PREFACE

The Gallinas and Manzano Mountains are the dominant mountain ranges in Torrance County. The Manzano Mountains are located in the midst of the fastest growing region in the State of New Mexico, which includes Bernalillo, Valencia and Torrance Counties. The population of Torrance County has grown by 42.9 percent in the last nine years. This is largely due to the exodus of workers from Albuquerque, who are seeking homes outside of Bernalillo County. This shift in population has resulted in the creation of new municipalities, as well as increasing numbers of tourists who come to enjoy the scenic beauty of the Manzano Mountains. Among the many attractions is the largest stand of Rocky Mountain large tooth maples in New Mexico, located at the head of Tajique Canyon.

Traditionally, small land grant communities have dominated the landscape in the Manzanos mountain region, with predominantly Hispanic residents who value their heritage and ties to the mountains. Land in this area is generally devoted to agriculture and ranching. Torrance County has long been an economically challenged area. However, the County has been active in planning and has made great strides to diversify its economy. County officials continue searching for ways to take advantage of the county's greatest strength, its natural resources, while maintaining a rural way of life.

The influx of new residents with their new values, wants and needs, is creating, urban sprawl in the Manzanos Mountain region, threatening that way of life. Many of the private land holdings are being sold or some form of development is taking place. These changes are impacting the Wildland Urban Interface and tbe National Forest. Recreation use has tripled in the last ten years and user conflicts have become an ongoing management challenge. (Some examples are grazing, firewood, recreation, herb gathering and scenery in the watersheds that feed the surrounding communities.) The Wildland Urban Interface areas around the Manzano Mountains.is rapidly increasing as a result of unchecked urban sprawl.

Torrance County and the Mountainair Ranger District are collaborating with the many communities they serve. Their goal is to establish partnerships to educate and prepare residents for potential wildland interface hazards.

The Mountainair Ranger District has become involved in providing economic development assistance through grants, challenge cost share agreements and many hours of technical assistance. The Forest Service has provided grants to help economic development in Torrance County and the community of Corona. Torrance County and Corona have focused on tourism and recreation, working closely with the Mountainair Ranger District. Opportunities in wood products and those directly related to forest health are the focus of the small land grant communities of Tajique, Torreon, Manzano and Punta de Agua.

The goal is to collaborate with communities in the design of projects to meet economic and subsistence needs, while helping with wildland/urban interface and forest health needs. Many landowners have come to realize the importance of defensible space and healthy forests and have come to the Mountainair Ranger District to seek technical assistance for ways in which to treat their forested areas and erosion problems.

METHODOLOGY

To determine how to classify areas of Torrance County into Wildland Urban Interface areas, we first compiled information from all available resources through one-on-one interviews, data requests or telephone interviews. Contacts included Torrance County Governmental Officials, United States Forest Service (USFS) staff, National Park Service (NPS) staff, and State of New Mexico officials.

Several field surveys were conducted in Torrance County using guidelines provided by USFS and the Southwest Area Wildland Fire Operations Group for final determination of interface areas.

All categories of the Scope of Work had to be considered when conducting certain phases of the Wildland Urban Interface Survey. Some conclusions within this report take into consideration information from all categories. However, each Scope of Work is broken down into individual Tabs in the Survey Binder to address unique needs of each category of the Scope.

The first Scope of Work was to Identify Wildland Urban Interface Areas in Torrance County (TAB A). To accomplish this task the USFS established a Structure Triage Checklist, which was used during field surveys.

The object of structure triage is to decide where to focus your efforts in order to accomplish the most good with the time and resources available.

For example, a wildland fire involving only 100 acres would involve a perimeter of 26,400 feet, or 1.6 miles. In order to assure that no fire extended beyond those 100 acres, thousands of well-equipped firefighters would be required, and they would need time to deploy and prepare their fireline. Unfortunately, such limitless resources are not readily available everywhere, anytime. When fewer firefighters are available and many structures are threatened, choices must be made as to which part of the fire to attack and which homes can be protected.

Deciding which homes can be protected is usually a rapid process, forced by the rapid spread of a fire. Information gained during the size-up process is used to make basic predictions about fire behavior, and to estimate the capability and availability of resources. In a wildland/urban interface fire, triage decisions could be required of anyone at any time. The primary goal in decision-making is to avoid wasting limited time and resources.

During triage,
you quickly decide into which category a threatened structure falls:
Can it be saved?

Needs little or no attention for now

These structures may be in the path of the fire's ultimate travel but are not under direct threat at the moment. Generally, there is no time to give to these structures while others are in imminent danger.

Is hopeless

If the fire is certain to destroy these structures no matter how many resources are devoted to fire protection, it does not make sense to waste time and resources in fighting the fire. The resources available will be better used, elsewhere.

Needs protection but is saveable

These structures have a chance to survive if aggressive action is taken in a timely manner. This is where fire protection resources can do the most good.

Triage decisions are based on consideration of five factors.

❶

The structure itself

Is it susceptible or not?

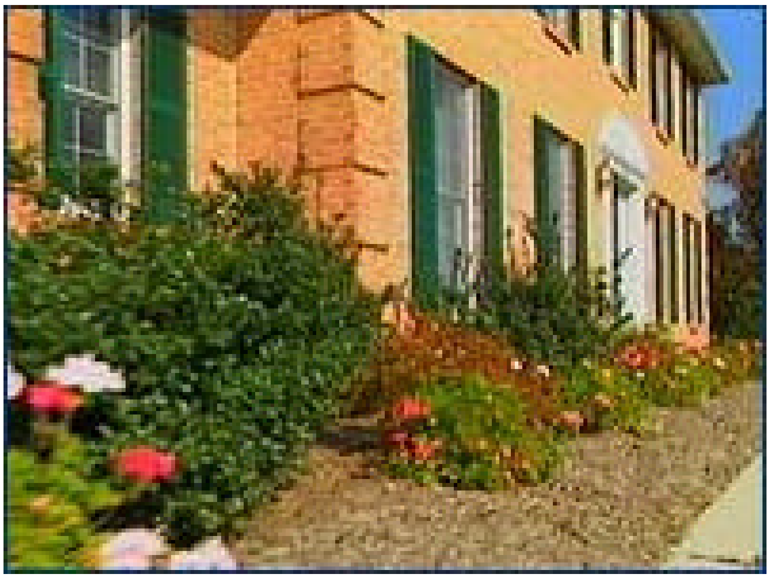
- Take a look at the roof. Is it made of combustible material, such as untreated wood shakes or tar-paper? Or is it made of tile, metal, or fiber glass, which will not burn?
- Are the gutters full of hazardous debris?
- Check the siding to see if it is made of combustible wood or noncombustible metal, brick, or adobe.
- Also look for heat traps like open gables and unscreened vents and decks.
- Large windows can be an easy entry path for heat and wind-blown debris. Curtains or draperies on the inside can create an even greater hazard. Shutters on the outside, however, can be used to shield the windows.
- The size and shape of the house should also be considered. Bigger structures can create stronger and dangerous eddies as wind swirls around sides and corners. A large number of eaves can trap heat and burning debris.

❷

Fuel loading around the structure

- Note the size and arrangement of the material. Also notice whether plantines are old and dry or young and green. How close are they to the structure? Are they of a fire-resistive type, or are they especially flammable? It is advisable to be aware of the fire-resistive and fire-tolerant species before you approach the fire. Check for hay, straw or firewood stacked outside and against the structure.

- What exists in the way of the defensible space or access around the structure? Is the yard clear or cluttered? Are any above ground fuel tanks visible?



❸

The fire's current behavior

These determinations go back to your initial observations on the scene:

- Check the rate of spread and direction of the fire. Will you have enough time to set up and protect the structure?
- Are there any topographical influences that will affect the speed of the fire's spread and take away valuable time from your efforts?
- What is the weather doing now? Are winds likely to increase the fire spread in your direction?
- How long are the flames? The longer they are, the more intense the heat will be when it gets closer to your activity.
- Are there spot fires? If so, they can drop behind your location and start new fires that could trap personnel and equipment.

4

The available resources

What is available now and what will be available when?

- Consider what is actually on-site now. Note the quantity and type for each resource, whether personnel or equipment.
- If additional resources are nearby, exactly where are they? If they are off site, how long will it take for them to arrive?
- Look at your resource capabilities and limitations in terms of mobility, especially water, foam, or retardant.

❺

Firefighter safety

This must be constantly in your mind.

