



# Ruidoso – A Wildland Urban Interface Story

A photograph of a forest fire. A dirt path leads through a line of trees on the left side of the frame. The trees are mostly green, but the ground and the air are filled with a thick, bright orange and yellow fire. The background is a hazy, orange glow from the fire. The text is overlaid on the center of the image.

**Fire Behavior and effects**  
**In the creation of a**  
**Defensible**  
**Strategy**

# Objectives

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Information regarding:



- Ruidoso's wildland fire challenges
- Understanding the wildland fire environment
- Factors influencing wildfire behavior
- Using wildfire behavior to develop a defensible strategy

# The Wildland Fire Problem

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New Mexico has one of the most severe wildland fire problems in the world because of:

- Population

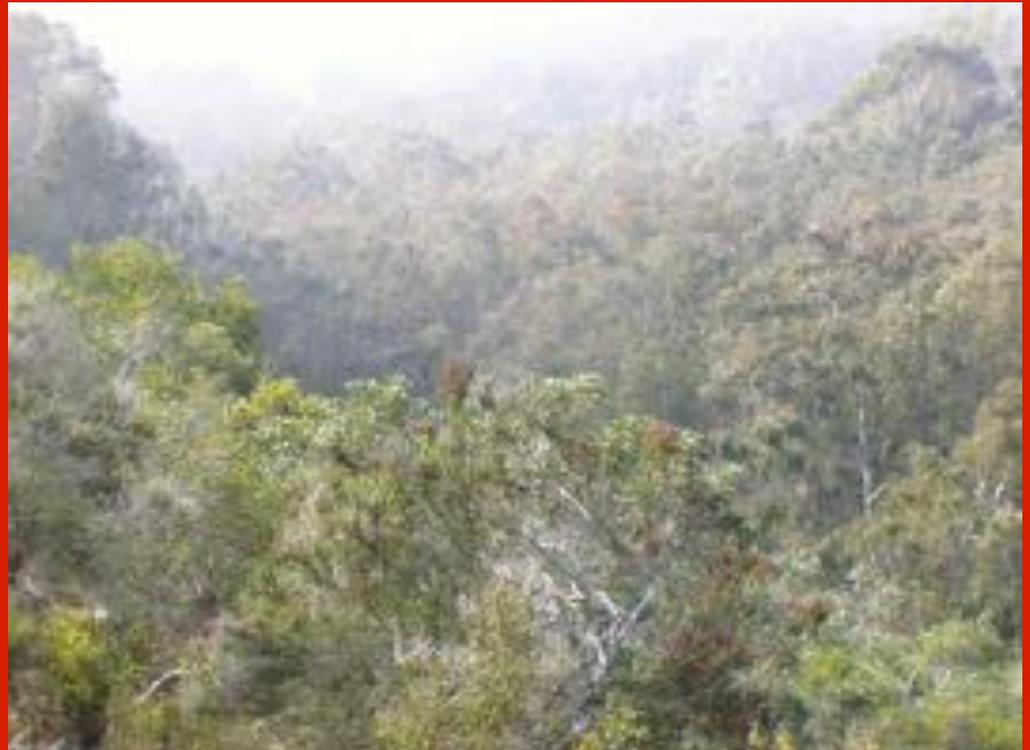


# The Wildland Fire Problem

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Ruidoso has one of the most severe wildland fire problems in the world because of:

- Population
- Vegetation



# The Wildland Fire Problem

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Ruidoso has one of the most severe wildland fire problems in the world because of:

- Population
- Vegetation
- Topography



# The Wildland Fire Problem

Ruidoso has one of the most severe wildland fire problems in the world because of:

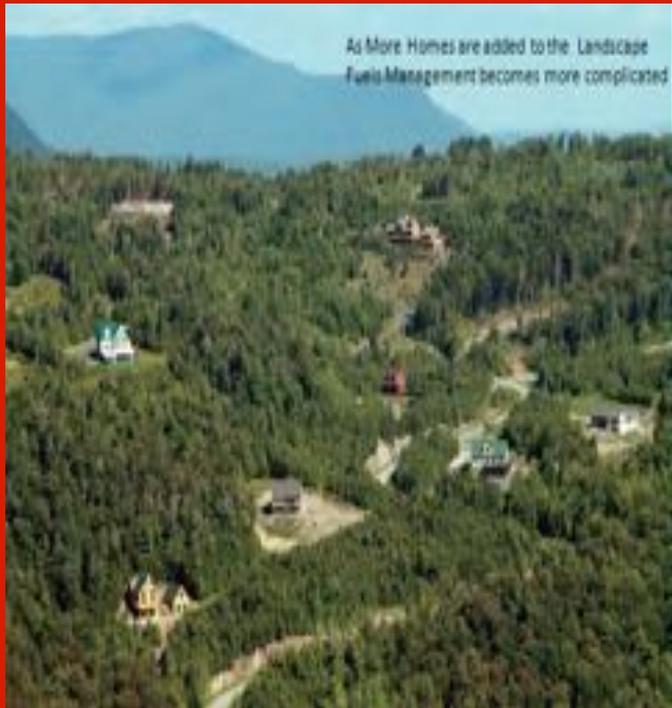
- Population,
- Vegetation,
- Topography, and
- Climate



In wildland/urban interface areas, wildfire isn't a matter of "IF," it's a matter of "WHEN."

# Local Conditions

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In New Mexico, thousands of people choose to build homes within or near wildland areas.

These areas are covered with flammable, native vegetation.

This environment may be desirable but it comes with consequences.

# Local Conditions

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## VEGETATION = FUEL

In mountain areas, forests with dense vegetation, steep canyons, strong winds and high temperatures are common.



# Local Conditions

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## VEGETATION = FUEL



New Mexico's native plants and shrubs are among the most flammable in the world.

Local hillsides and canyons are covered with these flammable plant materials.

