1| Geographic Context of Fort Worth

OVERVIEW

Fort Worth lies in North Texas, approximately 300 miles inland from the Gulf of Mexico and 75 miles from the Red River and the Oklahoma border (figs. 1-1 and 1-2). The city falls within the Cross Timbers and Prairies region, along the border of the rolling hills and grasslands of the prairie and the more heavily wooded Cross Timbers (fig. 1-3). The land is flat to rolling, carved throughout by the area's waterways, and the soil is rich. Fort Worth experiences hot, dry summers and mild winters. This geography is greatly tied to the city's nineteenth-century origins and twentieth-century development.

Figure 1-1. Shaded relief map of Texas. Map of Texas with Fort Worth circled in red. Source: https://gisgeography.com/Texas-map/.

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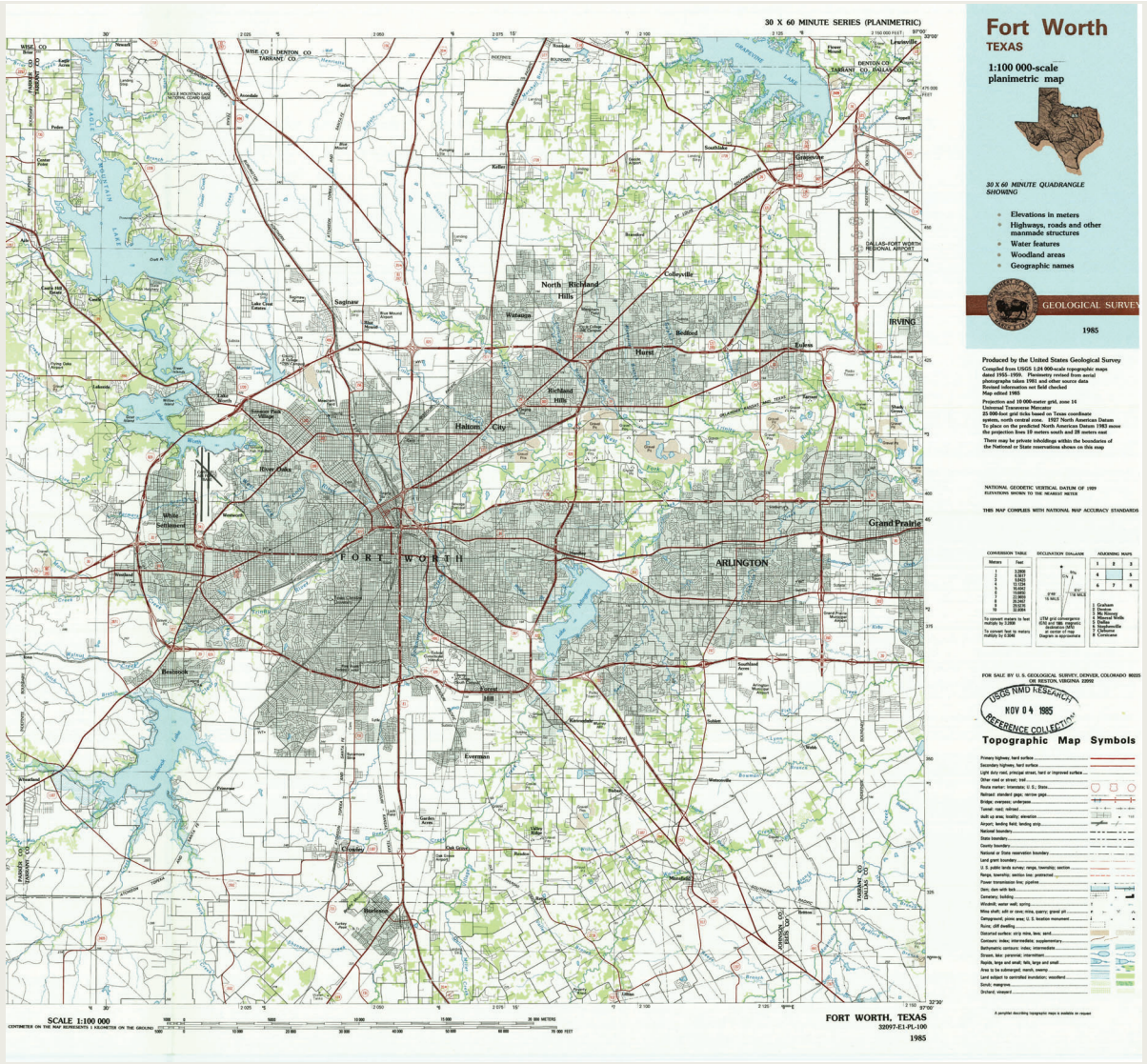


Figure 1-2. This is a 1985 USGS topographic map of Fort Worth with elevations, water features, and woodland areas (green) shown. Source: USGS, TopoView, accessed August 2, 2021, https://ngmdb.usgs.gov/topoview/.