- Be aware of your routes of egress and ingress. Are roads to the structure one way or two-way? Is there a heavy canopy of fuel over the road, or power lines? What is the grade and surface of the road? Are there loops or cul-de-sacs too narrow for turning large emergency equipment?
- Is smoke beginning to obstruct visibility near the property?
- What hazardous materials, if any, are nearby?

How do you quickly decide if a situation is hopeless? If any of the following factors apply, think very hard before committing personnel and equipment to saving the structure.

A structure may be considered a hopeless situation and not worth the safety risk of attempting protection when:

1. The fire is making significant runs in the standing live fuels and the structure is within one or two flame-lengths of those fuels.

2. Spot fires are starting around the structure or on the roof and are growing faster than they can be extinguished.

3. A low water supply will not allow fire fighting to continue until the threat subsides.

4. You cannot safely remain at the structure and your escape route could become blocked.

5. The roof is more than 1/4 involved, in windy conditions.

6. Interior rooms are involved and windows are broken, in windy conditions.

PROJECT MANAGER’S NOTES:

THE ADVANTAGE OF CONDUCTING A WILDLAND URBAN INTERFACE SURVEY IS THAT IT ALLOWS THE TIME TO PLAN AND THINK “WHAT IF”. IT ALSO ALLOWS YOU TO USE MANY SOURCES OF KNOWLEDGE AND EXPERIENCE TO DEVELOP A PLAN.

WHEN ACTUALLY FIGHTING FIRE, YOU WILL NOT BE ALLOWED TIME FOR PERFECTION – ONLY FOR YOUR BEST JUDGMENT IN THE TIME ALLOWED, AND A GOOD FOLLOW – THROUGH.

IF THINGS CHANGE OR YOU BEGIN TO LOSE THE BATTLE, YOU ARE ALWAYS FREE TO RE-THINK YOUR PLAN. BUT DO NOT LOSE PRECIOUS TIME IN CONTINUALLY QUESTIONING OR REGRETTING YOUR DECISIONS.

AFTER-ACTION REVIEWS WILL DETERMINE IF YOUR PLANNING MEETS YOUR EXPECTATIONS FOR RESULTS. IF NOT, ADJUST THE PLAN AS NEEDED.

Project Manager Udell F. Mentola has been involved in Volunteer Firefighting for over 11 years and is a Certified Wildland Urban Interface Instructor. He currently holds the position of Fire Training Officer on the Highlandville Rural Fire Protection District in Southwest Missouri.

NOTE: Fire Hazard Ratings were compiled for each Urban Interface area in Torrance County, NM. The Fuel Hazard section of the form was completed using the National Fire Danger Rating System's (NFDRS)"Fire-Danger Classes"(below). The NFDRS's"Fire Behavior Fuel Models", numbers one through thirteen, which were used to complete field surveys throughout the county, also appear below. (See Fuel Model Maps in TAB – K)

FIRE-DANGER CLASSES

AND

NARRATIVE DESCRIPTIONS

1. Low. Fuels do not ignite readily from small firebrands, although a more intense *-heat-* source, such as lightning, may start many fires in duff. Fires in open cured grassland may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.

2. Moderate. Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open-cured grassland will burn briskly and spread rapidly on windy days. Woods fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious, and control is relatively easy.

3. High. All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short distance spotting is common. High-intensity burning may develop on slopes, or in concentrations of fine fuel. Fires may become serious and their control difficult, unless they are hit hard and fast while small.

4. Very High. Fires start easily from all causes and immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics such as long-distance spotting and fire whirlwinds, when they burn into heavier fuels. Direct attack at the head of such fires is rarely possible after they have been burning more than a few minutes.

5. Extreme. Fires under extreme conditions start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high-intensity burning will usually be faster and occur from smaller fires than in the very high danger class (item 4). Direct attack is rarely possible, and may be dangerous, except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts.

Under these conditions, the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

FIRE BEHAVIOR FUEL MODEL DESCRIPTIONS

GRASS GROUP

Fuel Model 1 – (1 foot deep) Fire spread is governed by the fine herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through cured grass and associated material. Very little shrub or timber is present, generally less than one-third of the area. Grasslands and savanna are represented along with stubble, grass-tundra, and grass-shrub combinations that meet the foregoing area constraint. Annual and perennial grasses are included in this fuel model.

Fuel Model 2 – (1 foot deep) Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, besides litter and dead-down stemwood from the open shrub or timber over-story, contributes to the fire intensity. Open shrub lands and pine stands or scrub oak stands that cover one-third to two-thirds of the area may generally fit this model but may include clumps of fuels that generate higher intensities and may produce firebrands. Some pinyon-juniper may be in this model.

Fuel Model 3 – (2.5 feet deep) Fires in this fuel are the most intense of the grass group and display high rates of spread under the influence of wind. The fire may be driven into the upper heights of the grass stand by the wind and cross over standing water. Stands are tall, averaging about 3 feet, but considerable variation may occur. Approximately one-third or more of the stand is considered dead or cured and maintains the fire.

SHRUB GROUP

Fuel Model 4 – (6 feet deep) Fire intensity and fast spreading fires involve the foliage and live and dead fine woody materials in the crowns of a nearly continuous secondary overstory. Examples are stands of mature shrub, 6 or more feet tall, such as California mixed chaparral, the high pocosins along the East Coast, the pine barrens of New Jersey, or the closed, jack pine stands of the north-central states. Besides flammable foliage, there is dead woody material in the stand that significantly contributes to the fire intensity. Height of stands qualifying for this model varies with local conditions. There may also be a deep litter layer that confounds suppression efforts.

Fuel Model 5 – (2 feet deep) Fire is generally carried in the surface fuels made up of litter cast by the shrubs and the grasses or forbs in the understory. Fires are generally not very intense as surface fuel loads are light, the shrubs are young with little dead material, and the foliage contains little volatile material. Shrubs are generally not tall, but nearly cover the entire area. Young, green stands with little or no deadwood such as laurel, vine maple, alder, or even chaparral, manzanita, or chamise are examples. As the shrub fuel moisture drops, consider using a Fuel Model 6.

Fuel Model 6 – (2.5 feet deep) Fires carry through the shrub layer where the foliage is more flammable than Fuel Model 5, but require moderate winds (greater than 8 miles per hour) at midflame height. Fire will drop to the ground at low wind speeds or openings in the stand. Shrubs are older, but not as tall as shrub types of Model 4, nor do they contain as much fuel as Model 4. This model covers a broad range of shrub conditions. Typical examples include intermediate stands of chamise, chaparral, oak brush, low pocosin, Alaskan spruce taiga, and shrub tundra. Cured hardwood slash can be considered. Pinyon-juniper shrub lands may fit, but may over predict rate of spread except at high winds, for example, 20 miles per hour at the 20 foot level.

Fuel Model 7 – (2.5 feet deep) Fire burns through the surface and shrub strata equally. Fire can occur at higher dead fuel moisture contents due to the flammable nature of live foliage. Shrubs are generally 2 to 6 feet high. Examples are palmetto-gallberrry understory-pine overstory sites, low pocosins, and Alaska Black Spruce shrub combinations.

TIMBER LITTER GROUP

Fuel Model 8 – (0.2 foot deep) Slow burning ground fires with low flame heights are generally the case, although an occasional “jackpot” or heavy fuel concentration may cause a flare-up. Only under severe weather conditions do these fuels pose fire problems. Closed-canopy stands of short needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and some twigs since little undergrowth is present in the stand. Representative conifer types are white pine, lodgepole pine, spruce, true fin, and larches.

Fuel Model 9 – (0.2 foot deep) Fires run through the surface litter faster than Model 8 and have higher flame height. Both long-needle conifer and hardwood stands, especially the oak-hickory types, are typical. Fall fires in hardwoods are representative, but high winds will actually cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. Closed stands of long needled pine like ponderosa, Jeffrey, and red pines or southern pine plantations are grouped in this model. Concentrations of dead down woody material contribute to possible torching out of trees, spotting, and crowing activity.

Fuel Model 10 – (1 foot deep) The fires burn in the surface and ground fuels with greater fire intensity than other timber litter models. Dead down fuels include greater quantities of 3 inch or larger limb wood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation leading to potential fire control difficulties. Any forest type may be considered when heavy down materials are present. Examples are insect or diseased stands, wind-thrown stands, over mature situations with deadfall, and cured light thinning or partial cut slash.

