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**Adapted Rolling Red Plains Topography**

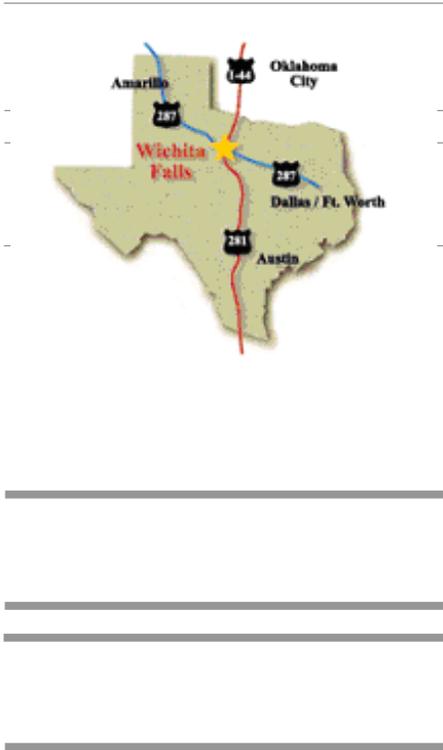
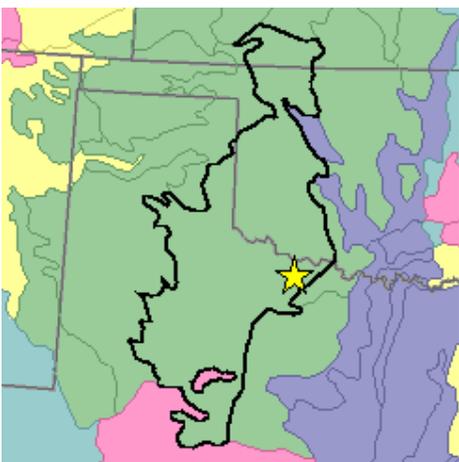


Figure 2.1: The Extent of the Rolling Red Plains Physiographic Region



Source: [www.essc.psu.edu/](http://www.essc.psu.edu/)

## GENERAL SETTING AND LOCATION

### Natural Setting

The jurisdiction of the Wichita Falls Metropolitan Planning Organization (MPO) includes the Cities of Wichita Falls, Pleasant Valley, and Lakeside City. The metropolitan region includes the convergence of several major highways:

- Interstate Highway 44
- United States (US) Highway 82
- United States Highway 277
- United States Highway 281
- United States Highway 287
- State Highway (SH) 79
- State Highway 240

While rail transportation is still important to the region, it has suffered with the diminishing industrial base of the Wichita Falls CBD. Roadway transportation is the dominant form of connectedness with outside communities.

Centrally located about 100 miles between Dallas/Fort Worth, Amarillo, and Oklahoma City, Wichita Falls is within the Rolling Red Plains physiographic region of Texas, an area of approximately 53,000 square miles that straddles the Texas/Oklahoma border, reaching as far south as San Antonio and as far north as Kansas.

The landscape is flat to rolling plains, with natural vegetation consisting of mixed grass plains, short grass high plains, shinnery oak grasslands, and mesquite grasslands plains. The mixed grass plains association is the transition zone between the tall grass prairie association and other associations

that are located in the western part of the physiographic area. Grasses and forbs are the dominant vegetation. Shinnery oak grasslands occur in broad rolling topographic relief of the western and northern parts of the area. These natural communities were maintained by numerous harsh weather events, such as severe winter weather, cycles of hot temperatures, drought, and fire<sup>1</sup>.