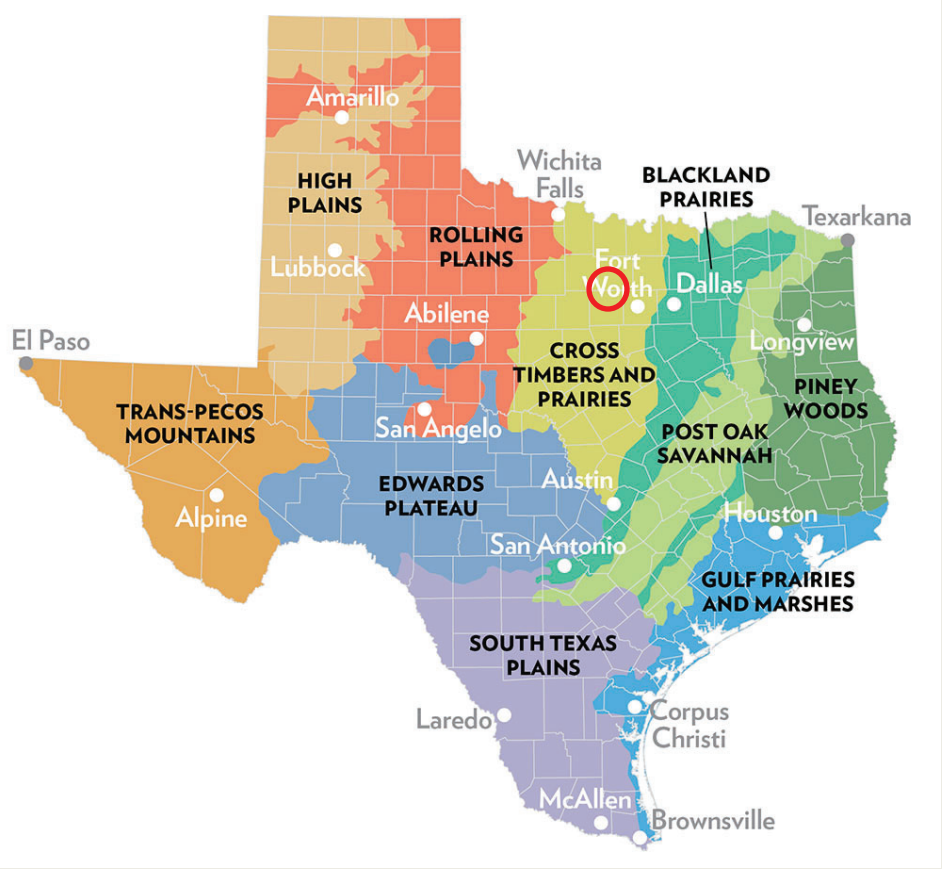


Figure 1-3. Map of Texas showing the state's various ecological regions. Fort Worth, circled in red, falls within the Cross Timbers and the Grand Prairie. Source: Texas Highways, published March 15, 2020, https://texashighways.com/wildflowers/the-wildflower-regions-and-vegetational-areas-of-texas/.

Before the first permanent Anglo inhabitants arrived in the mid-nineteenth century, this frontier land was characterized by vast swaths of rolling prairies, bisected by a myriad of rivers and streams. Flowing northwest to southeast across Tarrant County, the area's largest river, the Trinity, along with its many smaller tributaries, created areas in the city with gently sloping, flora-covered bluffs. Along the rivers and creeks, and in the flat bottomlands created by these waterways, stands of trees grew, including live oaks, sycamore, elm, pecan, and cottonwood. In and along the waterways, fish and fowl were plentiful, and wild animals, including deer, turkeys, and antelope, roamed freely in the river bottomlands and prairies. In part due to the hospitable environment, indigenous tribes including Tonkawa, Caddo, Comanche, Kiowa, and Wichita, lived in this region for centuries before the arrival of Anglo settlers.[1] This geographic portrait of the area proved significant in the city's founding and subsequent growth and development in the late nineteenth and twentieth centuries.

