewardship plan (Summerfelt 2003). A stewardship plan is an assessment of the conditions on the property and recommendations to improve forest health, address insect disease and mitigate fire risk. The Planning Division and Fire Division have an administrative program that requires a forest stewardship plan to be prepared and implemented for new developments or new building permits (Summerfelt 2003). They also complete stewardship plans for existing homes or properties at no charge. The Fuel Management Division also will mark the property owner's trees. However, cutting on private property is left to the private sector contractors. Periodically, the Fuel Management Division will hold workshops with local contractors about the Division's program standards. The contractors that attend are placed on a list provided to the property owner after the stewardship plan is completed (Summerfelt 2003). The Stewardship plans are funded through monies procured from Northern Arizona University and the Ecological Restoration Institute, city appropriations and the National Fire Plan.

The southwest part of Flagstaff is at the greatest risk from wildfire given prevailing winds and has been the priority for treatment. Beyond this prioritization, the Fuel Management Division has been more "opportunistic" in its approach. They found that targeting and prioritizing was difficult because there were people outside of those prioritized areas who were very interested in reducing hazardous fuels on their property. "So what we've chosen to do is not worry about the people that won't do it, but help those who will" (Summerfelt 2003). As a result of this approach, they have found that neighbors observe and then request the service. "We have just found that it has been more effective rather than beat ourselves against the wall trying to deal with people that are a little hesitant. We'll jump on those who are willing to do it and then neighbors start filling in the holes" (Summerfelt 2003). At the end of 2003, the Fuel Management Division had a backlog of two years of work, so demand for the program has not been a problem. "The biggest challenge I think we have is trying to meet the need... We no longer have to convince people this is the right thing to do. Now all we have to do is meet what they want done in a timely manner" (Summerfelt 2003). "All of our vendors [contractors] are maxed. They are so busy that if you were to call them right now, it might be 6 months before

they can get to your property” (Summerfelt 2003). There are 12-13 contractors on their current list (Summerfelt 2003).

The process has generally entailed a homeowner or property owner calling the Fuel Management Division to make an appointment. Someone from the Fuel Management Division will visit the property and evaluate conditions with the homeowner present. During that visit the Fuels Management Division explains the options for the property, the resources available and tailors a program to meet the property owner’s needs (Summerfelt 2003). The property owner will hire a contractor to thin the property. The Fuels Management Division advises the property owners not to pay the contractors until the property has been inspected. Most of the vendors know the standards and following through on appropriate treatment has not been a problem (Summerfelt 2003). On average if the homeowner is pile burning the material, the average cost per acre to treat is \$350-450 (Summerfelt 2003).

In 2001, Stewardship Plans were developed on 1,950 acres and 470 acres marked. In 2002, Stewardship Plans were developed on 614 acres and 605 acres marked. In 2003, Stewardship Plans were developed on 1,472 acres and 765 acres marked (City of Flagstaff 2004).

#### *Targeted Home Assessment Campaign*

In 2003, the Fire Department began a home assessment campaign to target 900 homes in the University Heights development (Summerfelt 2003). This is the first time the Fire Department targeted an area due to the developments location on the southwest side of the city. In the spring and summer of 2003, Fuel Management Division notified property owners of their plan to visit neighborhoods over the next several months to evaluate defensible space around homes. All property owners were provided with the checklist used. If the Fire Department identified issues that need to be corrected, the homeowner was contacted again. As of December 2003, 350 out of the 900 assessment have been completed. They use an assessment form and go door to door. About 1/3 of the properties needed work. They are fairly confident the work is getting done because people are calling Fuels Management to develop a stewardship plan for their property and the contractor list to do the work (Summerfelt 2003).

#### **United States Forest Service**

Coconino National Forest has numerous thinning projects completed, currently planned or ongoing within Flagstaff and on national forest lands surrounding the greater Flagstaff area. Many of these projects are stewardship contracts or various projects that exchange goods for services and are designation by description. These areas include Fort Valley, A-1 Mountain, Skunk Canyon, Lake Mary, Pumphouse and Mars Hill. As of January 2003 approximately 1,100 acres were thinned on USFS lands with approximately 900 acres under contract to thin. Additionally, 750 acres have been broadcast burned with many other acres of slash pile burning.