Oak mottes<sup>2</sup> occur throughout broad expanses of tall, mixed, or short grasses. The mesquite-grassland type is perhaps the most extensive of communities in the area. This association typically occurs on flat to gently rolling topography, and is characterized by open canopy of short mesquite trees with an under story of prickly pear and thorny scrub. These natural communities were maintained by a variety of harsh weather events, including severe

<sup>1</sup> A dense growth of small trees; especially, one of scrub oak in the West and Southwest. Sand Shinnery Oak (*quercus havardii rydb.*) is a rhizomatous, deciduous shrub on sandy soils from southeastern New Mexico to western Oklahoma. The common name, shinnery, comes from the French word *chenneire*, which means an oak that is shin-high. It is a white oak in contrast to red and live (evergreen) oaks common in other areas. Shinnery oak is a management problem when it grows in dense stands. On many sites, it may be 80% of the annual plant yield and it is highly competitive with grasses and forbs for water and nutrients.

<sup>2</sup> Oak mottes are isolated islands of live oak-dominated woodlots. Species found in the mottes include live oak, laurel cherry, yaupon, Chinese tallow, and a number of other tree, shrub, and understory species. Oak mottes are important habitat that provides food and shelter for birds.



**Figure 2.2: Typical Physiographic Conditions of the Rolling Red Plains**



Source: www.tarleton.edu

winter weather, cycles of hot temperatures and drought, and tornadoes.

The physiographic region suffers from the breaking of the land. The vast majority of the Rolling Red Plains has been altered for agriculture, primarily ranching. Remaining natural communities are affected by fragmentation, direct loss to pasture, and overgrazing. Bird conservation efforts in the area would require strong cooperation with

landowners to provide increased incentives for riparian zone restoration, oak motte restoration and management, and increased management of natural grassland systems.

shallow, comparatively broad valleys. The elevation ranges from 900 to 1,200 feet above mean sea level. Wichita County is drained from southwest to northeast by the Red and the Wichita rivers. The northwest quarter of the county empties into the Red River, the middle half drains into the Wichita River, and the southeast quarter drains into the Little Wichita River.

Sandy loams, black loams, and clay loams comprise the bulk of the local soils. Mineral resources include oil, gas, sand, gravel, and stone.

Temperatures range from an average high in the upper 90sF in July to an average low in the upper 20s F in January, combining for an average annual temperature of 63°F. Rainfall averages twenty-seven inches per year, and the growing season lasts, on average, 221 days each year.

**Figure 2.3: Lakeside City Vista**



Wichita Falls MPO is located at the southeast corner of Wichita County, and straddles a very small portion of northeast Archer County. Wichita County is located at 33°N 98°W and comprises 606 square miles (1 percent of the physiographic region), most of which lies in the eastern part of the Central Texas Rolling Red Plains.

As stated, the county's terrain consists of rolling plains with rounded slopes and

May is generally the wettest month with 3.9 inches of precipitation on average and 9 rainy days. Average annual humidity tends to range between a low in the upper 40s in the morning to a high in the mid 80s in the afternoon. Snowfall, when it occurs, averages 5.8 inches per year and falls between November and March; January, with 2.1 inches, is the month of heaviest accumulation.

Of the three communities within the Wichita Falls MPO (Wichita Falls, Pleasant Valley, Lakeside City), Wichita Falls is, by far, the largest community. Both Pleasant Valley and Lakeside City have populations less than 1,000, and Pleasant Valley's population is less than 400. Wichita Falls population (as of 2000) is 104,197.



Figure 2.4: Pleasant Valley Gateway



Lakeside City was incorporated in 1963. Located in Archer County along State Highway 79 adjacent to Wichita Falls, Lakeside City had, as of 2000, a population of 984. The majority of these people commute to Wichita Falls for work.

Pleasant Valley was incorporated in 1962 to prevent annexation from nearby Wichita Falls. Located along Farm-to-Market Road 367 just west of Wichita Falls in east central Wichita County, the community had, as of 2000, a mainly rural/agricultural economy and a population of 378. There is a trend within the community of commuting into Wichita Falls for employment.