WATERWAYS AND CLIMATE

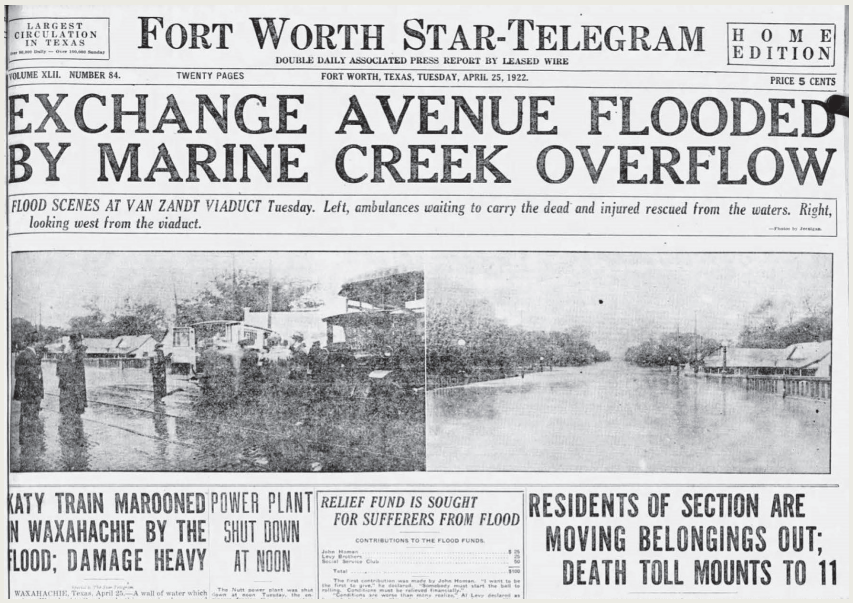
Flowing from the west, two of the Trinity River's four forks, the Clear and West Forks, come together at the approximate center of Tarrant County. At their confluence, bluffs overlooking the waterways and nearby lands provided the requisite vantage point for the establishment of Fort Worth in 1849, the military post from which the city evolved (fig. 1-4). Only a few months after the founding of the post, which was located near the bluffs on the banks of the river, its occupants learned of the waterway's proclivity for flooding. The military moved the camp out of the floodplain to higher ground atop the bluffs, but for the next 100 years, flooding remained an ever-present threat to the city.

Figure 1-4. Postcard from around 1907 showing the Trinity River and its tree-lined banks with the Tarrant County Courthouse in the background. Source: "Courthouse from the River," Jenkins Garrett Texas Postcard Collection, University of Texas at Arlington Libraries Digital Gallery, 1907, accessed June 9, 2021, https://library.uta.edu/digitalgallery/img/20088580.

Flood Control Measures

Fort Worth's climate contributed to the waterways' tendency to flood. Generally subtropical, Fort Worth has hot and humid summers, mild to cool winters, and is prone to tornadoes and severe storms. Precipitation in the area varies considerably from year to year. In years of drought, the city receives less than 20 inches of rainfall, but on average, 37 inches of rain falls annually in Fort Worth.[2] Most of the rainfall occurs during the four-month period beginning in March and ending in June. Consequently, each of the city's major floods—1889, 1908, 1922, and 1949—occurred in spring after severe storms (figs. 1-5 and 1-6). To protect against floods, which took lives, displaced citizens, and caused millions of dollars in damage to property, the City implemented a series of flood control projects beginning shortly after the flood of 1908. Over the next four decades, the levee-improvement district, various local organizations, and the US Army Corps of Engineers (USACE) built and strengthened levees, installed a drainage system, and straightened some channels in their flood control efforts.[3] Three dams, Lake Worth, Lake Bridgeport, and Eagle Mountain Lake were also constructed to help control the flow of the West and Clear Forks. The reservoirs also provided drinking water and recreation to city residents.

Figure 1-5. North Main Street after the April 16, 1908, flood. Source: "Flooded North Main Street during Fort Worth, Texas flood of 1908," Fort Worth Star-Telegram Collection, University of Texas at Arlington Libraries Digital Gallery, 1908, accessed June 9, 2021, https://library.uta.edu/digitalgallery/img/10005229.