Fort Valley was/is a GFFP Project. A portion of A-1 Mountain lies within the Partnership boundary but GFFP was not involved in planning. Results of implementation are visited and monitored and used to inform ongoing planning and discussions. Skunk Canyon is within GFFP boundary but not a GFFP project. Portion of Lake Mary is within boundary but not GFFP project. Pumphouse was planned prior to the GFFP and implemented in the earlier years of GFFP but not a GFFP project. The Pumphouse project was not fully implemented. The

Pumphouse analysis area was incorporated into the analysis area of the Kachina Village Forest Health Project which is a GFFP project. Mars Hill is multijurisdictional and with the partnership boundary. The GFFP was not involved in the planning of it but it incorporates many of the GFFP principles... collaboration between City and the FS; restoration based thinning, fuels reduction and involved a lot of work with Lowell Observatory. It is also used a learning site by GFFP members (Green 2004).

The work on the GFFP consists of 100,000 acres and treatment proceeds with the USFS as a major partner. GFFP work has been divided into 10,000 acre blocks. NEPA work on one of the 10,000 acre blocks costs \$100,000 to \$120,000 and takes 12-18 months to complete. The Fort Valley Project was appealed three times and litigated by the Forest Conservation Council, National Forest Protection Alliance, Forest Guardians and Flagstaff Activists Network (USFS 2001). The suit was settled with an agreement for a new Decision Notice that was finalized in June 2001. Due to the Partnership's national exposure, they had been perceived as a threat to environmental organizations seeking the elimination of commercial logging on national forests. Other groups opposed the restoration models developed by Wally Covington at Northern Arizona University (USFS 2001). The first contract was awarded for the Fort Valley Project in September 2001, after two years of delays, and the project is scheduled for completion in December 2006 (USFS 2001). Fort Valley is estimated to cost \$1,212,000 (USFS 2002). In FY2001 1,596 acres had been thinned and 262 acres had been prescribed burned on the Fort Valley Project (USFS 2001).

In addition to the Fort Valley Project, the USFS also is engaged in the Arboretum, Airport, Elden, Kachina, Woody and Mountainair stewardship contracts. The Arboretum Project completed NEPA work in September 2000 and was not appealed or litigated (USFS 2002). Arboretum is estimated to cost \$87,000. A total of 1,062 acres were thinned and 200 acres were prescribed burned on the Fort Valley and Arboretum in FY2002 (USFS 2002). In January 2003 Kachina completed its NEPA work and was not appealed or litigated (USFS 2003). Kachina is estimated to cost \$1,209,000 and a contract was awarded in August 2003 (USFS 2003). In FY2003 305 acres were thinned and 1,121 acres were prescribed burned on all the stewardship projects (USFS 2003).

Work has proceeded slowly due to complexities with contracts, the timing of work, burning windows, coordination with other agencies, and budgeting issues (Green 2004). NEPA work is completed for Fort Valley, Airport, Arboretum, and Kachina. All of Fort Valley Phase I has been contracted out and the contract lengths are generally about three years in length so the USFS would not expect all the thinning to be completed until then. The subsequent activities (slash treatments and prescribed burning) are interdependent. Most of the pile burning has been completed on Phase I. Phase II layout and marking is scheduled to be completed this year with contract award scheduled for next year. The NEPA for the Airport project is completed but implementation is not scheduled because the area is now part of a land exchange which needs to be completed prior to project implementation. The need for implementation and type of work originally proposed may need to be revisited depending on the outcome of the land exchange process. The Kachina Village project is proceeding although the operator was shut down during the winter of 2004 due to wet weather conditions, a standard mitigation measure during the winter. He is expected to resume around May 2004, conditions permitting. The planning

process for Mountaineer is beginning. Because the planning team for this project consists of many of the same members as those working on the Woody Ridge Project, it will not get into full swing until Woody Ridge Project is completed. The Decision Notice is expected near the end of the March 2004 (Green 2004).