**History**

Wichita County and Wichita Falls

The area now known as Wichita County was initially home to the Caddoan Indian peoples of the Wichita and Taovaya tribes, who migrated there from Kansas and Nebraska in the mid-18th Century. These were sedentary agrarian peoples and experienced raiding parties by the Lipan Indian peoples of the Apache and Comanche tribes.

The first recognized European contact occurred in the late 18th Century and consisted of Spanish Indian traders followed in the early 19th Century by surveyors of the Texan Emigration and Land Company. The first permanent settlement occurred in the mid-19th Century by subsistence farmers who frequently experienced raids from native peoples and were often forced from

their homes. Real settlement did not occur until the late 19th Century when ranching became a vital economic engine in the region.

Growth continued at a slow pace until, in the late 1880s, Wichita County became independent. Between 1880 and 1890, the population grew rapidly to almost 5,000, but was predominantly Anglo-American. Agricultural activities remained important economic drivers and were eventually joined by rail as a force of industrialization. By 1911, thanks to the efforts of Joseph A Kemp and Frank Kell, with the purchase and introduction of several rail lines into the County, the City of Wichita Falls became the regional transportation and distribution center. Its population increased from 2,480 at the turn of the century to 8,200 by 1910. Call Field, an Army Air Corps training facility, was built south of the city during World War I. Wichita Falls continued to grow; by 1920, the city had a population of 40,079 and by 1930 a population of 60,000, or 80 percent of the county's total population. Kemp was also instrumental in establishing water and irrigation programs and the creation, in 1901, of Lake Wichita.

The discovery of oil in 1911 put Wichita Falls and surrounding communities into a full oil boom. Between 1911 and 1950, the boom attracted people, industry, and commerce to the county, specifically to Wichita Falls. A number of petroleum-related businesses, including oilfield product manufacturing, crude oil refining, stock sales, and related endeavors, began operations locally, most often in Wichita Falls, which had transportation and

Figure 2.5: Wichita Falls at the Time of the Oil Boom



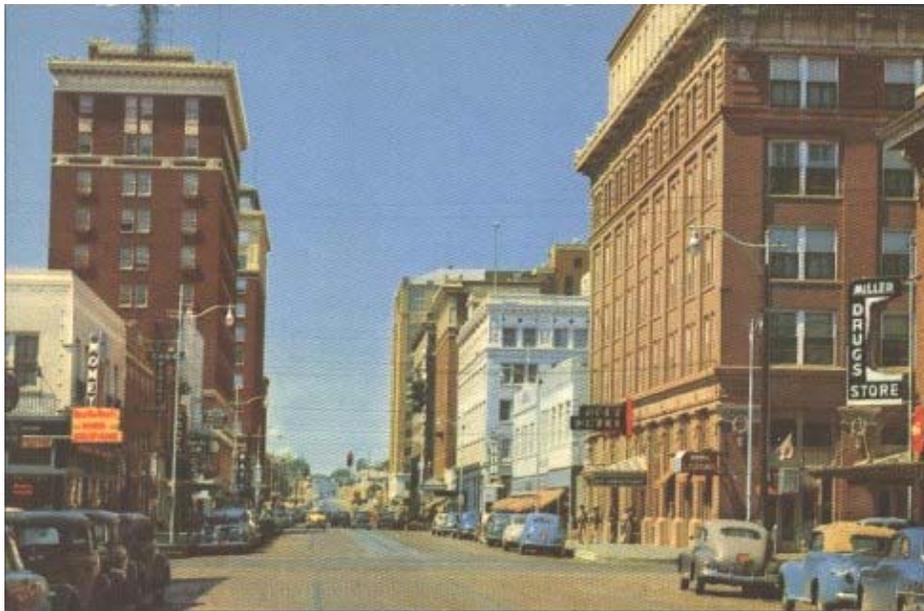
Source: [rootsweb.com/~txgenweb/postcards/Tyler.html](http://rootsweb.com/~txgenweb/postcards/Tyler.html)



communication facilities. By 1940, the county had become Texas' most productive and active oil county, having produced 320,000,000 barrels of oil. In 1930, Wichita Falls had a population of nearly 75,000 and rural areas had close to 1,500 farms. During the Great Depression, the regional economy, as a whole, slumped, but regained its importance during the War Years. Oil production, again a vital element to the economy, surged and Wichita Falls' population swelled with the investment and installation of the Sheppard Air Force Base.