LARGEST CIRCULATION IN TEXAS

FORT WORTH STAR-TELEGRAM

DOUBLE DAILY ASSOCIATED PRESS REPORT BY LEASED WIRE

HOME EDITION

VOLUME XLII. NUMBER 84. TWENTY PAGES FORT WORTH, TEXAS, TUESDAY, APRIL 25, 1922. PRICE 5 CENTS

EXCHANGE AVENUE FLOODED BY MARINE CREEK OVERFLOW

FLOOD SCENES AT VAN ZANDT VIADUCT Tuesday. Left, ambulances waiting to carry the dead and injured rescued from the waters. Right, looking west from the viaduct.

KATY TRAIN MAROONED IN WAXAHACHIE BY THE FLOOD; DAMAGE HEAVY

POWER PLANT SHUT DOWN AT NOON

RELIEF FUND IS SOUGHT FOR SUFFERERS FROM FLOOD

CONTRIBUTIONS TO THE FLOOD FUNDS.

RESIDENTS OF SECTION ARE MOVING BELONGINGS OUT; DEATH TOLL MOUNTS TO 11

Figure 1-6. Front page of the April 25, 1922, Fort Worth Star-Telegram the day after the April 24th flood. Source: Newspapers.com.

Despite these efforts, in 1949 Fort Worth experienced its worst flood due to levee failure (fig. 1-7). A sense of urgency for improved flood control followed the event and resulted in the completion of the Fort Worth Floodway project. Finished in 1957, the project included a new dam (Benbrook Reservoir), channeling of the West and Clear Forks, construction of new levees and strengthening existing levees, and more interior drainage.[4] The project, headed by the USACE and the Tarrant Regional Water District, leveed and channeled an eight-mile section of the river in Fort Worth. The work straightened and enlarged the course of the river and guaranteed protection for 1,710 acres in the city (fig. 1-8).[5] The new floodway allowed for greater urbanization and park creation within the city of Fort Worth.

See the next page for a sample statement of significance for resources associated with the theme of Waterways and Climate, subtheme Flood Control Measures.

Figure 1-7. Seventh Street after the flood of May 16–17, 1949. Downtown is in the background. Source: "Fort Worth flood of 1949," Squire Haskins Photography, Inc. Collection, University of Texas at Arlington Libraries Digital Gallery, 1949, accessed June 9, 2021, https://library.uta.edu/digitalgallery/img/20008278.

Statement of Significance*		
Theme:	**Waterways and Climate**	
Subthemes:	Flood Control Measures	
Summary Statement of Significance:	Resources significant within the theme of Waterways and Climate reflect not only flood control measures implemented as a result of Fort Worth's history of flooding, but they also reflect the land use created by flood control. Flood control resources are likely eligible as a district that encompasses a system, rather than as individual resources. These may be eligible under Community Planning and Development as well Engineering. Resources must retain sufficient integrity to convey significance and association with this theme.	
Period of Significance:	Roughly between 1908 through the 1950s	
Period of Significance Justification:	Broadly covers the period between the flood of 1908 and the subsequent flood control measures.	
Geographic Location:	Along the Trinity River, Clear Fork, West Fork, and other tributaries of the Trinity River	
Area(s) of Significance:	Community Planning and Development, Engineering, Landscape Architecture	
Criteria:	**National Register:** A, C	**Local:** 1, 2, 5
Associated Property Types:	Individual resources contributing to a historic district or landscape include a variety of flood control implements including: levees, dams, reservoirs, water gauges, sumps, sluices, and gates. May also includes parks.	
Example:	**Benbrook Lake**	

Benbrook Lake, approximately 15 miles southwest of downtown on the Clear Fork, was built between 1947 and 1952 during a period of immense flood control construction. Built by the Army Corps of Engineers, Benbrook was one of several new lakes in and around Fort Worth constructed to help with flooding of the Trinity River and its tributaries. Railroad tracks, rods, utility lines, and even cemeteries were relocated for the building of the project, which included construction of rolled-earth embankments, a concrete spillway, and sliding gates. During heavy rains in 1957, 1989, 1990, and 1991, Benbrook Lake helped prevent massive flooding and damage. The lake also serves as a source of water and as a source of recreation; boat ramps provide access to the lake and several parks are located on the lake's shores. The lake may be eligible as a local landmark and for listing in the National Register under Criterion A for Community Planning and Development and Criterion C for Engineering.