The GFFP has been able to complete approximately 2,000 acres of work so far and the USFS estimates it will take another 10 years to complete the rest of the work (Zanotto, Green and Stephens 2003). The Coconino NF has approximately \$4,000,000 annually for fuels reduction (Zanotto, Green and Stephens 2003). Ideally the Coconino Forest would like to thin 10,000 acres per year, including the Partnership projects, and this plan will require an additional \$3,000,000 annually, more than twice the budget available (USFS 2001).

There have been some clashes between Partners over the prescriptions used. Working out a common vision has been challenging at times. “What it comes down to is you have subcultures who are trained in forestry school and have a definite vision on what that means, and then we have an environmental community who has another vision. So its’ trying to find a way to weave those two things together” (Zanotto, Green and Stephens 2003).

Commercial removal on average costs about \$300 per acre. This means that under a service contract the USFS pay a contractor \$300 to do the 'services' which often mean removing the trees, conducting the required slash and road work as specified in the contract.

Non-commercial thinning costs \$100-\$140 per acre (Zanotto, Green and Stephens 2003).

### **Arizona State Land Department**

The Arizona State Land Department, Fire Management Division is small compared to the state forestry departments in Colorado and New Mexico. The entire division has about 30 employees, of which half are actual foresters, with the remainder working as support staff. In the greater Flagstaff area, they manage 28,000 acres of timber trust land primarily southwest of Flagstaff (Boness 2003). This land is intermixed with national forest. The Fire Management Division works cooperatively with the USFS due to the inter-jurisdictional nature of their lands. They try to match prescriptions and assist each other with archeological and wildlife surveys when appropriate (Boness 2003). In general prescriptions vary, but they shoot for 60 basal area and they try to protect specific species, like yellow pine.

AZ State Land Fire Management Division was managing its forested resources as a commercial timber base, until the markets declined. The pulp market disappeared in 1998 when the paper mill in Snowflake, AZ transitioned to recycle material. The sawwood market declined around 2000. The last timber sale was in August 1998. The State Land Trust dictates that in order to spend money on land, the land must generate revenue. Since the land was not generating money through timber sales, no thinning or fuel treatments could be planned. When the State Fire Assistance grants started in 2001, they started receiving much needed money for treatments (Pajkos 2004b).

The priority for hazardous fuel reduction has been lands close to Flagstaff. In 2001 Arizona State Lands received \$33,684 from a State Fire Assistance (SFA) grant for a 2,750 acre fuels treatment program in the Flagstaff wildland urban interface. In 2002 they received an \$80,000 SFA grant for fuels reduction around Flagstaff and received \$105,000 of a shared SFA grant with Prescott for \$242,525 for treatment of WUI acres.

In 2003, Flagstaff Fire Management Division received two grants—one for \$500,000 from the Arizona Department of Emergency Services and another SFA grant for \$250,000 (Boness 2003). The \$500,000 grant is a 100% funded grant (no cost share) and has been used to survey and mark roughly 990 acres of state trust land for treatment. 500 of these acres are prepped as a timber sale—all size classes and 490 acres are prepped as a pre-commercial thinning (6-7”), which will be hand thinned. The small diameter timber for the pre-commercial acres will be piled and burned. The cost to treat these acres is estimated at \$700-1000 an acre for the timber sale, and \$400-500 an acre for the pre-commercial thinning. These 990 acres are inside or within ¼ mile of Mexican spotted owl (MSO) protection zones. AZ State Land has partnered with US Fish and Wildlife to treat this land. Under this agreement, AZ State Land has been able to operate without restrictions and treat more aggressively and during the breeding season. Treatments in the MSO area are generally less aggressive, more clumpy, an increased emphasis in species diversity, uneven age and generally have size or timing restrictions. This is a one of a kind, first in the United States partnership and is being watch closely the Department of Interior and other agencies. The \$250,000 SFA grant is funding a new hire to assist with WUI fuels reduction projects and also funding the purchase of chippers and a dump truck to remove slash from private property (Pajkos 2004b).