# How a Fire Burns...

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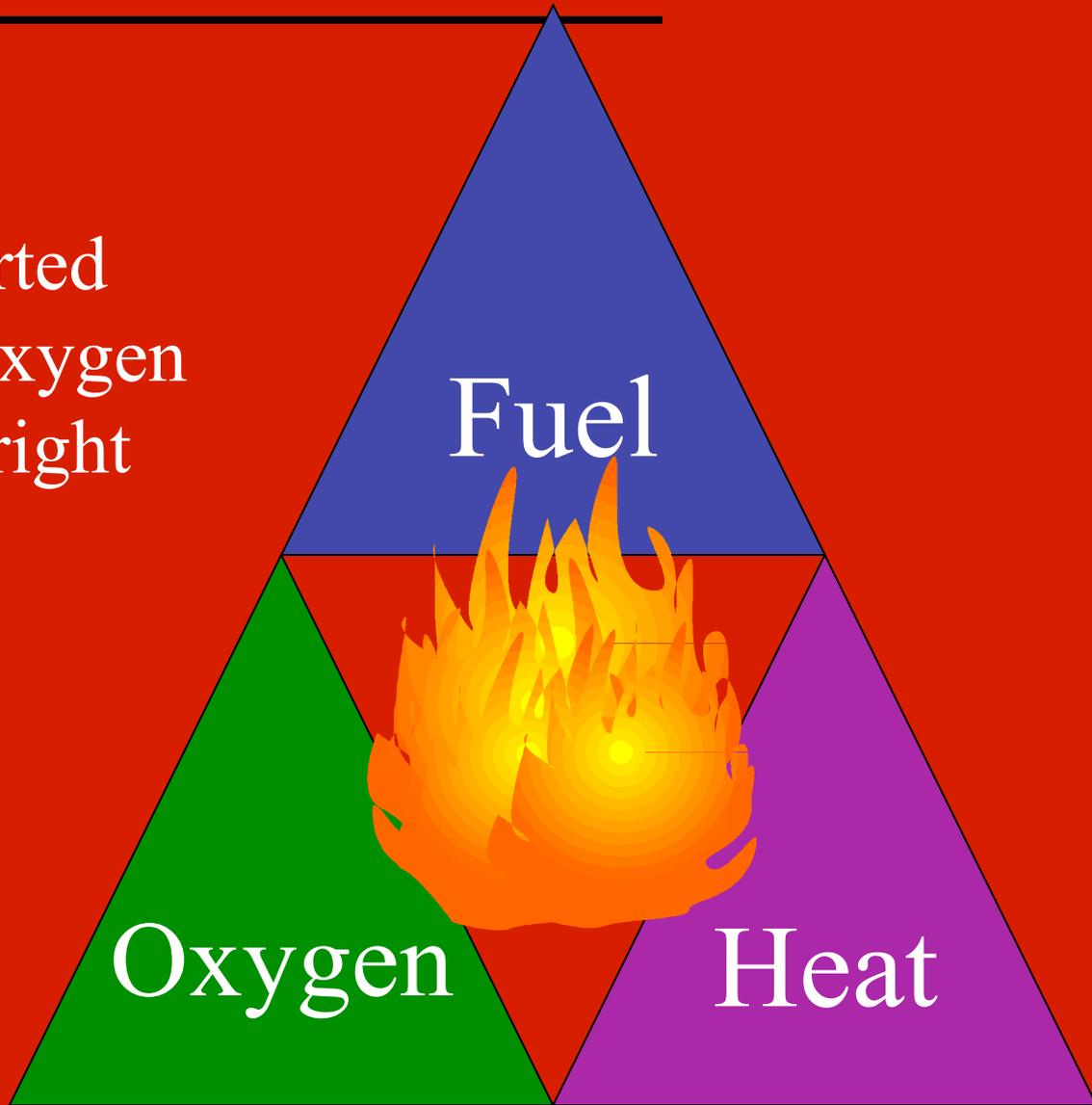


The act of burning is  
**COMBUSTION**

# How a Fire Burns...

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Combustion is supported when fuel, heat and oxygen (air) combine in the right amounts.

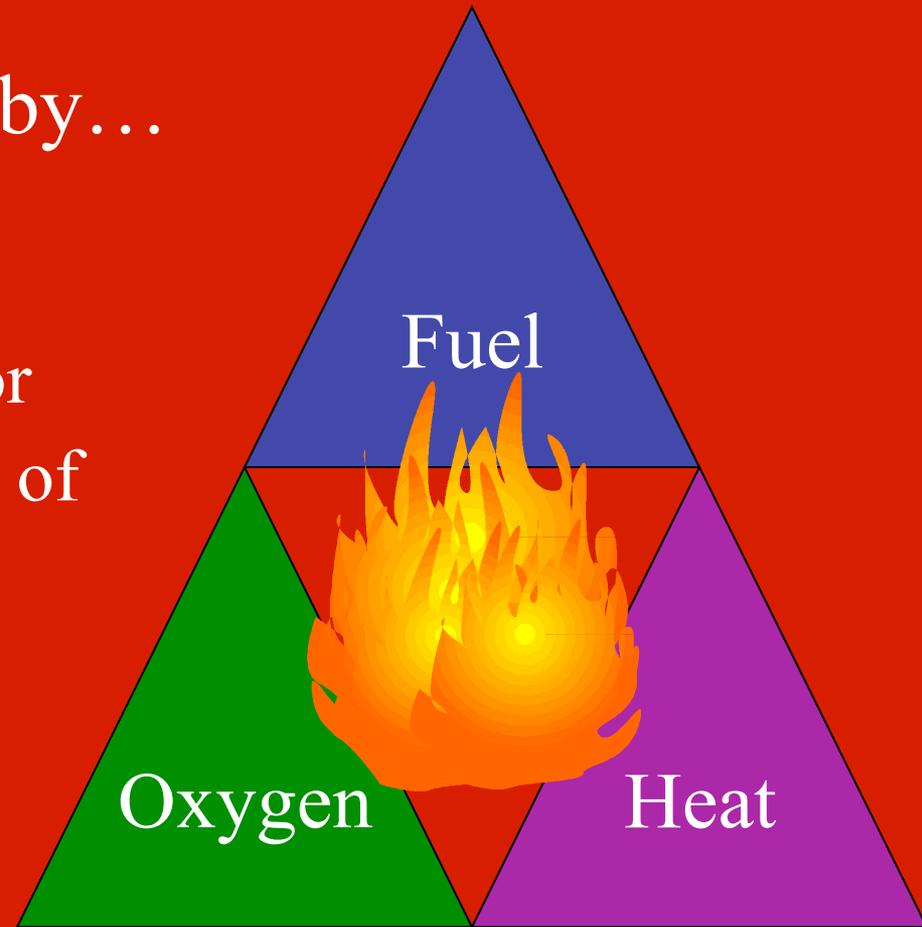


# How a Fire is controlled

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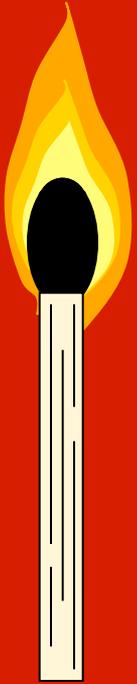
Combustion is interrupted by...