Benbrook Lake and Dam in 1953, shortly after completion. Source: Fort Worth Star-Telegram Collection, University of Texas at Arlington Libraries. "Benbrook Lake and Dam. View southward across the reservoir from the dam." UTA Libraries Digital Gallery, 1953, accessed August 31, 2021, https://library.uta.edu/digitalgallery/img/20132164.

*This sample provides a framework for the identification of resources associated with significant themes in Fort Worth's history. Resources significant under one theme/subtheme may also be significant under one, or several other themes. Period of Significance dates are also just a guide, and resources may have periods of significance that start earlier or end later. Each resource needs to be evaluated individually for historical significance.

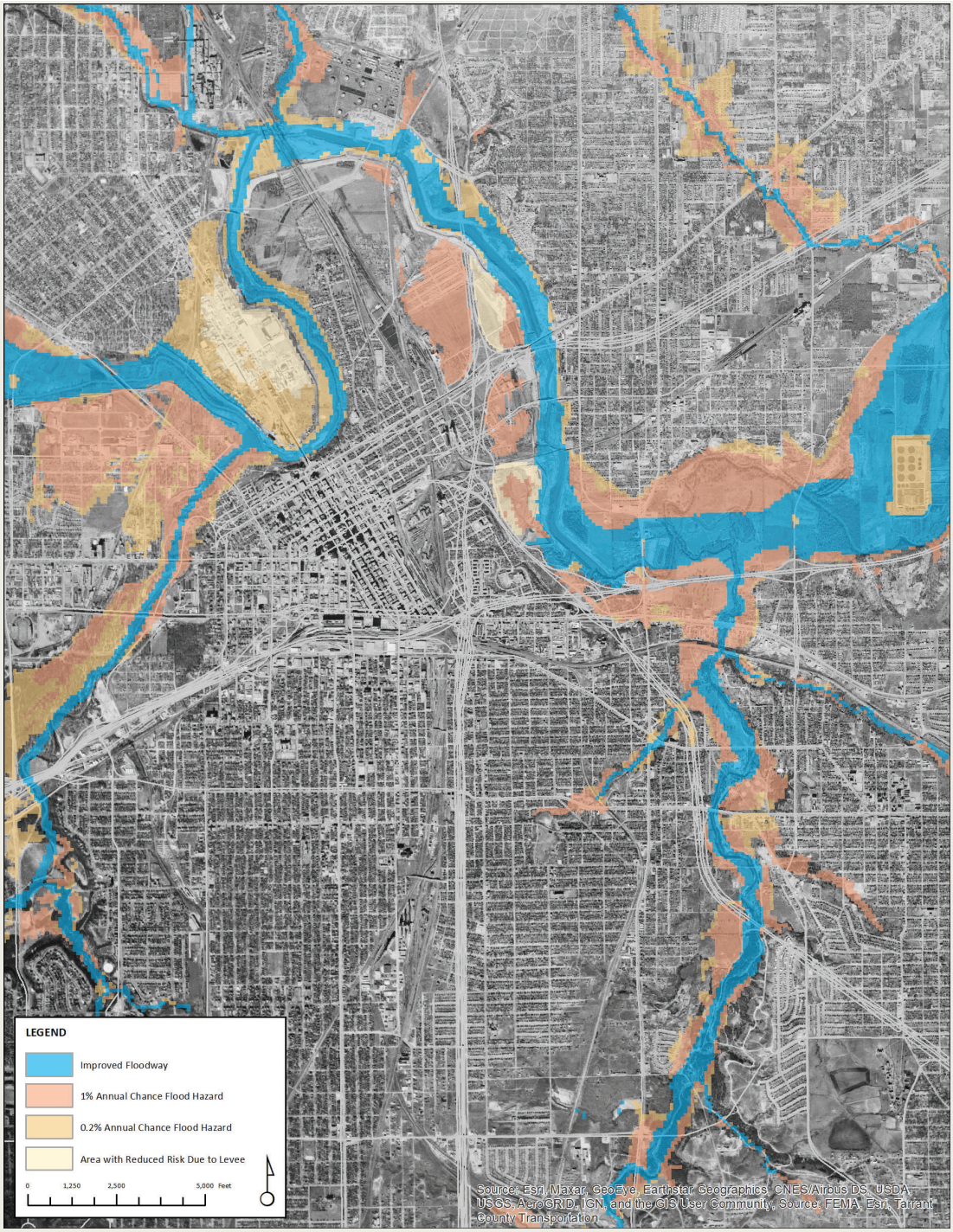


Figure 1-8. Map showing floodway improvements finished in 1957 overlaid on a 1953 aerial. Note the straightened course of the waterway, particularly the Clear Fork southwest of downtown. Source: USGS Earth Explorer aerial; FEMA floodplain data; overlay done by HHM, 2021.