The Flagstaff State Land office could use \$1.5 million a year for fuels reduction. They expect to receive \$100,000-200,000 next year through another Arizona Department of Emergency Services grant. With this money they will begin thinning between 200-500 acres in FY2005, which is ready and awaiting funding.

In 2001, 550 acres of state trust land were thinned and 400 acres burned. In 2002, 380 acres were thinned and 1040 acres burned. In 2003, 780 acres were thinned and 690 acres burned (Pajkos 2004a).

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

The Greater Flagstaff Forests Partnership (GFFP) is an alliance of 25 academic, environmental, business and governmental organizations dedicated to testing and adapting new approaches to restoring forest ecosystem health in the forests surrounding Flagstaff. The GFFP (formerly the Grand Canyon Forests Partnership) is a partnership between the US Forest Service (Coconino National Forest, Rocky Mountain Research Station, USDA Forest Products Lab) and non-profit Greater Flagstaff Forests Partnership, Inc., and was formally recognized through a Cooperative Agreement that was signed on March 31, 1998 (GFFP 2003a). The Partnership seeks to analyze 100,000 acres of WUI around Flagstaff in 10,000 acre blocks per year and implement forest health and fire reduction projects. The Partnership began after several severe fires burned

around the city of Flagstaff in 1996. At present, there are over 70 different research processes underway within the GFFP and its project boundary. The studies include the effects of different treatments on fire intensity, soils, wildlife and vegetation (GFFP 2003b). GFFP's vision is that within 20 years, the Flagstaff wildlands/urban interface will be a mosaic of open, parklike forest containing scattered timber stands with higher densities, interspersed with natural parks which approximate conditions present before Euro-Americans settlement.

There are four primary objectives of the GFFP: 1) Develop, test and demonstrate approaches to forest ecosystem restoration that are environmentally sound, economically sustainable, and socially acceptable; 2) Involve multiple and diverse interests and viewpoints at the local, regional and national levels in identifying, analyzing and reaching consensus on practical and workable solutions to critical forest ecosystem health problems in the region; 3) Monitor and document the ecological impacts, effects and tradeoffs of different restoration forestry techniques; 4) Monitor and document the economic and social impacts and tradeoffs of different restoration forestry techniques, including the development of new uses and products associated with small diameter timber (GFFP 2003a).

The Partnership is comprised of a five member board of directors, the Partnership Staff, the Partnership Advisory Board (PAB) and interested parties who do not wish to be a voting partner but participate in the process. The Partnership Staff coordinates with the USFS and provides administrative support. The PAB provide recommendations to the board of directors and consist of three working groups (GFFP 1998). Members of the PAB include representatives from twenty-five organizations: AZ Game and Fish, AZ Public Service, AZ State Land Dept – Fire Management Div., City of Flagstaff, Coconino County, Coconino Co. Farm Bureau and Cattle Growers Assoc., Coconino Natural Resource Conservation District, Cocopai Resource Conservation and Development District, Ecological Restoration Institute, Flagstaff Chamber of Commerce, Flagstaff Native Plant and Seed, Grand Canyon Trust, Greater Flagstaff Economic Council, Highlands Fire Department, Indigenous Community Enterprises, Northern Arizona Conservation Corps, Northern Arizona University – College of Engineering, Northern Arizona University – School of Forestry, Perkins Timber Harvesting, Practical Mycology, Society of American Foresters - Northern Arizona Chapter and Southwest Environmental Consultants (GFFP 2003a). One of the key operating processes of the GFFP is unanimity. It was very important to all partners that everyone was comfortable with the decisions that were made (Wheeler 2003).

The Partnership's goal is to analyze one 10,000 acre block per year and generate subsequent projects for public review in environmental analyses. They are engaged in several projects including Fort Valley Ecosystem Restoration and Research and Demonstration Sites, Mountaineer, Airport, Arboretum, Elden, Kachina Village and Woody. Some of the projects have multiple parts.