LOGGING SLASH GROUP

Fuel Model 11 – (1 foot deep) Fires are fairly active in the slash and herbaceous material intermixed with the slash. The spacing of the rather light fuel load, shading from overstory, or the aging of the fine fuels can contribute to limiting the fire potential. Light partial cuts or thinning operations in mixed conifer stands, hardwood stands, and southern pine harvests are considered. Clear-cut operations generally produce more slash than is represented here. The < 3 inch material load is less than 12 tons per acre. The > 3 inch material is represented by not more than 10 pieces, 4 inches in diameter along a 50-foot transect.

Fuel Model 12 – (2.3 feet deep) Rapidly spreading fires with high intensities capable of generating firebrands can occur. When fire starts, it is generally sustained until a fuel break or change in fuels is encountered. The visual impression is dominated by slash and much of it is less than 3 inches in diameter. These fuels total less than 35 tons per acre and seem well distributed. Heavily thinned conifer stands, clear cuts and medium or heavy partial cuts are represented. The > 3 inch material is represented by encountering 11 pieces, 6 inches in diameter, along a 50 foot transect.

Fuel Model 13 – (3 feet deep) Fire is generally carried by a continuous layer of slash. Large quantities of > 3 inch materials are present. Fires spread quickly through the fine fuels and intensity builds up as the large fuels start burning. Active flaming is sustained for long periods and a wide variety of firebrands can be generated. These contribute to spotting problems as the weather conditions become more severe. Clear cut and heavy partial cuts in mature and over mature stands are depicted where the slash load is dominated by the > 3 inch material. The total load may exceed 300 tons per acre, but the < 3 inch fuel is generally only 10% of the total load. Situations where the slash still has “red” needles attached, but the total load is lighter like a Model 12, can be represented because of the earlier high intensity and faster rate of spread.

NOTE: Material obtained from “Wildland Firefighting Practices” Joseph D. Lowe and Anderson, Hal E., Aids to Determining Fuel Models for Estimating Fire Behavior General Tech Report INT-122.

ACCESS

Torrance County Access can be broken down into three areas of interest.

Area #1: All land west of State Highway 337 and Scenic Valley View Road

Along State Highway 337 and Scenic Valley View Road, terrain is described as rolling with hard paved surface. Road width is more than adequate for two-way emergency traffic, with road grades generally less than 10% and most less than 6%. However, there are numerous secondary roads that dead-end or do not have adequate turnarounds for ingress/egress of emergency equipment.

Secondary roads that depart westerly from State Highway 337 or Scenic Valley View Road are seldom of hard paved surface (Dirt roads). Most widths are barely adequate to allow two-way traffic (less than 16ft), and slope increase is gradual for the first two to three miles. As distance increases to three to five miles approaching the Manzano Mountain range, slope rapidly increases to greater than 10-15%. For most forest roads we were unable to determine conditions, as locked gates prevented our access. Those that we were able to travel were not well maintained, were very narrow, and/or had abundant close vegetative fuels.

Driveways to structures throughout this area are generally dead-end, narrow, and winding with no means of turn-around. Vegetative fuels are abundant along roadways and pose a great hazard in their potential to cut off the only escape route from the area.

Subdivisions such as Sherwood Forest exemplify what not to do in a Wildland Urban Interface Environment. This subdivision is located a long distance from fire protection services, has no defensible spacing, and has close fuels, combustible construction materials, poor access roads, and no water sources. (SEE TAB – K “HIGH RISK AREA NORTH MAP")

Summation of Area #1:

Width:

- Primary Roads: Paved good condition
- Secondary Roads: barely adequate to allow two way traffic (less than 16ft)
- Private Roads: Throughout this area end in dead-end narrow winding driveways with no means of turn-around.
- Forest Roads: not well-maintained, very narrow, with abundant close vegetative fuels.

Slope: Increase is gradual for the first two to three miles and rapidly increases to over 10-15% after traveling three to five miles toward the peaks in the Manzano Mountain region.

Paving:

- Federal, State and some County roads are paved
- Most secondary roads are not paved
- Private roads are not paved

Road Configuration (Windiness): Winding roads dominate throughout this area, with many roads having dead-ends or narrow winding driveways with no means of turn-around.

Bridge Capacities: Good. Federal or State agencies maintain most bridges.

Vegetative Fuels:

- Populated areas: Medium-Hazard Fuels (Mixed upland forest with open understory including leaf litter and small shrubs as well as abandoned fields, rush, large shrubs, small trees, cedars and tall grasses).
- Unpopulated areas: High-Hazard Fuels (Mixed upland forest with heavy large brush, evergreens, downed trees & limbs and ladder fuels and evergreen timber stands).

Windiness of Driveways: The majority of driveways end at a single dwelling and are narrow, winding driveways with no means of turn-around.

Area #2: East of State Highway 337 and Scenic Valley View Road and West of Highway 41 and the Corona Highway

This area can be described as rolling terrain becoming open range. The area west of Highway 41 and North of Highway 60 is where the majority of the population of Torrance County lives. There are many access roads throughout the area, though these are still mostly unpaved. There are a number of paved roads in the more populated areas. The area South of Highway 60 and between Scenic Valley View Road and Corona Highway is mostly level terrain, except for the mountain range along the Southern border of the county, which rises rapidly over a short distance. Limited structures with no major development were the reason that no survey was conducted for this area. Difficulties still remain with inadequate road widths and lack of turn-around areas for emergency vehicles . Bridge capacities do not seem to be a problem, as there are very few bridges in the area and Federal or State government agencies maintain those that are present. Roads tend to be straighter with terrain becoming more level as one travels east to Highway 41.

Sub-Divisions: The majority of sub-divisions are located in Area #2. Those on the western edge of the area have the most hazard factors, placing this section in a medium to high risk category. This is mainly due to structure composition, limited access, lack of road or home identification and limited water sources. Those located toward the central to eastern side of the area and closer to the municipality of Moriarty tend to have fewer hazard factors. Road access is much better, however the density of the Sub-Divisions, structure composition and lack of water sources still place them at a medium risk category. (SEE TAB – K “MEDIUM RISK AREA MAPS")

Summation of Area #2:

Width:

- Primary Roads**:** Paved, good condition
- Secondary Roads: Mixture of Paved and Dirt, predominately adequate (more than 16ft wide)
- Private Roads: Narrow with no turn-around, poorly maintained

Slope: Overall less than 5%, some isolated ravines along the western edge

Paving:

- Federal, State and some County roads are paved
- Some secondary roads are paved
- Most private roads are unpaved

Road Configuration (Windiness): There are a minimal number of roads in this straight and level terrain. Most are located in the eastern areas.

Bridge Capacities: Good. Federal or State agencies maintain most bridges.

Vegetative Fuels: Light, low-hazard types (short grasses, weeds, few shrubs, or mature hardwoods with no understory).

Windiness of Driveways: There are some serpentine driveways along the western edge near Highway 337, mostly for single-family dwellings. Most Sub-Divisions identified as Urban Interface have streets accessing multiple structures with short driveways.

Area #3: East of Highway 41 and the Corona Highway

This area can be described as prairie-like, with some rolling terrain but mostly open range. There is very limited Wildland Urban Interface because of the large areas of land with no significant population or structures. Due to the lack of water sources, there is minimal vegetation. Vegetation in this area is primarily sagebrush and cactus, except near water sources, where a variety of trees and green vegetation can be found. Throughout this area there are very long, narrow dirt roads leading to single-family dwellings or community bunkhouses located on ranches. This increases the response time for emergency services.

Subdivisions: These are located on relatively flat terrain with very dense structure population. Fuel hazard is present in the form of tall to short grasses, weeds and shrubs. The highest risk factors are limited or one-way access into a subdivision and the density of the structures within it. Structure composition is mainly of combustible materials. (SEE TAB – K “LOW RISK AREA MAPS")

Summation of Area #3:

Width:

- Primary Roads: Paved good condition;
- Secondary Roads: Dirt, predominately adequate (more than 16ft wide);
- Private Roads: Narrow dirt leading into a ranch complex.

Slope: Less than 3%

Paving:

- Federal, State and some County roads are paved
- Secondary roads are not paved
- Private roads are not paved

Configuration of Roads (Windiness): A few serpentine roads in hilly areas.

Bridge Capacities: Good. Federal or State agencies maintain most bridges.

Vegetative Fuels: Light, low-hazard types (short grasses, weeds, few shrubs)

Windiness of Driveways: Less than 1% are serpentine.

HOUSING DENSITY

Torrance County covers a land area of 2,150,624 acres in central New Mexico. Of this land mass, 114,471 acres have been identified as High Risk Areas, 237,091 as Medium Risk Areas and 658,791 acres of Low Risk Areas of Wildland Urban Interface, totaling 1,010,354 acres.