SOILS AND VEGETATION

Fort Worth falls within the northern section of the Grand Prairie known as the Fort Worth Prairie. Around Fort Worth the soil is varied: heavy, dark calcareous prairies soils atop hard limestone make up the western side of the city; light, stony, and sandy noncalcareous soils are found to the east; and terraces of sandy, noncalcareous soils generally follow the course of the Trinity River.[6] Rich in organic matter, due in part to the floodwaters' ability to stretch over a broad area of flat terrain, the soils supported a diverse collection of trees, plants, and grasses prior to Anglo settlement.[7] Forests of oaks and walnuts covered the flatter land to the east, while the west was characteristically rolling prairieland. On an 1854 survey of the region for the railroad, J. Pope described the area as:

> . . . By far the richest most beautiful district of country I have ever seen, in Texas or elsewhere, is that watered by the Trinity and its tributaries. Occupying east and west a belt of one hundred miles in width, with about equal quantities of prairie and timber, intersected by numerous clear, fresh streams and countless springs, with a gently undulating surface of prairie and oak openings, it presents the most charming views, as of a country in the highest state of cultivation, and you are startled at the summit of each swell of the prairie with a prospect of groves, parks and forests, with intervening plains of luxuriant grass, over which the eye in vain wanders in search of the white village or the stately house, which seem alone wanting to be seen.[8]

The vegetation and landscape of Pope's memory changed vastly throughout the nineteenth and twentieth centuries, though an undisturbed portion of the native prairie remains at Tandy Hills Natural Area (fig. 1-9). Despite some areas of shallow soil, deeper soils throughout the region proved conducive to agricultural endeavors. To the east and along the river, farmers found the land good for dairy farming and the soils favorable for a variety of fruit, vegetable, and grain crops including watermelons, potatoes, corn, cotton, and wheat.[9] The grasslands to the west also supported crops as well as cattle and sheep. Substantial farming and livestock grazing by early settlers transformed the prairieland into a mix of rangeland, pastureland, and cropland. Oftentimes settling near waterways, farmers and ranchers cleared the land of trees, using the timber for building. These early agriculturalists left the first real permanent mark on the land, creating a cultural landscape that was also largely lost as the city grew in the nineteenth and twentieth centuries.

Figure 1-9. Tandy Hills Natural Area is a 200-acre remnant of the native Fort Worth Prairie. The conservation area is three miles east of downtown. Source: "Tandy Hills/Stratford Park Natural Area," Visit Fort Worth, accessed June 6, 2021, https:// www.fortworth.com/listings/tandy-hills-stratford-park-natural-area/9176/.

NOTES

[1] Looney Ricks Kiss, "Fort Worth Citywide Historic Preservation Plan" (prepared for the City of Fort Worth, 2003), 1, from the City of Fort Worth, http://fortworthtexas.gov/uploadedFiles/Planning/Historic_Preservation/2003%20Citywide%20Historic%20Preservation%20web.pdf.

[2] Average calculated from the National Weather Service, https://www.weather.gov/fwd/dmoprecip.

[3] Marsha Prior, Duane Peter, and Joseph Murphey, "Below the Bluff: Urban Development at the Confluence of the West Fork and Clear Fork of the Trinity River, 1849–1965" (prepared for US Army Corps of Engineers, Fort Worth District, January 2005), 74.

[4] Prior, Peter, and Murphey, "Below the Bluff," 80.

[5] Prior, Peter, and Murphey, "Below the Bluff," 80.

[6] H. W. Hawker, Neal Gearreald, and M. W. Beck, "Soil Survey of Tarrant County, Texas," for the US Department of Agriculture, Bureau of Soils (Washington, D.C.: Government Printing Office, 1924), 872.

[7] Hawker, Gearreald, and Beck, "Soil Survey of Tarrant County, Texas," 871.

[8] E. J. Dyksterhuis, "The Vegetation of the Fort Worth Prairie," *Ecological Society of America*, 5.

[9] Hawker, Gearreald, and Beck, "Soil Survey of Tarrant County, Texas," 897.