- Removing the fuel, or
- Removing the oxygen, or
- Cooling the temperature of the fuel



# How a Fire Spreads...

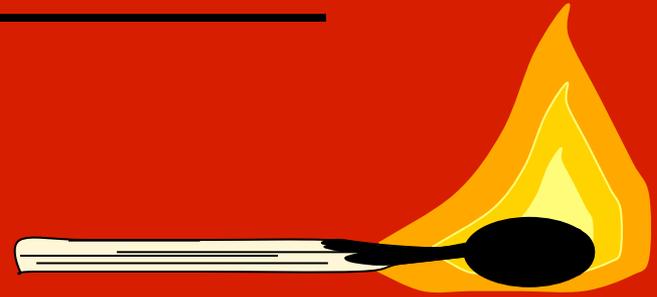
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Transfer of heat  
by contact

**Conduction**

*Slowest*



**Conduction and Radiation**

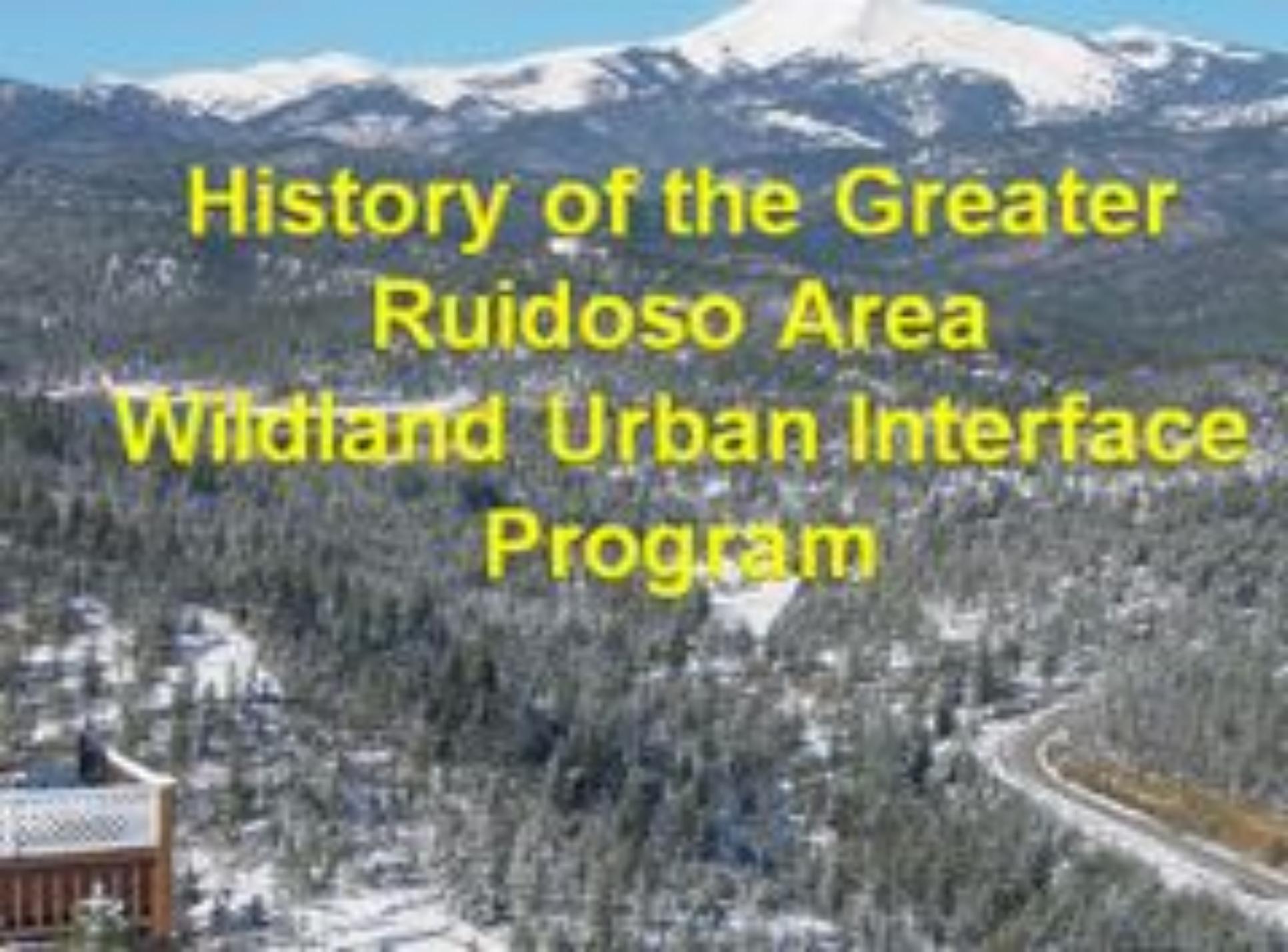
Transfer of heat by contact  
& through the air



**Conduction, Radiation,  
and Convection**

*Fastest*

Transfer of heat by contact,  
air and direction (rising)

An aerial photograph of a mountainous region. In the background, a large, snow-capped mountain peak rises against a clear blue sky. Below the peak, a range of smaller mountains and ridges stretches across the horizon. The middle ground is dominated by a dense, green forest covering a valley. A winding asphalt road curves through the forest on the right side of the image. In the bottom left corner, a portion of a wooden deck or railing is visible, suggesting the photo was taken from an elevated vantage point. Overlaid on the center of the image is the title text in a bold, yellow, sans-serif font.