Breakdown of Interface Areas by land ownership:

TYPE	ACRES
National Park Service	227
Municipal	6485
Isleta Reservation	14,464
Sub-Divisions	31,460
Land Grants	52,612
Forest Coverage	155,095
Private	1,559,752
BLM	16,045
State	314,484

(Numbers based on data provided by Torrance Co. & NM RGIS Website)

A total of 102 Wildland Urban Interface areas were identified. In this survey, only non-municipal private land was documented. For this reason, we do not claim or imply that all interface concerns in Torrance County are addressed in this document.

After review a hazard rating was assigned to each area, based on observed conditions of vegetative fuel, vehicle access, building materials, quality of defensible space, water availability, and terrain. In addition, proximity to the nearest fire department, extent of the area, housing density, potential for increase and special hazards were factored into the ratings.

WATER RESOURCES

Torrance County water resources are minimal at best. Municipal areas have hydrants and some water storage facilities that could be accessed by Fire Departments.

Some sub-divisions have wells with limited storage capacity and few hydrants; however, when tasked to supply the copious amount of water to fend off a wildland fire, these systems would not sustain the demand.

Other available sources are lakes, ponds, reservoirs, and dry hydrants. Survey of the High-Risk area shows only one reservoir with limited capacity. No lakes were located. Ponds were not of capacity to be useful. Dry hydrant locations were generally found to be *DRY* due to drought conditions over that last several years.

Irrigation wells usually have limited access, which makes them impractical, and most do not have the correct fire department hose connections. However, included in this survey is a list of State of New Mexico recorded well sites in Torrance County. This list provides the fire departments the well location and owner contact information for inquiries about connectivity and acquiring permission to access the well for fire fighting purposes.

The final and most dependable method of obtaining water is a water shuttle operation. In Torrance County, however, such an operation would require traveling a significant distance to acquire water. An alternative to minimize travel is to establish a large network of water storage relay sites. These sites should be strategically located throughout the county.

TERRAIN

A discussion of terrain is required when discussing ACCESS, therefore the majority of information contained in TAB–C pertains to ACCESS. However, that discussion did not contain detailed information into ASPECT of the Manzano Mountain Region.

ASPECT: The direction a slope is facing in relation to the sun

The aspect of a slope determines the amount of solar energy available, and therefore the amount, condition, and type of fuels present. South and southwest slopes which are more directly exposed to sunlight, generally have sparser, lighter fuels, higher temperatures, lower humidity, lower fuel moisture, and are the most critical in terms of the start and spread of fire. North facing slopes, being more shaded, have more and heavier fuels, lower temperatures, higher humidity, and higher fuel moisture.

The Manzano Mountain Region runs north to south along the borders of Valencia, Bernalillo and Torrance Counties. Therefore, the predominant aspect in Torrance County is an eastward facing slope. (See Digital Elevation Model (DEM) maps in this tab for reference) This provides morning sun exposure, however it does not provide much moisture, as the ascending clouds of a weather front from the west-southwest will have expended most of their moisture on their upward movement over the Western slopes. As a result, the eastern facing slopes tend to remain dryer, lower in fuel moisture and lower in humidity. These conditions provide an excellent area for the spread of a wildland fire and an area to watch for fires started due to lightning or manmade startups.

The feeder ridgelines extending easterly from the peaks of the Manzano Mountain Region to Highway 337 (Scenic Valley View Road) should be the areas of concentrated effort for mitigation. Because of their southern aspect exposure, they are critical areas of concern for the start and spread of fire, and a good strategic area for implementation of the FireWise Communities Program. Creation of defensible spaces around the urban areas will also increase safety margins for residents.

FOREST HEALTH

INTRODUCTION:

Awareness of forest health plays a major role in the prediction and prevention of wildland fires. In Torrance County, two major factors affecting forest health are the ongoing drought and the massive infestation of the bark beetle Pinon Ips (*ips confuses*).

CURRENT CONDITIONS:

There are currently over 9 million acres of pinon-juniper woodlands in New Mexico. Decades of above-average precipitation allowed pinon and juniper trees to proliferate in what were formerly sparse woodlands and grasslands. These excessive tree densities, coupled with several years of drought, have resulted in thousands of moisture-stressed pinons and junipers. These unhealthy trees are vulnerable to attack by bark beetles.

Currently, tree mortality is centered in "stress-zones' such as drier south-facing slopes, transition areas between ponderosa pine and pinon-juniper areas, and recent construction sites. As noted earlier in this document, there are several areas in Torrance County which fit this description. For example, the feeder ridgelines extending easterly from the peaks of the Manzano Mountain, because of their southern aspect exposure, tend to be drier and have more stressed vegetation. The extensive new construction activity in this region is also a contributing factor. Reports have stated that millions of Ponderosa pine and pinon trees have been killed. Overall, this equates to a loss of less than two percent of forests, however some localized areas may have tree losses of more than thirty percent.

ABOUT THE PINON BARK BEETLE:

Photo from Cooperative Extension, College of Agriculture & Life Sciences, The University of Arizona at their web site, http://cals.arizona.edu/pubs/natresources/az1300/

The Pinon Bark Beetle (Pinon Ips) is native to Ponderosa pine forests and pinon-juniper woodlands. These insects normally have a life cycle of one year (or two years at higher elevations). However, in unusually warm years, several generations may be produced. In fact, under optimal conditions such as those which now exist in New Mexico (i.e. millions of stressed trees and unusually warm temperatures) as many as four generations of beetles may be produced in a single reproductive season.

The beetles attack unhealthy trees by boring through the bark and laying eggs. When the eggs hatch, the larvae feed on the soft inner bark. In addition, the beetles introduce a "blue stain" fungus which spreads and clogs the water and nutrient conducting tissues, hastening the death of the tree. Even healthy trees can be overcome when "mass attacked" by large numbers of bark beetles. Within the last 18 months, U.S. Forest Service entomologists reported that beetle infestations have reached epidemic levels throughout America's woodlands. Many entomologists in New Mexico have stated that their state is facing the worst bark beetle epidemic in fifty years, and that a major outbreak cycle is likely if the drought persists.

SIGNS OF INFESTATION

Infested trees can be identified by their foliage, which will begin turning reddish-brown within a month of attack. Other evidence includes sawdust at the tree base or in bark crevices, small, popcorn-like masses of sap, small boring holes, and a "fading" of the needles. While pinon mortality has been increasing over the past three summers, the cumulative effect on the landscape is now noticeable to even the most casual observer.

Photo by LeRoy N. Sanchez, Public Affairs, from the Los Alamos Laboratory web site at http://www.lanl.gov/orgs/pa/newsbulletin/2002/10/07/text01.shtml

TREATMENT AND PREVENTION OF INFESTATION:

There is usually nothing that can be done to save a tree once it has been infested with bark beetles and is infected with blue-stain fungus. Injecting trees with insecticide is not an effective method for control or prevention of bark beetle infestation. Limited results in preventing the spread of the infestation from trees which have been cut down may be accomplished by the following methods:

- Use the greenhouse effect to destroy beetles by piling and covering logs with clear plastic on a sunny site.
- Peel the bark from the logs
- Burn, chip or bury the logs
  NOTE: Fresh pine chips can attract Ips beetles and should be removed from forested sites immediately.

Homeowners can take measures to protect their high-value trees. Those not yet infested can be protected by annual applications of a preventative insecticide. Carbaryl is the preferred chemical, because it provides longer protection. The entire surface of the trunk and large limbs must be sprayed to within a few feet of the top. On larger trees, this may require the services of a professional.

PROGNOSIS

Under the current conditions, it may be difficult or impossible to save the woodland pinons. Unfortunately, the single most effective agent for improving forest health – the weather – is outside human control. If the drought persists, more junipers and trees at higher elevations may be affected, which will only exacerbate the problem. However, selective removal of trees, along with brush disposal and appropriate use of prescribed fire, will improve forest health and reduce breeding opportunities for the bark beetle. These measures will also contribute to reducing the risk factors for catastrophic wildfire.

SPECIAL CONCERNS

This area of the study proved to be the most difficult as no one entity, office, or governmental agency had the information needed to compile a comprehensive survey. However, we were able to obtain some good information on endangered species, archaeological sites and pipelines.