#### *Fort Valley Ecosystem Restoration Project and Research and Demonstration Sites*

The first project was in 2001 with the Fort Valley Project (Wheeler 2003). Data collection and project planning for the Partnership began in 1998 with limited project work beginning in

November 1998. Due to administrative appeals and litigation, the Partnership was delayed in implementing ecological restoration work on its first major project from May 5, 1999 to January 3, 2001 (GFFP, 2003b). Fort Valley is GFFP's fire landscape-scale ecosystem restoration project. It will occur on a 9,100 acre analysis area and consists of two phases. Phase one consists of several different restoration approaches including burn only, adapted versions of the Northern Arizona University Ecological Restoration Institute restoration prescription, the Natural Processes restoration model developed by the Southwest Forest Alliance and Uneven aged Approach developed by the Rocky Mountain Research Station. Phase 1 began implementation in 1998 and was scheduled to be completed in 2002. These study sites compare three different restoration prescriptions all are developed by NAU ERI in three forest conditions. The nine 35-40 acre treatment units and three control units contribute data to the Fort Valley Ecosystem Restoration Project (GFFP No date(b)). There is a multi-party monitoring break between the two phases to last at least one growing season. Phase two will be designed and implemented according to monitoring and research feedback from phase one. Phase 2 NEPA work was scheduled to begin in the Fall 2003 (GFFP No date(b); GFFP 2003a).

#### *Mountaineer Project*

The Mountaineer area is one of four smaller project areas to follow between phase 1 of Fort Valley and the next large forest health restoration area, Kachina Village. Approximately 1,200 acres are proposed for thinning and broadcast burning. (GFFP No date(b)). Field analysis was scheduled to begin in Summer 2003.

#### *Airport Project*

The project area encompasses Flagstaff's Pulliam Airport and national forest lands adjacent to subdivisions around the airport: Pine Dale, Skunk Hollow, Bow and Arrow, Bennett Estates, and Aspen Shadows. The project was scheduled for 2000 and 2001. The project was categorically excluded and did not need an EA or EIS. Mechanical thinning is proposed on 850 acres with no trees over 12 inches in diameter proposed for cutting. Broadcast burning will take place on 1,922 acres and pile burning to remove slash will occur concurrent with the broadcast burn. (GFFP No date(b)).

#### *Arboretum Project*

The project area encompasses about 600 acres south of the Flagstaff Arboretum and was scheduled for 2000. About 100 acres will be thinned and broadcast burned. Another 500 will be broadcast burned without mechanical thinning first (GFFP No date(b)).

#### *Elden Project*

This area has been identified as at high risk for catastrophic wildfire. This is a fuels reduction project. Approximately 193 acres will be thinned by Flagstaff Fire Department and USFS crews with chainsaws in 2000. The project was categorically excluded. Trees will be lightly thinned from below. Managers will work with homeowners to decide on the appropriate prescription. Material will be stacked and burned (GFFP No date(b)).

#### *Kachina Village*

This project covers 10,417 acres including 2,363 acres of private lands, 329 acres of State Lands, and 7,725 acres of national forest lands. These lands occur between Pulliam Airport to Kelly

Canyon. Management actions will include thinning from below, prescribed fire and access and recreation management to address declining and poor forest health conditions. The Draft EIS for this work was released in July 2002. Implementation is scheduled to begin in Spring 2003 (GFFP No date(b)).

#### *Woody Ridge*

This project covers 30,000 acres of national forest lands from I-40 to Oak Creek Vista and west of Highway 89A (GFFP No date(b)).

GFFP has several public information and involvement efforts ongoing; 1) The GFFP website supplies information suited for a wide audience and is updated on a regular basis; 2) Field tours provided by GFFP staff are offered to project planning areas; 3) Neighborhood outreach to promote increased public awareness in neighborhoods adjacent to project areas; 4) Participation in the Nature Conservancy's Joint Fire Science program; 5) A monthly Community Forest Forum open to the public (GFFP 2003a)