**History of the Greater  
Ruidoso Area  
Wildland Urban Interface  
Program**

# How Do We Define the WUI?

**Interface** WUI - "where houses meet"



**Intermix** WUI - "where houses mingle"



As More Homes are added to the Landscape  
Fuels Management becomes more complicated



WUI



- 1998 - Village of Ruidoso began to formally address forest health and wildfire hazard reduction issues by purchasing a grapple truck and offering debris pick-up service. A forestry working group was appointed.
- 2000 – A second grapple truck was purchased and a forester was added to staff. Forester was charged with developing and implementing a Community Forest Management Plan (CFMP). The Greater Ruidoso Area Wildland Urban Interface Working Group was formed and developed a strategy for prioritization of projects. **Ruidoso was rated as the #1 at risk city in New Mexico for catastrophic wildfire.**
- 2001 – Existing ordinances restricting thinning efforts were relaxed ( up until this time a landowner had to have a permit to remove a 5” diameter tree) and forestry assessments were offered to the public.
- 2002- Village Council enacted a suite of ordinances mandating fuels reduction on all lands within Ruidoso and a fire hazard rating standard for new construction with regard to structural ignitability and site development. **Concepts from the Firewise Communities USA program plus research done on home ignitions zones were combined to establish objective fuels management standards. Kokopelli fire burned 20+ homes in area.**

- 2003- A Municipal Forestry Department was created and two additional grapple trucks were purchased as demand for services increased. Village began to contract composting of the forest wastes . Village was recognized with a Firewise Community award and a National Forest Service Rural Communities Assistance Spirit Award.
- 2004- Community Wild Fire Protection Plan was approved. Collaboration between Federal Agencies, County Government, Municipal Governments, sub-divisions, Mescalero Tribe, Industry, and community.
- 2011- White Fire burned 11,000 acres just east of Ruidoso. 5 homes were lost.
- 2012- Swallow Fire burned 9 homes in an area that had been thinned. Verified that the work being done positively affected fire behavior and allowed suppression forces to do their job.
- 2012- Little Bear Fire burned Over 40,000 acres and 240+ structures. Properties that were treated and the camping area around Bonito Lake confirmed that fuel treatments worked in mitigating damage from a large fire. **Fuel management standards were updated using lessons learned from large wildfire studies over the past 10 years as to what worked and what didn't work.**

## Greater Ruidoso Wildland Urban Intermix Goals:

1. Establish and implement catastrophic fire mitigation measures on public, State, and private lands utilizing the best available science regarding wildfire hazard reduction.
2. Restore and Monitor forest ecosystems and watersheds to maintain forest health and protect natural communities.
3. Engage private enterprise by supporting existing and emerging forest based economic development.
4. Maintain the high quality of life in forest areas while sustaining and nurturing real estate and tourism based economies.

# Fuels Management Goals for Village CFMP/CWPP

- Maximize fire mitigation on Municipal land – collaborate with other agency's efforts
- Minimize the effects of a spot fire or a fire originating on private land through mandatory ground and crown fire mitigation and fire hazard rating requirements on new construction
- Enhance forest health and restoration.
- Develop a sustainable community (Contractor pools, transportation infrastructure and utilization/disposal).

# CHALLENGES

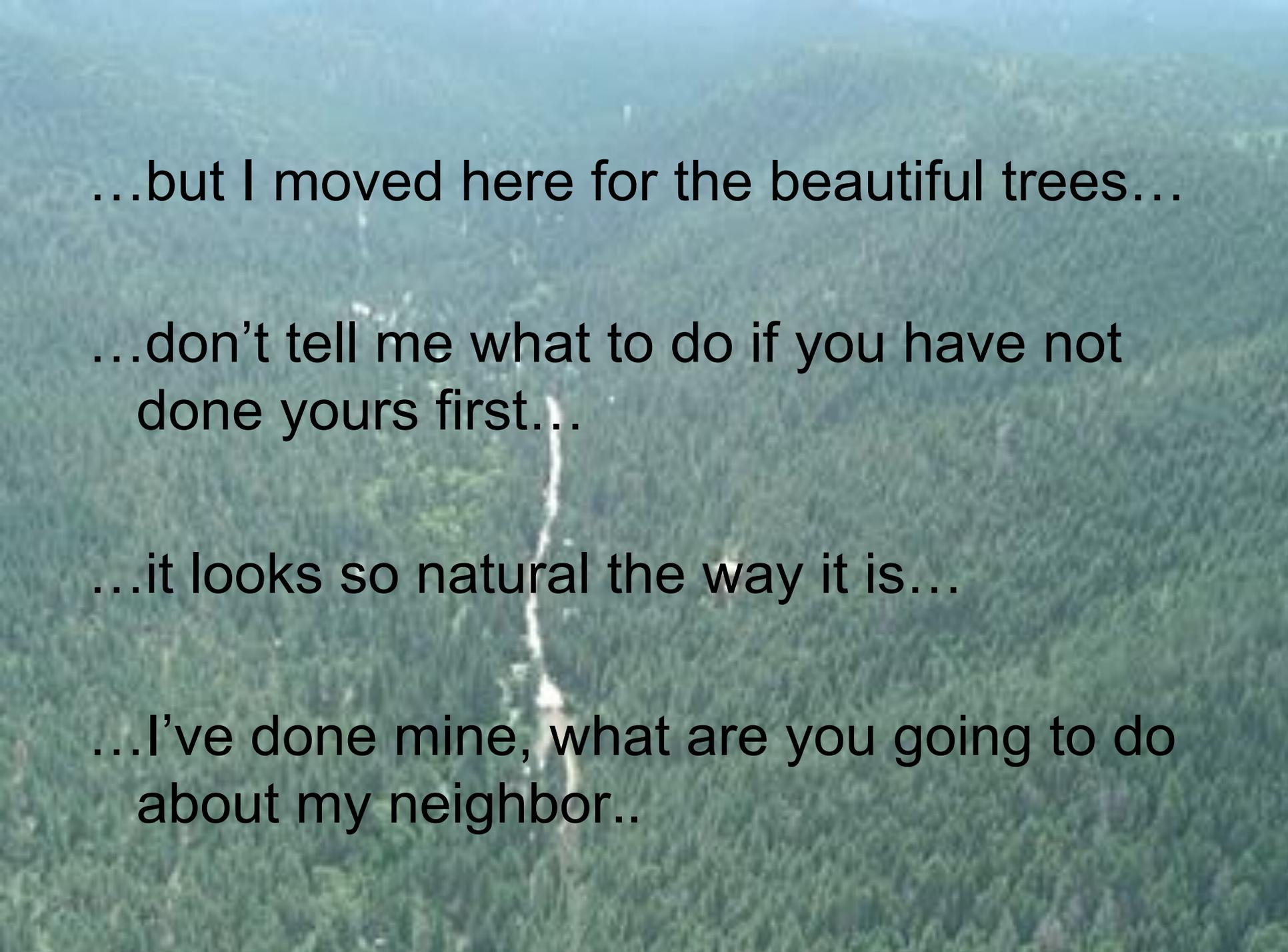


# Community values at-risk include:

- public safety
- community infrastructure
- economics (tourism)
- real estate
- watershed productivity
- recreational opportunities
- wildlife habitat
- aesthetics
- community peace of mind,

# Social challenges also exist

- Real Estate / Tourism based community.
- Landowners desire to have visual and sound barriers. (Privacy)
- > 50% out of town landowners.
- #1 in New Mexico risk to catastrophic fire.
- 600 to 1200 stems/acre
- Property rights.
- No burning within Village limits.