The railroad should be mentioned as a concern due to the large numbers of train cars passing through Torrance County on a daily basis. With every train comes the risk of fire or, worse, a derailment with Hazardous Materials. Such an event could severely impact the local environment, wildlife or human life.

We requested data from all the utility companies and as of the writing of this final report the only utilities that provided any information were the pipeline companies. Any additional data from other utilities would expand the usefulness of this document.

There are all types of utilities throughout the study area, including overhead utilities, underground utilities and propane tanks. Because of the extent of the survey area and the large numbers of utility sites, a complete and detailed evaluation is beyond the scope of this survey.

All utilities pose a threat to fire fighting, especially wildland fire fighting. (Example: Several years ago in Missouri, three fire fighters were killed by electrocution when crossing over a barbwire fence. The cause of this unfortunate accident was a downed power line lying across the fence several miles away. After action review of the accident showed several factors were involved;

* The entire perimeter had not been surveyed.
* The power line in question was owned by a private individual rather than an electric company.
* The fire fighters did not have the proper protective clothing to ensure their safety.

The best-case scenario is to identify potential risk factors in advance. If that is not possible, the Incident Commander or Safety Office must take every precaution to ensure the fire fighters’ safety. Safety must be the topic of every training session, and the primary concern in any situation.

PIPELINE COMPANIES

TransWestern and El Paso pipelines carry natural gas across Torrance County in the southwest quadrant through the Low Risk area of the Wildland Survey area.

Williams Mid-American LPG and Natural Gas pipeline extends across Torrance County from the northwest to the southeast and also passes through the city of Moriarty. Approximately one-third of the pipeline passes through the Low Risk area of the Wildland Survey area.

Texas & New Mexico Crude Oil pipeline extends across Torrance County from the northwest to the southeast. Approximately one-tenth of the pipeline passes through the Medium Risk area and one-fourth of the pipeline passes through the Low Risk area of the Wildland Survey area.

Diamond Shamrock pipeline carries diesel, gas, and jet fuel across the northern part of Torrance County from west to east. Approximately one-tenth of the pipeline passes through the Medium Risk area and one-third of the pipeline passes through the Low Risk area of the Wildland Survey area.

ARCHAEOLOGICAL SITES

NOTE: Research of records from Federal, State and private agencies and associations revealed no significant archaeological sites located in Torrance County. The National Park Service does have two locations that meet some, but not all, of the criteria to be federally registered archaeological sites, however, their potential loss due to wildland fire places them in the category of <u>*Special*</u> <u>Concerns</u>**.**

The following information regarding the overall history of cultures of the Southwest United States was obtained from the Archaeological Conservancy and National Parks and Conservation Association. The significance of this information pertains to Archaeological site(s) in Torrance County that may be associated with one of the prehistoric cultures discussed below.

Prehistoric Cultures of the Southwest

Several different (though related) groups of prehistoric Native Americans lived on pueblo and cliff dwelling sites in the Four Corners area, and on into southern Arizona and New Mexico. The best known of these cultures was the Anasazi, who lived in the Four Corners area for approximately 2,000 years. During much of the same time, the Mogollon, Hohokam, Sinagua, and Salado peoples occupied nearby regions of Arizona. Between AD 1300 and 1400, all of these prehistoric societies experienced significant cultural changes and/or relocations. Many of their abandoned settlements remain visible today.

The name "Anasazi" is derived from two historic Navajo words, ana- (not correct spelling) meaning "enemy" and sa- meaning "ancient" or "old" (also translated as the less bellicose "Ancient Ones"). The term Anasazi is used to describe the ancestors of the current Pueblo peoples of the Four Corners Region. Although the

Southwest has been inhabited since Paleoindian times (12,500-8,000 B.C.), the characteristic Anasazi cultural traits did not start to appear until around AD 600. Their earliest lodgings were semi-subterranean shelters called pithouses. By their halcyon days of AD 1000 through 1300, they were constructing sophisticated pueblo and cliff dwellings throughout the arid canyon lands of the region. Around AD 1300, they abandoned their dwellings and moved away. The precise reasons are still uncertain; although there is speculation that prolonged drought played a major role. They left thousands of ruins across the Four Corners area, many of which have been excavated by archeologists and partially restored.

Most Anasazi ruins take the form of pueblos (multi-room, sometimes multi-story, stone-constructed, free-standing dwellings) or (more rarely) cliff dwellings (buildings built in cavernous openings along the cliff faces of the many canyons). Almost all Anasazi ruins also include kivas, which are circular semi-underground ceremonial rooms. Some sites also feature Great Kivas (very large, public ceremonial rooms) and towers.

The Mogollon (pronounced mug'-ee-yone) and a branch known as the Mimbres, lived in the upper drainage of the Little Colorado River in northern Arizona and down through southern Arizona from AD 500 through about AD 1450. The Hohokam lived in the Phoenix basin at around the same time. The Sinagua lived in the San Francisco Peaks area (near Flagstaff) and on into the Verde River valley. The Salado lived in the Tonto Basin and Globe-Miami areas of Arizona.

After the Anasazi and Hohokam moved out of the Four Corners area (around AD 1300), the early Pueblo peoples began inhabiting the Rio Grande River valley. Although there are many similarities in the several cultures, there were many differences including architectural styles, artistic designs used in pottery, basketry and pictographs/petroglyphs, farming techniques, etc. There is evidence that there was a trading network between these peoples and the early peoples of the Pacific coast and with cultures in northern Mexico.

REGISTERED ARCHAEOLOGICAL SITES OF NEW MEXICO

Aztec Ruins National Monument {Anasazi} (Aztec, NM) [**] Principal Ruins: Aztec ruin (400-room, 9-kiva pueblo); restored/ recreated great kiva; several other sites not open to public Access: $3/person entrance fee. Open 8am-6pm June-August and 8am-5pm rest of the year. Information: Visitor's Center; Contact Superintendent, Aztec Ruins National Monument, P.O.Box 640, Aztec, NM 87410. Phone 505- 334-6174.

Bandelier National Monument {Anasazi) (near Los Alamos, NM) [***] Principal Ruins: Tyuonyi (large pueblo), Long House (cliff dwelling), Ceremonial Cave (and recreated kiva); Stone Lions (still an Indian religious site); Painted Cave. Access: $5/vehicle. Many ruins are available via a short hike through Frijoles Canyon. Information: Visitor's Center open 8am-6pm June - August, 8am-4:30pm rest of year. Phone 505-672-3861.

Casamero Ruins {Anasazi} (near Prewitt, NM) [* NPE] Principal Ruins: small pueblo (occupied 1000-1125 AD) and unexcavated great kiva. Access: take Exit 63 off I-40 at Prewitt, and then east of exit junction of US Hwy 66, McKinley County Road 19 leads north to the Plains Escalante Generating Station. Follow that road 4 miles. Information:

Chaco Culture National Historical Park {Anasazi} [*****] Principal Ruins: Pueblo Bonito, Great Kiva of Casa Rinconada; Chetro Ketl, Una Vida, Hungo Pavi, Kin Kletso, Casa Chaquita, Pueblo del Arroyo; also Sun Dagger Solar/Lunar Observatory (on Fajada Butte - not accessible); over 3,500 recorded sites (most not accessible) Access: $8/vehicle entrance fee. Access to the Park is via long dirt roads: From the north, Chaco can be reached by turning off NM Hwy. 44 at Nageezi and following San Juan County Road 7800 for 11 miles to New Mexico Hwy 57; the Visitor's center is 15 miles ahead on Hwy 57. From the south, pick up New Mexico Hwy 57 via Grants or Crownpoint. Both of these routes include at least 20 miles of unpaved roads. Self-guiding trails explore seven of the Park's ruins including Pueblo Bonito, Chetro Ketl, Pueblo del Arroyo, Casa Rinconada, and 3 village sites. Four other trails for day hiking lead into the back country (permits required). Information: Visitor's Center open 8am - 6pm June-August; 8am-5pm rest of year. Contact: Superintendent, Chaco Culture National Historic Park, Star Route 4, Box 6500, Bloomfield, NM 87413. Phone 505-786-7014.

Coronado State Monument {ancient Pueblos} (near Bernalillo, NM) [* NPE] Principal Ruins: Kuaua Pueblo; reconstructed kiva with murals Access: $2 entrance fee. Located along US Hwy 44, 1 mi. w of Bernalillo. Information: Phone 505-867-3304.