establishments. The depression slowed growth but did not stop it, due in part to a major oil discovery at nearby Kamay in 1938. In 1940, the population was 55,200. Bank deposits exceeded \$36 million, and there were ninety-two miles of paved streets, seventy-seven manufacturing establishments, 127 wholesale outlets, and 741 retail stores. In 1941, the economy was further bolstered by the opening of Sheppard Field, an Army Air Corps training facility. By May 1945, when the base reached its peak strength, there were 46,000 army personnel stationed there. The base was deactivated on August 31, 1946, but reopened as Sheppard Air Force Base in August 1948. It continued to function as a major training center for air force technicians and a flight-training center for NATO.

Figure 2.6: Wichita Falls Downtown, c.1940s



Source: [rootsweb.com/~txgenweb/postcards/Tyler.html](http://rootsweb.com/~txgenweb/postcards/Tyler.html)

Wichita Falls had a population of 110,100 in 1955. By 1960, the population had dropped to 101,724, and while oil production in the area still ranked eighth in the state, it would soon be eclipsed by other areas. By 1962, refinery activity had practically ceased. Recognizing that change was coming, the city's leaders formed Industrial Development, Incorporated, which sought to diversify the economy by attracting other types of industries. Gates Rubber Company built a plant in 1964. Sprague Electric and Johnson followed in 1966. Tex-Color Labs arrived in 1967, followed by Town and Country Mobile Homes and Dowell Division of Dow Chemical Company in 1968. In 1970, Industrial Development merged with the Chamber of Commerce to form the Board of Commerce and Industry. This organization was successful in attracting fifteen new industries during the 1970s,

The population of Wichita Falls in 1930, on the eve of the Great Depression, was 43,607. There were thirty-two parks, forty-seven churches, four railroads, twenty schools, and 118 industrial



including Pittsburgh Plate Glass, Certain Teed, Washex, Howmet Turbine, AC Spark Plug, and Cieba Geigy. These successes produced great optimism that the new trend would continue, but it declined by the early 1980s. Moreover, several companies moved their facilities away. These included AC Plug, Johnson and Johnson, and Sprague. Meanwhile, because of the construction of a large shopping mall in the southwestern part of the city, the downtown collapsed as a viable shopping area.

Wichita Falls was devastated on April 10, 1979, by one of the largest tornados ever recorded. Sweeping through the southern part of the city, the storm destroyed twenty percent of all the dwellings in town and damaged or destroyed numerous business establishments. Miraculously only forty-five people were killed, although more than 3,200 were injured. The city made a rapid recovery, and within three years, most of the damage had been repaired. In addition, the boom in oil prices during the early 1980s caused a brief flurry of activity in business. However, when oil prices slumped again in the mid-1980s, the economy became stagnant. In 1993 Wichita Falls had a population of 97,710 and 2,933 listed businesses.