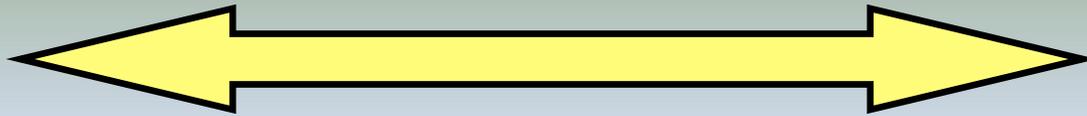
An aerial photograph of a dense, lush green forest. A narrow, light-colored road or path winds through the trees, starting from the bottom center and curving slightly to the right as it goes up. The forest is very thick, with varying shades of green. The overall scene is peaceful and natural.

...but I moved here for the beautiful trees...

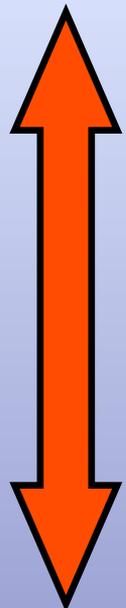
...don't tell me what to do if you have not done yours first...

...it looks so natural the way it is...

...I've done mine, what are you going to do about my neighbor..



# **Horizontal Continuity: Uniform vs Patchy**



## **Vertical Arrangement**

- Ground**
- Surface**
- Aerial**







Uniform Continuous Heavy Fuels

# Burn Enhancers found in Urban Interfaces





Concentrated Fuel Pellet





Waldo Canyon Fire 2012  
Colorado Springs



# **IMPLEMENTATION**

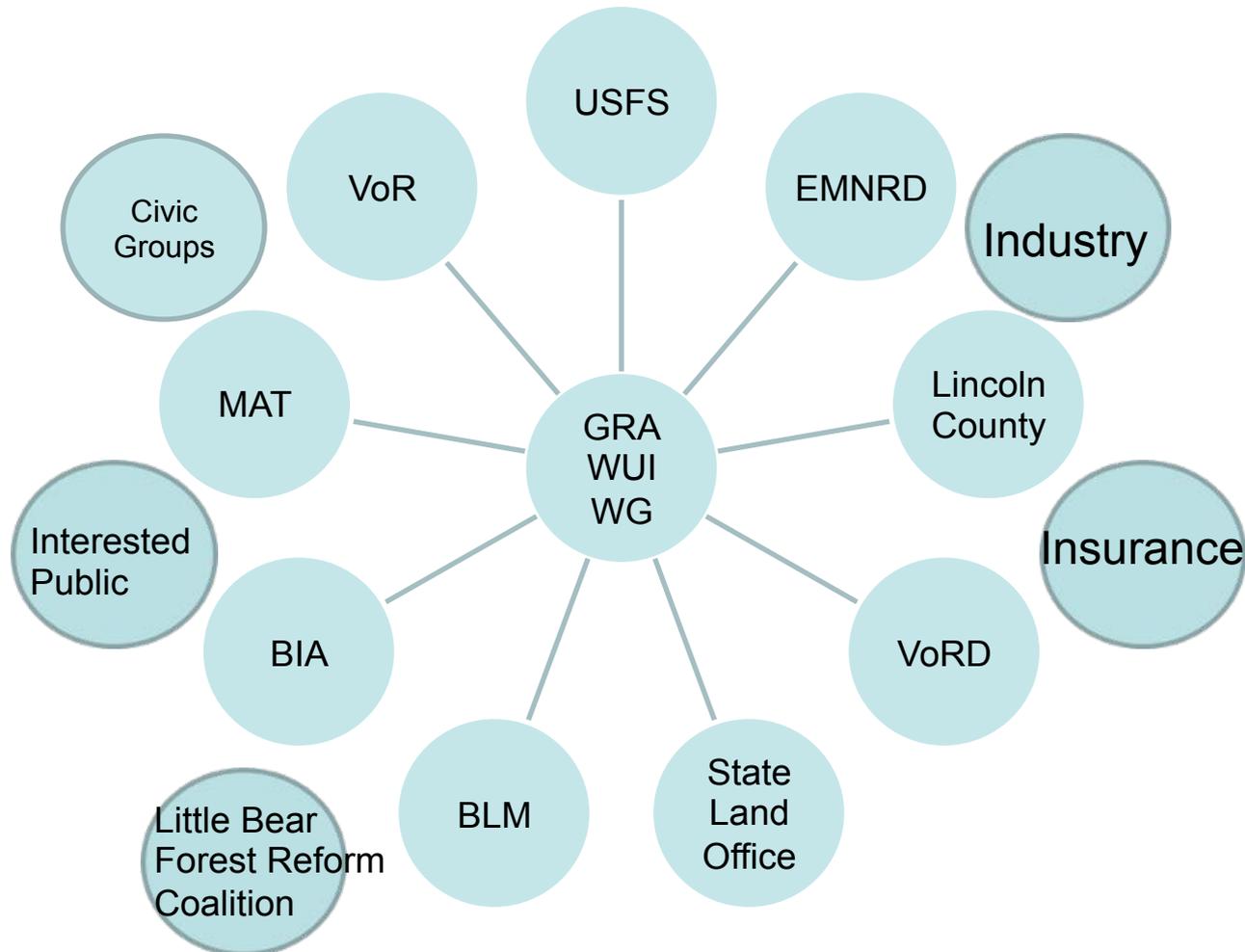
## **THROUGH**

- **COLLABORATION**
- **COORDINATION**
  - **LEVERAGE**
  - **HARD WORK**

# Keys to successful implementation plan

- Identify players & political champions
- Land managers coordinate & collaborate
- Meet regularly
- Keep policy makers & general public informed
- Stay flexible & open to new ideas in terms of treatment and new businesses
- Develop and implement an aggressive public awareness campaign.

*Greater Ruidoso Area WUI Working Group*  
created to implement individual management  
objectives in strategic locations.



...working on their “piece of the puzzle”

# Greater Ruidoso Area WUI Structure

- Chairman – Plans and Organizes Meetings
- Planning Committee – Coordinates strategies and evaluates priorities for the WUI. Facilitates the completion of updates to the Communities Wildfire protection plan.
- Education and Outreach Committee – Plans and coordinates educational opportunities with schools, civic events, civic organizations etc.
- Assessment Committee – Does on-the- ground evaluation of selected completed projects within the WUI and reports back to the group. They have also evaluated projects in areas with recent fire events and reported on the effectiveness of the treatments.