Dittert Site {Anasazi} (about 45 mi. se of Grants, NM) [* NPE] Principal Ruins: small pueblo and kiva, mostly backfilled/covered over Access: drive 5 miles east of Grants on I-40, then continue 9 miles south on SR 117 to BLM ranger station (ask directions). Information:

El Morro National Monument {Anasazi} (40 mi. w of Grants, NM) [* NPE] Principal Ruins: Atsinna ruin - originally over 500 rooms, all that's been excavated is around 20 rooms and 2 kivas. Also Inscription Rock (petroglyphs and grafitti dating back over 500 years) Access: Entrance fee $4/vehicle or $2/person. Located on SR 53, 40 mi west of Grants and 30 miles east of Zuni, NM. Information:

Contact Superintendent, El Morro National Monument, Rt. 2, P.O. Box 43, Ramah, NM 87321. Phone 505-783-4226.

Gila Cliff Dwellings National Monument {Mogollon} (44 mi. n of Silver City, NM) [* NPE] Principal Ruins: cliff dwellings (about 40 rooms built circa 1270 AD); pithouses dating back to around 300 AD. Access: located at the end of SR 15, 44 miles north of Silver City. Information: Phone 505-536-9461.

Hawikuh Ruin {Anasazi} (12 mi. s of Zuni Pueblo, NM) [* NPE] Principal Ruins: large in size, but these are mostly collapsed mounds of rubble. Access: obtain permission to visit the site from the Zuni Tribal Office (505-782-4481); for direction to the site, call the tribal archeology department at 505-782-4814.

Jemez State Monument {ancient Pueblos} (near Jemez Springs, NM) [* NPE] Principal Ruins: pueblo mounds plus 1621 AD church and monastery Access: Entrance fee $2. Located on SR 4 just north of Jemez Springs. Information: Phone 505-829-3530.

Pecos National Historic Park {ancient Pueblos} (near Pecos, NM) [* NPE] Principal Ruins: North Pueblo and South Pueblo Access: $5/vehicle entrance fee. Park is 2 miles south of Pecos on New Mexico Road 63. Self-guiding 1.25 mile hike; guided tours available on request. Information: Visitors Center opens 8am-6pm June-Aug., 8-5 rest of year. Phone 505-757-6414/6032.

Poshuouinga Ruins {ancient Pueblos) (near Abiquiu, NM) [* NPE] Principal Ruins: large pueblo (over 700 ground-floor rooms surrounding 2 large plazas with a large kiva in larger plaza) Access: located on US Hwy 84 2.5 mi. south of Abiquiu. Information:

Petroglyph National Monument {ancient Pueblos} (Albuquerque, NM) [*] Principal Ruins: over 15,000 petroglyphs (most dating from 1300 AD to 1680 AD, but some dating back 3000 years) Access: No entrance fee. . Information: Petroglyph National Monument, P.O. Box 1293, Albuquerque, NM 87103 (Phone 505-768-3316) or call City of Albuquerque Division of Open Space at 505-873-6620.

Pueblitos of Dinetah {ancient Pueblos} (ne of Farmington, NM) [* NPE] Principal Ruins: 8 small pueblos dating from 1715 to 1754. Access: get detailed directions from BLM; the ruins are only accessible via long drives on dirt roads. Information: Bureau of Land Management phone 505-761-4505 or 505- 327-5344.

Puye' Cliff Dwellings {ancient Pueblos) (Espanola, NM) [** NPE] Principal Ruins: combination of cliff dwellings and mesa top pueblos believed to originally have over 1,000 rooms. Access: $5 admission. Go 11 miles west of Espanola via New Mexico Roads 30 and 5 in the Santa Clara Indian Reservation. The Mesa top is accessible via gravel road or hiking. Open 9am-6pm. Guided tours available by reservation. Information: Phone 505-753-7326.

Salinas Pueblo Mission National Monument {ancient Pueblos} (Mountainair, NM) [* NPE] Principal Ruins: Gran Quivira, Quarai, Abo Access: No entrance fee. Information: Visitor Center at Broadway & Ripley Streets in Mountainair. Phone 505-847-2585.

Salmon Ruin {Anasazi} (Bloomfield, NM) [**] Principal Ruins: Salmon ruin (11th century pueblo and Chacoan outlier) Access: $1 admission. 2.5 miles west of Bloomfield via U.S. Hwy 64. Information: 505-632-2013.

Three Rivers Petroglyph Site {Mogollon} (30 mi. n of Alamogordo, NM) [* NPE] Principal Ruins: some 20,000 petroglyphs dating from 900 AD to 1400 AD. Access: go 30 miles north of Alamagordo on US Hwy 54; turn east at the Three Rivers intersection and go 5 miles to the site. One trail leads through petroglyphs and another to the excavated ruins. Information: Phone 505-525-8228.

Village of the Great Kivas {Anasazi} (on Zuni Reservation, NM) [* NPE] Principal Ruins: small (18 room) pueblo with 2 unexcavated great kivas. Access: located 17 miles from Zuni Pueblo. To visit the site, contact the Zuni Tribal Office at 505-782-4481 for permission and 505-782-4814 for directions (from tribal archaeology dept.).

Maxwell Museum of Anthropology, Albuquerque, NM [**] Located on the University of New Mexico campus.
Museum of Indian Arts and Culture, Santa Fe, NM [***] P.O Box 2087, Santa Fe, NM 87504-2087 Phone: 505 827-6344 for more information.

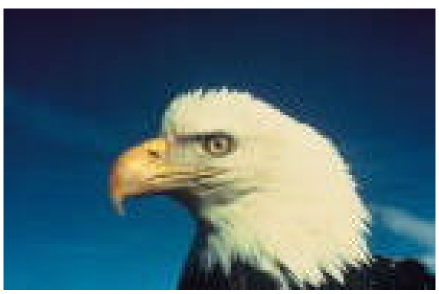
Western New Mexico University Museum, Silver City, NM [NPE]

ENDANGERED SPECIES

Researching endangered species in New Mexico and especially in Torrance County led to the United States Fish & Wildlife Service website. Findings include the following information concerning four endangered species with recorded studies occurring in Torrance County.

- Bald Eagle
- Black-Footed Ferret
- Black-Tailed Prairie Dog
- Mexican Spotted Owl

1. Bald Eagle



Bald Eagles build large stick nests lined with soft materials such as grass, leaves, and Spanish moss. Nests are used for several years by the same pair of eagles, with the birds adding materials each year. Nests are often very large, measuring 6 feet across and weighing hundreds of pounds. Young eagles can fly in 11 to 12 weeks, but the parents continue to feed them for 4 to 6 more weeks while they learn to hunt. Northern breeders migrate north out of Texas in early spring and return by September or October.

Reason for Concern:

The decline of the Bald Eagle coincided with the introduction of the pesticide DDT in 1947. Birds of prey at the top of the food chain, such as eagles, ingested relatively high levels of the pesticide, which was concentrated in the fatty tissues of their prey. Eagles contaminated with DDT failed to lay eggs or produced thin eggshells that broke during incubation. In 1972, DDT was banned in the United States, and a slow recovery for the Bald Eagle began. Loss of nesting habitat due to development along the coast and near inland rivers and waterways also has resulted in decreasing numbers of Bald Eagles.

2. Black-Footed Ferret

Biologists consider black-footed ferrets to be the most endangered mammal in the United States. Recently, however, thanks to aggressive captive breeding and reintroduction programs, much progress has been made toward recovering the ferret population.

Black-footed ferrets are members of the weasel family (Mustelidae), a distinction they share with weasels, martens, fishers, otters, minks, wolverines and skunks. Larger than weasels, black-footed ferrets are long, slender-bodied animals similar in size to a mink. A brownish-black mask characterizes them across the face, a brownish head, black feet and legs, and a black tip on the tail. Ferrets' short, buff-colored fur becomes lighter on the underside of their bodies. The middle of the back has brown-tipped guard hairs that create the appearance of a dark saddle.

Black-footed ferrets may look like the ferrets found in pet stores but they are actually a different species. Both belong to the weasel family but ferrets sold as pets evolved in Europe, while endangered black-footed ferrets evolved in North America.

It is possible that black-footed ferrets never were abundant, but their underground nocturnal habits make it difficult for biologists to know for certain. First described by naturalists John Audubon and James Bachman in 1851, black-footed ferrets were not sighted again for 25 years.

Ferrets were once found throughout the Great Plains, from Texas to southern Saskatchewan, Canada. Their range extended from the Rocky Mountains east through the Dakotas and south through Nebraska, Kansas, Oklahoma, Texas, New Mexico and Arizona. Where prairie dogs were found, so were black-footed ferrets. Ferrets eat prairie dogs and live in prairie dogs' burrows.