**Figure 2.7: Damage from 1979 Tornado**



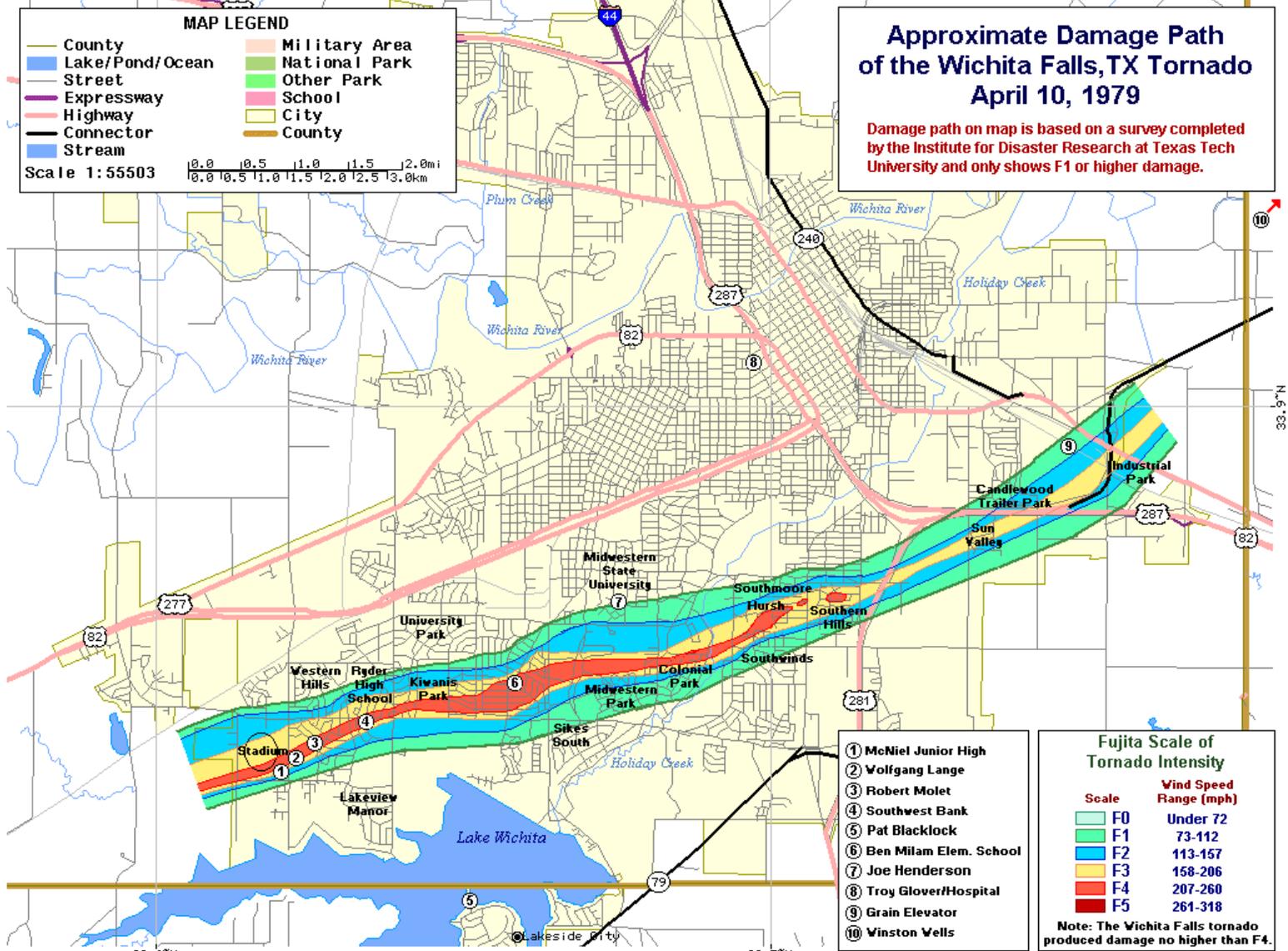
Source: [www.srh.noaa.gov/oun/storms/19790410/maps.php](http://www.srh.noaa.gov/oun/storms/19790410/maps.php)

**Figure 2.8: Aerial Photo of Damage**



Source: [www.srh.noaa.gov/oun/storms/19790410/maps.php](http://www.srh.noaa.gov/oun/storms/19790410/maps.php)

Figure 2.9: Approximate Damage Path of Wichita Falls Tornado, 1979



Source: [www.srh.noaa.gov/ou/storms/19790410/maps.php](http://www.srh.noaa.gov/ou/storms/19790410/maps.php)