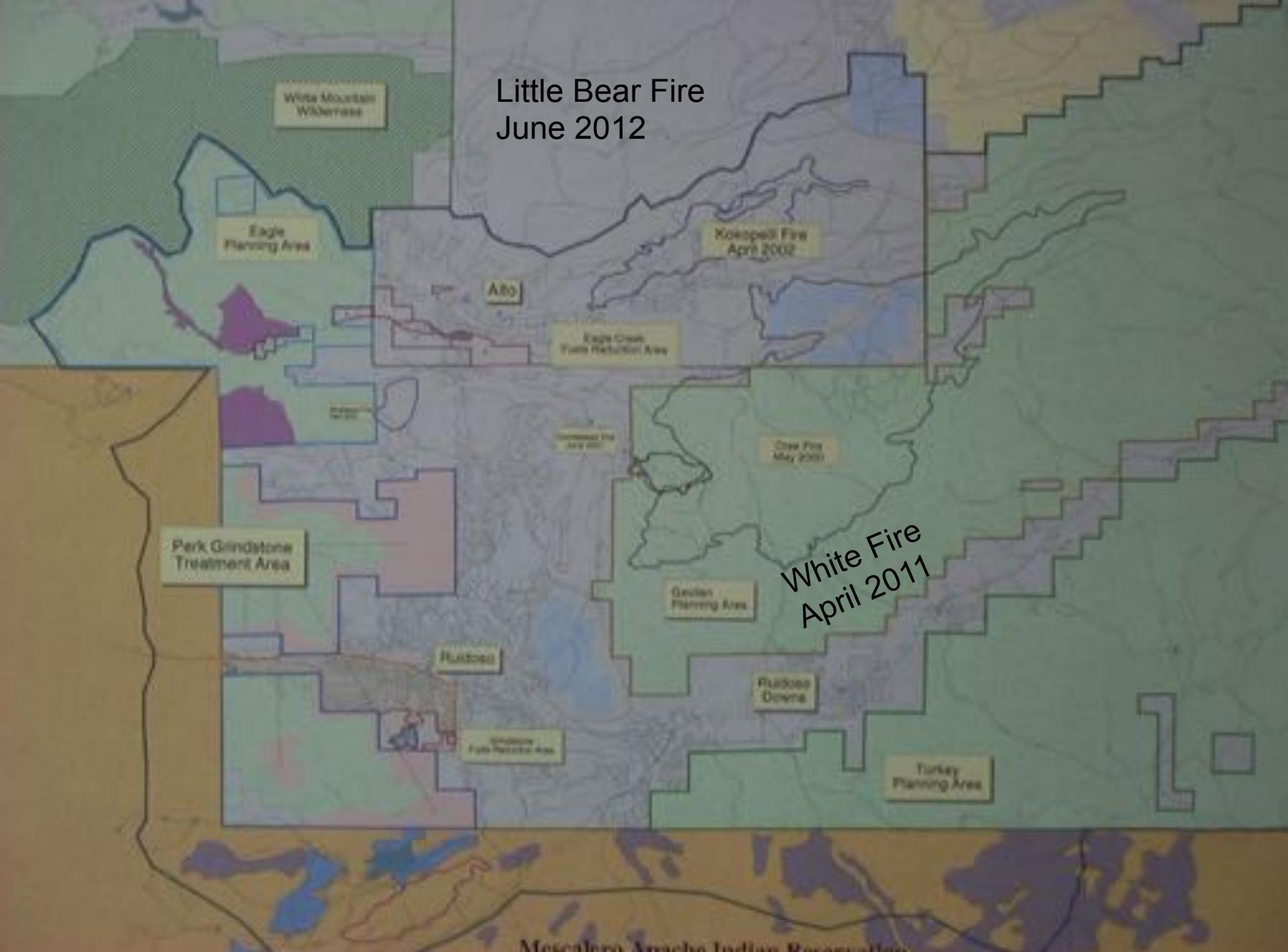
# Lessons Learned from 10 years of Large Fires (from ERI/NAU Research)

(Courtesy EMNRD)

## INFLUENCE OF VEGETATIVE TREATMENTS ON WILDFIRE BEHAVIOR AND SEVERITY

- **Treatments to Reduce Fuels Can Significantly Modify Fire Behavior and Severity and Reduce Environmental Damage Caused by Wildfire. (This Can Significantly Reduce Costs of Rehabilitation).**
- **Treatments Which Reduce Crown Density and Continuity, Raise Crown Height, and Reduce Surface Fuels Are Most Effective.**
- **The More Open the Stand Structure the Less the Severity.**
- **With Few Exceptions, All Treatments Regardless of Type Suffered Less Severity Than Untreated Areas.**

Little Bear Fire  
June 2012



# Greater Ruidoso Area Community Wildfire Protection Plan

## Legend

- Wildfire Treatments**
  - Wild Thinning Treatments
  - Prescribed Burn, Single and Standalone
  - Prescribed Burn, Bulk
  - Area Ignition Treatments
- Mechanical Treatments**
  - Grassland Thinning
  - Woodland Thinning
  - Grassland & Woodland Thinning
- Other Agency or City Treatments**
  - Wildland Fire Department
  - San Francisco Treatment
  - San Jose Treatment
  - San Mateo Treatment
  - San Diego Treatment
- Large Wetlands