3. **Black-Tailed Prairie Dog**

Black-tailed prairie dogs (*Cynomys ludovicianus*) are stout, burrowing animals within the squirrel family, approximately 14-17 inches long and weighing about 1-3 pounds. They are generally yellowish tan in color, but with a slightly lighter color on the belly. Their eyes are somewhat large for their body size; they have short ears and a short tail that is tipped in black. Prairie dogs are active by day and live in colonies; this particular characteristic of colonial living is especially significant with the black-tailed prairie dog. Undisturbed colonies of this species may contain thousands of residents and extend for miles. Within colonies, prairie dogs live in contiguous, territorial family units called coteries.

BIOLOGY

According to recent data provided to the United States Fish & Wildlife Service, the black-tailed prairie dog inhabits only a small fraction of the area that it once occupied, perhaps one million acres of what may have been 100 million acres in its original range. Black-tailed prairie dog occupied habitat is nearly 95 percent smaller today than at the turn of the century. Despite large historic reductions in habitat, the species is found in remnant colonies in much of its former range and in relatively large numbers compared to many other species whose populations appear to be secure. However, most black-tailed prairie dog colonies are small (less than 100 acres, disjunctive, and geographically isolated from other colonies). The range of the black-tailed prairie dog extends from southern Canada to northern Mexico and from approximately the 98th meridian west to the Rocky Maintains. They occur in Montana, North Dakota, South Dakota, Wyoming, Colorado, Nebraska, Kansas, New Mexico, Oklahoma, and Texas, and have been extirpated in Arizona since the 1960's.

CAUSES OF DECLINE IN POPULATION

Current information appears to indicate three major events, which occurred in the past and continue today to differing degrees and significance, may have had direct negative effects on the black-tailed prairie dog.

Recent data provided to the United States Fish & Wildlife Service indicates one of the early major events that had a significant effect on black-tailed prairie dogs was the conversion of prairie to farmland in the eastern portion of its range from approximately 1890 through 1930. Present day changes and/or loss of black-tailed prairie dog habitat throughout its range are also resulting in reductions in some populations, specifically in Montana and Mexico. However, these factors alone do not appear to be having a significant impact on the overall range-wide population of the species.

Information shows that sylvatic plague, a disease that was inadvertently introduced from Asia into the North American prairie ecosystem around 1900 has impacted the species in significant numbers. This disease may be the most important factor in the recent reduction of black-tailed prairie dog populations across their range. The plague is a disease caused by the bacterium, *Yersinia pestis*, which is transmitted by fleas. The disease was first documented in black-tailed prairie dogs near Lubbock, Texas, in 1946-47. Plague has been active in black-tailed prairie dog populations in the northern Great Plains only within the last decade; the disease appears to be spreading to encompass the entire range of the species. Recent black-tailed prairie dog losses to plague have occurred in Montana, Wyoming, Colorado, and Oklahoma.

PLANS FOR THE FUTURE

The United States Fish & Wildlife Service will investigate all of the factors mentioned above, in an in-depth review of the status of the black-tailed prairie dog, over the next nine months. Any additional information about the black-tailed prairie dog provided to the Service from private organizations, states, Tribes, other

Federal agencies, and the general public will be used to help determine if the species needs to be included on the Federal list of threatened and endangered wildlife and plants.

4. Mexican Spotted Owl

The Mexican spotted owl is found from southern Utah and Colorado south through the mountains of Arizona, New Mexico, and west Texas, and into the mountains of central Mexico (McDonald et al. 1991). Gaps remain in our knowledge of the distribution pattern of the Mexican spotted owl within this range. This is especially true in Mexico, where very little of the geographic range of the owl has been surveyed. Consequently, although the owl appears to be widely distributed in Mexico, we do not know whether its' range is fairly continuous throughout the Sierra Madre and associated highlands, or whether it is restricted to scattered mountain ranges.

There are still gaps in information about the spotted owls’ habitat in the United States. For example, several mountain ranges in west-central Arizona remain unsurveyed. Also, numerous canyon systems that may contain spotted owl habitat in southern Utah have not been surveyed for owls.

Despite these gaps, it is apparent that the Mexican spotted owl is widely but sparsely distributed throughout its range in the United States. Distribution depends upon the availability of forested mountains and canyons, and in some cases, rocky canyon lands. Consequently, the owl's habitat within the Southwest is naturally fragmented.

The Mexican spotted owl (*Strix occidentalis lucida*) (owl) inhabits canyon and mountain forest habitats across a range that extends from southern Utah and Colorado, through Arizona, New Mexico, and west Texas, to the mountains of central Mexico. The U.S. Fish & Wildlife Service listed the owl on March 16, 1993 (58 FR 14248) as lacking in critical habitat. A final rule designating critical habitat for the owl was published on June 6, 1995 (60 FR 29914). As a result of several court rulings, the Service removed critical habitat designation for the owl on March 25, 1998 (63 FR 14378). On March 13, 2000, the Service was again ordered to propose critical habitat designation within four months of the court order and to complete a final designation by January 15, 2001. Thus, the Service has now designated approximately 4.6 million acres of critical habitat for the owl on Federal Lands in Arizona, Colorado, New Mexico, and Utah.

NOTE: *Critical habitat refers to specific geographic areas that are essential for the conservation of a threatened or endangered species and that may require special management considerations. A critical habitat designation does not set up a preserve or refuge and only applies to situations where Federal funding, authorization or permits are involved. Since no private, state or tribal lands are being designated, the designation will only affect activities on Federal lands.*

PHOTOGRAPHS

Photographs were embedded throughout the document in order to provide additional information in relationship to the topic. Any photographs not included with specific text are attached as a digital file, for reference only.

MITIGATION

After review of all data collected there are three steps of mitigation that would greatly improve the Wildland Urban Interface situations in Torrance County:

1. Creation or improvement of defensible space around structures
2. Improvement of water supply sources
3. Improvement of accessibility

1. Creation or Improvement of Defensible Space around Structures

Homeowners need to understand and implement the three R's of defensible space creation:

1. **REMOVAL:** The elimination of entire plants, particularly trees and shrubs, from the site. Examples would be cutting down dead trees or flammable shrubs.
2. **REDUCTION:** The removal of plant parts, such as branches or leaves, from the site. Examples are pruning dead wood from a shrub, removing low tree branches, and mowing dried grass.
3. **REPLACEMENT:** The substitution of less flammable plants for hazardous vegetation. For example, replace a dense stand of flammable shrubs with an irrigated, well maintained flower bed.

In addition, the following tasks are recommended to help reduce risk of wildfire.

- Stack firewood away from the house
- Thin and prune trees and shrubs
- Maintain a circle of safety of at least 30 feet or greater
- Keep grass and weeds mowed
- Keep the immediate area clear of debris
- Enclose openings such as porches and foundations

- Remove tree limbs that hang over structures
- Replace wood shake roofs or treat with fire retardant materials
- Keep roofs and gutters clear of debris
- Have a fully-charge fire extinguisher available
- Keep a water hose near outdoor faucets
- Dispose of ashes properly in a non-combustible prepared area
- Provide adequate access for emergency vehicles
- Install spark arrestors on chimneys
- Dispose of trash legally – do not burn where there is risk

2. Improvement of Water Supply Sources

Improve water supply sources by maintaining an emergency water supply that meets fire department standards through one of the following.

- A tested community water/hydrant system
- A neighborhood cooperative emergency storage tank
- A minimum storage supply of 2,500 gallons on your property

To help the fire fighters, the property owner should:

- Clearly mark all emergency water sources and notify the local fire department of their existence
- Create easy fire fighter access to your closest emergency water source
- Consider having an emergency generator to operate well pumps during a power failure

3. Improvement of Accessibility

Improvement of accessibility is a joint effort by Federal, State and County agencies and landowners. All entities should make every effort possible to improve accessibility using one or more of the following methods:

- Identify at least two exit routes from each neighborhood
- Construct roads that allow 2-way traffic
- Design road width, grade and curves to allow access for large emergency vehicles
- Post clear road signs to show traffic restrictions such as dead-end roads, and weight and height limitations
- Make sure dead-end roads and long driveways have turnaround areas wide enough for emergency vehicles.
- Construct turnouts along one-way roads
- Clear flammable vegetation at least 10 feet from roads and 5 feet from driveways
- Cut back tree branches hanging over roads
- Construct fire barriers, such as greenbelts, parks, golf courses and athletic fields
- Make sure that each street is named or numbered and a sign is visibly posted at each street intersection
- Post house addresses at the beginning of driveways, or on the house if it is easily visible from the road

FINAL REPORT

A Wildland Urban Interface assessment survey was conducted in Torrance County from January, 2003 through December, 2003. This survey was conducted in accordance with the guidelines provided by the New Mexico Energy, Minerals, and Natural Resources Department.