As of January 2003, 1,100 acres had been thinned on USFS lands, with another 900 acres under contract to thin. On City of Flagstaff and Arizona State lands, another 4,230 acres have been thinned. 750 acres have been broadcast burned on USFS land, with many other acres of slash pile burning. On City and State lands, 2,450 acres have been broadcast burned to date. 7,000 acres are actively managed for restoration efforts and include thinning and burning mentioned above as well as wildlife cover deferrals, road closures and road obliteration on four miles, meadow restoration at Chimney Springs, protection and restoration work at Chimney Spring and clean up and designation of camping spots along Freidlein Prairie Road. Six environmental analyses have been completed to date: Fort Valley Demo, Fort Valley Ecosystem Restoration Project, Elden and Arboretum Fuels Reduction Projects, Airport Fuels Reduction Project and Kachina Village Forest Health Project. These analyses represent 11,000 acres of potential ecological restoration treatments and over approximately 24,000 acres of area analyzed. The Partnership is in the midst of planning the 16,000 acre Woody Ridge Project, with a Draft EIS due in late 2003 (GFFP 2003b).

According to Jim Wheeler, Flagstaff Assistant Fire Chief and one of the founding members of GFFP, there are two great challenges for the Partnership. The greatest external challenge is dealing with the principal agency—the USFS. GFFP has had three different forest supervisors on the Coconino since the Partnership began. Turnover of key leadership and people in the agency makes it difficult to maintain continuity. Personnel can be inflexible to new ideas, so that also makes the USFS difficult to work with in some cases. The greatest challenge internally for GFFP is holding the principal collaborates together because they all have various interests. There is a diversity of interests and holding those all together over the years is a challenge (Wheeler 2003).

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

Flagstaff has extensively utilized National Fire Plan grants for 2001 and 2002. State Fire Assistance Grants have funded projects in Flagstaff for \$183,684 in FY2001 and \$709,856 in FY 2002 used to treat private property in the community for a total of \$893,549. These monies have

gone to the Flagstaff Fire Department and Fuel Management Division to make personnel available to homeowners to create stewardship plans and mark trees (Summerfelt 2003). In 2001, Stewardship Plans were developed on 1,950 acres while 470 acres were marked. In 2002, Stewardship Plans were developed on 614 acres and 605 acres were marked. In 2003, Stewardship Plans were developed on 1,472 acres and 765 acres marked (Summerfelt 2004).

In 2004, the Greater Flagstaff Forest Partnership launched a 50/50 cost share program to assist private landowners with hazardous fuel reduction on their property (Summerfelt 2003). This program is funded through State Fire Assistance money. Areas on the southwest side of Flagstaff are prioritized.

AZ State Land has its own 25/75 cost share program funded by the Farm Bill. The Forestland Enhancement Program (FLEP) replaced the Stewardship Incentive Program (SIP) and the Forestry Incentive Program (FIP). State forestry agencies can use FLEP funds to provide assistance to Nonindustrial Private Forests (NIPF) landowners to achieve a broad array of natural resource objectives (Southwest Area Forest, Fire and Community Grants 2003). The Forest Land Enhancement Program also has been used to fund the cost share program (Boness 2003). They have treated 150 acres through this program with financial assistance from NAU's Ecological Research Institute and supplemented with funding from SFA.

In May 2002 the Greater Flagstaff Forest Partnership commissioned a report to consolidate the lessons learned about utilization of small diameter Ponderosa pine and evaluate and test new small-scale manufacturing technologies likely to impact viable utilization of the region's small diameter resource (GCFP 2002). The results from the report revealed that in 2001 the region began harvesting sufficient volume of wood resources from forest stewardship and restoration activities to warrant serious consideration of establishing a small log processing operation. Approximately 60-100 million board feet were available on the National Forests, 50% of which are small logs of 5-9" in diameter (GCFP 2002). Value added technologies, including new uses for Jack pine, indicated promising new opportunities. Technology manufacturers are considering investing in the region, but continue to have concerns about stability in the region's wood flow supply over time (GCFP 2002).