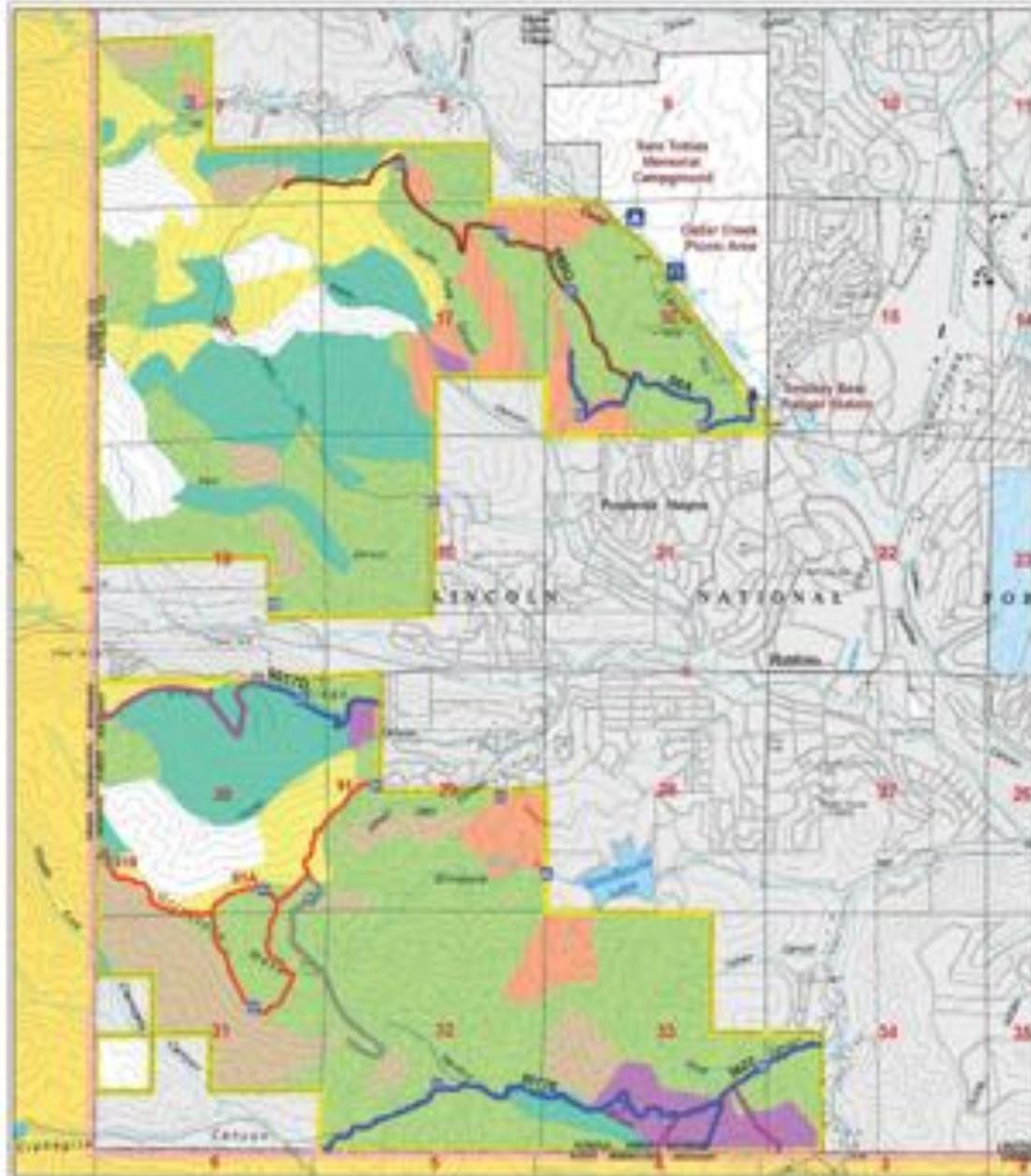
Ruidoso WUI Project Boundary

City of Ruidoso

Ruidoso



**Perk-Grindstone III Hazardous Fuel Reduction Project**  
**Lincoln National Forest**  
 Smokey Bear Ranger District  
 Ruidoso, New Mexico  
 01/10/2007  
**Alternative 2**  
**Helicopter Emphasis**



**Treatment Types**

- Community Surface Zone - heavier understory thinning up to 15 inch diameter trees/underburning
- Community Surface Zone - heavier understory thinning up to 6 inch diameter trees/underburning
- Prescribed Burn Only
- Standpole - Cut Dead and Dying Trees (some hot trees up to 6 inch diameter) underburning
- Thin From Below (up to 12 inch diameter trees) underburning
- Thin From Below (up to 6 inch diameter trees) underburning
- Construct Road From Existing MFS Trail, close after project use
- Construct Temporary Road From Unimproved Road, decommission after project use
- Construct Temporary Road On Existing Underburned Road, convert to MFS Trail after project use
- Reconstruct & Close MFS Road, open for project, close after project use
- Reconstruct Temporary Road From Existing Open MFS Road, decommission after project use and convert to MFS trail
- Construct Temporary Road, decommission near to MFS trail after project use
- Helicopter Log Landing
- Private
- Water
- Mesquite-Agave Inter-tribal Reservation
- Project Boundary