The survey used resources from Federal, State, County, and private industry as well as on-site surveys of selected areas representing each of the risk factors. This allowed for a comprehensive survey to be completed of all non-municipal urban wildland interface areas.

Each category of the survey was addressed individually. However the compilation of all data was used to derive the final Fire Hazard Rating for each of the 102 urban interface areas. (Addressed in “TAB–J Rating” section of the binder.)

This is a dynamic document that requires consistent updating to ensure that quality is maintained. The final report is stored in a binder with document protectors to allow easy replacement of outdated material. Also included with this final report is a compact disk of all data used to create maps, documents, pictures, and spreadsheets, which will allow Torrance County to update information as needed. (Note: all documents and spreadsheets were created using Microsoft Word or Excel software. Map data was created using ESRI ArcView and ArcMap software. Some data files were saved as Adobe Acrobat for printing purposes.)

Results of the overall assessment of the 102 Wildland Urban Interface areas are as follows:

- 13 developments qualify for a HIGH HAZARD RATING. These areas need to be considered for immediate mitigation (See TAB–M) to resolve the critical issues noted in the individual rating forms.

- 67 developments qualify for a MEDIUM HAZARD RATING. These areas need to be contacted and educated on the mitigation recommendations in this report and informed of materials and guidance resources listed in "Tab–O References".

- 22 developments qualify for a LOW HAZARD RATING. The citizens of these areas should be educated on using mitigation recommendations in this report and informed of materials and guidance resources listed in "Tab–O References".

- 18 subdivisions in the survey appear to be planned and, according to the data provided by the County, have not been developed with any structures. The ratings of these areas could change dramatically when new construction is started and should be updated immediately to ensure every precaution is taken to lower the owners' wildland fire risk hazard.

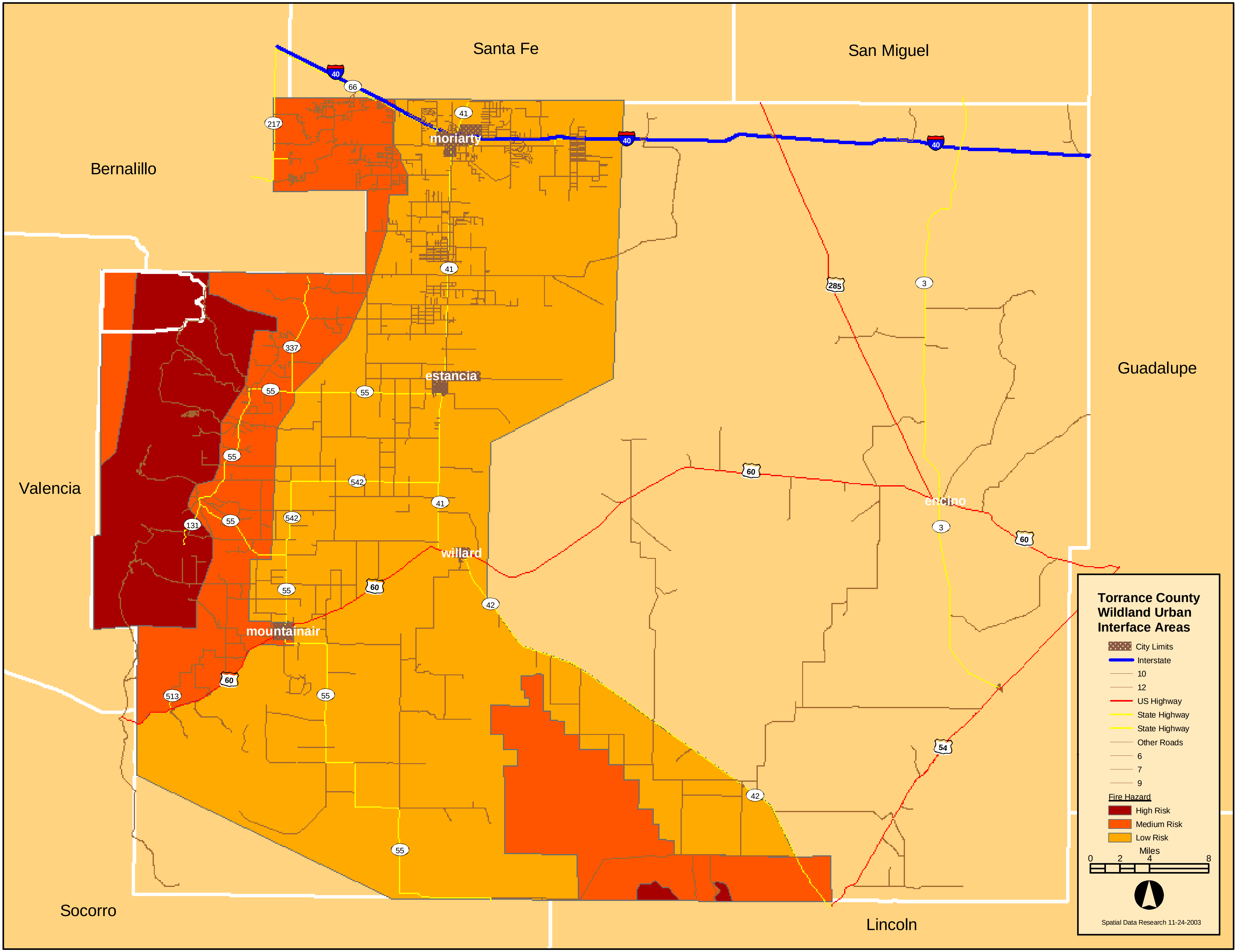
In conclusion, every effort was made to obtain the required data and information from primary sources. In cases where cooperation from the contacted agencies was not forthcoming, data was obtained from governmental or private websites and analyzed against data from surveys and from Torrance County for resolution. Some of the information used in this report was derived from data provided by Torrance County and Federal agencies and, as is inherent in raw data, inaccuracies may result in an imprecise assessment of a particular Urban Interface area. As all data is included in this report, corrections can easily be made to rectify incomplete or inaccurate data.

Overall, the results of the county assessment were positive. Torrance County has a concentrated area of wildland interface. With the growth of urban areas into the wildlands, the number of interface areas will continue to increase. Fire hazard issues need to be addressed as development occurs, not postponed until a wildland fire destroys precious resources or property.

With a reduction in Federal funding, the U.S. Forest Service is unable to conduct enough mitigation efforts to keep up with increasing urban development. The State and County Governments are also being affected by lack of funding and, as a result, cannot conduct a significant effort to help mitigate situations to improve the interface. Therefore, it is up to each citizen, the First Response agencies and volunteer organizations to get involved in the education and mitigation efforts of each development in their area. Through individual and collective efforts, substantial improvements can be made to the overall Wildland Urban Interface areas, making Torrance County a safer place for all its citizens.

REFERENCE WEB SITES

- US Forest Service www.fs.fed.us
- US Bureau of Land Management www.blm.gov
- US Bureau of Indian Affairs www.fire.nifc.nps/gov/bia/operations
- US National Park Service www.nps.gov/
- US Fish and Wildlife Service www.fws.gov/
- FIREWISE www.firewise.org
- EMNRD www.enmrd.state.nm.us
- State Land Office www.nmstatelands.org
- Wildland Fire Lessons www.wildfirelessons.net
- National Fire Plan www.fireplan.gov
- National Fire Center www.nifc.gov
- National Wildfire Coordination Group www.nwcg.gov
- NM Resource Geographic Information System Program www.rgis.unm.edu
- NM State Government www.state.nm.us
- The University of Arizona Cooperative Extension http://cals.arizona.edu/pubs/
- The Los Alamos National Laboratory, News and Public Affairs, www.lanl.gov


Santa Fe
San Miguel
Bernalillo
Guadalupe
Valencia
Socorro
Lincoln
moriarty
estancia
willard
encino
mountainair
Torrance County
Wildland Urban
Interface Areas
City Limits
Interstate
10
12
US Highway
State Highway
State Highway
Other Roads
6
7
9
Fire Hazard
High Risk
Medium Risk
Low Risk
Miles
0 2 4 8
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