### **Savannah Pacific Flagstaff**

For some, the dream of a thriving utilization sector is moving closer to reality. "The biggest success we have had occurred recently. It's the return of the wood products industry to the Flagstaff area that has taken shape in the form of a new company that calls themselves Savannah Pacific Flagstaff" (Wheeler 2003). Jeff Garver, President of Savannah Pacific, plans to develop a small diameter timber wood industrial park in Bellmont, six miles west of Flagstaff. Savannah Pacific is coming to Flagstaff in three phases. The first phase is a glued laminate and finger joint plant. Basically it is a small wood products plant that will utilize Ponderosa pine and structural lumber. The second phase will be a small sawmill for 5-14 inch trees. The third phase is a biomass plant. The small wood product plant is projected to open in the first quarter of 2004. The sawmill is projected to open the third quarter of 2004. The biomass plant might open in the first quarter of 2005 (Wheeler 2004). "This is not a commodity enterprise", according to Garver, "and the industry needs to add-value to their products." (Garver and Christopher 2003) Garver began talking with local agencies in August 2003 and particularly approached area

environmental groups. Taylor McKinnon, of Grand Canyon Trust, supports Savannah Pacific because the company is small enough where it's not going to drive what happens on the ground. "The industry that's in here needs to be scaled both in their volume consumption and in the size of the trees it uses." (McKinnon 2003) Another of Garver's supporters is Jeremy Christopher of the Greater Flagstaff Economic Council. Savannah Pacific could add up to 100 jobs to the local economy that pay a family wage with benefits plus contracting opportunities. Garver is also hoping to do some monitoring by partnering with the Nature Conservancy. Garver's greatest challenge has been getting people to get over the healthy skepticism they had. Savannah Pacific will look to National Forests in northern Arizona for small diameter timber material to utilize for his products.

Twenty years from now, the GFFP envisions the greater Flagstaff area will be home to a small but thriving sector of businesses based on the ecologically sustainable utilization of forest products (GFFP 2003a). Business will include primary producers of forest products, as well as "value-added" processors, such as manufacturers of fencing and custom building materials, furniture makers, wood pellets and others (GFFP 2003a). To facilitate this vision, Flagstaff was awarded SFA grants for \$50,000 in FY 2001 for a Biomass Viability Study sponsored by the Grand Canyon Forests Foundation, and \$35,000 in FY 2002 for a small diameter timber (SDT) sawmill assessment, for a total of \$85,000. Four Corners grants funded projects in Flagstaff for \$48,500 in FY2001 to create a forest restoration demonstration and \$40,000 in FY 2002 to expand SDT products sponsored by Indigenous Community Enterprises, for a total of \$88,500.

The Enterprise Development Fund for Small Wood Utilization is supported by the GFFP to create, expand or locate one or more utilization and/or marketing enterprises focused on small diameter wood generated by GFFP projects, as well as other restoration and fuels reduction projects regionally. The Fund will award a total of \$195,000 to businesses with demonstrated experience and proven competencies in the processing and/or marketing of solid wood or biomass products. (GFFP 2003c). The Partnership recently awarded two enterprise development fund grants—one to Total Timber, a fuel wood company. The grant allowed Total Timber to purchase a new piece of equipment that will facilitate bundling and packaging small diameter wood for distribution. Indigenous Community Ventures (ICV) is the second recipient. ICV is a nonprofit dealing in small diameter utilization principally in the area of Hogan construction, which is Native American building. \$95,000 went to ICE and \$100,000 went to Total Timber (Wheeler 2003). Another group called Forest Energy, out of Show Lo, AZ, manufactures heating pellets. Forest Energy wants to open an additional plant in Flagstaff in connection here to be with Savannah Pacific. They are in the negotiation phase with Savannah Pacific. They will also advance new products. They are developing a new product that will go over grass seed and hold it in place (Wheeler 2003).

Flagstaff is working with a consultant to the Arizona Corporation Commission to provide information to the commissioners to urge them to allow biomass to have a place along solar, wind and landfill gases to qualify for renewable energy credits. The renewable energy laws in Arizona compel power companies to participate using what are called green credits. By law power companies are required to seek only a very small percentage--- .6 or .4 going to .8. GFFP is using a consultant to create legislative pressure for power companies to participate more fully

in the creation of renewable energy. For instance, California mandates that 20% of its power must be produced from renewable sources (Wheeler 2003).

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