GIS  
 Smokey Bear  
 01/10/2007

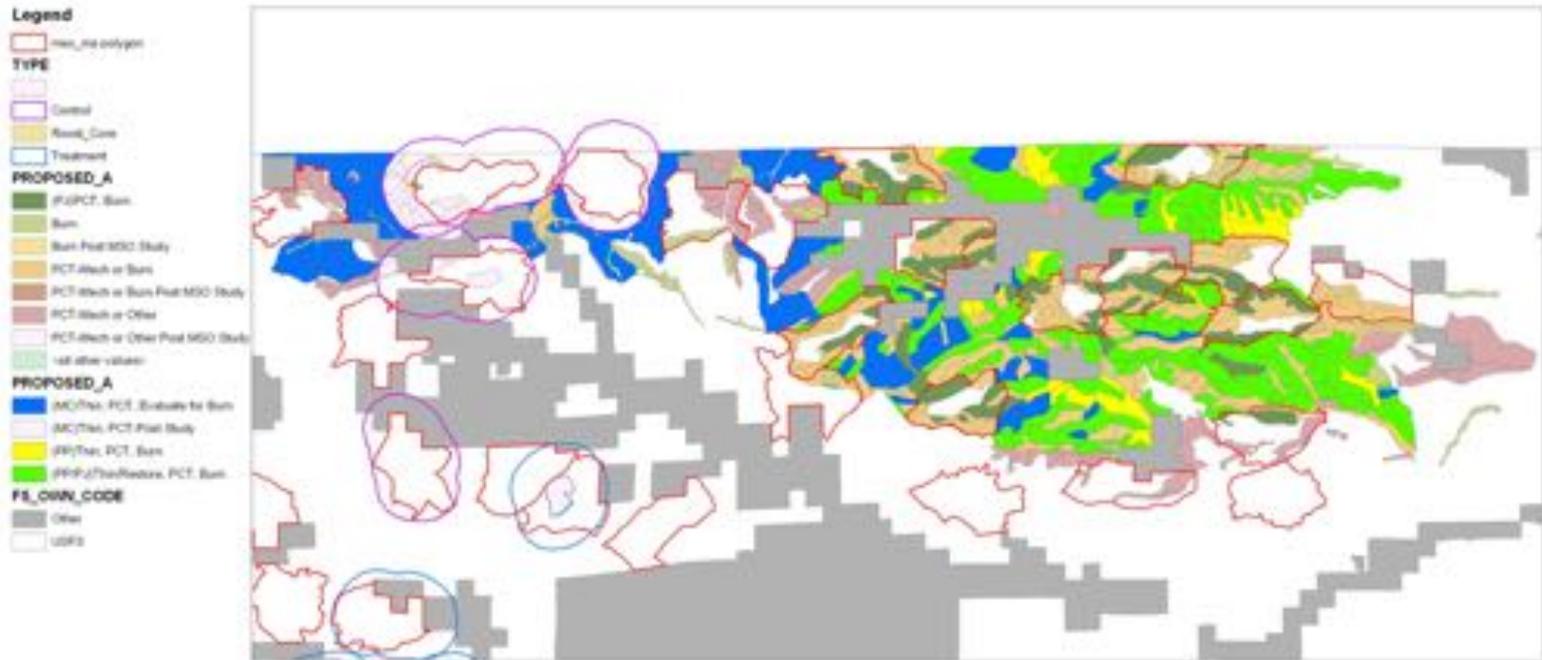


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16 Springs Stewardship Contract between the Mescalero Apache Tribe and the Lincoln National Forest was authorized under the Tribal Forest Protection Act, allowing the Tribe to address concerns for catastrophic wildfire and forest health along the reservation boundary.

No Prescribed Burn  
MSO Study Design  
16 Springs Proposed Action





Group works well because of a networking and collaboration format as opposed to an authority based entity.

GRAWUIWG participants at monthly meeting.





# Field discussions at Ponderosa Pine restoration demo plot



Bill Duemling discussing Ponderosa pine site history



PIPO site with reproduction not lost to fire



PIPO site where reproduction was lost to fire

# Lunch in the field along Eagle Creek



# Utilization and Economic Development

**One of five Solid Waste  
Department “grappling”  
trucks ...**



...providing a forest waste disposal service where 100% of the material is recycled.



**Village residents are charged \$4.00/month / acre for compliant properties and \$12/month/acre on noncompliant properties on their solid waste billing to pay for this service.**

A large pile of forest debris, including logs and branches, is stacked along the side of a gravel road in a wooded area. The debris is piled high and appears to be a mix of cut logs and smaller branches. The road is made of light-colored gravel and runs along the right side of the pile. In the background, there are several tall, thin trees, likely pines, under a clear blue sky with a few wispy clouds. A utility pole is visible in the distance.

**A key to Ruidoso's  
success...**

**Since 2000, Ruidoso has  
invested in infrastructure  
and staff to create  
forest debris Curbside  
Pick-up Service**

**STAGNER**  
LANDSCAPING & FIREWOOD

Landscaping - Tree Trimming  
Full Service Maintenance  
Property Clean-Up - Gravel Drives  
Box Cut & Burn Truck Work  
815-388-1321

**STAGNER**  
LANDSCAPING & FIREWOOD

Landscaping - Tree Trimming  
Year Round Maintenance  
Property Clean-Up - Gravel Drives  
Box Cut & Burn Truck Work  
815-388-2321

**FIREWOOD FIREWOOD**

GRIZZLYS

OPEN

GRIZZLY'S  
WORKSH



**Other ways to  
utilize small  
diameter trees...**

**Grizzly's Bears carves  
bears and other  
novelties**





Animal bedding produced  
by SBS Woodshavings









Compost from SCI is used in gardens and has been added as a silt control specification with New Mexico's Highway Department.





# Education and Outreach

# COOPERATIVE

## WILDLAND/URBAN INTERFACE TREATMENT

The trees in this area have been thinned to create defensible space within the wildland/urban interface. This treatment improves forest health and wildlife habitat while reducing excess forest fuels. The thinned trees were used for firewood and the slash (smaller branches and limbs), was consumed by a prescribed burn. Treatment in the area began in 2001.



SMOKEY BEAR R.D. VILLAGE  
OF RUIDOSO

Lincoln National Forest



# MR. LUCY'S ART CLASS



Ruidoso's **Community Forest Management Plan** for private land developed a logo through Ruidoso High School Art class contest.....



...14 year old, 9<sup>th</sup> grader Samuel Klinekole won the contest, along with a \$500.00 scholarship provided by Zia Natural Gas.

Other collaborations include educational monitoring. YCC crews have been provided through EMNRD and the Forest Trust.





GRAWUIWG partners also give presentations to Ruidoso High students.

# Challenges Remain

- **Treating Enough Landscape To Impact Fire Behavior**
- **Maintenance of Fuel Reduction Projects (Most are effective for about 10 years)**
- **Balancing Utilization Goals versus Disposal Needs**
- **Handling Wood from the Stump to Market (\$\$)**
- **Long term commitment.(maintenance is never ending)**
- **Insect Outbreaks and Disease Infections.**
- **Extended drought cycles.**
- **Declining Grant Revenue**











Warrior Project  
Prior to thinning



Warrior Project  
In Progress





**Warrior Project  
Complete**



# Leverage:

How do you get it done with a small staff?

- **Forestry Department** – A Director, 2 technicians, an office manager.
- **Solid Waste Department** – Makes disposal simple for landowners.
- Dispose of approximately 60,000 cubic yards per year.
- **Thinning Contractors** - 25 + contractors employ over 100 employees. Utilize much of the wood products in the form of logs for lumber sold to small saw mills, firewood, and wood products.
- **Grants** – Forestry Department has acquired approximately \$3,000,000 in FEMA , State Forestry, and Forest Service Grants. These have been used to treat Village owned property and cost share with landowners.
- **Landowners** – Approximately 50% of Landowners thin their property without financial aid.
- **Ordinances** – The Village of Ruidoso Fuels Management Ordinances are key to the accomplishment of the Goals.

# Accomplishments

- **>80% of Village Property and 70% of private property have been Treated within the Village boundaries.**
- **Thousands of Acres of Forest Service properties south and west have been treated.**
- **Thousands of Acres of Mescalero Tribal land have been treated.**
- **602 Acres of State Trust lands on Moon Mountain Treated by the end of 2014**
- **Many acres on private land within the WUI outside the Village have been treated with assistance by RC&D and State Forestry Department.**
- **Treatments by BLM in the NE part of the WUI.**
- **Solid Collaboration is being achieved.**
- **Ruidoso is a Safer Place in respect to catastrophic wildfire.**